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# Small-Scale Fisheries in Europe: Status, Resilience and Governance

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Too Big To Ignore (TBTI, toobigtoignore.net) is a global research network and knowledge mobilisation partnership, funded by the Social Sciences and Humanities Research Council of Canada and supported by 15 partner organisations and over 500 members from around the world. The network aims at elevating the profile of small-scale fisheries, arguing against their marginalisation in national and international policies, and developing research and governance capacity to address global fisheries challenges.

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Cover photo: Fishing for wahoo with "vara de peto" in La Restinga (El Hierro, Canary Islands, Spain, October 18, 2013). Photo by Jose J. Pascual Fernández.
This is a highly selective, traditional fishing technique in the Canary Islands, mainly used on the island of El Hierro, for the capture of wahoo (*Acanthocybium solandri*). The fisher stands in the bow of the boat, in a space called the trampoline. Near the bow, just below the water's surface, a wooden model of a wahoo, painted with great realism, is used to attract fellow fish. When a wahoo approaches the model, the fisher, using a wooden rod of about three meters, stabs the fish with a harpoon (that has the shape of a large hook) attached to a line to capture it.

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# Foreword

The past decade has seen an unprecedented amount of attention given to small-scale fisheries by governments, non-governmental organisations, and researchers alike. The *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* (SSF Guidelines), released by the Food and Agriculture Organization (FAO) of the United Nations (UN) after the adoption of member states in 2014, is among the highlights. The SSF Guidelines represents the "gold standard" for small-scale fisheries governance, with human rights and dignity, respect of cultures, non-discrimination, and gender equality and equity, among others, as the guiding principles. Governments, funding agencies, and the research community have pledged support to help countries and small-scale fisheries communities with the implementation of the SSF Guidelines. All of these commitments are wonderful except for one caveat – the SSF Guidelines are developed in the context of food security and poverty eradication. Thus, while they are global in scope, the focus is on developing countries where many small-scale fishing people and their families are marginalised and vulnerable.

For researchers interested in small-scale fisheries in the north, this is not encouraging news. Many would argue, in fact, that small-scale fisheries in developed countries also need livelihood protection and, in accordance with Sustainable Development Goals (SDG) 14, Target 14b, secured access to resources and markets. The latter is particularly relevant for small-scale fisheries in Europe, given the stipulation of the marine spatial planning directive and the blue economy agenda that dominates the discussion about growth and development in the region. Fisheries, including small scale, in the member states of the European Union (EU) are also managed under the Common Fisheries Policy (CFP), which may not work well across countries and in all contexts. The policy reform in 2013 gave rise to a new CFP that is more attuned to the specificity and the needs of small-scale fisheries. Yet, it is still not clear how small-scale fisheries can benefit from the new policy. While principles like sustainability, the precautionary principle, and an ecosystem approach promoted in the new fisheries policy are applicable to small-scale fisheries, concerns about livelihood sustainability, rights and access to resources, and social justice are still prominent, requiring additional principles and considerations.

Principles such as human rights and dignity, respect of culture, and gender equality and equity, which underlie the SSF Guidelines, are as relevant to small-scale fisheries in Europe as they are to those in the developing countries. Thus, it will make sense to set up institutions, rules, and regulations that foster the alignment between policies operating in Europe and the SSF Guidelines, which will also help achieve the SDGs.

So where to begin with this important governance exercise, which is complicated by the high diversity, complexity, and dynamism of small-scale fisheries, as well as by the scale issues associated with them? A good starting point is to conduct a large-scale research and comparative case study analysis, covering a wide range of historical accounts, cultural settings, socio-economic characteristics, geophysical and ecological systems, and governing structures. Such a study can only be done through partnership and research collaboration, which is exactly how the Too Big To Ignore (TBTI, toobigtoignore.net): Global Partnership for Small-Scale Fisheries Research operates. Since its inception in 2012, TBTI has been relying on contributions from its members and collaborators in the production and dissemination of knowledge about small-scale fisheries worldwide. Several books, journal articles, reports, and website contents have been produced from in-depth research that provides thick description about small-scale fisheries, making them more visible to policy- and decision-makers, attracting attention of donors, and encouraging new generations of researchers to follow suit. We frame our research around five big questions that have been compiled through broad-based consultations with fishers' organisations, civil society organisations, environmental groups, practitioners, policy-makers, and researchers. These questions are related to economic viability, livelihood sustainability, ecosystem stewardship, rights, access and ownership, and governance capacity and performance. We organise our work around 14 thematic research clusters to address current and emerging issues and concerns affecting small-scale fisheries sustainability. It is through these clusters that we are able to conduct research and have publications on important issues such as food security, value chains, subsidies, gender, and inland fisheries. The SSF Guidelines is another research cluster that has examined challenges and opportunities that countries face regarding the implementation of the SSF Guidelines. The 2017 book on the topic includes case studies from 32 countries around the world, offering important lessons for governments and agencies responsible for securing sustainable small-scale fisheries.

Information and knowledge about small-scale fisheries are largely incomplete. For that reason, TBTI has developed an open-access, web-based, crowdsourced platform called "Information System on Small-Scale Fisheries" (ISSF, issfcloud.toobigtoignore.net) to collect and distribute data about small-scale fisheries. It includes information about key characteristics of small-scale fisheries systems along the fish chain, from preharvest to harvest to postharvest. It also hosts information about the SSF Guidelines, organisations, case studies, fishers' experiences, and researcher profiles. ISSF is the most comprehensive information portal about small-scale fisheries, with 3000 records from around the world. About 300 of these are related to small-scale fisheries in the 25 countries covered in this book.

From these ISSF records and the work that TBTI has done thus far, it will be difficult to deny the importance of small-scale fisheries in Europe. With this new book entitled *Small-Scale Fisheries in Europe: Status, Resilience and Governance*, edited by José J. Pascual-Fernández, Cristina Pita, and Maarten Bavinck, the stage is set for positioning small-scale fisheries front and centre in the discussion about the CFP and other policies for the rest of Europe, as well as in the agenda setting for blue growth and blue economy. The 25 country case study chapters in the book, organised by the geography of the sea, provide us with vivid descriptions of small-scale fisheries, portraying beautifully the fishing people and their cultural heritage; illustrating a wide range of diversity, complexity, and dynamism found in this sector; and emphasising therefore the need to know the context where small-scale fisheries operate. There is no one size that fits all when it comes to small-scale fisheries, here in Europe and elsewhere.

The book illustrates that concerns and challenges facing small-scale fisheries, such as those related to ecosystem health, food security, livelihoods, and social justice, are truly global, and small-scale fisheries in Europe face similar struggles with those in developing countries when arguing for governments' attention and support. Many countries have strong organisations, and the region itself has a good representation in the organisation LIFE (Low Impact Fishers of Europe). Nevertheless, this region is facing the stiffest competition with large-scale, industrial fisheries, which generally receive a better deal from management. The book also illustrates how many small-scale fisheries in Europe are sidelined in subsidy distribution and are the casualties of the individual transferrable quota allocation system. Not only do the stories about mismanagement and poor governance performance in the region offer valuable lessons, but there are also examples of positive experiences and successful outcomes that can be shared.

This book is the most comprehensive volume about small-scale fisheries in Europe and is very significant in its content and contribution. It complements well TBTI books in the MARE Series that focus on small-scale fisheries in other regions. The book editors have done a wonderful job of bringing the country experts together for this unique collection, analysing the differences and similarities among them. The book provides important information and knowledge, as well as compelling evidences suggesting that small-scale fisheries in Europe, while they may not be too big to ignore relative to those in developing countries, are certainly too important to fail. It is a must read for those looking for ways to support sustainable small-scale fisheries in Europe and to help promote their causes. The United Nations International Year of Artisanal Fisheries and Aquaculture in 2022 will be about small-scale fisheries in Europe as much as small-scale fisheries everywhere else in the world.

TBTI Director, University Research Professor Ratana Chuenpagdee
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# MARE Series Editor Preface

Although the majority of small-scale fishing people carry out their trade in the Global South, they play an important role in the Global North too, as this book focussing on Europe demonstrates. There are of course notable differences between small-scale fisheries as they are practiced in various settings, such as the regional seas of Europe. However, small-scale fisheries also show similarities. Many fisher concerns are the same, like keeping a healthy marine ecosystem and a viable industry. In Europe, small-scale fisheries provide crucial employment and sustain livelihoods for people in coastal communities. They supply nutritious food and maintain cultural heritage. Without them, the future of fishing communities would even be highly uncertain. Nevertheless, small-scale fisheries are under pressure from various sources, and in many European countries, they have lost the significance they once had. Like small-scale fishers in the Global South, they often find themselves without a voice. They are typically excluded from the political processes that determine their future and are often victims of policies that do not have their well-being and potential in mind. Thus, their continued presence in the fishing economy is not guaranteed, putting stress on families and on communities. This book argues that the profile of small-scale fisheries must be augmented and that their services must gain the recognition they deserve. This is no less true in the European context than in other parts of the world. In all circumstances, the research community has an important role to play, as demonstrated in this book.

As editors of the MARE Publication Series, we proudly welcome this volume of 25 case studies from so many European countries, many of which – as far as small-scale fisheries are concerned – we hitherto have heard little from. It is indeed a unique contribution, which demonstrates diversity and cultural richness while sharing common challenges and destinies. The book falls nicely into the row of publications from the Too Big To Ignore (TBTI): Global Partnership for Small-Scale Fisheries Research, of which the current volume is a product. TBTI has made a very important contribution to the international effort in support of small-scale fisheries, mainly by means of research activities and advocacy. We are proud that the six edited volumes produced by TBTI in the course of 7 years, including this one, have all been published in the MARE Publication Series.

The MARE Publication Series commenced in 2004 with Amsterdam University Press but moved to Springer Academic Publishers in 2012. So far, the Series has produced 22 edited and single-authored volumes on a variety of regions in the topical field of people, coasts, and seas. Margaret Deignan and other staff at Springer have facilitated the production process, for which we again are grateful. We wish to congratulate the editors – José J. Pascual-Fernández, Cristina Pita, and Maarten Bavinck – with the completion of this fine book.

On behalf of the MARE Series editors,
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This book would not have been possible without the effort of the 75 authors from around Europe, who have helped to portray our small-scale fisheries. We are truly grateful for their great commitment and contributions. We also owe our gratitude to the many people who have reviewed individual chapters and helped us with the realisation of the book. We thank Vesna Kereži, Clive Tyrell, Alicia Saldaña Millán, Brennan Lowery, and Mirella de Oliveira Leis who provided essential assistance in language editing and formatting and Joseph Daniel and Fritz Schmuhl, as well as the Springer Nature team, who took good care of the publishing process. Our gratitude as well to Poul Dengbol and Nicole Franz who have read the book chapters and arranged the back matter texts. Finally, we are indebted to Svein Jentoft and Ratana Chuenpagdee for contributing to the editor's preface and foreword, respectively.

We are happy to include this book in the MARE Book Series, where it complements a set of other social science publications on small-scale fisheries in the world. The book found its origin in the Too Big To Ignore: Global Partnership for Small-Scale Fisheries Research (TBTI), funded by the Social Sciences and Humanities Research Council of Canada (Grant Number 895-2011-1011). We thank TBTI and Ratana Chuenpagdee for the generous support they provided. This endeavour also received a contribution for travelling and English editing from the project "GOBAMP II" (Governance Challenges for Sustainable Small-Scale Fisheries: Creating Synergies with Marine Conservation and Tourism, CSO2013-45773-R, financed by the Ministry of Economy and Competitiveness of Spain). J. Pascual would also like to acknowledge the Macarofood project (Interreg-MAC/2.3d/015), with the support of the European Regional Development Fund. Cristina Pita wishes to acknowledge the Centre for Environmental and Marine Studies (CESAM) and FCT/MCTES for the financial support to CESAM (Grant No. UIDP/50017/2020+UIDB/50017/2020) through national funding. Maarten Bavinck is grateful to the MARE Network (www.marecentre.nl) that provides valuable support for numerous ventures of this kind.

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# Chapter 1
# Small-Scale Fisheries Take Centre-Stage in Europe (Once Again)


**José J. Pascual-Fernández, Cristina Pita, and Maarten Bavinck**

**Abstract** Small-scale fisheries in Europe have historically rarely received the attention they deserve. Fishery scholars and policy makers worldwide have until recently paid scant attention to the diversity of the fisheries sector, or to the existence of small-scale fleets and their fishing communities. For far too long, small-scale fishing activity has been obscured by a focus on medium or large-scale fleets, idealised as being more modern, technologically advanced and more profitable. However, resource crises in some fisheries and increasing concerns about unsustainable practices and subsidies have put small-scale fisheries in Europe, and beyond, centre stage once again. This chapter introduces 25 country studies about small-scale fisheries in Europe, written by authors from different academic fields as well as by practitioners. Here, we provide insights into the backgrounds of small-scale fisheries in Europe, linking them to prevailing policy approaches, such as the Common Fisheries Policy (CFP). We argue that small-scale fisheries in Europe are diverse, complex and dynamic, and show various levels of resilience. The evidence collected in this book will help people to understand the range of challenges small-scale fisheries face and how these might be overcome.

**Keywords** Small-scale fisheries · Inshore fisheries · Artisanal fisheries · Coastal fisheries · Large-scale fisheries · European Union · Governance · Common Fisheries Policy · Atlantic · Mediterranean Sea · Black Sea · North Sea · Baltic Sea

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## 1.1 Introduction

Small-scale fisheries have been marginalised in research and decision making for decades all over the world. However, this underestimates their true relevance. FAO (2018) estimates that there are about 60 million people engaged in fish production in the primary sector, with capture fisheries representing 68% of this total, and small-scale fisheries accounting for 90% of employment in capture fisheries (FAO 2016). In fact, it is currently estimated that fisheries directly and indirectly support nearly 10–12% of the world's population (FAO 2012). Female employment is also important, with women making up about 14% of the workforce in aquaculture and fisheries (FAO 2018).

Ever since the early stages of human civilisation, resources from seas and inland waters have played an important nutritional and food security role (Erlandson and Rick 2010; Jackson et al. 2001; Pitcher and Lam 2015), with fishing being a central activity of many hunter-gatherer societies. In the Mediterranean, many civilisations – such as the Phoenicians, Minoans, Egyptians, Assyrians, and Greeks – carried out fishing activities dating back to 1000–500 BC (Pitcher and Lam 2015). For example, the Romans caught many species in different seas, with *garum* -a fermented fish sauce- as one of their main commodities (Curtis 2009; Lotze et al. 2011). Another example is Bluefin tuna fishing that was originally practised by small-scale fishers and has been part of Mediterranean culture for thousands of years. It was first associated with large tuna traps controlled by kings and nobles. Nowadays, it tends to be in the hands of a few enterprises operating industrial purse seines and tuna pens (Florido del Corral 2005; García Vargas and Florido del Corral 2010; Lotze et al. 2011; Said et al. 2016). The north European herring fishery has also been of great historical importance, and as with tuna and other species, the availability of preservation techniques was a key factor in its growth. Over the years, the title of "herring capital" moved from country to country, taking into account the erratic migrations of these fish, which were caught by beach seines and gill-nets in Scandinavia, then, later, in the sixteenth century by the Dutch off-shore fishing fleet, and by the British in the eighteenth century (Roberts 2007). Salted in barrels, herring could be transported to distant markets without spoiling (Roberts 2007). Fleets of diverse nations fished for herring, as well as for sardines, pilchards and anchovies (Roberts 2007). Cod and other species that could be preserved and sold in distant markets also contributed to the expansion of fisheries to far-off fishing grounds, like those of Newfoundland for the Portuguese, French and Spanish fleets (Lear 1998), attracting capital and the attention of governments. This was often reflected in international treaties such as that of Utrecht in 1713 (Arbex 2016). Long-distance fishers often took part in small-scale, local fishing and in jobs in the maritime trade (Pascual Fernández 1991). No less important was the interest of governments to promote and control fishing activities so as to ensure a reserve work force for their navies (Phillips 2001; Roberts 2007).

In the past, the difference between large-scale and small-scale fisheries was probably not as marked as it is today. Years ago, the crews of large-scale boats

would often be composed of fishers from small-scale fishing communities (Pascual Fernández 1991), who moved back and forth between large and small-scale fisheries. A fishing career would often start in small-scale fisheries, continue in the large-scale sector, and finish again as it began. Indeed, fisheries have often been termed the 'coastal employment system' (Jentoft and Wadel 1984a; Jentoft and Wadel 1984b; Sønvisen et al. 2011). Men and women, the elderly and the young have all worked together in fisheries to an extent that has not always been sufficiently recognised. In the past, whole families would often contribute to the viability of fishing enterprises and the sustenance of households (Pascual Fernández 1991; De la Cruz Modino 2012; Frangoudes 2013; Santos 2015). Though men were mostly onboard, women also supported the fishing enterprise in a variety of ways by mending nets, selling or processing fish, gathering seafood along the shore, taking care of fishing enterprise administration, and raising the next generation of fishers (Frangoudes et al. 2013). Youngsters would commence fishing at an early age, learning by doing (Miller and Maanen 1982; Lögfren 1984) and family elders continued their involvement too by instructing the younger generation, mending nets, helping in repairs and assisting with other small tasks (Nemec 1972; Stoffle and Stoffle 2007).

Up till the nineteenth century, the technology used in fisheries was limited and relatively simple, with a combination of large and small boats, multiple gears, and small-scale fishing activity spread all along coasts worldwide (Roberts 2007). Yet, conflicts about gears could arise, as shown during the early development of trawling in Europe, which was met with anger by many small-scale fishers. Violent reactions also occurred with the introduction of purse seining for pelagic species in some regions (Ansola Fernández 1998; Roberts 2007; Pascual-Fernandez and De la Cruz Modino 2011).

Over the last two centuries, but especially after World War II, in a period designated as the "Great Acceleration" of fisheries (1945-1975), Europeans made increasing efforts to fish not only in their vicinity but also in northern and Arctic waters (Bavinck 2011; Holm 2012). Technological developments in navigating instruments, freezing technologies and fishing gear assisted this expansion. At that time, the industrialisation of fishing was driven by confidence in the inexhaustibility of ocean resources and the benefits for society of increasing fish supplies. Thus, the large-scale fishing sector received huge subsidies to ensure its growth and success (Pauly et al. 2002; Sala et al. 2018). However, it soon became apparent that this expansion was often accompanied by a decline in resources, and the image of seas as inexhaustible providers has now been shown to be wrong, with poignant examples like the herring crisis in the North Sea and the depletion of Newfoundland cod. These crises raised questions about the development model that underlies industrial fisheries (McGoodwin 1990; Finlayson and McCay 1998).

The Grotius doctrine of *Mare Liberum* was dominant until World War Two. However, it was not until the adoption of the United Nations Convention on the Law of the Sea (UNCLOS III), the resultant extension of Exclusive Economic Zones (EEZ) to 200 nautical miles, and the herring crash in 1975 that European nations felt the need for a Common Fisheries Policy (CFP) (Copes 1981; Holm 2012). The CFP

initially focused on northern Europe (Regulations 170 and 171/83) (Penas Lado 2016), though later spreading to include countries in southern and eastern Europe.[1] The CFP in its different incarnations has been especially relevant for the member states of the European Union (EU), and has also influenced other countries in the vicinity. Some countries, like Norway, which objected to joining the CFP, proclaimed fisheries as one of the reasons for staying out of the EU (Skinner 2012).

During the expansion of industrial fisheries, small-scale fishers nevertheless continued their activities along European coastlines and around the world, coping with increasingly scarcer resources and markets that focused mainly on industrial catches (Pascual-Fernández et al. 2019). However, local catches were often different from those of large-scale boats, as the latter arrived at markets salted, dried, smoked or canned. In some places, small-scale fishers also cured their fish. In fact, salted cod and smoked herring helped establish early fishing communities in many areas of Europe (Roberts 2007). The linkages and market connections between fishing communities and consumers have always been closer in the case of small-scale fisheries than for large-scale fleets that served mass markets.

However, this does not mean that small-scale fisheries have not changed or adapted to new markets demands and circumstances. Technological innovation has also penetrated the small-scale sector both regarding harvest and post-harvest activities. The spread of refrigeration technologies in long distance fleets was a key element in the "Great Acceleration" of fisheries (Holm 2012), as mentioned above. These technologies also reached the small-scale sector, enabling their catches to be preserved on-board, too. Examples of this are the export of chilled nephrops from Scotland to mainland Europe, or frozen octopus from Portugal to other countries. In this way, the markets for small-scale fisheries have also expanded. Innovations have additionally appeared in the development of more productive fishing gears, as well as better instruments for navigation to locate fish stock (Holm 2012; Davies et al. 2018).

The above trends have led to a huge diversity of small-scale fisheries in Europe, with some countries having relatively small-boats with high-tech equipment, while others fish in more traditional ways. Without a doubt, small-scale fisheries have helped to characterise the so called 'fisheries dependent regions' in Europe. These regions have a long history in which fisheries have shaped human populations, the environment and the culture of coastal communities and created a heritage that still needs to be better researched and preserved (Thompson et al. 1983; Carbonell 2014). Nonetheless, it is fair to say that the political attention paid to the small-scale sector has always been relatively scant both at national and EU levels.

Very recently, however, efforts are being made to increase small-scales fisheries' visibility and protection, aiming to strengthen their role worldwide. The *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*, endorsed by member states of the Food and

[1] Its most recent update (REGULATION (EU) No 1380/2013) took effect on 1st January 2014, with the European Maritime and Fisheries Fund 2014-2020 (EMFF, REGULATION (EU) No 508/2014) integrating the various regulations for funding.

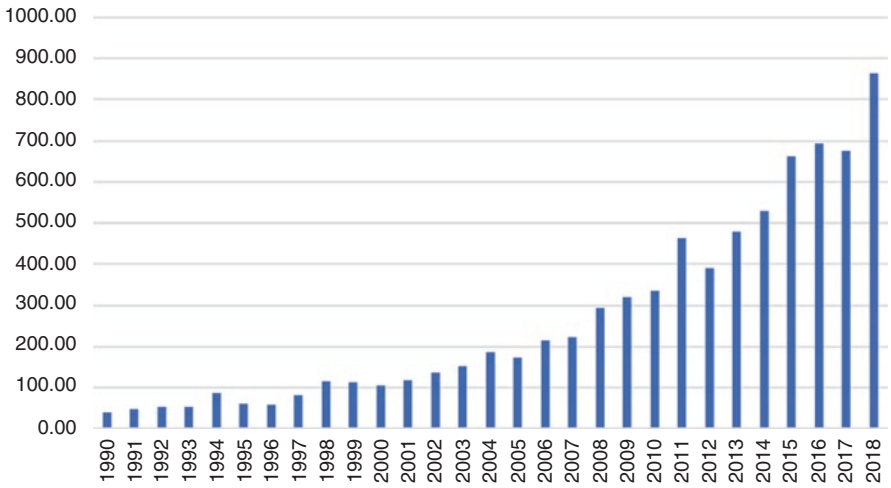


**Fig. 1.1** Evolution of publications related to small-scale fisheries in Web of Science. (Source: Web of Science. See footnote 2 for the details)

Agriculture Organization (FAO) of the United Nations in 2014, is the first international instrument for small-scale fisheries and has helped put this sector in the spotlight (FAO 2015, 2018; Jentoft et al. 2017).

These Guidelines have been accompanied by a surge in interest in this sector, clearly demonstrated in research terms. A quick search on Web of Science for fisheries as a topic resulted in 269,691 hits, with most literature focusing on natural sciences. By contrast, searching for small-scale fisheries yielded only 8578 hits, with a small share from social sciences.[2] The attention paid to small-scale fisheries in the scientific literature both worldwide and in Europe has been almost nil until very recently. Indeed, the number of publications in the database related to small-scale fisheries multiplied eightfold between 2001 and 2018, showing how researchers' interest in small-scale fisheries has increased sharply in the last couple of decades (see Fig. 1.1). Projects like *Too Big To Ignore: Global Partnership for Small-scale Fisheries Research*, three world conferences focusing on small-scale fisheries (Bangkok 2010; Mérida 2014; Chiang Mai 2018) and a number of symposiums taking place around the world have highlighted the relevance of small-scale fisheries as a research area. In the last decade, the number of publications and especially edited books on small-scale fisheries has finally placed this topic centre stage

[2] Searches performed in Web of Science, August 22 2019, 09:30:00 CET. It is relevant to note that small-scale fisheries have alternatively been named inshore fisheries (Symes and Phillipson 2001) or artisanal fisheries (García-Flórez et al. 2014). We have combined these terms in the TOPIC search (to find hits in titles, abstracts, authors' keywords, and more) using the following syntaxis (all databases, all years): ("small-scale fish∗") OR ("artisanal fish∗") OR ("inshore fish∗") OR ("small-scale coastal fish∗") OR ("coastal fish∗") OR ("local fish∗"). More sophisticated searches are possible in this and other databases (Google Scholar with a similar search strategy provides 18,100 hits), but the tendency looks to be very similar.

in fisheries research, and the Springer MARE series constitutes good evidence of this.

The 're-discovery' of small-scale fisheries may also be related to the recent attention to sustainability and the need for more responsible use of resources and energy. Fuel consumption by small-scale fleets tends to be much lower than by large-scale fleets, and so, they produce fewer $CO_2$ emissions (Thompson and FAO 1988; Pauly 1997, 2006; Tyedmers et al. 2005; Chuenpagdee and Pauly 2008; Carvalho et al. 2011).

## 1.2 Small-Scale Fisheries in Europe: Are They Visible Enough?

The EU's definition of small-scale fisheries takes an administrative approach, as it aims to separate small-scale fleets from those that do not share the same criteria of vessel length (less than 12 meters) and gear types (not using towed gears).[3] This definition is also applied in the Data Collection Framework and the current European Common Fisheries Policy (CFP). In fact, the use of boat length as a criterion for differentiation is not uncommon. As pointed out by Chuenpagdee and co-authors (2006) in their worldwide analysis of how small-scale fisheries are defined, in which 65% of countries, providing definitions, use boat size as a key determinant. In some countries, fishing gears used are also relevant, including the categorisation of small-scale fisheries gears like beach-seines, handlines or traps (Chuenpagdee et al. 2006).

The reference in the EU's definition to towed gear (as in the *Table 3 in Annex I of Commission Regulation (EC) No 26/2004 of 30 December 2003*[4]) is also of interest. The primary association is with trawling gear, but this table includes many other gears that throughout history have had a clear link with small-scale fisheries. Beach seines are such a case, as these gears have long been used in many areas of Europe by small-scale fishers. In Spain, for instance, we can find references to this gear that date back to the fifteenth century at least. Equally, purse seines are regarded as towed gear, but when used in boats under 12 metres, the fishery would be better described as small-scale. No less relevant are small shellfish dredgers -frequently a seasonal activity-, also excluded in the EU's definition, which may comprise hundreds of boats in some countries. In summary, what we suggest is that some towed

[3] As stated in Council Regulation (EC) No 1198/2006 of the European Fisheries Fund: "*1. For the purpose of this Article, 'small-scale coastal fishing' means fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed gear as listed in Table 3 in Annex I of Commission Regulation (EC) No 26/2004 of 30 December 2003 regarding the fishing vessels register of the Community",* https://goo.gl/FuX2iQ. In Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund, the same definition and table are cited.

[4] See: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:005:0025:0035:EN:PDF

gears in the EU definition are part of the small-scale fisheries tradition, while at the same time some static gears (i.e. longlines) when used intensively would more properly be categorised as large-scale fisheries.

Another anomalous group to be considered are shell-fish gatherers, which are mostly women in European countries, who do not use boats, but work on foot on beaches and in shallow water. They are not included in the statistics as small-scale fishers, even though they belong to the same fishing families and the same fishing communities, doing things which historically everyone in the family, including men, the elderly and youngsters have been involved in.[5]

Whether to include a boat in the category of small-scale fleet can also be difficult due to the typical alternation between gears in this sector. After all, many small-scale fishers vary their gear from season to season, depending on the species that are available. Such confusions have led to large discrepancies between the European data included in the EU Scientific, Technical and Economic Committee for Fisheries (STECF) and national data for similar categories, often underestimating numbers in small-scale fleets. Indeed, many thousands of boats and fishers are excluded in Europe from the small-scale fisheries category, belittling its relevance compared to large-scale fishing (Pascual-Fernández et al., Chap. 13 this volume). Despite these contradictions, the quantitative evidence for small-scale fisheries in Europe is significant. In EU, this sector is said to make up around 82% of the active fleet (approx. 70,400 vessels), 47% of employment (52,000), and landings that are worth approximately 943 million euros annually (or about 14% of revenue generated by EU fisheries).[6]

Another setback is that fishing regulations and small-scale fisheries are frequently at odds. This is because in many fisheries, regulations originate from a focus on large-scale fisheries. The modern history of the European fishing sector has been deeply affected by public policies: nation states have influenced the development of fisheries through subsidies, laws promoting or restricting specific fishing strategies as well as market interventions, amongst others. Up till now, subsidies in Europe have clearly benefited large-scale fisheries, with small-scale fisheries accounting for only 7% of the total (Schuhbauer et al. 2017). This generates direct advantages for large-scale fisheries, making the economic viability of small-scale fisheries more precarious (Schuhbauer et al. 2017).

Some measures, like scrapping funds, have been employed supposedly to diminish the capacity of European fleets, considering the poor state of many fish stocks in European waters. However, it appears that efforts to limit the capacity of EU fleets have had meagre results at best (Villasante 2010). Even though it is difficult to know small-scale fleets' impact on these endangered stocks, small-scale fisheries have been affected by the same scrapping policies. This is an illustration of how policies

[5] Some of these caveats about the EU definition of small-scale fisheries may be solved in the near future, as the discussions in the European Parliament of the draft report of the European Maritime and Fisheries Fund 2021–2027 includes shell-fishers on foot in the definition.

[6] https://ec.europa.eu/fisheries/sites/fisheries/files/docs/publications/2016-small-scale-coastal-fleet_en.pdf. Accessed August 22th 2019.

that have been mainly aimed at large-scale fleets have had consequences for fisheries as a whole, including small-scale fisheries.

Small-scale fisheries are especially sensitive to the increased focus on conservation in Europe (Goti-Aralucea 2019). A good example is related to the implementation of Marine Protected Areas (MPAs) and networks of MPAs, which affect small-scale fisheries by restricting their activities and limiting their mobility (Horta e Costa et al. 2013; Mallol and Goñi 2019). Very rarely are the design and step-zero issues considered in the development of these policies and measures that affect the viability of small-scale fisheries in these areas (Chuenpagdee and Jentoft 2007; Chuenpagdee et al. 2013; Pascual-Fernández et al. 2018). That is to say, small-scale fisheries are not involved enough in the inception processes of policies, taking into account the challenges and opportunities involved for their livelihoods by their implementation.

Fortunately, the CFP of 2013 and the EMFF 2014–2020 have encouraged analyses of how small-scale fisheries in Europe are influenced by public policies and regulations at different levels (regional, national or European). These new regulations explicitly state that fish stocks are overfished and the situation of European fisheries is precarious. In addition, for the first time, they pay particular attention to small-scale fisheries. Article 17 of the CFP reinforces this emphasis, though without citing them directly, by setting a series of criteria for allocating fishery opportunities that may favour small-scale fisheries.[7] In the EMFF 2014–2020 there are also several references and recommendations for special treatment of small-scale fisheries in many areas. For instance, Article 18.1.i specifies that each member state in which over 1000 vessels are considered small-scale must prepare an action plan for the development, competitiveness and sustainability of small-scale coastal fishing. It thus seems that the 2013 reform of the CFP has finally created a favourable setting for small-scale fisheries, given that principles like biological-economic-social sustainability, precautionary principles and the ecosystem approach are at the core of these new policies.[8] The discussion about the new CFP is ongoing, and the proposals

[7] REGULATION (EU) No 1380/2013, Article 17. "*Criteria for the allocation of fishing opportunities by Member States. When allocating the fishing opportunities available to them, as referred to in Article 16, Member States shall use transparent and objective criteria including those of an environmental, social and economic nature. The criteria to be used may include, inter alia, the impact of fishing on the environment, the history of compliance, the contribution to the local economy and historic catch levels. Within the fishing opportunities allocated to them, Member States shall endeavour to provide incentives to fishing vessels deploying selective fishing gear or using fishing techniques with reduced environmental impact, such as reduced energy consumption or habitat damage*."

[8] For instance, recital num. 19 of the CFP states that: "(…) *Member States should endeavour to give preferential access for small-scale, artisanal or coastal fishermen*" (Regulation (EU) num. 1380/2013 of the European Parliament and of the Council of 11th December, 2013 on the Common Fisheries Policy, initial considerations). Objectives 5f and 5i (Article 2) also aim to preserve and encourage coastal fisheries, bearing in mind socio-economic aspects.

for EMFF for 2021-2027 were put on the table by the European Commission in 2018,[9] with amendments already being voted on in the European Parliament in 2019.

However, despite all these good intentions at the European level, the reality in many countries is different. It is not clear that small-scale fishers in Europe are able to take advantage of the opportunities explicitly stated in the CFP and EMFF. The key role of nation states in the regulation of inshore, small-scale fisheries and in the implementation of many EU policies may explain some of these shortcomings. As argued in this volume, in many instances, nation states still pay scant attention to small-scale fisheries. Although new CFP regulations do require an action plan focused on the small-scale sector, the practical results, if any, seem rather sparse. Even in the best cases, efforts made for small-scale fisheries in some areas like quota access for key species could be better.

In addition, a key challenge for small-scale fisheries is how to participate in the governance of their activity. Most fisher organisations in Europe do not cater for small-scale fisheries. For example, Producer Organisations (POs) in fisheries, which have been dominant for a long time in many areas of Europe, have medium or large-scale fleets as their main members (Frangoudes and Bellanger 2017). In most cases, the integration of small-scale fisheries in these organisations has been relatively recent (Frangoudes et al., Chap. 12 this volume). Even in countries where it is possible to find a number of fishery organisations, this still does not guarantee a prominent role for small-scale fisheries. Moreover, despite representing a substantial number of boats and fishers in the context of national fleets, the voice of small-scale fishers can go unheard and organisations' attention may focus mainly on the interests of medium or large-scale fleets. For instance, the role of small-scale fishers in Advisory Councils (ACs) has been limited, and in many national organisations, the situation has been similar (Ounanian and Hegland 2012). In fact, even after the adoption of the latest CFP and EMFF, which gave greater visibility to small-scale fisheries, authors argue that the EU still does not pay enough attention to the representation of small-scale fisheries in fishery governance (Linke and Jentoft 2014). Likewise, most member states have also overlooked the sector's specific features. This may be related to the weaknesses of small-scale fisheries' organisations, or to the dilution of their interests in the context of national organisations compared to other interest groups.

Competition with larger fleets for resources and markets is another challenge facing small-scale fishers in Europe. Too frequently, they share the same stocks, and the catches of their fleets are not differentiated when entering the market (Pascual-Fernández et al. 2019). Urban development and tourism also affect many activities along coasts, beaches or harbour areas, thus influencing fish stocks and potentially taking over areas previously used almost exclusively by small-scale fishers (Santana Talavera 1997). Competition from recreational fisheries for resources is also worth noting, as recreational fishers target similar species and operate in the same fishing

[9] See for instance, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A390%3AFIN

areas (Hyder et al. 2018; Radford et al. 2018). In many European countries, numbers of recreational fishers have largely outgrown those of small-scale commercial fishers (Hyder et al. 2018; STECF 2018; Gordoa et al. 2019). This creates competition at sea in many fishing grounds, especially those closest to the coast, where small-scale fishers have commonly operated. Indeed, extraction by recreational fisheries may amount to 43% of the total for some species (Radford et al. 2018). Conflicts not only appear as a consequence of spatial confluences but may also be related to market competition, especially in areas where recreational fishers sell their catches illegally inducing a significant source of conflict in Greece, Italy or Spain, for instance (Merino et al. 2008; Maynou et al. 2013; Raicevich et al. Chap. 10 this volume; Tzanatos et al. Chap. 7 this volume).

## 1.3 The Book and Its Coverage

This book provides an analysis of the status and dynamics of small-scale fisheries in 25 countries in Europe, linking the analysis to national, EU and/or regional policy trends. The role of small-scale fishers and their organisations in the governance of the sector in EU member-states and non-member states has also been given special consideration. Furthermore, our aim has been to show the challenges these fishing communities are coping with, and the role that local, national and European policies play therein. The book places special emphasis on 'people' (less on technology or catches) with a focus on how small-scale fisheries have changed and adapted to new constraints and opportunities in recent decades, analysing current trends and the forces that are shaping these changes.

At the same time, examples are provided of how fishing communities prevail and develop adaptive strategies and synergies with other sectors, as well as the worst cases of failure of collective action and policies. The wide coverage of this book has involved challenges as information sources on small-scale fisheries are dispersed and scarce. The first was to find authors for all the coastal countries, who would agree to carry out an analysis of the small-scale fisheries sectors according to a similar outline. The aim has been to cover key societal aspects of small-scale fisheries, which until now have been sparsely researched. In some countries, this has been especially difficult, due to the lack of social science research on some of the topics discussed. As a result, the academic backgrounds of the authors are diverse, ranging from geographers to anthropologists and from political scientists to biologists. In this way, the book provides a synthesised, comparative analysis of small-scale fisheries in Europe, combined with country-by-country overviews. This is in line with comparative literature, in which regional compendia on small-scale fisheries are increasing in number (Ruddle and Satria 2010; Salas et al. 2018).

The book commences with a chapter that presents the voice of fishers and their organisations. Jeremy Percy and Brian O'Riordan (Chap. 2 this volume) from Low Impact Fishers of Europe (LIFE) analyse some of the challenges that small-scale fisheries have had to cope with in recent years. A key issue is how policies that are focused on the management of larger scale fishing have tended to have an undue


**Fig. 1.2** Map of the European countries represented in the book

impact on the small-scale sector. Another aspect these authors discuss is how to sustain organisations that address the needs and circumstances of such a diverse sector that extends the length of all European coastlines, and, at the same time, can represent small-scale fisheries at meetings where key decisions are taken. No less relevant is how to finance these organisational structures and their dedicated personnel. After all, it is essential to have knowledgeable staff to participate at negotiating tables, and fisher representatives who can devote themselves to these tasks without being distracted by the working days they lose on their boats. Changing the status quo, altering the institutional inertia, and involving more small-scale fishers in fisheries governance take time and sustained effort.

This chapter is followed by 25 country chapters, organised according to their sea basins. The volume commences with the Black Sea in the east, and moves via the Mediterranean, the Atlantic and the North Sea to the Barents Sea in the north-west (see Fig. 1.2). The following sections summarise the characteristics of these sea basins one by one.

### *1.3.1 Black Sea Basin*

The European section of the Black Sea includes three countries – Romania, Bulgaria and Turkey – the first two are part of the EU but are undergoing important regime changes. The analysis of Romania (Teodorescu and Kommer, Chap. 3 this volume) focuses on the difficult situation of small-scale fisheries in the Danube Delta,

declared a Biosphere reserve since 1993 but poorly managed. Spatial and regulatory restrictions have created new difficulties for fishers in this region. The resultant lack of economic opportunities threatens the future viability of small-scale fisheries.

As for Bulgaria (Raykov, Chap. 4 this volume), most fishing activities are carried out by the small-scale sector. However, small-scale fisheries are poorly organised and generally lack influence on fisheries governance and policies there. Moreover, Black Sea fish stocks are quite depleted and this, together with spatial restrictions, as in Romania, limit the profitability of fishing activities and pose difficulties for young people wishing to enter the fisheries.

Turkey (Ünal and Ulman, Chap. 5 this volume) bridges the Black and the Mediterranean Seas and bears similarities with the previous two countries. Even with its large small-scale fleet and many thousands of fishers, the current situation in Turkey is not promising, and most fishers seem pessimistic about their future. Unlike Romania and Bulgaria, small-scale fisher organisations in Turkey are relevant and have the potential to contribute to building a better future for this sector. However, reduction in fishing capacity, improved stock management, and even more involvement of fisher organisations in governance decisions or the development of protected areas constitute some of the pending challenges to improve the situation of small-scale fisheries in Turkey.

### *1.3.2 Mediterranean Sea Basin*

The northern flanks of the Mediterranean Sea have a long and rich fishing history. This section of the book starts with Cyprus (Hadjimichael, Chap. 6 this volume), where, unfortunately, small-scale fishers have been losing fishing grounds to a 'seascape' in which tourism, marine aquaculture, and more recently the search for hydrocarbons are side-lining historically important activities like fisheries. These developments are not exclusive to Cyprus, as the Blue Growth strategy of the EU is also looking at ways to promote ocean sectors that have high potential for sustainable jobs and growth on European coasts, without considering fisheries. Therefore, the small-scale sector must match this offer through better organisation both at local, national, regional and European levels. This is not an easy task, neither for Cyprus nor for Greece, which has the largest small-scale fleet of all the EU member states.

Turning to Greece (Tzanatos et al., Chap. 7 this volume), as in other European countries, "the legal framework for obtaining or retaining a professional fisher license is relatively ambiguous". This creates confusion as to who is actually a small-scale fisher. This creates a problem when it comes to collective action, as group demarcation must be clear to facilitate any such action (Ostrom 1990). The organisational capacity of the small-scale fisheries sector in Greece is also weak, as it has recently been merged with organisations from the agricultural sector. Such a weak level of collective action hinders small-scale fishers' involvement in

management decisions, and their capacity to benefit from EU funding schemes and market innovation opportunities.

This is not so different from the scenario in Croatia (Matić-Skoko and Stagličić, Chap. 8 this volume), where the level of collective action and involvement in governing fishing activity is rather low for small-scale fishers. This has become even more relevant, as changes to fishing activity since joining the EU have been dramatic, and fishers' voices seem to have been mostly absent from the process. All of these factors have led to negative perceptions about the future of small-scale fisheries in Croatia.

As in the case of Croatia, Slovenian small-scale fisheries have been shaped by the dissolution of the former Republic of Yugoslavia and later by joining the EU and its CFP (Janko Spreizer and Rogelja Caf, Chap. 9 this volume). Both transitions have been difficult for this sector, and the support from the national administration could have been much better. Weak fisher organisations have not helped either. However, on a more positive note, the development of tourism and aquaculture in the coastal areas of Slovenia has increased the diversification of activities of fishing families.

Regarding Italy (Raicevich et al., Chap. 10 this volume), small-scale fisheries comprise 60% of the fishing fleet and half of the fishing population. They have high social, economic and cultural value but, again, have been neglected by national and international policies. Competition with large-scale fisheries and recreational fisheries, and problems with illegal, unreported and unregulated fishing (IUU) threaten the sector's future, which is already at risk by climate change. Although some interesting local initiatives have come about to deal with several of these challenges, small-scale fishers' capacity to influence fisheries governance is still limited. For instance, in the Mediterranean Advisory Council (MedAC), only a single international association represents the small-scale fisheries sector, with no representatives at all from Italy. One of the pending challenges is, therefore, how to improve small-scale fishers' lobbying capacity at national and international levels.

Malta (Vella and Vella, Chap. 11 this volume) shares some of Italy's problems, with minimal participation of small-scale fishers in legislative policies and reforms. The small-scale fishing sector in Malta is in fast decline, and the regulatory framework still does not take its circumstances into account, leading to tensions and conflicts with other coastal stakeholders. A good example of these tensions are the spatial conflicts that occur between small-scale fishing and activities such as conservation, aquaculture, tuna penning, swimming, bunkering, scuba diving, as well as the development of a container freeport.

Finally, there are France and Spain, both countries have important small-scale fleets in the Mediterranean and Atlantic sea basins. In France (Frangoudes et al., Chap. 12 this volume), we again find a limited decision-making role for small-scale fisheries. Small-scale fisheries do not seem to benefit from any specific policies despite their importance for coastal communities and employment and their synergy with other sectors such as tourism and gastronomy. Some progress has been observed with management decisions now being taken by organisations that include all sectors, instead of being dominated by large-scale fleets. Yet, any improvement

of small-scale fishers' conditions would require much stronger participation in the decision-making process, which is hampered by state-designed participatory structures.

### *1.3.3 Atlantic Basin*

Spain is the last European country dealt with in the Mediterranean section, but also the first to be addressed in the Atlantic basin (Pascual-Fernández et al., Chap. 13 this volume). Spanish small-scale fleet is the third largest behind only Greece and Italy in terms of vessel numbers and employment. The relevance of Spain's small-scale fisheries is also high in historical, cultural, economic, and social terms. The importance of this sector varies in Spain, with the largest fleets in Galicia, Andalucía and the Canary Islands. Moreover, small-scale activity in Spain is highly diverse, with a myriad of interactions with other sectors such as recreational fisheries and tourism creating a range of challenges for this sector, such as the conflicts for space along the coastline. One of the specific features of Spain is the presence of pre-modern fisher organisations (Bavinck et al. 2015) known as *cofradías*, (structured as public corporations), scattered along the Spanish coastline.

Portugal shares some ecosystems of the Iberian Peninsula with Spain, and its fishing activities have similarities to the Spanish sector (Pita and Gaspar, Chap. 14 this volume). The Portuguese are avid consumers of seafood, with the largest consumption rate per capita in Europe (twice as large as the European average). In fact, Portugal's small-scale fleet makes up 85% of their total fishing fleet. Portuguese culture and traditions are deeply rooted in fishing, and fishing constitutes the economic basis of many communities, which are characterised by low economic diversification. As is the case with the Spanish archipelagos of the Canary or Balearic Islands, fishing activity in the archipelagos of the Azores and Madeira (Portugal) is mostly small-scale. Portugal's small-scale fisheries also share challenges with other European countries, like weak representation in governance, low fishing revenues, an ageing workforce, poor management and lack of control and enforcement, resource overexploitation, and a high dependence on a limited number of species.

In Ireland, the percentage of boats classified as small-scale or inshore (86%) is similar to that of Portugal, as is its social, cultural and economic importance (Fitzpatrick et al., Chap. 15 this volume). Despite this importance, establishing a governance framework for this sector has proven difficult and has only recently occurred. Currently, a number of organisations constitute the voice of this sector, and an industry-led strategy for the sector has been presented to the government. The increased visibility of small-scale fisheries has perhaps helped with some recent measures of spatial demarcation.

Iceland displays some key differences from the previous countries due to the importance of Individual Transferable Quotas (ITQs) in allocating fishing opportunities (Chambers et al., Chap. 16 this volume). Iceland was one of the countries that embraced this measure most vigorously in the 1980s and 1990s, followed by other

EU countries. This privatisation process concentrated the activity in fewer and fewer hands, boats and harbours, impacting small-scale fisheries in a disproportionate way. New regulations have recently increased the size of the boats to be regarded as small-scale, introducing fishers with larger boats that now share the access rights of small-scale fisheries. Nowadays, small-scale fisheries are still particularly important to rural communities, however, they still suffer from a lack of power in the decision-making process.

### *1.3.4 North Sea and Barents Sea Basins*

Moving north and passing through the English Channel into the North Sea, the next part of the volume commences with a chapter on small-scale fisheries in the United Kingdom (Symes et al., Chap. 17 this volume). Although these fisheries make up 79% of the total active fleet, small-scale fishers work under a system of allocation of fishing rights that reduces their opportunities, with some similarities to Iceland. Marked regional variations exist between the different constituent nations (England, Scotland, Wales and Northern Ireland) in fishing governance. A key feature of UK fisheries is the quota system. A large percentage of the UK quota is handled by self-governing producer organisations (POs), with fishing rights assigned through an informal system of ITQs, and limited capacity of mostly under 10-metre vessels to access quota regulated species. Uncertainties for small-scale UK fisheries derive from the current Brexit process, especially related to access to European markets, which are the destination of a large share of the catches of small-scale fisheries in the UK.

Regarding the situation in Belgium, it is different again (Verlé et al., Chap. 18 this volume). The small-scale fishing fleet there actually comprises just fourteen boats (under 70 GT, making trips of less than 48 hours mainly in the North Sea), while at the same time approximately 100 beam and otter trawlers under 12m are regarded as recreational. This situation points to a special relationship between recreational and small-scale fisheries. A transition from recreational to commercial fisheries has become an explicit objective of the *Vistraject* initiative, so regulations related to small-scale fisheries in Belgium are under discussion. The national context adds complexities to this scenario, as the jurisdiction over maritime affairs is divided between the federal state and the Flemish region. Competencies over fisheries belong to the Flemish region, while the federal government defines the overall rules and regulations for the Belgian part of the North Sea, including many other activities besides fishing.

Netherlands share some similarities with Belgium and the UK in as far as large-scale fisheries clearly dominate the sector (Kraan and Hoefsloot, Chap. 19 this volume). Here small-scale fisheries operate on the margins of the Dutch fishing fleet, though small-scale fishing is more relevant in the Zeeland Delta and the Wadden Sea. The Dutch government, as many others in Europe, does not make different policies for large-scale and small-scale fisheries. In fact, the Netherlands (as well as

Belgium) is one of the few EU member states with more large-scale vessels than small-scale ones. Small-scale fishers rarely own ITQs, so they are excluded from fishing key species. Despite the low economic importance of this sector, small-scale fisheries are still considered of great historical and social importance, with an impact on local jobs and identity (Carpenter and Kleinjans 2017).

Moving on to Denmark (Autzen and Winter, Chap. 20 this volume), the implementation of the ITQ system there included some formal caveats to protect small-scale fisheries, but despite these, its implementation has had widespread consequences for small-scale fishers. For example, there has been a concentration of fishing rights in fewer hands and fewer harbours, making it much more difficult for new entrants to access these fisheries. Criticism of this trend has been fuelled in recent years with the scandal of the "quota kings". Paradoxically, it appears as if this scandal has contributed to an increased interest in small-scale fisheries, and new opportunities for the sector are being created, for instance, with a distribution of European funds that prioritises small-scale fishing.

As for Norway (Johnsen, Chap. 21 this volume), a quota system was introduced for most fisheries in the 1990s after the collapse of important stocks and removal of subsidies. However, in contrast to other countries in the North Sea region, explicit policies were implemented to protect small-scale fisheries. This has allowed their survival both as a full-time and part-time activity. However, the governing system in Norway has changed from a liberal open-access regime to a complex regulatory one, where hierarchical state governance is combined with market instruments and negotiated regulations. It is relevant to note how the differentiation between small-scale and recreational fisheries is less pronounced than in other countries, since recreational fishers can register sales of their catches up to about 6000€.

The last chapter of this sea basin is devoted to the area of Arkhangelsk Oblast in the northwest of Russia (Shaw, Chap. 22 this volume), where small-scale fisheries activities have significantly diminished since the collapse of the Soviet Union. The new free market scenario provides small-scale fishers with marginal political and social status, as their catches do not serve profitable export markets. As in many other countries, Russian legislation does not recognise the difference between large and small-scale fisheries. However, small-scale fisheries still constitute the socio-economic and cultural backbone of this particular area.

### *1.3.5 Baltic Sea Basin*

The last sea basin to be discussed in the book is the Baltic Sea. This regional sea provides fishing access for a group of countries in north-western Europe. The first country analysed is Germany (Döring et al., Chap. 23 this volume), which has coastlines along both the North Sea and the Baltic Sea. In fact, small-scale fisheries in Germany share some characteristics with the fleets from Belgium and Netherlands, for instance, with the use of family-owned vessels up to 24 meters in length operating in both the Baltic and North Seas. Nowadays, most German small-scale fishers

are integrated into POs and most of their activities are dependent on quotas. A relevant feature of small-scale fisheries in this country is how market demand is structured around ecolabels. This means that fleets that do not get product certification have difficulties in selling their catches, which obviously affects small-scale fisheries.

The next chapter deals with Poland (Rakowski et al., Chap. 24 this volume). Small-scale fisheries represent almost 85% of the Polish fleet and 30% of catches and have been traditionally defined as vessels under 15 metres in length, mostly using passive gears. Small-scale fisheries are also important in terms of coastal employment and cultural heritage, even though economically they are strongly dependent on subsidies (although less so than large-scale fisheries). Some challenges to this activity arise from nature conservation, which has reduced access to fishing areas, and from tourism that has invaded the coastal region. On the other hand, tourism development may also constitute an opportunity that will stimulate local demand for fresh fish and other complementary activities.

In Estonia (Plaan, Chap. 25 this volume), as in Poland and East Germany, the transition from the Soviet system to the market economy had some prejudicial effects for small-scale fisheries, which were only partly reversed after Estonia's entry into the EU. Today, Slovenian small-scale fisheries are characterised by low incomes, dependence on external financial support, ageing fishers, diversification of livelihoods and a rise in tourism. Subsidies from the Fisheries Fund seem to have had a positive effect on fishing communities there, as it has facilitated, for instance, investment in processing plants to improve market access and achieve better prices. They have also helped develop tourism related activities that have boosted the economies of local communities. This has helped maintain young people in coastal areas and provides a glimmer of hope for small-scale fisheries in the future there.

Moving on to Finland, small-scale fisheries make up the vast majority of Finnish fishers (96%) (Salmi and Mellanoura, Chap. 26 this volume). They are operated on a family basis, and though fishing is combined with other activities in the household, it provides notable economic and cultural value in many areas. However, landings and economic yields cannot compete with aquaculture or large-scale fisheries. In addition, environmental policies, as in the other Baltic countries, have had an impact on the viability of small-scale fisheries. Other key challenge faced by small-scale fisheries in Finland are the recruitment of new generations and the need to differentiate small-scale fisheries' products from large-scale products in the market.

Finally, we come to Sweden, where small-scale fisheries are characterised by diversity, even though they have been in decline since the 1960s (Björkvik et al., Chap. 27 this volume). Indeed, paying attention to this diversity is essential for defining best case strategies for small-scale fisheries in the future, because not all *métiers* used are equally sustainable (i.e. eel fishery vs. vendance fishery). Major challenges faced by Swedish small-scale fishers stem from regulatory complexity, scarce recruitment of new entrants to fisheries and the ecological footprint of some fishing practices. On a positive note, market innovation and income diversification have created some new and beneficial opportunities.

## 1.4 Conclusion

This introduction has sketched out the diversity and the continued relevance of small-scale fisheries in Europe, as they carry out their activities in several European sea basins. Its aim has been to lay foundations for a more detailed, country-by-country analysis of small-scale fisheries on the European continent that are provided in chapters 3 to 27 of this volume. In addition, this introduction serves to pre-warn readers of the many challenges facing small-scale fisheries in Europe; a topic to which the final chapter (Pita et al., Chap. 28 this volume) will return.

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# Chapter 2
# The EU Common Fisheries Policy and Small-Scale Fisheries: A Forgotten Fleet Fighting for Recognition


**Jeremy Percy and Brian O'Riordan**

**Abstract** Fisheries in the European Union have been shaped by the evolution of Common Fisheries Policy (CFP). The influence of European fisheries policies became clearer after the establishment of the CFP in 1983. Three reforms have shaped the progressive reformulation of this policy over the more than 30 years since its adoption. Initially, the promotion of technological development was pushed to increase productivity with the renewal of fleets, then a drastic reduction of fleet capacity to curb over fishing, followed by a current incarnation that is more focused on the three pillars of sustainability. Successive policies have been developed with large-scale fleets in mind, giving scarce attention to small-scale or artisanal fleets. In this sense, management measures have frequently been implemented and impacts evaluated on the large-scale, ignoring effects on smaller fleets. However, the last CFP included some specific provisions for small-scale fisheries, including in the European Maritime and Fisheries Fund (EMFF), but these have been more honoured in the breach than the observance. This chapter aims to focus on how European policies have or have not adequately considered small-scale fisheries, or ignored them in practice. This assessment takes into account that these fleets comprise by far the majority of the European fleet by number, provide at least half of fisheries-related employment, and cover many parts of the European coasts. In this sense, it will also discuss how small-scale fisheries and their organisations have struggled for recognition in recent decades, highlighting the primary obstacles encountered in this process.

**Keywords** Landing obligation · Fisher organisations · Collective action · Large-scale fisheries · Low Impact Fishers of Europe (LIFE) · Women in Fisheries in Europe (AKTEA) · International Collective in Support of Fishworkers (ICSF)

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## 2.1 Introduction

Small-scale fisheries, as defined by the European Union (EU), comprise vessels of an overall length less than 12 meters which use non-towed gear.[1] This is by far the largest fleet segment by vessel number in the EU, providing most of the fishing jobs at sea, producing high quality fresh fish for local markets, and covering a large part of the European coast (Macfadyen et al. 2011). Small-scale fisheries in Europe are also an irreplaceable contributor to the economy, culture, and society of coastal communities and their heritage. However, production-led policies over the last six decades have ignored and marginalised this important but poorly understood sector.

Rooted in the Common Agricultural Policy of the 1950s, the Common Fisheries Policy (CFP) has undergone three reforms since its introduction in 1983 (in 1992, 2002, and 2012/13), each of which have shaped the progressive reformulation and redirection of this policy. This policy evolution has shaped the fisheries sector, highlighting the relevance of EU policies in regulating and transforming a primary sector such as fisheries. European fisheries policy, like the agricultural policy that spawned it, took root in post-war Europe when the rationale was to produce more food and create more employment through the provision of subsidies to farmers and fishing companies. This led to a process of industrialisation, overcapacity, and market saturation in the fishing sector. Initially, the CFP was more oriented towards structural and market aspects, later coming to promote technological development to increase productivity with the renewal of fleets. This was then followed by capacity reduction when productivity increases led to overcapacity and overfishing. In its latest form, it is ostensibly focused on the three pillars of sustainability and on regionalisation.

The CFP was developed with large scale fleets in mind, giving scarce attention to small-scale or artisanal fleets. Management measures have invariably been designed and implemented for larger scale fleets, with the impacts evaluated only for the large-scale fleet while ignoring effects on smaller-scale fleets. This has led to the small-scale sector being referred to as "Europe's forgotten fleet". It has largely been left up to Member States to determine how they manage their small-scale fleets and deal with the sub-sector. The 12-mile derogation to the principle of free access was seen as a sufficient tool for Member States to manage small-scale fisheries and to provide – or not – privileged access to inshore waters for smaller-scale fishing activities.

It was only with the 2012/13 CFP reform, however, that some specific considerations were given to small-scale fisheries. The 2009 Green Paper suggested that the

[1] The definition of 'small scale' in terms of fishing vessels within the European Union can be found in the European Maritime and Fisheries Fund Regulation 508/2014. Article 3(14) states that: "*small–scale coastal fishing' means fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004*".

EU could adopt a differentiated approach to managing small-scale and large-scale fleets.[2] However, this was not agreed to by Member States. Other provisions directed towards small-scale fishers, such as through the European Maritime and Fisheries Fund [EMFF], have yet to be taken up and applied by Member States. This chapter aims to focus on the weight that European policies have or have not given to small-scale fisheries, and will also cover how small-scale fisheries and their organisations have struggled for recognition in the last decades, and the main obstacles found in this process.

This chapter begins with some remarks on the difficulties in defining small-scale fisheries in Europe and its implications, especially the struggle to achieve fishing quotas to key resources. We will then refer to some recent developments, including the landing obligation and the policies for the growth of the "blue economy" that are impacting on the sector, concluding with a final synthesis and some future perspectives.

### *2.1.1 Defining Small-Scale Fisheries in Europe?*

The European Union definition of small-scale fisheries, while simple and straightforward from a management point of view, is in fact too simplistic from a policy perspective, given that it ignores the immense social, economic, environmental, cultural, and heritage elements that characterise the EU's majority fishing fleet. It also palpably ignores the multi-faceted nature of "small-scale", not just in terms of the differing sea conditions that require larger vessels that are still small-scale in other aspects; the policy fails to acknowledge that no one single parameter, such as vessel length, can define small-scale fisheries.

It is also a fact that over 80% of small-scale fisheries utilise passive rather than mobile gears with a resultant comparative (cf. large-scale) reduction in environmental impacts. However, one could also argue that the 'environmental impact' of a large pelagic trawler fishing on a healthy stock in a single species fishery is low, but it does not follow that it is by any means small-scale. In a similar vein, a small vessel of less than 12 metres using passive gear, but with a powerful engine and modern location and gear handling equipment, would have a significant environmental impact but again could not be deemed to be small-scale. Thanks to "technological creep", small vessels can also be powerful fishing tools when designed for speed, equipped with powerful engines and the latest navigational and fish finding technologies, and provided with large deck space (as is the case for multi-hulled vessels) and automated gear handling equipment. Traditionally, the essentially manual workload provided a natural limit on the amount of gear that could be used and how often it could be set. The invention of cheap and effective automated systems for

[2] See https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0163:FIN:EN:PDF. Accessed September 3, 2018.

such tasks, available even for vessels of less than ten metres, whilst taking out much of the backbreaking nature of working at sea and improving working conditions, have multiplied the fishing pressure of vessels.

This inherent difficulty in providing a simple definition of small-scale to meet management and policy objectives has been used by some to argue that there is no such thing as small-scale, and that therefore differentiation between large and small operators is either impossible or unnecessary. In the case of the EU, an important aspect of many small-scale fishing activities is their supply of high-quality fresh fish locally, an important addition of value which is often not recognised or rewarded. Recent economic analysis highlights that the ratio of gross value added to revenue is significantly higher for small-scale than for large-scale operations, although net profits are significantly higher for larger-scale fishing operations (STECF 2017).

The particularly strong focus by many academics and policy-makers on the global picture regarding small-scale fisheries highlights the worldwide importance of the sub-sector. In the European context, small-scale fisheries in our view are of equal importance given the size of their fleet, their contribution to fish supplies and local economies, and their ability to employ workers in often vulnerable coastal communities with few alternative employment opportunities and where access to locally caught and landed fresh fish is an important source of income and attraction for the tourist trade.

The mere presence of fishing vessels is also a significant benefit to coastal towns and villages. Some reports highlight how tourists are attracted by fishing boats on the beach or in the harbour to view, and may even be willing to pay for partaking of this fishing landscape (Acott et al. 2014). Multiplied by the millions of tourists who visit the coast each year across Europe, this is a substantial benefit to coastal communities. It is possible to identify both the key arguments in favour of linking small-scale fisheries with responsible tourism and the principles of sustainable tourism (Ford and Acott 2015). The downside of the attractiveness of coastal areas is that they have become a magnet for wealthy 'retirees' and second home owners. This in turn has resulted in a massive escalation of the price of housing, forcing formerly close-knit family fishing groups to move away in order to find affordable accommodation, making it difficult access to their boats and gear stores. A further negative impact of this coastal migration has been that many previously thriving villages have become ghost towns outside of the holiday season with resultant knock-on effects on local infrastructure, shops, and service suppliers who are starved of customers for periods of the year, as well as disrupting the societal fabric of the communities themselves.

It is clear that the downward trajectory for the small-scale fisheries fleet in Europe will continue unless significant and meaningful changes are made to its management practices, access to resources, and support structures. In turn, this will only be possible when administrators recognise and reward the multiple benefits delivered by a thriving inshore fleet.

### 2.1.2 Common Fisheries Policy and Europe's Forgotten Fleet

After many years of work, consultation, studies, and debate, the FAO finally published their 'Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication' in 2015 (FAO 2015).[3]

Whilst the Guidelines focus on the needs of developing countries, they have as much relevance for European small-scale fisheries as their counterparts elsewhere. This is partly due to the fact that Europe's small-scale fisheries have been marginalised, sidelined, undermined and disenfranchised for decades. This marginalisation has been exacerbated by the CFP and related subsidies, which have left small-scale fisheries without the capacity to positively influence fisheries policy and failed to allocate access to the resource (Jentoft 2014). This has increased the vulnerability of coastal communities that depend on small-scale fisheries, including island communities, to policy changes that increasingly benefit large-scale interests. This is particularly the case with regards to access to resources (regulated by quota management) and access to markets (managed through Producer Organisations).

In Article 5.7, the Guidelines call for preferential access to be granted to small-scale fisheries in waters under national jurisdiction, in line with the FAO Code of Conduct for Responsible Fisheries, and for appropriate measures to be taken, such as the creation and enforcement of exclusive zones for small-scale fisheries. Article 5.8 calls on States to adopt measures to facilitate equitable access to fishery resources for small-scale fishing communities, including redistributive reform. Article 5.9 calls on States to ensure that the legitimate tenure rights of small-scale fishing communities are not extinguished or infringed upon. It highlights that competition from other users is increasing within small-scale fisheries areas and that small-scale fishing communities are often the weaker party in conflicts with other sectors and may require special support if their livelihoods are threatened by the development and activities of other sectors.

In a similar vein, the current CFP states that "*Existing rules restricting access to resources within the 12 nautical mile zones of Member States have operated satisfactorily, benefiting conservation by restricting fishing effort in the most sensitive part of Union waters. Those rules have also preserved the traditional fishing activities on which the social and economic development of certain coastal communities is highly dependent. Those rules should therefore continue to apply. Member States should endeavour to give preferential access for small-scale, artisanal or coastal fishermen*". It goes on to say that "*Furthermore, the CFP should contribute to increased productivity, to a fair standard of living for the fisheries sector including small-scale fisheries*".[4]

[3] See also the special issue from Samudra 68, 2014 Now Walk the Talk https://bit.ly/2NeX7vA. Accessed September 3, 2018.

[4] REGULATION (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, https://bit.ly/2MsqvyH. Accessed September 3, 2018.

Unfortunately, these fine words are seldom translated into meaningful policy interventions in favour of small-scale fisheries. The reasons for this are manifold and are certainly not confined to the EU area. As elsewhere, small-scale fisheries in Europe are usually ignored when compared with industrial fisheries, not only by policy-makers, but also by scientists (Abernethy et al. 2007; FAO 2009; Villasante et al. 2012). Therefore, small-scale fisheries social, economic, and ecological impacts are poorly known. The CFP was introduced to focus on two main areas: to maintain fish stocks in European waters and fisheries-related employment. Fundamentally, it has failed to do either.

After decades of presiding over significant reductions in both fish stocks and related employment in Europe, the most recent reincarnation of the CFP in 2014 gave some hope for small-scale fisheries. The process of renewal started in 2009 with the European Commission publishing a Green Paper discussion document setting out, in general terms, the issues to be addressed under a reformed CFP. Historically, this process was the first time that small-scale fisheries were able to make a contribution to the debate that had been largely a construct between the Commission, Member States, scientists, the large-scale fleet sector, and environmental NGOs.

It is worth noting that until the launch of the Low Impact Fishers of Europe (LIFE) platform following the most recent CFP reform process (see Box 2.1 for more details), there was an almost complete absence of any dedicated specific voice on behalf of the European small-scale fisheries. This includes the largely disingenuous claims of the larger vessel representatives to support both small and large-scale interests. This absence was due to a number of factors: lack of resources, lack of leadership, difficulties in obtaining any form of consensus between small-scale fisheries operators spread across the EU and the overarching power of large-scale sector representatives in the main consultative systems, notably the ACFA and subsequently the Regional Advisory Councils (ACs).[5]

Compared with previous reforms, the 2012/13 reform process for the current CFP was distinct for two reasons. Firstly, it was the first time that there was joint decision-making between the Council of Ministers and the European Parliament [EP], and secondly on the basis of the ability of small-scale fisheries representatives to be present at and meet with officials from both entities. The latter was made possible through the financial support for travel and subsistence for representatives of the small-scale sector provided by environmental and other NGOs. These organisations recognised that engaging the previously ignored 75% of the European fleet, which had an intrinsic interest in promoting genuine and improved fisheries sustainability, would provide a more positive influence than merely pursuing the status quo.[6]

[5] See DG Mare webpage on Advisory Councils https://ec.europa.eu/fisheries/partners/advisory-councils_en. Accessed on September 3, 2018.

[6] See ICSF webpage for a list of events where small-scale fisheries had a say https://eussf.icsf.net/en/page/933-Events.html. Accessed on September 3, 2018.

In short, due to many factors including those noted above, the most recent reform of the CFP sparked hope that for the first time small-scale fisheries would be recognised and rewarded for fishing sustainably. The reality has been somewhat different. The reasons for hope for an improved CFP from a small-scale fisheries perspective were the influence of small-scale fisheries representations and lobbying in its development, the co-decision requirement introduced by the Lisbon Treaty that gave members of the European Parliament equal decision-making powers together with the Council of Ministers, the increased public interest and pressure that came from a number of high level campaigns – including 'Fish Fight', which focused on a ban on the discarding of fish[7] – the support provided through the International Collective in Support of Fishworkers (ICSF; see Box 2.2 for more details about this organisation), the Ocean 2012 Campaign, and an increasing recognition that previous versions of the CFP had failed to halt the decline in fish stocks.[8] A major positive outcome of the CFP process was the creation of LIFE (see Box 2.1). In addition, the women's fishing organisations gathered in AKTEA have also contributed, in partnership with LIFE, to make more visible the life of fishing communities and its gender diversity in Europe (see Box 2.3).

**Box 2.1: Low Impact Fisheries of Europe (LIFE)**
The Low Impact Fishers of Europe Platform (LIFE)[9] was launched on the eve of the reformed CFP in 2012. The 2012 CFP reform process was the first such process to give any serious consideration to small-scale fisheries as a distinct sub-sector, and the first time that European small-scale fishers had participated as a united group in such a process. LIFE was launched to fill the glaring omission of any European-wide organisation dedicated to representing and providing a voice for small-scale fishers from EU member states. Several organisations claim to represent both small and large interests at both the European and member state level, claiming that fisheries is a single sector, and that creating sub-sectors will be divisive and conflictual. However, it is generally the larger-scale interests, with greater economic and political weight, whose voices are heard at the negotiating table.

(continued)

[7] See http://www.fishfight.net/. Accessed on September 3, 2018.

[8] The European Commission (EC) has no decision-making powers, apart from through delegated acts. It puts forwards legislative proposals, which are now negotiated between Parliament and Council of Ministers "facilitated" (with a big stick) by the EC through the trialogue. See: https://eussf.icsf.net/images/stories/small-scale/Brussels_Workshop_Final_Statement.pdf. See also http://www.pewtrusts.org/en/projects/archived-projects/ocean2012/about. Both accessed on September 3, 2018.

[9] See: www.lifeplatform.eu. Accessed on September 3, 2018.

**Box 2.1** (continued)

The provision of support to small-scale fisheries representatives from NGOs allowed small-scale fisheries leaders from around Europe to work together, starting in 2009 with the launch of the Green Paper Consultation process. It became clear quite quickly that this coming together of like-minded leaders should, if at all possible, be continued post-CFP reform, and DG MARE and the Commissioner for Maritime Affairs and Fisheries at the time, Maria Damanaki, were encouraging in this regard. There was even talk of a special Advisory Council for small-scale fisheries. After its launch in 2012 and General Assembly meeting in 2013, LIFE became incorporated in 2014, and established a European Office in Brussels in 2015. With a Management Board made up of working fishers from across Europe and the employment of staff with a vast range of knowledge and experience as researchers, fishermen, fisheries managers, communicators, and so on, LIFE very quickly developed into the recognised voice for small-scale fisheries in Europe. 2015 and 2016 also saw the establishment of a Mediterranean Coordination office, and a Coordination office for the Baltic and North Seas.

LIFE's overall aim is to bring small-scale fisheries issues from the periphery to the centre of policy and to transform fishers from passive to active actors in decision-making processes as empowered agents of change. LIFE functions as a professional, member-based organisation engaged in decision-making processes; as an advocacy group, providing a dedicated voice for small-scale low impact fishers; and providing support in the form of information, capacity-building, and other services to small-scale fishers and their organisations.

LIFE is not just about representing small-scale fisheries and providing fishers with a voice; it is also about promoting an alternative, responsible approach to fishing based on the three pillars of sustainability in line with its motto: using the right gear, in the right place at the right time. As well as its work at the EU-level with the Brussels-based institutions and the policy and legislative processes, LIFE is engaged at the regional and national level in capacity-building, advocacy, and on-the-water activities with its members. LIFE's actions are designed to have impacts at the social (improving the lot and status of small-scale fishers and their communities), environmental (reduced impact on fish stocks and the seabed), economic (fishers transformed from price takers to price makers), and political levels (changing policies in favour of those who fish in the most sustainable manner, from a social, economic, and ecological perspective).

As an organisation of organisations, LIFE has a current membership of 30 small-scale fisheries organisations representing in excess of 10,000 individual fishers across 16 member states from the Baltic to the Mediterranean.

**Box 2.2: International Collective in Support of Fisherworkers (ICSF)**
The International Collective in Support of Fishworkers (ICSF) is an international non-governmental organisation that works towards the establishment of equitable, gender-just, self-reliant, and sustainable fisheries, particularly in the small-scale, artisanal sector. ICSF draws its mandate from the historic International Conference of Fishworkers and their Supporters (ICFWS), held in Rome in 1984 parallel to the World Conference on Fisheries Management and Development organised by the Food and Agriculture Organization of the United Nations (FAO). ICSF was launched in 1986 in Thiruvananthapuram, Kerala, India in response to the outcomes of the 1984 FAO World Conference, which in the view of many who were there had overemphasised the commercial, industrial, scientific, and fishery resource aspects, at the expense of the actual real-world, life-and-blood people involved in fishing worldwide. These proceedings especially overlooked fishworkers, especially from communities that are dependent on small-scale fisheries, which include sections of the population which are often marginalised from mainstream society.

After winding up in September 2017, ICSF was relaunched in December 2017 by a small group drawn from ICSF's previous membership and staff. ICSF's main office is in India, with a membership that spans the Americas, Africa, Europe, and Asia. ICSF's members are individuals from civil society committed to addressing the plight of small-scale fishery workers and their communities. In its current incarnation, the main aims of ICSF are: to monitor issues that relate to the life, livelihood, and living conditions of fishworkers around the world; to disseminate information on these issues, particularly amongst fisherfolk; to prepare guidelines for policy-makers that stress fisheries development and management of a just, participatory, and sustainable nature; and to help create the space and momentum for the development of alternatives in the small-scale fisheries sector. Within a global perspective, ICSF's work is focused on countries of the Global South, with a mission to support fishing communities and fishworker organisations, and empower them to participate in fisheries from a perspective of decent work, equity, gender justice, self-reliance, and sustainability.

As a support organisation, ICSF is committed to influencing national, regional, and international decision-making processes in fisheries so that the importance of small-scale fisheries, fishworkers, and fishing communities is duly recognised. In this endeavour, ICSF works in collaboration with organisations of fishworkers and other like-minded groups. The work of ICSF is widely recognised, notably its role in the development of the FAO's Voluntary Guidelines. For more information, see www.icsf.net

**Box 2.3: Women in Fisheries in Europe (AKTEA)**

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AKTEA is a network of fisherwomen's organisations in Europe. AKTEA is the result of a three-year programme of exchanges of experiences between fisherwomen from different EU Member States on their contributions to fisheries and aquaculture.[10] Exchanges focused on the role of women in the private sphere (fishery enterprises) and public sphere (organisations and collective actions). Following this positive experience, a number of women's organisations decided to maintain this transnational dynamic by establishing AKTEA. In 2006, the AKTEA network was set up in Ancona (Italy).

The members of AKTEA are independent women's organisations acting at national or regional levels and representing wives of fishermen carrying out tasks linked to fishery enterprises (selling fish, administration, etc.), as well as fisherwomen, women shellfish gatherers and net menders. The network works towards the formal recognition of women's role in the sector and to ensure access for women from fishing communities to decision-making at EU and national levels. The network is currently lobbying, at a European level, for the legal recognition of women's contributions to the fisheries industry and for the integration of women's organisations into the fisheries decision-making process. It is hoped that the actions of national organisations, trans-national and trans-European networks will increase awareness of women's contributions to fisheries and lead to legal recognition of this contribution. The main objectives of AKTEA are the following:

- To promote the visibility of women's role in the fisheries industry.
- To promote the recognition of women's contributions to the sector.
- To promote the participation of women in decision-making processes, particularly concerning matters which affect women's roles in fisheries.
- To promote the exchange of experiences, problems and solutions among women in fisheries around Europe.
- To promote the sustainable development of fisheries and the preservation of fisheries communities.
- To promote the acceptance of women's organisations within the political and institutional framework of fisheries.
- To promote greater self-confidence among women.

For more information please visit http://akteaplatform.eu/

[10] Project *Femmes: Les femmes dans la pêche et les cultures marines en Europe Project ID: Q5TN-2002-01060*.

### 2.1.3 Fishing Rights for Small-Scale Fisheries

Two of the key issues that small-scale fishers were lobbying for in the CFP were to have fair access to resources, and for those who fished in the most sustainable way to be granted privileged access to fishing opportunities. As described below, thanks to the intervention of the European Parliament, Article 17 of the CFP does, at least in theory if not in practice, go a long way to address this. This achievement is all the more important given the pressure applied by the Commission to introduce a European wide system of "transferable fishing concessions". If successful, this system could have seen an end to any prospects of fair access for small-scale fisheries, and the rise of a Europe-wide commerce of quotas and the accumulation of fishing rights into ever fewer hands.

LIFE has since been particularly proactive in arguing for the effective implementation of the CFP in both the spirit and letter of the law, especially concerning Article 17 which states:

> *When allocating the fishing opportunities available to them, as referred to in Article 16, Member States shall use transparent and objective criteria including those of an environmental, social and economic nature. The criteria to be used may include, inter alia, the impact of fishing on the environment, the history of compliance, the contribution to the local economy and historic catch levels. Within the fishing opportunities allocated to them, Member States shall endeavour to provide incentives to fishing vessels deploying selective fishing gear or using fishing techniques with reduced environmental impact, such as reduced energy consumption or habitat damage* (REGULATION (EU) No 1380/2013).

Access to fishing opportunities is of course the lifeblood of any fisher, and in the EU to a large extent access to fish requires access to quota. However, the granting of access through quota allocation has long favoured the large-scale sector over small-scale fisheries. This is hardly surprising as the large-scale sector was the only one in the room when rights were handed out and small-scale fisheries has been playing catch up ever since. Currently, most small-scale fishers have to rely on non-quota species since they have little or no quota. As discussed later, this makes them particularly vulnerable when it comes to the landing obligation, a central plank of the new CFP.

The UK fleet below ten metres provides a good example of this unfair situation which came to a head in 2012/13. The small-scale fisheries representative body, the New Under Ten Fishermen's Association (NUTFA)[11] requested access to some of the 14,000 tons of fish quota allocated on an annual basis to the large-scale sector but which was regularly not caught. The UK's fisheries management body, the Department of Food and Rural Affairs (DEFRA), concurred and set the process in motion to move a small percentage of this unused quota from the large to the small-scale sector. Large-scale fisheries representatives objected to this and took DEFRA for a Judicial Review of the decision at the High Court. Their argument was based on their belief that they had a legitimate expectation to the status quo in terms of

[11] http://www.nutfa.org/. Accessed September 3, 2018.

"their" quota holdings both now and in the future. The Court decided not only that they had no legitimate expectation to any future entitlement but also their 'entitlements' expressed as fixed quota allocations only had a value in the year that fish was allocated against them. On the basis of the decision, DEFRA reallocated a small amount of the unused quota to the small-scale sector.[12] The UK example is particularly poignant considering that the inshore sector (under 10 metre vessels) make up 77% of the UK fleet by number, but have access to only about 4% of the national quota (Bawden 2014; Carpenter and Kleinjans 2017).[13] They are also heavily restricted since their activities take place in a national pool managed by the government on their behalf, whereas the over ten metre sector is able to manage their own allocations via producer organisations that gives them far greater flexibility. Similarly the [mis]allocation of Bluefin tuna quota in the Mediterranean to the larger vessel sector, which caused the demise of this species in the first place, is equally contentious.[14]

These unfair terms of access spurred small-scale fishers to call for priority access to be granted to those who fish most sustainably during the 2012 CFP reform. This call was heeded by the European Parliament, who agreed to add an amendment to the European Commission CFP proposal, in the form of Article 17. This clause was described by a senior EU official at the time that the new CFP was ratified as 'potentially revolutionary' in terms of resetting the criteria for the allocation of fishing opportunities. Perhaps it was precisely because of the revolutionary nature of the Article that it has been effectively ignored by Member States.

In the majority of coastal Member States, quota was allocated to those who could prove a track record of catches. At that time, the small-scale fleet had no legal requirement to record and report their landings. At the same time, most administrations did not bother to collect detailed landings data. In the UK for instance, the under ten metre sector was specifically ignored, with officials assuming that their contribution to landings was often not worth recording. On the other hand, the large-scale sector was told to record their catches over a three year period and that their future fishing opportunities would be based on those records. Perhaps not unsurprisingly, many 'ghost fished' by over-recording their landings thereby illegally inflating their subsequent quota entitlements.

Article 17 requires member states to include social, economic, and environmental criteria when allocating fishing opportunities. The specific and single parameter of historic track record does not meet this requirement, yet no member state has embraced Article 17, leaving the small-scale sector with an extremely small share of the fishing 'pot'. Thus, it is hardly surprising that greatly restricted allocations – exacerbated by gross overfishing by the large-scale sector in the latter part of the last century that dramatically reduced both fish stocks and therefore the associated quota

[12] See: https://www.judiciary.uk/wp-content/uploads/JCO/Documents/Judgments/uk-assoc-fish-producer-orgs-10072013.pdf. Accessed September 3, 2018.

[13] It is also relevant the Fixed Quota allocation register from United Kingdom https://www.fqaregister.service.gov.uk/. Accessed August 19, 2019.

[14] See http://lifeplatform.eu/bft-iccat-ssfs/ Accessed August 19, 2019.

available – has contributed significantly to the continuing struggles and ultimate demise of so many small-scale fisheries across Europe.

Advisory Councils (ACs), formerly Regional Advisory Councils, are the EU Commission's favoured vehicle for consultation and information exchange with the fisheries sector and other stakeholders.[15] It is thus no surprise that they are dominated by large-scale fishing interests, due partly to the fact that when ACs were designed and set up there was no specific place dedicated for the small-scale fisheries sector. Currently 11 ACs exist, covering all the main sea basins (the Baltic Sea, North Sea, North West Waters, South West Waters, the Mediterranean, and the Black Sea), for distant waters (Long Distance AC), for Pelagic fisheries (the Pelagic AC), for Aquaculture, for Markets, and for Europe's Outermost Regions.

The 2014 CFP reform has sought to rectify this oversight through a delegated Regulation to ensure that the structure of ACs "*guarantees a balanced representation of all legitimate stakeholders in the field of fisheries, including small-scale fleets*" (Recital 5).[16] To achieve this, it provides that "*the general assembly may decide to appoint an executive committee of up to 30 members to ensure appropriate representation of small-scale fleets*", and that "*the number of representatives of small-scale fleets should reflect the share of small scale fleets within the fishing sector of the Member States concerned*." The Delegated Act also sought to provide additional financial support in recognition of the fact that small-scale fisheries interests did not have the resources to employ well-paid lobbyists to attend in the same way as the large-scale fisheries sector.

However, changing the status quo is not easy, as it entails overcoming a huge resistance to change by those who are favoured. According to the status quo, in the general assembly and executive committee of the ACs, 60% of the seats shall be allotted to representatives of the sector (fishers and representatives of the processing and marketing sectors), and 40% to representatives of the other interest groups affected by the CFP, for example environmental organisations and consumer groups. Apart from the inertia and resistance to change of the large-scale sector, other barriers to increasing the seats allocated to small-scale fisheries on the executive committee have been the inability of non-sector representatives (NGOs and others) to take up the additional seats needed to maintain the 60:40 balance, and the reluctance of the large-scale fisheries sector to give up seats in favour of small-scale fisheries.

In a similar fashion, small-scale fisheries have generally suffered through being outside of the producer organisation system for quota management purposes. They mostly rely on access to a national pool of quota that is generally inflexible, given its design to allocate a small quota to all stakeholders on a regular basis rather than being allocated more effectively in economic terms. For example, allocation in the UK's under ten metre fleet is based on the above and small-scale fisheries lose out by not being able to access more quota when fish quality and therefore prices are

[15] https://ec.europa.eu/fisheries/partners/advisory-councils_en. Accessed September 3, 2018.

[16] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32015R0242&from=EN. Accessed September 3, 2018.

high, and less when prices fall. At the same time, although they are now permitted to lease quota from large-scale interests (mainly the large-scale fisheries producer organisations), they may only do so with the permission of the Administration and not retrospectively in order to cover a good catch. This element alone results in small-scale fisheries being penalised for an overharvest whereas the PO members can simply call the PO office and have the catch covered before landing.

More recently, there are moves afoot for small-scale fisheries to be able to form their own POs, with the Coastal PO in the UK a case in point.[17] There are similar initiatives proceeding in Denmark and Ireland. The domination in this area by the large-scale fleet and the lack of effective oversight and management by the authorities in many member states was the subject of a recent study commissioned by LIFE. The subsequent report highlighted the failures to recognise and regulate the existing POs and suggested solutions.[18] This is despite measures being included in the reformed regulation for Common Market Organisation to encourage the appropriate and representative participation of small-scale producers and for producer organisations to take into account the special characteristics of small-scale fisheries.[19]

On a more promising note, the European Maritime and Fisheries Fund [EMFF][20] requires, in Article 18i, that Member States with over 1000 small-scale fishing vessels should attach to their operational programmes "*action plans for the development, competitiveness and sustainability of small-scale coastal fishing*". The use of 1000 as the criterion in terms of this requirement is less than helpful in many Member States. The small-scale fleet in Malta, for instance, is the predominant sector but does not contain 1000 vessels. It would have been far more effective to use a percentage rather than an arbitrary number so that more member states would have to focus more clearly on the needs of their small-scale fisheries sector.

The Achilles Heel of the EMFF for many aspiring small-scale fisheries applicants is that, for the most part, the various possibilities suggested are just that: suggestions. Each Member State produces its own Operational Plan that can choose to include (or not) many of the articles within the EU's overarching EMFF Regulation. At the same time, the application process is long, difficult to comprehend for the layperson, and can take a significant amount of time from initial application to receiving the support requested. In the UK for instance, some reasonably straightforward applications can take in excess of 200 days for the process, which is often a perceived barrier for applicants needing to undertake initiatives. Some other member state processes are reportedly more straightforward.

[17] https://fish.coop/. Accessed September 3, 2018.

[18] http://lifeplatform.eu/wp-content/uploads/2017/12/Fishy-Business-in-the-EU.pdf. Accessed September 3, 2018.

[19] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R1379&from=EN. Accessed September 3, 2018.

[20] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0508&from=EN. Accessed September 3, 2018.

Small-scale fisheries needs and interests are however recognised in the EMFF, whereby it is possible for them to attain 100% funding for some elements. For example, there is the ability to financially support new entrants and for fishers to be able to replace engines [provided the new engine is of less power] to reduce harmful emissions. It also provides financial support for diversification and added value, as well as for the creation of Fisheries Local Action Groups (FLAGs). The EU also provides support for Farnet, the organisation charged with implementing Community-Led Local Development (CLLD) under the European Maritime and Fisheries Fund (EMFF). This network brings together FLAGs, managing authorities, citizens, and experts from across the EU.[21]

## 2.2 The Landing Obligation and Small-Scale Fisheries

Following pressure from 'Fish Fight' and other actions, the Landing Obligation (LO) or 'discard ban' as it is often referred to, has become a central plank of the CFP. The LO is explained in Article 15:

> *All catches of species which are subject to catch limits and, in the Mediterranean, also catches of species which are subject to minimum sizes as defined in Annex III to Regulation (EC) No 1967/2006, caught during fishing activities in Union waters or by Union fishing vessels outside Union waters in waters not subject to third countries' sovereignty or jurisdiction, in the fisheries and geographical areas listed below shall be brought and retained on board the fishing vessels, recorded, landed and counted against the quotas where applicable, except when used as live bait (…)* (REGULATION (EU) No 1380/2013, article 15.1).[22]

In essence, the LO was driven by the recognised need to deal with the issue of rising discard rates, which was over 50% for some species in some areas,[23] notably in the larger-scale mobile gear sector. It was also effectively impossible at that point in time for fishers to improve the selectivity of mobile gears in a mixed fishery in order to avoid often significant by-catches of fish for which there was no market, or more typically for which fishers had insufficient quota. Unfortunately, despite the discard ban becoming law on January 1st 2015 in the Baltic Sea and subsequently and incrementally elsewhere, apart from the Mediterranean for the majority of species therein, Member States are still turning a blind eye to high discard rates by the mobile gear sector.[24]

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[21] https://ec.europa.eu/fisheries/cfp/eff/farnet_en. Accessed September 3, 2018.

[22] REGULATION (EU) No 1380/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the Common Fisheries Policy.

[23] http://www.fishfight.net/story.html. Accessed September 3, 2018.

[24] See: http://lifeplatform.eu/wp-content/uploads/2018/03/Percy_Letter_-Baltic-management-DK.pdf, and: http://lifeplatform.eu/wp-content/uploads/2018/04/Reply-to-letter-from-Jeremy-Percy-LIFE.pdf. Accessed September 3, 2018.

Full implementation of the discard ban was supposed to come into force on January 1, 2019. However, despite strong words from the European Commission, there is little evidence that the discard ban is being implemented to any degree in Member States. Thus the words of Commissioner Vella's speech to the European Parliament in May 2018 ring hollow

> *[the] rules are clear: as of 1 January 2019, the landing obligation will apply to all catches of species subject to catch limits and, in the Mediterranean, subject to minimum sizes. These are the rules of the CFP, agreed by all, and well-known to everybody for more than four years now. Rules cannot be changed half-time through a match. It would undermine the reformed CFP. And it would damage our credibility*[25]

In reply, the Chair of the Fisheries Committee of the European Parliament, Alain Cadec observed: *"[the] diagnosis (on the implementation of the Landing Obligation) is very clear: uncertainty, difficulty, complexity… I don't regret voting against the Landing Obligation*".[26]

Although clearly aimed at the large-scale sector, the LO is likely to have a considerable impact with unforeseen consequences for small-scale fisheries. However, very little consideration is being given to small-scale fisheries as the LO deadline of January 1, 2019 approaches. Also reflecting this lack of emphasis on the small scale, between 1950 and 2014 out of 3924 scientific papers published about discarding, 3760 were focused on large-scale mobile gears and only 164 on the smaller-scale fleet (Villasante et al. 2015). Also, as one observer put it, "*trawling is the elephant in the room*" when it comes to the landing obligation, given the difficulty to improve selectivity of the gear as used in most mixed fisheries and the reluctance of the large-scale fleet to take measures that may affect their profits.

However, a smaller rate of discard by the small-scale fleet does not necessarily mean that they will be impacted less[27] by the LO. In fact, due to a number of factors, they are likely to be impacted more, especially given the interconnected nature of fisheries issues and interventions. The majority of support for and measures to reduce discards have been introduced in large-scale fisheries; the majority of work and focus has been on larger-scale mobile gear impacts and issues. Conversely, very low quota allocations mean that the landing obligation impacts small-scale fisheries more because they have less access to quota which gives them less flexibility in dealing with the choke species issue. A study by Veiga et al. (2016) states:

> *The effects in the long-term are unpredictable, but available evidence suggests that in the short to medium-term a landing obligation is likely to bring more negative social, economic and ecological impacts than benefits.* (p. 64).

Two further elements of European policy proposals and direction of travel are valid with regard to the small-scale fleet. The first is the new European Commission

[25] http://lifeplatform.eu/choking-landing-obligation/. Accessed September 3, 2018.

[26] For his discussion see: http://lifeplatform.eu/choking-landing-obligation/. Accessed September 3, 2018.

[27] Also see: http://lifeplatform.eu/choking-landing-obligation/ Accessed September 3th 2018.

proposal to significantly amend the Control Regulation. The recent (2018) proposals by the European Commission,[28] together with the background documentation that includes a very useful Q&A,[29] pull no punches in describing the EU's aims for a much "improved" system for the control, monitoring, and enforcement of the EU fishing fleet. The Q&A press release notes that

> *[The] current Fishery Control System is not equipped to effectively address current and future needs in terms of fisheries data and fleet control, to match the constant evolution of fishing practices and techniques. It also does not provide the necessary flexibility to take advantage of modern and more cost-effective control technologies and data exchange systems.*
>
> *Last but not least, the current system does not effectively promote a culture of compliance and significant loopholes have emerged in the implementation of current enforcement rules, which warrant their revision "(…) An enforcement system with dissuasive, proportionate and effective sanctions is paramount to ensure that the CFP and its conservation measures are complied with".*[30]

Although these are strong words, what will they mean to fishers in general and the small-scale fleet in particular? The recommendations include electronic reporting for all vessels, irrespective of size, the mandatory institution of vessel tracking, and the need to report catches before landing. The press release goes on:

> *For the smaller vessels it is nowadays possible to use mobile and other type of tracking devices, which are affordable and easy to use. Also, all catches should be accounted for and reported electronically, irrespective of the vessel's size and of the amount of fish caught. (…) Paper-based reporting will therefore be phased out and current derogations removed. (…) The proposal remains however, technologically neutral, insofar as it avoids prescribing the use of any specific technology. Specific applications will need to be tailored to the different needs and actors keeping in mind that interoperability is necessary. (…) All provisions will be in one single act: The Control Regulation. The enforcement system will allow fishermen to be treated equally across the EU, irrespective of the Member State where they operate or land.*[31]

It appears at the time of writing that all fishers will be apparently treated equally across the EU although there is clearly going to be wiggle room for each member state to tailor their own systems. As a result, just how level the playing field will be remains to be seen, not just across member states but also within them, as it is clear that current 'enforcement' varies significantly depending on from which part of a country a given fishing unit fishes. The list of serious infringements will be updated and sanctions doled out irrespective of vessel size or the amount of fish involved. On that basis, it appears that it won't matter if a fisher has one fish over, or a thousand

[28] See: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=COM:2018:368:FIN&from=EN. Accessed August 19, 2019.

[29] For details see: https://ec.europa.eu/fisheries/questions-and-answers-%E2%80%93-revision-eu-fisheries-control-system_en. Accessed September 3, 2018.

[30] See: https://ec.europa.eu/fisheries/questions-and-answers-%E2%80%93-revision-eu-fisheries-control-system_en. Accessed September 3, 2018.

[31] See: https://ec.europa.eu/fisheries/questions-and-answers-%E2%80%93-revision-eu-fisheries-control-system_en. Accessed September 3, 2018.

tons; the penalty will be the same. The Regulation also includes the requirement for CCTV to be mandatory on boats that have a specific level of discard risk, although no details are available at present regarding how this would be done. These are only proposals at this stage, but they are generating huge concerns.[32]

## 2.3 Blue Growth and Small-Scale Fisheries

Another noteworthy element of maritime policy is the Commission's focus on "Blue Growth" – the development of the "blue economy" through focussing on selected sectors deemed to have greatest potential for growth. To take this forward, DG MARE has restructured its departments to include a Directorate for Maritime Policy and the Blue Economy. However, this Blue Growth agenda appears to be a somewhat simplistic attempt to maximise returns from the panoply of new technologies related to five maritime sectors – energy, aquaculture, tourism, biotech, and mining.

It is particularly disturbing that fisheries are excluded from the EU's Blue Growth strategy, and that aquaculture is being supported as the future food production sector with privileged access to waters and subsidies. LIFE has been critical of the EU's Blue Growth strategy since its inception.[33] In LIFE's view, the European strategy for Blue Growth focuses on cherry-picked economic sectors considered to have potential for growth while excluding those, like fisheries, which have been deemed to have limited potential.

In shaping blue growth strategies, greater emphasis should be put on the sustainable development of the blue economy, building on the three pillars of sustainable development: economic, environmental, and social sustainability. The blue economy should work for all maritime sectors, not just a few. It is incoherent that small-scale fisheries, with its inherent potential for added-value and increased earnings — and its synergies with tourism — should be excluded from European blue growth strategies while aquaculture, with growing concerns over its environmental impacts, is included (Vidal 2017).

Over the last 10 years, aquaculture production in Europe has stagnated, showing declines of up to 20%[34] overall. Yet, it is included as a 'growth' sector. According to DG MARE Maritime Policy and Blue Economy Director Bernard Fries, aquaculture requires "*business certainty, lean administrative procedures and adequate*

[32] A fuller analysis of the Commission proposal for amending the Control Regulation is provided by LIFE: http://lifeplatform.eu/control_regulation/. Accessed August 19, 2019.

[33] See http://lifeplatform.eu/5059/; and http://lifeplatform.eu/life-calls-inclusive-blue-growth/. Accessed August 19, 2019.

[34] See http://www.europarl.europa.eu/factsheets/en/sheet/120/european-aquaculture. Accessed August 19, 2019.

*space*" to develop.[35] This recognition that aquaculture requires space to develop, while overlooking small-scale fisheries that also have significant potential to grow, provide jobs, and contribute to local economies, is misguided. The idea of the Blue Economy came out of the 2012 Rio + 20 process and is rooted in the Green Economy rhetoric. This in turn is seen as vital for.

> *(…) achieving sustainable development (…), contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems* (United Nations 2012).

The potential of the seas and oceans – the Blue Economy – to meet sustainable development needs is enormous, but this potential can only be realised if they can be maintained in and/or restored to a healthy and productive state. LIFE is concerned that amid all the hype and razzamatazz, sight is being lost of the fact that Blue Growth has huge implications for fisheries, be they small or large in scale. The economic sectors targeted by Blue Growth include many that will encroach on the spaces traditionally occupied by fisheries, and which will undoubtedly have an impact on the resources on which fisheries activities depend. These include industrial-scale aquaculture, ocean energy, and seabed mining. Although maritime spatial planning is included as an "essential component", more attention is needed to ensure that the European Blue Growth strategy seeks coherence and complementarity with the CFP. If not, the CFP will be overwhelmed by the tsunami of Blue Growth.

LIFE also asserts that Blue Growth should not be a license for business as usual and more of the same "brown" development. Up to now, oceans have been treated as a means of free resource extraction and waste dumping, and environmental and social costs have been externalised from economic calculations. Blue Growth is a call for fundamental change; ongoing trends in the exploitation and degradation of marine and coastal ecosystems show that endeavours to date have been insufficient and that more needs to be and must be done quickly. The huge amounts of marine debris building up in the oceans, especially plastics, demand urgent action. Addressing the problem must go beyond paying fishers to become litter collectors at sea. Blue Growth and small-scale fisheries, far from being incompatible, are entirely complimentary. However, for such complementarity to be effectively transformed into a "win-win" scenario, greater attention needs to be paid to safeguarding the fishing rights of small-scale fisheries and providing them with secure and priority access to their traditional fishing areas. Implementing Article 17 of the CFP could go a long way in this regard.

[35] See https://ec.europa.eu/dgs/maritimeaffairs_fisheries/magazine/en/people/driving-blue-economy-forward. Accessed September 3, 2018.

## 2.4 Summary: Economic Viability, Access, and Collective Action

Despite the ostensibly positive references and recognition of small-scale fisheries within the reformed CFP, the reality is that, overall, the sector continues a downward spiral across Europe, albeit for sometimes different reasons. At the heart of the decline are the universal requirements of any fisher to be able to fish and have access to fisheries resources and markets.

In the Mediterranean, there is a growing realisation that all of the current efforts run the risk of being "too little too late", and the necessary medicine is in danger of killing the patient. The abject failure to come to grips with the well-known and long-term negative trends in fish stocks in the region, and the failure to curb the most destructive fishing practices, epitomises the problems of a top-down, command and control regime that is too slow and unwieldly to be able to react quickly and positively to changes in stock structure, fishing mortality, and environmental pressures, not least of which is climate change.

It also highlights the lobbying power of large-scale fisheries, a sector in need of being reigned in but capable of influencing policies in its favour. Nowhere is this power more visible than the case of the more than 80 licenses granted to the Dutch cutter beam trawl fleet to fish with electric pulse trawls (Haasnoot et al. 2016). The ability to conduct pilot projects allowed by the CFP (under Article 14.1., EU Regulation No 1380/2013) has been utilised as a loophole by elements of the Dutch beam trawl fleet to switch to the extensive use of electric pulse fishing gear (the use of electricity, along with poisons and explosives is expressly prohibited under Article 31 of EU Regulation 850/98[36] unless used under an exemption granted for scientific purposes). The outcome of this has been that, rather than the relatively few beam trawlers permitted under a derogation for 5% of a Member State's beam trawl fleet for scientific purposes and other loopholes, the Dutch have converted over 80 vessels for this method.

This loophole has allowed the beam trawl fleet to work in areas of softer ground than was previously possible with heaver ground gear, to the apparent detriment of fish stocks in the areas concerned. The shift to beam trawling using electrical pulses has resulted in almost all sole landings in the Netherlands coming from electric pulse trawls (ICES 2018). This lethargic response to fisheries-related issues is compounded by the intransigence of Member States that are more willing to maintain the status quo than introduce measures to ensure the long-term sustainability of stocks and the fishers who rely on them. The failure of management for Baltic stocks, with the resultant downward spiral for cod, sprat, and herring is illustrative of the reluctance of fisheries managers to heed scientific advice. There are many examples of this over the decades and in every region of Europe. No amount of

[36] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31998R0850. Accessed September 3, 2018.

gloss and fancy posters can hide the problems that need and deserve better attention from those charged with meeting the objectives of the CFP to maintain fish stocks and fisheries-related employment in European waters and coastal regions.

The introduction of regionalisation, and the prioritisation of the development of sea basin level multiannual plans of action (MPOAs) under the reformed CFP seeks to devolve fisheries management down to sea basin level, with advice provided by the ACs. Unfortunately, the combination of the aforementioned reluctance by Member States to grasp the sustainability nettle and advice from the ACs dominated by large-scale interests has meant that very little has changed in terms of a more positive and proactive approach to meeting the aims and aspirations of the CFP.

In economic terms, the European large-scale fleet is doing particularly well at the time of writing. Profit margins are up and increasing, due to the recovery of some stocks from previous overfishing and rising fish prices for consumers, leading to a largely financially secure position for this sub-sector. This is not the case for small-scale fisheries. For all the reasons given in this chapter, small-scale fisheries continue to struggle to survive in many areas, whether it be lack of fish in the Mediterranean or Baltic, the unfair allocation of quota in the UK, or just the general lack of recognition and reward by member states. In all of these cases, small-scale fleet numbers and income are still falling whilst the large-scale sector make record profits.

It is noteworthy that small-scale fisheries in many areas of the EU are struggling to survive even as a subsistence occupation. Whilst this sector is dismissed by some economists as their incomes do not show up well on a spreadsheet, the point that is often missed is that the income from fisheries may not be deemed to be 'profit' *per se*, but it does maintain families, livelihoods, and a way of life that has immense meaning for many coastal communities on the coastal fringes of Europe. In these peripheral regions, small-scale fishing continues to provide an important social and economic safety net. For reference and in comparative terms, using 2013 figures from STECF's annual report,[37] the average wage per full time equivalent [FTE], by definition including both crew wage and unpaid labour, was €23,000. Belgian (FTE) fishers earned the highest wages on average, €120,000, followed by the Danish fishers, €67,000. On the other hand, the Greek fishers received the lowest average wage at €8100, followed by Croatian fishers at €9600.

When analysed across fishing activities, the small-scale sector employed 50% of those employed in fisheries. Average wage per FTE in 2013 for the small-scale sector was estimated at €13,900. The same indicator for fishers operating in the large-scale sector was €27,900, and €29,400 for fishers in the deep-water fleet. However, fishers engaged in small-scale fisheries received high wages if they were employed in the Danish and French fleets.

In terms of social trends, the current structure looks equally bleak. The average age of a small-scale fisher is well over 50 years of age, and the boats they use are

[37] See: https://stecf.jrc.ec.europa.eu/documents/43805/1034590/2015-07_STECF+15-07++AER+2015_JRCxxx.pdf. Accessed September 3, 2018.

also ageing. It is becoming increasingly difficult to attract new and younger entrants into the small-scale fleet due to increasing costs to become established and the relative attractiveness of shore-based occupations that do not have the economic and personal risks associated with fishing, which remains the most dangerous occupation in the world. The consolidation of quota into fewer and fewer hands, and the fact that those hands increasingly belong to remote corporations, makes it increasingly difficult for young fishers to enter the fleet.

As stated previously, the survival of the small-scale fleet in Europe rests fundamentally on two things: the right to fish and access to fishery resources. For small-scale fisheries in the Baltic and Mediterranean, the absence of fish is the main threat to their continued existence. This is also the case in other regions due to multiple factors.

The UK's Seafish Industry Authority, in partnership with the Marine Stewardship Council (MSC), developed an initiative to use the MSC's three principles (sustainable fish stocks, minimising environmental impacts, and effective management) to assess the status of every inshore fishery in England in order to provide managers with a roadmap to sustainability.[38] Unfortunately, many of the fisheries assessed failed to meet the criteria, especially principle 3 (effective management), due to the fact that much of the fishing and therefore the impact on stocks occurs outside of the inshore area and is outside of the control of inshore fisheries managers and small-scale fishers themselves. What is clear across Europe is that the key requirements of fish and access to fish by small-scale fisheries are not being met and it seems increasingly unlikely that there will be any significant viable upturn in the immediate future unless policy-makers change tack by focusing on the needs of this sector more so than in the past.

It would, however, be unfair to blame all the ills of the small-scale fisheries sector on external actors. Fishing effort by the small-scale fleet has increased dramatically with the advent of modern technologies, as previously mentioned. Small-scale fishers are also sometimes their own worst enemies (the first author is a former small-scale fisher) in that they are by nature independent – some might say stubborn – politically unaware, anti-establishment (especially when it comes to engaging with administrative bodies), and struggle to generate sufficient resources to fund lobbying efforts at the main fora of decision-making. They also often do not recognise the need to be 'in the room' when negotiating their futures and have suffered accordingly.

This was precisely why LIFE was created: to provide representation, capacity building, and lobbying in support of the silent majority. How long it can survive without the direct financial support of small-scale fisheries remains to be seen, but to date it has been impossible to attract any direct support in this respect from its membership. This also raises questions about the willingness of those in the sector to engage in a concerted and collective way towards securing their own livelihoods and sustaining fisheries for future generations of small-scale fishers.

[38] http://www.seafish.org/industry-support/fishing/project-inshore. Accessed September 3, 2018.

### 2.4.1 What Is the Future for European Small-Scale Fisheries?

The ageing workforce, the increasing consolidation and privatisation of access rights to the resource, and the immensely variable and often declining stocks all conspire against the prospects of small-scale fisheries. Neither does the laissez faire, top-down "too little, too late" style of fisheries management underpinned by a clear lack of will from Member States to effectively monitor and manage European fish stocks. Additionally, for a fleet with very limited ability to move fishing grounds, the impact of climate change will have disproportionately negative impacts, as well as winners and – more likely – losers in the climate lottery for small-scale fisheries.

The Mediterranean and Baltic small-scale fisheries sectors are at particular risk due primarily to the continuing decline in the availability of resources, combined with the continuing failure of Member States in the region to act proactively in terms of recognising and rewarding the benefits of a thriving inshore sector. States have also failed to curtail the blatant abuse of regulations by members of the large-scale sector. Are current management measures too little, too late? Only time will tell.

It is often appropriate to end a chapter on a positive note, referring perhaps in this case to the resourcefulness of small-scale fishers, their strong spirit, and traditional resilience. All of these attributes do describe this sub-sector. Furthermore, there is an increasing demand for locally caught fresh fish with a proven provenance. However, these are overshadowed by the combination of all the threats outlined above, as well as the general failure of small-scale fisheries to take control of and responsibility for their own destiny by providing genuine support for those seeking to represent them. In conclusion, the future doesn't look bright for very many small-scale fisheries and the coastal communities they support.

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# Chapter 3
# Economic Decline, Fishing Bans, and Obstructive Politics: Is there a Future for Small-Scale Fisheries in Romania's Danube Delta?


**Dominic Teodorescu and Maura van den Kommer**

**Abstract** This chapter describes small-scale fisheries in Romania within their historical, economic, and political contexts. It focuses on small-scale fisheries in the Danube Delta, which was declared a UNESCO Biosphere Reserve in 1993. The chapter highlights that contemporary small-scale fisheries are small, with very few economic opportunities and low capital intensity, yet vital to the Danube Delta's remaining population. The condition of Romanian small-scale fisheries is the result of failing post-socialist economic and environmental policies and ignorance of the problems that fishers have to deal with. As a result of flawed policies and environmental decline, the Danube Delta biosphere reserve is poorly managed. Its implementation is characterised by a lack of interest in developing new economic opportunities for fishers and, more generally, underestimating the local importance of small-scale fisheries. To maintain small-scale fisheries in Romania, improved monitoring of fisheries data is needed as well as more economic opportunities.

**Keywords** Romania · Danube Delta · Small-scale fisheries · Post-socialism · Environmental governance

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## 3.1 Introduction

This chapter highlights the small-scale fisheries of Romania and the lives of the fishing families that depend on this particular sub-sector. It focuses on the Danube Delta region. Romania has an estimated population of 19.5 million people of diverse ethnic origin and a particularly tumultuous history, with its present borders dating back only to the end of WWII. As political transitions have had an important impact on the fisheries of the country, we pay them special attention. The Danube Delta, which has recently (1990) been declared a UNESCO biosphere reserve, is a prominent feature in the country's landscape and of great relevance to its fisheries.

The chapter outlines the characteristics of Romanian small-scale fisheries at the national level (Sect. 3.2). Then, we consider the general policy context of small-scale fisheries (Sect. 3.3). Sect. 3.4 focuses on the role of small-scale fisheries in the Danube Delta, thereby highlighting the consequences of the strict conservation regulations and the establishment of a biosphere reserve there. The last section discusses prospective future developments of small-scale fisheries.

First, however, a brief sketch is provided of Romanian post-WWII history and the effects it has had on the structure of the fisheries sector. In doing so, we must remember that although the country gained independence in 1859, its borders have changed repeatedly.[1] After World War II, Romania became a socialist republic and adopted a command economy. The Communist Party was put into power by the Soviet Union, which meant that the new communist elite was initially "pro-Moscow" and orientated towards internationalism. This changed dramatically with Ceaușescu's take-over in 1965. The country became increasingly autarkic and adopted a nationalist ideology. From then on, the Romanian coastal area was opened up for modernisation programmes and changed drastically in an effort for Romania to become economically self-sufficient. Tangible outcomes were newly built seaside resorts, factories and seaports and land reclamations for agriculture and fish polders. Meanwhile, this form of modernisation resulted in a massive loss to the natural environment (Van Assche et al. 2011a, b; Văidianu et al. 2015). The fisheries in this period changed dramatically due to the introduction of industrial trawlers and the creation of a distant water fleet.

After the overthrow of Ceaușescu's regime in 1989, Romania adopted a parliamentary democracy and implemented free market reforms. The country joined the European Union in 2007. The European Commission and international organisations

[1] Romania's connection to the Black Sea is a rather new one and was established in the decades following independence in 1859. Until its independence, the control over the actual Romanian territory was transient. All regional powers (Habsburg, Russian, and Ottoman Empires) conquered its territories at some time in history and subsequently tolerated the establishment of vassal states, called the Romanian lands (Țările române). The coastal area, Dobruja, was however characterised by an ethnically diverse population (with Romanians only accounting for 21% of the coastal population in 1877) and lacked cultural connections to the newly formed state. It required several treaties, wars and assimilation processes for Romania's present coastline to become an integral part of the country (Van Assche et al. 2011b; Boia 2015).

such as UNESCO persuaded the postsocialist governments to relax the relentless modernisation of the coast (Bănaru et al. 2015), which eventually led to the proclamation of the Delta Danube biosphere reserve and the adoption of Natura 2000. Meanwhile, the Common Fisheries Policy was introduced and the industrial fleet completely eliminated, resulting in a fishery sector dominated by small-scale fisheries. The following section discusses the implications this has had for small-scale fisheries.

## 3.2 Description of Contemporary Small-Scale Fisheries

Romania has a coastline of 225 kilometres and an exclusive economic zone (EEZ) of approximately 25,000 km$^2$. The fishing sector includes three sub-sectors: marine and inland fishing, and aquaculture. The Romanian government adopted the EU definition[2] of small-scale fisheries and as a result considers most of its maritime vessels to be part of the nation's small-scale fisheries[3] (MARD 2006). According to Radu et al. (2013), a majority (2968 persons) of the people active in the fishery sector is actually working in aquaculture. There seems to be a disagreement on the total number of marine fishers. Radu et al. (2013) and the EC (Carvalho et al. 2017) mention a total of 417 and 278 respectively, while Eurofish assumes a figure that is double the higher number (Table 3.1). The latter source might also include fishers from the Danube Delta that have permission to fish in the biosphere's coastal waters. As of 2017, the marine small-scale coastal fisheries sector is said to consist of 108 registered vessels and all of these fishers use only passive gear (EC 2016a). A further 17 vessels belong to the large-scale sector, which declined tremendously in size after 1989 but has gradually grown again after Romania joined the EU in 2007 (from 10 to 17 vessels). The number of small vessels is likely to be somewhat underestimated as subsistence fishers and those combining fishing with tourism activities may not have been included. It is certain, however, that the contemporary fishing fleet consists almost entirely of SFF (Radu et al. 2013; Zaharia et al. 2014) and is altogether quite small.

Nicolaev et al. (2015) describe the small-scale fisheries of the Black Sea as characterised by low capital intensity, a limited number of gears and short fishing trips close to the shore. The main fish species caught by small-scale fisheries in the marine areas are small pelagic species such as rapa whelk, sprat, turbot, pontic shad, whiting, anchovy, and horse mackerel (Năvodaru et al. 2001; NAFA 2015; Nicolaev et al. 2015). Depending on the type of fish that is targeted, fishers use different fishing gear. Small-scale fishers mostly use gill nets, but also apply handlines and pole and lines, longlines, beach seines, and pots and traps (Nicolaev et al. 2015; EC 2016b).

[2] EU defines all vessels shorter than 12 metres, with a crew of one or two and not using towed gear, to be part of the small-scale fisheries coastal flee.

[3] Given their small numbers, in some studies vessels that range from 12–40 meters are also included in small-scale fisheries.

**Table 3.1** Technical and demographic dimensions of small-scale fisheries in Romania

| Data refers to years: 2012/2015/2016/2017 | Total | Small-scale marine fisheries[1] |
|---|---|---|
| **Fleet**[a] | | |
| Number of vessels | 125 | 108 |
| Capacity (gross tonnage) | 1123 | 252 |
| **Number of fishers (Marine only)** | 825[c]<br>355[3] | 278[3] |
| % women | | 3%[f] |
| Authorised Danube Delta fishers | + 1700[2] | 1244[g] |
| Danube Delta fishers authorised to fish in the Black Sea[3] | | 399 |
| **Landings** | | |
| Quantity (ton) | 4843[d] | |
| Value (€) | 2.5 million (2014)[e] | 1.2 million (2014) |
| Most commonly used gear (top 3) (% in total) | Gill nets, handlines and polelines, longlines | Handlines and polelines (39%), longlines (19%), beach seines (15%) |
| **Most important species in landings:** | | |
| Top 3 by quantity (% in total) | Veined rapa whelk (*Rapana venosa*) (92%), European anchovy (*Engraulis encrasicolus)* (2%), European sprat (*Sprattus sprattus*) (2%)[a] | Veined rapa whelk (71%), European sprat (11%), Turbot (*Scophthalmus maximus)* (5%) |
| Top 3 by value (% in total) | Veined rapa whelk (57%) and turbot (22%)[3] | |

Source: [a,b]: EC (2017); [c]: Eurofish (2016); [d,e]: NAFA (2015); [f]: STECF (2015); [g]: Ministry of Water and Forest (2016)

[1]Fishing vessels less than 12 meters in length are considered small scale fisheries. The figures in this column pertain to marine coastal fishing and exclude the Danube delta: fishing activities which are categorised as fresh-water.

[2]NAFA (2012). In their most recent report (2012), they report that "over 1700 licensed fishers" are active in the Danube Delta's biosphere reserve.

[3]This group is not solely active in coastal waters and this might explain, partially, the discrepancy between the EC and Eurofish data on marine fishers

After 1989, when Romania's distant fleet was sold, fishing production fell enormously from 177,550 tons in 1990 to 8585 tons in 2015 (FAO 2018). Of the total fish capture in 2015 (excluding aquaculture) 4843 tons were captured in the coastal waters of the Black Sea (NAFA 2015). The remaining 3742 tons were captured in inland waters, mainly from the Danube River and Danube Delta. However, it must be noted that the quality of reporting on fish catches has been very poor since 1989. According to Bănaru et al. (2015), the actual fish catches are 1.3 times higher than FAO figures; Năvodaru and Staraş (1998) mention that in 1996 data quality research showed that actual fishing catches are two to four times higher than statistical data

show. This discrepancy may be due to illegal fishing activities (Năvodaru et al. 2001). Damian (2011) and Damian & Dumitrescu (2009), for example, suggest that in the Danube Delta the general lack of employment is one of the reasons why illegal fishing continues to be undertaken by the more than 1500 unemployed and impoverished fishers:

> Fishing [by locals] is still allowed, but only for self-consumption, though the surplus catch can be sold to tourist units [in the Danube Delta]. In order to make them turn to other occupations, the authorities have been considering the possibility to pay locals compensation wages. However, most fishers though jobless, refuse to attend the training courses offered by Tulcea County Labour Employment Agency, eventually losing their unemployment status and preferring to work illegally for various employers, or turn to poaching (p 16).

So, although most sources do suggest annual increases of fish production from 2010 onwards (NAFA 2015; Neculiță and Moga 2015), statistics are hard to interpret due to bad reporting mechanisms and a weak organisation of the fisheries sector (Bănaru et al. 2015). In any case, the fishing sector's contribution to the gross domestic product (GDP) is relatively small and, not surprisingly, creates very few employment opportunities (Eurofish 2016).

Romanian fish consumption has been recovering from a historical low of 1.39 kg per capita per year in 1993 to 6.2 kg in 2013 (FAO 2017). The European Commission suggests that Romania needs to aim for an increase in fish consumption up to 20 kg a year to stimulate the national sector. This can provide a hopeful perspective for fishers but also needs some nuance. Whereas 96% of the fish consumption was once provided from Romania's socialist fleet catches, nowadays most fish is imported and the share of domestic catches is under 20% (EC 2010; Neculiță and Moga 2015). The latter is obviously related to the disappearance of the distant fleet that fished far beyond Romania's territorial waters. Moreover, Romanians are, so to say, becoming more sophisticated in their demands and do not want to eat merely carp and anchovies, like they once did. Or, more accurately, in contrast to the harsh 1980s, (canned) fish is no longer the only important source of nutrition available in Romanian shops. The gap between consumption and domestic production levels is filled through a high level of imports. Yet, despite the low GDP value and small number of registered fishers, other sources claim that the Romanian fishery continues to play an important social role for coastal communities in the form of income and food supply (EC 2010) – or as Damian (2011) suggests, fishing continues to be a livelihood even in illegal ways.

The main fishing ports along the Romanian coast are Constanța, Mangalia, Sulina, and Sfântu Gheorghe (see Fig. 3.1). The Ministry of Agriculture and Rural Development (MARD) divides the coastline into a southern and a northern section. The southern section of the coast is 85 km long and stretches from Constanța to Vama Veche. In this area trawlers are legally allowed to operate. They are mainly based in the port of Mangalia-2 Mai (MADR n.d.; EC 2014). The southern part of the coastline is further characterised by a diversified economy, a booming tourist sector, two main seaports, and major infrastructural developments (Agenția pentru Dezvoltare Regională Sud Est 2010). The northern section of the coast stretches from the Ukrainian border to the municipal border of Constanța and has a length of

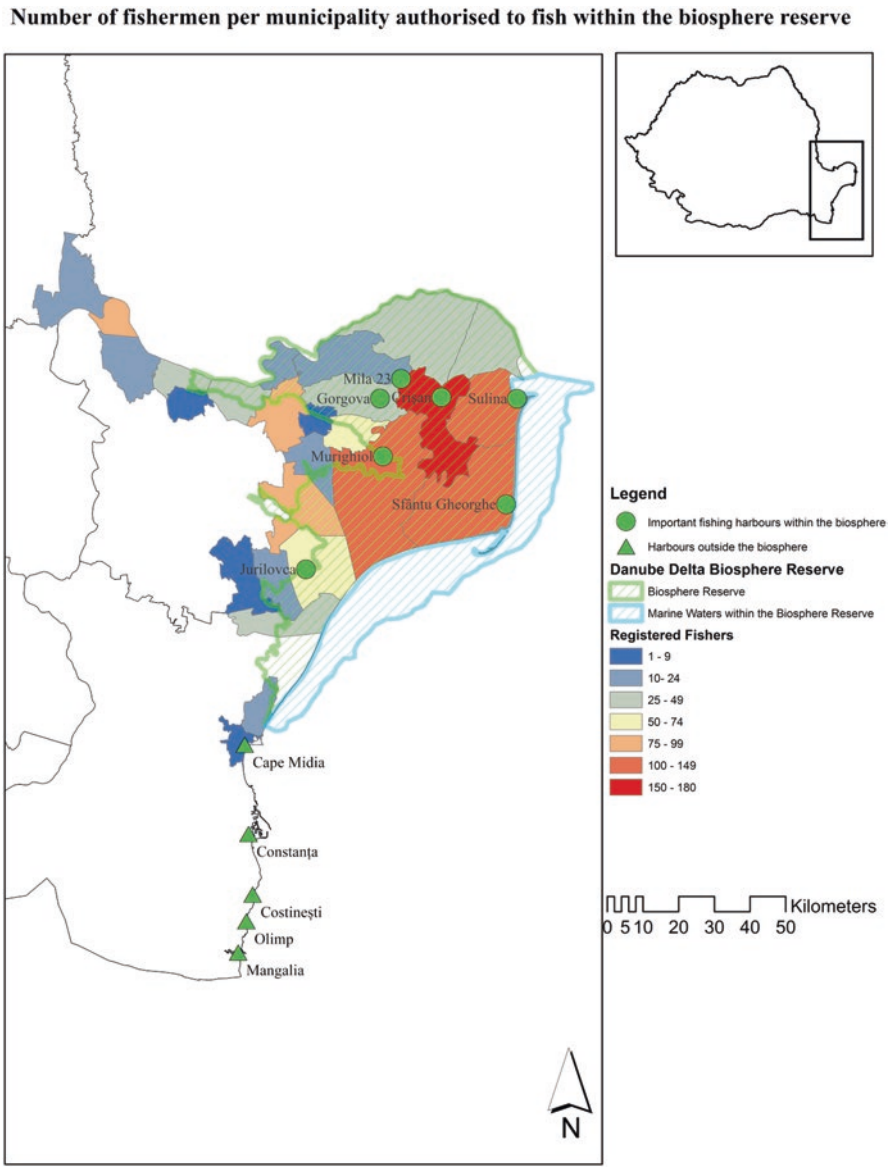


**Fig. 3.1** Number of fishers authorised to fish within the biosphere reserve (at municipal level). (Sources: Map by D. Teodorescu: DDBRA and Ministry of Agriculture and Waters)

158 km. This coastal region, which extends into the Black Sea up to a depth of 20 metres, is almost entirely included in the Danube Delta biosphere reserve, where fishing with trawlers is prohibited (Duzgunes and Erdogan 2008; Zaharia et al. 2012). The largest part of the northern region is remote and cannot be accessed by

car or train. Communities living here have been struggling much more with post-socialist pro-market reforms than their southern neighbours. Environmental protection in the northern region is also said to obstruct financial investments. Damian and Dumitrescu (2009) describe the main economic difficulties in the Delta and argue that potential developments and investments are costly and undergo great scrutiny. The implication of the differences between the two regions is that the position of small-scale fisheries varies from one part of the coast to the other. So, whereas small-scale fisheries are a rather marginal sector in the southern part of the Romanian littoral, they do continue playing a significant role in remote and deprived communities in the Danube Delta. By 2012, the 1700 licensed fishers were catching around half of the total catches in Romania (NAFA 2012) and also fishing for self-consumption or poaching persisted (Damian 2011). Danube Delta fishers are, however, not considered by EC data to be among marine fishers given that their fisheries are situated in brackish, fresh, and maritime waters.

## 3.3 The Policy Context of Small-Scale Fisheries

We have highlighted the actual state of Romania's small-scale fisheries and the historical background of the sub-sector in previous sections. This section focuses on the policy context within which small-scale fisheries operate. Special attention will be given to three emerging policy domains: economic restructuring, environmental planning, and EU policy implementation. We argue that a scrutiny of these areas will provide the reader with a better understanding of how postsocialist policies failed to address and even ignored the growing problems experienced by Romanian fishers. With the lessons from this section, we will subsequently highlight the situation of small-scale fisheries in the Danube Delta.

For economic restructuring policies, we need to go back to the first period after 1989 and spell out which major changes took place. This period, also referred to as the 'transition', meant a major metamorphosis of Romanian fisheries and included privatisation of state companies, the rapid dismantling of its oceanic fleet, closure of unprofitable canning factories, and the emergence of private sector fishing operations. The austerity measures that were implemented after 1989 resulted in failing supervision of fishing activities and rapid deterioration of vital infrastructure (ports, landing facilities, and shelters). The first democratically elected governments attempted to mitigate the harsh outcomes of economic policy through accelerated deregulation and privatisation. The thinking was that a cheap "give-away" privatisation of boats and equipment (the dismantling of the state-run enterprises Piscicola and Compania de Pescuit Oceanic) and a significant increase in licenses and allowable fishing time would provide a much needed boost to the sector (Năvodaru et al. 2001; Damian 2011). Consequently, the number of independent actors in the sector increased but production dropped dramatically - fish catches in Romania's coastal waters declined by more than 80% in the first postsocialist decade (Năvodaru et al. 2001). Furthermore, the increase in actors in the maritime sector led to a consider-

able increase in vessels below 12 m in length (Radu et al. 2013). By contrast, the large socialist-era vessels gradually deteriorated or ended up as scrap in Greece (Crangan 2017), is one of the journalists who has reported on the "dismantling" of the socialist-era *Oceanic Fleet*). The economic transition towards a market economy thus meant a move towards a poorly regulated, yet quickly growing small-scale fisheries sector.[4]

The rapid decline in fish production after 1989 can arguably be interpreted as a consequence of the economic crisis, low investments in the fisheries sector, and the rapid deterioration of fishing vessels and gear (MARD 2006; Bănaru et al. 2015). The implementation of the Danube Delta biosphere may have also played a role. For marine fisheries in this region, conservation efforts meant more concretely that fishers have been "*restricted to practising stationary fishing in the shallow coastal area, using fixed gears such as pound nets, gillnets, longlines and beach lines*" (Zaharia et al. 2014, 98).

The commercial sturgeon fishing ban was another drastic policy intervention impacting primarily on local fisheries in the Danube Delta. Caviar from wild sturgeon was vital to these communities. Before the ban, Romania ranked as the world's fifth largest exporter of caviar. From 1986 to 2006 Romania exported 26 tons of caviar (Kecse-Nagy 2011) (see Fig. 3.2). The sturgeon ban was introduced by the national government in 2006 for at least a ten-year period, as an answer to the rapid decline in migratory sturgeon species in Europe. This ban was prolonged for another five years in 2016. It was argued that sturgeon stocks had suffered badly from overfishing, as well as from the construction of dams, pollution, and habitat loss. The ban covers five sturgeon species - Russian sturgeon (*Acipenser gueldenstaedtii*), the sterlet (*Acipenser ruthenus*), the stellate sturgeon (*Acipenser stellatus*), the beluga (*Huso huso*), and the ship sturgeon (*Acipenser nudiventris*). Although this fishing ban is argued to be an important step towards the preservation of sturgeon, it is once again decreasing the possibilities of making a livelihood. As Damian (2011) suggests and recent findings from Ludwig et al. (2015) confirm, the ban does not, however, prevent poaching from taking place.

The last context that we want to highlight is the adoption of the EU's Common Fishery Policy (CFP). This occurred prior to the EU accession by means of the ten-year National Strategic Plan for Fishing and Aquaculture in Romania in 2006. This plan "*covers all the aspects of the [CFP] … and shows the priorities, objectives and public financial resources required for [its] implementation in Romania*" (Radu et al. 2013, 261). The most important steps taken at that time were to adopt and implement systems by which fishing vessels and aquaculture activities could be registered and monitored and setting up a satellite monitoring system for maritime

[4] Small-scale fisheries existed also in socialist times and even if independent forms of small-scale fisheries were at odds with socialist command purposes, not all forms of traditional and small-scale fishery vanished. Small-scale fisheries were complementary to industrial fishing but often not included in investment schemes. Still, small-scale fisheries were expected to contribute to nationally set quotas (Nicolaev et al. 2015) and small-scale fishers were employed by the state (Năvodaru et al. 2001). Industrial vessels caught an average of 70% of the total production and other types of fishery – among which were also small-scale fisheries – the remaining part (EC 2010).

**Fig. 3.2** Catching sturgeon in the past. (Photo credit: E. Acsente)

vessel activities. Furthermore, the Plan introduced a closed season (47 days in the Black Sea and 30 days in the Danube Delta) so that stocks could reproduce. In line with the EU's Common Fisheries Policy, in 2008 Romania also adopted laws on minimum sizes, by-catch procedures, and technical characteristics and usage of fishing gear. Also, a legal framework was set up to provide guidelines to ensure food safety. This was done for the entire food industry, so that it would meet EU food standards. The overall implementation and responsibility for fisheries policies now lies with the National Agency for Fisheries and Aquaculture (NAFA), a public administrative board established by the MARD. The European Maritime Fisheries Fund (EMFF) supported several projects, such as a training programme for 100 fishers in 2011 and another 150 in 2013 (ANPA 2014).

## 3.4 Small-Scale Fisheries in the Danube Delta

The Danube Delta is where Europe's second largest river, the Danube, enters the Black Sea. Just like many other wetlands and deltas in the world, the Danube Delta has been inhabited for centuries and fishing has been a vital activity for local communities (Van Assche et al. 2008; Van Assche et al. 2009) (see Fig. 3.3). The abundant supply of fish in this area is a result of a complex mix of ecosystems shaped by freshwater tributaries, brackish debouchments, and salty lakes. The fish fauna of the Danube Delta is therefore heavily influenced by both the influx of Danube freshwater fish species and diadromous Black Sea fish species. This section provides an analysis of recent changes and will show how economic restructuring, environmental planning, and, more recent structural development funds have impacted on the small-scale fisheries of the Danube Delta.

**Fig. 3.3** Fishing in the Danube Delta region. (Photo credit: E. Acsente)

### *3.4.1 Historical Background*

Romania's spatial planning policies have profoundly influenced the Delta since the late nineteenth century onwards. Aquatic fauna became threatened by a diligent socialist regime that aimed to modernise Romania by means of massive planning interventions, such as a reed industry and fish polders. Furthermore, the construction of dams and canalisations along the Danube during the socialist era reduced the flow of sediments into the delta considerably (Van Assche et al. 2011a; Bănăduc et al. 2016). As a result, the Delta is now subject to intense erosion (Bănăduc et al. 2016). This socialist planning-legacy was mostly part of the country's infamous *systematisation* programme.[5]

The socialist period thus left a major footprint on the Danube Delta area. However, with the transition to democracy and capitalism a window of opportunity also opened for the introduction of environmental discourses into post-socialist Romanian politics. The end of the last socialist exploitation programme from 1983 and the subsequent designation of the Danube Delta as a biosphere reserve (1990) and a UNESCO Humanity and the Biosphere heritage site (2016) were tangible outcomes of this process, as was the resolution to protect several indigenous species. These massive changes needed however to be implemented in harmony with

[5] The megalomaniac national programme, under the leadership of Ceaușescu, had as a result that in less than three decades of rule more was constructed than in the entire preceding history of the country (Boia 2012).

the livelihoods of the roughly 14,000 people who continued to reside in the area and, as mentioned earlier, remained heavily dependent on small-scale fisheries (Damian and Dumitrescu 2009; Damian 2011). Especially the municipalities Crișan, Murighiol, Sfântu Gheorghe, and Sulina still house large numbers of fishers with, respectively, 180, 139, 119, and 100 registered fishers by the year 2016 (Ministry of Waters and Forest) (see Fig. 3.1). Therefore, the arduous task of the postsocialist regime was to find a balance through which the inhabitants could use natural resources in a sustainable way.

The Danube Delta Biosphere Reserve Administration (DDBRA) was established in 1993 in order to conserve and enhance the reserve, manage the activities in the area, and ensure the sustainable use of the area by inhabitants (Năvodaru et al. 2001; Van Assche et al. 2011a). Furthermore, the engineering-oriented Danube Delta National Institute (DDNI) from Tulcea was turned into the DDBRA's research and consulting institute. It had, *inter alia*, to study and assess maximum sustainable fish quotas and relevant socioeconomic developments (later in this section we will assess the DDNI's contribution to socioeconomic research). The traditional Humanity and Biosphere zoning approach was adopted by the DDBRA, and, consequently, the new reserve was divided into two parts: strictly protected areas, or ecological core areas, and buffer areas (Van Assche et al. 2011a). A total of twenty sites, which is equal to almost 9% of the total biosphere surface, have been labelled as strictly protected core areas. This means that entry for the public is forbidden and no activities are allowed. These restrictions mainly impact fisheries from the villages of Sfântu Gheorghe and Jurilovca. Secondly, the buffer areas are split up into economic zones and ecological restoration areas. In the former, fishing and agricultural activities are encouraged. In the latter, such activities are discouraged. Most remaining rivers and nearly the entire coastline of the biosphere reserve are declared economic zones (about 85% of the DDBRA's waters) and thus permit economic activities. Only fishers from the villages of Gorgova, Mila 23, and Crișan have experienced a decrease in the size of their fishing grounds due to the newly declared restoration areas.

The new biosphere status requires a new approach from political actors. Emphasis is laid on increased participation of residents, transparency of proceedings and collaboration with NGOs. These bottom-up reforms were, from an institutional perspective, presumably the hardest and most awkward change after four decades of socialist top-down planning (Van Assche et al. 2011a). Also, DDBRA deployed people in local fish centres to help ensure that fish quotas were respected. Probably the most dramatic impact for local fishers came from the privatisation of the socialist-era production cooperatives in 2000 (Van Assche et al. 2011b) and the earlier mentioned commercial sturgeon-fishing ban in 2006 (Caviar Emptor 2006).

The fisheries along the Danube Delta coastline and its freshwaters are regulated by a concession system, which has been in place since 2000. Before 2000, the fisheries were conducted by a system of production cooperatives. Production cooperatives in fisheries date back to socialist times and were used to take care of vital activities such as investments, maintenance of equipment, and salaries. It is, however, important to mention that most cooperatives went bankrupt in 1990 and that no

common investments were made in the years that followed. The only component that remained intact was the relative free access to the fishing grounds for local fishers. It took another decade to formulate and implement a new concession system and regulate actors in the fishing grounds. The regulatory task of the DDBRA in the new concession system lies in registering and publishing yearly lists of commercial fishers and companies that are allowed to fish in specific areas and to monitor their actions in the biosphere reserve (with the last update being made in 2016). Moreover, rules specify the type of fishing that is allowed per area. For coastal areas this means that in inshore waters (up to 20 m in depth) only fishing with passive gear is allowed, while for fishers the new concession system meant that profits are now based on their own efforts and investments are no longer made collectively. The Danube Delta biosphere is the only territorial area where the role of NAFA is subservient to DDBRA. The remainder of this section will highlight the impacts of the post-socialist governance on the Delta's small-scale fisheries.

### *3.4.2 The Present State of the Delta's Small-Scale Fisheries*

Currently, small-scale fisheries are practiced exclusively in the Romanian territorial waters of the Black Sea and the EEZ, but some fishers in the Danube Delta regularly combine these activities with fishing in freshwater. This practice finds support in the circumstance that close to a quarter of all species in the Danube Delta have a presence in both the Black Sea and the fresh waters of the Delta (Bănăduc et al. 2016). Along the Danube Delta's coastline, marine small-scale fisheries activities are concentrated in the harbours of Sulina, Sfântu Gheorghe, and Jurilovca.

Remote local communities in particular still rely heavily on small-scale fisheries' activities. According to DDBRA (2011) this is especially true for the villages of Crișan, Mila 23, Gorgova, Jurilovca, and Sfântu Gheorghe (see Fig. 3.1). Most of these fishing villages are not connected to the national road network and can only be reached by boat. According to NAFA's most recent report on national fishing activities (from 2012), there were over 1700 fishers active at that time in Delta. Of these, the Romanian Ministry of Water and Forests reports that 1244 are self-employed (DDBRA 2012, 2016) (see Fig. 3.1), while the rest fish for one of the 33 registered companies (DDBRA 2013). Of these companies, two also have permission to fish in the Black Sea. Of the self-employed fishers, 381 were permitted to fish in the Black Sea (see Fig. 3.4). As of 2011, fishing was no longer the main occupation in the Delta (15.3% of the total labour force in the biosphere reserve being active in fisheries according to DDBRA). However, the contribution to national fish production remained significant, providing approximately 50% of the country's wild catches in 2012 (NAFA 2012). Despite this, the Delta region suffers from unemployment (18.4% in 2010) and an aging population (cf. Van Assche et al. 2008, 2009, 2011b; Damian 2011; Văidianu et al. 2015).

Based on the figures above, one can thus argue that the transition to free market rule and a new governance model has had dramatic impacts on local small-scale

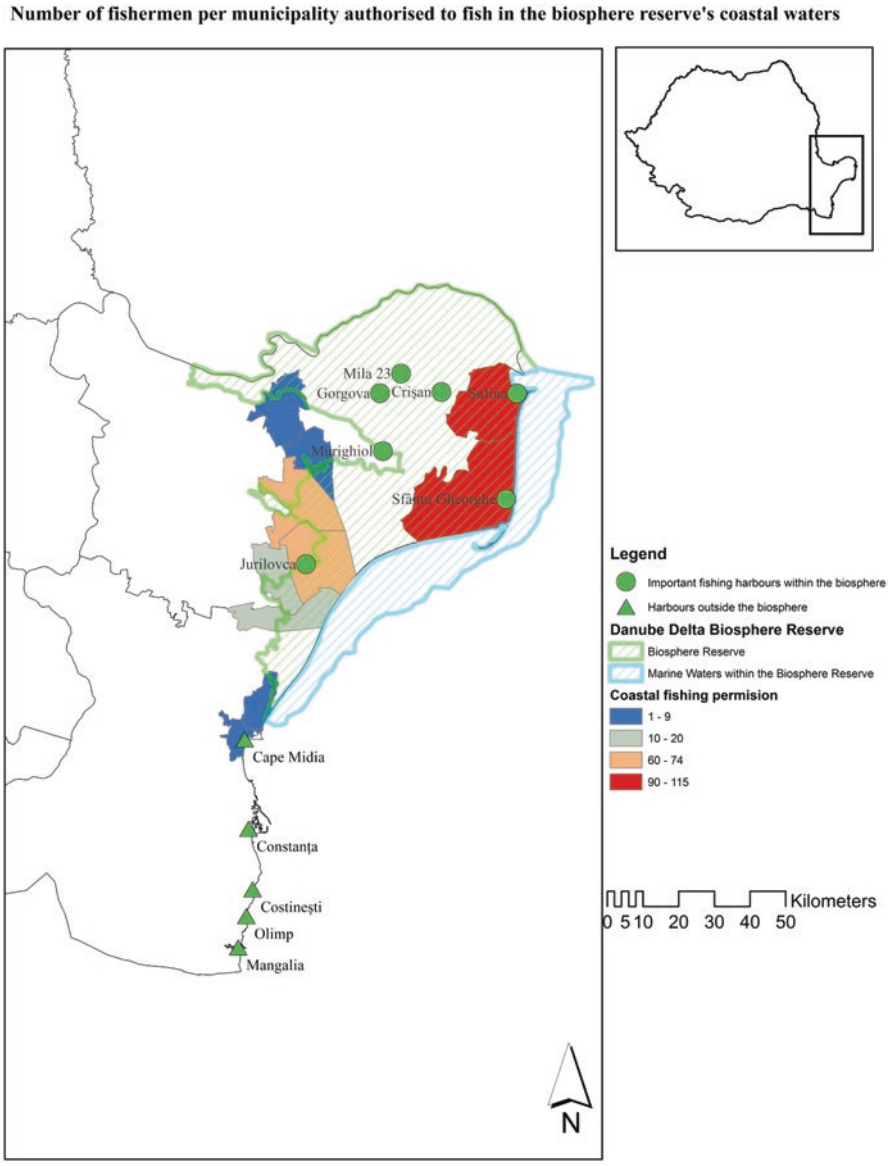


**Fig. 3.4** Number of fishermen authorised to fish in the biosphere reserve's coastal waters (at municipal level). (Sources: Map made by D. Teodorescu: DDBRA and Ministry of Agriculture and Waters)

fisheries (Văidianu et al. 2015). For small fishing communities, such as the ones in Sfântu Gheorghe or Sulina, the ban on sturgeon fishing, for example, implied that their most important source of income disappeared and that new employment opportunities had to be sought (Box 3.1). Tapping into new sources was partially

**Box 3.1: Interview with Eduard Acsente, Fisherman from Sfântu Gheorghe on the Role of Small-Scale Fishing**

***Eduard Acsente is a 46-year old fisherman. He is married and father of one daughter and, at present, is mainly working as tourist guide in the biosphere reserve.***

The reality in the Danube Delta is hard. In our village, we once had over 700 fishers. So, imagine, during communist times we had about 2800 residents and of these almost all adults worked in fisheries. But those times are long gone. Now, I think that fishing only contributes to 1/3 of the total revenues of Sf. Gheorghe's local economy. The rest is earned mainly from tourism activities. And often fishing is connected to tourism. By law you're allowed to keep 10% of all catches for personal use. Often, this is enough to cook traditional fish stews and other meals for tourists that are accommodated in our own homes. Still, this new influx of tourists is insufficiently promoted by the national government and more precisely by the Ministry of Development and Tourism. So, to come back to your question, fishery is not as important as it used to be for Sf. Gheorghe and you can also tell this by the dramatic drop in our population. From 2800 souls, there are only 600 left.

In previous times, we were thriving well on sturgeon fishing. These fish are huge and the profits made out them are astonishing. The biggest sturgeon I've ever seen weighed 675 kg and contained 145 kg of caviar. You can imagine what a fortune was made out of them. A huge sturgeon could earn you US$20,000 or more. These were good times and you have to understand that we, the fishers, love the sturgeon. It's an amazing fish and gets all my respect. But since the Romanian and Yugoslavian state built a huge dam in the Danube [completed in 1972], the sturgeon fishery has declined.

Now there are many new rules and regulations. You have to understand that the Danube Delta is governed from the tenth floor in Bucharest by people that have no real affinity with this region. They want to keep us quiet while they enrich themselves with poaching and available EU funds. Just think about the bureaucratic hell a fisher endures when he's out fishing. The fisher is controlled by 12 different departments in the Danube. The ANPA, DDBRA, Danube Delta Police, local police, customs, tax police, and I am not even mentioning them all now. So, these departments have their own policemen and all are patrolling through the economic zone in the reserve. Can you imagine the stress that this brings about? Just think of a fisher coming home with 30 kg, he's risking being stopped several times by several policemen and every time he needs to show his ID. So, sometimes a journey of 30 min can last 2 h because of these bullying practices. And well, you know already what happened to the 30 kg. Every inspector that stops him expects a fish from him and he arrives at the selling point with only 20 kg left. Oh, and not to mention the hell you're experiencing when you have to use someone else's boat while your own boat is being fixed. No, the Delta is very poorly governed and its governors are definitely not in favour of us. We always say here that we're the first ones in Romania to see the sunrise but the last to hear the truth.

Still I can't and don't want to be pessimistic because the Delta is full of miracles and one of the miracles are the people that have inhabited it for centuries.

thwarted due to DDBRA's opaque privatisation process of former production cooperatives. The latter is said to have resulted in preferential treatment for a limited group of concessionaires. DDBRA's market access concessions are blamed for ruling out local fishers, while forcing them to work for one of the privileged new concessionaires. Also, fishers were prevented from unionising (Van Assche et al. 2011b). Damian (2011) mentions in relation to the privatisation that fishers' living standards deteriorated faster than those of other families in the Delta.

Although the establishment of the Danube biosphere reserve was a major step towards the protection of the unique environment in the Delta, the implementation was carried out with insufficient new employment opportunities for fishers. The only sector that appears to provide some new related opportunities is aquaculture, but it is unlikely that this sector will provide many new jobs to the Delta's fishermen (Neculiță and Moga 2015). However, some alternative employment appears to have come about, primarily stimulated by economic conversion policies. The model village in this regard is Sfântu Gheorghe, a harbour village in the Delta. Ivan's (2012) study gives the impression that the postsocialist impoverishment in Sfântu Gheorghe did not merely lead to social issues but also to the empowerment of local fishers who succeeded in self-managing activities around the increasing number of tourists. Another study, from Năvodaru et al. (2013), describes an attempt to convince local fishers to switch from the continuation of illegal sturgeon fishing to harvesting sea buckthorn.[6]

However, it should be remembered that economic conversion strategies could not prevent many unemployed fishers ending up on welfare benefits, taking part in poaching activities or simply leaving the Delta (e.g. Damian and Dumitrescu 2009; Damian 2011). Arguably, the management of ecological and economic activities are proven to be beyond the capacities of the DDBRA. Already within a couple of years after the establishment of the biosphere, international moneylenders, such as the World Bank and European Bank of Regional Development, threatened to cease funding if the exclusion of local communities from policy making was not addressed (Van Assche et al. 2011b). Nevertheless, a green future for the Delta continues to be supported by both international and Romanian actors. Van Assche et al. (2011a) might therefore be accurate in their analysis when they state that more than two decades of tolerated nepotism, corruption, and expropriation of former fishing grounds have, above all, affected the locals aversely and reduced them 'to workers for concessionaires' (p. 13) or futureless subjects.

The low absorption rates of EU funding by local authorities and the strong tendency to (mis)use public and EU funds is discussed by several authors (see Ion 2014) on public and EU funding for urban development or on lack of expertise among local authorities) (Cace et al. 2011). The DDBRA is no exception to the rule and has failed to make use of more funds from the total of €224million[7] allotted to

[6] Box 3.1 of this chapter provides a different take on recent post-socialist changes.

[7] According to the EC's factsheet (2016) on Romanian fisheries only 8% of the roughly €18 million reserved for fishery modernisation has been used and another 20% of the Community-led local development strategies funds that account for another €45 million.

the Romanian fisheries by the Operational Programme (formed by EU and national funds). However, funds that have been used led in several instances to, what Romanian mass-media calls, "major scandals". Examples of scandals are the construction of authentic log cabins and a shopping street near Sulina, worth €1.5 million, and the realisation of an open-air ethnographic museum near Tulcea where traditional village life from the Delta had to be showcased. The first project was held up by a European Court's decision that considered the construction illegal. The latter is a park ignored by tourists and therefore not a new source of employment. The list of such financial debacles is longer, but suffice it to say that funds are often underused, while the funds that are used are not directed at providing alternative sources of income (Romania's TV channel Pro TV dedicated in the TV show *România, te iubesc!* a series of reports, under the name *Problems in Paradise*, to this particular matter) (PROTV n.d.).

The marginal position of locals in the political arena is also addressed in a study by Berceanu and Sandu (2015). They highlight the absence of civic movements that pursue new livelihood projects. Labour unions are powerless and only some newly established NGOs are taking up the role to reflect critically upon the commodification of production cooperatives and DDBRA's shady activities, and to voice the local demands among politicians. Fisheries Local Action Groups (FLAG) and important NGOs have, however, been set up with EU funding and focus, among others, on sustainable development and modernisation of commercial fisheries in the biosphere area and the formulation of new and realistic livelihood strategies for the region's fisheries (in order to prevent new disappointments). On paper, the list of stakeholders and their described key-aims seem hopeful, especially because DDBRA and all the main NGOs have common visions. Concrete proposals are the modernisation of distribution points and processing facilities, new professional retraining centres and the promotion of local values. These improvements seem also in line with the CFP aims and the projects that the EMFF seeks to support. Nevertheless, when one considers policy outcomes, some authors (Berceanu and Sandu 2015; Van Assche et al. 2011a) conclude that locals continue to be side-lined, the NGOs' 'civil society' role is still minor, and tangible outcomes are insufficient.

Especially in the case of the Danube Delta, it is believed participatory planning can enhance the situation by providing both employment possibilities for small-scale fishers and safeguarding essential local knowledge (Van Assche et al. 2011a, b; Berceanu and Sandu 2015). They, the fishers, can for example be consulted to obtain information about breeding sites and seasons of the sturgeon and subsequently made responsible for stocking programmes (WWF 2016). By doing so, a new way of creating livelihoods is achieved by linking the existence of fish to new employment opportunities from e.g. the Ministry of Environment and Climate Change or from increasing fish tourism in the area. The aims of the so-called conversion policy are multiple. It helps to avoid the destruction of natural habitats (in this specific case the extinction of sturgeon), enhance the livelihoods of local communities (Otterstad et al. 2011), and can legitimise the role of the DDBRA in the area.

## 3.5 Conclusion: Looking to the Future

The postsocialist period brought about many challenges for Romanian small-scale fisheries. The dominant role for the central government was replaced by market mechanisms and deregulation. The once state-employed fishers were also confronted with new realities that came into existence during the transition. Many became self-employed, had to get a hold of fishing licenses, and also became responsible for financing individual investments. The outcome is a greatly reduced sector harvesting only a small fraction of what it once did. The distant fleet disappeared and due to larger economic changes, Romanian fishermen were forced to turn to new forms of fishery. The Danube Delta case points out how the absence of an effective state hampered fishing activities in postsocialist years. Privatised forms of small-scale fisheries proved incapable of making investments in modern equipment. Consequently, reduced fishing areas within a strictly regulated biosphere reserve and obsolete fishing gear are argued to be the main reasons for limited livelihoods in the Danube Delta.

Even though small-scale fisheries in Romania continue to play an important role, they are poorly understood and analysed. There are limited statistics available and weak sector policies and institutions. We have noted that the small-scale fisheries sector is concentrated in the northern section of the coast, and experiences many challenges. These challenges are partially related to the incapacity of DDBRA to succeed in both protecting nature and securing enough livelihood sources for its residents. Fishers that continue fishing in the biosphere reserve areas do so under strict environmental regulations, but are rarely offered an alternative employment opportunity (see Fig. 3.5). Tensions are exacerbated by problems of unemployment, bad infrastructure, demographic decline, and marginal representation in politics. The sturgeon ban in 2006 was arguably another major blow for many fishers in the Delta. Moreover, the bad management of the Danube Delta and stories of corruption scandals do not make it easier to implement policies and strategies or to utilise available funds to their fullest potential. Hence, a balance between nature conservation and sustainable use of fish stocks and more economic opportunities for local small-scale fisheries is still, in the short run, inconceivable.

It is not entirely clear what the future of small-scale fisheries in the Delta will look like and for now we can only make guesses. Given the importance of the Danube Reserve as a conservation area for a region that is wider than the Romanian borders, it is not very likely that environmental regulations of the Danube Reserve, such as the sturgeon ban and policies on restricted fishing areas, will be lifted in the near future. This implies that small-scale fishers in the region will need to adapt themselves permanently to a restrictive regulatory situation, in which civic action and improved performance of state agencies may result in new opportunities for employment and income.

**Fig. 3.5** Fishers returning from a fishing expedition in the Delta. (Photo credit: E. Acsente)

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# Chapter 4
# Characteristics of the Bulgarian Small-Scale Fisheries


**Violin St. Raykov**

**Abstract** Small-scale fisheries in Bulgaria emerged largely after 1990, when the industrial fisheries of the country went into decline. Small-scale fisheries now constitute the bulk of the Bulgarian fisheries sector and include the majority of its fishing population. They are concentrated in a limited number of landing centers and fishing is carried out in the inshore zone. The state of fish stocks in the Black Sea is poor, which is possibly a reason for the low incomes and declining interest of young people in joining these fisheries. Zoning of no-take areas is the policy measure affecting small-scale fishers most. Being badly organised, small-scale fishers generally have little influence on fisheries policy. Capacity building and information campaigns to advertise and to encourage ecologically-friendly and socio-economic sustainable small-scale fisheries in Bulgaria are argued as being a must for this sector.

**Keywords** Bulgaria · Black Sea · Small-scale fisheries · Management · Common Fisheries Policy

## 4.1 Introduction

At present, small-scale fishers account for the majority of Bulgaria's fishing population. This has not always been the case. Until 1990, government efforts focused mainly on large-scale, commercial fisheries. It is only after this date that the number of small-scale fishing vessels increased rapidly, now making up the bulk of the fleet. Along with the increasing international attention on small-scale fisheries and on the Black Sea (FAO 2015, 2016), national interest has grown. Thus "*Bulgaria [is] inter-*

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*ested in the protection of resources and in the preservation of the customs of fishers' communities and in their social and economic development for the stabilisation of the coastal zone*" (FAO 2015, 108).

This chapter reviews the position of small-scale fisheries in Bulgaria, making use of relatively scarce data resources. The following section provides an overview of the fisheries sector in general terms. Attention then shifts to small-scale fisheries and their socio-economic context. The institutional parameters of small-scale fishing and its policy context are discussed next. The final section considers the future of small-scale fisheries in Bulgaria.

## 4.2 Marine Fisheries in Bulgaria

The term "small-scale fisheries" is not mentioned in the Fisheries and Aquaculture Act (2001) of Bulgaria, nor are these fisheries defined. Small-scale fisheries are recognised in Regulation No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund (EMFF, art 3), and defined as "*fishing carried out by fishing vessels of an overall length of less than 12 meters and not using towed fishing gear as listed in* Table 4.3 *of Annex I to Commission Regulation (EC) No 26/2004*". It is this definition that will be used as reference point in this chapter.

Bulgarian marine fisheries take place exclusively in the Black Sea (Ivanov and Beverton 1985), General Fisheries Commission for the Mediterranean (GFCM) Fishing Sub-area 37.4 (Division 37.4.2), and Geographical Sub-Area 29. Fishing opportunities are limited by the specific characteristics of the Black Sea, so that the exploitation of fish resources is concentrated on the shelf area (depths below 100–110 m are anoxic). The main fishing grounds are coastal (up to 30–40 m depth) and offshore (up to 100 m depths), and located in territorial waters (<12 NM). At the end of the 1980s, experts agreed that the fisheries were on the brink of collapse due to "*the combined effect of successive overexploitation of fish stocks, increasing pollution and eutrophication, population outbursts of alien planktonic species and strong decadal- scale climate fluctuations*" (Keskin et al. 2017, 7). With the demise of industrial fisheries that took place in the late twentieth century, it is now small-scale fisheries that predominate. In the 1970s, approximately 80% of marine catches came from the industrial fisheries, and the remainder came from the artisanal sector, which used mainly passive gears (Kumantsov and Raykov 2012). Nowadays, the small-scale sector represents 96% of the fishing fleet in term of vessel numbers, and is responsible for landing around 57% of the Black Sea catch (Radu et al. 2010).

Bulgaria has a coastline that is 378 km in length and has land frontiers with Turkey, Greece, FYR of Macedonia, Serbia and Romania. The Bulgarian fishing fleet operates exclusively in the Black Sea, and 95% of Bulgarian vessels are <12 m length (Black Sea Commission 2008). The average LOA of the Bulgarian fleet is 6.93 m (GFCM 2018). The species composition of landings during the period

2001–2011 includes 36 species of fish, molluscs and crustaceans (Raykov and Triantafillidys 2015). Fishers take part in the fisheries on a full-time or a part-time basis. In the latter case, they combine fishing with other occupations. The largest number of fishers lives in the areas of Balchik, Kavarna, Varna, Biala, Nessebar, Pomorie, Burgas, Sozopol, Primorsko, Kiten, Carevo, Ahtopol (see Fig. 4.1).

Information about the fleet operating in Bulgarian Black Sea area is recorded in a Fishing Vessel Register (FVR), maintained by National Agency of Fisheries and Aquaculture (NAFA). No demographic data of the people engaged in fishing are, alas, available, i.e. their age, education level, sex, family status etc. Table 4.1 provides summary characteristics of the fishing sector.

In Bulgaria, according to the latest available data approximately 12,260 persons are employed in fisheries (Popescu 2011). This figure includes processors, but not traders. Employment of women in fisheries remains rather low at just 16%. As in the rest of Europe, fishing is predominantly a male occupation (EU 2014). The large majority of fishers are men and only 1% of the fishing permits are issued to women. However, women dominate heavily in the processing industry, comprising 88% of the workforce (European MSP Platform 2018). Young people generally show little interest in joining the fisheries, so that the average age of fishers is relatively high.

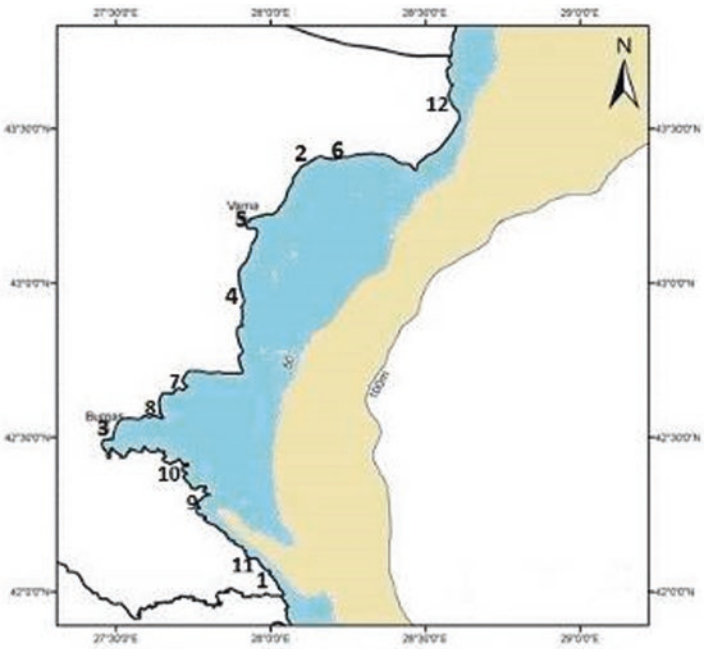


**Fig. 4.1** Fishing stations and total fishery activity in the Bulgarian sector. (FAO 2013)

**Table 4.1** Characteristic of Bulgarian fishing fleet, gears used and landings (STECF 2017)

| Data refers to: 2016 | Total (all fisheries) | Small-scale fisheries[1] |
|---|---|---|
| Fleet | | |
| Number of vessels | 1910 | 1815 |
| Capacity (GT) | 6176 | 2954 |
| Capacity (kW) | 55,651 | 38,127 |
| Number of fishers | 12,260 | 2767 |
| % women | 16 | n.a. |
| Average age of fishers | n.a. | n.a. |
| Landings | | n.a. |
| Quantity (ton) | 8560, 989 t | n.a. |
| Value (currency) | n.a. | n.a. |
| Most common gear used (top 3) (% in total) | Towed gears (59%), gill nets (24%), traps (10%), | Hook and lines (55%) Gill nets (35%), traps (10%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | *Rapa whelk (Rapana venosa)* (25%), sprat (*Sprattus sprattus*) (23%), Red mullet (*Mullus barbatus*)(14%) | Gobies (22%), Turbot (*Scophthalmus maximus*) (16%), Scad (*Trachurus mediterraneus*) (10%) |
| Top 3 in value (% in total) | *Sea snail (Rapana venosa)* (31%), Turbot (*Scophthalmus maximus*) (33%), Sprat (*Sprattus sprattus*) (22%) | Turbot (*Scophthalmus maximus*) (25%), Gobies (18%), Scad (*Trachurus mediterraneus*) (12%) |

A caveat on the figures regarding the number of fishing vessels is in order. Most of the owners of small-scale vessels keep them on the fishing register but do not use them even part-time. The reasons for this are most probably that once removed from the register, the owners would never have the chance for a second inclusion of their vessels. Thus, they will lose their licences, so they prefer to 'freeze' their activities but not lose the rights and to keep the vessels on the register. During 2013, NAFA took effective administrative measures against the non-active fishing vessels. As a result of these measures, a substantial number, total of 492 non-active fishing vessels with overall length up to 12 m, has been taken off the register of the fishing vessels.

Although no clear figures are available on the income of small-scale fishers, impressions are that these are generally low. However, the estimates that have been made of the profitability (return on investment) of small-scale fisheries, distinguishing between smaller boats (< 6 m) and somewhat larger ones (6-12 m) suggest that both segments are generally profitable (NAFA 2013), (see Table 4.2).

**Table 4.2** Average return on investment (ROI) (NAFA 2013)

| | *Fleet segment* | *Fleet segment* |
|---|---|---|
| *Values for 2013 year (€'000)* | *0 to 6 m* | *6 to 12 m* |
| Income from landings + other income | 227.5 | 1099.24 |
| Crew costs + unpaid labour costs + fuel costs + repair & maintenance costs + other variable costs + non variable costs | 161.87 | 618.41 |
| Net profit | 65.62 | 480.84 |
| Fleet capital asset value (vessel replacement value + estimated value of fishing rights) | 994.98 | 3689.50 |
| **ROI** | **6.6%** | **13.03%** |

**Table 4.3** State of fish stocks in Bulgarian marine area (GFCM 2018)

| Species/Stock | Ref. year | Stock status |
|---|---|---|
| *Sprattus sprattus* | 2016 | In sustainable exploitation |
| *Psetta maxima* | 2016 | Overexploited |
| *Engraulis encrasicolus* | 2016 | Overexploited |
| *Trachurus mediterraneus* | 2016 | Overexploited |
| *Mullus barbatus* | 2016 | Overexploited |
| *Merlangius merlangius* | 2016 | Overexploited |
| *Squalus acanthias* | 2016 | Depleted |
| *Rapana venosa* | 2016 | Sustainably exploited |

The state of fish stocks is apparently low (Raykov 2006). It seems (see Table 4.3, GFCM 2018) that only sprat (*Sprattus sprattus*) and Rapa whelk (*Rapana venosa*) stocks are sustainably exploited (FAO 2016), since all others are considered to be in a state of overexploitation. Catch rates generally seem to be declining (FAO 2016; Raykov and Duzgunes 2017, GFCM 2018).

It is the common opinion of fishers that the fish stocks are shrinking for various reasons: water pollution, insufficient regulation and control of fishing practices and of stocks, lack of care for the preservation of the biodiversity in the Black sea. There is uniform agreement among stakeholders that some species need to be excluded from fishing.

## 4.3 Problems Facing Small-Scale Fisheries

Small-scale fishers in Bulgarian waters are strongly affected by adverse weather conditions and a lack of sheltered areas. Other problems of small-scale fisheries are the ageing fishing fleet and increased fuel costs, risks of accidents at sea, inadequate working conditions, ineffective marketing and poor promotion of fishery products. In addition, small-scale fishers are poorly organised.

## 4.4 Socio-Economic Context

Besides small-scale fisheries, the Bulgarian fishing sector includes a limited number of large-scale vessels. These vessels often operate in the 3-mile zone and thus interact with small- scale fisheries. Small-scale fishers blame those beam trawl fishers for habitat destruction and reducing the fish species diversity and low abundance of coastal ecosystems (pers. comm.). Implementation of Marine Protected Areas (MPA) in coastal areas has appeared as a major issue for fishing fleets operating with towed gears such as beam trawls targeting sea snail mainly. Furthermore, there are no management plans for MPAs and fishing free zones are not clearly established yet. Small-scale fisheries in the city and resort areas have been affected negatively, for example, fishing stations and passive gears (i.e. uncovered pound nets) have been moved far from tourist attractions near the coast, without considering the suitability (i.e. sheltered coast, migration routes, spawning and nursery grounds, etc.) of the already established fishing points and passive gears that have been used for years.

## 4.5 Organisational Context of Small-Scale Fisheries

Before the 1990s, all licensed fishing vessels were state property and belonged to the "Black Sea Fisheries Ltd.". Two years after the liquidation of state fishing enterprises (in 2000 and 2002), two main fishery associations were established: "Black Sea Sunrise" and "BG Fish". About 80% of all registered vessels are part of these associations. The major role of these fishery associations is to familiarise association members with the requirements of the Internal Market and the Common Fisheries Policy of the European Union in order to successfully resist the competitive pressure after the date of accession. They also support the establishment of a functioning market infrastructure that contributes to the transparency of fishing and fish markets and reduces the possibility of unfair competition in the sector. In addition, these associations promote an increase in fishing and fishery production through joint action with public authorities to find external markets and negotiate cheaper export and import rates. They also take measures to stimulate the development and modernisation of fish processing and processing bases in the country and attract foreign investments in the sector. Moreover, they protect the interests of association members in the allocation and utilisation of Structural Funds in the field of fisheries from the European Union and take measures for the effective participation of Bulgaria in international fisheries organisations and conventions in order to obtain catch quotas and other fishing rights as well as exploring the possibility of concluding new bilateral fisheries agreements. As part of this, these associations establish contacts and cooperation with international fisheries associations in order to strengthen Bulgaria's international prestige in the field of fisheries and to increase

the number of licensed Bulgarian fish processing plants for the export of fish and fishery products to the European Union.

Both organisations however, prefer to deal with large companies, as the membership fee is very high (especially in Bulgaria) and small-scale fishers are unable to pay such fees. Most of these prefer to work independently and not get involved in such organisations, leaving small-scale fisheries unrepresented before national or EU institutions. The European Commission has made attempts to provide small-scale fishers access to funds; the problem, however, is that these fishers lack appropriate institutional facilities.

In Bulgaria, there are nine Fisheries Local Action Groups (FLAG) registered. In fact, all the areas inscribed in Fig. 4.1 are locations of FLAGs – with some areas combined under a single FLAG - through which the EMFF implements strategies to boost employment and territorial cohesion by promoting economic growth, social inclusion, job creation and providing support for employability and labour mobility in communities in coastal and inland regions, which depend on fisheries and aquaculture, including diversification of fisheries activities as well as other sectors of the maritime economy. In addition, FLAGs are meant to encourage the development and enhancement of the competitiveness of the fisheries and aquaculture sector, improvement and development of the technical infrastructure for sea-related activities, and environmental protection and climate change mitigation.

**Box 4.1: Small-Scale Fishers in Bulgaria**

Small-scale fishers in Bulgaria and their families usually start their activities early in morning (Fig. 4.2.). The smallest vessels are less than 3 metres long and the largest is about 12 metres. Fishing activities are limited up to the 3-mile zone, though the majority of gill nets are deployed in the coastal zone 1–2 miles from the shore. Daily fishing trips can last a whole day (Fig. 4.3.) The rest of the time, when the weather conditions do not allow working on board, the main activities are limited to sewing and repairing fishing nets. Usually, catch amounts are very small and the fishers barely provide enough food for their families. A few fishers are assigned to repairing the nets, the boat engine and so on. Spouses, daughters and sons are engaged with fisheries activities to a very small degree, nowadays.

It is a common opinion among fishers that fish stocks are shrinking for various reasons: water pollution, insufficient regulation and control of fishing practices and stocks, lack of care for biodiversity conservation in the Black sea. There is uniform agreement among stakeholders that some species need to be excluded from fishing. Small-scale fishers in Bulgarian waters are strongly affected by adverse weather conditions and a lack of sheltered areas. Other problems of small-scale fisheries are the ageing fishing fleet and increasing fuel costs, risks of accidents at sea, inadequate working conditions, ineffective marketing and poor promotion of fishery products. In addition, small-scale fishers are poorly organised. It is necessary to find new ways to

(continued)

**Box 4.1** (continued)
stimulate small-scale fisheries and traditional fishing methods in support of local communities. In this context, it is recommended to promote gear that is more selective and less destructive to habitats and endangered species.

The main role of fisheries associations is to familiarise association members with the requirements of the Internal Market and the Common Fisheries Policy of the European Union in order to successfully resist the competitive pressure after the date of accession. They also support the establishment of a functioning market infrastructure that contributes to the transparency of fishing and fish markets and reduces the possibility of unfair competition in the sector. In addition, these associations promote an increase in fishing and fishery production through joint action with public authorities to find external markets and negotiate cheaper export and import rates.

Small-scale fishing in Bulgaria has specific social, economic and environmental challenges. From the point of view of the limitations of small-scale fishing and the development of policies in this area, it is clear that its future will be guided by the logic of environmental sustainability and multifunctionality. However, despite their socio-economic importance, small-scale fisheries do not always receive the attention they deserve. Indeed, small-scale fishers should be involved much more in public policy processes and decision-making.

**Fig. 4.2** Coastal small-scale fisheries, Gulf of Varna. (Photo credit: C. Peiffer)

**Fig. 4.3** The beauty of artisanal fishery, Varna Lake. (Photo Credit: C. Peiffer)

## 4.6 Policy Context

Fisheries policy in Bulgaria is based on the Common Fisheries Policy (CFP) of the European Union. The Ministry of Agriculture and Food Supply is the main governmental institution responsible for putting into practice the Fishery and Aquaculture Act 2001. In accordance with this Act, the Minister is able to regulate all administrative and organisation procedures within the scope of fisheries.

The Minister delegates the task of operational activity, development and management of the fishery to the National Agency for Fishery and Aquaculture (NAFA). This body receives budgetary support and works under the regulations, ratified by the Ministerial council of Bulgaria. One of the main prerogatives of this National agency is the elaboration and execution of the National Program for Fishery and Aquaculture, in force for a seven-year period. In the frame of these activities, the agency is responsible for applying measures on biodiversity conservation, creation and support of information-statistical systems, quota allocation and obligations of member states under international regulations and contracts. This kind of quota allocation is not established yet, since lack of total allowable catches (TAC) and quotas as management tools in the Black Sea region are only for a few stocks, such as sprat and turbot. Small-scale fishers possess only a very small percentage of the quota for turbot. Since they do not use towed gears, they are not engaged in sprat fisheries.

In addition to a TAC for turbot and sprat, fisheries management in Bulgaria includes effort regulation, closed seasons, restocking, closed areas and gear restrictions. Effort regulation, in terms of scraping vessels, affects to a very low extent small-scale fishing vessels, since larger fishing vessels are the ones that have been removed from the fishing register or changed their activities, e.g. switching to tourist vessels.

In accordance with the administrative division in the country, the NAFA supervises 27 branches. Branches in Varna, Bourgas and Dobrich are situated close to the Black Sea coast (to observe Fisheries and Aquaculture Act of Bulgaria implementation). Some requirements under the environmental protection legislation also exist as regards conservation of rare and endangered species. In fact, there are yearly prohibitions for commercial fishery in coastal areas (1–3 n.m. from the shore) implemented by the Ministry of Environment and Water.

The most relevant measures for small-scale fisheries refer to geographical zoning, according to two rules: the 1-nautical-mile coastal zone rule and 3-mile zone rule. The catches of fish and other aquatic animals by any kind of pelagic trawling gear in the coastal zone are prohibited, as follows (EAFA, Fisheries and Aquaculture act 2001):

- from Cape Sivriborun to the River Kamchiya outflow - in 3-mile zone
- from the River Kamchiya outflow to the Cape Emine - in 1-mile zone;
- to the line of Cape Emine - Nessebar lighthouse;
- to the line of Nessebar lighthouse - village Chernomorets, south cape;
- From the c. village Chernomorets to the River Rezovska outflow - in 1-mile zone.

Though Atlantic bonito (*Sarda sarda*) is not a species under quota in the Black Sea, it is an unauthorised species, as such Council Regulation No. 1239/98 prohibits the use of driftnets to catch the tuna and other species listed in Annex VIII (Raykov and Triantaphyllidis 2015).The only small-scale fishery that has been identified in the Black Sea interacting with an Annex VIII species is the Bulgarian marine driftnet fishery targeting Atlantic bonito. However, contemporary catch rates are reported as an extremely low proportion of total national catch (NAFA officially registered just 48 kg bonito catches in 2012). Based on these reported catches, it is unlikely that this fishery is having severe negative impacts on the sustainability of the stock. Comprehensive assessments of the stock status of Atlantic bonito have not been conducted, thus, it is difficult to draw conclusions about the impact of drift netting on this species. However, the existence of a fishery taking Atlantic bonito in the Black Sea suggests that control systems and tools in place within Bulgaria are currently not adequate for implementing Regulation (EC) 1239/98 in relation to Annex VIII species (Raykov and Triantaphyllidis 2015).

## 4.7 Looking to the Future

The FAO symposium on sustainable small-scale fisheries in the Mediterranean and the Black Sea (FAO 2015) that took place in 2013 formulated a number of recommendations for the sustainable development of small-scale fisheries in Bulgaria. The first recommendation was that it is necessary to find new ways to stimulate small-scale fisheries and traditional fishing methods in support of local communities. In this context, it recommended the promotion of gear that is more selective and less destructive to habitats and endangered species. Presumably in response to the many inter-sector conflicts affecting small-scale fishers, the symposium also considered it necessary to develop mechanisms to resolve conflicts between different users of marine ecosystem goods, services and fisheries.

Despite their socio-economic importance, small-scale fisheries do not always receive the attention they deserve (Ignatova 2016). Small-scale fishers should be more involved in public policy processes and decision-making. They face difficulties in exploiting resources that are depleting, and there is a lack of an integrated vision for the management of the sector. There is an immense need for fishery community involvement in processes of social protection and safety. Moreover, managerial decision-making processes must also be conducted according to a participatory approach.

## 4.8 Conclusions

While dominating the fisheries sector numerically, small scale fisheries in Bulgaria face many problems and challenges. A decreasing trend in catches and a technically outdated fleet contribute to low incomes and a lack of interest of young people in joining the fisheries. However, in line with increasing international attention on Black Sea fisheries, Bulgarian policy- makers are displaying a greater interest in small-scale fisheries, which may contribute to their revival.

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# Chapter 5
# The Current Status and Challenges Facing the Small-Scale Fisheries of Turkey


**Vahdet Ünal and Aylin Ulman**

**Abstract** The Turkish small-scale fishing fleet consists of 13,193 vessels. This represents over 90% of the commercial fleet in terms of the number of vessels. Moreover, approximately 30,000 fishers are organized into 572 fishery cooperatives in Turkey, and most of these fishers are from the small-scale fisheries sector, which also includes fisherwomen. However, this sector has not been given the attention it deserves. In this chapter, the general structure of Turkey's small-scale fisheries is discussed, along with its socio-economic characteristics, organisational structure, policy measures and influence over time. One successful case study of small-scale fisheries is presented, hopefully to be expanded around the country. Lastly, suggestions towards improving small-scale fisheries in the future are discussed. Our findings demonstrate that the future of this sector is in jeopardy as it is transitioning into a part–time (and even recreational) activity. Over two-thirds of fishers are pessimistic about their futures, while 40% are willing to quit the profession outright. The most prominent threats faced by this sector stem from overfishing, illegal fishing, reduced catches and revenues, and weak monitoring, control and surveillance (MCS) resulting from a lack of effective fisheries management. Despite all these issues, fishers (especially those organised in cooperatives) have great potential to contribute to building a better future for fisheries, if managed effectively. Indeed, if management authorities are truly concerned about the sustainability of small-scale fisheries, they must seek creative ways to close current loopholes in the system to make it effective. Fortunately, many of the essential tools are already in place.

**Keywords** Catch Per Unit Effort (CPUE) · Fisheries management · Fisherwomen · Fishery cooperatives · Governance · Illegal fishing · Marine conservation · Marine Protected Areas (MPAs) · Overcapacity · Small-scale fisheries

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## 5.1 Introduction

Turkey with its long coastline (8500 km) shares three major seas (the Black Sea, the Aegean Sea and the Mediterranean) and contains one inland sea (the Sea of Marmara, Fig. 5.1). These seas provide habitats for approximately 512 fish species (Bilecenoğlu et al. 2014), 1065 molluscs (Öztürk et al. 2014) and employment opportunities for thousands of fishers, most of whom operate in the small-scale fisheries sector.

Turkey reported just over 231,000 t of fish and invertebrate commercial landings in 2014 (TÜİK 2015), which places the country amongst the top ranking Mediterranean and Black Sea countries for their marine landings. The Turkish coasts offer a diverse variety of marine capture fishery activities including large-scale commercial (trawl and purse seine fishing), small-scale commercial (gillnet, longline etc.) and recreational fisheries (conducted from shore, by boat and by spear-argun). Small-scale fisheries dominate the marine capture fisheries in terms of number of vessels, fishers and fishery co-operative organisations.

In 2014, marine commercial fisheries were valued at about US $ 452 million. Of that amount, nearly 25% of marine fisheries catches were processed into fishmeal/oil. Fisheries represent about 0.18% of Turkey's GDP (Gross Domestic Product). Aquaculture now represents over 50% of the total fisheries production in terms of volume, and approximately 70% in value (TÜİK 2015), and is increasing each year. Due to this low contribution to GDP, some suggest the marine fisheries do not make a sufficient contribution to the Turkish economy, although the Turkish fisheries were once one of the most abundant fisheries in the Mediterranean, and have always dominated catches in the Black Sea. However, since the 1950s, there has been a constant reduction in the variety and quality of fish available, as most larger fish species have been overfished and are no longer present. This issue is somewhat

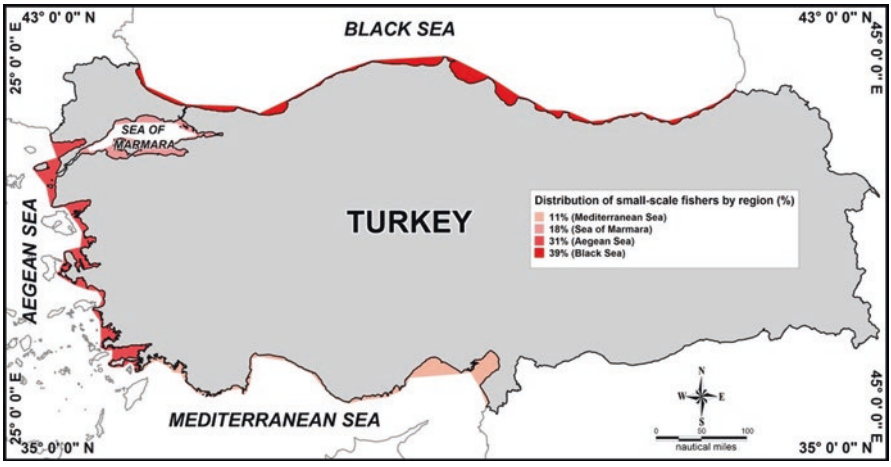


**Fig. 5.1** Distribution of small-scale fishers along the Turkish coasts

masked if one looks at the statistics alone, which fail to highlight the overall reduction in catch value, as much of what is now caught is no longer for human consumption. Despite nearly 80% of total fishery catches consumed domestically, the per capita fish consumption rate in Turkey is five times lower than the EU average. Nonetheless, marine capture fisheries, in particular small-scale fisheries, will always remain an important component for providing food and improving local livelihoods in rural areas. Small-scale fisheries also provide employment opportunities to women. However, this sector requires government assistance in order for them to remain viable. The map in Fig. 5.1 shows the distribution of small-scale fisheries in Turkey.

This chapter focuses on the importance of the small-scale fisheries sector, and the challenges and opportunities it faces. Also discussed are small-scale fishing capacity, policies, the role of fisherwomen, the current state of these fisheries, capacities of fishing cooperative organisations, the fishery buyback programme, management initiatives and limitations, and finally recommendations on how to improve the fisheries and the livelihoods of the small-scale fishers.

## 5.2 Description of Small-Scale Fisheries in Turkey

In spite of the important role small-scale fisheries play in overall marine capture fisheries, the principal Turkish Fisheries Law #1380 (created in 1971) fails to properly define the commercial fisheries sectors, in contrast to the draft of the new Fisheries Law (currently awaiting approval). However, the general accepted definition from national reports sets a length of commercial vessels <12 meters as the functional definition for small-scale fishing vessels, which encompasses 90% of the commercial fleet (in numbers, see Table 5.1). Therefore, in this chapter, we define small-scale fishers as fishers using vessels <12 m in length, who use passive fishing gear (i.e., set nets such as gillnets, longlines, traps etc.), and who sell their catches commercially. This differs from recreational fishing defined here as fishing either purely for sport, or for providing for one's self or family (as in subsistence fishing) and thus not for profit.

As seen in Fig. 5.1, for 2014, the highest numbers of small-scale fishers are found along the Black Sea and Aegean Sea coasts. Catch rates of small-scale fishers vary regionally, and are highest near the Dardanelles due to higher regional fish abundances. Over two-thirds of Turkey's total commercial catches come from the Black Sea (69.2%); 13.6% from the Sea of Marmara, 13% from the Aegean and 4.2% from the Mediterranean Sea.

Small-scale fisheries dominate the Aegean Sea coastal region, since its continental shelf is narrow with numerous coves and bays. In addition, there is a 24 m depth limitation for purse seiners and also a regulation on minimum distance from the coast for trawlers (which varies from 1.5 n.m. to 3 n.m.), presenting challenges for large-scale vessels there. Small-scale fisheries in Turkey use passive fishing gear

**Table 5.1** Basic information on fisheries and small-scale fisheries in Turkey

| Data refers to 2014 | Total (all fisheries) | Small-scale fisheries[1] |
|---|---|---|
| Fleet | | |
| Number of vessels | 14,595 | 13,193 |
| Capacity (GT) | 175,000 | N.A. |
| Number of fishers | 32,599 | 19,648 |
| % women | 1.7 | 1.3 |
| Landings | | |
| Quantity (tons) | 266,077.6 | N.A. |
| Value (1000 €) | 341,846.3 | N.A. |
| Most common gear used (top 3) (% in total) | Nets: 62.4%; Longlines, handlines, rods: 24.6%; Trawls: 4.5%. | Nets: 56.3%; Longlines, handlines, rods: 26.5%; Encircling nets: 11%. |
| Most important species in landings: | | |
| Top 3 in quantity (% in total) | Anchovy: 36.2%<br>Sprat: 15.7%<br>Striped Venus clam: 8.2% | N.A. |
| Top 3 in value (% in total) | Anchovy: 22.6%<br>Atlantic bonito: 11.4%<br>Bluefish: 10.6% | N.A. |

Notes: [1]Small-scale fisheries: fishers using vessels <12 m in length, and use passive fishing gear (variety of gillnets, longlines, handlines, traps etc)
Source of information: TÜİK 2015
Links to official stats webpages: http://www.tuik.gov.tr/
N.A.: not available

requiring generally low investment such as gillnets, long-lines and various traps. Small-scale fishers generally fish within 3-5 n.m. from the coast.

In the Black Sea region, small-scale fishers are known to venture further from shore (up to 15 n.m.) to catch turbot, *Scopthalmus maximus*, (Y. Erdem, pers. comm.), and also for swordfish (*Xiphias gladius*) from Gökçeada, an island in the north Aegean Sea (D. Acarlı, pers. comm.).

## 5.3 Socio-Economic Status and Interaction with Large-Scale Fisheries

Six different socio-economic studies of small-scale fisheries from different regions in Turkey were compared, to better understand the status of the small-scale sector (Çeliker et al. 2006, 2008; Taşdan et al. 2010; Ünal and Franquesa 2010; Doğan and Gönülal 2011; Ünal 2015). From these studies, the mean age of small-scale fishers in Turkey is 46 years old, with an average of about 25 years fishing experience. About half the fishers work alone, which presents many challenges. Over half only have some primary school education, and approximately 20% have finished high

school. About two-thirds of small-scale fishers own their houses and are receiving social security. Nearly 90% of fishers who were interviewed were opposed to their children entering the fishing industry.

In the Black Sea, over half the fishers hope to quit or retire soon from the industry. This ranged from 25 to 40% for the other surveyed regions (Aegean and Mediterranean coasts). It is also worth noting that 90% of fishers are pessimistic about their futures, especially as most fishers are no longer making any profit. Ünal et al. (2015a) found that over 90% of the 200+ fishing vessels assessed do not make any profit in the Datça-Bozburun peninsula. In fact, only 10% of interviewed fishers make some profit, while the rest operate with a deficit. Of the 186 small-scale fishing vessels analysed from selected fishery co-operatives around Turkey, the average Return On Investment (ROI) was 43% for the 127 vessels that revealed some profit, however, the other 59 vessels displayed a negative ROI. Under these conditions, the economic viability of this sector is under imminent threat of collapsing.

According to Berkes (1986), three decades ago, the average small-scale fishing boat had an income of about $40 per boat per day and an average catch of about 20 kg per boat per day. More recently, two studies (Ünal and Franquesa 2010; Ünal et al. 2015a) revealed that this average daily income per vessel had declined to between US$ 23.6 and $28.0 which is extremely low, especially since this income valuation excludes operating costs, such as gasoline, wages, gear, etc. In addition, nearly half the fishers interviewed from the southern Aegean coast stated their entire livelihoods solely depended on fishing (Ünal and Franquesa 2010). Under these circumstances, these small-scale fishers can be considered an extremely marginalised group barely capable of providing for themselves and their families. Clearly, it is only possible for these fishers to continue their profession if they have additional sources of income.

## 5.4 Current State of the Fisheries

Turkish marine commercial catches have been drastically declining since the early 1990s (Ulman et al. 2013). This is worrying as Turkey's population continues to increase dramatically, resulting in a decrease in wild fish availability for all. However, Turkey's reported catches were recently recalculated to include previously unreported catches, which resulted in 80% more catches than thought, as massive under-reporting plagues the statistics and recreational catches are not included in the reported data (Ulman et al. 2013).

Fisheries catches from the Turkish Republic of Northern Cyprus (TRNC), only recognised as a separate country by Turkey, have somehow been overlooked by the FAO, which collects and publishes data voluntarily submitted by most countries. The fisheries there were thoroughly investigated recently by Ulman et al. (2015), who found that the fisheries are mainly small-scale, with only 30–40 Turkish fishers in 1974 (the time of the division of the island). This had increased to 270 active small-scale fishing vessels in 2007. In 2010, this sector had an average catch rate of

0.571 t per vessel per year with a total annual catch of 172 t (calculated by interviewing over 35% of the sector on their catch rates, which were categorised into four levels). Most of this sector (89%) fishes only part-time with other employment compensating their income, and only 11% of the sector classified as full-time fishers.

Since the early 1980s, Catch Per Unit Effort (CPUE) has declined for small-scale fisheries by a factor of 3.5, from 14 kg/kw per day to about 4 kg/kw per day (Ulman and Pauly 2016). The authors attribute this large decline in CPUE to the increased fishing effort in the large-scale sector, both in numbers of vessels and in sophistication of technology such as the use of sonar, bird radars and high-voltage lights.

From 1991 to 2008, Turkey tried to restrict its fishing fleet by introducing a moratorium on new fishing licenses. Subsequently, there were three suspensions of the moratorium (1994–1996, 1997–1999 and 2001), and during these suspensions, the fleet actually doubled to over 12,000 vessels by 2001. An additional 4000 small-scale boats entered the fishery since 2001. The licensing control system has since been reinstated, but has not proven helpful in restricting the fishing effort (Ünal 2004), due to loopholes in the system, which have allowed boats to increase their overall capacity (Koşar 2009; Ulman et al. 2013).

Fish were considerably larger and much more abundant in the past. The most experienced small-scale fishers reported that their individual CPUE were 40 times greater in the 1950s compared to 2013 (Ulman and Pauly 2016). Small-scale fishers complain that they have to keep increasing the length of their set nets to try to catch the same amount of fish, but their catches and revenues nevertheless continue to decline.

Biodiversity is rich in the Mediterranean region but productivity is very poor, especially in the oligotrophic Eastern Mediterranean. In the Black Sea, the situation is reversed; biodiversity is quite poor but the remaining pelagic stocks are fast growing, thus having high productivities, especially anchovy and sprat stocks.

Since the variety and abundance of fish varies according to region (mostly due to migratory patterns), each region has different target species. The target species for small-scale fishers in the Black Sea are mainly bonito (*Sarda sarda*), bluefish (*Pomatomus saltatrix*), turbot and horse mackerel (Trachuridae); in the Sea of Marmara, they are mainly bluefish, chub mackerel (*Scomber japonicus*), sardine (*Sardina pilchardus*), and horse mackerel; and for the Aegean/Mediterranean Sea (which has the lowest catch rates), generally pandora (*Pagellus erythrinus*) are targeted, along with sardine, dolphinfish (*Coryphaena hippurus*), swordfish (*Xiphias gladius*), common dentex (*Dentex dentex*), barracuda (*Sphyraena sphyraena*), parrotfish (*Sparisoma cretense*) and rabbitfish (Siganidae) (A. Ulman, unpublished data).

Small-scale fishers reported discarding between 2-10% of their catches due to unmarketable taxa, which included species such as flying gurnard (Dactylopteridae), Mediterranean moray eel (*Muraena helena*), conger eel (Congerdiae), thornback ray (*Raja clavata*), spiny dogfish (*Squalus acanthius*), scorpionfish (Scorpianidae), the poisonous pufferfish (*Lagocephalus sceleratus*), as well as undersized and damaged species (A. Ulman, unpublished data).

### *5.4.1 Status of Fisherwomen in Small-Scale Fisheries*

Small-scale fisheries do contain some fisherwomen in Turkey, most of whom work along the Southern Aegean peninsula. Awareness of fisherwomen in Turkey is continually increasing, and they were given their own category in Turkish fishing statistics (TÜİK) in 2012. According to TÜİK (2015), 1% of fishers are fisherwomen in the country; however, this number has been shown to be as high as 20% from more localised studies in the Datça-Bozburun peninsula (Ünal et al. 2015a).

A study in 2008 initially helped raise awareness of fisherwomen (Göncüoğlu 2008), and similar projects have become increasingly popular. NGOs, along with cooperation from educational institutions and fishery cooperatives have kindly donated aid to this marginalised group of fishers. In doing so, fisherwomen have been trained in topics like safety and ecology, and some cooperatives have been provided with proper safety equipment and fishing gear, thus enabling them to remain in the industry. Despite this increased awareness, fisherwomen have not yet been granted a voice in local policy making. The photo in Fig. 5.2 shows a fisherwoman deploying traditional longlines in Gökova Bay.

**Fig. 5.2** A fisherwoman deploying traditional longlines in Gökova Bay, Turkey. (Photo credit: Z. Kızılkaya)

## 5.5 Institutional and Organisational Context of Small-Scale Fisheries: Capacity for Collective Action and Influence on Governance Arrangements

Small-scale fishers are well organised into fishery cooperatives in Turkey. Currently, there are 336 marine and 236 freshwater fishery cooperatives, with over 30,000 members. Central Union of Fishery Cooperatives (SÜR-KOOP) is the highest level of cooperative, which is unified, organised and structured by fishers, for fishers. In terms of distribution, 39% of marine capture-based fishery cooperatives are located in the Sea of Marmara region, followed by the Black Sea region with 30%, the Aegean with 21% and the Mediterranean with 10% (Ünal et al. 2016). In particular, small-scale fishers establish themselves in fishery cooperatives in cities that have numerous fishing ports. For example, Izmir (the most populated city on the Aegean coast) has 40 fishery cooperatives which range in size and services, but most are responsible for setting fish prices at morning auctions for the fishmongers to use. The main reason for the association between fishery cooperatives and ports stems from the amended 15th May 1986 Fishing Law 1380, code 3288/5, which gave fishery cooperatives the right to rent and operate in fishing ports (i.e., store their boats there), which resulted in rapid increases in the number of cooperatives (Ünal et al. 2009).

Within the last decade, small-scale fishers have been integrated as stakeholders in some conservation projects, and some are even leading marine conservation and management projects (Ünal et al. 2015c). One such project entitled "Supporting sustainable fishing activities in Gökova Bay MPA", financed by MedPAN and managed by the Mediterranean Conservation Society, held a fish festival to raise awareness and increase the market value of culturally untraditional fish species such as *Nepiterus randalli, Upeneus molluccensis, Siganus luridus and Siganus rivulatus.* Other such noteworthy projects are detailed in Ünal et al. (2015c).

All the above-mentioned projects contribute to incorporating fisher-stakeholder participation and collaboration, empowering fishers with decision-making, and helping them by providing additional resources. However, the inclusion of small-scale fisheries into the decision-making process is only currently "consultative" at the national level, as the competent governmental institution, DG-Fish, is responsible for all aspects of fisheries management. A mechanism does exist for DG-Fish to consult with fishers also with other stakeholders but ultimately, DG-Fish makes all decisions itself. The Central Union of Fishery Cooperatives also organises high attendance meeting once a year to discuss the issues affecting the fishers and fishery sector to convey expectations and potential solutions of the fishers to relevant ministerial bodies, particularly to DG-Fish. The Central Union invites not only their members to these meetings but also academics and relevant bureaucrats of DG-Fish in order to help guide decisions for management measures. It is recommended that the national fisheries management approach is restructured at the legal base so that those who are experts on the topic (i.e., fishery professors and researchers) provide decision-makers with sound advice necessary in achieving sustainability, along

with additional guidance from the fishers themselves, who are extremely knowledgeable and have a vested interest in the long-term sustainability of the resources. Overall, when organised into fishery cooperatives, members generally experience a sense of empowerment in the form of education, personal rights and problem-solving.

## 5.6 Legal and Political Framework

All fishing laws and guidelines are based on the principal Fisheries Law #1380 enacted in 1971, and which was amended by Laws #3288 in 1986 and #4950 in 2003. These laws provide the basis for both commercial and recreational regulations, such as the regulation of fishing licenses, sanitation of fishing materials, inspection and control, penalties, prohibitions, limitations and liabilities (Updated from MARA 2009; Ünal and Göncüoğlu 2012). The current fisheries institutional laws are perceived as having the necessary foundation for the provision of effective fisheries management.

In June 2011, the national fisheries management was transferred from the Ministry of Agriculture and Rural Affairs (MARA) to the Ministry of Food, Agriculture and Livestock (MFAL); and the Department of Fisheries was transferred to the Directorate General for Fisheries and Aquaculture (hereafter referred to as DG-Fish). On July 9, 2018, DG-Fish was transferred to the Ministry of Agriculture and Forestry.

Today, DG-Fish is the main state organisation that is responsible for fisheries management. They oversee the provision of fisheries regulations, as well as monitoring and providing technical assistance. However, surveillance of fisheries is shared amongst several other institutions, such as the coastguard and the gendarmerie. Consequently, effective surveillance can be hampered if communication between these groups is not successful.

The Ministry of Development also plays a role, as it selects an expert committee, which in turn sets the objectives for fisheries management policies in Turkey. The general objective is to manage fishery resources sustainably, but this is not the reality. The sustainability of the marine resources has not yet been seriously addressed by any tangible measures. Thus, regionally-based (Black Sea, Marmara Sea, Mediterranean) preliminary fisheries management plans need to be restructured to address sustainability, above all, with the objective of rebuilding depleted stocks to pre-determined historical levels.

An annual Total Allowable Catch (TAC) ‘quota’ system is currently practiced for the export markets of only two commercial species: bluefin tuna (*Thunnus thynnus*) and Striped Venus clam (*Chamelea gallina*). In 2015, the TAC quotas were 1223 t for tuna and 30,000 t for the Striped Venus clam. If TACs could be introduced and implemented *only* for the large-scale fleet (> 12 m), with no restrictions on the small-scale fisheries, the livelihoods of the small-scale fisheries would undoubtedly improve.

Due to Turkey's candidacy for European Union membership, the most notable achievements for improving national marine policy have resulted from the institutional twinning program in support of the alignment with the EU Acquis in 2008 (detailed below).

### *5.6.1 How National and EU Policies Have Affected Small-Scale Fisheries in the Last Decade*

Turkey first applied to join the European Economic Community (EEC) in 1959 and began accession negotiations in 2005. Harmonisation through accession negotiations is still ongoing. One instrumental result from this was the EU funded Acquis Project: The Legal and Institutional Alignment of the Fisheries Sector.

Although some recent attention has been given to small-scale fisheries in the EU Common Fisheries Policy, these initiatives have not yet transpired in Turkey, since fishery negotiations between Turkey and the EU ceased in December 2006. However, in the adaptation process of the EU fishery Acquis, 43 port offices were constructed in major fishing areas, the TÜİK statistical system improved its collection of fisheries data, logbooks and an Automatic Information System (AIS) were initialised for vessels greater than 15 m, and most importantly DG-Fish was created. The Fisheries Law was re-evaluated and a new draft law was presented to the government via a stakeholder and public consultation process, which when approved (expected very soon), will be the most recent, beneficial development for commercial fisheries.

To date, 43 newly constructed port offices, built to verify commercial landings on-site, are still non-functional. This is because there is no requirement for fishers to land their catches at these offices meant to deter non-reporting or under-reporting of commercial catches; although this oversight could be easily corrected in the future. The logbook system has also proven ineffective, since commercial fishers are commonly known to underestimate their catches, thus rendering the process futile.

In addition, a publication in the governmental 'Resmi Gazette' on September 11, 2007, introduced a rule that vessels greater than 15 m must use the Automatic Identification System (AIS) Class-B CS device. However, since this rule has not been supported by fishery legislation, the usage of these devices is not controlled, rendering them useless. Also, no support system exists to examine the data gathered through AIS, so this measure too is currently ineffective. To address these issues, the Ministry is planning to establish a new monitoring system that would both automatically transfer data via satellites by having electronic logbooks placed on all the vessels greater than 12 m; however, the software still has to be developed. The data that the Ministry of Transport, Maritime and Communication obtains from the devices on vessels will be used as AIS data (H. Arpa, pers. comm.).

Turkey has been a member of the General Fisheries Commission for the Mediterranean (GFCM) since 1954, a regional organisation established under the

FAO Constitution. The GFCM has the authority to adopt binding recommendations for fisheries conservation and management in its area of application, and plays a critical role in fisheries governance in the region, although national cooperation and support are necessary for effectiveness of the measures. The measures can relate, for instance, to the regulation of fishing methods, fishing gear and minimum landing size restrictions, spatial and temporal closures and the control of fishing effort. Although Turkey is an active participant in GFCM, Turkey's involvement has yet to produce any tangible results that benefit the sustainability of the Turkish fisheries, as first and foremost, the structural functioning of the fisheries management system needs to be overhauled.

The Fisheries Dialogue Group between Turkey and the European Commission has improved cooperation in several forums (i.e., the International Commission for the Conservation of Atlantic Tunas — ICCAT and GFCM) and has also contributed to improvements in inspection and control. Although, the group states that there have been no improvements in structural actions, market policy or state aid (EC 2014).

### *5.6.2 Updates on Conventional Management Measures*

Small-scale fishers are generally resentful of large-scale fishers' use of bottom trawls and purse seines, which often fish in very close proximities to the activities of small-scale fisheries and are often found operating amidst both spatial or temporal restrictions for large-scale fishing (i.e., April 15th to September first for trawls and April 15th to September 15th for purse seines). Only after vocal discussions was the minimum depth limit for purse seining increased from 18 m to 24 m, whereas in the European Community, the minimum depth for purse seines is 50 m in the Mediterranean (EC 2006).

White grouper (*Epinephelus aeneus*) and dusky grouper (*Epinephelus marginatus*) are now permanently prohibited from being caught by commercial and recreational fishers in all Turkish seas (DG-Fish 2016).

Besides these conventional management measures regulating input and output controls, more modern measures to help improve fisheries (especially small-scale fisheries) have been the establishment of marine protected areas (MPAs) and marine reserves, the deployment of artificial reefs, and fisheries buy-back programs. These are all discussed below.

### *5.6.3 Fisheries Buy-Backs and Small-Scale Fisheries*

Recently, due to the EU-CFP accession process, new measures were initiated using equity capital with the intention of increasing fish stocks to benefit fisheries. The most important of these was a fishing vessel buyback programme targeting mainly

large-scale vessels, initiated by DG-Fish in 2012. In 2013, the first period, 364 vessels greater than 12 m were bought back from the owners (and hence withdrawn). In 2014, the second period, 456 vessels greater than 10 m were withdrawn; and in the third period, in 2015, 191 vessels greater than 10 m were withdrawn. In the third period, the compensation paid per meter length of vessels was increased for vessels greater than 30 m. From this three-year buyback operation, a total of 1011 vessels were removed from the large-scale fisheries fleet for a total sum of US$ 45 million. Please note, however, that many of these large-scale vessels were inactive when they were retired. From the total buyback programme, vessels between 10-20 m were the size-class most removed (948 vessels), and vessels greater than 31 m the least removed (just 8 vessels). Many large-scale fishers complained this programme was ineffective because it did not compensate for the often very sophisticated and expensive technical equipment onboard, normally worth much more than the vessels themselves.

According to Ekmekci (2015) and Ünal et al. (2015b); from the results of the first two buyback programmes, one-third of fishers who participated in the programme owned additional operational vessels, and sold their inert or unused vessels. Over three-fifths of recipients (61.5%) declared they would remain in the industry, and a quarter of recipients purchased new vessels (either recreational or small-scale) with money received from the buyback programme. Governmental buyback programmes have been widely criticised for their ineffectiveness because fishers had anticipated this reimbursement, which is understood to lead many fishers to acquire additional non-operational vessels to sell. The results of such precipitous programmes need to be closely evaluated before implementation, as they can lead to the opposite effect of their intention, i.e., increasing overcapacity. Another important issue is to monitor the impacts and results of these programmes so as to avoid wasteful schemes in the future. For instance, 53% of vessels (533) decommissioned were between the 10-12 meters length belonging to small-scale fisheries, which contribute very little to the overcapacity issue trying to be resolved. In conclusion, although the buyback programme was intended to decrease the overcapacity of the large-scale sector, very few large-scale fishing vessels were withdrawn, and this programme may inadvertently have contributed to the decreasing viability of small-scale fisheries in the future.

### *5.6.4 MPAs, Marine Reserves and Marine Biota*

Coastal areas that are protected in various capacities in Turkey amount to a total area of 3460 km$^2$. There are 31 marine and coastal protected areas, resulting in about 4% of Turkish waters being under some form of protection (TVKGM 2014). MPAs have been shown to benefit fisheries in many cases.

The designation of a marine area as a No-Take Zone (NTZ), or No Fishing Zone (NFZ) is an arduous task requiring group participation from fishers and other stakeholders whom benefit from natural resource exploitation. It is essential that

co-management exists between fisheries managers and the major stakeholders in order to have a successful MPA.

As the process of creating MPAs is quite new, it continually needs to be improved upon. For example, in the Gökova Bay MPA established in 1988 and its NFZs in 2010, enforcement was initially weak, but in 2012, a marine guard-training course was initiated to improve the monitoring of sites, and shortly after, revenues increased by over 53% for many small-scale fishers (Kızılkaya et al. 2015). After the small-scale fisheries witnessed positive biological enhancement in the Gökova Bay MPA, members from the Selimiye Fishery Cooperative and Datça Fishery Cooperative requested other closed areas in the Gulf of Hisarönü. In 2012, four more NFZs were announced for the Datça-Bozburun MPA. Figure 5.3 shows a small-scale fisherman and his wife-fisherwomen hauling their nets in the Gökova Bay MPA.

### *5.6.5 Artificial Reefs*

The deployment of artificial reefs commenced in the 1970s at various localities around the world, however in Turkey, this practice commenced in the 1990s with the initial goal of benefiting scuba divers by increasing the local biodiversity (Lök et al. 2011).

**Fig. 5.3** A small-scale fisherman and his wife-fisherwomen hauling their nets in Gökova Bay, Turkey. (Photo credit: Z. Kızılkaya)

A national artificial reef project in Turkey was implemented in 2012 with a budget of US$ 2.7 million in the Gulf of Edremit (Northern Aegean Sea), where 7000 units of reef blocks (3.5 $m^2$ each) were deployed with the aim of increasing biodiversity and boosting catches for small-scale fisheries. In 2015, a five-year monitoring programme began to study the project's biological, ecological and socio-economic effects. Before other similar projects are introduced, DG-Fish is waiting to determine the outcome of this project. Ünal (2015) noted that after 4 years of monitoring, the perception of artificial reefs varies considerably according to stakeholder, and are not positively perceived by all. However, this attempt by the government to support small-scale fisheries by trying to increase biodiversity is an encouraging initiative.

## 5.7 Looking to the Future

### *5.7.1 Current Challenges*

In 2013, small-scale fishers were interviewed along the western coast of Turkey (Ulman and Pauly 2016). When asked how to best improve the future of small-scale fisheries, the most cited responses (in order of popularity) were to reduce illegal fishing (which is dependent on improving enforcement of existing rules and regulations), ban/restrict large-scale fisheries, ban purse seine lights, ban bottom trawling, increase enforcement and control, ban sonar/radar, protect critical fish recruitment periods, control pollution, restrict technology, control illegal spear fishers, address invasive species issues, control the duration of set nets, increase minimum legal mesh sizes, and educate fishers. For example, one extremely important area for several migratory fish species is the area between the Sea of Marmara and the Bosphorus Strait, both which have summer fishing bans for the industrial fishing sector, but this sector still operates openly in the Sea of Marmara and undercover in the Bosporus Strait (e.g., with their vessels painted dark so patrol boats cannot see them at night and using a very elaborate shore-based detection system), with minimal penalties given out when caught. Such critical areas for spawning and migration would certainly benefit from full protection if depleted stocks are to be rebuilt. Many small-scale fishers resent the large-scale sector due to their sophisticated level of technology and excessive catch capacities, which remove a very large proportion of the shared resources from the common pool. Furthermore, for the last two decades spearfishing, has been practiced very intensively along the Turkish coasts. However, this method becomes illegal when practiced at night, using a torch, and/or scuba gear which are all common, targeting only high-value species such as groupers and has disastrous socio-economic impacts in many coastal areas by causing a sizeable depletion in high-valued fish stocks further impeding the livelihoods of small-scale fishers.

Other challenges increasingly faced by the small-scale fisheries sector are negative interactions with the invasive silver-cheeked toadfish *Lagocephalus sceleratus* and common dolphins, both which can lead to declining revenues, since more time is required to repair nets and fishing lines from incidental damage. In the late 2000s, *L. sceleratus* began targeting fish in fishing nets for sustenance, often causing irreparable damage to the long set gillnets in the process, along with ingesting 10-20% of longline hooks, leaving less time for fishing in lieu of making such tedious ongoing repairs (Nader et al. 2012). A new menace, the lionfish (*Pterois miles*), has also just been introduced into the region, first sighted in Iskenderun Bay in 2014 (Turan et al. 2014), and now a common species along the southern coast; Predictions are this species will further devastate fisheries, as the species has done in the Caribbean. The introduction of pufferfish and lionfish to the region has exacerbated the issue of declining fish stocks. Both species grow rapidly and, hence, can drastically reduce local juvenile fish populations in the process (Green et al. 2012). Ünal et al. (2015d) reported that annual economic losses related to the silver-cheeked toadfish in 2011 were US$ 481.00 per fisher from the Turkish Mediterranean coast.

Since approximately 2005, dolphins also began targeting fish in gillnets for food and have been destroying the nets in the process. Dolphins, once regarded as friends to fishers as they would chase fish towards nets, are more recently are considered a 'pest' species by many fishers. There is even a new high-frequency sounding device some small-scale fisheries install to deter dolphins from their nets but to no avail. Alarmingly, many fishers have observed dolphins with their ribcages exposed, a sure sign of malnutrition not noticed in the past. A 'true' ecosystem approach to fisheries, much needed here, would consider and protect the nutritional requirements of non-commercial fauna, especially the top predators, to also ensure their sustainability, many of which are keystone species, and are vital components to healthy ecosystem function (Ulman 2014). Another issue is that diesel fuel subsidies provided mainly to industrial fisheries masks their true operating costs, further driving the system towards unsustainability which further disadvantages the small-scale fisheries sector when competing for resources (Jacquet and Pauly 2008).

### 5.7.2 *Future Opportunities: An Ideal National Conservation Success Story and a Best Practice Case for Small-Scale Fisheries- a Case Study of Gökova Bay*

One great opportunity to improve conservation is to learn from best-practice cases and try to recreate these cases elsewhere. Gökova Bay provides a very unique success story for Turkish marine conservation, which has been protected since 1988 by Law #88/13019 (June 12, 1988). Today, the size of the protected area encompasses 827 $km^2$ and has between 150 to 200 small-scale fishers in the area and about 100 fishing vessels. The area provides essential recruitment and nursery habitats, with fish egg densities reaching 667 eggs per $m^2$ in patches. Biodiversity is also higher in

the MPA than in surrounding areas. It contains 723 macro species occurring, 34 of which are protected under both national and international treaties (Okuş et al. 2006).

Six NFZs were officially declared in July 2010 to support biodiversity and small-scale fisheries in Gökova Bay. In the short term, establishment of NFZs increased illegal fishing activities in these areas and worsened the problem. Soon afterwards, the Mediterranean Conservation Society (Akdeniz Koruma Dernegi = AKD) started a project that trained fishers as marine rangers and equipped them with speedboats. Since January 2013, four local rangers have been working in close cooperation with the Coast Guard in Gökova Bay and this illegal fishing issue is now controlled, the surrounding stocks have improved and fishers' incomes are increasing (Vahdet Ünal, unpublished data).

Some additional opportunities to enhance the success of the Gökova Bay fisheries were recently offered from the AKD. A draft fisheries management plan was presented to support the small-scale fisheries in Gökova Bay, which is currently awaiting approval by DG-Fish. Moreover, in 2016, an 'Ecosystem Approach to Fisheries' project was approved by DG-Fish to be managed by the FAO through the EastMed Project and involving many stakeholders. All these studies and initiatives conducted either by academic sides or NGOs, or the projects conducted by the cooperation of all parties show that the Gökova Bay MPA is seen as a laboratory to establish sustainable small-scale fisheries management and great progress has been made in this field (Box 5.1).

**Box 5.1: A Laboratory for Successful Small Scale Fisheries Management Efforts: Gökova Bay MPA**

A section of Gökova Bay including both marine and terrestrial areas was selected and declared as a Turkish Special Environmental Protection Area (SEPA) by the Decree no. 88/13019 of Cabinet of Ministers in 1988 (June 12, 1988). This SEPA includes 270 $km^2$ of terrestrial area and 827 $km^2$ of marine area, and the economy of the region relies mostly on tourism, agriculture and fishing. Within the protected marine area (827 $km^2$) of Gökova Bay, the fisheries are dominated by small-scale fisheries; with about 100 fishing vessels, averaging 8.1 m in vessel length fishing in the Gökova MPA. The most common small-scale fishing gears used here are various types of gillnets and longlines. Three fishery cooperatives established and run by small-scale fishers exist in the bay. These cooperatives support their members by providing marketing facilities, facilitating legal procedures, and representing the fishers in relevant platforms and have been engaged with the several projects to encourage sustainable fishing in the bay. Since the 2000s, many projects have been conducted by governmental institutions, NGOs, and academic institutions and a series of meetings and workshops were organised with the fisheries

(continued)

**Box 5.1** (continued)
stakeholders in order to create improved practices of small-scale fisheries management in the Gökova MPA, Turkey (Eastern Mediterranean). For instance, during the attendance of all stakeholders, a consensus was reached declaring 6 critical areas as No Fishing Zones (NFZs) within Gökova Bay. These areas were announced in the issue 27,637 of the Official Gazette (dated July 10, 2010) (Ünal et al. 2015c). Following many initiatives and efforts ever since, eventually, it was developed as a fishery management plan (FMP) for the small-scale fisheries in the bay. The plan is based on the Ecosystem Approach to Fisheries (EAF) which is considered an appropriate framework for fisheries management in this special area. These plans can guide the implementation of agreed management measures, thus assisting managers to make better decisions for the sustainable use of fisheries resources. Ünal et al. (2018) reported that the FMP for small-scale fisheries in Gökova MPA was endorsed by all stakeholders and approved by DG-Fisheries in March, 2018. From this point forwards, success is dependent on the "willingness and ability" of DG-Fish (authority responsible for fisheries management) to implement the plan which presents a challenge. Their implementation of the plan will not only affect the fisheries in Gökova but also their level of dedication will also dictate the future of Turkish fisheries. Given that success or failure will either encourage or disappoint entire stakeholder groups, especially the fishers whose entire livelihoods are dependent on fishing, and relevant scientists who have devoted their professional lives on installing proper fisheries management techniques to achieve sustainable fisheries. Considering the scarcity of effective management practices of many Turkish fisheries, there is no doubt that this level of awareness shown in this project needs to be expanded (Ünal et al. 2018). In summary, this SEPA took almost two decades to achieve this level of participation and awareness for the sustainable management of small-scale fisheries in Gökova Bay MPA, and its success hinges on its effectiveness, where if successful, its collective management technique should then be replicated around the country.

## 5.8 Conclusions

Despite the fact that word 'small' is used to describe small-scale fisheries, they are certainly of great importance in providing local employment, in supplying fresh fish and for offering more sustainable fishing methods than their large-scale counterparts. However, in nationally reported statistics, it is impossible to separate small-scale from large-scale landings, which can impede the appropriate decision-making capabilities for both sectors.

Although some positive developments, such as improved small-scale involvement in fisheries, have commenced, the quality and quantity of Turkish fisheries have been drastically declining for some time and the future of small-scale fisheries is certainly in serious jeopardy. The failure of vessel buy-back programmes should not be reintroduced until they can actually decrease overall capacity. However, there are still many opportunities to support conservation measures, though comprehensive governmental support is needed more urgently than ever.

Fisheries management is a complex issue, especially in Turkey with its different seas and its use of multi-gear fishing multispecies. At the very least, fishery managers should be educated in fisheries management, operate with a healthy operating budget, employ a sufficient number of staff, and ensure that the marine resources are improved on from one year to the next. All stakeholders, especially fishers organised under the fishery cooperatives should be part of the decision-making process when improving fisheries management. Responsibility and even authority should be shared between the fishers and related government bodies to manage fishery resources. Currently, awareness and willingness to cooperate amongst fishers are more favourable than ever for a co-management approach to be initiated around the country.

The most realistic way to begin to rebuild Turkish fisheries would be to 'successfully' reduce fishing capacity in combination with the creation of more MPAs especially those with NTZs or NFZs. A strengthening of the MCS is also necessary to reduce illegal fishing and overfishing, and could fund itself from penalties imposed. However, stakeholder participation in the decision-making process is also a vital factor, which cannot be ignored. If it is not possible to involve all stakeholders in the process, then, at the very least, fishers need to be consulted and included in this process due to their accumulated knowledge and vested future interests.

As a result, we suggest that rather than combating the issue at a national level, management instead focuses on building many more manageable smaller MPAs to help rebuild the fisheries and uses small-scale fishers to co-manage these. This is achievable, as small areas can be easier to control, have minimal exchange with the large-scale sector and can therefore result in increased catches.

It has been demonstrated here that small-scale fisheries in Turkey are highly marginalised due to their declining fisheries, and profits. Most are struggling to remain in the sector, and although many wish to exit, there are few alternative livelihoods due to education levels and lack of other available alternatives. Since many are no longer making profits, it can be said that small-scale fisheries are transforming to the recreational sector.

Turkey has a very large population and many different types of fisheries, so management is not an easy task. However, different regions and different sectors would benefit from having their own management measures that incorporate an understanding of local conditions and stocks. DG-Fish certainly has the proper structural foundation in place to implement a successful management regime. Hopefully, through exemplifying some weak facets of the management system, the management regime can be improved (i.e., the landing offices, the logbook system, etc.), so that these initial investments are useful in benefiting the fisheries. Rebuilding

Turkish fisheries so that they are sustainable will require a combination of different management measures to reduce fishing levels. In addition, more classical ways of rebuilding fisheries by strengthening input controls (number of fishers, number of boats) and output controls (quota systems, minimum landing sizes etc.) can be used. There is also a great opportunity here to replicate the Gökova Bay MPA around the country. A consolidated effort between trained scientists, fishers and government is needed to help introduce the proper measures necessary for stock rebuilding.

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# Chapter 6
# Losing Space: The Rise of the Blue Economy and the Marginalisation of Small-Scale Fishers in Cyprus


**Maria Hadjimichael**

**Abstract** The Cypriot small-scale fishing fleet is considered the backbone of fishing in the Republic of Cyprus, constituting its largest fishing sector. Small-scale fishers have always been part of the lower class of Cypriot society, and they are now becoming marginalised, both figuratively and literally, at sea. The fleet's numbers are set by the national Fisheries Law at 500 maximum per year though a smaller number has been issued the past few years. A number of factors, including overfishing, ecosystem changes and an increase in fuel costs has through the years made the profession unviable. In terms of regulations, Cyprus' accession to the European Union and the need to comply with the Common Fisheries Policy has not had a direct impact on small-scale fishers but rather indirectly due to the loopholes the Republic of Cyprus has attempted to find in order to ensure the status quo. More recently however, where conflicts over marine and coastal space have increased, the small-scale fishing sector has been further overlooked in favour of other forms of economic development considered to be more profitable. This chapter explores the changes experienced by small-scale fishers from 1974 onwards. Historical stages are highlighted and where possible presented through the lens of mainstream media. What has been noted is that the profession of small-scale fishers in Cyprus has undergone dramatic changes, with not only a decline in marine resources, but also a reduction in marine space. It appears the rise of more economically important activities in marine areas have been given priority over small-scale fisheries; consequently small-scale fishers have been left to defend the importance of their profession in solitude.

**Keywords** Small-scale fishers · Mediterranean · Blue economy · Maritime spatial planning · Marine space

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## 6.1 Introduction

> *Today the oceans and seas around the European Union are shrinking. They are not becoming smaller, but more and more users are racing to develop their activities there, and to compete with those who are already there […] Europe is at a crossroads. We need concrete action, now, to make sure that the European Union delivers on growth and jobs. We need to set the scene now for those economic activities that will carry us into the future* Maria Damanaki, Commissioner for Fisheries and Maritime Affairs, 2010–2014 (European Commission 2012).

Today's high demand for marine space from new users has led to conflict over areas. On the one hand, arguments include the need to exploit seas' economic potential, and on the other, to ensure their environmental conservation (Ehler and Douvere 2010). Conflict over marine space seems likely to increase as the concept of the Blue Economy (defined by the European Union as the conception of the "*seas and oceans as drivers for the European economy with great potential for innovation and growth and the maritime contribution to achieving the goals of the Europe 2020 strategy for smart, sustainable and inclusive growth*" (European Commission n.d.)) becomes an essential part of the economy of EU coastal states. Spatial conflict is often based on competing uses and values and is manifested in political terms through the concept of sustainable development (McGinnis and Collins 2013). In the EU, it is illustrated through agreements such as "the Limassol Declaration", whereby environmental and nature conservation objectives must be balanced with existing and emerging opportunities, contributing to economic growth and job creation (EU Ministers 2012).

An Integrated Maritime Policy in the EU has been implemented via Maritime Spatial Planning (MSP), which has been defined by the European Commission as "*a process of public authorities of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives*" (European Commission 2010. The process is seen as "*a practical, operational approach to implement rather vague notions of marine ecosystem-based management*" (Ehler and Douvere 2010). On the eastern Mediterranean island of Cyprus, marine space has become increasingly crowded. Therefore, following EU legislation, the MSP project 'THAL-XOR' was initiated, aiming "*for the materialisation of maritime spatial planning, the preparation of a map which reflects the vision of each state as to how to best exploit its marine space, aimed at achieving its sustainable development*" (Oceanographic Institute 2015).

According to the MSP report, the coastal zone of the Republic of Cyprus (hereafter RoC) is particularly crowded and faces increasing pressure from various sources. The main activities currently within the Cypriot coastal zone are: i) tourism (coastal and cruise related- although in more recent years there has been an introduction of yacht tourism linked to the creation of marinas); ii) maritime transport; iii) fishing and marine aquaculture; and iv) energy (hydrocarbon and offshore energy production from renewable sources) and raw materials (desalination) (Oceanographic Institute 2015, 131). The division of the island in 1974 (see Sect. 6.1.2) marked the beginning of the segmentation of the coastal zone. The division

played an important role with regards to the fishing sector in Cyprus, with 300 Greek-Cypriot fishers moving to the South, increasing fishing effort on the less valuable fishing grounds of the south coast of Cyprus. An analysis of RoC's small-scale fisheries sector by Hadjimichael (2015) presented the challenges faced and highlighted a range of issues such as overfishing, economic viability, conflict over access to space and resources, and power struggles (not only between different *métiers* but also between fishers and authorities). The deteriorating state of fish stocks surrounding Cyprus (in decline since the 1990s) and the dysfunctional and unformulated management by the authorities have exacerbated the situation.

This chapter gives a historical account of the continuous segmentation of the sea-space and discusses the changes which have occurred, focusing on the impact on the small-scale fishing sector of RoC. Fisheries in RoC are not an important economic sector and do not make a substantial contribution to the national gross domestic product, resulting in their marginalisation. This became particularly prominent after the economic crisis affected RoC in 2013, leading to a bailout from the European Financial Stability Mechanism. Since then, the prioritisation of economic growth has meant that more economically important sectors have become the principal actors in negotiations over the use of marine space.

### *6.1.1 Re-configuring the Seascape*

While planning of activities at sea and around the coastline might be important in terms of the number of economic activities, there is a growing body of literature which provides an essentially critical view of the process. It is argued that by including increasing numbers of marine activities and zones in the planning process, greater compromises and commitments have to be made in order to reach conservation objectives, meaning biodiversity targets are less easily met (Mazor et al. 2014). Additionally, even though the concept of sustainable development suggests that the implementation of MSP is a completely beneficial situation, there is evidence that this may not be the case. For the least powerful stakeholders, such as those who are not well represented as they have few resources to support their claims, there is a significant risk of being overlooked in the planning process (Jentoft and Knol 2014).

The MSP is essentially a mapping process which intervenes to reorganise at community level and redefines the map and narrative of the coastal frontier, thus preparing it for development and creating space for the new global economy (Nichols 1999). For example, mapping practices for policy purposes make the ecosystem legible, measurable and manageable, and involve assumptions and choices that influence the political reality they produce (Knol 2011). Such instruments can often become "*a useful smokescreen to hide less respectable objectives, to depoliticize fundamentally political issues, to create a minimum consensus on reform by relying on the apparent neutrality of instruments presented as modern, and whose actual effects are felt permanently*" (Lascoumes and Le Gales 2007). Thus, the politics of marine space demand an inquiry into the dialectical relationship between

changing constructions of the sea and local political-economic processes (Trist 2010). It is a process which re-constructs ocean space within the dynamics of a historically specific political economy; such was the case for land space (Steinberg 1996).

Fishers used to be the main human actors at sea in terms of the use of space and marine resources, although since the end of the 1990s, the economic seascape has started to change rapidly. More economically important sectors, such as large-scale fisheries, marine aquaculture (Nayak and Berkes 2012; Hadjimichael et al. 2014; Ertör and Ortega-Cerdà 2015), offshore oil and gas extraction (Zalik 2009), and recreation and tourism activities, have expanded, leading to dispossession of space for small-scale fishers with potentially serious impacts on their livelihoods.

### *6.1.2 Case Study Location – Republic of Cyprus*

The Republic of Cyprus (RoC) is the third largest island (after Sicily and Sardinia) in the Mediterranean Sea and lies approximately 75 km south of Turkey and about 1450 km south-east of the Greek mainland. In 1963, three years after Cyprus was declared an independent state, conflict arose on the island between the Turkish and Greek populations, leading to a cease-fire line dividing the capital Nicosia. In 1974, the president of Cyprus was overthrown in a military coup backed by the Greek military junta and Turkish troops were sent to the island to protect the Turkish Cypriot population. There was then a relocation of the Turkish-Cypriot population to the northern part of the island, and the Greek-Cypriot population to the southern. The Republic of Cyprus only has control over the southern part of the island and is an internationally recognised state, whereas the northern part is under the control of the Turkish Republic of Northern Cyprus, a state only recognised by Turkey (Fig. 6.1). In April 2004, the entire island was admitted into the EU, but only the south is protected by EU legislation, at least until the current political situation is resolved. This chapter will focus on the small-scale fisheries sector of RoC.

## 6.2 An Account of Small-Scale Fisheries

Despite its relatively insignificant contribution (less than 0.3%) to Gross National Income (GNI), the fisheries sector is an important industry for the local economy of several coastal areas (Marttin et al. 2006).

Overexploitation of marine resources is understood to be the result of excessive resource extraction by professional, recreational and illegal fishing on the one hand, and weak enforcement of existing regulations on the other. Ecosystem shifts due to factors such as climate change and introduction of invasive species have also had an impact (Hadjimichael et al. 2013). Information from the 2017 Annual Economic

**Fig. 6.1** The island of Cyprus and its different jurisdictions. The dark grey partitioning line (the buffer zone) divides the island in the southern part, the Republic of Cyprus, and the northern part, the Turkish Republic of Northern Cyprus. The areas shown with light grey are the British Sovereign Base Areas. The fishing harbours are marked with red dots and are the following (from right to left): Ayia Triada, Paralimni, Ayia Napa, Potamos Liopetriou, Xilofagou, Ormidia, Xylotymboy, Larnaca, Zygi, Limassol, Akrotiri, Paphos, Ayios Georgios Peyias, Latsi, Pomos, Pyrgos

Report (hereafter AER) on the EU fishing fleet (STECF 2017) states that while in terms of profitability the Cypriot fishing fleet in 2016 generated a positive Gross Value Added[1] (GVA) of €1.1 million. According to the same report, there was an estimated revenue at €7.84 million which is an increase of 4.4% from the previous year due to a 1% increase in income from landings and an increase in direct subsidies. Gross profit and net profit in 2015 were estimated at -€0.03 million and -€6.5 million, respectively, showing a deterioration in the economic performance compared to the year before. The small-scale fleet (meaning vessels under 12 m using passive gears) represented 95% of the total fleet in 2016 and thus is the most important fleet in terms of number of vessels and thus, employment. It also represents 47% of total weight of landings and 60% of value of landings. Since the small-scale fleet provides for fish which is of higher quality (meaning freshness and size) they get better prices than the large-scale fleet at first sale (STECF 2017).

The fishing fleet is divided into the following main fleet segments, established by Cypriot Fisheries Law (Annex II, Article 13) (Fisheries Law (ΚΕΦ.135), n.d.). These segments are: (i) small-scale inshore vessels composed primarily of small fishing vessels (less than 12 m) that use seasonally deployed passive gear, (ii) polyvalent fishing for pelagic species, fishing within or outside RoC's territorial waters,

[1] Gross Value Added is defined in the Annual Economic Report as a measure of the contribution to GDP made by the sector.

**Table 6.1** Types and numbers of fishers active in Cypriot waters

| Category | Specifications | Gear | Number of licences[a] |
|---|---|---|---|
| Small-scale (A & B)[a] | Boats smaller than 12 metres. Category A: Full-time fishers | Seasonal passive gear (gillnets, longlines, pots etc) | 327 (according to law up to 500 licences can be issued) |
| | Category B: Part-time fishers | | |
| Trawlers (inshore)[b] | | Trawler | 2 |
| Multipurpose/Polyvalent[b] | Boats 18–24 m | Longlines, bottom longlines, gillnets | 35 |
| Mediterranean fishing (operates beyond the 200 nm and within the Mediterranean Sea)[b] | | | 9 |
| Purse seiner[b] | | Purse seiner | 2 |
| Category C (with boat)[c] | Professional fishers with licences to fish over the weekend and bank holidays | Gillnets of up to 600 m | 450 |
| Category C (cast net)[c] | Professional fishers with licences to fish over the weekend and bank holidays | | 300 |
| Rod and line | No licence required | | Estimated at hundreds of fishers (DFMR 2012) |

[a]The data have been compiled using the latest announcement by the DFMR on licence applications/renewals (announced on 20th September 2018 for licenses to operate in 2019)
[b]The data have been compiled using the latest announcement by the DFMR on licence applications/renewals (announced on 8th November 2017 for licenses to operate in 2018)
[c]The data have been compiled using the latest announcement by the DFMR on licence applications/renewals (announced on 20th September 2018 for 2019)

with an overall length 12–24 m, (iii) coastal bottom trawlers operating within the territorial waters of the RoC. Article 13(3) of the national Fisheries Law sets a limit to the licenses that can be issued by the Director of the Department of Fisheries and Marine Research for small-scale fishers. Depending on the state of the fish stocks, Category A and B licenses can amount up to 500 licenses and Category C up to 1200 (differences in the licenses are explained below). Table 6.1 gives detailed information on the numbers of licenses issued in 2018/2019, and type of gear used by each group.

There is heterogeneity within the small-scale fishers' fleet, not in relation to gear or resources extracted, but rather the type of license each fisher holds. Category A includes professional fishers for whom fishing is the main occupation, whilst category B includes professional fishers whose occupation is part-time. Category A

fishers are obliged to provide proof of full employment in order to renew their licences every year, whilst Category B fishers must demonstrate that they have been at sea for at least 120 days per year and landed over 1000 kg. Category C, introduced in 2007, is defined by the Fisheries Law as professional fishers who are only allowed to fish during weekends and their fishing trips are limited to no more than 70 days per year (with specific open and closed periods). Despite these limitations, Category C fishers are not prevented from selling their catch, although they do not receive subsides. Hadjimichael (2015) describes the political and socio-economic context in which Category C was introduced after Cyprus' accession to the EU, and the introduction of new Community legislation (Council Regulation 1967/2006 of 21 December 2006 hereafter) in which 'leisure fisheries' were prohibited from the use of nets (Article 17(1) of the Regulation). It has been argued by professional fishers that Category C fishers are recreational fishers who demanded this loophole in order to continue fishing with the use of nets after the Mediterranean regulation was passed. Thus, even though accession in the EU did not have an impact to small-scale fishers per se, there were policy changes at the national level aiming to ensure the status quo which in turn had an impact on small-scale fishers. There is a possibility that the creation of Category C fishers created problems with the data, as the number of fishers and vessels are included in the official statistics. However, it is unclear whether numbers include the catch, days-at-sea and employment for this Category. In this chapter, the term small-scale fishers does not include Category C fishers.

Small-scale fishing fleet are small family–owned businesses usually of one physical person, their area of operation is close to landing points and they use one or more passive gears even to the same fishing trip and have limited daily landings. The main gears used are trammel nets, set gillnets and set longlines (STECF 2017). Landings are mainly composed of picarel (*Spicara* spp. and *Spicara smaris*), bogue (*Boops boops*), red mullet (*Mullus barbatus*), surmulet (*Mullus surmuletus*), sea bream (*Pagellus erythrinus*), and cephalopods such as common octopus (*Octopus vulgaris*), musky octopus (*Eledone moschata*), common squid (*Loligo vulgaris*), and cuttlefish (*Sepia officinalis*). The fleet also lands relatively large quantities of seabream (*Diplodus* spp.), Mediterranean parrotfish (*Sparisoma cretense*), and rabbitfish (*Siganus* spp).

The number of effort days for this fleet is seasonal and weather dependent with small vessels targeting different species depending on the time of the year. In 2015 there were 635 small-scale fishers (full-time employment) and the number is projected to fall to 551 for 2017 (STECF 2017). It is important here to mention that 66 vessels of Category A and B were scrapped in 2015 with public aid within the framework of the Scheme of Permanent Cessation, co-funded by the European Maritime and Fisheries Fund 2014–2020 (STECF 2017). The data used in the Annual Economic Report (AER) report include fishers from Category C, and thus not indicative of the actual small-scale fleet. Fishing in Cyprus is a male dominated profession, with only two women fishers being registered albeit as fisher assistants, meaning that these fisherwomen do not own a boat and are not able to go fishing by themselves (Fig. 6.2).

**Fig. 6.2** A small-scale fisher in Larnaca region, after a fishing trip removing the catch from the nets. (Photo credit: M. Hadjimichael)

There are 16 fishing harbours (known as fishing shelters)[2] in the southern part of the island (Fig. 6.1), which are as follows (the numbers in brackets are an indicative number for the vessels registered at each harbour)[3]:

- Famagusta region: Ayia Triada (25), Paralimni (56), Ayia Napa (99), Potamos Liopetriou (66), Xilofagou (16);
- Larnaca region: Ormidia (28), Xylotymboy, Larnaca (129), Zygi;
- Limassol region: Limassol, Akrotiri;
- Paphos region: Paphos, Ayios Georgios Peyias (15), Latsi, Pomos (12),
- Nicosia region: Pyrgos (17)

### *6.2.1 Institutional and Organisational Context of Small-Scale Fisheries*

The fishing sector falls under the jurisdiction of the Department of Fisheries and Marine Research (DFMR) of the Ministry of Agriculture, Natural Resources and Environment. The DFMR is responsible for conducting fisheries research, collecting fishery data and developing the government's fisheries policy. There is a top-down approach from the competent authorities, particularly with regard to decision-making, which is often criticised by fishers who feel powerless to change

[2] Fishing shelters in the Republic of Cyprus: http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page12_gr/page12_gr?OpenDocument

[3] Data are from 2010 (Hadjimichael 2010) as it was not possible to obtain updated figures from the DFMR.

the situation within the sector. This is despite the fact that the small-scale fisheries sector has made attempts to organise itself. According to fishers, the fact that their association does not have scientific staff or advisors who can process and transfer data in a format they can comprehend, means that they cannot be meaningfully involved in any decision-making process.

The Cypriot small-scale fleet is organised into local associations, usually linked to one or two fishing shelters. These local associations then form regional ones (Famagusta, Larnaca, Limassol and Paphos regions) which together form the pan-Cyprian body. Occasionally, local associations distance themselves from the national body, something which can create further ruptures among fishers. Some associations are much more active than others depending on their members and particularly the president, along with other local issues. For example, the fisher association at Zygi harbour has been extremely active in discussions with the DFMR and with stakeholders near their fishing grounds. This particular association has had an active president but also many issues to deal with such as the expansion of marine aquaculture and in particular, the increasing industrialisation of the Vasilikos area[4] (a direct action from this association is further discussed in Sect. 6.3).

In general, despite the fact that the small-scale fisher organisation has been officially registered, it does not have the resources or staff with the relevant background to be able to lobby for small-scale fishing rights at national or European level. According to fishers' representatives, fishers learn about the majority of issues after decisions have been taken and when responding, are informed they "*are reacting opportunistically for the money*". At the same time, when fishers react to an action in advance and ask for consultation or meetings, they are often ignored.

## 6.3 Policy Context (National and EU-Policy Measures and Influence)

The main policy instrument for the Cypriot fishing fleet is the Cypriot Fisheries Law (Fisheries Law (ΚΕΦ.135). n.d.), which creates legislation such as; how licences are issued; categorisation of different fishing fleets; penalties and their enforcement; maintenance of the fishing vessel register; regulations about fishing gears and the prohibition of the use of poisonous substances and dynamite for fishing. In addition to the main Fisheries Law, there are a number of bylaws establishing specific technical and management measures including:

- Restrictive access to fisheries by limiting the number of licences issued for each fleet segment;
- Effort control by restrictions on the use of fishing gears (quantities, soaking time, depth of deployment and distance offshore) and regulation of fishing capacity (using scrappage schemes, engine power restrictions and capping the fleet vessel register);

[4] Vasilikos is the most industrialised area in Cyprus, where besides the aquaculture farms, there is also a power station and a cement factory.

– Market restriction measures defining a set of minimum landing sizes;
– Technical conservation measures by setting minimum mesh sizes,
– Seasonal and area closures.

As the activities of small-scale fishers take place within the country's 12 NM limit, this means that management of fisheries resources falls under national jurisdiction rather than under the Common Fisheries Policy. This is particularly true for Mediterranean fishers as those in the northern EU are required to comply with the Total Allowable Catches measures. The principal relevant EU legislation has been the Mediterranean regulation (Council Regulation 1967/2006 of 21 December 2006), which came into force in 2007, establishing technical measures, increasing mesh and hook sizes for trawl nets, bottom-set nets, and longlines for certain species and making the use of square-meshed nets mandatory. It also determined the overall size of the main types of passive fishing gear while reserving part of the coastal area for selective gears used by small-scale fishers. With regards to trawlers, the new regulation set the minimum distances for the use of trawl nets. This decreased their fishing area owing to the continental shelf of Cyprus being very narrow with a relatively steep slope, making fishing with trawlers unviable. In addition, the fact that it prohibited recreational fishers using nets, led to the introduction of the disputed Category C (discussed in Sect. 6.2).

## 6.4 Sharing Space – Losing Space

Small-scale fishers are sharing the seascape and its resources with other actors, both human and non-human. Since early 2000's in particular, the role of fishers in the coastal and marine space has been changing with other, often more economically important activities gaining greater prominence (Fig. 6.3).

### *6.4.1 Competition with Marine Species*

Encounters with marine species such as dolphins, sea turtles and seals are unavoidable for all fishers, particularly small-scale ones. Newspaper articles published in RoC press every year give particular weight to the impact these encounters have on fishers' livelihood (a recent example can be found in an article in Philelefthe ros, Vasilas 2015). The newspaper articles point to the damage inflicted by dolphins, turtles and seals to fishing gears, and the effect on the fish resource itself from the increasing population of an invasive species, referred to by the locals as '*lagocephalos'* (rabbit fish). *Lagocephalos* (*silverstripe blassop*) is a "*lessepsian migrant*", widespread in the Indo-Pacific region, which migrated from the Red Sea into the Mediterranean through the Suez Canal. The increase in water temperature around the island of Cyprus has given this species the opportunity to dominate, becoming

**Fig. 6.3** A fishing shelter in the Larnaca region with the industrial port visible in the background. (Photo credit: M. Hadjimichael)

much more common since 2004 (DFMR 2009). Fishers often use such articles to exert pressure on the government for financial assistance. There has been some form of governmental financial assistance for fishers' gear, with Governmental press releases on decisions for providing such assistance dating back to 1995.

### *6.4.2 Competition with Other Fishers*

As described in Sect. 6.2, apart from small-scale fisheries, the Cypriot capture fisheries consist of the trawl fishery and the multipurpose/polyvalent fishery. Additionally, there are different groups of recreational fishers, from fishers holding Category C license, to spear fishers, and those using rod and line.

As of June 2013, two purse seiners have received a license to operate in Cypriot waters and have become part of the multipurpose/polyvalent fishery, although only one of them is currently active. The re-introduction of the purse seiners made the small-scale fishers react, leading to protests outside Parliament in June 2013, which were the first sector-specific protests after the country's bail-out in February 2013. The small-scale fishers compete in terms of primarily resources with the purse seiners since they both target bogue (*Boops boops*), which is the highest in price landed species in the Republic of Cyprus. There is also the multipurpose fishery (polyvalent gears) which consists of boats of about 16 m in length using long lines in the waters of RoC and in international waters in the Eastern Mediterranean.

Recreational fishing is also a significant activity both in terms of number of those involved and fishing effort (Ministry of Agriculture, Natural Resources and Environment 2012) and has economic, social and cultural importance. The DFMR issues approximately 4500 licences for recreational fishers, while it is estimated that hundreds of others fish with rods and lines without a license (DFMR 2012). As already discussed above, the introduction of Category C fishers created a loophole for the use of nets by leisure fisheries (whether through the use of boat or not) whilst recreational fishers also fish through the use of spear-guns. According to official statistics, the recreational fishery captures approximately 15% of the total Cypriot catch; however this is not yet reflected in the Fishery Statistics, most likely because the DFMR has only recently focused on this fishery (DFMR 2008). Spear fishing in particular has gained increasing popularity amongst both locals and tourists alike and there are fears that novice spear fishers kill a high proportion of coastal juvenile fish (Ulman et al. 2014). Added to this, there is also the introduction of Category C fishers in 2007. Fishers appear to be more concerned about competition with recreational fishers (Hadjimichael et al. 2013), as they compete for the same resources and boats are of similar size and power (sometimes wealthy recreational fishers own boats that are more powerful than the small-scale, commercial fishers). There is also a lack of catch-control and activity on the part of the recreational fishers, who sometimes illegally sell their catch to restaurants for a lower price.

### *6.4.3 More Fishers, Less Space*

Before 1974, the small-scale fishing fleet, then consisting of roughly 350 small (5–9 m length) wooden marine diesel boats, was not under any particular space constraints. It was not until 1974, following the partition of the island, that fishers started to feel confined. The events of that year had two important implications for the fishing industry. According to Garcia and Demetropoulos (1986), the 1974 events led to a 40% decrease in fishing grounds in terms of area, and thus a 60% increase in fishing effort per square mile. Additionally, 300 fishers became displaced and had to move to the south of the island.

Evidence also shows that although there were only about 30–40 Turkish-Cypriot fishers on the island at the time of its division in 1974, more Turkish-Cypriots took

to fishing after this date, as they had the opportunity to use the abandoned gear in the north. This led to the number of artisanal fishers gradually increasing to reach approximately 410 fishers in 2012 (Ulman et al. 2014).

The Government of RoC then assisted the 300 fishers through loans and grants, technical assistance and the building of new fishing shelters, in order for them to resume fishing in the waters controlled by the Republic (Demetropoulos 1985; Hadjistephanou and Vassiliades 2004). The changes that occurred in 1974 led to the heavy exploitation of resources in the areas that remained under the control of RoC (Garcia and Demetropoulos 1986) and also created a dependent relationship between the fishers and the administration (Hadjimichael 2015).

The rise of tourism, particularly from the 1980s onwards, appears to have had influence on fishers, especially those who are based close to tourist resorts such as Ayia Napa, Protaras and Paphos. On the one hand, tourism can be seen as a sector which can potentially complement fishers' activities if exploited the right way (for example by making use of the potential from fishing tourism), though it can also have negative effects depending what kind of tourist development is undertaken. This development can differ among municipalities and there have been cases where villages have seen such a sudden rise in tourism that the character of the village, itself, changed rapidly. This in turn had socio-economic and cultural implications for those sectors not involved in the tourist industry. Such an example has been the village of Ayia Napa, which after the division of the island experienced a fast-track shift from a fishing village to an Ibiza-type tourist resort. A Fishery Local Action Group (FLAG[5]) has been set up for the Larnaca and Famagusta region, organising seminars to help fishers to develop the potential for fishing tourism. Another FLAG for the Limassol region is now being established with the potential results of these actions becoming visible in the near future.

### *6.4.4 Development of Marine Aquaculture*

The development of marine aquaculture in Cyprus started during the late 1980s – early 1990s. Currently, there are six operating marine aquaculture farms owned by five companies and according to Hofherr et al. (2015), cover 3% of the coastline. Four of the farms are within an aquaculture development area located in the south-west of the island. There has also been a significant increase in the production of the farms, from 1800 t in 2001 to 7.277 t in 2017 (DFMR 2017; 2018).

The introduction and expansion of this industry has not been without conflict with fishers. Reports of conflicts between aquaculture farmers and fishers at the

[5] https://webgate.ec.europa.eu/fpfis/cms/farnet/tools/flags-2014-2020

Liopetri River (Potamos) in the press dates back to 1991. In a report from 1991, local fishers appear to blame the aquaculture farm for changes that occurred to the seabed with fishers stating that after its establishment, the sea in proximity and to the east of the farm became full of seaweed (cladophora spp). After the matter started receiving media attention, the company workers (according to testimonials from local fishers) threw a white substance into the water, after which the seaweed disappeared but which led to "an ecological catastrophe" turning the seabed white and leaving organisms on and in the proximity of the seabed dead.

Newspaper articles which discuss the issue dating back to 1997 suggest that the marine aquaculture farm displaced fishers (Giannakos 1997), as well as having a detrimental effect on the ecology of the marine environment (Giannakos 1999).

### *6.4.5 Hydrocarbons as a Way Out of the Crisis*

In 2011, Demetris Christofias, then president of RoC, confirmed the discovery of hydrocarbon reserves within the Cypriot Exclusive Economic Zone (EEZ), presenting the discovery as a stimulus for economic recovery, as well as a catalyst for peace in the Eastern Mediterranean region. Since then, a fast-track licensing procedure has occurred, albeit without sufficient consultation, affecting different sectors and stakeholders. Small-scale fishers have been one of the most disregarded groups as appropriate participation was not feasible. This was not only due to a lack of appropriate resources on the part of fishers, but also a lack of willingness to include them owing to their marginal importance to the economy (especially when compared to the potential contribution of hydrocarbon reserves).

The example of the fishers from the Zygi harbour is distinctive. According to local fishers, they have been negotiating with 'VTTV, Vasiliko',[6] the company which was commissioned by RoC to construct and run the terminal for hydrocarbon storage since 2012. The negotiations focused on the compensation fishers from Zygi would receive from the company for the loss of time and income, since the terminal would oblige them to travel further in order to reach their fishing grounds. During late 2014, the negotiations collapsed and fishers decided to stage a protest by blocking the terminal using their boats. The blockade lasted for 6 h making headlines in the mainstream news. The most popular newspaper in RoC used the title: "*20 fishing boats blockade 300 million euros worth of work*" on their front page the day after the blockade. The company responded by disagreeing that the terminal negatively impacts the fishing sector and highlight its overall support for neighbouring communities (Phileleftheros 2014) (Box 6.1).

[6] According to their website, VTTV, Vasiliko is comprised of 28 tanks and has a capacity of 544,000 $m^3$. It offers access to a deep water marine jetty as well as to road tanker loading facilities. A Phase 2 expansion is currently under evaluation and would create an additional 13 tanks and further capacity of 305,000 $m^3$.

**Box 6.1: Zygi: A Fishing Community at the Margins of the Blue Economy**

Zygi is a small village community on the south coast of Cyprus and is considered to be one of, if not the most well-known and reputable fishing villages of the Republic of Cyprus. After the 1974 division of the island, Zygi was one of the villages which lost half of its population (who were Turkish Cypriots and thus moved north). It was, therefore, a village where displaced Greek Cypriots settled. With the financial assistance of the Department of Fisheries and Marine Research, some of the displaced people became fishers, an occupation which at the time could provide them with a good living, particularly fishing in that specific area, as it was considered to be one of the island's best fishing grounds. During more recent years, as the village developed, an increasing number of industries started to be located in close proximity. Small scale fishers have been particularly affected by these developments. An example of these are aquaculture farms, as five out of the six aquaculture farms which operate in the Republic are located in the area of Vasilikos, the only industrial area of Cyprus with port facilities for dirty cargos, which is also currently expanding to accommodate the emerging oil and gas industry of Cyprus and the Eastern Mediterranean. Consequently, we have the expansion of existing sectors such as marine aquaculture, and additionally the exploration of new economic sectors, such as the oil & gas sector. The particular fishing community did not appear to be against aquaculture farms. The fishers got used to their presence and adapted their sea routes accordingly. Additionally, they receive a small subsidy from the aquaculture industry, plus once in a while when the nets of an aquaculture farm break; fishers enjoy a good catch. The situation could not be any more different in the case of the oil & gas sector. The government's decision to place the "Mediterranean's new energy hub"[7] with 28 tanks and a capacity of 544,000 $m^3$, access to a deep-water marine jetty as well as to road tanker loading facilities at Vasiliko created a storm of reactions. Despite the fact that small scale fishers started negotiations with the company in charge of the development from 2012, fishers ended up organising a protest during December 2014 where a 20 fishing-boat blockade of the terminal cost 300 million euros worth of work. According to the fishers, the protest was to show their indignation at the company going back on their promise to give financial assistance to the fishers due to the fact that fishers not only lose fishing space, but they also have to travel longer distances to fish.

(continued)

[7] http://www.vtti.com/terminals/vttv-cyprus

**Box 6.1** (continued)

Notwithstanding that, fishers have been negotiating for over two years, I witnessed an ex-DFMR officer, now an Engo representative during the MSP consultation process, stating that fishers at Zygi "*did not try to do anything beforehand, but now they smell that there is money to be made, they have decided to protest*". The latest development has been the establishment of the Vasilikos master plan which allocates land for the construction of up to five LNG liquefaction plants, liquefied petroleum gas and oil products storage and gas-based industry such as methanol or urea. This has led to health worries for eight of the communities adjacent to the Vasiliko area including Zygi. Additionally, fishers are particularly worried, as the master plan expands and appropriates another large area from their fishing grounds.

## 6.5 Conclusion and Looking to the Future

By focusing on the issue of marine space, this chapter has aimed to provide an account of the small-scale fisheries sector of RoC through exploration and understanding of the historical changes the sector has been undergoing. In summary, after 1974, Greek-Cypriot fishers were left with almost half their fishing areas, and then experienced a sudden rise in coastal tourism development, thus changing the character of many of the fishing villages. The rise of marine aquaculture and the discovery of hydrocarbon reserves in the Cypriot EEZ have coincided with a newly introduced discourse that focuses on the Blue Economy. This includes the EU's Blue Growth strategy and the attempts for the implementation of an MSP directive, which was voted by the House of Representatives on the 29th of September 2017.

Throughout the years, fisheries mismanagement[8] lack of enforcement and an increase in fishing activity (particularly due to the increase in recreational and illegal fishing) have led to over-exploitation of the marine environment, whilst an increase in maritime activities has also contributed to its overuse. Small-scale fishers in RoC have been losing space, while the issues they have had to deal with have been increasing. The growing number of maritime activities/users, decreasing space and the decline in marine resources along with the increase in fishing activity does not allow much optimism for the future of small-scale fishers in Cyprus, unless radical changes occurs. The DFMR has a vital role to play in ensuring the small-scale fisheries sector is consulted during the finalisation of the MSP plans which need to be finalised by the 31st of March 2021, as well as in putting the appropriate safety

[8] The point on fisheries mismanagement has been extensively analysed in Hadjimichael (2015).

measures in place so as to protect the sector. Additionally, scientific information with regards to the activities and impact of recreational fishers is imperative if a complete picture is to be drawn in terms of the state of fish stocks.

Damanaki's statement quoted at the beginning of the chapter was clear, "*we need to set the scene now for those economic activities that will carry us into the future*". If we are to make an assumption based on the political and economic context of our times, we will have to predict that small-scale fishing is not an important enough economic activity to gain institutional support. Having said that, Cypriot fishers have for the first time been involved in a pan-European initiative and participated in a meeting organised and facilitated by the Low Impact Fishers of Europe platform [LIFE], in which Mediterranean small-scale fishers united to identify problems and solutions and discuss and agree upon a series of initiatives to ensure the sustainability and survival of their sector.[9] The Zygi small-scale fisher association became an official member of LIFE in March 2017 and if there are positive outcomes from this cooperation, this can become a catalyst for the improvement of the small-scale fisheries association lobbying at a higher level. There are still, however, collective actions taking place, the results of which we are yet to witness.

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# Chapter 7
# Small-Scale Fisheries in Greece: Status, Problems, and Management


**Evangelos Tzanatos, Michalis Georgiadis, and Panagiota Peristeraki**

**Abstract** Small-scale fisheries in Greece are characterised by a large number of fishers and vessels scattered along an extensive coastline, a variety of fishing gears and target species, and intense heterogeneity. There are various definitions of small-scale fisheries; in general, they comprise all gears except for trawls and purse seines. Despite having little direct economic value, small-scale fisheries do have significant social importance, especially for remote rural and insular areas. Small-scale fisheries are structured around the family; contemporary fishers are relatively old, tend to inhabit their place of birth, have a low educational level and diverse levels of dependence on the profession. The fisheries are mainly located in the coastal zone and managed through control measures regulating effort, gear types, and gear use in terms of space and time. In general, small-scale fisheries have characteristics associated with sustainability, although there are cases with adverse effects on the marine ecosystem. In past decades, due to a number of management practices (e.g. vessel modernisation and replacement), Greek small-scale fisheries have, however, lost their traditional advantages of "cost-effect" relationship and morphed into "small-becoming-big-scale fisheries" with high costs, low profits, increased fishing effort and pressure on fish resources. In addition, the complex and outdated legal framework regarding professional fisheries and the individualistic character of the profession act as obstacles to collective action and complicate management.

**Keywords** Greece · Small-scale fisheries · Mediterranean Sea · Sustainability · Fisheries legislation

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## 7.1 Introduction

Greece, situated in the southeastern corner of Europe, is characterised by a mountainous landscape and a multitude of islands. It has a vast, rugged coastline of over 15,000 km (Anonymous 2017), which combined with other landscape characteristics, has resulted in the existence of numerous small ports and havens. The Mediterranean Sea, especially the eastern part, is highly oligotrophic (Turley et al. 2000) and is also considered a "biodiversity hotspot" (Bianchi and Morri 2000; Myers et al. 2000). The above have resulted in multi-species fisheries and a pre-industrial model of fisheries development (Olympitou 2010). Moreover, the lack of a processing sector and of a large export trade have resulted in the majority of fish products being sold in local markets: characteristics that still largely apply to the present day.

As a result, small-scale fisheries have acquired major importance in coastal areas both as a source of high-quality food and as a means of employment for insular and coastal populations that have strong nautical and fishing traditions. The above elements combined with the poverty traditionally associated with the rural sector have led to the high significance of small-scale fisheries, with Greece having the largest fishing fleet in the European Union (EU) (18.4% of the total vessels); however, concerning tonnage or engine power, the percentage of the Greek fleet is just 4.7% and 6.9% respectively (EC 2016). The above clearly indicate the significance of the small-sized vessels that characterise small-scale fisheries.

## 7.2 Description of Small-Scale Fisheries

Small-scale fisheries are a sector that despite being characterised by a number of elements, is not easy to define (García-Flórez et al. 2014); thus, there are diverse small-scale fisheries' definitions among different European and Mediterranean countries with the most common criteria being vessel length, tonnage, trip duration or fishing gears (Durand et al. 1989). The current Greek legislation provides definitions according to administrative criteria that differentiate fishing sectors. According to these, small-scale fisheries are carried out on professional vessels that can only be owned by individuals who are professional fishers. To undertake fishing operations, the presence of the owner onboard is required and the use of trawl and purse seine gears is prohibited. Furthermore, these are the only professional vessels allowed to fish in the coastal zone and indeed their activity is mainly carried out there; thus, not surprisingly, in Greece small-scale fisheries are colloquially called "coastal fisheries." Small-scale fishing vessels, contrary to industrial fishing vessels, cannot be owned by an enterprise of any form, nor be leased or ceded to individuals other than their owner(s).

The Hellenic Statistical Authority (ELSTAT www.statistics.gr) provides fisheries statistics distinguishing three major categories: "overseas fisheries", "open sea fisheries" and "inshore fisheries". The latter corresponds to small-scale fisheries.

Similarly, a number of laws regulate the fisheries carried out within the waters under national jurisdiction by distinguishing them as open sea (trawlers and purse seines) and small-scale fisheries.

This definition of small-scale fisheries results in the inclusion of various gears such as; trammel nets; gillnets; set and drifting longlines; beach seines; traps and pots; and handlines. Here it is important to note the inclusion of longline fisheries for large pelagics and hake. These fisheries share some of the characteristics of industrial fisheries (vessel size, crew number, costs, profits, catch biomass and fishing grounds). However, these fisheries are seasonal and in many cases, alternate with typical small-scale fishing métiers in the rest of the year.

Lagoon barrier trap fisheries (a form of extensive aquaculture) focus on the periodic fish migrations from lagoons, which are nurseries for a number of euryhaline species, to the sea (Dimitriou et al. 2007). Many Greek lagoons are leased periodically by the state to fisher cooperatives (Katselis et al. 2007). The above definition of small-scale fisheries leaves lagoon barrier trap fisheries excluded from the small-scale sector. In Greece, there are also freshwater, small-scale fisheries carried out mainly in lakes (Bobori and Economidis 2006). The total production of this activity seems to be below 5% of total small-scale fisheries, and regarding which there is limited, relevant data and usually only of local importance.

### *7.2.1 Socio-economic Relevance for the Country*

The economic importance of small-scale fisheries in Greece is low. The yearly value of the total Greek capture fisheries production was €~540 million (0.24% of GDP) in 2009, a fourfold higher percentage compared to the EU average (Chymis 2014). As small-scale fisheries value is 55% of the total capture of the fisheries sector (Anonymous 2007), it contributes just ~0.13% to Greece's GDP. However, as a significant part of the fish is legally sold retail at landing sites or directly to taverns/hotels (Fig. 7.1), this value could be higher.

Despite the low economic value, similar to other countries in Europe, the social component of small-scale fisheries is more important (Guyader et al. 2013). As there is no up-to-date register of fishers, their numbers can only be estimated. According to ELSTAT, 12,220 individuals were working in the entire capture fisheries sector (0.3% of total workers in Greece) in 2009. However, this number is a serious underestimate, as it excludes individuals working on vessels of engine power less than 20 hp and those not declaring income from fisheries. Considering the time of occupation (full-time equivalents) in fishing activities, in 2009, there were 23,862 capture fishers (not only small-scale) in Greece (Chymis 2014). According to the Ministry of Rural Development and Foods, there were ~30,000 fishers in 2007 (Anonymous 2007), while according to Tzanatos et al. (2005) in 2002, there were ~29,500 small-scale fishers (today following the fleet dynamics, this number could be ~23,000, if a linear correlation between the number of fishers and vessels is assumed). The divergence among these estimates indicates a common

**Fig. 7.1** The catch of small-scale fisheries is generally of high commercial value and is usually sold directly, often by the fishers themselves. (Photo credit: D. Maoutsou)

phenomenon in the sector of small-scale fisheries: the availability of individuals working as fishers without this being their primary occupation, resulting in their inclusion (or not) in the sector depending on the criteria used. In any case, even with the most conservative estimate (by the European Commission [EC]), despite Greece being placed tenth in the EU regarding total population (2% of EU population), it is second concerning the number of capture fishers (17% of the EU total). This combined with an estimate of small-scale fishers being ~80% of the capture fishers (Anonymous 2007), clearly indicates the social significance of small-scale fisheries. This is also obvious from examining the allocation of profit. Using data from different sources (EC, FAO, ELSTAT, Ministry of Rural Development and Foods in Anonymous 2007; Chymis 2014), it can be deduced that a profit of €1 million is produced by ~20 individual fishers in the EU, ~44 fishers in Greece and ~62 fishers considering only the Greek small-scale fisheries sector. Naturally, bearing in mind the existence of other fisheries-related professions (fishmongers, shipyards, processing of fish products, taverns and hotels); the indirect social and even economic importance of the small-scale fisheries sector is much higher. This socio-economic significance of fisheries is expected to be even greater in areas and local populations with strong traditions related to fishing and the maritime environment in general.

### 7.2.2 Numbers

The registered professional fishing fleet in Greece in 2018 consists of 14,935 fishing vessels, of which 14,431 (96.6%) could be characterised as belonging to the small-scale fishing fleet according to the Common Fisheries Register (EC 2018), as they are not allowed to use otter trawls or purse seines. According to the Common Fisheries Register, this fleet is officially distributed over 185 ports, but as only ports with port authorities are inserted in the register, the actual distribution of the fleet is scattered over many more locations (Table 7.1). The large number of home ports resulting in a large number of landing sites is one of the main challenges for monitoring fishing activity.

**Table 7.1** Characteristics of the Greek fisheries/small-scale fisheries sector

| Data refers to: (various sources: 2005–2018) | Total (all fisheries) | Small-scale fisheries[1] |
|---|---|---|
| Fleet | | |
| Number of vessels | 14935[1] | 14431[1,*] |
| Capacity (GT) | 76827.6[1] | 35991.0[1,*] |
| Number of fishers | 23862[2] | 19090[**] |
| % women | 7[3] | n.a. |
| Average age of fishers | 42[4] | 49[5] |
| Landings | | |
| Quantity (ton) | 60319[6]/118634[4]/82764[2] | 21718[6]/59169[4] |
| Value (1000 euros) | 229809[6]/399283[4]/540000[2] | 112978[6]/227438[4] |
| Most common gear used (top 3) (% in total) | Trammel net (29%), longline (29%), gillnet (27%)[1] | Trammel net (30%), longline (30%), gillnet (28%)[1,*] |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Anchovy (*Engraulis encrasicolus*): 16%, sardine (*Sardina pilchardus*): 14%, hake (*Merluccius merluccius*): 5%[6] | Swordfish (*Xiphias gladius*): 10%, hake (*Merluccius merluccius*): 6%, octopus (*Octopus vulgaris*): 6%[6] |
| Top 3 in values (% in total) | n.a. | n.a. |

Notes:
∗professional fishing vessels not licensed for trawl/purse seine
∗∗calculated according to the estimate that small-scale fishers are 80% of total fishers (Anonymous 2007) using the total number of fishers[2]
Sources: [1]European Commission (2018), [2]Chymis (2014), [3]European Commission (2001), [4]Anonymous (2007), [5]Tzanatos et al. (2006a), [6]ELSTAT (2018)

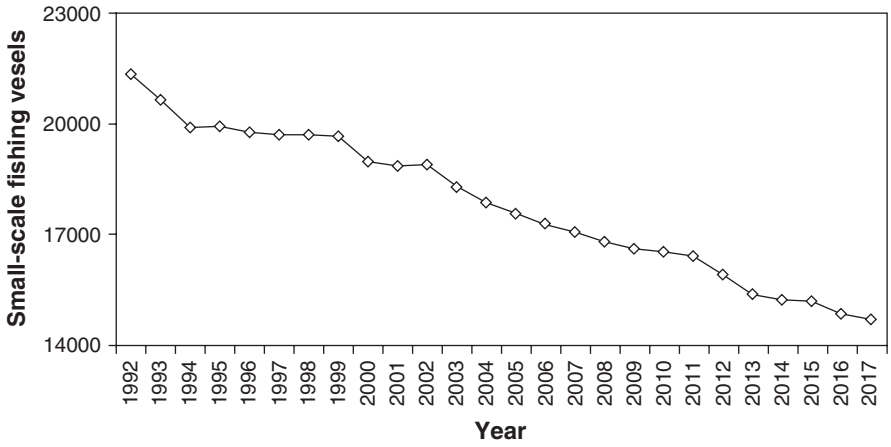


**Fig. 7.2** Dynamics of the small-scale fishing fleet in years 1992–2017 according to the Common Fisheries Register

As mentioned above, a detailed inventory of professional fishing vessels is included in the EU Common Fisheries Register (European Commission 2018). Following the definition of small-scale fisheries as the sector that does not include industrial trawlers and purse seiners, in the last 25 years the small-scale fishing fleet in Greece has been steadily decreasing, with a reduction of more than 31% from 1992 to 2017 (Fig. 7.2). Similar declines have been reported from other countries of Europe (Lloret et al. 2018).

### *7.2.3 Location/Distribution*

Tzanatos et al. (2006a) report that 85.7% of professional small-scale fishers live in the regional unit[1] where they were born and 68.8% in the city or village of their birth, with the percentages in all NUTS-3 areas being higher than 50%, except for Attiki (the prefecture where Athens, the capital, and ~40% of the population is located). The distribution of fishers (Fig. 7.3) indicates that the highest numbers are found either in NUTS-3 areas with urban centres like Attiki or Thessaloniki, or in insular areas such as Cyclades, Dodekanisa or Lesvos (Tzanatos 2006). As small-scale fisheries are generally characterised by relatively short travel times and distances, the marine zones adjacent to these areas are expected to host the highest small-scale fishing activity and nominal effort (number of boats). Considering the number of inhabitants of these NUTS-3 areas, a ratio of number of fishers per inhab-

[1] Regional units are a recent administrative categorisation coined by the Greek state, corresponding to the formerly used prefectures and are known as NUTS-3 areas, NUTS: Nomenclature of Territorial Units for Statistics.

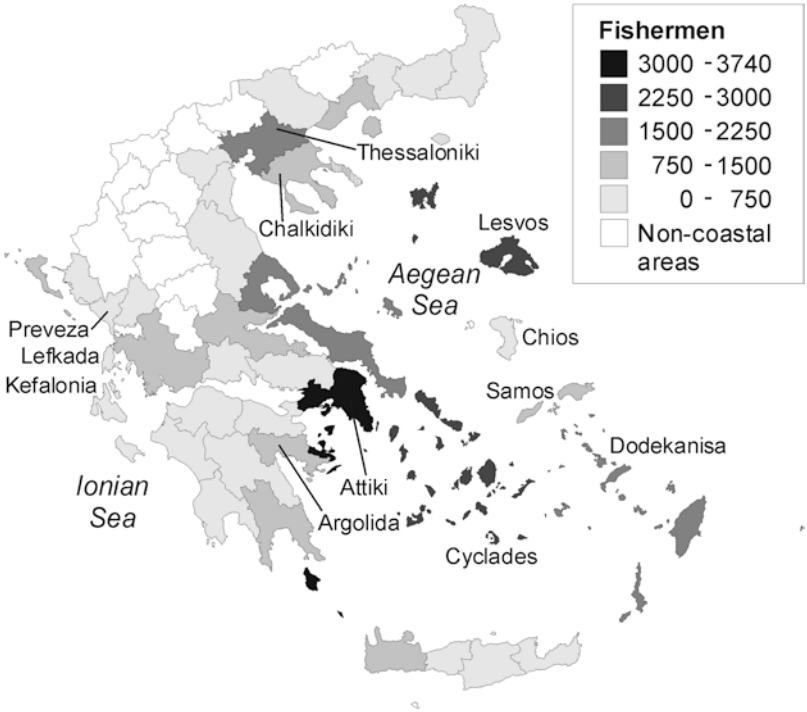


**Fig. 7.3** Number of small-scale fishers per regional unit according to Tzanatos (2006). The regional units referred to in the text are indicated

itant can be generated, providing an indicator of the relative social importance of small-scale fisheries. This ratio indicates that small-scale fishing is not such an important profession in Attiki and Thessaloniki, in contrast to the insular areas of Cyclades, Dodekanisa and Lesvos (Fig. 7.4). Other insular (Samos, Chios, Lefkada and Kefalonia) and continental areas (Chalkidiki and Argolida) also demonstrate high values of this index. Lefkada, Samos, Preveza and Kefalonia were listed in the EU top-ten of fisheries employment dependency for 2011 (not only concerning small-scale fisheries), considering the regional ratio between fishing fleet employment and total employment (EC 2014).

### *7.2.4 Age/Gender Dimensions*

According to Tzanatos et al. (2006a) the average age of Greek fishers is 49 years old and their age distribution is significantly different from that of the average Greek male population. Small-scale fishers are relatively old with only 28% being under 40 years old and 21% over 60 (Tzanatos et al. 2006a).

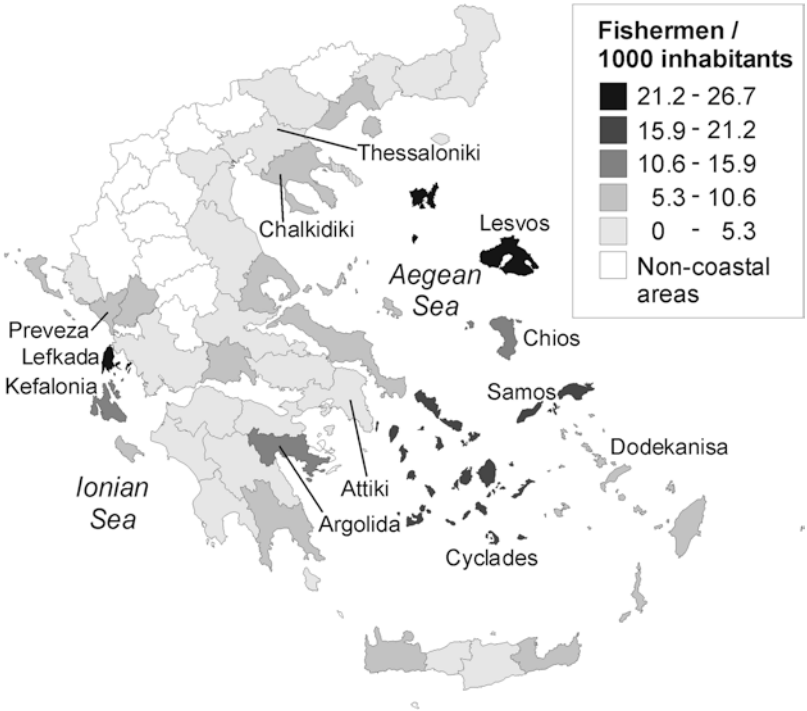


**Fig. 7.4** Ratio small-scale fishers/1000 inhabitants per regional unit according to Tzanatos (2006). The regional units referred to in the text are indicated

Regarding gender balance, according to EC (2001), women comprise about 7% of the fisheries sector in Greece, which is the highest percentage among EU member states. Other sources document that 3% of fishing vessels employ a woman onboard, indicating that women comprise 2% of all fisheries professionals (Anonymous 2007). Both estimates regard fisheries in general; the percentage of small-scale fisheries is expected to be higher as women workers are very rare in industrial fisheries. The cases where women are holders of individual professional fishing licences because their husbands do not qualify for the right to own an individual professional permit and thus a registered fishing vessel, are, however, common, and as a consequence some women are only "nominal" fishers. In other cases, there are many women (usually wives, daughters or mothers of fishermen) who contribute to shore-based tasks (constructing, mending, preparing fishing gears, transferring and selling fish products (Fig. 7.5). They carry out a large part of the "invisible work" related to fisheries (Anonymous 2007; Conides 2007), in many cases not recognised legally (Frangoudes 2013).


**Fig. 7.5** Baiting a longline: Many women are involved in shore-based tasks associated with small-scale fisheries. (Photo credit: M. Georgiadis)

### *7.2.5 Current Fishing Practices, Boats and Gears*

In 2017, Greek small-scale fishing vessels had an average overall length of 6.9 m (standard deviation, s: 2.1 m), capacity of 2.4 Gross Tons (s: 3.2 Gross Tons) and main engine power of 21.0 hp (s: 29.3 hp). It is common knowledge that the true engine power is certainly higher than the declared one, because after the definition of a ceiling limit in the EU fleet capacity, the nominal power has been kept fixed, while the actual engine power has clearly risen. About 69.0% of small-scale fishing vessels are made of wood, 30.5% of plastic or fiberglass (with their percentage gradually rising in the last decades) and the rest of other materials.

A variety of fishing gears are used in small-scale fisheries. The gear licenses indicate the prevalence of nets (mainly gillnets and trammel nets) and set longlines (Tzanatos et al. 2005) with over 95% and 85%, respectively, of the vessels being licensed for them, with all other gear license percentages below 20%. Gear use, according to Tzanatos et al. (2005) reflects the significance of nets and longlines;

**Fig. 7.6** The beach seine is a dynamic fishing gear that sweeps the seabed, has low selectivity and high yield (characteristics often associated with industrial fisheries). Its effects on Posidonia beds that are popular fishing grounds and the catch of immature fish have raised concerns over the sustainability of its use. (Photo credit: G. Lazarakis)

gears of minor importance are beach seines (Fig. 7.6), drifting longlines, trolling lines (Fig. 7.7) and traps. The most important target species are striped red mullet (*Mullus surmuletus*), red porgy (*Pagrus pagrus*), common pandora (*Pagellus erythrinus*), white seabream (*Diplodus sargus*) and red mullet (*Mullus barbatus*).

Analysis of fishing *métiers* both at national (Tzanatos et al. 2005; Katsanevakis et al. 2010a, b) and local level (Tzanatos et al. 2006b) indicate the spatial and temporal heterogeneity of small-scale fisheries and the variety of fishing *métiers*. Important *métiers* are those that use nets to catch striped red mullet (*Mullus surmuletus*), red mullet (*Mullus barbatus*), bogue (*Boops boops*), red porgy (*Pagrus pagrus*), spiny lobster (*Palinurus elephas*) and hake (*Merluccius merluccius*). Longlines mainly target common dentex (*Dentex dentex*), red porgy (*Pagrus pagrus*), scorpionfish (*Scorpaena scrofa*), white seabream (*Diplodus sargus*) and common two-banded seabream (*Diplodus vulgaris*). Beach seines target picarel (*Spicara smaris*) and bogue (*Boops boops*), drifting longlines target swordfish (*Xiphias gladius*) and albacore (*Thunnus alalunga*), trolling lines target species like bonito (*Sarda sarda*), albacore (*Thunnus alalunga*) and dusky grouper (*Epinephelus marginatus*).

**Fig. 7.7** In the wide variety of fishing gears found in small-scale fisheries some, like the trolling line, are highly selective, target species of high commercial value and their yield largely depends on the fisher's skill and knowledge. (Photo credit: E. Tzanatos)

Fishing activity and the resulting fishing pressure is generally seasonal with only a few fishing days in winter, many days in summer and intermediate activity in spring and autumn, although some exceptions from this pattern can be observed in certain areas (Tzanatos et al. 2005).

### *7.2.6 Resources Used and Interactions with Conservation Strategies*

Most small-scale fisheries target and catch mainly benthic or benthopelagic species, with some medium pelagic exceptions (Tzanatos et al. 2005). Large-pelagic species like swordfish and bluefin tuna are also mainly caught by small-scale fisheries. In general, despite the existence of specialised small-scale fisheries (targeting species of the families Sparidae, Serranidae and Mullidae), small-scale fisheries in Greece are typically multi-species, thus a multitude of by-catches are also brought onboard. They are also multi-gear (one species can be caught by more than one gear).

In general, small-scale fisheries are considered to be sustainable as the catches per fishing trip are low in quantity, and the gears are more selective than those of

industrial fisheries (e.g. Jacquet and Pauly 2008) (Fig. 7.7). However, there are some cases where the fishery clearly has unsustainable characteristics, as it operates in sensitive habitats with destructive effects or harvests juveniles, either because of technical gear characteristics or the fishing ground being a nursery area, or both. Tzanatos et al. (2006b) document that on some occasions, species are targeted during their spawning period (e.g. targeting gilthead seabream and European seabass with combined nets in winter). In other cases, a significant part of the catch is composed of undersized individuals (e.g. trammel nets, catching white and axillary seabream) (Tzanatos et al. 2008).

Conservation has traditionally involved species and habitats on the basis of their importance or scarcity. Regarding most fish species targeted by small-scale fishers, no stock assessments are carried out. Traditionally, small-scale fisheries have not raised serious worries, as species of concern (e.g. elasmobranchs) are not targeted and are not abundant in the catch. In terms of target species, there is concern over the common dentex (*Dentex dentex*) and the dusky grouper (*Epinephelus marginatus*), characterised as vulnerable and endangered, respectively (Nieto et al. 2015). Several species are considered data-deficient, e.g. white grouper (*Epinephelus aeneus*), goldblotch grouper (*Epinephelus costae*), common sole (*Solea solea*) (Nieto et al. 2015). However, there is a Total Allowable Catch (TAC) regulation for bluefin tuna (*Thunnus thynnus*) and seasonal fishing prohibitions for swordfish (*Xiphias gladius*) -restricting fishing on recruitment- and spiny lobster (*Palinurus elephas*) -restricting fishing in the spawning season. Seasonal and gear restrictions also exist for eel (*Anguilla anguilla*) fisheries.

Concerning other species like marine mammals (many considered vulnerable or threatened), competition for catches has been documented between them and small-scale fisheries (Bearzi et al. 2010; Tsagkarakis et al. 2010). Interactions include gear destruction and competition for fish, although their quantification is difficult (e.g. Bearzi et al. 2008a, b; Gonzalvo et al. 2015).

Concern has been raised over important habitats like Posidonia beds (coastal habitats reaching depths of 45 m covered by seagrass meadows acting as fish nursery areas) and *coralligène* (biogenic hard substrates generated by coralline algae over the continental shelf). Posidonia beds have been one of the fishing grounds traditionally associated with beach and boat seines (Katsanevakis et al. 2010b). There are concerns over the effects of the gear sweeping the seabed catching immature fish and destroying seagrass (Fig. 7.6). (Stergiou et al. 1996; Katsanevakis et al. 2010b). *Coralligène* is mainly a trammel net and longline fishing ground; trammel nets (e.g. targeting spiny lobster) can remove parts of the substrate (Georgiadis et al. 2009), but no specific study exists on the effects of this gear use.

While more research is needed on the subject, in our opinion small-scale fishing practices could be characterised as biologically sustainable when they combine the following characteristics: (a) not fishing populations during their spawning period, (b) not catching juveniles, (c) not having destructive effects on habitats. Fishing tactics with these characteristics are, for example, gillnets for striped red mullet and longlines for common dentex, both operating after mid-July.

## 7.3 Socio-economic Context

### *7.3.1 General Socio-economic Context*

Similar to other European cases (Guyader et al. 2013), Greek small-scale fisheries are structured around the nuclear family (Tzanatos et al. 2006a). In a typical case, the father is the captain of the boat and the wife and/or children work as crew or are involved in the marketing of fish. The benefit of this approach seems to be economic, as there is avoidance of various costs (e.g. proper wages to crew members or profit of intermediate marketing links) to the detriment of efficiency maximisation. Non-relatives (e.g. pensioners and former fishers) sometimes have supportive roles (e.g. disentangling or repairing fishing gears) in exchange for fish or a small monetary compensation.

The fishing profession is considered to be among those most prone to accidents at work (EC 2010). Regarding Greek fisheries, a pilot study (not differentiating between small-scale and industrial fisheries) indicated that fisheries-related accidents have decreased in the last decades and found that at least 28% of fishers have experienced at least one injury and 14% had an incidence of near-drowning (Frantzeskou et al. 2013). In this study, health-related habits like smoking, diet, alcohol consumption and lack of (other than fishing) exercise are specifically related to the small-scale fishers' way of life.

Small-scale fishers show diverse levels of economic dependence on the fishing profession. Tzanatos et al. (2006a) identified three dependence groups: fully dependent fishers (with more than 90% of income coming from fishing) that account for ~64% of the total; partially dependent fishers (30–90% of the income comes from fishing) who comprise ~23% of the total; and the remaining 13% not dependent on fishing activities (lower than 30% of income originating from fishing). As these estimations are based on fisher statements, it is possible that the significance of the fully dependent group is overestimated and the other two underestimated. The three categories show differences in age, vessel length, annual days of fishing activity and daily income (Tzanatos et al. 2006a). It is important to note, however, that regardless of economic dependence, small-scale fisheries contribute to shaping the identity and self-determination of the fishers (Chronopoulos et al. 1999; Bada 2010). Thus fishers, as a result of the shared burdens of their common everyday life, feel that they and their families are related socially with fellow fishers and may share concern and support each other, sometimes even financially (Box 7.1). However, out at sea the competitive character of the profession, and the idea that the fish that are caught by others are not available to oneself, render fishers individualistic and secretive.

According to Tzanatos et al. (2006a) about 61% of fishers have finished primary school, 4% did not go to school at all, while less than 5% have had education further than high school.

**Box 7.1: "I Want to Become a Fisher!"**
Alykes is a small fishing village in Achaia, Peloponnese, located about 26 km SW of the city of Patras. Since ancient times the location was used as a port. During the period of the Venetian Republic, the area was used for salt production (the name Alykes literally means "salt pans") and for the storage of acorns. The modern settlement was apparently founded sometime between 1900 and 1905 when Michalis Karras, a fisher from Spetses (an island in the Aegean Sea), came with his children in their boat to fish in the area and, having caught many fish, decided to stay there (Chronopoulos et al. 1999). Soon afterwards, three other families, those of Giorgos Bitounis from Ithaka (Ionian island), Angelos Chaliotis from Kefalonia (Ionian island) and Giorgos Voudouris from Feneos (area in NE Peloponnese) settled as well; the new settlement grew around these four fisher founding families and the tradition has been maintained till nowadays, when most inhabitants work as fishers. Today, according to the 2011 census, Alykes has 144 inhabitants. Its professional fishing fleet is composed of seven purse seines (industrial fisheries), one boat seine and 26 longliners/netters (small-scale fisheries). The fishing tradition and identity of the village strikes a contrast with that of agriculture and livestock farming character of the nearby villages and the surrounding rural area. The common close ties of the populace with the maritime element have created a sense of communality and solidarity among its members, further enhanced by the family ties and the idea of their common ancestry. The village's everyday life and culture is deeply interwoven with fishing and the sea. The fishers, devoting a major part of their day to fishing or related activities, claim they are too occupied to spend time in organising; similarly no fishing cooperative exists. The villagers, despite having various problems and worrying about the status of fisheries and coastal management, will still share with you the general feeling that the fisher profession is a satisfactory means to make a living –contrary to many other places in Greece. Apart from several women being involved in fishing and fishing-related activities, most children, having "grown up in the sea" when asked which profession they would like to follow when they grow up will answer "I want to become a fisher!"

### *7.3.2 Interaction with Other Fisheries –Large-Scale & Industrial*

The interaction with industrial fisheries involves mainly the direct competition for fish and fishing grounds (Maynou et al. 2011; Guyader et al. 2013). However, competition exists within the small-scale fisheries as well. In Greek fisheries, the main interactions are between small-scale fisheries and trawlers, such as for target species like hake, red mullet and Caramote prawn (Stergiou et al. 2003; Tzanatos et al. 2005). Regarding purse seines, there is competition for species like bogue, horse mackerel and chub mackerel. However, target species like white seabream, common

dentex, red porgy, dusky grouper and spiny lobster are almost exclusively caught by the small-scale fisheries sector (Tzanatos et al. 2005). Concerning large-scale fisheries, there is competition with the large purse seines that catch live tuna for aquaculture/penning.

Competition for space is about competition for fishing grounds. Legislation divides the marine area into various zones, banning industrial fisheries from the coastal zone (Kapantagakis 2007; Tserpes et al. 2011). Consequently, industrial fishers claim they have priority in offshore waters. Furthermore, there are a number of conflicts between small-scale and industrial fishers, usually with the small-scale fishers reproaching the industrial ones for some characteristics of their fishing techniques (e.g. large proportion of undersized or discarded fish and trawl effects on the benthic habitat), while industrial fishers accuse small-scale fishers of not being "true" fishers (due to their various levels of dependence on fishing).

Increasing conflicts have also been documented in recent years between the professional small-scale fisheries sector and recreational fisheries in Europe (e.g. Guyader et al. 2013; Maynou et al. 2013; Lloret et al. 2018). This is the case for Greece as well; however, there is a scarcity of information regarding recreational fisheries with the number of recreational fishers estimated at ~100,000 by Anagnopoulos Planning Consultancy Ltd. (APC) and Istituto di Ricerche sulla Pesca Marittima (IRPEM) (APC and IRPEM 1999). Hyder et al. (2018) raise the number of Greek recreational fishers to ~300,000. The conflicts are again related to target species and fishing grounds. Further conflicts are related to the fact that some recreational fishers sell their catches, which is prohibited by law. In an everlasting blame-game, professionals point out that the recreational fishers are not under any control regarding fleet size, vessel capacity and engine power (contrary to the professional fleet), while recreational fishers accuse professionals of using non-selective gears and exploiting a common resource without some form of compensation to the general population.

### *7.3.3 Interaction with Other Sectors*

The interactions between small-scale fisheries and other activities that make use of the coastal zone (e.g. tourism) seem more complex. Although the scientific literature is still scarce, small-scale fisheries appear to be boosted by tourism as the market demand for fishing products soars during the summer months (also assisted by the seasonal closure of trawl fisheries). Correspondingly, fisheries and especially the small-scale sector, contribute to the appealing traditional image of rural areas, especially in the highly touristic Aegean and Ionian islands (Fig. 7.8); furthermore, they provide daily fresh sea products to taverns and hotels. The direct retail sale to tourism-related establishments documented by Tzanatos et al. (2006a) also serves fishers, maximising profit as no intermediaries exist. However, fisheries and tourism can be competitors for space when tourist activities are carried out in coastal areas constituting small-scale fishing grounds and in the case of small ports. It is impor-

**Fig. 7.8** Small-scale fisheries contributes to the painting of a romantic picture of coastal areas, an important characteristic for tourism. (Photo credit: K. Skarvelis)

tant to note the indirect effects of tourism on small-scale fisheries. The tourist industry has had various effects on the coastal zone through the construction of infrastructure and buildings, altering natural freshwater flow, affecting wetlands and causing modifications of the coastline.

Lloret (2011, 135) underlines the need to change from the current model of mass tourism to an "*ecologically responsible marine tourism model involving sustainable practices*" in the Mediterranean; fishing tourism could be an interesting option in this direction. The legal framework was recently changed in Greece, under some conditions allowing fishing boats to take tourists onboard.

Mixed interactions exist between fisheries and aquaculture. The negative interactions naturally concern the competition for space (Lloret et al. in press), but also the fact that aquaculture can provide otherwise expensive fish supplied by small-scale fisheries (e.g. gilt-head seabream, European seabass) at low prices and in large quantities. Other aquaculture effects (e.g. use of antibiotics and other chemicals) on the environment have not been sufficiently studied. Regarding positive interactions, it has been documented that the presence of fish farms modifies the distribution of wild fish aggregations (Giannoulaki et al. 2005), possibly acting as a Fish Aggregation Device (FAD). Consequently, fish-farming activity in enclosed and oligotrophic areas like the Mediterranean could be related to increased fishing activity and fisheries landings (Machias et al. 2006; Arechavala-Lopez et al. 2011).

A strong connection between small-scale fisheries and traditional shipbuilding has resulted in the existence of many dockyards/shipyards scattered along the Greek coasts. However, the gradual reduction of the fleet and the replacement of traditional wooden boats with plastic ones has weakened the tie between small-scale fisheries and shipbuilding.

### *7.3.4 Socio-economic Developments Relevant for Small-Scale Fisheries*

In recent decades, a significant proportion of small-scale fishers has modified the characteristics of their vessels. Apart from factors like the high market value of some fish products and the large profits generated, these changes were boosted by the policies implemented at national and EU level. Specifically, in the 1980s there were incentives for modernisation and vessel replacement, leading to the increase of fleet capacity and engine power. Gradually a number of wooden vessels were replaced by lighter and faster plastic ones and in general smaller boats were replaced by larger ones with more powerful engines and more space allowing for more gears. This reduced travel time and increased fishing power and effective effort, partly changing the profile of small-scale fisheries into "small-becoming-big fisheries". In the decades that followed, a completely opposite policy was enacted, aiming to reduce fleet size through financing vessel withdrawal. This way, even though the number of small-scale fishing vessels has significantly decreased, the relative importance of high-capacity vessels has risen. Nowadays, and with the current socio-economic crisis in full swing, the power and resulting high operational costs of these vessels are becoming a burden instead of being an asset.

The socio-economic crisis that has affected Greece in the past decade has certainly also affected small-scale fisheries; however, neither the specific effects, nor their extent is clear. It can be speculated that the rise in unemployment and income reduction may have switched the market demand for the generally high-value, small-scale fisheries landings to cheaper industrial fishing and aquaculture products; naturally this has led to a decrease in prices of the "first class," expensive, small-scale fisheries products. Furthermore, unemployment and the mixed trend of internal immigration (until recently, internal immigration was towards urban centres, today there is a mixed trend of people going to the major cities in search of employment, while others return to rural areas of origin to reduce costs of living), may have augmented the popularity of the fisher profession. Finally, the socio-economic crisis seems to have led to an increase in the number of recreational fishers selling their catches (legally prohibited), increasing the conflicts with professional small-scale fishers.

The recent waves of ship-borne refugees of the Syrian civil war have turned many fishers of the insular areas of eastern Greece into "everyday heroes" (Vlachopoulou 2016). According to the media, many small-scale fishers of the eastern Aegean saved

refugee lives, often at the cost of losing fishing days and facing the everyday sentimental burden of fear and anguish from discovering corpses; however, the effects of the refugee crisis on the lives of small-scale fishers are still largely unknown (Vlachopoulou 2016).

## 7.4 Institutional and Organisational Context

In Greek legislation, there is no definition of fishing rights; thus, fishers do not have to pay a fee to be able to exploit fisheries resources. Instead, there are some socio-economic criteria that must be satisfied by someone who wants to be a professional fisher (contrary to recreational fisheries that can be carried out by anyone).

The current fisheries legislation came into effect in 1966 (R.D. 666/66) and states that professional fishers must make a living from fisheries, regardless of whether they own a vessel or not. In the years that followed, as socio-economic conditions changed, a number of laws created derogations for a number of professions or types of income that were considered as "compatible" with professional fishing. Consequently, today the legal framework for obtaining or retaining a professional fisher license is relatively ambiguous; a fact that has also been noted by the Greek ombudsman (Individual professional fishing permits, Finding 01/12/10). This situation can have severe negative consequences, as owning a fishing vessel or working on one requires being a professional fisher. This results in misunderstandings, on the one hand initiated by persons who consider that they should be allowed to be professional fishers but are not licensed and on the other hand among licensed professionals regarding the right of those that have complementary income to own a personal license. As a consequence, unfair competition may exist, as well as a sense of injustice among fishers. In recent years, there have been discussions and operational programmes initiated by management authorities (national, EU) about favouring the development of complementary activities and sources of income for professional fishers to compensate for reducing fishing pressure; however, this initiative is contradictory to the existing legal context.

In the past, small-scale fishers organised themselves into local associations. The role of these associations was solely to defend the professional interests of the sector. From 1983, when fisheries were incorporated into the legal framework of agriculture, fishers were represented regionally or nationally by farmer associations, until 1997 when a central representation of fisher associations was re-established. In 2011, the law changed again, returning to a status similar to the former situation. As a result, today, a fisher association can be created in any municipality with more than 20 professional fishers. Participation in the association is voluntary. However, at regional and national level, these associations are represented through the central farmer unions.

The legal confusion described above has weakened the small-scale fisher sector, affecting both the ability to act collectively and to influence government decisions. It is true that in the years of central fisher representation (1997–2011), the fisheries

sector was more dynamic, mainly supporting the interests of small-scale fishers (owing to their numbers). Today, there is a national association of small-scale fishing vessel owners (Panhellenic Union of Vessel-owners of Coastal Professional Fishing Vessels); however, it seems that their influence is limited. Internal competition, low educational level and the solitary character of the fishing profession appears to impede union participation. Fishers usually dread administrative tasks, gladly leaving them to their representatives.

In total, it has been estimated that ~30 small-scale fisheries cooperatives have been created in Greece (Michalopoulos and Tsiakalou 1998). The aims of these cooperatives are production, standardisation and storage, processing and selling of fish products, as well as the provision of supplies to fishers. In some cases, women's cooperatives were created by fishermen's wives and daughters. These cooperatives guaranteed important benefits for the fishers like favourable prices for selling, guaranteed sales of catches and steady supply of bait (and other everyday supplies). However, the majority of cooperatives were not very successful, and resulted in bankruptcy. This fact has, to our knowledge, increased fishers' general mistrust for collective action and also explains why the cooperatives created are not very popular today. Furthermore, as fishers are often ignorant of market mechanisms and lack business flexibility, they often fail to benefit from EU funding schemes and collaboration with relevant scientists (Michalopoulos and Tsiakalou 1998). Today most cooperatives have disbanded.

The low rate of collective action, which characterises Greek small-scale fishers, hinders their involvement in management decisions (Guyader et al. 2013). The lack of specific elements in the institutional framework that characterises the successful exploitation of common pool resources reported by Ostrom (1990), such as the definition of boundaries and membership in the exploitation of resources, the existence of collective-choice arrangements, monitoring, graduated sanctions originating from those exploiting the resources and the creation of conflict-resolution mechanisms are also responsible for a failure to promote collective action in Greek small-scale fisheries.

## 7.5 Policy Context

It is worth noting that in general, in recent years, Greece has not designed nor implemented any nation-wide fisheries management schemes, but rather adopted the relevant EU legislation (with some individual exceptions). In the Mediterranean, direct control of the catches only applies to the bluefin tuna fishery. The other fisheries are managed through effort control regimes that define effort, technical characteristics, and spatio-temporal allocation of gear usage (Lleonart and Maynou 2003). Both national policy and the EU Common Fisheries Policy (e.g. EC 2006) pose restrictions on the industrial sector. Thus, in Greece, according to Regulation 1967/2006 (EC 2006), criteria of seabed depth and distance from the shore prohibit the use of trawl and purse seines (Kapantagakis 2007; Tserpes et al. 2011). Similar prohibitions

have always existed (with different limits) in national legislation. Despite the lack of any respective prohibition of small-scale fisheries from deep fishing grounds, the marine environment is, de facto, divided into two zones: the shallow/coastal one where the bulk of professional fishing activity belongs to small-scale fisheries and the deeper/offshore one, where fishing activity is mainly carried out by trawlers and purse seiners.

Minimum landing sizes have existed in EU Mediterranean fisheries since 1994 (EC 1994) and were updated in 2006 (EC 2006). In Greece, there is concern over the size composition, as in some cases a portion of the landings is undersized (e.g. Tzanatos et al. 2008).

The recently legislated landing obligation, i.e. the prohibition of discards and the obligation of fishers to land their entire catch (EC 2013) is a controversial measure that has raised much discussion (e.g. Damalas 2013). Despite the high biomass of discards in the Mediterranean (Tsagarakis et al. 2014), on average small-scale fisheries have low discards (~10% according to Tzanatos et al. 2007); significantly lower than industrial fisheries (e.g. Machias et al. 2001). Thus, it can be expected that the small-scale fleet will not alter fishing tactics very much or change fishing grounds as a response to the landing obligation.

Marine Protected Areas (MPAs) are considered as a successful management measure for the conservation of fish stocks (Tsikliras and Stergiou 2007; Forcada et al. 2009). In the form of protected areas with clear, established restrictions there are two MPAs in Greece, (Zakynthos and Vories Sporades), two other national parks include a marine part (Schinia-Marathona park and Mesologgi-Etoliko lagoons, estuaries of acheloos and Evinos and Echinades islands), but there also exist various other forms of specially designated or protected areas like Natura 2000 sites, sometimes including a terrestrial part without always official or clear restrictions (Gabrié et al. 2012). On some occasions, however, the impacts of MPA declaration are debated (Dulvy 2013). Di Franco et al. (2016) consider that elements like the existence of high MPA enforcement, the presence of a management plan, fisher engagement in MPA management and their representation in the MPA board and the promotion of sustainable fishing are key attributes to increase MPA performance for small-scale fisheries management. In our opinion, with the data available, the effects of the established MPAs cannot be considered as clearly beneficial for fish stocks (e.g. Dimitriadis et al. 2018 where protection level was less beneficial than habitat type, a finding attributed to the partial protection status of the Zakynthos MPA). Mavraki et al. (2015) claim that the characteristics of small-scale fisheries in the Mediterranean Sea (Forcada et al. 2010) and especially in Greece (Tzanatos et al. 2005), such as large fleet sizes, home port distribution, dependence on local fishing grounds and markets, renders both the declaration of one large MPA or several small MPAs unrealistic and consequently not completely suitable to Greek small-scale fisheries.

## 7.6 Looking to the Future

### *7.6.1 Challenges, Opportunities and Trends*

The age composition of the small-scale fishing sector indicates that the negative trend documented here is expected to continue. However, considering the socio-economic crisis in Greece, small-scale fisheries seem to be a promising way to guarantee social coherence and generate income, especially in remote areas. For this, an educational process of fisher professional training is essential. It can provide knowledge on safety, hygiene, successful fishing, catch preservation and convey the concepts of sustainability, environmental protection and, most importantly, cooperation with scientists and managers.

Today, the biggest challenge needing attention is the modernisation of the small-scale fisheries organisational and legal context. The conditions for becoming a professional fisher should be clarified. This could make the profession more appealing to young people who would like to make a sustainable living. In this direction, the role and influence of organizations would also be strengthened.

The heterogeneity and scattered distribution of Greek small-scale fisheries renders them very difficult to monitor, even under the auspice of the Data Collection Framework (DCF). Thus, it is essential to adapt monitoring to local particularities. In the recent years, an attempt to improve fisheries monitoring in Greece through local correspondents seems to have improved small-scale fisheries data. However, for many years no DCF application-national project was carried out in Greece, resulting in data gaps. Thus, the long-term application of the DCF should be ensured. Moreover, it is essential to involve the fishers in both the monitoring and the management of the fisheries resources and the coastal zone.

Regarding management, there is still a lack of knowledge on the effects and sustainability of some small-scale fishing *métiers*. This knowledge needs to be obtained and used to update the legal framework in Greece. On the other hand, regarding sustainably fished and fresh small-scale fishing products, an opportunity regarding their certification and marketing clearly exists. Finally, as wooden vessels are not favourable for high engine power –being less efficient- an initiative for their maintenance would result in reducing the nominal fishing effort and keeping the low cost-efficiency vessel operation rate character of Greek small-scale fisheries.

## 7.7 Conclusions

The Greek small-scale fishing fleet is the largest among the EU member states. It is mainly composed of small vessels often operating as family businesses. Furthermore, Greece has the highest percentage of fishers per inhabitant in the EU. However, this

population comprises a relatively old workforce with poor education and diverse dependence levels on fishing. The above, combined with the complex and outdated legal framework with regards to professional fisheries and the individualistic character of the profession, act as obstacles to collective action and complicate management. The small-scale fisheries contribution to the Gross Domestic Product is small; however, the direct and indirect economic importance can be significant, particularly on a local scale. Moreover, small-scale fisheries provide fish of high commercial value not otherwise supplied to the market (Fig. 7.1). However, the most important component of small-scale fisheries is the social one, as it shapes a strong individual and group sense of identity, solidarity and social cohesion, even in periods of transition (e.g. current economic and refugee crisis in Greece). Furthermore, profits (produced by a common resource) are shared by more individuals in small-scale fisheries than in industrial fisheries.

The small-scale fishing fleet is distributed along the entire coastline of the country and the various existing fishing practices are adapted to diverse target species and local environmental conditions. Consequently, both the monitoring and the adaptation of management guidelines to local conditions are difficult and costly. Despite the existence of some cases of apparently unsustainable fishing practices, small-scale fisheries are considered the most sustainable fishing sector, as also indicated in the priorities of the new Common Fisheries Policy.

Small-scale fisheries in Greece possess characteristics of a "fisheries of the future", combining sustainability, employment and decentralisation. However, they are currently at a turning point: either they will be reformed by implementing the guidelines of the Common Fisheries Policy, clarifying the legal framework and encouraging young people to enter the profession, or they will be left to collapse if handled in a business-as-usual manner.

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# Chapter 8
# How Is Fisheries Management Perceived by Croatian Small-Scale Fishers: Should I Stay or Should I Go?

**Sanja Matić-Skoko and Nika Stagličić**

**Abstract** Small-scale fisheries make an important contribution to the food supply and economies of Croatian coastal communities and yet are poorly documented in official catch statistics. Consequently, Croatian fisheries policies and management are mainly focused on the short-term interests of industrial fleets, particularly purse seiners rather than the long-term maintenance of coastal fisheries. Small-scale fisheries are characterised by their varied fleet size (lengths ranging from 6–12 m), use of passive fishing gears and shore seines, fishing multi-species (>150 species) and using extremely heterogeneous landing sites. This chapter assesses how perceptions of fisheries policy and the economic crisis have affected the ability of Croatian, commercial small-scale fishers to remain in this sector. Fishers were surveyed as to how they perceive and interpret (i) the Common Fisheries Policy (CFP) reform and national fisheries laws and regulations (ii) their level of involvement in decision-making processes on fisheries policy. A negative perception of national and European Union (EU) fisheries policy prevails, which adversely influences the behaviour, emotional response and resilience of fishers. They feel estranged from decision-making processes, and confidence in the outcomes of fisheries policy-making is low. In their minds, policy-makers fail to recognise regional and local natural and geographical characteristics. Fishers also considered that the Croatian Fisheries Department must find a way to involve fishers more in decision-making processes to achieve a more positive policy perception and enhance the resilience of the sector. This approach would support the development of better national fisheries management strategies, since fishers' knowledge can provide invaluable, practical information.

**Keywords** Small-scale · Fishers' attitudes · Adriatic Sea · Fisheries policy · Decision-making

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## 8.1 Introduction

The Adriatic Sea, as part of the Mediterranean Sea, shares with that region all common characteristics in terms of geographical features, available marine resources, type of fisheries and intensity of exploitation. Much of that fishery in the coastal zone is small-scale fisheries (80%). Moreover, small-scale fisheries functioned in the very specific socio-economical and historical contexts. Analysing the socio-economic framework of fishers' work and life and determining how fishers cope with situations like the recent economic crisis and frequent legal changes is of great national importance for a country like Croatia, where everything related to the sea, particularly fisheries, is a very sensitive issue (Matić-Skoko et al. 2011a). In addition, predicting who may leave a fishery is an important consideration when designing capacity reduction programmes in order to enhance ecological and economic sustainability. Overall satisfaction with fishing and the challenges of fishing were found to be the primary drivers of the desire to stay or leave the sector (Pascoe et al. 2015). Satisfaction is largely dependent on economic drivers, namely prices, catch rates and costs (Pascoe et al. 2015). However, research on what affects the decision to remain in the fishing sector has mostly focused on large-scale fisheries, while data on the reasons for leaving small-scale fisheries are not readily available. While income from fishing over time is surely one of the key factors affecting overall satisfaction, Tella and MacCulloch (2006) suggest that subjective measures of happiness or satisfaction provide a better indicator of fishing perceptions and the desire to leave the profession than economic ones. For example, continuing a family tradition of fishing and a pride in being a fisher was found to be very significant for fishers' perceptions of satisfaction (Pascoe et al. 2015). However, the causes of leaving small-scale fisheries are often complex and multiple, e.g. overfishing, changes in market preferences by consumers, changes in seafood price, etc.

Throughout the Mediterranean, small-scale fisheries function in a very specific, complex and dynamic socio-economic and historical context (Battaglia et al. 2010). The Adriatic Sea, as part of the Mediterranean Sea, shares common characteristics in terms of geographical features, available marine resources, type and intensity of exploitation (Matić-Skoko et al. 2011a; Stagličić et al. 2011). Small-scale fisheries or artisanal fisheries are characterised by high diversification of fishing gears and techniques, targeting a large variety of species, and by frequent changes in gears and techniques used, spatially and seasonally, to optimise the catch and maximise profitability. Furthermore, small-scale fisheries hold **a high 'cultural' and 'heritage' value among island and coastal inhabitants** and are consequently the most numerous in terms of number of vessels and fishers involved (Battaglia et al. 2010 and references therein; Matić-Skoko et al. 2011b). This chapter gives a detailed overview of small-scale fisheries in Croatia and addresses the question of how perceptions on policy and the economic crisis affect the ability of small-scale fisheries fishers to sustain themselves, particularly in the light of numerous changes in fisheries policy after Croatia's accession to the EU on the 1st of July 2013.

## 8.2 Description of Small-Scale Fisheries

There are two main types of marine fisheries in the Republic of Croatia: commercial and non-commercial ones. Commercial fisheries encompass commercial fisheries *sensu stricto* and a new category of small coastal fishery, limited in terms of gears and method of operation, while non-commercial ones include sports and recreational fisheries. Additionally, the Fisheries Act (Official Gazette No. 81/2013) further distinguishes fishing for scientific purposes and tourism. Prior to its accession to the EU, Croatia had a very specific category of non-commercial fishery called "small-scale fishery for personal needs" or subsistence fisheries that pursuant to the regulations in force required registration in the commercial category after Croatia acceded to the EU on the 1st of July 2013. The key distinguishing features between commercial and subsistence fishers were the purpose of their activity, type and quantity of fishing gear allowed and daily catch limits. Commercial fishing is a profit-making activity, while fish and other marine organisms caught in the course of subsistence fishing were not to be placed on the market and were intended solely for **personal use.** This category accounted for around 11,000 vessel licence holders before 2013. Following the accession negotiations, from the aforementioned total, 3500 vessels are now included in the fleet register and are called "small coastal fishery". The remaining number of subsistence fishers either joined the recreational category of fisheries or became inactive, as many of these licence holders were neither full-time fishers nor depended on fishing for their livelihoods. Due to prolonged administrative and legislative procedures, the transition process of their full registration only ended in April 2015. Thus, since then, the subsistence fishery category has ceased to exist.

Advanced age (>60 years old) and poor social status (monthly income <400 EUR) were the basic conditions for receiving "small coastal fishery" licences. Due to these prerequisites, new commercial licence holders find it hard to fulfil their obligations as professionals (e.g. keeping accounts, invoicing, etc.). Therefore, being unable to comply with all the legal requirements, many small coastal fishers do not work in fisheries anymore but are reorienting their efforts more towards tourism-related activities. Those who opted for recreational fisheries are also disappointed as this fishing category prohibits the use of any kind of net and restricts fishers exclusively to hook and line fishing tools. With these requirements, most coastal inhabitants have felt forced to give up the tradition that they believed they had been entitled to since time immemorial.

Sports and recreational fisheries in Croatia are regulated by the Marine Fisheries Law and related ordinances, and a permit (daily, multi-day, annual) is needed to engage in them, whether from shore or boat. These permits can be purchased from authorised dealers, in the regional offices of the Fisheries Department or electronically from their website. Annual permits for islanders over 65 years of age can be issued free of charge. Sports and recreational fisheries are allowed to fish along the eastern Adriatic coast, but they are prohibited around aquaculture facilities (within 200 metres of fish farms or 100 metres of shellfish farms), and from ports and

harbours and on the beaches from May to October. In special habitats (estuaries) and marine protected areas, certain forms of sports and recreational fisheries are strictly regulated or prohibited. The types and quantities of fishing gears and equipment (mostly longlines, jigs, traps) that fishers are allowed to use are also strictly prescribed.

Data dealing with recreational fishing are generally rare, since no requirements exist for the reporting of recreational fishing in Croatia, despite this having been a very popular activity for decades. Much of the resident population, as well as a growing number of visiting tourists, engage in it. The number of recreational fishers in Croatia was reported to stand at around 25,000 from 1979 to 2007, but in the last couple of years, expert opinion suggests that the number of recreational fishers is three times higher, especially during summer months (cca. 75,000). Therefore, recreational catches may have a significant impact on near-shore marine resources and are direct competition to local small-scale fisheries.

At the EU level, there are numerous definitions for small-scale fisheries, but there is no uniform, straightforward definition (e.g. COFI 2014). The reformed CFP defines small-scale fisheries as "*fishing carried out by fishing vessels of an overall length (LOA) of less than 12 m and not using towed fishing gear*" (EU Regulation No 1380/2013). In Croatia, small-scale fisheries are defined as commercial, multi-gear fisheries operating with vessels <12 m using all types of static gears (nets, hooks and long lines, traps) and shore seines, since they are traditional, relatively small-sized fishing gears and are operated by small fishing vessels not far from the shore (Figs. 8.1 and 8.2). This fishery is mostly carried out within a distance of a few nautical miles from the mainland and island coasts, since the majority of fishers embark on one-day fishing trips, and at depths no greater than approximately 80 m.

The Fishing Fleet Register of Croatia currently includes 7733 vessels. However, all national reports for 2014 indicate a number of 4385 vessels (this number includes all vessels active during this year). This discrepancy is the consequence of the inclusion of 3500 vessels (small coastal fishery) in the Fleet Register. The largest percentage of the fleet (over 90%) is comprised of vessels less than 12 m LOA, which also constitute the largest segment of the fleet's capacity in terms of power (some 60% kW). However, around 15% of vessels in this category (< 12 m LOA) belongs to small coastal fisheries and are probably inactive or rarely active as explained earlier. The bulk of the total tonnage of the Croatian fishing fleet refers to purse-seiners, while multipurpose vessels comprise the largest part of total power. The fleet contains 375 vessels, or 8.1% with LOA > than 12m. The majority of vessels are registered as multipurpose vessels (over 45%), where fishers target assemblages rather than species and where gears are changed several times during the year. Purse seiners account for some 8% of fleet, but they are the most important fleet segment in terms of landing percentage (over 91% of total landings in 2014), while bottom trawlers account for some 17% of the fleet.

Data on the number of fishers are estimated taking into account data of vessels and the commercial registry, and data on the number of crew and number of licenses (vessels) in the fishing fleet. The resulting assessment shows that the sector directly employs around 11,000 people with around 7000 fishers being involved in the

**Fig. 8.1** Savudrija fishing port. (Photo credit: S. Matić-Skoko)

**Fig. 8.2** Small-scale fishers in Croatia. (Source: IOF archive)

small-scale fisheries sector. The highest numbers of small-scale fishers (>1200) are from the regional units of Zadar, Split and Dubrovnik (Fig. 8.3). In addition to full-time employees, there are a significant number of seasonal workers, but they are not present on the national register as part of small-scale fisheries, since they are not usually registered (owners pay them for their work on daily basis). Usually, just one or two fishers work on small-scale fisheries vessels (mainly the owner and close family members), while, on average, three and eight fishers are employed on bottom trawlers and purse seiners, respectively. Unfortunately, the number of women involved in fisheries is not possible to estimate with great accuracy. Certainly, a number of women are involved in the sector (both fishing and sales), particularly in small-scale fisheries. However, they are not usually registered as employees. Also, a number of women are registered as owners of vessels for socio-economic reasons (around 15%) and/or are involved in land-based activities related to fisheries (e.g., repairing nets, catch distribution and sale, accounting services…).

Total catches reported for Croatia in 2014 amounted to 79,162,000 tons. By far, the largest percentage of the catch is made by purse seines (> 90%). Towed gears


**Fig. 8.3** Number of small-scale fishers in seven regional units of the Directorate of Fisheries in Croatia

account for some 8% of the catch, while small-scale fisheries accounted for slightly over 1% of total catch landings in 2014 covering 109 species in total. Such a small share of small-scale fisheries in total landings is in part due to their highly seasonal activity. Multipurpose small-scale fisheries vessels predominantly use different types of fixed nets (gillnets and trammel nets) and operate from the shore and in coastal waters, in limited areas and during limited periods. The most important segment in this gear class is the one between 6 and 12 metres LOA, involving 673 vessels, representing over 25% of the fleet. They land mostly sole (21%) and a mixture of other demersal species (hake, cuttlefish, sea breams, common octopus). Quantities landed have been stable over time, with the share of small pelagic species clearly dominating the overall structure of catches (over 90%). The majority of the landings by purse seines included sardines (80%) and anchovies (11%). Small pelagic species also constituted the most important species in terms of value, accounting for over 50% of total value. On the other hand, Norwegian lobster accounts for less than 0.5% of landings, but represents over 7.5% in terms of value, whereas hake accounts for 1.1% of quantity landed, and 4.4% of value. Out of the total catch, fish represent 96%, cephalopods make up around 2%, and crustaceans and shellfish another 2% (Directorate of Fisheries 2015). However, the average price of small-scale fisheries products, intended almost exclusively for fresh consumption, are five to ten times higher than those of species caught by industrial fisheries (Lleonart and Maynou 2003). Moreover, these catches are probably underestimated, as illegal, unregulated and unreported (IUU) landings often occur in demersal and small-scale fisheries. The reconstruction of total catch estimated the IUU component to be as high as 43% (Matić-Skoko et al. 2016) with discards within the demersal fisheries and non-reporting of small-scale fisheries catches being the main reason for the discrepancy. This highlights that the current method of fishery catch reporting is inadequate and incomplete, and more comprehensive reporting, which includes all fishing sectors is necessary to provide more accurate estimates of total catches. A summary of the aforementioned information on the small-scale fisheries in the Croatia is given in Table 8.1, Box 8.1.

**Box 8.1: Small-Scale Fisheries Example: Savudrija Bay in the Northern Adriatic**

The shallow, northern part of the Adriatic represents a unique marine ecosystem characterised by specific hydrographic conditions. Eutrophic conditions resulting from river Po inputs lead also to a relatively high density of fish populations, making this area one of the most important fishing grounds in the Adriatic Sea. Fishing fleets of three countries, Croatia, Italy and Slovenia, operate in the area and fishing is carried out by demersal, pelagic and small-scale fisheries. Shared fishing grounds and resources but also the specific political situation related to border issues between Slovenia and Croatia in the

(continued)

**Box 8.1** (continued)
Savudrija Bay, put local small-scale fishing communities in a very specific and fragile position regarding all possible legislative changes in the future.

Port Savudrija, located in Savudrija Bay, is the northernmost Croatian fishing port. In total, 24 fishers are registered in that port (95% are men). They started fishing on average at the age of 18 and have more than 25 years of fishing experience within their community. All of them possess their own, polyvalent vessel, which is on average 10.5 m long and 29 years old. They have a low level skill outside fisheries; the average fisher is self-employed with 2.5 employees and without additional income (60%). They have more than 200 fishing days (7 months) with average fishing trip of 1 day duration, very close to port (within 6 NM). The fishing activity is more intense and catches are significantly higher during the colder part of the year following the seasonality in catches of target species (*Solea vulgaris*, *Eledone moschata*, *Sepia officinalis*, *Pecten jacobaeus*). In total, 5 vessels are equipped for bottom trawl fishing and dredging (known as "*rampon*" on Croatian coast or "*rapido*" along the Italian coast). Other are typical small-scale vessels using seasonally 3 main types of fishing gear – gill nets and trammel nets for catching common sole, *Solea vulgaris* and bottom long-lines.

In period of more intensive fishing (120 fishing days targeting *S. vulgaris*), Savudrian fishers have from 28 to 114 fishing days (mean 61,17 ± 38,04), and on each vessel they have 1.5 km of trammel nets "*listara*"targeting *S. vulgaris*. In that period they landed 6.23 t (mean 259,6 ± 20,27 kg per vessel), and mean catch per unit effort (catch/100 m net) was 2.2 kg (mean 0,9 ± 0,92 kg). However, average monthly catch was far away from this numbers. Mean turnover was around 4000 EUR and monthly take home income was around 1400 EUR, but in high season targeting *S. vulgaris* can be as high as 3500 EUR monthly. But, during fishing season, those fishers reported high competition with dolphins, and recorded damages on the fishing gear and catch. Thus, one monthly income needs to be invested in repairing the damage done on trammel nets.

All fishers in Savudrija are members of national Fisheries Guild, but only minority attend the meetings regularly (≥3 per year) and are actively involved in policy change decisions and processes. Others get the information on policy change in informal ways, either by media or by word of mouth. Most local fishers recognise the need for legislative provisions to become more stringent in order to ensure the stability of resources. However, there is a sense of nervousness among them due to instability of catches due to environmental causes and dolphin damages, and even more so due to unsolved and complex political border issues.

**Table 8.1** A summary of basic information on the small-scale fisheries in the Croatia

| Data refers to: 2014 | Total (all fisheries) | Small-scale fisheries[a] |
|---|---|---|
| Fleet | | |
| Number of vessels | 7733 | 3363[b] |
| Capacity (GT) | 53.380,48 | 12,699,00[c] |
| Number of fishers | 10,963 | 3595[b] |
| % women | n.a. | n.a. |
| Average age of fishers | n.a. | n.a. |
| Landings | | |
| Quantity (ton) | 79162.7 | 1263.5 |
| Value (currency) | 72.149.743,51 EUR | 12.315.000,00 EUR |
| Most common gear used (top 3) (% in total) | Nets (37.7%) | Nets (60.5%) |
| | Bottom trawl (17.0%) | Traps (13.2%) |
| | Purse seine (7.7%) | Hooks and lines (10.2%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | *Sardina pilchardus* (71.9%) | Cephalopoda (*Octopus vulgaris* + *Sepia officinalis*) (29,3%) |
| | *Engraulis encrasicolus* (11.5%) | *Solea sp.* (20.2%) |
| | *Merluccius merluccius* (1.1%) | *Spicara smaris* (11.8%) |
| Top 3 in values (% in total) | *Sardina pilchardus* (40.4%) | Cephalopoda (*Octopus vulgaris* + *Sepia officinalis*) (22.3%)∗ |
| | *Engraulis encrasicolus* (11.7%) | *Solea sp.* (21.2%)∗ |
| | *Nephrops norvegicus* (7.1%) | *Seriola dumerili* (7.1%)∗ |

Source of information: Directorate of Fisheries (Ministry of Agriculture): Annual report on balance between fishing capacity and fishing opportunities for 2014 – Croatia
Links to official stats web pages: http://www.mps.hr/ribarstvo;
[a]multigear fisheries using all static gears (nets, hooks and long lines, traps) + beach seine operating with vessels <12 m; just professional fisherman are taken into account
[b]plus 3500 fishers involved in small coastal fisheries (ex subsistence)
[c]plus 7276.1 GT for small coastal fisheries (ex subsistence)
[d]total landing x mean price (expert estimation)

## 8.3 Socio-economic Context

Croatia is the most important coastal fishing country of the former Yugoslavia, and it is second only to Italy in terms of landings of marine capture fisheries in the Adriatic Sea. Croatia has a long tradition in fisheries, which provide a source of income throughout the year for coastal and island communities and adds value to coastal tourism. However, the Croatian fleet is generally small and the fisheries sector only accounts for approximately 1% of Gross Domestic Product (GDP). Since the majority of the catch consists of small pelagic fish, Croatia has a well-developed and well-equipped commercial fleet for this type of fishing. Thus, fisheries

management is mainly focused on the short-term interests of industrial fleets, particularly purse seiners (effort limitation, spatial and temporal closure).

Focusing fisheries policy and management on large-scale fleets has been a common feature even under previous state and political systems. Namely, in the former Yugoslavia, large-scale industrial pelagic fishing was under state control, while small-scale fisheries, although extensive and ongoing, were not a major political focus. Even today, the legislative and management considerations of small-scale fisheries are still under represented. To illustrate this, almost 30 fish processing factories were active during the 1960s (Basioli 1985). In the early 1990s, socio-political turmoil (i.e. the change from state to private ownership and the transition from a socialist to a market economy) and the armed conflict led to a collapse in the purse seining industry (both fishing and processing), whereas the trawling sector dramatically increased (~10-fold increase) (Matić-Skoko et al. 2011a). This was driven largely by the disappearance of regional markets for canned, small pelagic fishes due to trade interruptions caused by conflicts. Furthermore, restructuring of the sector encompassed a redirection of the fishery from small pelagic resources towards demersal resources, which were considered to be underexploited (Fredotović and Mišura 2003). This led to the construction of more bottom-trawlers, until a ban was issued in 2000 (Mišura et al. 2008). More recently, with the reopening of regional trade infrastructures, an increasing number of trawlers are converting back to purse seiners.

Small-scale fisheries have always involved large numbers of professional and subsistence fishers, reflecting Croatia's rich fishing tradition similar to other Mediterranean countries. This fishing sector was rarely influenced by country-level political issues in the past, as most fishing vessels have always been small (<12 m Length Overall, <15 Gross Register Tonnage) and generally privately owned throughout history, although a sharp upward trend in new entrants to the subsistence sector was observed in the early 1990s, during the war, when socio-economic reasons led to a high number of people engaging in fishing (Stagličić et al. 2011). However, more recent economic perturbations (2008 global economic crisis) have not had similar effects. Specifically, in the last decade there has been no increase in the number of new small-scale fishers.

Despite small-scale fisheries not being very economically significant, they do have great social importance, simply because such a large number of fishing vessels cannot be ignored. Analysis of the economic data collected under the Data Collection Framework for the reference year 2013 shows that small-scale fisheries accounted for only 1.6% of total landing (MA 2015) but, as explained above, most landings were probably largely unreported and consequently their financial value too. Days at sea in small-scale fisheries have a distinct seasonal character, depending on the migration of target species to the inshore area during the warmer period of the year. Data from 2013 show that, on average, multipurpose vessels have around 70 days at sea per fishing gear during the year (MA 2015). As small-scale fisheries combine working with fishing gears on a seasonal basis, the total number of working days is

higher than for each individual gear, as is the total catch. Furthermore, the number of days at sea is probably underestimated, since every fishing day is not registered in the logbook by small-scale fishers. Most small-scale fisheries catches are sold on the local market, not in *Prud' homies* or in *Cofradías* auctions, as in France and Spain, and the income is often used as a supplement to the household budget. For some small-scale fishers, profit is not even a priority, since they have other sources of income (e.g. agriculture or tourism). Despite the limited importance of catch quantities, small-scale fisheries make a substantial contribution to employment among the rural population on islands and along the coast, particularly during the summer months, and during the winter fishing is mainly intended for personal consumption. If small-scale fisheries diminish over time, it would cause a substantial shortage of income-generating labour in rural areas, as well as a reduced supply of healthy food on the islands in the winter months. Additionally, during summer months, tourism along the coast and on islands in Croatia is a significant economic activity and small-scale fisheries products play an important role as new markets emerge. Moreover, small-scale fisheries associated with tourism provide an added value to tourism services, though currently, there are no estimations of fisheries' contribution to this value. However, these fisheries do fit well within the national strategic guidelines for tourism development; the aim of which is to develop the tourism offer on the basis of high-quality services. Most of the mariculture infrastructure in Croatia is directly related to the islands, and this also significantly influences the development and sustainability of vulnerable island communities. Areas and communities traditionally dependent on fisheries, still having the characteristics of "fishing villages", especially on the islands, represent a significant asset in terms of overall tourism development. Similarly, small-scale fisheries have significant cultural value and as such are part of the identity of the islands' populations.

In a context of further socio-economic development in Croatia and/or the region (Adriatic Sea), there are several issues that are relevant for the fisheries sector and the future of small-scale fisheries. One such issue involves potential conflicts between the fisheries sector and the oil and gas industry regarding exploration and possible extraction. In fact, potential incidents related to this industry could affect the living resources exploited by all fisheries sectors. Recently, heightened tensions have been witnessed among governmental agencies and ministries on the one side, and conservationists, fishers and local inhabitants on the other. Limitations on navigation spaces and the potential development of new pipelines could severely limit fishing areas for the Croatian fleet. Spatial conflicts may also arise with the maritime transport sector and with the wind energy sector; although no large scale projects are expected in the area. Other conflicts may arise between fishers and Marine Protected Areas (MPAs), which are expected to increase in size in the coming years (10% Aichi Targets). Thus, any increase in the size and number of MPAs should be accompanied with awareness-raising, so that fishers perceive them as being to their own benefit (Guidetti and Claudet 2010). The adoption of sustainable fishing practices could also be highly compatible and beneficial for the tourism sector.

## 8.4 Institutional and Organisational Context of Small-Scale Fisheries: Capacity for Collective Action and Influence on Governance Arrangements

In administrative terms, the Ministry of Agriculture (hereinafter referred to as MA) is responsible for fisheries issues. An organisational unit within the MA directly responsible for these issues is the Directorate of Fisheries (DF). DF is responsible for carrying out all administrative tasks within marine fisheries (fleet management and resources), freshwater fishing, aquaculture (sea and freshwater), structural policy measures (as governing body) and market policies and fisheries inspection. DF, besides its central office in Zagreb, has seven regional units, which perform technical and administrative work in the marine fisheries sector. The DF aims to establish an overall system of sustainable resource management and fishing activity.

Within the Agricultural Advisory Service, there is also a Department of Fisheries, aimed at ensuring a link between the administration and the stakeholders in fisheries and fulfilling an advisory role to them. Stakeholders are organised in chambers, cooperatives and associations. The most important umbrella institutions are the Croatian Chamber of Economy (HGK) and the Croatian Chamber of Crafts (HOK). Chamber membership is mandatory with legal entities being members of HGK, and individuals, of HOK. In terms of association in cooperatives, during the last few years there has been heightened interest in joining them. In order to respond to this increased interest in joining cooperatives and to provide basic guidelines for the development of cooperatives, DF adopted a regulation based on the special recognition of fishing cooperatives in order to further encourage the sector to form associations and ensure their monitoring and development. So far, 18 fishing cooperatives have been recognised by the DF with a total membership of 443 fishers (status May 2012). Some of the fishing cooperatives have even shown the ability and interest to transform into producer organisations that have already been recognised by EU legislation, and also collaborating with Directorate of Fisheries in decision-making processes regarding new legislative measures.

Inspection, surveillance and control of the fisheries sector in Croatia are undertaken by several different services. The most important one is the Fisheries Inspection of the MA, which is the only service exclusively devoted to this purpose. However, given the length of the coast and the multitude of different types of activities in the field of fisheries, other state administration bodies are authorised to perform these tasks as well. These include Port Authority inspectors of the ministry in charge of safety at sea and the authorised personnel of the Maritime Police of the Ministry of Internal Affairs. Furthermore, inspections of fisheries may also be performed by personnel of the Coast Guard of the Republic of Croatia, as well as by the State Inspectorate (in the area of trade and markets of fisheries products). All these state administrative bodies cooperate through the Governmental Cooperation for Surveillance and Control at Sea, as well as through other available instruments (ordinances on cooperation, memorandums of understanding, strategic documents, action plans etc.).

## 8.5 Policy Context, Economic Crisis and Fishers' Perceptions

The key legal instrument governing fisheries in Croatia is the Law on Marine Fisheries (Official Gazette No. 81/2013), which in essence allows for the implementation of the EU *acquis*. It also contains the main administrative elements, specifying the key main bodies involved and their activities. Pursuant to this Law, several ordinances detailing the governance of different issues have been drafted and adopted in the last 3 years. In the sector of marine fisheries, the most important regulations concern technical measures: specifications for technical characteristics of fishing gears and fishing techniques; measures directed towards resource protection through minimum catch and landing sizes; designation of specially protected areas or fisheries protected areas; methods of collecting and submitting fisheries-related data and the system of issuance of fishing licenses, etc. The Law and ordinances also contain numerous provisions guaranteeing compliance with the revised Common Fishery Policy (CFP) in general. As a result, national control, inspection schemes and programmes have been adopted in terms of fisheries management.

The changes to Croatia fisheries since joining the EU where dramatic and small survey was carried out with Croatian small-scale fishers to assess their perceptions about their status, and changes under the CFP and the global (and national) economic crisis. The survey was responded by 27 small-scale fishers with long experience fishing (around 30 years), operating gillnets, trammel nets, traps and bottom long-lines. Most fishers were members of some association (mostly the National Fisheries Guild) and participate in meetings. They think that the fishing profession is not involved in the decision-making processes and perceive that Croatian Fisheries interests are not well represented in the EU. They are mostly familiar with concept of CFP, but they have voiced doubts that Croatia is obliged to incorporate all the provisions arising from the CFP into national law and that national legislation can only be more stringent than those laid down in Council Regulations. The vast majority considered that EU member states should not have uniform fisheries policies and that transition periods for policy changes should not be the same in all EU countries. They wish that their individuality and specific traditions to be recognised. Legislative changes in fisheries make them uneasy as they feel that scientific support is generally lacking and the changes are so numerous and introduced with insufficient time to adjust and organise. Moreover, implementation and compliance with regulations is perceived not to be high. Consequently, about a third of fishers think that they will not be able to fish anymore in the near future given that more policy changes are likely. Unfortunately, only a small number of fishers have other business options, while majority do not have the possibility of doing anything other than fishing. As their only option, they could change one fishing gear for another if allowed with the existing licences and authorisation rules. A buyback by Fisheries Directorate is also proposed as a way to address this problem.

The economic framework of small-scale fisheries in Croatia, especially in times of national and EU/world crises is quite unique. Unlike large industrial fisheries, the

small-scale fisheries sector certainly involves lower costs (small vessels with low engine power, small distance operations, and small crew numbers). Indicative of this is that only a third of fishers are credit burdened regarding fisheries. In addition, small-scale fisheries, especially gill and trammel nets, provide highly varied catches with the majority of catches being commercialised and with species of low fishing value usually retained for personal consumption. Discards are practically irrelevant (Tzanatos et al. 2013). Additionally, the economic viability of these fisheries is, without doubt, compensated by continuous increases in fish prices in general (around 30% in the last decade).

Limited institutional capability to effectively conduct surveillance and monitoring of fishing activities, particularly in the case of small-scale fishers (large number of landing ports, inspections not frequent enough and fines not high enough to force compliance) certainly implies that a certain proportion of the total catch goes as unreported, ending up directly in restaurants or on the black market. Since, economic indicators from small-scale fisheries, such as catch rates, suggest low profitability; there is obviously a discrepancy between the official statistics and reality. It can be clearly seen that small-scale fisheries contribute to the food supply and economies of Croatian coastal communities (especially on islands during winter months) and thus small-scale fisheries revenue is probably sufficient not to force fishers to leave the profession. Evidently, fishers' individual resilience and adaptive capacity are based on their confidence in their skills, their coping ability and their ability to assess risks as suggested by Marshal (2007).

## 8.6 Looking to the Future (Challenges and Opportunities for Small-Scale Fisheries According to Forecasts)

The fisheries sector suffers from a multitude of problems: overfishing, fleet overcapacity, heavy subsides, low economic resilience and decreases in the volume and size of fish caught (EU Regulation No 1380/2013). We believe that besides all the listed economic variables, overfishing is a major cause of the decline in small-scale fisheries in EU waters. Lloret et al. (2018) highlighted the ecological and socioeconomic changes that small-scale fisheries are facing nowadays with a number of examples. They showed how small-scale fisheries could threaten the sustainability of vulnerable coastal species and habitats by using fishing gears that actively select certain species, sizes and sexes and through the deployment of fishing gears on certain fragile habitats, as well as by ghost fishing gear, etc. Also, they underlined the importance of growing recreational fisheries in coastal waters and the disappearance of traditional low technology artisanal fisheries. All of which are leading to a loss of the traditional ecological knowledge held by small-scale fishers. Furthermore, data collection of many coastal fisheries resources caught by small-scale fisheries is still not sufficiently systematic and thus hinders the assessment and management of small-scale fisheries, in spite of the enforcement of the EU Data Collection

Regulation (DCR, EU Regulation No 1543/2000) in all EU Member States (in Croatia, it was applied in 2012).

In addition, all Mediterranean countries, including Croatia, have rather limited resources to control fishing capacity and fishing effort and/or the application of technical measures. Scientific advice, although it is always sought, has rarely been really considered in the implementation of such measures. Moreover, control and surveillance at sea have not been fully efficient in enforcing the adopted measures.

In Croatia, including fishers in the decision processes has only become more common in the last couple of years, as recommended by the CFP (EU Regulation No 1380/2013). The general impression is that there is still a lack of communication among managers, fishers and scientists, where in fact, this should be the focus of any management process (Lleonart and Maynou 2003). Better knowledge of recent changes in coastal fishing communities accompanied with a better flow of communication and a greater sense of trust among scientists, fishers and fisheries managers would significantly facilitate the desired outcome of the sustainable management of fisheries (Matić-Skoko et al. 2011b).

The newly reformed CFP recognises that securing the future for coastal small-scale fisheries is essential and public funding may help small-scale fisheries to adapt to changing conditions in the wake of this reform. This would strengthen their economic viability and maintain the contribution they make to the livelihoods of coastal communities. However, even though small-scale fisheries are generally considered to be more sustainable than large-scale fisheries, a number of studies have demonstrated that they can profoundly affect populations of target species, especially in cases where small-scale fisheries and bottom trawl industrial fisheries target the same fish stocks in coastal areas (Hawkins and Roberts 2004; Lloret et al. 2012). A specifically tailored regime taking into account all fisheries' components is needed to secure the ecological sustainability of the stocks on which these fishing communities ultimately depend. The question that arises in such situations of spatial competition for resources is whether restricting one fisheries sector is enough for a fish population to fully recover.

As part of the new CFP, a landing obligation was formally implemented in the EU for the first time. It explicitly requires that all the species captured by small-scale fisheries will be subject to catch limits (still not determined) or minimum sizes (in the case of the Mediterranean). Small-scale fisheries were included irrespective of the fact that the discard issue in the EU has historically been associated largely with mixed trawl fisheries. The effects of this measure in the long-term are unpredictable, but in the short to medium-term, Veiga et al. (2016) suggest that a landing obligation is likely to bring more negative social, economic and ecological impacts than benefits. Moreover, the EU has recognised that the main impacts associated with implementing a discard ban will be felt in the small-scale fisheries sector in the Mediterranean (Villasante et al. 2015). A negative perception of this policy was found to significantly and adversely influence the behaviour and emotional response of fishers, which will, in turn, also influence their resilience. Generally, fishers feel estranged from decision-making processes and their confidence in the outcomes of policy-making is low. One of the most serious examples was the previously

described issue with non-commercial fisheries being called "small-scale for personal needs" or subsistence fisheries that pursuant to the regulations in force needed to be registered in the commercial category. With this process, as of April 2015 around 7500 fishers either joined the recreational category of fisheries or became inactive. The transition process was extended for almost 2 years and had very negative public perceptions. This was mainly because fishers perceived that EU policy-makers did not recognise regional and local natural and geographical characteristics. Furthermore, they highlighted that social goals were almost completely neglected. Namely, resource and habitat protection policies (particularly those that are in competition with small-scale fisheries like the establishment of new MPAs) are introduced without due consideration of socio-economic factors and, therefore, are ultimately ineffective in achieving resource protection. Marshall (2007) highlighted that these policies are typically associated with intense conflicts, low compliance, significant delays and overly complicated criteria.

Thus, the Croatian Fisheries Department must find a way to meaningfully involve fishers more in decision-making processes, so that policy perception is positive and resilience is enhanced. Actively involving fishers not only brings otherwise unavailable traditional and local knowledge to the decision-making process, it also gives legitimacy to rules governing the fisheries in question and is more likely to result in management strategies that are respected and complied with willingly (Dimech et al. 2009). Above all, equity has to be ensured, on national, regional and international levels. Perceptions of lack of fairness in the distribution of the costs and benefits of resource protection measures are known to be a major influence on how policies are perceived and interpreted, especially for small-scale fisheries with non-transferable skills (Cochrane 2000). Feelings of inequity can lead to hopelessness and anger and loss confidence in future work (Marshall 2007). Developing better national fisheries management strategies based on fishers' knowledge can provide invaluable practical information. Moreover, people will be less likely to automatically respond negatively to prospective changes and will be more willing to incorporate such changes into their lives. An examination of fishers' desires to leave the small-scale fisheries together with an analysis of factors affecting their satisfaction would contribute to a better understanding of fishers' perceptions and provide additional information on the effectiveness of current management systems.

## 8.7 Conclusions

The negative perception Croatian small-scale fishers have regarding the EU's CFP and their fear for the future is mainly related to their opinion that EU policy-makers fail to recognise regional and local natural and geographical characteristics, or specifically the differences between the Mediterranean region and the North Sea and Atlantic fisheries. Furthermore, they highlight that social goals are almost completely neglected during the preparation process of new regulations. They find that

the fish markets in northern and western European countries are much better organised with fish and other marine organisms achieving higher prices than in southern Europe ones and therefore, in their opinion, small-scale fishers in those countries are better motivated to accept the rules and more stringent measures arising from CFP and different regulations and directives. Croatian scientists and experts working on fisheries issues are aware of the fact that although the adoption of EU rules is necessary, they should try to alleviate the problems these rules are causing fishers in practice. These experts actively work in numerous EU and Mediterranean boards that are responsible for decision-making processes trying to present the specific characteristics of Croatian small-scale fisheries and fisheries in general.

Small-scale fisheries along the eastern Adriatic coast function in a very specific context, with high numbers of participants, fishing gears, species caught and landing sites making this sector the most complex in terms of monitoring and management in Croatia. Overall satisfaction with fishing and the challenges of fishing were found to be the primary drivers of the desire to stay or leave small-scale fisheries. Fishers' responses indicate hardship to stay in fisheries as income barely covers the high costs of fuel and vessel maintenance. New measures and regulations are seen as additional burdens that reduce their ability to work and generate income. Small-scale fishing is a commercial activity, and obviously income is an important factor in creating satisfaction. Therefore, fishers who express their dissatisfaction by stating they plan to leave the fishery should be taken seriously into consideration. However, for Adriatic small-scale fishers, continuing a family tradition of fishing and the pride in being a fisher was found to be vital in their desire to continue, especially on the islands. Additionally, the number of fishers that can exit their fishery without substantial loss is limited. The funds for the withdrawal from the sector (e.g. scraping) are mainly provided for large-scale vessels. In addition, the Fisheries Department has an obligation to monitor the process and validate whether established inactivity is just a temporary phenomenon or a permanent and real withdrawal.

All the above confirm that small-scale fisheries present many challenges to the EU and Croatia. If we are to maintain small-scale fisheries, it is high time for their management to become more adaptive, practical and objective oriented. As noted by McClanahan et al. (2009), the use of adaptive management strategies is less disruptive to social systems, more likely to build social consensus, and promote more adequate tools for each situation, rather than extreme actions such as discard bans, quota introductions, spatial-temporal restrictions, etc. The EU could also improve management within the CFP by focusing on different actions, some already anticipated in the CFP reform. While economic crises, both in the EU and at a world level, influence all sectors, including small-scale fisheries, a more global approach to factors driving fishers' behaviour (Pascoe et al. 2015) is needed to improve our understanding of how management changes affect fishers' perceptions, and when this is likely to be associated with the decision to stay or go from fisheries. In particular, it is necessary to integrate different assessment approaches (biological, social and economic) with the active participation of all stakeholders (Lloret et al. 2018), if we wish to ensure the sustainability and continuation of small-scale fisheries.

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# Chapter 9
# Small-Scale Fisheries in Slovenia (Northeastern Adriatic): From Borders to Projects


**Alenka Janko Spreizer and Nataša Rogelja Caf**

**Abstract** This chapter describes small-scale fisheries in Slovenia from 1991 to 2014 in the context of implementing Europe's Common Fisheries Policy (CFP) and its ambition for sustainable development. Firstly, we analyse socio-political and economic changes from 1991, a significant year for Slovene small-scale fisheries, dealing with systemic aspects involving politicians, fisheries specialists, and fishers. This period marked a significant decrease in waters designated for industrial fisheries. Consequently, numerous fishers enrolled in small-scale fisheries. Previous jurisdictions over marine management were also transferred from institutions in the former Republic of Yugoslavia to Slovenia, which first had to establish a national network of fisheries institutions. Subsequently, we describe the processes of EU accession and "harmonisation" of national legislation with EU regulations. Reflecting on this transition, we depict the situation of small-scale fishers in Slovenia such as grappling with borders, regulatory requirements, and new development projects.

**Keywords** Small-scale fisheries development · Slovenia · Fisheries office · North-Eastern Adriatic · Sustainable fisheries · Fishing tourism · Common Fisheries Policy (CFP)

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## 9.1 Introduction

It was a grey rainy day in autumn 2004 when we went to the town of Koper to meet two local, small-scale fishers and hear a story about the new governmental requirements. In that period, the Slovene administration had to adapt rapidly to EU rules and in the case of fisheries, the state was asked to provide more detailed information on the quantity of catches. A system of daily catch recordings by the fishers themselves was then introduced because the government found it hard to justify costs for state sampling and monitoring. Fishers on the other hand, felt that the burden of accurate registration of their catch had been shifted from state administrators onto their shoulders. They critically observed the actual size of EU logbooks as can be seen in the following:

> They say it's only experimental, these European logbooks or how shall I call them… Previously I wrote down once a month … what I caught, but here I have to fill in the amount every day, every catch… […] And also these logbooks are way too big. For a big boat it's not a problem, but if you have a boat of four meters, a boat without a cabin, where can you keep such a book that is too big and too fat? Where can I keep it? And then my dirty hands! (personal conversation, Koper, November 2004)

Apart from such unease related to big books and dirty hands, our ethnography is also full of fishers' comments related to smallness. This aspect was expressed in many different forms, sometimes through concerns over adjusting to detailed EU regulations, or in numerous requests by Slovene Ministries for exemption from a certain EU rule (such as the request for first-hand sales of fish at the pier). Nevertheless and smallness apart, Slovene small-scale fisheries have acquired a rightful place within the bigger picture of tourism, sustainability discourse and neoliberal economics. They have also had to cope with new challenges and opportunities at different levels. One such challenge is the continuous stream of 'projects'. "Everything nowadays becomes a project", preferably a sustainable one, and it has become quite difficult to think about work outside of the project framework even if you are a Slovene small-scale fisher. In this race for projects, small-scale fishers in Slovenia come in last, even though they are the ones on whom the image of a sustainable fishery is based. They have to compete with mariculture, with people who know how to apply for projects, or they have to become involved in the tourist industry if they are to survive. Not everybody is prepared or has the financial capacity to make these changes as small-scale fishing boats are often not appropriate to function as tourist boats, lacking the necessary space (for toilets and other facilities).

Our ethnography is anchored in three coastal towns – Koper, Izola and Piran.[1] The fishing port in Koper is located near the international port. Smaller boats (up to 12 metres) are moored in the inner part of this harbour, where the dock was recently

[1] The following article is part of the ARRS programme "Heritage on the margins: New perspectives on heritage and identity within and beyond national" (P5-0408)) led by Dr. Špela Ledinek Lozej (ZRC SAZU, Slovenia) and part of the EQUIP project FISHERCOAST led by Dr. Ajit Menon (Madras Institute of Development Studies, India).

raised by 1 m, making boarding more difficult. Our respondent Mario, an older fisherman, was fortunately able to negotiate a berth near the steps leading to the sea. In terms of women, hardly any are observed, since fishery is, according to our ethnography, a man's calling. Nevertheless, there are always exceptions: we may find women biologists sampling the fish, an administrator from the fisheries office or even a partner, enthusiastic about going fishing even on days when the fish market is closed. Here we cannot find fishers selling their catch from the boat as they do in nearby Izola, a traditional site for industrial fishing. Mario tells us that the new stone tables in Koper are not convenient for selling fish, because there is no water and electricity and no roofing. The ice machine is not working properly either, and fishers are quite critical about the aesthetics, rather than having a more functional renovation of the pier, which are nothing more than a tourist gimmick.

In Izola, more men may be found in the port, even if they do not undertake fishing activities (See Fig. 9.1). Here again, not many women can be seen. According to Sonja, a woman's place is in the background. She herself is not directly involved in fishery, occasionally working at the community museum of fish canning and industrial fishing. Even though women are rarely seen in the port, some have regular jobs and support their families with steady income from tourism, teaching or the public sector. In fact, many fishers are forced to combine their activities with other jobs like transporting tourists. Although there are fewer and fewer fish in the Slovene sea, some fishers still want to pass on their knowledge, especially since the School of Fisheries in Piran closed down several years ago. In Izola, there are some new boats of mariculturalists, who have transformed their businesses into shellfish farming. We find fishers who are willing to talk about their vocation but become frustrated

**Fig. 9.1** Fisher entering the port of Izola in the old mandracchio. Izola, June 2016. (Photo credit: A. Janko Spreizer)

when anthropologists inquire whether they are able to catch enough in order to make a living. Some are not happy about the mounting pressure on small-scale fishing with various fishers entering into the sector after the industrial fishing fleet was reduced and bigger boats were scrapped. While they are cleaning the nets and sorting the fish, we are told that they have, many times and unsuccessfully, tried to establish cooperative organisations (*zadruge*).

Fishers in Piran like to tell visitors that they are the most sustainable community, because there are no trawl boats. The fishing pier is located in the old port and equipped with pontoons and floating berths, which make boarding easier. The entrance to the old port is attractive as visitors have to navigate through green and red signals dating back to the Austro-Hungarian Empire. Here, the fishing gear boxes are decorated with old postcard motives. Not far from here, there is a fishing reserve in Piran Bay, which is a disputed fishing zone owing to border issues with Croatia that have still not been solved. Fishers from the other side of the Piran Bay are subjected to frequent checks carried out by fishery inspectors from Croatia, Italy and Slovenia, who jointly control fishing activity in this ecologically vulnerable bay.

## 9.2 Slovene Small-Scale Fishers in a Big World

In the following section, we will describe the socio-political and economic changes after the break-up of Socialist Federal Republic of Yugoslavia (SFRY) in 1991 in order to shed light on the story of how Slovene small-scale fisheries have been caught up in a 'big world'. Although their territorial waters became smaller after the separation of SFRY, Slovene small-scale fishers have had to cope with different legislation, borders and discourses from a 'big world' that influences their daily routines.

The Republic of Slovenia is geographically located in Central Europe, touching the Alps and bordering the Mediterranean Sea. Its coastline is less than 50 kilometres long[2], stretching from the peninsula of Muggia (Italy) to the peninsula of Savudrija (Croatia). The Slovene coast is also located in the north-western part of the Istrian peninsula, which is primarily represented as a border region (See Fig. 9.2).

The fishing communities of Ankaran, Koper, Izola, Strunjan and Piran are geographically located along the shores of the Gulf of Trieste, which is described as the northernmost part of the Adriatic Sea and characterised as a shallow marginal part of the Mediterranean Sea (Orožen Adamič 2002, 144; Orožen Adamič 2004; Klemenčič 2013). Biologists regard the Gulf of Trieste as a coherent natural environment or habitat, which among other things, also affects the dynamics of its living marine resources and fisheries. Some of the characteristics of the fish in the Gulf of Trieste are the extensive migration and seasonal, annual and secular fluctuations (Zei 1996).

[2] Slovenia's Adriatic coastline stretches between 43.157 km (Burger 2015) and 46.6 km from Italy to Croatia. The total area of Slovenia is 20,273 km$^2$, and the area of water is 122–180 km$^2$ (Ogrin and Plut 2009).


**Fig. 9.2** Map of Slovenia in Europe and Slovene Coast

The Gulf of Trieste is today divided between Croatia, Italy and Slovenia with the maritime border between Italy and SFRY having been established in 1977 by the Treaty of Osimo. At that time, approximately two thirds of the aquatorium of the Gulf of Trieste belonged to Italy and one third to the SFRY.

After Slovenia became independent in 1991, the maritime border between Croatia and Slovenia in Piran's Bay remained undefined and continues to be contested at the time of writing. The main issue of the dispute is whether the state border line runs along the border of cadastral municipalities or along the line that runs from the mouth of the Dragonja River into the sea and towards the middle of the Bay of Piran. Although the political dispute regarding the maritime border between the two countries is seen as a problem that emerged after Slovenia's independence in 1991, it was already apparent within the framework of the SFRY (Mihelič 1987, 1998, 2008).

However, there are several other lines and boundaries in this sea beside state borders. Fishing is banned in two protected areas and in one fishing reserve in the area of Strunjan and Portorož, as well as along Debeli rtič, where the ban also applies to anchoring and sailing. Moreover, there is an important industrial port in the Gulf of Koper. Due to international safety rules, a common routing system and traffic separation scheme was established in the Northern Adriatic, which has also had an important impact on fisheries (UL RS 2000: 1578–1583).[3]

[3] Memorandum of understanding between the Government of the Republic of Slovenia, the Government of the Republic of Croatia and the Government of the Italian Republic on the establishment of a common routing system and traffic separation scheme in the northern Adriatic (ULRS 2000: 1578–1583].

## 9.3 Slovene Fisheries in Numbers

In 2014, there were 170 (AER 2015) registered fishing vessels in total, of which 91 boats were active (meaning that they took at least one fishing trip and submitted one fishing diary per year). From a total of 170 boats, there were 155 registered small-scale fishing boats shorter than 12 m and equipped with passive fishing gear; among them only 77 were active (AER 2015). The total capacity of vessel gross tonnage (GT) was 597 and for small-scale fisheries it was 357 (SORS 2014). Based on the data, we can conclude that the Slovene fishing fleet mainly consists of boats that are 6 m long and generally less than 12 m in length. Total employment in 2014 was estimated at 126 jobs, or 80 full-time equivalents (FTEs). In 2014, there were 60 full-time fishers (FTEs) (AER 2016) employed in small-scale fisheries (See Fig. 9.3). The level of employment actually increased between 2008 and 2014, with total employed increasing by 13%, whilst the number of FTEs increased by 6% (AER 2016).

There are no data on the gender and age structure available for Slovene marine fisheries. Fishers reported that there were one or two women registered as professionals and that some also worked part time at the fish market and occasionally went to sea with their spouses. In 2015, we were able to speak with a woman who helped her partner, a small-scale fisherman, fishing with him from Monday to Thursday. During the weekends, she usually sold fish at the fish market. We were also told that


**Fig. 9.3** Map of Slovenian small-scale fisheries at the Slovene Coastal area

there was one woman who occasionally went purse seine fishing with her father in 2014. Furthermore, we heard of a woman who sometimes headed out to sea with trawlers (personal conversation, Koper, May 2015). We also found information about a woman who worked in fishing with smaller boats around 2010, and was the only woman officially registered as a fisher. We were also told that she was now employed elsewhere and no longer went out to sea. There are also some younger persons involved in fisheries, who are sons or daughters of fishers, working informally on family boats.

The economic performance of fisheries is generally weak. The numbers and values of total landings for all small-scale fishery and large-scale fishery, are given in Table 9.1. According to statistics collected by InfoRib (2016), the most important landed species for Slovene small-scale fisheries in 2014 in terms of quantity were *Sparus aurata* - gilthead sea bream, *Sardina pilchardus* - European pilchard and *Solea solea* - common sole. Other important species are *Engraulis encrasicolus* - European anchovy, *Platichthys flesus* - flounder and *Mugilidae* - mullet. In 2014, in the small-scale fisheries segment the top three types of gear used for fishing were: trammel nets, set gillnets and purse seines (InfoRib 2016). Most of the catches are sold directly to known customers. In the past, when the fish processing industry – Delamaris factory[4] – operated, the products were sold to them and their commercial agents. Today, part of landed catches is sold at the fish markets in Slovenia or in Trieste, Italy.

## 9.4 Unique, Artisanal and Small: Definitions and Ideas of Marine Small-Scale Fisheries in Slovenia

One of the mantras that runs through our research material is that of smallness – expressed whether in concerns to adjust to the EU rules that resulted in big investments (transferring 4 Slovene boats to the electronically led fishery diaries), presented in 'zero numbers' (such as 0.014 for GDP[5]) or in numerous request for exemptions from following a certain rule directed from Slovene Ministries to the EU governmental bodies (such as the request for the first-hand sales of fish at the pier). This smallness is also reflected in the use of definitions of marine fisheries in Slovenia. On the one hand, we have official definitions of small-scale fishing, and on the other, we have a discourse about the small coastal fishers that should be highlighted here.

In Slovenia, there are several formal categories of marine fishing. We can speak of commercial marine fishing and non-commercial (i.e. sport fishing and recre-

[4] In the local vernacular the name Delamaris is still in use for former food processing and fish canning industry. The name is also used for industrial fishing fleet.

[5] Contribution of fishing to the Slovene economy is providing only about 0.014 percent of the Gross Domestic Product (GDP) (Faoadriamed.org 2016).

**Table 9.1** Small-scale fisheries in numbers

| Data refers to: (2014) | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| Fleet | | |
| Number of (all) vessels | 170 (AER 2015) | 155 (AER 2015) |
| Capacity (GT) | 597 (SORS 2014) | 357 (SORS 2014) |
| Number of fishers (in FTEs) | 80 (AER 2015) | 60 (AER 2015: 356) |
| % women | n.a. | n.a. |
| Average age of fishers | n.a. | n.a. |
| Landings | | |
| Quantity (ton) | 254.5 (AER 2016) | 33.6[1] / 102.3[2] |
| Value ( EUR) | 1.28 million (AER 2016) | 0.6 million (InfoRib2016) |

Most common gear used (top 3) (% in total)

| Fishing_gear | Quantity in tones_all | % |
|---|---|---|
| Purse Seines | 113.7 | 44.8 |
| Other Trawls- Buttom | 72.6 | 28.6 |
| Trammel nets | 34.8 | 13.7 |

| Fishing_gear | Quantity in tones_all | % |
|---|---|---|
| Trammel nets | 34.1 | 39.8 |
| Set gillnets–anchored | 27.4 | 32.0 |
| Purse seines | 19.3 | 22.6 |

Most important species in landings:

Top 3 in quantities (% in total)

| name_sci | Quantity in tones_all | % |
|---|---|---|
| *Sardina pilchardus* European pilchard | 78.4 | 30.9 |
| *Engraulis encrasicolus* European anchovy | 33.2 | 13.0 |
| *Sparus aurata* gilthead sea bream | 19.3 | 7.6 |

| name_sci | Quantity in tones_ssf | % |
|---|---|---|
| *Sparus aurata* gilthead sea bream | 18.6 | 7.3 |
| *Sardina pilchardus* European pilchard | 14.7 | 5.8 |
| *Solea solea* common sole | 13.3 | 6.3 |

Top 3 in values (% in total)

| name_sci | SumOfLanding_value_eur | % |
|---|---|---|
| *Sparus aurata* gilthead sea bream | 172512.7 | 14.6 |
| *Solea solea* common sole | 168228.4 | 14.2 |
| *Sardina pilchardus* European pilchard | 146918.6 | 12.4 |

| name_sci | SumOfLanding_value_eur | % |
|---|---|---|
| *Sparus aurata* gilthead sea bream | 167870.7 | 28.2 |
| *Solea solea* common sole | 155181.2 | 26.0 |
| *Scophthalmus maximus* turbot | 31532.5 | 5.3 |

Sources:

InfoRib (2016) Fisheries Information System at the Ministry of Agriculture, Forest and Food. Ministry of Agriculture, Forestry and Food

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[1]Calculated from data for 2013, for segment 0-6 m

[2]Calculated from data for 2012, for segment 6-12 m

ational fishing).[6] Commercial fishing is further divided into full- and part-time commercial fishing, the latter combining fishing with other activities. An additional formal category appeared within the framework of the EU, namely, the category of small-scale fishers (those with boats of less than 12 m in length, using passive gears only). Today the majority (app. 91%) of commercial fishing boats used along the Slovene coast are less than 12 m in length. In present popular discourse, all Slovene fishers are perceived as small-scale, while the terms small coastal fishing and small-scale fishing are used synonymously. Additionally, they are considered coastal fishers due to the fact that the overall landings are limited (only 237 tonnes in 2013, and 254.5 in 2014) (AER 2016), and with the fleet being small in terms of engine power and tonnage.

When we collected the ethnographic data, the definition of small-scale fisheries in the Slovene coastal region was used differently by several actors. In the Slovenian language small-scale fisheries literally translates as "small coastal fisheries". According to individual fishers who bought trawlers from the former Delamaris fleet[7], they may also be considered small fishers with boats up to 18 m. They refer to their fishing as a traditional, small, family business. However, some small fishers (those with boats up to 12 m) occasionally (according to the situation) advocate the need to ban trawlers in the small sea area, which is limited by state borders and traffic lines as well as the confines of reserves and protected areas.

Although the Ministry of Agriculture, Forest and Food (MAFF) has adopted the EU definition of small-scale fisheries, some representatives at the Ministry stressed that during the fisheries policy reform after 2006, the definition was understood differently.

> For us, 12 m is perhaps too long as a criterion, because we do not have large vessels. We have only four ships longer than 15 m, and we do not have a single ship longer than 18 m. With regard to policy and management, the definition of small-scale fisheries is acceptable, and I personally would not include trawling ships in the definition (personal conversation, Ljubljana, April, 2015).

In the interview (personal conversation, Ljubljana, April, 2015) with the leading administrators at the MAFF, we learned why there is a trend to speak about Slovene fisheries as small-scale coastal fisheries:

> Small-scale fisheries in terms of fishing close to the coast are almost everything for us. We have twelve bigger trawling ships [koče], but we also have trawling vessels of 7 metres. The definition of small-scale fisheries does not include trawlers […]. Trawling requires a 3 NM distance from the shore, but there is an exception for four trawlers longer than 15 m in the

[6] The difference between these two categories is that sport fishers are members of fishing clubs, whereas recreational fishers occasionally buy fishing permits. Sport fishers are obliged to fill in the catches in their cards and must report them annually to the Fisheries Research Institute of Slovenia. In practice, sport and recreational fishers do not return the data on their catches as they should and consequently the statistics on catches are not precise.

[7] See footnote 4.

legislation for Slovenia. Up to May 2017, trawlers are by exception allowed to fish at no less than 1.5 NM from the shore.[8]

Our interlocutors kept explaining that all Slovene fisheries are actually small scale due to their marginal position, low catches and the low income of this whole sector of the economy. On the other hand, fishers with small boats felt even more marginal and pressured due to the shared fishing area and permits for four boats to trawl up to 1.5 NM from the shore.

## 9.5 Socio-political and Economic Changes After 1991

One of the factors that have had the strongest impact on the daily lives of Slovene fishers after 1991 was the establishment of the new state border, which resulted in a significant loss of their fishing areas. After 1991, the closure of substantial swathes of fishing ground (along the previously common Yugoslav coastline), coupled with the prohibition of driftnet fishing during late spring and summer periods, resulted in a dead season for fishers used to this kind of fishing gear. However, the economic crisis had already started in the 1980s. At that time, the majority of fishers were employed by the state-owned company Delamaris, but during the crisis, the state began to encourage people to become self-employed. We were told that due to such problems many people from the Slovene coast who had smaller boats at that time went fishing further south along the coast of Istria, as far as Umag, Vrsar and Limski kanal (Croatia). In the 1980s, fishing within the SFRY was identified as a developing sector and some fishers were exempt from taxation.

There are several causes that have led to a reduction in income in Slovene marine fisheries after 1991, when the SFRY disintegrated and Slovenia became "independent". Besides the economic crisis, there was war in the former Yugoslav republics of Croatia, Bosnia and Herzegovina and Serbia. Due to the economic sanctions placed on Slovenia because of the conflict, it lost its markets. Furthermore, the former common fishing area in the Northern Adriatic was reduced as a result of the changed political situation. These changes also affected people who were engaged in commercial fishing along the Slovene coast. The industrial trawling fleet was sold off bit by bit after 1991, and some trawlers were purchased by individual fishers. Small-scale fishers started to talk about the need to limit industrial fishing in territorial waters, complaining that trawling was endangering certain species of fish and resulting in a decline in fishery resources.

[8] Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94. Chapter 4, Article 13, states: "1. The use of towed gears shall be prohibited within 3 nautical miles of the coast or within the 50 m isobath where that depth is reached at a shorter distance from the coast /… The use of trawl nets shall be prohibited within 1.5 nautical miles of the coast." (EC No 1967/2006: 28–29).

At a later date, in the period of Slovenia independence in 1994, when the Companies Act[9] was adopted, the status of fishers was changed to that of entrepreneurs. Then, in 1999, with the passing of the amended Marine Fisheries Act, the status of Slovene fishers was equated with that of farmers. According to this Act, marine fishers could have health and pension insurance as fisher-farmers, provided that they were able to achieve an income level as established by the MAFF. According to our information, marine fishers felt uneasy about such a designation, mainly because fishers and farmers faced completely different problems in their daily work and should be considered separately.

This status changed once again, when the new Act on Marine Fisheries (ZMR2) was passed in 2006, and fishers could now have the status of independent entrepreneurs or establish their own companies. If the criticism regarding equating fishers with farmers focused mainly on different working methods and income, equating fishers with independent entrepreneurs or business companies also created uneasiness, grouping them with professions with which fishers feel they have nothing in common.

## 9.6 Joining the European Union: Slovene Fisheries Policies 2004–2006

Opportunities for positive restructuring of fisheries in Slovenia's EU pre-accession period were lost due to mismanagement by the MAFF. As our respondents stressed, many of them, for example, lost chances for fleet renewal with the fishing licenses being granted in a chaotic process. During the transitional period (1992–2004), fishers were formally members of two main associations, which did not operate well due to numerous internal conflicts as well as the feeling that they had a lack of support from the MAFF.

Several attempts to establish fisher organisations in the form of cooperatives failed. Finally, in 2004 coastal municipalities funded the Fisheries Office [*Ribiška pisarna*], which was established as a coordinating body. The role of the Office was to provide the base for joint communication and the consolidation of the fisheries sector.

After 2004, older administrators at the MAFF were replaced with new experts. This was, at that time, perceived as a positive shift. Current sources at the MAFF reported that in that period the main problem for public servants within this sector was to understand the philosophy of the EU, how it worked, how things happened and how to participate in the preparation of EU legislation. Everybody had to learn from scratch how EU funds were obtained and spent as well as how EU procedures worked. The most serious problem was the unsolved question of the state

[9] The establishment, management and organisation of companies in Slovenia is regulated by the Companies Act, which is fully harmonised with EU legislation.

border between Slovenia and Croatia in the Bay of Piran (Rogelja and Janko Spreizer 2017), which is still, after the arbitrage decision in 2017, in a status quo. Fishers also complained about the antiquated fleet and limited opportunities to obtain funds in order to rebuild their old boats. It is important to mention that the MAFF had invested a lot of time and energy in establishing communication among fishers. Small-scale fisheries using passive net technology, for example, complained that trawler fishers were destroying their nets. On the basis of these complaints a corridor for trawlers was established with the Ministry's support. Fishers continued to keep the pressure on the MAFF to deliver more effective surveillance, including police and inspection.

Immediately after Slovenia's accession to the EU, some issues remained unresolved, including the sale of fish products. In 2004, the Italian authorities did not allow the sale of fish from the Slovenian sea on the Italian market. This issue was settled after the visit of the EU Commissioner with fish now allowed to be sold in the Trieste market and directly to restaurants in Slovenia.

### *9.6.1 Creative Management*

In Slovenia, the field of fisheries, together with relevant legislation and management, is currently the responsibility of the Fisheries Department within MAFF. Although the marine fishing sector is numerically small and has an insignificant influence on the national economy, it is still considered to have a strong social impact on the Slovene coastal region in terms of employment. Moreover, fisheries are also important for maritime identity and tourism. In addition to directly creating employment opportunities, it is linked to the economy of the entire region, especially to tourism and catering. Our respondents at the Ministry said that it was difficult to gain an understanding regarding the specifics of Slovene fisheries within the EU. Recently, the Slovenian state was brought before the European Court of Justice, because the sector had not developed an electronic log (fishing diary system): currently, the state is expected to develop on-line diaries for four trawlers exceeding 15 m. This activity demands a great deal of effort and money. The same problem applies to the implementation of the VMS system.

Before 1999 statistics were collected by Statistical Office of Slovenia (SORS) in accordance with Yugoslav statistic methodology and were based on physical or legal persons employed in fisheries. Now SORS collects data according to the methodology of EUROSTAT, and records persons employed in fisheries in FTEs.[10] In 2006, the Ministry developed a new information system (InfoRib),[11] which collects data on marine species, landings, register of fishing vessels and socio-economic

[10] Data on "persons in FTEs" actually do not show how many people combine fishery with other activities. Recently it was said, that 40 people make a living from fisheries.

[11] InfoRib is Fisheries Information System at the Ministry of Agriculture, Forestry and Food.

data on the small-scale fisheries and large-scale fisheries fleet segments. Due to fact that the government found it hard to justify costs for state sampling and monitoring, fishers now have to register their catch by themselves. As well as the Ministry, the Fisheries Research Institute of Slovenia (FRIS) performs research and consultancy in the fields of freshwater and marine fisheries. These public service activities are carried out on the basis of national and EU legislation.

## 9.7 Common Fisheries Policy and the European Fisheries Fund

From 2007–2013, the Slovene fisheries sector drew on funds from the European Fisheries Fund, which, in total, allocated a little over €21 million to Slovenia. The funds were intended for the sustainable development of fisheries, aquaculture, and processing and marketing of fishery and aquaculture products. Documentation on obtaining funds from the European Maritime and Fisheries Fund (2014–2020) was under preparation at the time of writing. In the new Operational Programme, the main objectives are related to enhancing the competitiveness of aquaculture and leaves fishing aside.

### *9.7.1 "Fishing for Projects"*

After 2008, the Fisheries Office was active in the field of project management and application, assisting with following the steps required for EU funding. As other EU countries, Slovenia had to organise a Fisheries Local Action Group (FLAG) according to the Axis 4 of the European Fisheries Fund. The idea was to support local fishing communities to build a more sustainable future by managing these funds through partnerships between local fishers and a variety of other local stakeholders. The overall idea of the FLAG was that the stakeholders themselves design the local development strategy that would fit their area's needs and be harmonised with the sustainable development tripartite philosophy, namely, to increase economic, social and environmental welfare. In performing these activities, the Fisheries Office encouraged collaboration between public institutions, private fisheries, the non-fisheries sector and those interested, living and working in the fisheries field, and decided to treat the entire coastal area as a single unit under a single FLAG. All three Slovene coastal municipalities as well as the Fisheries Office (the head together with a working group of fishers) had already cooperated in the initial phase of the establishment of the Slovene FLAG. Everyone who expressed interest in participating in the development of the FLAG was invited to initial presentations organised by the MAFF, while the working group of fishers prepared the initial basis for the Local Strategy for Sustainable Fisheries Development (LSSDF),

choosing two independent entrepreneurs to carry out the final preparation of the LSSDF. These individuals held interviews with fishers, economic operators and other stakeholders from the area who expressed their interest in collaborating in the FLAG. At that time, the Fisheries Office and coastal municipalities organised several working meetings. In 2011, a working group of fishers at the Fisheries Office received a draft of the LSSDF and upgraded it accordingly. The final documents of the LSSDF and of the consortium agreement were drawn up in December 2011, and the consortium was constituted on 9 January 2012. A fisher from Izola was appointed administrator of the FLAG "Fisher" [*Obalna akcijska skupina – OAS Ribič in Slovene*]. All three Slovene coastal municipalities signed the agreement of joint financing for the LSSDF preparation, while the municipality of Izola provided an office in Izola for the purposes of establishing the FLAG and its operations. The FLAG "Fisher" was at the time comprised of forty-six partners: twenty-six from the private fisheries sector, fifteen from the private non-fisheries sector and five from the public sector.

The Slovene LSSDF has seven objectives: diversification and restructuring of fishing activities; preservation of the natural environment and contribution to sustainable fisheries; marketing; processing and culinary offer of Slovene sea and farmed fish harvests; education and training in fisheries and enhancing Slovene fisheries; cooperation between fishermen; the preservation and restoration of the cultural heritage of fisheries; and active integration of women into supplementary fisheries activities. By establishing the FLAG and LSSDF, all necessary conditions for the disbursement of EU fisheries funds were realised. Subsequently, on 12 April 2012, the FLAG "Fisher" issued an invitation to submit tenders for the selection of projects for the implementation of the Local Development Strategy in the period of 2012–2013 on the website of the municipalities of Izola, Koper and Piran and in the newspaper *Primorske Novice*. The following year seventeen projects (see the Box 9.1) were implemented through "Fisher" and the administrator of the FLAG office reported to the local newspaper: "*At the beginning both the fishers and the local community were somewhat distrustful of the idea that Slovenia could gain EU funds, since it has rarely happened. However, in the end this case turned out to be different*" (Vidrih 2013).

Walking along the Slovene coast, we are today confronted by numerous noticeboards informing us of fishing projects and their financial sources mainly from EU funds. Most of these projects are tourism projects connected to gastronomy, recreation and education. We can, for example, observe two vessels EKO 1 and

**Box 9.1: The Seventeen Selected Projects of the FLAG "Fisher"**

1. Dušan Kmetec s.p., Mazzinijeva 3, 6330 Piran, "Conversion of vessels 51- PI for the implementation of additional fishing tourism activities",
2. Robert Radolovič s.p., Obrtna ulica 30, 6310 Izola, "Vessel for passenger transportation",

(continued)

**Box 9.1** (continued)

3. Ribištvo-Školjkarstvo, Mitja Petrič s.p., Veluščkova 8, 6310 Izola, "Vessel EKO 1",
4. PROSUB d.o.o., Zaprta ulica 3, 6310 Izola, "Vessel EKO 2 - Fresh from the sea",
5. DELFIN, Milenko Buležan s.p., Ferda Bidovca 1, 6310 Izola, "Mobile catering facility",
6. Gimnazija, elektro in pomorska šola Piran, Pot pomorščakov 4, 6320 Portorož, "Aquarium",
7. FONDA.SI d.o.o., Liminjanska cesta 117, 6320 Portorož, "Purchase of photovoltaic electric hybrid vessels for the transport of people on excursions to discover shellfish farms and fish farms",
8. GASTRO PROJEKT d.o.o., Ul. Sergeja Mašere 5, 6000 Koper, "Tastes of the Sea",
9. FONDA.SI d.o.o., Liminjanska cesta 117, 6320 Portorož, "Design and purchase of equipment for the guided "green" tours of the fish farms and with kayaks, canoes and vultures",
10. SAPIENTIS, Stanka Turk s.p., Sončna pot 4, 6310 Izola, "The development of the programme Fishing Holidays",
11. FONDA.SUB d.o.o., Liminjanska cesta 117, 6320 Portorož, "Preparation and organization of the seafood kitchen",
12. LEAN FONDA s.p., Liminjanska cesta 117, 6320 Portorož, "Publishing of the book Underwater Piran",
13. FONDA.SUB d.o.o., Liminjanska cesta 117, 6320 Portorož, "A documentary film for the promotion of aquaculture and trademarks FONDA Piran sea bass",
14. HALIAETUM, mag. Aleš Bolje s.p., Tomažičeva 15, 6310 Izola, "The economic and nutritional value of fish of the Slovenian sea (research)",
15. Ribištvo, Domenico Steffe s.p., Staničev trg 12, 6000 Koper, "Fishing in Slovenian Istria as motivation, occupation , and tourism activity for young people",
16. Mediteranum Piran, Ulica svobode 81, 6330 Piran, "Reprint of the book Our Sea",
17. Mediteranum Piran, Ulica svobode 81, 6330 Piran, "Extension of the exhibition on sea shells and sea snails".

Source:
The FLAG "Fisher". The selected projects. (http://www.oasribic.si/en/17-selected-projects.html).

EKO 2 owned by local fishers who started to combine their activity with shellfish farming while also offering educational trips on seafood gastronomy, shellfish farming or recreational tours. They also cooperate with rescue diver services and occasionally take part in underwater construction work. Four private entrepreneurs led

by the members of one local family that engages in fish farming won, for example, four projects connected to fish farming, promotion of fish farming, education and ecotourism. They managed to purchase an ecological vessel and equipment for tourist tours taking visitors to their fish farms and the purchase of a mobile kitchen for educational purposes. Furthermore, they published a book about the underwater world of Piran and produced a documentary promoting their brand.[12] Three out of the seventeen projects were undertaken by fishers who were already successful in combining fishing with fishing tourism. A new boat was bought solely for tourism activities, one fishing boat was converted into a tourist vessel and the purchase of another envisaged as a mobile seafood kitchen was also made. The purchase of an additional vessel was realised in partnership with the Piran gymnasium and Piran's aquarium. Three projects were research-oriented covering topics such as the economic and nutritional value of fish in the Slovene sea, guidelines for fishing holidays and researching fishing as a motivation for young people. Two of the seventeen projects were assigned to the Institute Mediteranum, which reprinted a book and made an extension of the exhibition on sea-shells. It seemed that all the objectives proposed under the European Fisheries Fund were achieved and that the seventeen projects addressed the eligible activities connected with basic EU regulations, such as competitiveness, diversification, infrastructure and environmental protection. One of the fishers who won a project under the EFF seemed to be satisfied with the whole course of events: "*The FLAG 'Fisher' is a good example of cooperation, the results are really good, even if you look at the smallest fisherman, he really made a nice project*" (personal conversation, Izola, May, 2014). This "smallest fisherman", Milan from Piran (see the Box 9.2) who won a project converted his boat for tourism activities. It seems, however, that the measures are only beneficial to those who are willing to convert their traditional fishing activity into another, mostly tourism related activities or those who engage in mariculture. Although many fishers we interviewed did not support the maricultural approach (mostly stressing its negative impact on the environment), it seems that fish farms and tourist boats will replace traditional fishing along the Slovene coast in the following years.[13]

A close look at the page of the FLAG "Fisher" demonstrates that only one Slovene small-scale fisher (with a boat under 12 m) applied for European fisheries funding and obtained a project. Financial statistics were interesting as well, revealing that out of the total 28 million EUR allocated for the development of Slovene fisheries until the end of 2014 around 10 million EUR were intended for mariculture, approximately the same amount for port infrastructure, 2.3 million EUR for the adaptation of fishing vessels for tourism and around 2.8 million EUR for the functioning of the FLAG.

[12] Some journalists (Mužič 2005), in the central Slovenian daily, such as Dnevnik, even played with the idea that the traditional Piran grey mullet would now be replaced by the Fonda seabass.

[13] In the national daily Delo.si (Je. G. 2015) the phrase "fishing and mariculture communities" was introduced in some articles to replace the phase "fishing communities", announcing this change also on the discursive level.

**Box 9.2: Small-scale fisher: Milan from Piran**

Milan was born in 1953 in Maribor. In 1957, he came to Seča, a seaside village on the Slovenia coast. His family opened a restaurant, *Ribič*, and bought a motorboat, which they used to go and buy fish in Savudrija (Croatia) and to transport guests from Portorož to Seča. Near the restaurant, there was a fishing cooperative. Milan spent a lot of time with fishers, who spoke mostly Italian. This was where he first learned fishing skills and tasted local fish for the first time. Milan stressed that it was more difficult for his parents to adapt to local fish dishes than it was for him to adjust to this new environment. In 1960, his parents sold the restaurant and moved to Piran. His mother opened a bar in Piran, called *Pri Marici*. Milan spent a lot of time in Piran's port, observing and talking to fishers. He had learned some basic Italian in Seča and could communicate with Italian-speaking fishers. Some of the fishers were customers at his mother's bar and soon they took Milan, aged eleven, to sea. He learned about different small-scale fishing techniques, nets, fish species and weather patterns. For his secondary school education, he went to Ljubljana. After finishing school, he came back to Piran. He noticed that older Italian fishers had left and some new ones from Dalmatia and continental Slovenia had come. He bought his first boat, *Batelin,* for sport fishing. At that time, he was working as an insurance agent. In 1978, he passed his fishing exam and bought a bigger boat, *Pasara.* In 1982, he left his insurance job and began fishing as his main occupation. When Milan started to work as a professional fisher, there were 30 small-scale fishers in Piran. When he started to fish professionally, he sold all his catch to the fishmarket in Piran. Later on, he sold fish to a bigger fishmarket in Koper or to restaurants. He supports the idea of sustainable fishing, which he associates with passive technology, small boats and the use of different nets. The best season for this kind of fishing, he says, is autumn. In autumn, he earns most and works up to 12 h a day. From September to December, he fishes gilthead sea-breams, seabasses and common soles. From January to March, he fishes anchovies, cuttlefish, congers and picarels. In winter, he participates in traditional fishing for mullets. April and May are good for *brodet*, a fish soup, he says. He fishes scorpionfish, piper gurnards and crabs, sometimes anchovies. June is good for pandoras. From June till autumn, he fishes octopuses and mantis shrimps with fish-baskets called *vrša*. In July, he fishes for small sharks. He also dives for seashells. A few years ago, he received funding from the EU Fishery Fund (the only Slovene small-scale fisher who received funds in 2013) and transformed his *Pasara* boat into tourist transport. He is sure that visitors are also interested in the everyday life of Piran, not just in Piran's "*façade*".

## 9.8 Conclusion

Thus to conclude, all the data presented here are linked with a rather simple question: Is Slovene (small-scale) fishing collapsing and disappearing or does it have the capacity to withstand the stress? And if so, how, and in which form? We can observe that as well as undergoing substantial changes in the management system of Slovene fishing, the reorganisation and innovation also brought new opportunities for tourism and mariculture. We could see these processes as a sign of adaptability, where the fishing community has been able to absorb changes while retaining somehow a similar structure (for example those small-scale fishers who combined fishing and tourism already in 2000 only in an embryonic form, took on the role of the risk-takers and enlarged their business through the project system and were able to continue with fishing as well). Nevertheless, overall, the general observations gathered in this article surely do not augur well for the future of "traditional" small-scale fisheries in Slovenia. The composition of the portfolio of projects of EU fisheries funding support this opinion.

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# Chapter 10
# The Unexploited Potential of Small-Scale Fisheries in Italy: Analysis and Perspectives on the Status and Resilience of a Neglected Fishery Sector

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**Abstract** Small-scale fisheries represent one of the most important fishing sectors in Italy, comprising 60% of Italian fishing vessels, half the fishers and 16% of national landings. Despite their high social, economic and cultural value, they have been neglected by national and international policies, resulting in a poor outlook for the near future. In this chapter, we provide an overview of recent trends, the status of small-scale fisheries in Italy and major, current threats to the sector. These include: competition from large-scale fisheries, rivalry with illegal, unreported and

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unregulated fishing, recreational fisheries, ecological changes and the degradation of ecosystems. The evolution of international and national legislation affecting small-scale fisheries is also outlined, with examples of opportunities and challenges in two complementary case studies from the Tyrrhenian and Ionian Seas. The analysis is mainly focused on participatory, bottom-up management tools (local management plans and co-management schemes). The resilience of small-scale fisheries' socio-ecological systems, mainly related to fishers' capability of adapting their strategies to multiple sets of conditions over time and across areas, is also discussed. We conclude our analysis by investigating actions which could be implemented to allow the unexploited economic, social and cultural potential of small-scale fisheries in Italy to be developed.

**Keywords** Common Fisheries Policy · Local Management Plans · Illegal · Unreported and Unregulated fishing · Territorial Use Rights for Fisheries · Co-management

## 10.1 Introduction

The presence of fishing in the Mediterranean Sea dates to prehistoric times. Ever since then, these fisheries have been characterised by the use of a range of fishing gears targeting several species (Bekker-Nielsen and Casola 2010). In Italy, fishing activities became an industry under Phoenician rule in Sardinia (Bartolini 1991), and also during the Roman Empire, which developed an impressive amount of economic activity involving catching, processing, transporting and trading fish products, such as *garum* and *tarichos* (Marzano 2013). Fishing activities have strongly influenced coastal communities, contributing to current Italian cultural and ethnographic heritage, as well as to Italy's coast and estuaries. For several thousand years, fishers developed lifestyles, religious practices, gastronomic habits, songs,

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cuisine, fish-chilling and preservation techniques, along with other traditions related to seafood and fisheries. In some areas, such as the Venetian lagoon under the *Repubblica Serenissima,* fishing activities were strictly regulated, with fishers contributing to its management and the enforcement of control and surveillance (Fortibuoni et al. 2014).

Until the end of World War II, Italian fisheries remained characterised by limited technological development. Nevertheless, small-scale fishing gear were highly efficient, being conceived and modified to maximise the catches of target species according to local conditions. This entailed the accumulation and passing down of local ecological knowledge (*sensu* Berkes 1993) through generations of fishers. After World War II, mechanisation and new technologies (e.g., new materials for nets, radar and satellite positioning systems) led to the emergence of large-scale fisheries, although the Italian fishing fleet today still comprises a large number of artisanal, small-scale fishing vessels. Large-scale fisheries, as in other Mediterranean countries, are mainly multi-specific (Farrugio 1991). Their fast development and greater capacity rapidly caused the overexploitation of many fishery resources. Indeed, the number of overexploited and collapsed fish stocks in the Mediterranean increased at a rate of approximately 38 every 10 years between 1970 and 2010 (Tsikliras et al. 2015).

Since the early 90s, a rediscovery of small-scale fisheries was identified as the only way to manage the oncoming crisis of Mediterranean fisheries (Durand et al. 1991). However, the strategies developed within the Common Fisheries Policy (CFP), and in Mediterranean countries themselves, did not seriously consider these recommendations. Such policies were mainly focused on large-scale fisheries, in particular trawlers, tuna purse seiners and large driftnet vessels. Efforts made to reduce fishing capacity affected both small-scale fisheries and large-scale fisheries but did not result in significant improvement in the majority of stocks either. This contributed to the decline of small-scale fisheries, which were also vulnerable to other threats, including competition from large-scale fisheries; Illegal, Unreported and Unregulated Fishing (IUUF); recreational fisheries; an ecological imbalance in marine ecosystems; pollution; and unsustainable uses of coastal areas. These issues originally came to light in 1980 (Andaloro 1982). In this chapter, we reflect on recent trends in this sector in Italy and explore the threats it is subjected to while identifying potential governance measures and new approaches that would support a balanced and effective enhancement of this economic sector.

## 10.2 Small-Scale Fisheries in Italy

### *10.2.1 Definition, Fishing Gear and Target Species*

According to the European Union (EU) Regulation on European Maritime and Fisheries Fund (EMFF) (Reg. EU No 508/2014, Art. 3.14; EU 2014a) ‘small-scale coastal fishing’ is defined as ‘fishing carried out by fishing vessels of an overall

length of less than twelve metres and not using towed fishing gear as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004'. Italy recently endorsed this small-scale fishery definition (MIPAAF 2015), although it excludes some fishing activities that continue to be carried out with low-impact fishing gear and limited technological input.

Small-scale fishery represents the major fishing segment in Italy in terms of vessel and employee numbers. The most recent national data (MIPAAF 2015) indicate that there are currently 7475 fishing vessels belonging to 'small-scale coastal fishing,' representing 60.2% of the Italian fleet and 8.6% of total capacity (13,945.65 Gross Tonnage). In 2014, small-scale fisheries employed nearly 50% of Italian fishers (13,228; STECF 2016; Table 10.1). The distribution of small-scale vessels and

**Table 10.1** Main statistical and technical features of Italian total (all fisheries) and small-scale fisheries (Data refers to 2013–2015)

| | Total (all fisheries)[1] | Small-scale fisheries[2] |
|---|---|---|
| Fleet | | |
| Number of vessels[3] | 12,414 | 7475 |
| Capacity (GT)[3] | 162,748 | 13,965 |
| Number of fishers[4] | 26,932 | 13,114 |
| % women[5] | 4.3 | n.a |
| Average age of fishers | n.a. | n.a. |
| Landings | | |
| Quantity (ton) [4] | 176,800 | 28,200 |
| Value (million Euro) [4] | 813.3 | 203.3 |
| Most commonly used gear (top 3) (% in total)[5] | Trammel nets (28%), set (anchored) gillnets (21%), otter-trawl (21%) | Trammel nets (43%), set (anchored) gillnets (37%), set longlines (8%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total)[6] | Anchovy (18%), Sardine (15%), Venus clam (8%) | Cuttlefish (10%), Gastropods: *Murex* and *Nassarius* spp. (8%), Grey mullets (6%) |
| Top 3 in value (% in total) [6] | European hake (8%), anchovy (7%), deep-water rose shrimp (6.0%) | Cuttlefish (11%), European hake (7%), striped red mullet (6%) |

Notes: [1]Total fisheries comprise small-scale fisheries and large-scale fisheries, excluding distant water fleet, which is almost negligible in Italy. [2]Small-scale fisheries are defined as 'small–scale coastal fishing' which means 'fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004' (Reg. (EU) No 508/2014; Art. 3.14)

Source of information: [3]MIPAAF (2015) – data refer to September 2015; [4]STECF (2016): data refer to 2014; [5]Data expressed as percentage of total fishing days and refer to 2014, developed from the file "2016_STECF 16-11 - EU Fleet Economic and Transversal data tables.zip" retrieved on 5 June 2017 from https://stecf.jrc.ec.europa.eu/data-; [6]ISTAT (2016): data referred to 2014, http://agri.istat.it/sag_is_pdwout/jsp/NewDownload.jsp?id=13A&anid=2014


**Fig. 10.1** Spatial distribution of small-scale fishers according to Italian administrative regions

employees is uneven in Italy, increasing in number southward (Fig. 10.1). A small-scale fishing licence can authorise the use of a number of gear types. For instance, 97% of small-scale fishing vessels can adopt static nets (e.g., gillnet and trammel nets), 70.6% long-lines, 37.8% hooks and lines, 17.3% surrounding nets, 6.4% small driftnets and 6.0% harpoons (MIPAAF 2015). Fishing gear can be modified to catch different species and specimens of varying sizes, resulting in huge diversification of fishing gear in Italian small-scale fisheries and use of multiple fishing gears by the same vessel (Colloca et al. 2004; Battaglia et al. 2010, 2017).

Most fishing vessels have limited size and engine power, operating primarily on a daily-trip basis and are mainly used in coastal areas, although some species are targeted in open sea.

On the whole, Italian fisheries are characterised by a large number of target species (about 140), although six species (anchovy, sardine, Venus clam, European hake, deep-sea pink shrimp and striped red mullet) contribute 50% of the weight of landings (ISTAT 2016). Small-scale fisheries contribute 16% of total landings (STECF 2016), with eleven *taxa* contributing 50% of these landings: *Sepia officinalis*, gastropods (*Murex* spp. and *Nassarius* spp.), Mugilidae, *Octopus vulgaris*, *Merluccius merluccius*, *Spicara* spp., *Boops boops*, *Mullus surmuletus*, *Solea solea*, *Xiphias gladius* and *Squilla mantis* (ISTAT 2016). Small-scale fisheries' targets species do not fully overlap with the main targets of large-scale fisheries. Moreover, there is a lack of data on the status of many species targeted by small-scale fisheries, with analytical stock assessment being applied only to major stocks.

However, available data do show that more than 90% of assessed Italian stocks (i.e., 20 stocks referring to 9 species, mostly targeted by industrial fisheries, comprising 34.5% of Italian landings) are overexploited, with an average fishing mortality that is more than three times $F_{MSY}$ (Andaloro et al. 2015).

### *10.2.2 Socio-Economic Context, Recent Trends and Current Status*

The role of small-scale fisheries within the Italian economy is relatively limited. Overall, fisheries (including aquaculture) make up 0.30% of Italian GDP, while the entire Italian maritime industry (including fisheries and aquaculture, maritime transport, boating, shipbuilding, shipyards and auxiliary activities) contributes just 2.03% (CENSIS 2015). This figure does not consider the contribution of small-scale fishery relative to other sectors, such as tourism, underestimating its value to national and local economies. Among the economic activities within the maritime cluster, fisheries and aquaculture performed the worst between 2011 and 2013; their contribution to GDP fell 7.7%, although employment in these sectors was more stable than in other sectors (CENSIS 2015). The socio-economic data from 2008 to 2014 allowed an assessment of the recent trends and status of small-scale fisheries and compare them to large-scale fisheries (STECF 2016).[1] The fishery sector showed clear signs of deterioration in terms of structural and economic performance in that period, albeit with some differences between small-scale fisheries and large-scale fisheries. In particular, small-scale fisheries showed limited reduction in the number of vessels (−3%), tonnage (−1%), and power (−11%). On the contrary, large-scale fisheries underwent greater structural changes, showing notable alterations in the number of vessels (−11%), tonnage (−18%) and power (−14%). This pattern is reflected in the total numbers employed by small-scale fisheries and large-scale fisheries (−4% and − 12%, respectively). Both segments were affected by a sharp reduction in landing weights (−14% and − 19%, respectively), and endured

[1] According to the Annual Economic Report on the EU fishing fleet (STECF 2016) the following definitions were used to distinguish the three main fisheries sectors: (1) Small-scale coastal fleet - includes all vessels under twelve metres using static gears. According to Data Collection Framework gear definitions, these include: 'drift and/or fixed netters,' 'pots and/or traps,' 'hooks,' 'passive gears only,' 'other passive gears,' 'polyvalent passive gears only,' 'active and passive gears;' (2) Large-scale fleet - all vessels using towed gears. According to DCF gear definitions these include: 'dredgers,' 'demersal trawlers and/or demersal seiners,' 'other active gears,' 'polyvalent active gears only,' 'purse seiners,' 'beam trawlers,' 'pelagic trawlers' and vessels over 12 metres using static gears operating in EU fishing regions. (3) The distant-water fleet (DWF) - includes EU registered vessels over 24 metres operating in 'other fishing regions' including EU outermost regions.

In this paper, data regarding the distant water fleet was omitted since this segment was not active in 2013–2014.

severe declines in landing values (~ − 30% each).[2] Despite limited structural changes in small-scale fisheries, worse economic performances were reported than for large-scale fisheries from 2008 to 2014. This was confirmed by sharper declines in the gross value added, gross profit, net profit, and profitability indicators (STECF 2016). By contrast, 2014 data show an improvement in small-scale fisheries' economic performance compared to that of 2013 (STECF 2016).

### *10.2.3 Current Threats to Italian Small-Scale Fisheries*

Small-scale fisheries are directly or indirectly vulnerable to a large number of threats. The conflict with large-scale fisheries is relevant, considering both small-scale fisheries and large-scale fisheries exploit species in common and compete for fishing grounds. Indeed, large-scale fisheries affect small-scale fisheries' target species, severely depleting stocks, as confirmed by a survey of 200 fishers in the Veneto and Sicily regions (ISPRA 2013). Moreover, an indirect effect could be expected in relation to unwanted mortality caused by large-scale fisheries characterised by low selectivity on non-target species (e.g., discards) though which are small-scale fisheries' target species. Conflicts, particularly those between trawlers and small-scale fisheries adopting static gear, have emerged over the use of fishing grounds (ISPRA 2013). For instance, small-scale fishers complained about trawlers destroying fishing gear deployed within three NM of the coastline (or 50 m bathymetry), where trawling is not permitted according to the Reg. (CE) 1967/2006 (EC 2006; ISPRA 2013).

Illegal, unreported and unregulated fishing also affects small-scale fisheries because it exerts unfair competition from fishing vessels without licences (or utilises forbidden fishing gear). An example is the swordfish fishery whose undersized specimens are illegally caught (Romeo et al. 2014) and sold without authorisation. Recreational fisheries are also a competitor for small-scale fisheries with a recent assessment estimating that they number 538,000 fishing by boat and 235,000 free divers or beach and quay fishers (Silvestri 2013). Although daily catch limits are established, enforcement is poor with only recreational tuna fishing being strictly regulated by total allowable catch. Direct estimates of the effects of recreational fishing are not available, although a recent paper by Pranovi et al. (2015) highlighted that along the north-western Adriatic Sea, recreational fishing may equal 30% to 45% of the landings produced by local small-scale fisheries. In addition, unfair and illegal competition could also emerge when recreational fishers sell their catches, the extent of which is unknown. Another factor to consider is that the current spread of non-indigenous and thermophilic species of the southern Mediterranean (now appearing more frequently in its northern and colder parts, resulting from global

[2] The average catch value (price) per kg is almost double (7.2 €/kg; 2014) in small-scale fisheries compared to large-scale fisheries (4.2 €/kg; 2014) (STECF 2016).

warming) may also cause both an ecological imbalance and the disappearance of species traditionally targeted by small-scale fisheries (Coll et al. 2010). Indeed, as shown by Fortibuoni et al. (2015), the appearance of warmer-water species has already occurred in Italian marine fisheries' landings. Another potential threat is the degradation of coastal habitats and ecosystems, with increased urbanisation and pollution in coastal areas possibly undermining the productivity of coastal ecosystems, causing a decrease in species abundance for small-scale fisheries.

In addition, the emergence of other uses of the sea poses further concern to the prospects of small-scale fisheries. Maritime traffic, for instance, will increase in the Mediterranean due to the Suez Canal having doubled in size (Baccelli et al. 2015). Gas and oil extraction, wind farms, nautical tourism and aquaculture are also likely to increase in the short term, affecting not only Italian small-scale fisheries but also the entire Mediterranean Sea.

In this context the EU Blue Growth Initiative, which fosters sustainable growth in aquaculture, coastal tourism, marine biotechnology, ocean energy and seabed mining sectors, could contribute to the protection of small-scale fisheries. This initiative, along with the enforcement of new legislation such as the Maritime Spatial Planning Directive (Reg. 2014/89/EU; EU 2014b) should reduce conflicts over spatial use of the sea and contribute to achieving "good environmental status" (according to the Marine Strategy Framework Directive [MSFD] Reg. 2008/56/EC; EC 2008). However, if political consideration given to small-scale fisheries is marginal (in comparison to other uses of the sea), this opportunity could be lost, affecting the viability of this sector in Italy and throughout the rest of the Mediterranean.

### *10.2.4 Fishers, Fisher Organisations and the Capacity for Collective Action*

No comprehensive analysis of the Italian small-scale fisheries workforce is available, but in general fishers are characterised as having low schooling and increasing age (e.g., see data on Sicilian fishermen in the report from the "*Consorzi di indirizzo, coordinamento e gestione tra imprese della piccola pesca artigianale*" of Trapani; CO.GE.PA. 2015). The latter could be attributed to the decline in fisheries resources and earnings, making the sector unattractive to younger generations. As stated by an older small-scale fisher in the Venice Lagoon: "*I would not suggest a young person to start fishing now. Now, it's impossible to make a living from fishing*".

Disaggregated data on gender repartition within small-scale fisheries, in Italy, is missing and the official statistics on women employment in fisheries in Italy, as in the rest of the EU, are scattered, imprecise or too general (Frangoudes 2013). However, a recent report presented at the European Parliament estimated that women account for 4.3% of all fishers in Italy, while 18.7% of enterprises related to seafood chains are owned by women (Osservatorio Nazionale della Pesca 2015). These data confirm the typical gender division of workload in Italian fisheries, where women are mainly involved in activities related to fish processing and sales

rather than fishing activities themselves. Nevertheless, the social recognition of the role played by women in this sector is increasing, due to the recent establishment of women fisher associations seeking to share their experiences in Italy and Europe.

In Italy, various cooperative fisher associations are present. Their role in contributing to establishing fisheries management is consultative and defined by the Italian Law 41/1982. These associations have a hierarchical geographical structure with fishers generally joining a local cooperative belonging to a national fisher association. National and regional branches of fisher organisations represent their associates with respect to national and regional administrations and policy makers. These associations include fishers belonging to various fishing sectors, resulting in the challenge of striking a balance between the needs of individual members and those of multiple fishing industries (Buonfiglio et al. 2011). Most fishers consider their cooperatives only as providers of services, and do not recognise their roles in supporting fisheries management. This hampers the capability of national fisher associations to guide local fishers' activities toward more sustainable practices (Buonfiglio et al. 2011). Moreover, this may lead to the perception by some fishers that they are excluded from the management decision-making process (Raicevich and Giovanardi 2013).

In addition, small-scale fisheries have limited capacity for collective action at national level, since they lack a single association that will represent the sector, with their influence being more prevalent at local level. According to the Ministerial Decree 14/9/1999, national legislation supported the establishment of consortia for coordinating small-scale coastal fishing enterprises (CO.GE.PA; 'Consorzi di indirizzo, coordinamento e gestione tra imprese della piccola pesca artigianale') with the following roles: (i) to propose management plans, (ii) contribute to control and surveillance, (iii) develop structures to support production activities and enhance the value of catches. However, the related implementation rules and procedures were not issued at that time. Even if some progress has been made, we are still far from a proper recognition of small-scale fisheries' representatives. For instance, the EU established the Mediterranean Advisory Council (MedAC) to foster a more effective engagement and participation of fisheries stakeholders in the development of CFP. Even though within MedAC several national professional and recreational fisher organisations, and international non-governmental organisations are present, only a single international association exclusively represents the small-scale fishery sector.

### *10.2.5 The Influence of National and International Policies*

Italian policies on fishery management have been increasingly affected by the EU over recent decades, in particular since early 2000. The second reform of the Common Fishery Policy (Reg. 2371/2002; EC 2002) led to decommissioning of the Italian fleet (the case with all other European fleets) due to overcapacity, a process that started in the 1990s. Such a policy determined that the Italian fleet's fishing effort (as kW∗days) should decrease by about 30% between 2004 and 2012 (Cardinale and Osio 2014). A 40% reduction in capacity was achieved between

1992 and 2015 (elaboration based on UE Fleet register data, http://ec.europa.eu/fisheries/fleet/index.cfm). Between 1995 and 2005, the fleet decreased by 12% in tons and 21% in number of vessels, averaging 6.8 tons for each vessel, and with small-scale fishery being the most affected sector. In spite of the amount of energy and financial resources devoted to reducing the fishing effort in Italy, fisheries continue to be characterised by overexploitation with little economic return (Cardinale and Scarcella 2017).

Other EU policies have also affected Italian small-scale fisheries. For instance, the Mediterranean Regulation (EC 2006) was conceived to reduce overexploitation through technical measures such as restrictions in mesh and gear size, and fishing areas. The latter has had a positive effect on small-scale fisheries, with pressure on large-scale fisheries to operate outside the three-mile limit of coastal areas having become stronger. However, fishing permits for some traditional fishing activities were no longer granted by national law, resulting in economic losses for the fisheries sector as a whole. For instance, Spagnolo (2010) estimated a decrease of 35% (Liguria) and 50% (Sicily) in annual revenue. The Mediterranean Regulation (Art. 19, EC 2006) did, however, permit the re-establishment of fishing activities, dependent on the implementation of a management plan. This procedure was applied successfully to a limited number of fisheries in Italy (see the example given in Box 10.1).

**Box 10.1: The Transparent Goby Fisheries: An Example of Successful Collaboration Between Fishers, Scientists and Governmental Institutions**

The transparent goby, *Aphia minuta,* a small fish with a maximum length of six centimetres, is traditionally popular among consumers in some Mediterranean areas and has been an important resource for many small-scale fleets in Italy and Spain for decades (Serena et al. 1990). In late autumn-winter, the exploitation of this species used to be a widespread practice for small-sized boats using different gears, mainly boat seines with small meshes (Froglia et al. 1998; Auteri et al. 2000; Lanteri et al. 2014; Fig. 10.2). The transparent goby was an important source of income due to its high value, up to 60–70 euro/kg, providing an important share of the annual revenue for the local fishermen. When Regulation EC 1967/2006 entered into force its fishery was no longer allowed, because the nets' mesh size was lower than the minimum legal limit (50 mm). The same Regulation did allow certain fishing activities to be carried out, provided that scientific evidences of their environmental sustainability and the approval of a specific Management Plan were available.

In the FAO General Fisheries Commission for the Mediterranean (GFCM) geographical sub-area GSA9, Ligurian and northern Tyrrhenian Sea, the transparent goby fishery has been monitored for several decades, thanks to the collaboration of local fishermen who shared their fishing data with scientists.

(continued)

**Box 10.1** (continued)
Collected data clearly demonstrated the light environmental impact of this fishery, especially due to the high selectivity, accounting *A. minuta* for more than 90% of boat seine catches in weight. On-board observations form scientists also demonstrated also the minimum impact of the gear on the ecosystem (Auteri et al. 2000) while stock assessments highlighted that that the virgin stock biomass was about twice the size of the catch (Baino et al. 2001).

On the basis of this scientific evidence, and thanks to the proactive attitude of the fishermen, since 2001 the exploitation of *A. minuta* in GSA9 has been allowed in the framework of a Special Management Plan (SMP) accepted at EU level (Various Authors 2011).

Currently, there are about 150 small-scale vessels involved in this fishery, from November to March, according to specific rules on fishing capacity (length of nets), activity (n° of fishing days), catch quotas. Real-time data on fishing effort, landings and by-catch are collected directly by fishermen; these information, validated by scientist, contribute to guarantee an adaptive management of the resource. The SMP of the transparent goby in GSA9 has been one of the first co-management experiences in Mediterranean. Currently the status of the resource is within safe limits and the economic performance of the fishery is showing a positive trend.

**Fig. 10.2** Fishers retrieving a boat seine during transparent goby fisheries in Tuscany. (Photo credit: R. Silvestri)

Parallel to the enforcement of the Mediterranean Regulation was the introduction of a new measure within the European Fishery Funds (EFF, Council Regulation (EC) 1198/2006). It allowed the derogation of power from central to local areas, encouraging self-management and co-management schemes, based on the introduction of restricted access such as Territorial Use Rights for Fishing (TURFs). This tool is particularly instrumental in the management of small-scale fisheries in coastal areas and could represent an innovative opportunity for small-scale fisheries' governance. However, potential negative effects, such as privatisation of resources and discrimination of non-local fisheries, should be considered when implementing TURFs. Fisher communities (consortia of fishers representing at least 70% of those registered in a given area) were allowed to delimit a territory and enforce a Local Management Plan (LMP) regulating the demarcation of fishing zones, restocking areas and establishing fishing calendars. In this framework, local rules could be more restrictive than EU regulations. Within their EFF responsibilities, some Italian administrative regions took the initiative to support the introduction of TURFs through LMPs and, together with the EFF National Authority, legal procedures were approved so as to allow its enforcement. The new approach constituted a remarkable innovation of management strategies adopted by the EU. By switching from a single-stock management plan approach to one based on fisheries management plans, goals were not only more realistic, but also more appropriate. When implementing LMPs in small-scale fisheries, the underlying idea is to introduce a property rights scheme aimed at the removal of the common property feature of the resource along with a reduction in entrepreneurial behaviour known as the "race to fish" and the "race to invest," leading to resource overexploitation. To date, some interesting cases have been observed, particularly in Sicily (which has ten LMPs established along the Sicilian Coastline, see Box 10.2).

**Box 10.2: Local Management Plans (LMPs): An opportunity to enhance participation of small-scale fishers in management. The case-study of Sicily**

Sicily is the Region with the highest number of fishing vessels and fishers in Italy (Andaloro et al. 2015). It is closely connected with the sea and boasts an ancient cultural and historical vocation for marine activities and uses (Fig. 10.3). Over the last two decades, Sicilian small-scale fisheries have been affected by EU and national fishing management strategies, resulting in a significant decrease in the number of fishing vessels and employment. The adoption of LMPs in the context of the EFF, and the support of the National Administration, represented a new opportunity to reorganise fishing activity based on rules established among fishers, institutions and the scientific community. This framework supported the application of community-based use rights, promoting TURFs involving fishers who were formerly reluctant to collaborate. The enforcement of the Sicilian LMPs involved grouping fishers into consortia (CO.GE.PA) and the establishment of management schemes

(continued)

**Box 10.2** (continued)
based on local traditional activities and needs as well as specific features of each fishing ground. The planning phase was focused on the identification of Sub-Management Units (SMUs). For each SMU, an LMP was proposed when at least 70% of local registered vessels agreed to take part in management measures and become members of a consortium. Ten LMPs were approved in 2012 by national authorities (MIPAAF 2012) and adopted by the Sicilian Region, involving 1413 vessels (78.6% of those registered in SMU areas and 46.2% of the entire Sicilian fleet; Bertolino 2012). Based on characterisations of ecological features, fishing vocations or uses of each SMU, the CO.GE.PA (in cooperation with one or more research institutes) defined LMP rules. These rules aimed to rebuild biological resources, ensuring the sustainable exploitation and viability of economic and social conditions. Various technical measures were adopted: (i) fishing gear size and selectivity to rebuild stocks of red mullet (*Mullus* spp.) and spiny lobster (*Palinurus elephas*); (ii) restricting access to fishing zones/seasons, including the protection of spawning and nursery areas (with a reduction in fishing effort on target species such as lobster, cuttlefish and octopus); (iii) reducing the impact on marine ecosystems and non-target species (limiting the use of fishing aggregating devices to protect juveniles of non-target species and avoiding competition with long-line fishing). Moreover, a monitoring system on the biological, economic and social components of small-scale fisheries was implemented, establishing reference points. This Sicilian experience shows that with direct participation by fishers, and synergy between partners sharing the same objectives, tangible and pragmatic measures can be enforced. The outcomes of LMP implementation will need to be assessed to ensure their continuity, strengthening the collaboration and coordination between national and regional administrations, consortia and monitoring authorities. In doing so, it must be recognised that the survival of small-scale fisheries traditions is not possible without directly engaging fishers in the management of their fishing grounds. According to Spagnolo (2012), future fisheries policies should consider the introduction of TURFs and LMPs as an important tool to allow for biological, economic and social sustainability wherever the social and administrative conditions allow for their implementation.

The recent Council Regulation (EC) No 1198/2006 on European Maritime Fisheries Fund (EMFF; European Commission 2016) did not, however, mention any measure relating to the delegation of management at local level, *de facto* cancelling any co-management experience by "eliminating micro-management." Moreover, the Commission did not approve the Italian request to maintain a strategic role for co-management in the Operational Programme enforcing EMFF. As matter of fact, the Commission explicitly required all references to co-management

**Fig. 10.3** Small-scale fishers repairing nets in Sicily. (Photo credit: P. Battaglia)

be eliminated from the document. Based on this, it is difficult to understand the Commission's decision-making process because it seems that the Commission's "Green Book" approach has been inverted without public debate or explanation. In particular, it is not clear what is meant by "eliminate micromanagement at EU level" nor how this relates to "new" governance measures in small-scale fisheries such as co-management and TURFs. This contrasts with the aims declared within the reform of CFP (Reg. EU 1380/2013; EU 2013) that identify the need to sustain and preserve small-scale fisheries, adopting restrictions on other fisheries in the coastal areas. However, such objectives are not supported by defined obligations, leaving Member States with the responsibility to define policies in support of small-scale fisheries. Nevertheless, according to the EMFF, Member States where over 1000 vessels can be considered small-scale shall provide an action plan for the development, competitiveness and sustainability of small-scale coastal fishing (Art. 18; EU 2014a). Moreover, the need for financial support for this sector is also foreseen within EMFF, and has been budgeted within the Italian Operational Programme, but no fund was assigned to TURF like measures.

### *10.2.6 Enhancing the Resilience of Italian Small-Scale Fisheries: The Way Forward*

Despite the threats they are subjected to, small-scale fisheries continue to represent the most important fishery sector in Italy in terms of vessels and fishers employed. Whilst they have shown more structural stability than large-scale fisheries in recent years, they have been subjected to long-term, continuous, decline. Moreover, small-scale fisheries' socio-economic performance has been negative with only some signs of recovery detected only in 2014. At the same time, contradictory policies at European level might interrupt the processes recently established in Italy aimed at enforcing local co-management and TURFs (see Spagnolo 2006; Gutierrez 2013; Raicevich 2018). Accordingly, there is a palpable risk that this sector will be further marginalised in favour of large-scale fisheries.

The relative resilience shown until now by small-scale fisheries could be ascribed to three factors: (i) the possibility of shifting from one target species to another with the ability to cope with local depletions; (ii) the inherent family structure of small-scale fisheries enterprises that ensures greater capability to react to negative economic conditions and more flexibility (Van Ginkel 2014); (iii) the partial synergies established in some areas between small-scale fisheries and local tourism, enhancing the diversification of profit sources.[3] The latter activity refers to the possibility of tourists joining fishers during a fishing trip, including the demonstration of fishing activities and practices, and the consumption on board of catches. Most often, such activity is carried out during the main tourist season, representing an additional source of income. Moreover, it entails a reduction in fishing effort since fishing is carried out only for the purpose of demonstration. Despite the political attention paid to this activity, difficulties in organisation (i.e. matching offer to demand), the lack of or complexity of national/regional laws, and the need of providing fishers with new skills and responsibilities, continue to hamper its development.

Given the social, cultural and economic values of small-scale fisheries, it is necessary to enforce an *ad hoc* strategy to sustain the sector and fully unlock its unexploited potential. Based on present analysis, we suggest four major actions:

1. Enhance recognition of the value of the small-scale fishery sector in Italy and define/implement strategic policies aimed at sustaining their development within the context of CFP. The contribution of small-scale fisheries to the local and national economy goes beyond the simple production of fish because it stimulates the local economy, in particular, when related to tourism. The same holds true when considering the cultural and social values of small-scale fisheries. Efforts to apply integrated approaches for assessing and increasing the value chain generated by small-scale fisheries should be enforced;

[3] Multifunctionality experiences in small-scale fisheries (enforced thanks to the support of EFF), where people are engaged in fishing, tourism and agricultural activities, have been recently spreading in Italy and represent a way to strengthen the socio-economic resilience of this sector.

2. Engage small-scale fisheries in co-management practices. Co-management and TURFs are interlinked tools that can effectively enhance the viability of small-scale fisheries by preventing conflict with other fisheries and uses of the sea. Engaging fishers in co-management also contributes to reaching sustainable resource use, as shown both in Italy (Box 10.1) and other cases in the Mediterranean Sea (e.g. Lleonart et al. 2014). We suggest further support is provided to the appropriate establishment of LMPs, so as to allow their adoption to be more uniform along Italian coastlines. Detailed analysis and monitoring of the effectiveness of current LMPs schemes (Box 10.2) should be carried out to guide further implementation;
3. Assess and solve conflicts between small-scale fisheries and large-scale fisheries, recreational fisheries and IUU fishing, which result in both economic loss and negative effects on exploited resources. It is also necessary to enforce better control and surveillance schemes. The targets set by Italy in 2014 relative to the MSFD implementation (including assessment of the pressure exerted by IUU fishing and recreational fisheries) could identify the hotspots where such issues are more relevant, thus guiding pragmatic solutions.
4. Increase the lobbying capacity of small-scale fisheries at national and international level. Establishing and supporting networks, including representatives specifically dedicated to small-scale fisheries within relevant institutions and advisory/management bodies (e.g., MedAC or GFCM), could further allow the specificities of small-scale fisheries to be considered within the decision-making process. In this light, proper capacity-building schemes and support should be established to allow small-scale fishers to play an active role.

Recent trends at global and Mediterranean level could represent opportunities to be taken in the short term to trigger this process. The Food and Agriculture Organization (FAO) recently released the 'FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication' (FAO 2015). These guidelines represent the first international agreement that provides consensus principles and guidance on addressing small-scale fisheries. Moreover, the GFCM recently organised three regional conferences dedicated to small-scale fisheries that culminated in the adoption from high-level representatives from 18 Mediterranean and Black Sea countries as well as the EU of a Ministerial Declaration aimed at implementing a "Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea" (GFCM 2018). In addition, GFCM also amended art. 5 of its legal framework (GFCM 2015), introducing a legally binding obligation to consider the impact of its recommendations on the small-scale fishery sector (Raicevich 2018). On these bases, and considering the general aims of the reformed CFP to promote small-scale fisheries, increased collaboration among Mediterranean countries, institutions and stakeholders, could prevent the decline of small-scale fisheries and allow them to reach their full, unexploited potential.

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# Chapter 11
# Maltese Small-Scale Fisheries: Halting the Decline


**Adriana Vella and Noel Vella**

**Abstract** This chapter presents the contemporary Maltese small-scale fisheries, describing their current status and the challenges they face. As one of the smallest fisheries in Europe, Maltese small-scale fishermen are facing important difficulties. These follow from competition with other maritime activities and declining space for fishing. Problems arising from their minimal participation in legislative reforms cause additional frustration and socio-economic impacts. With an aging population, the Maltese small-scale fisheries are expected to decline further. In contrast large-scale fishing activities have been growing in EU waters, often promoting short-term profits over long-term viable and sustainable fisheries. Lessons learned at both national and regional levels have, however, been conducive to the formulation of the Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea, which is expected to provide tangible solutions for this fisheries sector.

**Keywords** Malta · Small-scale fisheries · Mediterranean · Multiple-use conflicts · Fisheries policy

## 11.1 Introduction

Through the centuries Maltese fishers have developed a unique national cultural heritage linking ways of making a living from the sea with traditional vessel designs, small-scale economies, culinary and religious practices at the heart of each fishing village and community (FAO 2014). However, the gigantic growth of industrial and recreational fishing and the effects of past policies and management regimes have left small-scale fishermen to fend for themselves.

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This chapter investigates the contemporary nature of the small-scale fisheries in Malta, asking questions such as:

Will the Maltese small-scale fishery, as one of the smallest small-scale fisheries communities in EU, cope with difficulties pouring in from every place? Should it be left to sink as a by-product of regulatory demands designed for larger and more resilient fleets? To what extent will the implementation of the Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea (RPOA-SSF) safeguard local small-scale fisheries in the coming decade?

Section 11.2 presents a description of the small-scale fisheries in Malta and is followed by a section describing its socio-economic context. Sections 11.4 and 11.5 look into the institutional character of small-scale fisheries and the many policies affecting it. Section 11.6 then considers the challenges affecting the sector, presenting the views of small-scale fishers themselves.

## 11.2 Description of the Small-Scale Fisheries/Fleet in Malta

Malta is the smallest EU Member State and its coastline accounts to around 0.8% of the total EU Mediterranean coastline (Fisheries Control Directorate 2013). The topography of the islands, with cliffs on the southern sides of Malta and Gozo, limits coastal fishermen to use certain areas more than others further away from their home ports (Fig. 11.1). Longer travel time increases fuel costs, increases risks further away from safety and leaves less time for fishing. Yet more and more fishermen have had to deal with this as their traditional fishing locations have been used for other anthropogenic activities in particular those linked to maritime bunkering, transportation routes to harbours and the Freeport on the one hand and tourism, private beaches, swimming zones, scuba diving, tuna penning and aquaculture zones on the other, with most of these activities being concentrated on the same side of the islands where one finds most of the fishing ports.

The Maltese Islands lie just 93 km south of Sicily and 288 km north of North Africa. Since 1971, Malta's Exclusive Fishing Zone (EFZ) has extended for 25 nautical miles from the Maltese Islands with an overall area of 6735 $km^2$ (Act XXXII of 1971), in accordance with the United Nations Convention of the Law of the Sea. As an EU member state in 2004 Malta's EFZ was maintained as a Fisheries Management Zone (FMZ) by EU (Council Regulation (EC) No 813/2004). The geographical location of the Maltese Islands and their 25 NM Fisheries Management Zone (25 NM FMZ) is an opportunity to test the efficacy of fisheries conservation research and policies' implementation, while considering small-scale fishers' livelihoods.

The main fleet segment which is allowed to fish in the 25 NM FMZ around Malta is that composed of vessels smaller than 12 m. The maximum fishing capacity for the 25 NM FMZ was set in the Treaty of Accession and is reflected in Council Regulation (EC) 1967/2006 (Eur-Lex 2016). However, a number of fishing activities conducted by vessels larger than 12 m are allowed within the 25 NM FMZ by

**Fig. 11.1** Maltese Small-Scale Fishermen at work, including the only full-time female small-scale fisher. (Photo credit: A. Vella)

way of derogation, which may need assessment to consider their impacts on small-scale fisheries.

The fishing industry in Malta has remained small and vulnerable in various ways. The proportion of the working population depending directly on this industry for its livelihood is around 1.3%. The average value of catches is around 0.16% of national Gross Domestic Product, excluding costs of imported inputs, such as fuel. From an international perspective, total employment, including full-time, part-time and seasonal employment, is around 0.4% of the EU total for the sector (FAO 2005). Maltese landings accounts for around 0.03% of the total EU catch (Fisheries Control Directorate 2013).

In 2017, the Maltese professional fishing fleet comprised 912 vessels, 36% of which account for vessels used by full-time fishermen while the rest were used by part-time fishermen (Table 11.1). The Maltese small-scale fisheries fleet is composed of 840 small vessels which corresponds to 92% of the total professional fishing fleet. Additionally, Malta has a separate registration for recreational fishing vessels, a fleet that has twice as many vessels as the professional fishing fleet. This situation weakens the voice of full-time small-scale fishermen who have often shown concern for the deteriorating marine environment and impoverishing resources due to unmonitored activities by the grand majority of recreational

**Table 11.1** Description of the Maltese fishing fleet

| Variable | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| **Fleet** | | |
| Number of vessels | 912 excl. Recreational | 841 excl. Recreational |
| Capacity (GT) | 6386.9 | 2087.5 |
| **Number of fishers** | ~ 3000 incl. Recreational | ~ 950 excl. Recreational |
| % women | 1.9% | 1.9% |
| Average age of fishers | ~ 45 years | ~ 49 years |
| **Landings** | | |
| Quantity (ton) | 2032 | 7 |
| Value (1000 €) | 9350 | 22 |
| **Most common gear used** (top 3) (% in total) | Trammel nets (17.6%) | Trammel nets (23.6%) |
| | Drifting long-lines (16.5%) | Pots and traps (19.9%) |
| | Set long-lines (15.1%) | Hand and pole lines (15.5%) |
| **Most important species in landings:** | | |
| Top 3 in quantities (% in total) | Mackerel (21%) | Bogue (46%) |
| | [*Scomber* sp., *Trachurus* sp.] | [*Boops boops*] |
| | Swordfish (14%) | Smooth-hound (19%) |
| | [*Xiphias gladius*] | [*Mustelus* sp.] |
| | Common dolphin fish (14%) | Thornback ray (7%) |
| | [*Coryphaena hippurus*] | [*Raja clavata*] |
| Top 3 in values (% in total) | Swordfish (21%) | Bogue (24%) |
| | [*Xiphias gladius*] | [*Boops boops*] |
| | Common dolphin fish (15%) | Smooth-hound (12%) |
| | [*Coryphaena hippurus*] | [*Mustelus* sp.] |
| | Atlantic bluefin tuna (10%) | Red porgy (12%) |
| | [*Thunnus thynnus*] | [*Pagrus pagrus*] |

Source: Fishing Vessel Register and the Department of Fisheries and Aquaculture, MSDEC, Malta, 2017 (unpublished)

fishermen, unregistered hobby fishermen and other anthropogenic activities out at sea around the Maltese Islands.

The Maltese fishing fleet is composed of traditionally designed boats and Multi-Purpose Vessels (MPV). The traditional boats, which account for more than half of the small-scale fishing fleet, include the '*Luzzu*' and the '*Kajjik*', both of which usually have wooden hulls, with 99% of them being smaller than 10 m and characterised by bright colours. The '*Luzzu*' is the foremost traditional Maltese fishing vessel with pointed ends, has an average length of around 7 m with an average power of 30 kW. 72% of the '*Kajjik*' are less than 5 metres. This vessel has a flat end at the stern and an average power of 17 kW. On the other hand, the MPVs have an

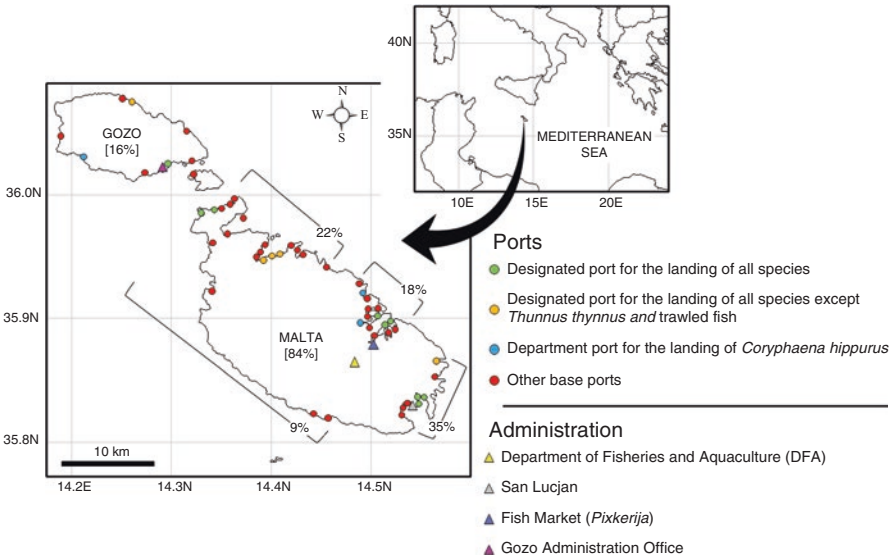


**Fig. 11.2** The main designated fishing ports (circles), some of which are also utilised as fisheries landing sites in the Maltese Islands (marked in green, orange and blue). Several other creeks are used as base ports by small-scale fisheries (marked in red). Most ports, especially the larger ones that are also designated as fisheries landing sites, are associated with nearby local small-scale fisheries communities, with the largest small-scale fisheries community in Malta being that of Marsaxlokk (port marked in green, South-East of Malta), and largest SSF community in Gozo is at Mgarr (port marked in green, South-East of Gozo). Included in the map there are also the four main administration offices of the Department of Fisheries and Aquaculture (triangles). The values indicate the percentage number of fishing vessels registered in different regions around the Maltese Islands. (NSO 2016, 2017)

average length of over 8 m, with only 20% of them exceeding 10 m (NSO 2016). The latter are a relatively recent addition to the fleet. All vessels utilise local ports, with Marsaxlokk hosting the largest number of fishing vessels and representing the largest small-scale fisheries community in Malta (Fig. 11.2).

The Maltese small-scale fisheries shift efforts seasonally among various target species and fishing grounds. Bottom offshore longlines are usually set at deep rocky bottoms and are aimed to target species such as dogfish, skates, rays, groupers, wreckfish and breams. This gear is used in the winter months with fishermen changing their fishing grounds between fishing trips. As the weather gets better and fish availability changes, most of these bottom-longliners move on to off-shore pelagic longlines targeting more valuable species such as the bluefin tuna and swordfish. Other demersal fishing gears involve the use of nets including gillnets and trammel nets. The activity of these fishers is limited to inshore and shallow coastal areas during bad weather but extends to offshore during good weather. These gears target mackerel, bogue, scorpion fish, red mullet, cuttlefish and the common octopus. Traps are also used to catch coastal species such as bogue, octopi and spiny lobsters. In preparation to the dolphinfish season, in August most of the fishermen concentrate

their activities in setting up off-shore fish aggregating devices (FADs) which would then be used for the following 4 months to target this species, and to a lesser extend the pilot fish and amberjack. Another less commonly used technique is the '*Lampara*' which consists of a small-scale pelagic purse seine used to surround fish that are attracted by the bright light used. This technique targets chub mackerel and round sardinella (Fisheries Control Directorate 2013; NSO 2016).

Independent of the technique used, Maltese fishermen land their catches at one of the local landing sites (Fig. 11.2) within few hours from the catch. Fish are then sold locally at the official fishmarket (locally known as *pixkerija*, Fig. 11.2), from where fishmongers buy these marine resources to later sell to local consumers. Export is limited to large pelagic species such as Bluefin tuna and Swordfish.

## 11.3 Socio-Economic Context of the Maltese Small-Scale Fisheries

The social and cultural importance of the Maltese fishing industry is not reflected in its national economic contribution. The livelihood of most of the local fishers depends on the sale of highly priced species that is made available to the consumer as fresh fish caught by traditional methods during very short fishing trips. The variety and quality of the catch also contributes significantly to the economically important tourism industry, since local restaurants are proud of their high quality local seafood, which is a significant attraction.

The Maltese small-scale fisheries seasonality provides different marine resources for consumption but also provides diverse colourful fishing gear and activities in preparation at fishing villages, such as Marsaxlokk, where tourists coming at different times of the year enjoy seeing. The small-scale fishers therefore provide interesting and valuable attraction to the fishing villages allowing hotels, restaurants, shops and markets to gain from tourism. Some fishers also take tourists onboard while other tourists are happy to photograph small-scale fishers at work with their various gears. Due to diminishing marine resources small-scale fishers are increasingly considering other temporary sources of income which often involves tourism using their charismatic colourful boats. This has already been in operation for many years in the fishing village of Żurrieq where fishers take tourists on short cruises to the Blue Grotto.

Small-scale fishing in Malta is an activity undertaken predominantly by men with only one registered full-time female fisher (Fig. 11.1). However, when considering the time spent by women, usually the wives and daughters assisting fishers in various related jobs, including: Organizing and selling the fish; Assisting in mending nets; and Keeping the financial accounts organised, their involvement may be recognised as the main support system for Maltese small-scale fisheries.

Over 75% of the Maltese aging fisher community is seeing future generations look elsewhere for their future careers, abandoning the idea of undertaking fishing

as a full-time or part-time job. For the past two decades this has been an increasing trend discouraging future Maltese small-scale fishing prospects. Even though unemployment is a problem found across most EU workforce sectors, self-employed fishers have sustained themselves and their families in humble ways. Youths, in these fishing communities, would rather change profession even though gear and training would be available through their exposure to fisher family members.

With the changes in small-scale fisheries management and control, more fishers see fishing as a periodic pleasure and not as a full-time dedicated and responsible endeavour. This is clear from the larger proportion of leisure fishing boats when compared with the full-time small-scale fishing boats registered in Malta. The self-controlling and sustainable mechanism that for many decades has been operating among small-scale fishers is being transformed into a short-term profit-making or leisure activity. In order to reverse such trends, it is necessary to engage through research with small-scale fishers to address their serious difficulties which frustrate them and their families.

**Box 11.1: Considering Competing Interactions: Maltese Small-Scale Fisheries Versus Large-Scale BFT Purse Seine Fishing and Penning Industry. Interview Reply by Maltese Small-Scale Fisheries BFT Fisher**

While various target and non-target species have been declining in local landings, migratory and pelagic species regulations in the Mediterranean for species such as the Bluefin tuna (*Thunnus thynnus*) (BFT) and Swordfish (*Xiphias gladius*) have not always promoted sustainable fisheries but encouraged the operations of large-scale fisheries at the expense of small-scale fisheries. Such key commercial species are usually composed of shared migratory stocks, so they tend to be vulnerable to increased fishing competition with commercial large-scale fisheries.

To make matters worse, the number of specimens caught using large-scale purse-seining and illegal driftnets by neighbouring countries in the Mediterranean has had an impact on our fishing success and landings as small-scale fishermen. The tuna penning industry, which has been allowed to bloom since 2000s in Maltese waters, has increasingly been involved in exploitation of wild BFT stocks with increasing negative socio-economic impacts on our small-scale fisheries community and the Bluefin tuna stock itself. Therefore, to safeguard the stock, the total allowable catch (TAC) for Malta, which is shared between the local small-scale fishermen and the large tuna penning industry, had to decrease with the small-scale fisheries suffering drastic reductions in quotas even though our fishing techniques allow for sustainable and equitable sharing of resources among the whole small-scale fisheries community targeting these species. The allowable catch by traditional small-scale fisheries long-liners with vessels, is around 36% of the national TAC. In this respect one would need to consider to what extent Maltese small-scale fishermen also benefitted from increases in quotas and whether the

(continued)

**Box 11.1** (continued)
increase in quotas reflected the sustainability of these fisheries rather than simply reflect past exploitation rates.

Our collaboration with the Conservation Biology Research Group of the University of Malta (CBRG-UoM) has allowed data collection and research on local to regional matters that need to be resolved through stock assessments across the Mediterranean also highlighting our small-scale fisheries needs (Vella 2009; Vella and Vella 2012; Vella et al. 2016).

## 11.4 Institutional and Organisational Context of Maltese Small-Scale Fishers

There are two fishers' cooperatives in Malta representing Maltese professional fishers, including small-scale fishers, which are located at Marsaxlokk, the village that hosts the largest small-scale fisheries community (Fig. 11.1). The smaller cooperative *Għaqda Koperattiva tas-Sajd Ltd.* and the larger cooperative *Koperattiva Nazzjonali tas-Sajd* were founded in 1964 and 1991 respectively. Both associations belong to the Koperattivi Malta which represents all cooperative enterprises in the Maltese Islands.

The main aim of these cooperatives is to lead fishers through a challenging environment and to organise fishers so that they can collectively benefit from additional profits that may arise from sale of bait and fish. By joining a co-op, fishers may enjoy other benefits, including duty free diesel, refund of half of their social security contributions, commissions and other benefits related to the sale of fish, assistance in controlling market conditions (such as fish storage and export), access to good quality bait (which is bought at a good price), and provision of plastic boxes and fishing tackles.

The *Marsaxlokk Artisanal Fishers* NGO focuses solely on small-scale fishers, with the main objective to represent small-scale fishers in the decision-making process, both at a national and international level. This ensures the protection of the fishers' livelihood, community and heritage together with the promotion of low impact traditional fishing methods.

Additionally, there are some other regional to international organisations that aim at representing fishers in the decision-making process, protecting the fishers' livelihood, community and heritage together with the promotion of low impact traditional fishing methods. Such organisations include MEDAC (Mediterranean Advisory Council), Europeche and LIFE (Low Impact Fishers of Europe). These national to international participation allows some fishers to be able to engage with the development of regulations and their implementation. However, the language barrier, high labour effort required by small-scale fisheries and the low level of academic education limit the number of Maltese fishers actively involved in these useful actions.

## 11.5 Policies and the Way Forward for the Future

### *11.5.1 Regulation of Fisheries in Malta*

The fishing sector in the Maltese archipelago is governed by regional and national legislations. These diverse regulations also consider the type of gear allowed, minimum landing sizes of fishes, closed seasons and area restrictions (Eur-Lex 2016; Maltese Legislation 2016). The Malta regulatory body is the Department of Fisheries and Aquaculture (DFA, Fig. 11.2) within the Ministry for Sustainable Development, Environment and Climate Change (MESDC). The primary objective of the DFA is to ensure the sustainability of fish species and to address the requirements in the fisheries sector. The DFA has established numerous fishing harbours distributed along the Maltese coastline (Fig. 11.2).

### *11.5.2 Small-Scale Fisheries Management*

The main legal regulation and management of the fisheries sector in Malta is the Fisheries Conservation and Management Act of 2011 (Act II of 2001, Chapter 425). This Act developed from earlier 1930's fishery Regulations (Government Notices 206/1934 and 148/1935). While it provides for both conservation and management of fisheries resources exploited for consumption, it also safeguards protected marine species, such as turtles and dolphins (Article 38(2)h).

The Enforcement of Sea Fishing Conventions Order of 2011 (Legal Notice 209/11 and Legal Notice 282/11 provides for the restrictions and obligations arising from Fisheries Conventions to which Malta is Party to. The management plans for the small-scale fisheries for *Lampuki*, *Lampara* fisheries and for the Bottom Trawling fishery are derived from Legal Notice 354 of 2013 (Implementation and Enforcement of Certain Fisheries Management Plans Order) under the Fisheries Conservation and Management Act (Cap. 425) which is also approved by the EU. In fact, the scope for this Order is the implementation and enforcement in conformity with Article 19 of the Council Regulation (EC) No 1967/2006 relating to sustainable fishing in the Mediterranean Sea (ERA – MSFD 2013a). The latter also known as the '*Mediterranean Regulation*' aims at preventing conflicts between fishers, with particular attention given to small-scale coastal fisheries, thus banning more active gears, such as trawlers and purse seines, from coastal areas.

Limitations of resources and space in the multifunctional coastal zone (Fig. 11.3) implies that Maltese small-scale fisheries are under intense spatial competition with maritime transport, industrial fisheries, tourism and recreational activities. Marine protected areas (MPAs) comprise almost half of the inshore fishing zones that,

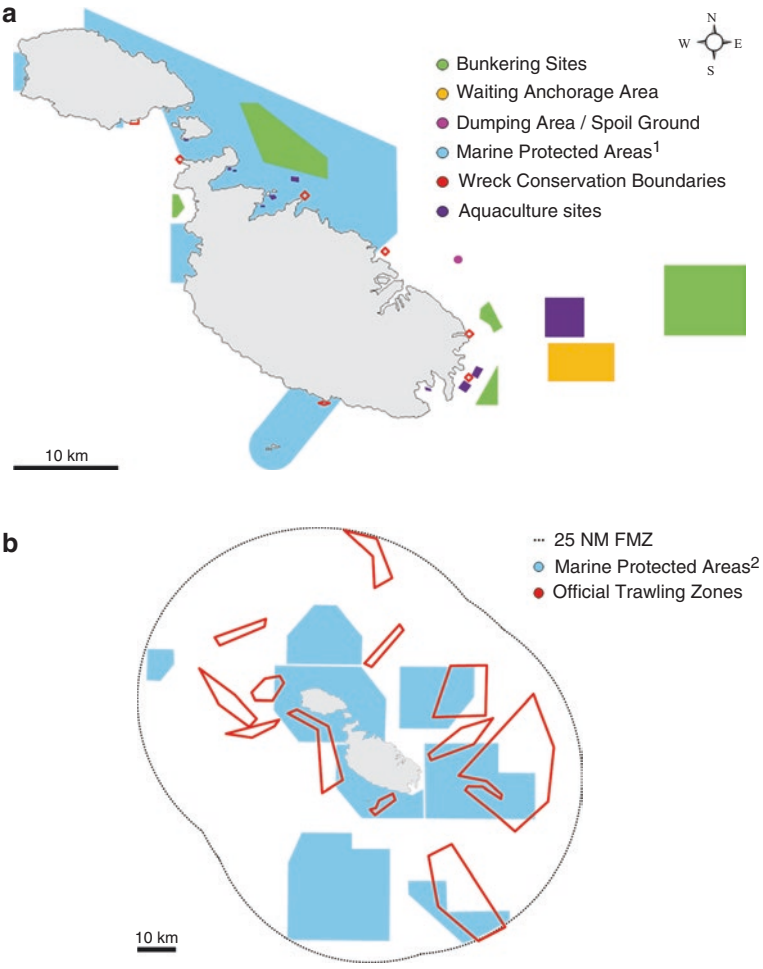


**Fig. 11.3** (**a** & **b**): Maps of the Maltese Islands showing areas within the 25NM Fisheries Management Zone (FMZ) that have been designated for various specific marine oriented purposes (ERA - MSFD 2013b; Fisheries Control Directorate 2013; ERA 2018; Transport Malta 2018). [[1]The first five MPAs in the Maltese Islands, four of which were set in 2010. These were primarily designed on the presence of *Posidonia oceanica* seagrass meadows. [2]Eight MPAs set in 2016, five of which were designated for the protection of seabird species; one site for the protection of loggerhead turtle; and two for the protection of seabirds, turtles and dolphins]

together with several fishing restrictions of numerous wreck conservation sites, makes the ability of small-scale fishers to fish increasingly challenging. Additionally, the large maritime bunkering zones which limit fishing activities may also pollute the sea.

### 11.5.3 Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea

The Regional Plan of Action for small-scale fisheries in the Mediterranean and the Black Sea (RPOA-SSF) is a Ministerial declaration for a plan of action specifically aimed at strengthening and supporting sustainable small-scale fisheries in the Mediterranean region (FAO 2018). This was based on the conclusions of the First Regional Symposium on Sustainable Small-Scale Fisheries in the Mediterranean and Black Sea held in Malta 2013. The latter was followed by: The SSF Guidelines (FAO 2015); the Regional Conference "Building a future for sustainable small-scale fisheries in the Mediterranean and the Black Sea"; The High-level conference on Black Sea fisheries and aquaculture; The High-level conference towards enhanced cooperation on Black Sea fisheries and aquaculture; The Ministerial conference on the sustainability of Mediterranean fisheries "MedFish4Ever"; the Mid-term strategy (2017–2020) towards the sustainability of Mediterranean and Black Sea fisheries adopted by the GFCM, and; The FAO Blue Growth Initiative (FAO 2018).

The product of these various efforts led to the RPOA-SSF political commitment signed in Malta on September 26, 2018. The officially established action plan needs to be carried out by 2028, through nine common objectives targeting scientific research, small-scale fisheries data, small-scale fisheries management measures, small-scale fisheries value chain, small-scale fisheries participation in decision-making processes, capacity-building, decent work, role of women and climate and environment. These objectives aim at protecting the great diversity, values, local knowledge and the good practices of local small-scale fisheries communities, while at the same time ensuring food security, economic growth, rural development and employment opportunities within the sector (FAO 2018).

### 11.5.4 Challenges and Opportunities for Small-Scale Fisheries Future

The fisheries sector interacts closely with other maritime sectors. The Integrated Maritime Policy (IMP) addresses interactions between all EU policies and maritime affairs, while the Common Fisheries Policy (CFP) takes a more holistic approach. The latter points towards: a) Providing the right instruments to support an ecosystem approach for good environmental status by 2020; b) Facilitating climate change adaptation efforts concerning impacts in the marine environment including the reduction of fishing pressure to encourage species and ecosystem resilience; c) Integrating marine spatial planning for the IMP by incorporating sustainable fisheries requirements; d) Setting-up stronger synergy between the various maritime sectors, including fisheries, in terms of surveillance, data, knowledge and research; and

e) incorporating emission policies and energy efficiency when shaping the future of the fisheries and aquaculture sectors.

To achieve these requirements for sustainable fisheries: a) Control policy would need to be implemented properly and fairly across the whole of the Mediterranean focusing on combating illegal, unreported and unregulated (IUU) fishing even among recreational fishers without destroying small-scale fisheries; b) Improving ways to eliminate discards and waste while protecting vulnerable species and habitats through involvement of small-scale fishers; c) Establishing long-term management plans to reduce the fishing pressure on overexploited stocks and restore them to maximum sustainable yield (MSY) through close collaboration between small-scale fishers and scientific researchers; d) Enhancing transparency for consumers and further improvements to the traceability of production along the market chain, while assisting small-scale fisheries and the socio-economic status of small-scale fishers. The EU has been committed to achieving MSY by 2015, a target set in 2002 under international agreements but MSY alone is not enough, as a healthy age and size distribution in all stocks is also required toward achieving an ecosystem based fisheries management system (ClientEarth 2012).

The Scientific, Technical and Economic Committee for Fisheries (STECF 2013, 2014) notes that as most of the resources are shared with other larger neighbouring countries, the current status of stocks depends little on the activity of the Maltese fleet. This points toward the need for careful consideration of the distinctions in fishing fleet sizes, scales and levels of sustainability. At the same time coordination of the different well adapted regulations across the Mediterranean have to be in place to encourage fishers in this region to participate in safeguarding marine biodiversity in effective ways. This would facilitate the small-scale fisheries in Mediterranean find ways to apply Article 19 of Council Regulation 1967/2006 (Fisheries Control Directorate 2013; Eur-Lex 2016).

As part of ongoing research, Maltese small-scale fishers are regularly interviewed. Their concerns, grouped into topical categories, include the following (Vella and Vella 2018):

- Interactions, obstacles and pressures from concurrent maritime activities

1. Problems with integrated spatial management of activities around the Maltese coasts which increasingly deduct space for fishing, such as marine protected areas and areas for aquaculture, tuna penning, swimming, bunkering, wrecks, SCUBA diving areas, Freeport and port activities (Fig. 11.3). This would increase the fishing pressure on localised zones rather than distributing the small-scale fishing on a larger area.
2. Increasing number of persons with leisure boats going out for recreational or hobby fishing in the same fishing areas where professional full-time and part-time fishermen operate. While the latter two are increasingly monitored, the former two are still not monitored to promote overall sustainable resource utilisation.
3. Incremental competition from the industrial sector, including competition to access same fishing grounds for different target species such as during the com-

mon dolphinfish season, where swordfish long-lines of the industrial fishers damage the lines of small-scale fishers.

4. Overall, the most experienced fishers with more than 50 years at sea clearly indicated that fish have decreased and what used to be caught in 1 day some 50 years ago, is now caught over a whole month or season of work. There is concern on the reduction of self-discipline and enforcement including surveillance and night patrols out at sea by officers who are well trained and knowledgeable on marine species, fisheries regulations and small-scale fishermen's rights and responsibilities.
5. Within the 25 NM FMZ Maltese small-scale fishers also believe bottom trawlers should be stopped as this form of fishing destroys the seabed apart from being wasteful.
6. As increasing limitations to fishing have been placed on the small Maltese fishing community the more nervous fishermen are becoming resistant to any new management and obstacle to fishing. This also includes increasing intolerance to dolphins that depredate their catch and damage fishing gear. Research to avoid such cetacean-fisheries interactions needs to be addressed to protect both, such as through the use of pingers (Vella 2016).

- Fisheries management aspects

7. Also inadequate regional cooperation between EU and non-EU countries on timing of resource utilisation has been noted, for example the dolphinfish fishing should start when the fish is of at least 35 cm so as to minimise over-exploitation of the very small juvenile fish which grow quickly to larger size and thus to allow for more fishermen and consumers to benefit from each individual caught. For this reason, small-scale fishers have argued against starting dolphinfish exploitation early in August rather than early September.
8. Small-scale fisheries in Malta, with most of its products aimed at the local market, has found increasing pressures to adopt EU traceability practices which forces them to disclosure of personal information such as their full name and home address on their fresh catch on sale. Due to their small-scale activities Maltese fishers do not have companies set-up and therefore would need to have other means of reference, such as code numbers that would still allow for traceability by the local authority, without infringing on disclosure of personal information.
9. Small-scale fishers feel that by-catch should be landed without infringements and donated to needy people or for research rather than thrown overboard. Such by-catch usually caught in small amounts, has always and will continue to happen until perfectly targeting fishing gears are created. Such small by-catch from small-scale fisheries landings would aid research on fish gear selectivity and on the ecosystem approach toward improved management. If fishers would be penalised for by-catch, this decreases the quality of the knowledge and the assistance to fishers in improving the sustainability of the fishing effort. Greater collaboration between fishers, researchers and authorities is required to achieve these necessary targets.

10. The closing and opening of fishing seasons need to be accompanied by public awareness so as to allow fishers to find receptive buyers of fish during the open season which promotes efficient use of in-season marine resources. Overabundance without receptive consumer demands may force prices down dramatically with impacts on the socio-economic wellbeing of the Maltese small-scale fisher community. This causes changes in exploitation patterns to match the supermarket mentality that all food is available always. Educational campaigns focusing on the value of using fresh local products when in season (fisheries open season) are required to inform consumers reducing the ecological footprint of the fishing industry.
11. Closed seasons should also address the need for detailed knowledge on the local species, their life-histories, the time of year when small-scale fishers do not go fishing due to bad weather, such as January, February and March, which would count as a closed season. Hence an additional closed season would further negatively impact their economic situation.

- Environmental aspects

12. As fishers are noticing the changing marine environment, they are concerned at the possible impacts on the life-histories and spawning cycles of various target species, such as for the: Dolphinfish which is being observed at distinctly different stages of development during the August to December fishing season in Maltese waters; Distributions and migrations/movements of fish with incoming alien species from the Red Sea.
13. Subsidies to invest on new economical and environmentally friendly engines to reduce emissions would help safeguard the sea and its resources from pollution.
14. Increasing pollution and port dredging works with disposal of such materials close to fishing zones is of concern to small-scale fishermen.
15. Due to concentration of organic wastes in aquaculture and tuna penning areas, there has been an increased abundance of the bearded fireworm (*Hermodice carunculata*). These have affected fish quality caught on trammel nets, as they would be covered with hundreds of these worms feeding on the fish caught.

- Socio-economic aspects:

16. If small-scale fishers are to survive, they need urgent assistance through socio-economic assessments of how the fast changing fisheries policies are affecting different Mediterranean fishing communities. The Maltese Islands are unique for their very high human density and the even higher tourist presence with associated demands on space and resources. These pose great challenges in order to achieve sustainable development in all the economic sectors, including the fisheries sector.
17. Authorities that are responsible for fisheries and maritime planning may increasingly allow greater consideration and involvement of small-scale fish-

ers in fisheries and maritime planning, policy making and management. Communication and consultation with fishermen and independent local scientists prior to any new policy or legislation is essential in order to assess the impacts on the wellbeing and future of the fishermen community and the marine resources.

### *11.5.5 The Way Forward*

In 2018 the Maltese Department of Fisheries and Aquaculture supported the sustainability of small-scale fisheries by successfully implementing two projects funded by the European Maritime and Fisheries Fund (EMFF): EMFF 1.4.1 (Training for Fishers) and EMFF 1.23.1 (*Nesploraw Flimkien it-Teżori tal-Baħar!*). The former encouraged over 250 fishers to participate in training courses which were directly related to their line of work, including business diversification, maritime and fisheries laws and regulations, and had practical session on vessel IT equipment, STCW Basic Safety Combined Course, VHF Short Range Certificate, STCW Security Awareness, Safe Food Handling and Fish Vessel Hygiene and Navigation Aids. The courses aimed at improving the knowledge and skills of those working in the local fishing industry, to ultimately increase the overall standard of the local fishing industry. On the other hand, the second project was nationwide and planned to support small-scale fisheries by helping consumers diversify their fish consumption and become acquainted with underutilised species. These two programs provided tools and skills to the fishers while widening their market within the local community.

## 11.6 Conclusion

Small-scale fisheries in Malta are in fast decline and in danger of being replaced by other forms of marine activity. Prevailing regulatory frameworks are insufficiently geared to the realities of small-scale fishing practice and cause frustration among practitioners. However, the RPOA-SSF 2018 declaration establishes useful objectives, principles and concrete actions to ensure the long-term environmental, economic and social sustainability of small-scale fisheries. This commitment paves the way to allow the national signatories to work together on the common challenges faced by Mediterranean small-scale fisheries communities. Knowledge sharing, regional cooperation and political commitment with a 10-year plan provides a roadmap for implementation of tasks in support of small-scale fisheries, also in Malta, with stakeholders directly involved in fisheries management.

Maltese small-scale fishers need to become more active in research and monitoring collaborations through financial assistance that aid collaborative research

efforts. Inclusion of stakeholders in the assessment and decision-making process strengthens the efficacy of any long-term management plan.

At the same time, socio-economic protection interventions aimed at reducing the vulnerability and strengthen the resilience of small-scale fisheries households and should be strengthened. The CFP therefore needs to integrate such protection policies, schemes and instruments with regard to small-scale fisheries's management. Innovative interventions provide the support required across various diverse challenges that small-scale fishers face at both local and regional levels (Béné et al. 2015). The RPOA-SFF implementation may pave the way toward a brighter Maltese and Mediterranean small-scale fisheries future.

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# Chapter 12
# Small-Scale Fisheries in France: Activities and Governance Issues


**Katia Frangoudes, Manuel Bellanger, Olivier Curtil, and Olivier Guyader**

**Abstract** This chapter reviews the major themes and issues related to small-scale fisheries in France. It first examines the definition of small-scale fisheries within the French legal framework and its relation to EU regulations. Some statistics describing the main trends of the small-scale fisheries fleet, gears and target species are presented. The participation of small-scale fishers in fisheries management and their role within fishers' representative organisations are reviewed. It appears that, despite their numerical importance, as compared to larger-scale fleets, and their vital socio-economic influence within coastal communities, the decision-making power of small-scale fisheries in terms of resource management is limited. Indeed, most management decisions are taken within organisations that encompass all fishing vessels, which have long been dominated by larger-scale fleets. Nevertheless, small-scale fisheries have gradually gained more visibility within these fisheries' organisations and greater participation in the decision-making process regarding resource management, which is illustrated through some practical examples. Finally, the future of French small-scale fisheries is discussed with regard to the challenges and opportunities for their emancipation and the sustainability of their activities.

**Keywords** Small-scale fisheries · France · Governance · Fisheries management · Local communities · Social justice

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## 12.1 Introduction[1]

According to French law, the national fishing fleet is divided into four categories: "small fisheries", "coastal fisheries", "offshore fisheries", and "industrial fisheries". All vessels operating for less than 24 h per fishing trip belong to the "small fisheries" category; those operating between 24 and 96 h are considered coastal fisheries (Frangoudes 2001). This division based on the time of absence from harbour does not really correspond to the definition given to small-scale fisheries in other countries, where the different categories are based on vessel length and the use of fishing gear or area of fishing. Another aspect specific to France is that vessels under 12 meters in length can use towed and passive gear depending on the season and targeted species (Guyader et al. 2013). It is not uncommon to find small-scale fishing vessels using nets for fishing or dredging for scallops or other shellfish. This chapter takes into account all types of vessels under 12 meters operating within the 12-nautical mile territorial waters and not having to keep logbooks imposed by EC Regulation n°1224/2009.

This chapter will first examine the national legal framework related to small-scale fisheries and its relation with EU legal framework concerning small-scale fisheries. Then some statistics describing the main trends of the small-scale fishing fleet, gears and target species will be presented. As small-scale fisheries are family enterprises, the support given by family members and especially those of wives will also be discussed in relation with social rights and participation in fishers' organisations.

Small-scale fisheries and their participation in fisheries management and the role they play within fishers' representative organisations is also reviewed. In France, fishery activities occurring within territorial waters (12 miles) are managed by "fisheries committees": compulsory organisations present at all geographical levels (district, regional and national), which make rules to avoid cohabitation conflicts between different fleets and gears (Rural and Fisheries Act 2010). These committees have evolved over time, and nowadays, they are legally entitled to issue fishing licenses and make other rules to manage the activities of all vessels operating within territorial waters. However, the law does not give these committees the responsibility to manage quotas. This task has been given to Producers' organisations (POs) in charge of the market organisation of fisheries. POs allocate quotas among vessels and produce management plans for regional seas to avoid overconsumption of quotas. This chapter will focus mostly on the issue of the equitable distribution of quotas among small-scale fisheries and larger fleets. Another type of organisation, the *prud'homie*, will also be presented. The *prud'homies* exist exclusively in the Mediterranean Sea, where they have been established since the sixteenth century.

[1] This chapter is focused on small-scale fisheries in continental France. It does not cover the outermost regions of France, as this would extend the chapter beyond the scope of this book.

Their main responsibility is the management of fishery activities within a define territory. Nowadays, these organisations have less power over resource management, but they are still active and play an important role at a very local level.

The role of small-scale fisheries in the decision-making process regarding resource management will also be illustrated through several examples. Finally, challenges and opportunities for French small-scale fisheries is also discussed. The chapter does not present overseas small-scale fisheries in order to retain the homogeneity of mainland French ones and their governance.

Secondary data, published articles, unpublished reports and material from different research projects conducted by the various authors, and participatory observations during field work or meetings bringing together fisheries organisations and scientists are drawn upon to illustrate the points mentioned in this chapter. The authors represent different disciplines, including law, economy and political sciences, and their research themes focus on resources management and governance issues.

## 12.2 Definition of Small-Scale Fisheries in France

"*Petite pêche*", literally translated as "small fisheries", is a notion used in French law, but in an ambiguous manner because it refers only to the licences for maritime navigation. However, law n° 42–427 of the 24 April 1942 dealing with "maritime commercial navigation" (revised in 1999) made the following classification: "small fisheries/*petite pêche*" category includes vessels engaged in fishing trips of less than or equivalent to 24 h; vessels operating between 24 and 96 h belong to the "coastal fisheries/*pêche cotière*" category; offshore fisheries include vessels making trips exceeding 96 h; and finally industrial fisheries include vessels over 1000 GRT and absent from harbours for 20 days or more. The "small fisheries/*petite pêche*" also include vessels involved in shellfish farming (Curtil 1998; Frangoudes 2001; Reyes et al. 2015).

The Rural and Maritime Act (article L. 931-1-2010) confirms the commercial nature of fisheries, and "*petite pêche*" operations are defined as those carried out "*by vessels of less than 12 meters or those making fishing trips of less than 24 hours*". In this new definition, the criterion of length appears without specifying fishing gear. In practice, vessels less than 12 meters in length can use different gears depending on season and availability of resources; and it is common to find vessels operating with nets and towed gear alternatively during the course of a fishing season (Rural and Fisheries Act 2010). Another term used to designate small-scale fisheries is often artisanal fishery because it refers to the family organisation of fisheries enterprises, but the Rural and Fisheries Act (L 931-2) does not define artisanal as such. Artisanal fishery refers to the social status of the owners working on board vessels up to 24 meters of length and using all types of gears (Cazalet et al. 2013; Reyes et al. 2015). So this concept does not correspond to what we call here as small-scale fisheries. Consequently, these terms are often used in ways that create ambiguity.

### 12.2.1 French Legal Framework on Small-Scale Fisheries and the EU

The European Union (EU) legal framework also ignores the concept of small-scale fisheries. The EU Common Fisheries Policy (Regulation 1380/2013) mentions this category without defining it or granting it a special regime. The only aspect related to small-scale fisheries to be found in this Regulation is in Article 17, which refers to fishing opportunities allocation, recommending Member States (MS) to use transparent and objective criteria "*including those of an environmental, social and economic nature*" in their allocation procedures. MS are called upon to "*provide incentives to fishing vessels deploying selective fishing gears or using fishing techniques with reduced environmental impact, such as reduced energy consumption or habitat damage*" (EU Regulation 1380/2013). In this low impact fisheries category, one can certainly find small-scale fishing vessels.

Nevertheless, Article 3, paragraph 2(14) of the EU Regulation n° 508/2014 (European Maritime Fund and Fisheries-EMFF) specifically notes that "*small-scale coastal fishing means fishing carried out by fishing vessels of an overall length of less than 12 meters and not using towed fishing gear as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004*". In addition, Article 18 of EMFF calls on Member States to establish *"an action plan for the development, competitiveness and sustainability of small-scale coastal fishing*" if the national fleet includes over 1000 small-scale fishing vessels. Therefore, MS belonging to this group must add an action plan to their operational programmes that promotes the competitiveness and sustainability of small-scale fisheries.

France developed its Action Plan for small-scale and coastal fisheries in 2015 (Renaud 2015). The Plan highlighted that 75% of the French fleet is part of the small-scale fisheries category as defined by EMFF. It should also be noted that 70% of the French fishing fleet operates within the 12-nautical mile zone, corresponding to territorial waters, where a high percentage of vessels using passive gear is concentrated. This is based on the information from the EC register, which can, however, be misleading when analysing gears that are used, particularly in the case of small-scale fisheries. For example, dredging almost never appears as a primary gear for this fleet. Despite the adoption of this Action Plan by the French authorities, fishers' representatives' organisations still refuse to recognise the definition of small-scale fisheries given by EMFF.

Apparently, European and French authorities do not grant exclusive access rights to vessels of less than 12 meters, which constitute the small-scale fishing fleet. In practice, however, there exists a derogation regime to the "principle of equal access" for the 12 NM zone granted by the EU to MS based on the principle that small-scale fishing vessels must be privileged within this area (Regulation 1380/2013 Article 20). This derogation regime allows MS to implement management and conservation measures within the 12 NM zone, effectively creating a "specific regime" in this area. In France, this derogative status has led to an important number of management decisions made by fisheries committees through co-decision making with regional and national fisheries authorities. These decisions aim at progressively

reserving access to this area to vessels less than 12 meters' length. Despite these practical dispositions, the French legal framework ambiguously continues to allow large-scale fleets to operate in territorial waters.

In the following section, the importance and diversity of small-scale fisheries in terms of vessels and employment by region are outlined. As noted above, small-scale fisheries represent the majority of the fleet and are numerically very important in some regions of France.

## 12.3 Small-Scale Fisheries: Figures

In 2013, the French fleet included around 5000 vessels under 12 m, 4326 using static gear and 666 using towed gear. This represented respectively 73% and 11% of the total fleet in numbers (see Table 12.1 and Fig. 12.1). The small-scale fleet is spread over the North Atlantic (73%) with a higher proportion of vessels using towed gear, the Mediterranean Sea (91%) and the so-called "Other region" area (97%) which includes the French overseas regions. Total employment in the small-scale fleet was estimated at 8500 crew members, and 13,500 for the whole fleet (see Table 12.2).

Small-scale fisheries represented 50% of the employment in the North Atlantic, which is the main area in terms of employment, with 3785 crew members, 75% in the Mediterranean Sea and 86% for other regions. Total employment was around 8500 persons. Full time equivalent is not considered here.

## 12.4 Trends in Small-Scale Fishing Fleet

In the Atlantic area (North Sea-English Channel, Bay of Biscay), the number of vessels under 12 m decreased by 24% (−672 vessels) between 2000 and 2013. Most of the decline concerns the towed fleet (−40%; 398 vessels). Additionally, there was a 16% reduction (274 vessels) of the static fleet. In the Mediterranean area, the number of vessels under 12 m decreased by 17% (−234 vessels) between 2000 and 2013 (see Fig. 12.2).

**Table 12.1** Distribution of vessels by segments and regions in 2013

| | North Atlantic | Mediterranean Sea | Other regions | Total |
|---|---|---|---|---|
| < 12 m static | 1471 | 1104 | 1751 | 4326 |
| < 12 m towed | 598 | 41 | 27 | 666 |
| ≥ 12 m static | 163 | 21 | 22 | 206 |
| ≥ 12 m towed | 581 | 92 | 37 | 710 |
| Total | 2813 | 1258 | 1837 | 5908 |

Source: Annual Economic Report 2015, Scientific, Technical and Economic Committee for Fisheries (STECF 2015)

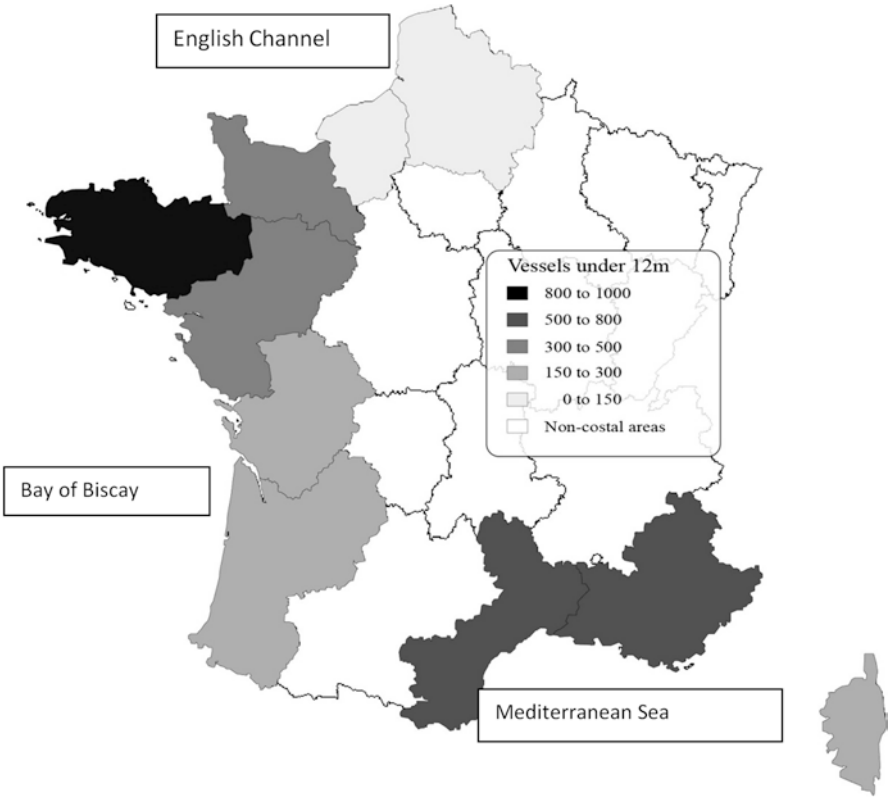


**Fig. 12.1** Number of vessels per region in 2013

**Table 12.2** Distribution of total employment by segments and regions in 2013

| | North Atlantic | Mediterranean Sea | Other regions | Total |
|---|---|---|---|---|
| < 12 m static | 2648 | 1399 | 3161 | 7209 |
| < 12 m towed | 1137 | 75 | 81 | 1293 |
| ≥ 12 m static | 1101 | 34 | 96 | 1231 |
| ≥ 12 m towed | 2896 | 463 | 413 | 3772 |
| Total | 7782 | 1971 | 3751 | 13,504 |

Source: Annual Economic Report 2015, Scientific, Technical and Economic Committee for Fisheries (STECF 2015)

### *12.4.1 Fishing Gears*

In the Atlantic and Mediterranean areas, the gears used by small-scale fisheries are passive, gillnets, trammel nets, longlines, handlines, nets, pots, and traps. In some areas, they operate dredges for shellfish; and in a few cases, vessels of 11 m length can use trawls. The choice of different gears by small-scale fishers is based on the

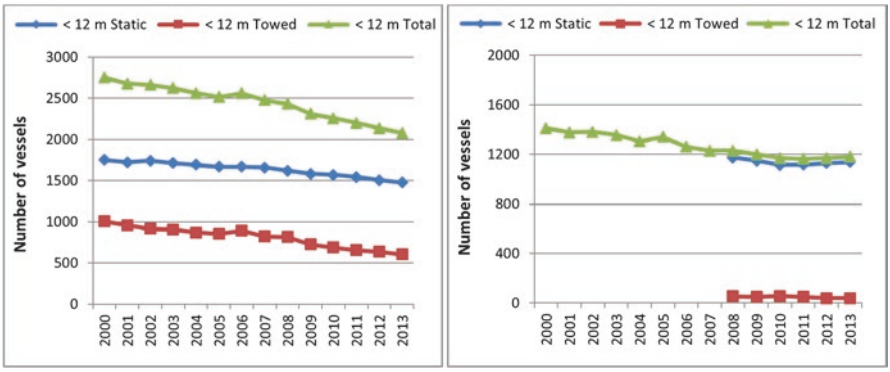


**Fig. 12.2** Trends in number of vessels under 12 m between 2000 and 2013 in the Atlantic area (left) and the Mediterranean area (right)

**Box 12.1: Shellfish Gathering: From Informal to Formal Activity**
*(Summarised example from* Gariglietti-Brachetto 2014*)*

Shellfish gathering on foot is a traditional activity performed over centuries by the coastal population and fishers' windows. This informal occupation became a real profession in 2001 thanks to the implementation of a legal status for shellfish gatherers. All of them opted for a social status by choosing between the social security system of fishers or the one of farmers. Since 2010, all persons willing to become shellfish gatherers have to follow a theoretical and practical training before starting on the job.

Shellfish gathering is defined by French law as the activity "*realised on foot on the Public Maritime Domain, including rivers, lagoons and channels containing salt water, with the objective to harvest marine animals for human consumption. The fishing action should be carried without the use of respiratory equipment to remain immersed, and with the feet always resting on the ground* (decree-law n°2001-426 of 11 of May 2001).

In 2012, 767 shellfish gatherers were registered, operating mainly on the Atlantic coast. The annual production amounted to 722 tons of grooved and Japanese carpet shell, 544 tons of cockles, 121 tons of furrow shells (*donax trunchus*), 280 tons of wild oysters, 192 tons of mussels. Marine plant gatherers are also part of this category, with glasswort (*salicornia*) as the main species with an annual production of 160 tonnes. Marine plants are authorised to be harvested only in Northern France. But this group does not include seaweed gatherers on foot.

The prices of shellfish products vary from area to area and between wholesale and retail markets. For example, cockles (*cerastoderma edule*) are sold in wholesale markets between 3.5 and 4 euros per kilo, and Furrow shells between 8 and 10 euros per kilo, selling at 25 euros in the retail market. The

(continued)

**Box 12.1** (continued)
majority of the French shellfish production is sold to the Spanish canning industry and only a few species are consumed at national level.

The excessive demand of shellfish from the Spanish canning industry impacted French shellfish grounds negatively. In 2000, French fisheries authorities introduced a new regulatory system, with a national license, in order to avoid overexploitation of stocks. However, this new management tool failed to improve the situation. Another management tool was then introduced, the shell fishing permit, which is issued at the local level by regional fisheries committees. For each shellfish ground, fishing permits are issued in accordance with the stock evaluation. In some areas, fisheries committees added more rules such as allocation of daily quota for each species, always taking into account stock evaluation. The only area that has not introduced fishing permits is the Mediterranean Sea, which instead imposes a daily quota on each gatherer.

The most important threats to the sustainability of shellfish activities are the overexploitation and the high mortality of the resources. A third difficulty concerns the deficient participation of shellfish gatherers in the decision-making process for resource management. Only one part of gatherers, those contributing to fishers' social security system, takes part in the working groups of CRPM.[2] Those contributing to the farmers' social security are not allowed to participate in CRMPs work. Under such conditions, the majority of shellfish gatherers, including some practicing this activity on a full-time basis, are excluded from the decision-making process. And, of course, decisions taken by others are not often easy to implement.

season and targeted species as well as the regional sea being harvested. For example, in the Mediterranean Sea, in addition to fishing at sea, a large number of small-scale vessels operate in lagoons covering 50,000 hectares and linked to the sea. Lagoon fishery is an old activity practised by vessels exclusively made for this purpose and using fixed gears like fyke nets. The small-scale fisheries category includes also shellfish and seaweed gathering, the former being practised in all seas and the latter only on the Brittany coastline (Gariglietti-Brachetto 2014; Delaney et al. 2016).

### *12.4.2 Catch Composition and Value*

As indicated in Table 12.3, the main species landed by the small-scale fleet using static gears are, in terms of value, Common sole (18%), European sea bass (15%), Pollack (6%) and Monkfish (5%). All these species are subject to a total allowable

[2] Fishers' social security system includes only fishers using fishing vessels.

**Table 12.3** Main landings per species in the Atlantic area in 2013

| | < 12 m Static | | | | < 12 m Towed | | |
|---|---|---|---|---|---|---|---|
| Species | Value (M€) | Weight (tons) | Price (€/kg) | Species | Value (M€) | Weight (tons) | Price (€/kg) |
| Common sole (*Solea solea*) | 30.1 | 3109 | 9.7 | Great Atlantic scallop (*Pecten maximus*) | 20.8 | 8383 | 2.5 |
| European sea bass (*Dicentrarchus labrax*) | 23.9 | 1643 | 14.5 | Common sole (*Solea solea*) | 10.2 | 942 | 10.9 |
| Whelk (*Buccinum undatum*) | 18.3 | 12,006 | 1.5 | Common cuttlefish (*Sepia officinalis*) | 6.8 | 2083 | 3.3 |
| European lobster (*Homarus gammarus*) | 7.7 | 437 | 17.6 | Norway lobster (*Nephrops norvegicus*) | 4.0 | 347 | 11.4 |
| Great Atlantic scallop (*Pecten maximus*) | 7.1 | 2875 | 2.5 | European sea bass (*Dicentrarchus labrax*) | 3.1 | 240 | 12.8 |
| Pollack (*Pollachius virens*) | 5.8 | 1341 | 4.3 | Inshore squids nei (*Loligo vulgaris*) | 3.1 | 433 | 7.1 |
| Monkfishes nei (*Lophius*) | 5.0 | 1249 | 4.0 | Common shrimp (*Crangon crangon*) | 3.0 | 333 | 9.1 |
| Spinous spider crab *(Maia Squinado*) | 4.9 | 2520 | 1.9 | Atlantic mackerel (*Scober scombrus*) | 2.3 | 1507 | 1.5 |
| Common cuttlefish (*Sepia officinalis*) | 4.5 | 2003 | 2.3 | Mussels *(Mytilus* spp) | 1.6 | 1327 | 1.2 |
| Other | 56.2 | 52,275 | 1.1 | Other | 23.9 | 29,086 | 0.8 |
| Total | 163.4 | 79,459 | 2.1 | Total | 78.8 | 44,682 | 1.8 |

catch (TAC), except European sea bass. The other main species are whelks and crustaceans like the European lobster (5%) and spider crab (3%).[3] Total landings value is estimated to be 163 M€ for about 80,000 tons. Average price is 2.1 €/kg; but Table 12.3 shows large price differences between species. For the small-scale fleet using towed gear, the most important species are scallops (26% of total value) mainly harvested in the English Channel, followed by Common sole (13%), Common cuttlefish (9%) and Norway lobster (5%). European sea bass is also caught by this segment. Total landings value is estimated at 80 M€ for 45,000 tons.

[3] Great Atlantic scallop included in the landings of the small-scale fleet using static gear are harvested by a fleet segment operating static and towed gears (dredges for targeting scallops) at different times of the fishing season.

### *12.4.3 Family Character of Fishing Enterprises: From Diversification to Gender Equality*

Small-scale fisheries enterprises are characterised by the family organisation of the work. As all other artisanal activities in France, small-scale fishing enterprises require an important contribution of the family, and wives, parents and children play their part. While men are at sea, wives carry out a number of activities essential for fishing operations. A study on the role of women in small-scale fisheries in Brittany in 2008 pointed out that women perform numerous tasks: preparation of longlines, mending fishing nets, shopping for the vessels' needs, carrying fish from vessel to buyers (restaurants, local supermarkets…) (Frangoudes and Keromnes 2008). They are also in charge of administrative tasks necessary for the fishing enterprise (payment of bills, banks, accounting, etc.).

Women are also important actors in the diversification of activities of family small-scale fishing enterprises. The most common tasks are direct sale or processing of fish, crustaceans or shellfish. Direct sales can be made in certain places, either by mobile retail units, vans or stalls in the harbour or near the vessels. About 80% of the respondents to a survey conducted within fishing communities along the English Channel highlighted that women are the main actors in direct sales (Henichart et al. 2012; Montfort et al. 2017). Direct sales increase the income of fishing households and provide cash income for the family and the enterprise.

Within the diversification movement, women have also initiated new activities such as visits along the shore (seaweed or shellfish gatherers), seal and dolphin watching, or just giving an insight into fishing operations. According to French law, fishing vessels are not allowed to transport passengers; those who want to undertake that activity must submit a special request to the fisheries administration in order to obtain a derogation. These derogations are mostly found in Corsica where fishers conduct "Pesca Turismo" seasonally. Local fishers often spend more time carrying tourists than actually fishing. Small-scale fisheries organise fishing trips, and catches are cooked and consumed at the end of the excursion (Frangoudes 2004, 2011).

Receiving and guiding tourists on vessels or on the shore, talking to customers and attracting new customers requires new skills. As fishermen are busy at sea, women are taking training courses to develop these skills. Fishermen justify their lack of interest by saying: "*Our job is at sea. As soon as the fish is landed, our contribution ends*". The contribution of wives or life partners in the fishing enterprise was at last recognised in 1997 when the Fisheries Act legalised it with the introduction of the Collaborative Spouse Status (CSS). Women could therefore enjoy social benefits, including pension schemes. But the visibility and legal recognition of their contribution were the most important gains for women.

#### 12.4.3.1 Gender Equality in Fisheries?

Initially, spouses or life partners could access the Collaborative Spouse Status (CSS) if the man, as head of the fishing enterprise, requested so. During the first 10 years after the law was enacted, few women opted for this status. The situation changed in 2008 when a new law made the legal status mandatory for all women contributing to the family enterprise. Since then, they must choose one of the following designations: associate, employee or CSS.

In 2017 the number of women opted for CSS was 590. This figure also includes spouses of shellfish farmers. Women have a preference for CSS because it is less costly than the other two designations. Moreover, associate owner status is rarely chosen because husbands are reluctant to share vessel ownership with their wives. This attitude can be explained by the French tradition that views the sea and fisheries as a male space.

The CSS, with its access to retirement schemes and more visibility, allows women to benefit from free vocational training and be part of fishers' organisations (Frangoudes et al. 2014). Women's participation in fisheries committees is the most important benefit granted to women, provided that the husband does not stand as candidate in elections. However, few women replaced husbands and became members of fisheries committees, which remain almost exclusively male organisations. Since 2008, only two women have chaired district committees. Moreover, the transfer of decision-making power regarding resources management to the regional level in 2010 has weakened the district committees and made it difficult for women to occupy positions of power within fisheries committees. Centralisation of decision-making has meant that women have fewer possibilities to lead these committees, first because the regional seat is far from the coast, and second because women are mostly known locally through the social roles they perform. The same phenomenon is observed in other arenas, such as municipal elections. According to Roux (2004, 2012), women elected at municipality level lose their leadership positions as soon the decision-making power is given to "Communities of municipalities".

## 12.5 Governance of Small-Scale Fisheries, Institutional Framework

In France, small-scale fishers are members of different organisations, but only one is mandatory: fisheries committees. According to the Fisheries Act, all commercial fishers must be members of these committees found at all administrative levels. In France, there are 13 district/inter-districts and 12 regional committees including outer most regions. The National Committee of Fisheries and Marines Cultures is

the national representation of all committees (Rural and Fisheries Act 2010). Membership and official mandates, defined by law, have evolved since they were first established in 1945. Thirteen Producers Organisations (POs) have the responsibility to regulate market and ensuring better prices for the fish. PO's are also open to Small-scale fisheries. The role of POs has also evolved and now includes preparing regional management plans and allocating fishing opportunities to their members. Finally, there are thirty-three *prud'homies*, territorial organisations found only in the French Mediterranean Sea, have had as their main objective over centuries the management of fishing activities at delimited territorial levels.

The "Platform of Small-scale Fisheries" is the newest organisation established in 2012. It is a voluntary organisation bringing together only small-scale fishers. It is a member of Low Impact Fisheries in Europe (LIFE), an organisation lobbying at EU level for small-scale fisheries interests. A short presentation of the work, responsibilities and actions of these organisations, and the place of small-scale fisheries within this complex institutional framework in relation to power and social justice, is presented below.

### *12.5.1 Evolution of Fisheries Committees*

Fisheries committees bring together all French commercial fishers, crew members, Producers organisations and cooperatives. They were established in 1945 to support fishing populations and fleets that suffered during the Second World War. Since that date, three main reviews of the law have taken place, in 1992, 1998 and lastly in 2010 with the Rural and Fisheries Act (République Française 2010). From 1945 to 1992, members of these committees were not elected but designated by the fisheries administration, and they mainly represented the industrial and large-scale vessel segments. Since 1992,[4] all fishers have voted for their representatives, and they can stand for election if they wish so, provided that they are part of one of the trade unions' lists. Nowadays, fisheries committee members are more legitimate than in the past, as they are elected through a democratic process. Direct election of fisheries committee members is the most important innovation introduced by law. Every five years, vessel owners of all fleet segments, including small-scale fisheries and shellfish gatherers and crew members, vote to elect their representatives for district committees, which in turn elect the members of regional committees and of the National Fisheries Committee. The councils of these committees at different levels have between 42 and 52 members, who then elect their board. Crew members are represented only at district and regional levels but not at the national.

[4] Decree 93–335 of 30 March 1992 laying down the rules for the organisation and functioning of the National Committee for marines Fisheries and Marine Farming and the regional and local committees for marine fisheries and marine farming, https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000356874&categorieLien=cid

Despite the democratisation of the electoral process, the system is still not equal because all fishers cannot be candidates, as they must belong to a list established by one of the various national trade unions. Under such conditions, many small-scale fisheries cannot be elected because only a few of them are members of these trade unions. So, small-scale fishers wishing to gain more decision-making power and become a visible group must set up their own trade union, at national or regional level, and then win the majority of a fisheries committee's seats. Since 2010, the Mediterranean small-scale fisheries opted for such a strategy and won the elections not only because they were greater in number but also because they went as a unified group, which made the difference compared to the past, when larger-scale fishers led all the committees. Another aspect contributing to this success was the fact that the larger fleet was in difficult situation due to the lack of sardines and the subsequent withdrawal of many vessels. This successful experience ended in 2017 because during the elections that year there was a lack of common agreement among small-scale fisheries.

Since the establishment of the fisheries committees throughout France, their main task has been the promotion and representation of the interests of the fisheries sector in order to improve its social and economic condition. This role was strengthened by the 1992 law that allowed them to manage the resources within territorial waters.

However, in 2010, the Fisheries Act abolished fisheries committees at harbour level and regrouped them at district level in areas where fisheries activities remain important, like in Brittany. But decision-making power relating to resources management has now been transferred entirely to the Regional and National Fisheries Committees (CRPM and CNPM, respectively).

The CRPM and CNPM are now the place to discuss rules and measures to manage the fisheries within the 12 NM zone. New rules to be implemented are discussed within working groups created on the basis of fish species (seaweed, scallops, langoustines…), or by gear (netters, pelagic trawlers…). As soon as an agreement is reached within these groups, it is submitted to the board of CRPM or CNPM, which has the final say on the matter. After being approved by the council, the decision is examined by the Regional or National Fisheries Administration. It is then submitted for validation to the representative of the State (Prefect or Minister). CRPMs have, for example, the power to adjust the number of allocated fishing licenses to the available resources, to adjust the fishing effort. They can also make decisions facilitating the coexistence between different fishing gears operating in territorial waters. CRPMs also have the power to adopt rules regarding the technical characteristics of fishing gear and the exploitation of fish stocks that are not under the European quotas system. They can also the professionalization of informal activities as shellfish and seaweed gathering on foot (Box 12.1).

Overall, the level of influence of small-scale fisheries on the decision-making process is difficult to measure due to the lack of statistics concerning the number of small-scale fishers who participate in the working groups or are elected to fisheries committees and boards. The second difficulty is to evaluate the effective participation of small-scale fisheries during discussions and their influence on decision-

making due to the lack of information provided by the committees. It can be assumed that the current mode of election based on trade unions and the functioning of the fisheries committees based on working groups with frequent meetings prevent small-scale fishers to participate in the decision making, as they cannot be replaced on fishing vessels during their absence. Days spent in meetings are not paid for, and income is reduced because the majority of small-scale fisheries do not employ crew members. Anecdotal evidence shows that fishers' participation is higher when working groups of committees are held at local level, just because travelling requires less time and meetings are organised at the best times for fishers. In this case, CRPM and regional fisheries administration staff move to local level to meet and discuss with fishers. This happens for local stocks, for example seaweed, which are located in one particular district. But it is not the case for others species or gears. The example of seabass handliners association (Box 12.2) shows well how some decisions of fisheries committees favour larger vessels and exclude small-scale fisheries. In general, centralisation of decision-making has made it difficult for small-scale fisheries to participate in decision-making due to lack of time to travel.

**Box 12.2: Fishers Adding Value to Fish: Association of Handliners of Brittany**

*(Summarised example from Bernard G. 2009)*

The association of handliners of Brittany, established in 1993, brings together fishers using handlines to catch sea bass and pollack. This handliners group decided to defend their fishing activity, environmentally friendlier than other fishing gear, by promoting the environmental responsibility of their activity and increasing the price of wild sea bass, a species losing its value due to the massive production of sea bass by Mediterranean aquaculture. To achieve this objective, fishers acted collectively and created the trade-mark "Handline sea bass from the tip of Brittany" which differentiates wild from farmed sea bass. This differentiation aims at increasing consumers' awareness on the matter and establishing links between producers and consumers. Information about their own fishing activity and transparency of products was meant to bring consumers closer to fishers. Membership was open to all fishers using handlines as their main gear and targeting sea bass and pollack in all Atlantic coast harbours, with the core group based in Brittany.

The association does not have any responsibility in resource management within the fisheries committee framework, but the low impact of handlines on the ecosystem became the main slogan of these fishers to promote their specific activity in the fisheries sector and society in general. They advocate their cause as follows: low discards, release of undersized fish, high survival, little impact on seabed, no or little ghost gear.

The members of the association decided, in common, to increase their environmental image by reducing their fishing effort, decreasing the number

(continued)

**Box 12.2** (continued)
of days at sea from seven to five a week. They also introduced a biological rest period during the breeding season of sea bass, but did not want to be inactive during these 2 months.

This biological rest was compromised due to the overexploitation of the stock of sea bass by other gears as Danish seines, seines, pelagic trawlers and recreational anglers. To restore the stock, which is not under the EU TAC and quota system, the European Commission suggested the introduction of new management rules to Member States. In the beginning, France did not decide to privilege the small-scale fleet depending exclusively on this species for their livelihood. Fisheries authorities, with the support of fisheries committees, gave more attention to the preservation of seiners and pelagic fishers rather than small-scale fisheries. Finally, they accepted a proposal made by the handliners association, which was precisely the extension of the biological rest already practised by them to all fleets and the banning of fishing in spawning areas.

Nevertheless, these measures were not sufficient to protect sea bass stocks as handliners and larger vessels target sea bass as soon as the season starts. The vulnerability of handliners stems from the inability of fisheries authorities to make a clear decision to support them. Larger vessels, with the help of fisheries committees, lobbied against handliners interests. Thus, in spite of voluntary efforts to improve the ecological sustainability of their activity, the economic sustainability of handliners remains at risk because of the competition and conflicts with other fleets.

### *12.5.2 Mediterranean Specificity: The Prud'homies*

*Prud'homies* are old fishers' institutions found in the French Mediterranean Sea. They are related to brotherhoods and corporations from the Old Regime, the period before the French Revolution. Unlike all other brotherhoods, *prud'homies* were not abolished during the French Revolution in 1789 thanks to the intervention of the fishers of Marseille explaining their role during the revolutionary process (Feral 1990; Faget 2011). Since then, *prud'homies* were established in each coastal village with the objective of managing, regulating and monitoring fisheries activity within an allocated territory. *Prud'homies* are regrouping all vessel owners and fishing rules are adopted by the majority of their members who are small-scale fishers. The elected leaders must be fishers with wide experience because they have legal functions in matters of conflicts between fishers or in cases where offenses are committed within their territory, for instance.

The main scope of *prud'homies* was to ensure an equitable distribution of resources among fishers, not the management of resources per se. For this reason, there were random draws for lots of fishing posts (mainly in lagoons), and strict

regulations on reciprocal access to fishing zones managed by neighbouring *prud'homies*. Resource management within their territory was made by imposing limitations of fishing time, net mesh sizes or seasonal fishing bans. *Prud'homies*' legal function is limited to the settlement of problems affecting the social order of the fishing community operating in a given territory. They also guarantee the respect for certain unwritten rules. They still play an important part in fisheries management, though their role is now weaker than in the past due to the modification of responsibilities and the powers of fisheries committees (Raicevich et al. 2017). Autonomous decisions and the power to monitor fishing activities and pass judgements on infringements is a strong point for the *prud'homies* because they can react quickly at the most local level in case of a lack of resources, conflicts between fishers, etc. (Frangoudes 1997, 2001; Cazalet et al. 2013; Reyes et al. 2015). Few *prud'homies*, due to their local legitimacy, have seats on the councils of fisheries committees.

The *prud'homies* contribute to the management of marine resources by implementing pragmatic conservation measures at a local scale, which they are able to enforce through regulatory, jurisdictional and disciplinary powers. In 2003, the *prud'homie* of Saint-Raphael designated an area of 450 hectares at Cap-Roux as a reserve (Decugis 2009), with depths reaching up to 80 m. In 2013, the marine reserve was extended for six more years. The sea bed is rich and varied and includes *Posidonia Oceanica*, rocks and *coralligenous facies*, which contribute to the development of important biodiversity. Fisheries assessments performed by the University of Nice pointed out that a remarkable number of fish species were present in the marine reserve, including emblematic species like groupers and capon.

Within this area, professional and recreational fishing is prohibited. The reserve has been marked off and it is monitored by the *prud'homie*, which is even entitled to control recreational fishers. This example shows the capacity of small-scale fishers to manage locally the fishing activities in order to sustain the marine ecosystem and biodiversity of their area.

### *12.5.3 Platform of Small-Scale Artisanal Fisheries*

In 2012, small-scale fishers decided to change French fisheries' institutional system by establishing a new organisation exclusively for small-scale fisheries. These fishers considered that small-scale fisheries were invisible and without power within the CRPM and CNPM and that only a new organisation could increase their visibility and promote their rights. The name of this new organisation is "*Plateforme de la Petite Pêche Artisanale*". Despite its efforts, it was not able to mobilise massively small-scale fisheries. Thus far, only few local small-scale fishing organisations have joined, and they are all run by fishers with strong personalities. This lack of interest to establish an independent small-scale fishing organisation can be explained by different reasons, the most important one being the fear of losing fishing rights allocated by fisheries committees. The main challenge for the Platform is how to

strengthen their visibility within the fisheries sector and society in general. To achieve this, the Platform of small-scale fisheries, as a group, should modify its strategy and choose the best option to influence the decision-making process. They either build their own independent organisation outside the legal fisheries organisation with the risk of being marginalised, or create a national trade union for small-scale fishers and participate in the election of fisheries committees in the hope of obtaining many seats.

The Platform is member of the Low Impact Fisheries in Europe (LIFE), an organisation that lobbies for small-scale fisheries at EU level, and established alliances with Environmental NGOs, which has not eased its relations with fisheries committees. Thus, so far, the role that the Platform can play within the institutional framework in the national context is still to be figured out and specified.

### *12.5.4 Small-Scale Fisheries and POs*

POs are major actors in the socio-economic system in French fisheries. They are groups of harvesters that develop collectively fisheries management plans. Historically, they were created to establish a minimum price mechanism, which mainly served the large-scale fleets. Since PO membership is voluntary, only fishers that wished to benefit from the minimum price scheme joined. Most small-scale fisheries were operating outside POs until about 2005 (Frangoudes and Bellanger 2017). This situation progressively evolved when the fisheries administration decided to use POs as a cornerstone of the quota allocation system. Regulatory power delegated by the national administration to POs includes fishing rights management, monitoring, control of activities and commercialisation.

According to legal statutes dating from 2006, the French national quotas are shared out into sub-quotas per PO (JORF 2006). The distribution of the national quota among POs is based on the historical landings (also referred to as 'track records') of member producers over the period 2001–2003 (Larabi et al. 2013). POs are then responsible for implementing their own internal allocation rules, which vary across POs and across species within POs. Many PO quotas are essentially managed by a pool system. However, for quotas that are effectively limited (e.g. for which the uptake could be greater than 95%), POs tend to use non-tradable individual quotas that are considered easier to enforce than collective limits by PO managers, since individual limits allow for meaningful threats of individual penalty for quota overrun.

Quotas for vessels that are not members of a PO are collectively managed by the national fisheries administration. The main reason why fishers massively joined POs was that those who remained outside were operating in a race-for-fish where fishery closures could happen early in the season. Since historical landings constitute the principle for sub-quota allocation to POs, some POs were reluctant to accept the membership of small-scale vessels that do not own any historical rights. This issue is particularly critical for small-scale fisheries because in the past the landings

by small-scale vessels were not systematically recorded (compliance with landing declaration requirements were deficient), and the use of logbooks was mandatory for large-scale vessels only. This led the administration to underestimate the historical landings of many small-scale fisheries in the years 2001–2003. Eventually, the inclusion of small-scale fisheries was facilitated by the EU-funded decommissioning policy from which many larger vessels benefited. With the departure of many larger vessels and increased quota availability, POs decided to facilitate the integration of small-scale fisheries into their organisations. Bellanger et al. (2016) showed that some POs granted small-scale fisheries a share of their PO sub-quota, thereby allowing them to stay in the fishery though they did not have historical landings track records. However, the question of equity within and among POs is still being raised by many stakeholders. Some POs invariably complain about the use of historical landings as the basis for sub-quota assignments, which they claim to be unfair to small-scale fisheries and also raises issues regarding intergenerational equity. Overall, the access to fisheries under quota for small-scale fisheries and new entrants remains quite restrained.

## 12.6 Concluding Remarks: Looking to the Future of Small-Scale Fisheries

The following points can be highlighted regarding the main challenges and perspectives of French small-scale fisheries. First, it appears that small-scale fisheries do not benefit from any specific policy despite their numerical importance, and that they are not organised in their own right. They are members of organisations bringing together all fishing vessels. However, it is clear that they have gradually gained more visibility within these organisations, without reaching yet the higher spheres of power within them, and despite structural modification within small-scale fisheries. However, small-scale fisheries are now participating actively in the sustainable management of the resources within territorial waters.

Another critical factor is the importance of small-scale fisheries within coastal communities. Small-scale fisheries footprint is strong because vessels fish daily and often sell their catch directly within the community. They also have a preference for local labour compared to large-scale vessels using local and foreigner labour. Family members are also involved in fishing enterprises. All these aspects make small-scale fisheries visible within the community, and the EU has recognised this contribution by supporting them through EMFF. This is not the case at national level where national and regional fisheries authorities, fisheries committees and politicians still do not give them any specific support. This negative attitude towards small-scale fisheries is based on the idea that large-scale vessels generate more jobs, more fish and more revenues. They do not recognise that the number of small-scale fishers is probably greater than those employed by the large fleet. In addition, revenues generated by small-scale fisheries are important; it is for these reasons that they find crew members locally and offer good salaries with satisfactory working conditions.

Within this complex context, it is also important to discuss some aspects which may help reinvent the current fisheries system and allow small-scale fisheries to become full actors within the public space. Giving them exclusive use of territorial waters would certainly contribute to strengthening their position within fishers' organisations and guarantee them a space to operate. MPAs could also represent a benefit in terms of space and resources; but is this possible within the French legal framework? The last point to consider is the issue of organisation and what the best course of action is to review and rethink the current system.

Concerning the allocation of the right to exclusive use of territorial waters by the State, the EU has opened a way which French small-scale fishers could call on to claim that right. In their view, the exclusive use of territorial waters would decrease competition with the large fleet and protect them from seasonal transfers of large-scale fleet fishing effort, which always leads to conflicts of space. But granting this right to small-scale fisheries remains difficult because the fisheries sector has been perceived by all as "one body" having "a single voice" for centuries; and nobody is ready to modify this situation, unless small-scale fishers raise their voices.

As mentioned, MPAs could be a good solution in terms of exclusivity for fishing space. However, Marine Natural Parks as defined by the law cannot exclude the large fleet from their territory and reserve it only for small-scale fisheries. In France, these conservation tools are not empowered to manage fishing activities, this jurisdiction remains in the hands of the CRPMs. Marine Parks have the right to ban fishing activities only when this modifies the initial state of resources and ecosystems within their area. Fisheries committees are members of Parks' management councils to be able to defend their own roles and rights if necessary. The example of the *prud'homie* of Saint Raphael shows the role of local fishers' organisations in the establishment of a marine fisheries reserve for the conservation of resources and of fishing rights. By implementing and monitoring this area, the *prud'homie* sets aside the available resources for its members by excluding all other users. In other areas where this local organisation is not present, it is impossible to establish fishery reserves without the participation of the State agencies.

Organisational issues appear to be the main impediment to small-scale fisheries empowerment. Fisheries committees are compulsory organisations that include all professional fishers. The law grants them responsibility to manage fishing activities within the 12 nautical mile zone; and these committees are ready to defend fishers' rights if they feel threatened either by the EU or by other users such as wind farms companies. In theory, they have the mission to protect the entire fisheries sector; but some small-scale fisheries feel that they are being neglected, especially in processes of decision-making on management issues. They feel that the committees advocate more in favour of large-scale interests rather than small-scale fisheries. For the small-scale fisheries group, the establishment of an independent organisation is the only alternative to strengthen their participation in resources management, quota allocation, and for the global protection of their rights. Under the current legal system, small-scale fisheries cannot leave fisheries committees; so the Platform of small-scale fisheries has to co-exist as a formal and informal organisation advocating for the rights of small-scale fisheries.

The main concern is therefore to find a solution to manage both organisations, and avoid that the committees putting pressure on fishers who want to join the new entity by telling them that their fishing licenses would not be renewed for example. The departure of small-scale fisheries represents another risk for fisheries committee because their survival depends on small-scale fishers' membership fees, since the EMFF forbids direct financial support to fisheries organisations. Small-scale fisheries are numerically important and represent a good source of income through membership fees but also the payment of each fishing license. As stated above, the Platform of small-scale fisheries should perhaps modify its strategy and become a national trade union instead of an independent organisation. This would allow them to fight to improve their situation and rights within the committees. Otherwise, the action of the Platform will focus only on protesting against committees.

Finally, small-scale fisheries have recently gained a better position within POs as many of them are now participating in the decision-making bodies. The decommissioning of large fleet vessels favoured small-scale fisheries integration in these POs without upsetting the system of quota allocation already in place. Even though internal rules have not been adopted to favour small-scale fisheries, at least they have been successful in securing quotas. Their main aim now is to obtain an increase in their share of the quotas.

For the others who are not members of POs, who operate on fast-consumed national quotas managed by national fisheries authorities, the challenge is to gain access to POs in order to obtain individual quotas allocated by POs. Their lack of power makes it difficult to claim such rights even when Article 17 of the CFP asks Member States to revise fishing allocation by favouring gears with low impact on ecosystems. In terms of fisheries governance, small-scale fisheries have little room for manoeuvre, but the establishment of the Platform and the different initiatives taken by the EU or LIFE can been seen as positive for the future of small-scale fisheries in France.

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# Chapter 13
# Small-Scale Fisheries in Spain: Diversity and Challenges


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**Abstract** Small-scale fisheries constitute an important segment of the Spanish fishing fleet. Within the European context, the Spanish small-scale fleet is the third largest behind only Greece and Italy. The historical, cultural, economic, and social significance of this fishing sector in Spain is high, as is the range of gears and strategies used. This chapter aims to provide an overview of the condition of small-scale fisheries in Spain. It focuses on factors which have influenced the development of the sector over time. It thus pays attention to the role of local fisher organisations (*cofradías*), the interactions that occur with other fisheries but also with tourism, and the effects of the European Common Fisheries Policy. This chapter argues that small-scale fisheries in the country differ from one region to another, but all face serious challenges both at sea and in the markets. These are to be addressed by relevant actors at different scale levels.

**Keywords** Artisanal fisheries · Fisheries governance · Fisheries management · C*ofradías* · Collective action · Markets

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## 13.1 Introduction

The coast of Spain is characterised by a rich diversity of ecosystems. The sea and continental shelf in the north of the Iberian Peninsula are very different to those in the Canary Islands, on the south coast in the Gulf of Cadiz, or in the Mediterranean. Even in the north of the peninsula, the Basque country coastline is quite different from Galicia, where the *rías* (large estuaries) strongly shape the coastline and the productivity of marine ecosystems. Not only do the marine environments, continental shelves, and coastlines vary from one another, but also the human settlements which have different population densities and patterns of economic and social activity that create differing relationships between coastal peoples and the sea. Owing to these contrasts in natural and human landscapes, small-scale fishing activities have developed with a diverse range of fleets, gears, target species, and even fishing cultures across these distinct maritime regions.

Spanish policymakers have taken the diversity of fishing activity into account in designing legislation, such as for the large fishing areas under Spanish control (known as *caladeros*): the Cantabric Sea and Northwest, the Gulf of Cadiz, the Mediterranean Sea, and finally the Canary Islands. Moreover, following Franco's dictatorship and the 1978 Constitution, the Spanish State initiated a process of decentralisation towards Regional Governments (*Comunidades Autónomas*). Thus, regional governments could take control of inland and internal waters,[1] while the Spanish State maintained control of fisheries in territorial seas and in the Exclusive Economic Zone (EEZ) (Suárez de Vivero et al. 1997; Suárez de Vivero and Frieyro de Lara 1997). Due to these institutional changes, Spain has a complex governance structure of fisheries that depends on coordination between national and regional administrations. However, this system is not always efficient, thus creating difficulties for small-scale fisheries. After all, small-scale fishers operate in internal waters, but also in the EEZ or territorial seas, thus having to consider regulatory variations among different administrations.

Small-scale fisheries have been important in many coastal areas of Spain for centuries. Most fishing activities before the industrial revolution were undertaken by small-scale fishers organised in *cofradías* (see Sect. 13.4 below) or similar organisations that managed a variety of issues related to coastal (and in some cases inland) fisheries (Pascual-Fernandez and De la Cruz Modino 2011; Bavinck et al. 2015). For centuries, these local fisheries co-existed side-by-side with distant water fisheries, like those of Spanish fleets off the coast of Africa (Rodríguez Santamaría 1923) or in the North Atlantic and Newfoundland (García-Orellán 2010; Arbex 2016), and more recently in South America (Martínez Shaw 2008; Villasante et al. 2014). These various fleets were not operating in isolation from one another, as fishers could work for some years in distant water fisheries to embark later on cabotage boats (shipping devoted to coastal trade), or carry out fisheries closer to the coastline in small-scale

[1] "Waters on the landward side of the baseline of the territorial sea form part of the internal waters of the state" (UNCLOS, Art. 8).

boats (Pascual Fernández 1991). These activities shared the same harbours, and even the same organisations (the *cofradías)* until the industrial revolution introduced major transformations in fisheries (Ansola Fernández 1998). It is also important to mention that throughout history, Spanish fisheries have involved both men and women, and both the elderly and young. In fishing families, the division of labour had a gender dimension. Men usually took the roles of fishing, boat building, management, and public representation. Women also took on or shared these tasks, and performed others like weaving and repairing nets, shellfish gathering, or marketing. Women's roles in fisheries has frequently been overlooked, even though in Spain their role has been especially important. This has been highlighted in the literature about women gathering shellfish on foot in Galicia (Frangoudes et al. 2008; Marugán Pintos 2004), working in fish processing (Muñoz Abeledo 2012), and in managing family enterprises (Azpiazu Elorza 2016).

The aim of this chapter is to describe and analyse the features of small-scale fisheries in Spain, highlighting their diversity and the challenges they face. It starts by describing the sector in consideration of regional differences. The chapter continues by discussing their socio-economic importance, market roles, and interactions with other marine activities. We continue by examining the governance of the sector, including the role of fisher organisations and interactions with the political domain. The chapter concludes by highlighting current challenges and prospects for small-scale fisheries in Spain.

## 13.2 What Are Small-Scale Fisheries in Spain?

In most European countries there is no clear definition of small-scale fisheries, and Spain is no exception. In the European Union (EU), the meaning of the term is slightly clearer, as a definition of 'small-scale coastal fisheries' has been formulated, referring to vessels under 12 m in length not using towed gears.[2] The same definition is referred to in the Data Collection Framework and the European Maritime and Fisheries Fund (EMFF, EU No 508/2014), where funding opportunities for the small-scale fleet receive special treatment. Using the bare EU criterion, the Spanish small-scale fleet represents 11.3% of vessels, 15% of total employment, and 13% of total landed value of EU fisheries (STECF 2018).

However, other authors make use of a broader set of characteristics to define small-scale fisheries. For example, Guyader et al. (2013) refer to smaller vessels, more reliance on coastal and nearby waters, small crews with sometimes only one person on-board, frequent use of passive and multiple gears with different target

[2] As stated in the Council Regulation (EC) No 1198/2006 on the European Fisheries Fund: "1. For the purpose of this Article, 'small-scale coastal fishing' means fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed gear as listed in Table 3 in Annex I of Commission Regulation (EC) No 26/2004 of 30 December 2003 regarding the fishing vessels register of the Community".

species during the year; and, compared to large-scale fleets, lower investment, catches, costs, turnovers, dependence on subsidies, and fuel consumption. These traits are present in most small-scale fisheries in Spain, even if some fishers may be specialised in specific *métiers* (e.g. trammel nets, pot fishing for fish or shrimp) (Pascual Fernández 1991). Some authors suggest a differentiation between small-scale (referring to boat size) and artisanal fisheries (referring to technology level), or propose definitions that include descriptors with a score-based methodology for differentiation purposes (García-Flórez et al. 2014). These proposals are interesting, but we must note that small-scale fisheries are not always clearly distinguishably from large-scale fisheries; what we find in reality is a continuum from fleets that are clearly small-scale and display all the characteristics mentioned above, to others that have some but not all characteristics, and then to fleets that are clearly large in scale.

In Spanish legislation, references to small-scale fisheries (usually called artisanal fisheries) are often based on boat length. However, this usage is usually related to EU regulations for fisheries funds.[3] The concept of small-scale fisheries is also linked to safety at sea regulations such as in Royal Decree 963/2013[4] which fixes the minimum number of crew taking into account vessel size. The general criterion of the Spanish fisheries administration to classify the fleet is based on the "fishing modality", related to the gears used and not to vessel length. The modality more similar to small-scale coastal fisheries is the "*artes menores*" or small-scale gears, which comprise a wide range of technologies such as bottom long-lines, trammels, hooks and fish traps, mostly in boats under 12 m. Small-scale fishers apply these technologies interchangeably based on resource variability and market demand. This category is not limited by boat length, but the vast majority of the fleet that operates under this modality is less than 12 m, so the correspondence is very high but not absolute. Most of the Spanish small-scale coastal fleet is within the small-scale gear modality, but nearly one third of the boats of this modality are excluded from EU statistics of small-scale coastal fisheries due to the use of gears that do not fit the EU definition, even though they have a long history in coastal communities. The discrepancy with the EU definition criteria leads to a distortion in the statistical

[3] There are several regulations that refer to the EU fisheries funds and that transpose EU regulations into the national legal framework. For instance, see Royal Decree 1549/2009, of October 9, on the management of the fishing sector and adaptation to the European Fisheries Fund: *CHAPTER V Artisanal coastal fishing.* Article 34. Object. 1. "*For the purposes of this Royal Decree, artisanal coastal fishing is defined as fishing carried out by fishing vessels of an overall length of less than 12 metres and which do not use towed gear"*. See also Royal Decree 3448/2000, of December 22, which establishes the basic regulations for structural aid in the fishing sector: "*Article 29. Artisanal coastal fishing. 1. For the purposes of this Royal Decree, artisanal coastal fishing shall be understood as fishing practised by vessels of an overall length of less than 12 meters"*.

[4] Royal Decree 963/2013, 5 December establishes the minimum crew for safety reasons of fishing vessels and fishing auxiliaries and regulates the procedure for their assignment (BOE December 31, 2013). It is relevant to note the definition of *artisanal fishing: "fishing activity carried out with vessels of up to 12 metres in length"* (Art. 4.10).

data both for the small-scale coastal and the large-scale fleet, and increases the difficulties to make the policies at European and national level fit.[5]

The fleet of small-scale fishing gears is characterised by the family/local organisation of both capital and labour. No less important are small-scale fishers' preferred relationships with local markets and for working on nearby fishing grounds, in a similar pattern to other European small-scale fleets (Guyader et al. 2013). Regulations with regard to small-scale gears vary from one fishing area to another.[6] For instance, the most recent State regulations about this modality in the Canary Islands distinguish fleets under and over 15 m,[7] and highlight the possibility of small-scale fishers alternating gears in the same day (not allowed in other fishing areas of the country).

In Spain, 73% of fishing vessels are less than 12 m in length (MAGRAMA 2018). As for boats between 12 and 15 m in length, which share similar technical and socio-economic characteristics, as well as fishing grounds with those of less than 12 m, these represent 8% of the total fishing fleet (MAGRAMA 2018). In other words, 81% of the operational fishing fleet of Spain (9146 units, with an average length of 10.9 m, see Table 13.1 for a general description) fits into what could be defined as small-scale (MAGRAMA 2018). According to the classification of the fleet by fishing gear, 7106 boats (or 77.7% of the total) is within the modality of small-scale gears (MAGRAMA 2018).

The distribution of the fleet of up to 12 m in length by Regional Governments in 2017 is provided in Fig. 13.1. The evolution of employment in small-scale fishing is provided in Fig. 13.2, showing a diminishing trend. The scrapping policies and other factors, like the increase in formal training requirements or the difficulties for the traditional training on-board of youth, have diminished the recruitment in fisheries, also in the small-scale sector (STECF 2019).

From a regional perspective, Galicia, Andalusia, and the Canary Islands are the regions with the most small-scale vessels (see Figs. 13.1 and 13.3). Large-scale fishing predominates in the Basque Country and Cantabria in the Cantabric Sea, and in Catalonia and the Valencian Community in the Mediterranean (see Fig. 13.3). The latter fleets practice trawling, purse seining, or surface longlining.

[5] As stated in the STECF (2018) report: "On 2016, 4123 vessels were covered by the fishing activity 'small-scale coastal fleet' in accordance with the European definition. However, this classification differs from the Spanish classification that includes on this fishing activity the mobile gears of 12 meters (DTS, DRB, and PS). This type of vessels is covered under the EU classification on the activity "Large-scale Fleet", so the result is that the information that emanates from this report will show some distorted data with the reality of the Spanish small and the large-scale fleet" (p. 487). Based on this source, and taking into account only the small dredgers (DRB, under 12 m), 1828 vessels were included in the EU category of large-scale fleet, while pertaining to the Spanish category of small-scale gears… This highlights clear discrepancies between EU and Spanish statistics, distorting the use of EU data for the analysis of small-scale and large-scale fisheries in Spain and elsewhere, as well as showing the limitations of the EU definition.

[6] Regional governments can regulate many aspects of this activity for internal waters.

[7] Order AAA/2536/2015 and Order APA/441/2019 regulates the gears and modalities of maritime fishing and establishes a management plan for the vessels of the census of the National Fisheries of the Canary Islands.

**Table 13.1** Main characteristics of Spanish small-scale fisheries (2016–2017)

| | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| Fleet[a] | | |
| Number of licensed vessels | 9146 | 7106 |
| Capacity (GT) | 333,813 | 23,014 |
| Fishing power | 1,064,296 | 259,988 |
| Number of fishers[b] | 31,597 | 8869 |
| % women | 2.5 | 5.7 |
| Average age of fishers | n.a. | n.a. |
| Landings[b] | | |
| Quantity (ton) | 904,032 | 30,800[c] |
| Value (million €) | 2,095 | 120.5[c] |
| Most common gear used (top 3) (% of total value)[b] | Purse seiners (27%), demersal trawlers (7%), passive gears (5%) | Gillnets, longlines, trammel nets, netters, traps, hook and lines, pole and line[d] |
| Most important species in landings: | | |
| Top 3 by quantity (% in total) | Skipjack tuna (14%), Yellowfin tuna (9%), Argentina hake (5%) | Mackerel, Octopus, Skipjack tuna[c] |
| Top 3 in landed value (% in total) | Yellowfin tuna (17%), European hake (7%), Swordfish (7%) | Octopus, Common cuttlefish, European seabass[c] |

Sources of information: STECF (2018), MAGRAMA (2018) and data provided by the Spanish General Secretary of Fisheries

Notes

[a]Data from MAGRAMA 2018; numbers related to small-scale fisheries are taken from the minor gears modality, above and under 12 m

[b]Data from STECF (2018), taking into account the EU definition of small-scale fisheries

[c]Small-scale gear modality fleet

[d]< 12 m vessels

It is important to note that some regions in Spain have undergone fleet downsizing or what could be called "artisanalisation". This is caused by the progressive loss of access to fishing grounds off the North and West African coasts and a refocusing of fishing activity in nearby fishing grounds, mostly through one-day fishing trips on small-scale vessels. In recent years, in Spanish small-scale fisheries, it has become evident that there was an increase in fishing effort and commercial specialisation focused on some species in high demand. This has been aided by new fishing technologies for navigation and harvesting, which have thereby sometimes contributed to overfishing (Florido del Corral 2008). The Canary Island and Andalusian fleets, which are based close to the fishing grounds of North and West Africa, present good examples of these trends.

Spanish Mediterranean fishing has some specificities, as a multi-species fishery involving nearly 29% of the Spanish national fleet and which is focused on fish of high commercial value (see Fig. 13.3). Over 55% of vessels in this fleet are small-scale, and many of them work less than 90 days per year (Herrera-Racionero et al. 2019). From the technical point of view, the most common gears are trammel nets, long lines, and gill nets (Herrera-Racionero et al. 2019). Variability in the landings of main target species is high. Therefore, the Mediterranean small-scale fisheries

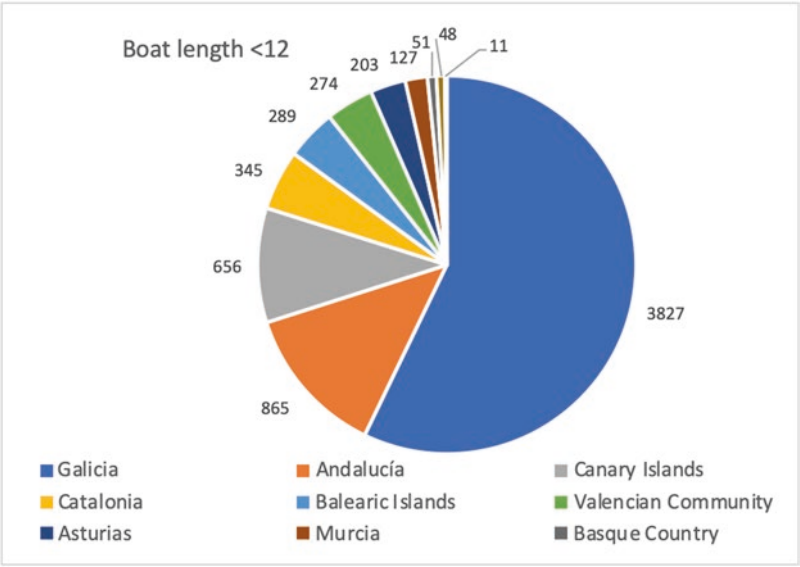


**Fig. 13.1** Distribution of the number of vessels under 12 m (modality of small-scale gears) by Regional Governments (2017). Source: MAGRAMA (2018)

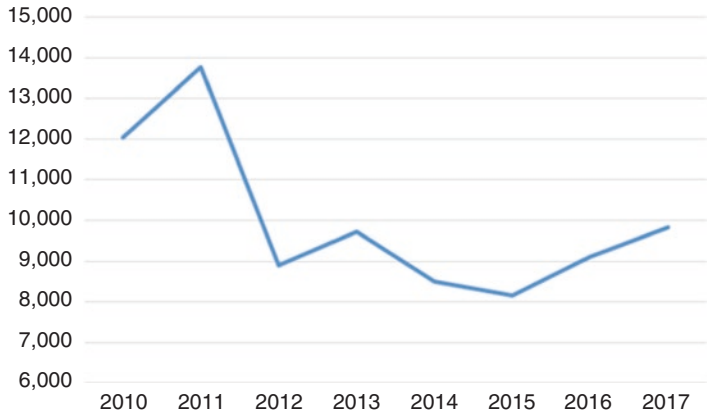


**Fig. 13.2** Evolution of employment in small-scale fisheries (<12 m boat length). (Source: MAGRAMA (2018). In this graph, employment in trawlers and dredgers has been excluded)

show great complexity due to the multi-species character of landings (hake, red mullet, octopus, squid, a wide range of *sparidae*) and the diversity of gears involved (Garcia-Rodriguez et al. 2006). In Andalusia, fishers also make use of shellfish gear to catch clams. Pollution (i.e. toxins) has led to the closure of various Mediterranean fishing grounds and is one of the main threats for the small-scale fishery there (Camiñas et al. 2004). Moreover, despite high average first sale prices, the livelihoods of many Mediterranean small-scale fishers are not improving because of

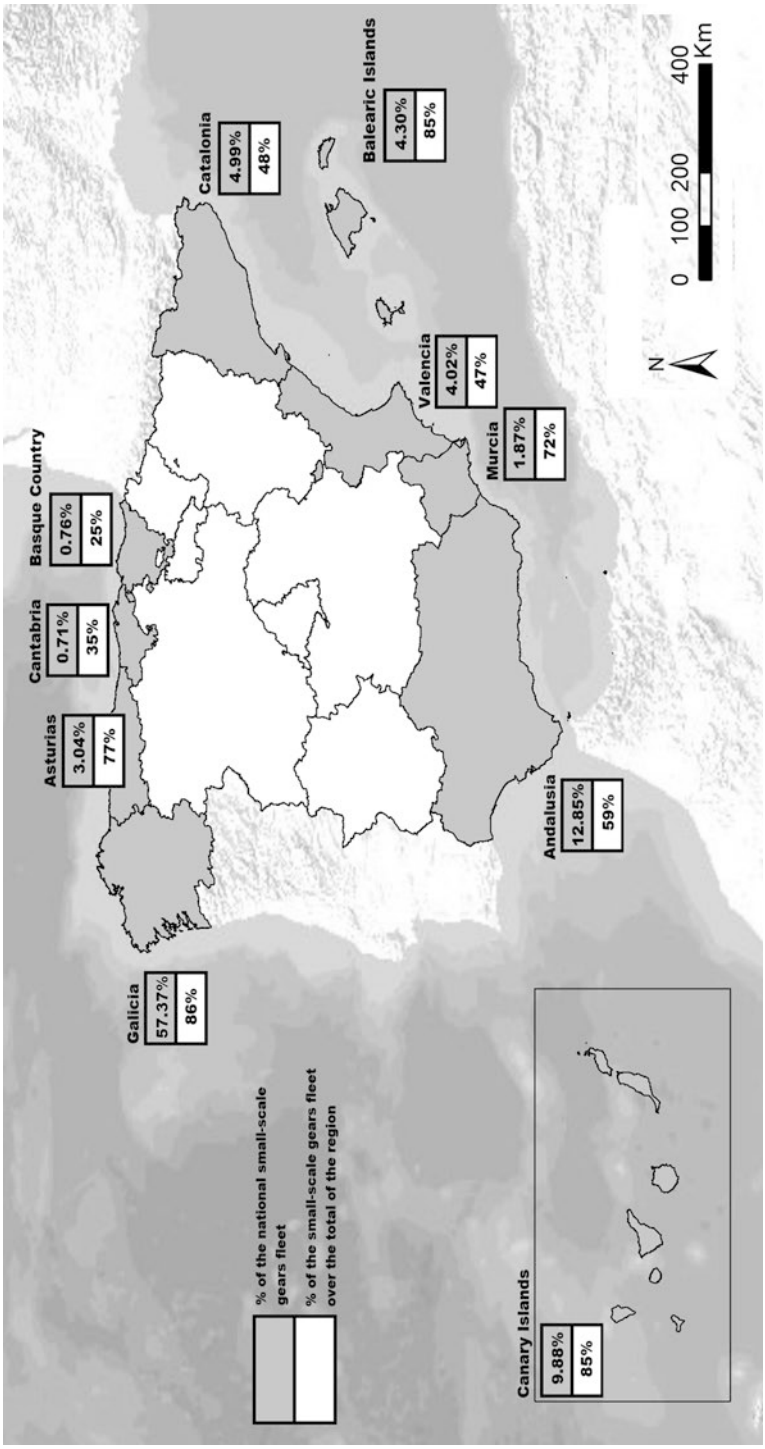


**Fig. 13.3** Map of distribution of small-scale fishing gears modality in Spain by regions, compared with the total of each region. (Source: MAGRAMA 2018)

market problems –including the fact that recreational fishers sell their catches in local restaurants, as has been documented for the Balearic Islands (Maynou et al. 2013). In this location, fisher organisations have set quotas by boat and day for some valuable species to keep prices high at first sale (Morales-Nin et al. 2010).

## 13.3 Small-Scale Fisheries and Interactions with Other Sectors and Users of the Marine Environment

Small-scale fisheries are vulnerable to the effects of economic globalisation, such as the pressure on resources that ensues from the growing international demand for seafood, competition from large-scale fishing fleets, and the expansion of new coastal activities (e.g. tourism, recreational fisheries). Let us first consider the domestic market, which in the Spanish case is dominated by supermarkets, where seafood from different fleets and geographical origins are mixed and put on sale (Villasante et al. 2013; Pascual-Fernández et al. 2019). Even though the local origin and potentially superior quality of small-scale fishing products could provide market leverage, this is not always the case. For this reason, initiatives are under way to differentiate local fisheries products through labelling. One thus finds a range of labels linked to origin (*Pescado de Conil*), to a species and its origin (*Gamba Roja de Palamós*), to the products of a region (*Pesca Artesanal* in the Canary Islands; and *pescadeRías* in Galicia), or to online sales (García Allut 2003; Pascual-Fernández et al. 2019). The success of labelling initiatives has been variable, but some of them appear to be efficacious in distinguishing local catches and achieving premium prices in the market. However, few small-scale fisheries (e.g. the octopus fishery in Asturias) have opted for ecolabels, like Marine Stewardship Council (MSC), due to the difficulties of certifying multi-species fisheries.

The main areas of competition between small-scale and large-scale fleets pertain to demersal species (longliners and trawlers) and tuna (purse seiners). For some demersal species, the potential conflict with trawlers is clear, and this gear has therefore been banned in depths under 50 m in the Mediterranean, 100 m in the North and Cantabric Sea, or completely banned as in the Canary Islands. The small-scale sector is also demanding additional trawling depth restrictions in some areas of the Mediterranean.

In the Spanish case, the development of Marine Protected Areas (MPAs) is related to the rejection of unsustainable fishing gears and the over-exploitation of resources. Small-scale fishing organisations have thus become involved in the creation of MPAs named '*Marine Reserves of Fishing Interest*', where small-scale fishing can be performed under certain conditions (Chuenpagdee et al. 2013). National and regional administrations sometimes collaborate in these arrangements, as they may involve the joining of internal and territorial waters in the same reserve. Examples of the involvement of small-scale fishing organisations in the development of protected areas include *La Restinga* and the Sea of Calms (El Hierro, Canary Islands, see Fig. 13.4) (De la Cruz Modino 2012) and *Os Miñarzos* (Lira, Galicia) (Fernández-Vidal and Muiño 2014).


**Fig. 13.4** Fishing for wahoo in La Restinga. (El Hierro, Canary Islands. Photo credit: J.J. Pascual-Fernández)

The first 'Marine Reserve of Fishing Interest' created in Spain at the request of small-scale fishers was in El Hierro in 1996, with a strong involvement of the local *cofradía* in the design process. In 2002, artisanal fishers from Lira (north-central coast of Galicia) initiated a process to create a 'Marine Reserve of fishing interest' that concluded with its formalization in April 2007, under the name of "*Os Miñarzos*".[8] Under the Fisheries Law of the Xunta de Galicia (Law 11/2008, December 3, of Galician Fishing), the 'Marine Reserves of Fishing Interest' are tools for the management of fishing resources and conservation of marine ecosystems. Experiences like those of *La Restinga* and *Os Miñarzos* have inspired other small-scale fishing communities to propose other 'Marine Reserve of Fishing Interest', as is happening on the north coast of Galicia.[9] Furthermore, a procedure for the extension of *Os Miñarzos* was initiated in 2009 and is currently in its final stage (Pita et al. 2018c). In the Balearic Islands, Marine Reserves are especially important, encompassing 21% of the maritime domain in 2013 (Maynou et al. 2013). However, protected areas have become a source of some conflict, especially with recreational fishers (Morales-Nin et al. 2010). A recent example is that of the Tagomago MPA,[10] which was supported by local small-scale fishers in Ibiza (Box Centeno 2018), but opposed by recreational fishers and other stakeholders. Similar incidents occurred in Tenerife, Girona, and El Hierro (Chuenpagdee et al. 2013;

[8] Decree 87/2007, 12 April, by which the marine reserve of fishing interest "Os Miñarzos" was created. Galician Government Gazette.

[9] Decree 28/2009, 29 January, by which the marine reserve of fishing interest "Ria de Cedeira" was created. Galician Government Gazette.

[10] Decree 45/2018, 14 December, establishing the marine reserve on the northeast coast of Ibiza-Tagomago and regulating the extraction of marine flora and fauna and underwater activities (BOCAIB of 15 December 2018).

Pascual Fernández et al. 2015), thereby limiting the expansion of MPAs and even Marine National Parks in Spain.

The competition between small-scale and recreational fishers in Spain is intense, as both sectors target similar species and fishing areas. In the Canary Islands, recreational fishers number around 95,000 (Gordoa et al. 2019), whereas small-scale commercial fishers are only about 1500. In Galicia, it has been conservatively estimated that there are 65,000 recreational fishers (Pita et al. 2018b; Gordoa et al. 2019). In Andalusia, where there are more than 280,000 licenses for recreational fishing among the different modalities (Gordoa et al. 2019), the proposal of a Marine Reserve of Fishing Interest by the *Cofradía* of Conil in 2016 provoked an opposition movement. As the competencies to issue recreational fishing licenses are transferred to regional governments, the total number of recreational fishers is not easy to estimate. However, a recent source calculates a total of 871,533 recreational fishers in Spain (Gordoa et al. 2019). This is nearly 30 times the total number of workers in the commercial fisheries sector (approximately 30,000 persons) (MAGRAMA 2018).

Urban development and tourism also affect many activities along the coast, on beaches, or in harbour areas, thereby influencing marine ecology and potentially taking over areas previously used almost exclusively by small-scale fisheries. Tourism – which now accounts for more than 80 million visitors a year (based on 2017 data), most of them in coastal areas – has been competing with small-scale fisheries for labour and use of the sea and the coast since the 1960s. The impacts on coastal communities have been clear, as in many places fishers have been expelled from the shoreline that is now occupied by hotels or transformed into urban areas (Santana Talavera 1997). However, tourism also constitutes an opportunity for the sector. Fisher organisations may have a role in improving the social perception and valuation of their activity, making the related fisheries heritage more visible and promoting activities related to fishing tourism - or *pesca-turismo* (Santana Talavera and Pascual Fernández 2003; Miret Pastor et al. 2015; Herrera-Racionero et al. 2018). In some parts of the country, there are special initiatives to preserve fishing heritage; the Fisheries Museum of Palamós and its area devoted to fish gastronomy (Espai del Peix) is a case in point (Alegret and Carbonell Camós 2014; Alegret 2016).

## 13.4 Institutions and Organisations: *Cofradías* and Other Fisher Organisations in Spain

Fisher guilds, or *cofradías,*[11] appeared in the Iberian Peninsula during the 11th and 12th centuries (Alegret 1999). The development of *cofradías* was not simultaneous everywhere, and the historical continuity of these institutions is not clear in the vast

[11] *Cofradías de pescadores* can be translated into English either as fisher guilds or fisher brotherhoods. In the different languages spoken in Spain, the naming of these institutions may vary: *confraries de pescadors* in Catalan or *arrantzaleen kofradiak* in Euskera. Historically they have been named in different ways, such as *cofradías, pósitos,* or *gremios de mareantes*.

majority of the cases; most of the existing ones were created in the last century (Raicevich et al. 2018). Indeed, since the Middle Ages, *cofradías* have offered social assistance to their fisher members, as well as to the widows and orphans of members that died while fishing. Moreover, they were able to manage fishing activities inside their coastal (or sometimes also inland) territories of influence. From the sixteenth century onward, *cofradías* became guild-like professional organisations with power over membership and fishing rights (Alegret 1999). They integrated either the whole fishing population or those belonging to a specific fishery in a fishing town, and included both crew and vessel owners (Pascual-Fernández 1999). The Basque guilds, from early times, regulated both harvesting and commercial practices, controlled access to fishing grounds, and prevented foreign and/or unregistered fishers from operating (Erkoreka Gervasio 1991).

The historical relationship between *cofradías* and the Spanish state has been intricate and changeable, usually due to the state's efforts to control fishing activities. During the second half of the nineteenth century, the struggle of *cofradías* to avoid domination by industrial fisheries made them an obstacle in the eyes of state agencies eager to modernise the country. Consequently, their autonomy was gradually reduced until their dissolution in 1864 (Royal Decree July 10, 1864). However, this process was not uniform because of the resistance of some *cofradías* (for example Bermeo, in the Basque Country). To resist, they used several strategies, like changing their legal status to associations. In other cases, however, *cofradías* were replaced by specialised bodies which were arranged by industrial ship owners in order to avoid the traditional rules of social care (Ansola Fernández 1999; Ansola Fernández 2001; Florido del Corral 2002; Pascual-Fernandez and De la Cruz Modino 2011).

From 1918 onward, new regulations favoured the creation of new fisheries organisations called *pósitos*, (Ansola Fernández 2007), but these were again replaced after the Spanish Civil War (1936–39) by *cofradías* (Ansola Fernández 2008). C*ofradías* obtained the status of public law institutions, as they were created by the Spanish state, which assigned to them a coastal area of influence. In 1978, Decree 670/1978 confirmed the status of *cofradías* as public-private corporations (García-Lorenzo et al. 2019), explicating their roles in overseeing the fisheries inside their specific areas of influence.[12] These areas are delimited between two points on the shore, which means that each *cofradía* has its own area of influence at sea and for shellfish gathering on the coast. These boundaries are specified in their statutes, which are validated by the government. *Cofradías* can be consulted by the Spanish government about matters that concern their areas of influence, as well as issues that may have an impact on their activities. In some areas where these organisations did not exist before, *cofradías* were intentionally created after 1978, developing functions of political and commercial representation, as well as social and labour management services.

The shifting political context in Spain during the 1970s–1980s created a new scenario. Admission into the European Community posed challenges, as Producer Organisations (POs) became lead organisations for the management and marketing

[12] Decree 670/1978 (http://goo.gl/GkpJf6) details their functions.

of fish. Some parties tried to put an end to *cofradías*, but fishers resisted; therefore, POs mostly developed in large-scale fisheries, where *cofradías* were not so relevant. In some instances, as demonstrated in Andalusia (Florido del Corral 2002), these events fuelled social conflicts that waned only in the 1990s.

Law 3/2001 of Maritime Fisheries of the State recognises the traditional implantation of the Fishermen's Guilds (*Cofradías de Pescadores*) on the coast, and their legal nature as non-profit public law corporations. This law establishes the democratic foundation of their composition and operation, as managed by the Autonomous Communities around the country. There are now 198 *cofradías* in the country,[13] organised into regional and national federations.

Contemporary *cofradías* often encompass a variety of fleet segments. Sometimes, as in the Canary Islands and Galicia, small-scale fishers predominate, whereas in other areas of Spain the membership is mixed. For instance, in Andalusia the guilds have an important diversity. It is possible to find *cofradías* that represent exclusively artisanal fleets and others that include different fleet segments, including purse seine and trawl fleets, in a competitive relationship with small-scale fleets (Maya-Jariego et al. 2016). In some regions, specialised sections exist within *cofradías*, for instance related to gathering shellfish on foot or by boat. Such differences sometimes cause conflicts between fleet segments (Pascual-Fernandez and De la Cruz Modino 2011). When ports and *cofradías* include diverse fleet segments, this frequently leads to a diminished role of small-scale fishers in the governing body. In the Andalusian *cofradías*, for instance, small-scale fishers are only properly represented when this segment is large in numbers. When purse seine or trawl fishers join the organisation, small-scale fishing interests are politically marginalised at local and especially regional and national levels. In some parts of Spain, where fisher organisations became dominated by more powerful fleet segments, small-scale fishers have tried to create their own organisations. Some examples include Asoar-Armega (Galician Association of Small-scale Gears Boat Owners), MedArnet (Mediterranean Small-Scale Gear Network) or FE.NA.PA. (National Federation of Artisanal Fishing Associations). It must be noted, however, that the membership of these organisations is small compared to those of the *cofradías*.

Historically, women were not part of *cofradías*, since they generally did not take part in the act of fishing at sea (see Fig. 13.5). However, with the 1978 Spanish Constitution, which prohibited gender discrimination, their participation became easier. In the 1990s thousands of women shellfish gatherers joined Galician *cofradías* (Frangoudes et al. 2008), and now make up nearly one third of their membership. In 2014, 13 of these *cofradías* had female presidents (*patronas mayores,* see Box 13.1 and Fig. 13.6).[14]

In many parts of Spain, *cofradías* manage the first sale of catches (Pascual-Fernández 1999) and, in some cases, are trying to innovate in marketing by using

[13] https://www.fncp.eu/quienes-somos/, accessed June 9, 2019.

[14] In the elections of 2018, this number was reduced to six, see https://bit.ly/2MopmYX

**Fig. 13.5** Women with the catches from trammel net fishing ready for street sale. (Gran Canaria. Photo credit: J.J. Pascual-Fernández)

**Fig. 13.6** Women shellfishers gathering on the beaches. (Photo credit: J.J. Pascual-Fernández)

**Box 13.1: Women Shellfish Gatherers on Foot in Galicia: From Open Access to Co-Governance**

The gathering of shellfish (e.g. clams, cockles) on the beaches of Galicia and in other areas of Spain has customarily been a subsistence activity performed by women from coastal communities (see Fig. 13.6). Traditionally, these resources were accessible to all, as they were viewed as food for the poor (Macho et al. 2013). The open access regime ended when the Galician regional government, given the right to regulate the sector, introduced new rules. Individuals now required a license for shellfish gathering from the regional government (exploitation permits or *permex*) and registration in the social security system.[15] In addition, *cofradías* were required to develop annual exploitation plans. What emerged was an elaborate system of co-governance (Frangoudes et al. 2008; Frangoudes et al. 2013).

The new system reduced the number of shellfish harvesters on foot, mostly women, from 16,335 in 1990 to 3792 in 2018 (Frangoudes et al. 2008). For it to become operational, a clear delimitation of each *cofradía's* territory and membership was necessary. Activities now sometimes came to include improving the productivity of beaches through restocking.

All these changes had profound effects on the women who took part in shellfish gathering. These women now had to engage with the male membership of existing *cofradías*, who did not always appreciate the new shellfish gathering divisions. For women, the process also implied a new vision of themselves as capable of managing an organisation. The role of the regional administration in the transition was essential, as facilitators provided training, technical assistance, and legal advice. In only a few years, women transformed shellfish gathering from an individual activity under a regime of open access into a collective endeavour. As a result of these changes, the profitability of shellfish gathering tripled between 1995 and 2000, to the benefit of the shellfish gatherers themselves.

the Internet or developing specific labels for their catches. They may also implement fishing rules that their members have to respect, such as timetables for departing or returning to port. *Cofradías* may even impose a variety of sanctions to transgressors of these rules; social sanctions require special mention, given the sense of social belonging that *cofradías* generate. *Cofradías* also organise the supply of basic inputs for fishing, such as ice, fuel, boxes, and oil. For all these services, they apply a tax that is deducted from the fish sales of members.

[15] In Spain, fishers and those who work in shellfishing, aquaculture, or other sea-related activities have a special social security system called Social Security of Seafarers (*Régimen Especial de Trabajadores del Mar)*. From 1993 onward, affiliation to this system became compulsory for shellfishers.

*Cofradías* can additionally request the national or regional government to issue specific regulations for their area of influence. For instance, in the Canary Islands, the *cofradías* of an island can agree on the fishing techniques to be permitted, and the regional and/or national government frequently endorse these decisions (Pascual-Fernández 1999). In Andalusia, some *cofradías* implement regulations that are more restrictive than those of the government, such as minimum catch sizes for certain commercial species or a minimum mesh size of fishing gears (Florido del Corral 2002). Such measures only affect those who fish in the territory assigned to each *cofradía*. Since fishers may move between areas of influence of different *cofradías*, to avoid conflicts the Spanish government may prefer to endorse the agreements established by these *cofradías*.

The Spanish State carries out a fishing boat register that helps to define a boat's main harbour, where the boat owner and crew can then join the local *cofradía*. This register is the licensing system to enter commercial fishing activity. Likewise, for crew, barriers include the training qualifications required to fish on a boat. It is not compulsory for fishers to be a member of a *cofradía*, but for those operating small or medium-size boats, it can be very practical, as *cofradías* handle the necessary bureaucratic paperwork. Membership is in practice automatic for boat-owners and crew in small-scale fleets. Fishers on long distance industrial fleets may opt for other enterprise organisations.

Even though the monitoring of rules is usually conducted by the authorities, *cofradías* may take part or collaborate in these efforts. For example, Galician shellfisher associations take care of the beaches where the shellfish grow and patrol the beach to dissuade poaching. Their activities are framed in Exploitation Plans co-designed between the associations and the regional government (Pita et al. 2018a).

Regional regulations on fisher organisations usually provide political space for the operation of *cofradías*. Their official relationship with POs, however, varies from one part of the country to the other. For instance, in the Mediterranean fishing area, both in Valencia (Law 5/2017[16]) and in Murcia (Law 2/2007[17]), the treatment of *cofradías* and POs is clearly differentiated. On the other hand, in Catalonia[18] (Alegret i Tejero 2016) and Andalusia,[19] legislation facilitates the linkages, or at least, the collaboration between *cofradías* and POs (Herrera-Racionero et al. 2019). In some cases, *cofradías* have contributed to the inception of POs, as well as cooperatives or marketing enterprises for the purpose of improving fish sales. The strategy is to take advantage of the European and national regulations that favour fish marketing through such bodies.

In sum, *cofradías* irrefutably have a strong presence in coastal matters as representatives of local fishers. However, their capability to sway policies is complex, partially due to their lack of technical staff in most cases. Furthermore, coordinating

[16] Law 5/2017 of Fisheries and Aquaculture of Valencia Region.

[17] Law 2/2007 of Marine Fishery and Aquaculture of Murcia Region.

[18] Catalan Law 22/2002, of July 12th of Fishers Guilds.

[19] Andalusian Decree 86/2004 of March second, about Fishers Guilds and their Institutions.

their demands with those of the public administration to further their interests can be difficult (Alegret 2000), taking into account the possible conflicts among organisations and leaderships. No less important are the linkages that sometimes develop between *cofradía* leaders and political parties, creating clientelism. Financing *cofradías* activities depends partially on regional government funds, and this further contributes to the complexity of relationships.

## 13.5 Political Context

Public policies have always had profound effects on Spanish fisheries through measures such as subsidies, the definition of management plans in specific fisheries or fishing areas, developments in participative governance, the definition of access rights, and many other regulatory measures that affect the livelihoods of fishing communities. Fisheries in Spain cannot be understood without considering the role of the EU, the national administration, and regional governments.

### *13.5.1 Fisheries Management Plans*

The European Commission promotes the definition of management plans for vulnerable fisheries in EU waters. National and regional governments in Spain are assigned the task of establishing these plans. Normally, management plans involve the definition of (a) a closed list of vessels authorised to fish, (b) vessels' technical characteristics (c) the periods and timetables for fishing activity, (d) technical measures of permitted fishing gear and tools, as well as specific conservation and protection measures.

The octopus fishery presents an interesting case of localised management plans in Spain. The octopus fishery is one of the most important fisheries to have emerged in recent decades, thanks to the growing demand for this cephalopod in national and international markets. It is particularly pronounced in Galicia (see Box 13.2) and Andalusia. Andalusian small-scale fishers are devoting increasing effort to harvesting this species. In fact, in Andalusia 528 artisanal vessels are currently targeting octopus in the Gulf of Cadiz and Mediterranean fishing grounds. Owing to the increased fishing effort, the stagnation of economic returns, and resultant conflicts between fishers, the regional government of Andalusia launched a participative resolution process, calling on the representative organisations of small-scale fishers in the areas concerned. The end result has been the approval of a regulatory framework to manage this fishery, both on the Atlantic and Mediterranean coasts.[20] These regulations include the limitation of the number of vessels and traps per vessel.

[20] Order of April 25, 2017, regulating octopus catches (Octopus vulgaris) with specific gears in national fishing areas of Gulf of Cadiz, and creating a list of vessels authorised for this activity; and Order of February 18, 2016, regulating the trap gear for octopus (Octopus vulgaris) on the Mediterranean coast of Andalusia.

**Box 13.2: Octopus Fishery Management Plans in Galicia**

Spain is traditionally one of the main contributors to European landings of cephalopods, reaching 35,785 t in 2017 (MAGRAMA 2018). Within Spain, Galicia is the most important Autonomous Community in terms of the octopus (*Octopus vulgaris*) fishery. However, in spite of this importance, many aspects of this fishery remain largely unknown.

Variations in distribution and abundance of octopus are conditioned by their life cycles, spawning seasons, and migrations, which in turn determine the pattern of fishing effort. The dominant gear for the octopus fishery is a small trap (see Fig. 13.7) that began to be widely used in the 1970s, creating one of the few specialised fisheries (one gear, one target species) in the region (Freire and Garcia-Allut 2000). Octopus is fished along the entire Galician coast, even though the *Rias Baixas*, in the south of the region, has traditionally had the largest catches. In the past years is also seems that more than 90% of catches derive from the small-scale fleet (Bañón et al. 2018). The octopus fishery in Galicia is carried out according to management plans arranged by the regional government,[21] which include closed seasons (from May to July), minimum size of catches (currently 1 kg), maximum daily catches taking into account the number of crew members, limited number of traps of working hours at sea, and similar measures.

A total of 1224 vessels were given permission to deploy traps in 2017, though effective license usage is considerably lower and has steadily decreased since 2004 (Bañón et al. 2018). This correlates with the declining volume of landings from 4.1 thousand tons in 2010 to 2.1 thousand in 2017. The decline is explained by the interaction of environmental variations in the Galician estuaries (*rias)*, pollution, overfishing, and ineffective monitoring of rules. Official catch figures are, however, offset by the illegal catch of *Octopus vulgaris,* which is estimated to range between 20–50% of total reported catches in 2010, while the number of recreational fishers selling octopus to restaurants is also substantial (Villasante et al. 2015). Nevertheless, better control and monitoring programs with more sustainable fishing appear to have contributed to a substantial reduction of illegal practices over the last years. In 2017, the octopus fishery generated almost 16 million euros, with an average price 7.8 €/kg[22] (Xunta de Galicia 2019). However, the increasing demand for *Octopus vulgaris* has multiplied octopus imports ten-fold (namely from Morocco and Portugal).[23]

[21] Resolution of May 8, 2018 approving the pilot plan for the management of octopus (Octopus vulgaris) with pots for the 2018–2019 campaign.

[22] Xunta de Galicia (2018) Anuario de Pesca 2017 Available online at https://www.pescadegalicia.gal/Publicaciones/AnuarioPesca2017/indice.html (Accessed February 15th, 2019).

[23] Villasante S, Garcia-Rodrigues J, Pita P, Monteiro S, Matos F, Power AM, Pita C. (2019) Repository on Octopus supply and demand in Galicia, Cephs and Chefs Project.

**Fig. 13.7** Working with pots for octopus. (Photo credit: P. Pedrosa, fisher in the *Cofradía* of Muros)

The mechanised dredge fishery presents another interesting case. The Andalusian regional government has approved specific plans for this fishery.[24] Again, an intricate network of socio-economic and ecological relationships can be observed. The bivalve resources that are fished upon are of important commercial value and therefore play a role in the economic strategies of the fishing population. The CFP, however, seeks for this fishery to be socio-economically and environmentally sustainable. In addition to the usual measures of fishing effort control, regulations have established production limits by species, based on biological parameters proposed by stock assessments and samples carried out by the Spanish Institute of Oceanography (IEO). Regulations also provide for the scientific monitoring of the results of management plans (Delgado et al. 2013).

The prohibition of using different fishing gears on the same fishing day is a common feature of these management plans – thereby affecting small-scale fishers who ordinarily make alternative use of fishing gears, adapted to the various targeted species.[25] Furthermore, management plans in Andalusia stipulate that all vessels must also have electronic positioning devices installed (named *green boxes*). This system could allow control of the fishing effort, as it incorporates information about location of activities at sea, time spent, and associated landings per day in each vessel (harvesting and price data). However, to date the regional government does not use

[24] The Order of June 29, 2017, is the most recent plan, regulating shellfishing from a vessel with a hydraulic dredge in the Gulf of Cadiz, establishing technical measures in order to reach maximum sustainable yield levels.

[25] This is an old requisite for small-scale gear modality. See for instance Royal Decree 1428/1997, of September 15, which regulates fishing with small-scale gears in the Gulf of Cádiz fishing grounds.

it as a management tool. The fishers, perceiving that they are being controlled, have developed strategies to deactivate the functionality of these devices.

### *13.5.2 Spanish Fisheries and Participative Governance*

The development of management plans has enhanced the participation of fisher organisations in the governance process. We have already noted that the management plans for octopus fisheries, discussed above, involved the public administration, the fishing sector, NGOs, and scientists. The fishery of the sand eel or "*sonso*" (*Gymnammodytes cicerelus*) in Catalonia could also be defined as taking place under co-management. This fishery makes use of small pelagic trawls, similar to small beach seines used from a boat (Lleonart et al. 2014). It required a special management plan to be realised within the framework of the Mediterranean Fisheries European Regulation (Regulation (EC) No 1967/2006). The political process that ensued with the active participation of affected fishers resulted in the formulation of a plan (2013), and the creation of a co-management committee that included representatives of two administrations (State and Autonomous Community), the fishing sector, scientists, and civil society (WWF and Greenpeace). The plan affects the operations of about 25 small vessels using a *métier* banned in the Mediterranean fisheries management general regime. However, it is maintained as an exception due to this management plan. Other co-management structures too have been implemented in Spain, like the one in charge of the *Os Miñarzos* marine reserve.

The experiences described above are not isolated cases. The Catalonian government has passed a decree for fisheries co-management[26] that promotes the creation of management plans for all fisheries in their internal waters. To fulfil this purpose, management committees are created composed of representatives of the fishing sector, the *cofradías* (or other organisations), scientists, the environmental sector, and government. These committees are required to develop plans within a framework of adaptive ecosystem-based management for specific fisheries or areas, taking into account market demands and resource availability.

Another form of participation is demonstrated by the role played by small-scale fisher organisations in Advisory Councils (AC).[27] In the South West Waters Advisory Council (SWWAC), there are two working groups related to small-scale fisheries, a group of traditional fisheries and an insular subdivision. In both, federations of *cofradías* or POs are more represented than independent *cofradías.* Representation in these ACs is mixed, even in the traditional gear section, with small-scale fishers

[26] Decree 118/2018, of 19 June, on the model of governance of commercial fisheries in Catalonia. Official Gazette of Catalonia, published 21-06-2018.

[27] Advisory Councils (ACs) are organisations led by stakeholders capable of providing the Commission and EU countries with recommendations on fisheries management matters, with a regional perspective and in a diversity of issues (i.e. conservation and socio-economic aspects of management), see https://ec.europa.eu/fisheries/partners/advisory-councils_en

mingling with, for example, trawl fishers. Lately, small-scale fisheries organisations have become more interested in participating in ACs. For instance, a workshop was held in March 2017 in Conil (Andalusia), whose purpose was to promote the participation of small-scale fisher organisations with a view to achieving the sustainable fishing objectives laid down by the CFP.[28]

Fisheries Local Action Groups (FLAGs), promoted by the EU through fisheries funds, have been developed with variable success in different areas of Spain, integrating the Spanish Network of Fishing Groups.[29] Their activities have placed a significant focus on diversification to other activities, including tourism (Miret-Pastor et al. 2018).

### *13.5.3 Total Allowable Catch Limits and Landing Obligation*

The European Commission enforces its Total Allowable Catch (TAC) policy based on the recommendations made by the International Council for the Exploration of the Sea (ICES) (Carpenter et al. 2016). This mode of operation has been developed for specific fisheries and intended for fleets other than the small-scale fleet. However, the precarious state of some commercial resources means that some species that play a fundamental role in the economy of small-scale fishers end up being affected by these restrictions. In the Spanish case, one of the most notable examples is bluefin tuna, which was subjected to a special recovery plan prepared by the International Commission for the Conservation of Atlantic Tunas (ICCAT) (see Box 13.3).

Small-scale fisheries are vulnerable to side-effects of the TAC system, as the bluefin tuna case (Box 13.3) demonstrates. This condition is due to the political weakness of small-scale fishers, i.e. their lack of voice in regional, national, or international organisations that would allow them to negotiate their objectives more strongly. The landing obligation provides another example. Under the new orientation of the CFP (Regulation (CE) No 1380/2013), all member states are directed to move towards a gradual elimination of bycatch, including in small-scale fisheries. Several research teams in southern Europe have studied the matter, coming to the conclusion that small-scale fishing activity is highly selective of species and has a discard ratio well below that of industrial fishing (Villasante et al. 2019a). Another study on the impacts of the landing obligation (LO) on small-scale fishing in Spain shows that the majority of fishers are sceptical about the success of the LO and did not see any benefits from this policy (Maynou et al. 2018).

Galicia is probably the EU region with the highest dependence on small-scale fishing (Natale et al. 2013). In this region the economic impact of the LO on

[28] SWWAC covers the Atlantic zone running from the tip of Brittany in the north to the Strait of Gibraltar in the south and including the outermost regions of Madeira, the Azores, and the Canary Islands (zones ICES VIII, IX and X, and the COPACE divisions 34.1.1).

[29] See https://regp.pesca.mapama.es/

**Box 13.3: Bluefin Tuna and Small-Scale Fisheries in the Canary Islands and Spain**

A major transformation of the Mediterranean tuna fisheries occurred in the 1980s with the generalised use of two intensive fishing techniques: surface longlines and large purse seines. Together these two fisheries, in combination with the introduction of fattening pens, led to alarming levels of over-fishing (WWF 2008; Fromentin et al. 2014). As a result of the growing pressure on wild stocks, the International Commission for the Conservation of Atlantic Tunas (ICCAT) decided to launch a Bluefin Tuna Recovery Plan (2006–2022). The key element in this new management scenario is the application of Total Allowable Catches (TACs), which are shared between different coastal states (Eastern Atlantic and Mediterranean). ICCAT's recommendations have been adopted by the European Union and transferred by national governments to their fisheries through a quota system.[30] The distribution of the TAC among the fleets is based supposedly on historical, socio-economic, and environmental criteria. The three main fleets concerned are: i) the big industrial fleets of the Mediterranean (purse seiners for fattening and surface longlines); ii) the fishing fleets making use of gears like pole and line; and iii) the tuna traps (named *almadrabas*) (Florido del Corral 2014; Florido del Corral 2017). Up to now, the Spanish quota has mostly benefitted the purse seiners (only six industrial boats in 2018), which are linked to the tuna ranching industry, and the traditional *almadraba* gear with centuries of presence on the Andalusian coast. At the same time, the Canarian fleet has been accorded very limited access to the quota, despite their historical catches and favourable environmental and socio-economic impacts. In short, the small-scale fleet of the Canary Islands (more than 240 boats) has less quota (255 t) assigned to it than the quota assigned to one (260 t) of the six purse seiners in 2018 (Pascual-Fernández et al. 2019).[31] This demonstrates the challenges that small-scale fishers sometimes face in order to access valuable marine resources (Florido del Corral 2014; Pascual-Fernández et al. 2019).

small-scale fleets, which harvest species under the TAC regulation, is estimated to be €58 million annually (Villasante et al. 2019b). Given the high dependence of coastal communities on fishing revenues, the incomes of around 3000 small-scale fishers (nearly 11,000 people taking into account family members) are expected to be negatively affected (Villasante et al. 2019b).

[30] EU Council Regulation No 1559/2007 of 17 December 2007, which established a multi-year Recovery Plan for bluefin tuna in the Eastern Atlantic and the Mediterranean; and Order ARM/1244/2008, of 29 April, which regulates bluefin tuna fishing in the Eastern Atlantic and the Mediterranean. Similar regulations have been renewed each year up to the present date.

[31] Resolution of 2 March, 2018, by the General Secretary of Fisheries, in which the quota allocation of bluefin tuna and the specific census of the authorised fleet to catch this species was published in the Official State Gazette «*BOE*» num. 64, 14 March, 2018, pages 29949 to 29957.

### *13.5.4 Subsidies and Scrapping Policies*

Subsidies seem to have an important role in explaining the profitability of some fleets, such as the distant water fishing fleet in Spain (Sala et al. 2018), which has occupied a privileged position. The lobbying capacity of large-scale fleets, in combination with the lack of visibility of small-scale fisheries, may explain their advantage. Some European measures, like the scrapping funds, have tried to reduce the capacity of European large-scale fleets, with meagre practical results. In general, the entire EU fisheries reduced the number of vessels and fishing capacity during the 1990–2017 period (Villasante 2010). However, the largest segments of the EU fishing fleet (>2000 GT) increased the number of vessels (84%), tonnage (125%), and power (151%), and also shows a growing trend of technical coefficients (Eurostat 2019). On the contrary, the EU inshore fishing segment (<24 GT) reduced its capacity in the 1990–2017 period in the number of vessels (–17%), tonnage (–28%), and power (–1,9%) (Eurostat 2019). The reduction of the Spanish inshore fishing segment (<24 GT) was substantially higher than the EU fleet: in the number of vessels (–52%; that is 8.207 less), tonnage (–46%; 23.998 GT), and power (–39%; 145.494 Kw) (Eurostat 2019). Nevertheless, this general reduction was partially compensated by the modernisation of vessels, which now are more powerful (Villasante 2010).

## 13.6 Conclusions: The Future of Small-Scale Fisheries in Spain

Small-scale fisheries in Spain face a diversity of challenges. Access to resources is not easy and all too often the criteria for allocation of fishing rights by the Spanish government, like in many other EU countries, does not seem to "*use transparent and objective criteria including those of an environmental, social and economic nature*", or provide "*incentives to fishing vessels deploying selective fishing gear or using fishing techniques with reduced environmental impact, such as reduced energy consumption or habitat damage*" (Regulation (EU) No 1380/2013, CFP, Art. 17). Therefore, conflicts about TAC allocations have arisen, and the case of bluefin tuna quotas constitutes a good example (Pascual-Fernández et al. 2019). The relationship with large or medium-scale fisheries has been complex and the interactions that take place at sea have proven cumbersome for small-scale fishers. Competition with recreational fishers has also been growing, which target many of the same species fished by the small-scale sector.

Market challenges are no less important, and devising strategies to improve the value and market position of the small-scale sector constitutes a key factor for its long-term viability. In order to increase the value of small-scale fisheries catches, it is important to be able to differentiate them from those coming from other fleets or from world markets. Some labelling initiatives of small-scale fishing products have proven successful. These experiences need to be expanded into other areas.

Interesting new opportunities are now also arising in the food and gastronomy sector, on the rise in many areas of Spain, which open the possibility for synergies with small-scale fisheries.

Fisher organisations, *cofradías*, producer organisations, and cooperatives all have a role to play in the future of the sector in Spain. The role of small-scale fisheries in these organisations has been variable in different regions, having a stronger role in some of them while waning in others. Comparatively, the fisheries sector in Spain is much more structured than in other European countries, but not always to the benefit of small-scale fisheries. Conflicts between local fisher organisations are not an exception, even in regions where small-scale fisheries dominate, and this weakens their capacity to negotiate at national or regional levels. To improve the profitability of this sector, new marketing strategies need to be developed, and this can hardly be achieved by individual fishers; instead, strong organisations and federations are needed to implement the innovations required (Pascual-Fernández et al. 2019).

Apart from organisational challenges, the recruitment of young fishers has proven difficult in many areas. Opportunities in other economic sectors, especially those related to tourism and services, have discouraged the renewal of crews and land-based workforce in fisheries. New activities, such as fishing tourism, may help to reverse this tendency if well planned, since these new activities may increase profitability, and in general the visibility of small-scale fisheries. Finally, there are the challenges of specialisation, technological creep, and intensification in fisheries which are becoming increasingly competitive. Pro-active fisher organisations and attention to political action at the national and European levels are more necessary than ever.

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# Chapter 14
# Small-Scale Fisheries in Portugal: Current Situation, Challenges and Opportunities for the Future


**Cristina Pita and Miguel Gaspar**

**Abstract** A large portion of the Portuguese fisheries is characterised as small-scale fisheries, since 85% of the fleet is comprised of small-scale vessels employing static gears. Small-scale fisheries in Portugal target multiple species and employ a wide range of fishing gear, such as set gillnets, trammel nets, set longlines, handlines, pole-and-lines, and pots and traps. Fish landed by the small-scale fleet has a high quality and is commercialised fresh in the national market or exported to European and North American countries. Small-scale fisheries in Portugal have a high social, economic and cultural importance; with Portuguese culture and traditions deeply rooted in fishing and with fishing being the economic basis of many communities characterised by low economic diversification. However, there is a general lack of information about the environmental and human dimensions of small-scale fisheries, which hampers the sustainable management of the fleet, resources and ecosystems where fisheries take place. Furthermore, small-scale fisheries have traditionally been neglected, and this has resulted in, and is also a consequence of, small-scale and artisanal fishers being poorly organised, weakly represented and often ignored in local, regional and national decision-making processes that regulate their fisheries. This chapter describes small-scale fisheries in Portugal. It gives an overview of the status and trends of the sector, its socioeconomic and cultural importance, the management of small-scale fisheries, and the current challenges and opportunities for small-scale fisheries.

**Keywords** Portugal · Artisanal · Fishery management · Policy · Decision-making · Participation · Governance

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## 14.1 Introduction

In Portugal, fishing is a traditional activity with a strong historical connotation; it is an integral part of Portuguese culture and society and has long been an economically important activity for many coastal communities (Pita et al. 2015). The fishing sector contributes directly and indirectly to employment and income for many rural coastal communities where there are restricted employment opportunities (Pita et al. 2010). Plus, fish is an important component of the traditional diet. Despite the Portuguese fishing sector landing a small proportion of the of the total EU-28 landings (4% in quantity), the Portuguese are the biggest consumers per capita of fishery products in the EU (56.8 kg/head/year), consuming more than double the EU average consumption per capita (24.9 kg/head/year) and the country spends almost six times the value of fish landings importing fish food products (fish, crustaceans and molluscs) (European Commission 2016; INE 2017).

The Portuguese fishing sector accounts for 10% of the EU fleet in number and 12% in employment (European Commission 2016), and the small-scale sector is a major component of Portuguese fisheries, particularly important economically, socially and in terms of cultural heritage (Pita et al. 2015).

This chapter will describe the small-scale fisheries sector in Portugal. It will give an overview of the status and trends of the sector, its socioeconomic and cultural importance, the management and organisational structure of small-scale fisheries, interactions and conflicts between small-scale fisheries and other coastal activities, and the challenges and opportunities for small-scale fisheries in the near future. This chapter draws from information published in official statistics, policy documents, research articles and results from a vast number of interviews carried out with Portuguese small-scale fishers as part of several projects and which resulted in several publications by the authors, namely Gaspar et al. (2014), Pita (2014, 2015), Rangel et al. (2019) and Silva et al. (2019).

## 14.2 Definition of Small-Scale Fisheries

There is no official legal definition of small-scale fisheries in Portugal. For practical and financial aid purposes, as in most European member-states, small-scale fisheries in Portugal are defined as "*fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear*" (Commission Regulation (EC) No 26/2004).

Small-scale fisheries in Portugal are commonly referred to as artisanal, local or polyvalent (i.e., multi-gear) as this segment usually holds several licenses, and there are legal definitions for these. Hence, it could be said that the definition of small-scale fisheries in Portugal is based on several characteristics, such as vessel size, area of operation, and the gear used.

Accounting for the small-scale fisheries component of Portuguese fisheries based solely on freely available published official statistical data is not straight-

forward, since the information being reported is often in different units when referring to different issues (i.e., fleet, registered fishers, licenses, landings), which makes it difficult to report comparative information. See Table 14.1 for information provided in official statistics books, and the small-scale fisheries

**Table 14.1** Summary of official statistics reporting of data and identification of data reported on small-scale fisheries, considering the EU definition of small-scale fisheries (vessels below 12 m in total length not using towed gear)

| | Reported by | Short description | Small-scale fisheries data |
|---|---|---|---|
| Vessel category | Local | Vessels <9 m in total length, open-deck (<60cv, operate inside the 6 nm) or closed-deck (<100cv, operate inside the 30 nm). | ✓✓ |
| | Coastal | Vessels between 9 and 33 m in total length, minimum of 35cv. When >100GT needs to operate outside the 6 nm. | ✓ |
| | Long-distance | >100GT, >15-day autonomy, operate outside 12 nm. | Ø |
| Gear licensed | <10 m | Account for 85% of licenses; mostly licenses to operate hooks and lines, nets and traps. | ✓✓ |
| | 10–<15 m | Mostly licenses to operate hooks and lines, nets and traps. | ✓ |
| | 15–<24 m | Mostly licenses to operate hooks and lines, and nets. | Ø |
| | 24–<40 m | Mostly licenses to operate hooks and lines, and trawling. | Ø |
| | >= 40 m | Mostly licenses to operate hooks and lines, and trawling. | Ø |
| Landings | Multi-gear | Reported by species and by main harbour for the entire fleet. | ✓ |
| | Purse seine | Reported by species and by main harbour for the entire fleet. | ✓ |
| | Coastal trawling | Reported by species and by main harbour for the entire fleet. | Ø |
| Registered fishers | Local multi-gear | Reports data separately for fishers registered in the local multi-gear fleet. | ✓✓ |
| | Coastal multi-gear | Reports data separately for fishers registered in the coastal multi-gear fleet. | ✓ |
| | Long-distance multi-gear | Reports data separately for fishers registered in the coastal long-distance fleet. | Ø |
| | Local purse seine | Reports data separately for fishers registered in the local purse seine fleet. | ✓✓ |
| | Coastal purse seine | Reports data separately for fishers registered in the coastal purse seine fleet. | ✓ |
| | Trawling | Reports data separately for fishers registered in the coastal and long-distance fleets. | Ø |

Adapted from INE (2017) and Decree 7/2000
Notes: ✓✓ = data exclusively on small-scale fisheries; ✓ = some data refers to small-scale fisheries; Ø = no small-scale fisheries data

component of the data (if considering the EU definition). In terms of fleet, it is easy to identify the number of small-scale fisheries vessels, as official statistics report the number of registered and operational small vessels <12 m using static gear. In terms of employment, it is harder to identify the total number of fishers employed in small-scale fisheries. Fishers employed in the local multi-gear and local purse seine fleets are clearly employed in small-scale fisheries,[1] while some fishers employed in the coastal multi-gear and coastal purse seine fleets are also small-scale fishers (those employed on vessel between 12-15 m in total length), but these are impossible to identify. With respect to landings, it is hard to identify the landings exclusively from the small-scale sector, as landings are reported solely by segment, and there is a component of small-scale and larger scale fleet landings in both the multi-gear and purse-seine segments. When reporting the amount of gear licensed, official statistics use yet another unit to report the issuing of licenses; licenses for vessels <10 m in total length are clearly small-scale fisheries, the next level are vessels between 10 and 15 m in total length, and in this case, according to the EU definition some are small-scale and some not.

The use of different criteria when reporting landings, fleet and fishers makes accounting for the importance of small-scale fisheries, as defined by the EU, complicated when looking solely at the official published fisheries statistics books. For the purpose of this book chapter, we will take the precautionary approach, as was done in the "Integrated Coastal Fisheries Management" (PRESPO) project (Gaspar et al. 2014), and mostly refer to small-scale, or artisanal, fisheries as the fleet composed of local vessels (up to 9 m in total length). Nevertheless, it is important to note that this is an underestimate if taking the EU definition into account, as the coastal fleet is also composed of many vessels <12 m using static fishing gears. Still, since this fleet does not fall exclusively into the category of small-scale, and due to the difficulty discriminating the small-scale component of this fleet in the official statistics, it will not be accounted for when reporting data.

[1] Much of the Portuguese fisheries data is reported by fishing segment – trawl fishing, purse seine fishing and polyvalent (i.e., multi-gear) fishing – and subsequently (sometimes) divided into three fleet categories (local, coastal and long-distance fleets), according to vessels' dimensions (length and/or gross tonnage), engine power and operating areas (Decree Law 278/87, altered by Decree Law 383/98, and Law 43/87, altered by Law 7/2000 and 15/2007). These laws define the local fleet consisting of vessels up to 9 m in total length, open- or closed-deck, operating in marine and inland waters; open-deck vessels are below 60cv (45 kW) in engine power and operate until 6 nm from the shore, while closed-deck vessel are below 100cv (75 kW) in engine power and operate within 30 nm. The coastal fleet consists of vessels between 9 and 33 m in total length, with a minimum of 35cv (26 kW); when they are over 100 GT, they need to operate outside the 6 nm (DGRM website; INE 2017).

## 14.3 Socio-economic and Cultural Importance of Small-Scale Fisheries

The small-scale sector is a major component of Portuguese fisheries, due to its extensive national coverage, diversity of gears used, species captured, high number of fishers and other people indirectly involved in the sector, as well as its high social and cultural importance at local, regional and national levels (Gaspar et al. 2014; Pita et al. 2015). Portuguese fisheries (in the mainland, Azores and Madeira archipelagos) have traditionally been characterised as being artisanal, small-scale, labour intensive, multi-gear and multispecies fisheries. They tend to catch species with a high commercial value and supply fresh fish to the local and national markets.

### *14.3.1 Small-Scale Fishing Activity*

The Portuguese fishing industry lands at 163 ports all around the country. In 2016, 4075 vessels were licensed to fish, i.e. fleet authorised to operate a certain fishing gear, in a specific area and for a specific period of time. The small-scale fleet accounts for 85% of the total Portuguese registered vessels, accounting for 11% of the total gross tonnage and 40% of the power (Table 14.2). This fleet is composed mostly of vessels between 5.5 and 7 m in total length, below 100 cv, operating locally (from ¼ up to 6 nm from the coast if open-deck; from 1 to 30 nm if closed-deck), employing a diversity of, mostly passive, gears, and targeting multiple species, usually of high quality. In 2016, 17,660 licenses were issued for vessels <10 m in length (84% of the total licenses issued in Portugal), an average of 4 licenses per vessel, of which 51% were licenses for hooks and lines, 30% for nets and 13% for traps (Table 14.2). The majority of fishing trips made by small-scale fishing vessels take one day (Afonso-Dias et al. 2007; Pita et al. 2010), fishing is mostly carried out within 3 nm, and part of the fleet does not operate all year-round, being subject to significant stops, particularly during the winter season (Gaspar et al. 2014).

The small-scale fisheries sector exploits a multitude of species. Despite the fall in common octopus (*Octopus vulgaris*) catches over the last few years, this species is still the most important in terms of value generated for small-scale fisheries, accounting for 26% of all landings in value (Table 14.2). In general, the small-scale fleet lands a large diversity of species, but there is some regional variation, and for instance in the Madeira archipelago fewer species are landed, with tuna spp. (48%) and black scabbardfish (*Aphanopus carbo*) (44%) accounting for most of the value landed.

The fishing activity is one of the most important economic activities in the Azores archipelago, an outermost region of Europe with one of the highest economic dependencies in the fisheries sector in the EU (Salz et al. 2006; Martins 2011), with the fishing fleet employing around 5% of the islands' workforce (Carvalho et al. 2011). The islands' fishing industry is mostly artisanal, small-scale and open-deck,

**Table 14.2** Fisheries in Portugal (data refers to 2016; data adapted from: INE fisheries statistics, 2017)

| | Total (all fisheries) | Total small-scale fisheries | Small-scale fisheries in the mainland | Small-scale fisheries in the Azores | Small-scale fisheries in Madeira |
|---|---|---|---|---|---|
| **Fleet** | | | | | |
| Number of licenced vessels | 4075 | 3449[1] (85%) | 2884[1] (85%) | 497[1] (86%) | 68[1] (68%) |
| Capacity (GT) | 76783 GT | 8498[1] | 6370[1] | 1909[1] | 219[1] |
| Power (kw) | 284750 kw | 113485[1] | 86825[1] | 24144[1] | 2516[1] |
| **Number of fishers** | 17285 | 5784[2] | 4541[2] | 1066[2] | 177[2] |
| % women | n.a. | n.a. | n.a. | n.a. | n.a. |
| Average age of fishers | 43.6 | n.a. | 44.6[3] | 37.7[3] | 43.7[3] |
| **Landings** | | | | | |
| Quantity (ton) | 124263.6 t | 50988.6 t[4] | 39477.5 t[4] | 5746.5 t[4] | 5764.6 t[4] |
| Value (1000 €) | 269498.8 | 179065.2[4] | 137479.2[4] | 25881.4[4] | 15434.7[4] |
| **Most common gear used (top 3) (% in total)** | Hooks and lines (50%), nets (29%), traps (13%) | Hooks and lines (51%), nets (30%), traps (13%)[5] | Hooks and lines (50%), nets (30%), traps (13%)[5] | Hooks and lines (56%), nets (35%)[5] | Hooks and lines (78%)[5] |
| **Most important species in landings:** | | | | | |
| Top 3 in quantities (% in total) | Chub mackerel (23%), horse mackerel (16%), sardine (11%) | Octopus (19%), tuna *spp*. (9%), black scabbardfish (9%)[4] | Octopus (26%), chub mackerel (9%)[4] | Tuna *spp*. (19%), blue jack mackerel (11%)[4] | Tuna *spp*. (47%), black scabbardfish (33%)[4] |
| Top 3 in values (% in total) | Octopus (18%), sardine (11%) | Octopus (26%), tuna *spp*. (8%), black scabbardfish (8%)[4] | Octopus (34%), black scabbardfish (5%)[4] | Tuna *spp*. (9%), red porgy (8%), blackbelly rosefish (7%)[4] | Tuna *spp*. (48%), black scabbardfish (44%)[4] |

Notes: n.a. = data not available; [1]vessels employing static gear <12 m (the percentage shown corresponds to the amount of small-scale on the total fleet), [2]employed in the local multigear fleet (i.e., polyvalent) (includes solely vessels <9 m in total length), [3]total average age (data is not available for small-scale fisheries), [4]multigear (i.e. polyvalent) fleet (not exclusively small-scale), [5]< 10 m vessels

Source of information: INE, Portuguese Fisheries Statistics (2017); Links to official stats webpages: www.ine.pt

using several gears and targeting multi-species (Carvalho et al. 2011), especially mostly high-value deep-sea species with handlines and longlines (Damaso 2006). Overall, 70–75% of all landings in the Azores are exported (mainly to mainland Portugal, Spain, Italy and Greece, but also to the USA and Canada), making fisheries responsible for 20% of all the Azores' exports (Santos 2017). The fishing activity in the Madeira archipelago, also an outermost region of Europe, is not as important as in the Azores, with the fleet representing 2% of the national fleet and 3% of employed fishers. The fleet is mostly artisanal, <12 m in total length, highly specialised, mostly using hooks and lines (90% of the fleet), and traditionally highly concentrated on black scabbardfish, caught with drifting deep-water longlines, and tuna (mostly bigeye and skipjack), caught by the pole and line fishing. The consumption of these species is very high in Madeira, and the fall in catches of black scabbardfish in the 1990s forced fishers to seek ever distant fishing grounds (e.g., the Azores).

In terms of trends, over the last decade, the national small-scale fishing fleet has decreased by 21%. The total number of vessels licensed for small-scale static gear (<12 m in total length) was 4356 in 2006 (86% of the total licensed vessels) and this value declined to 3449 in 2016, but still representing 85% of the total licensed fleet. The decline in the number of licensed small-scale fisheries vessels reflects the decline in the number of licensed vessels in general (20%) (Fig. 14.1). The economic performance of the small-scale fleet has been deteriorating since the beginning of the century, mainly due to decreasing landings and increasing operational costs (STECF 2014), but improvements have been observed since 2012, maybe as a reflection of increases in fish prices at first auction and lower fuel prices (STECF 2017).

### *14.3.2 Small-Scale Fishing Employment*

The local multi-gear fleet (solely vessels <9 m) employs 34% of all the registered fishers (n = 5784) (Table 14.2). If we account for the fishers employed in local purse-seiners (n = 155) (also small-scale) and the coastal multi-gear fleet (n = 6468), the majority of which is between 9 and 12 m in length, this value increases to 72%. To add to these, there are also 1651 fishers registered to fish in inland waters, 224 registered "on foot fishers" and 956 registered animal gatherers (INE 2017). The crew size varies according to the length of the vessels, in general, local vessels have a crew of 2–4 men (Seruca 2000; Afonso-Dias et al. 2007; Pita et al. 2010, 2015).

Small-scale fisheries and Portuguese fisheries, in general, are characterised by having a middle-aged workforce, with a low level of formal education. There are 19% of fishers aged over 55 and 58% between 35 and 54 years of age, with only 23% of fishers below 34 years old (INE 2017). Most fishers have either primary (up to 4 years of schooling) or preparatory (up to 6 years of schooling) education

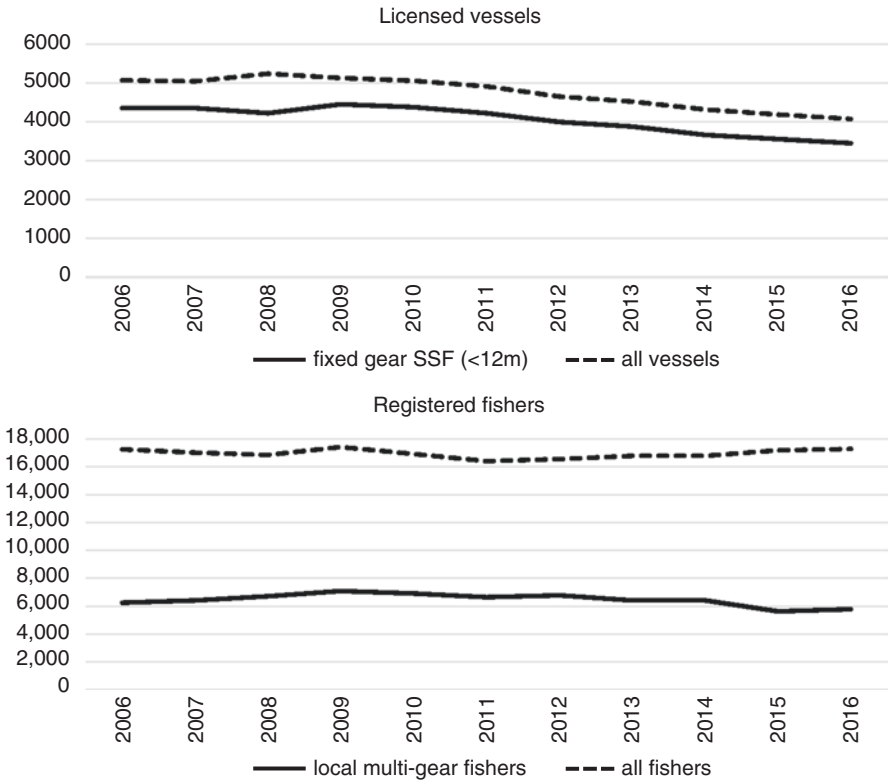


**Fig. 14.1** Number of licensed vessels and fishers registered, for the period 2006–2016. (Data source: INE fisheries statistics)

(Seruca 2000; Pita et al. 2010, 2014; Gaspar et al. 2014; Silva et al. 2019). These characteristics strongly restrict job mobility (Pita et al. 2010). Several independent surveys have highlighted that most small-scale fishers work exclusively in fisheries, being economically dependent on the fishing activity (Pita et al. 2010; Seruca 2000; Silva et al. 2019).

The regions of Portugal with the highest number of fishers registered in the local multi-gear fleet are the Algarve (n = 1403), the Azores (n = 1066) and Lisbon Metropolitan Area (n = 959). The proportion of small-scale fishers in the total number of registered fishers is especially high in the south of the country (73% in Alentejo, 61% in the Lisbon metropolitan area, and 52% in the Algarve) (Fig. 14.2). This is mostly due to the fact that most fishers registered in the coastal and long-distance trawling and coastal purse-seining are registered in the northern and central regions and also, possibly, a reflection of the better sea conditions in the south. Small-scale local fisheries in the Algarve, employ half of all registered fishers and are heavily economically dependent on octopus (which accounts for 40% of the total value landed in Portugal), an important traditional resource with catches (and

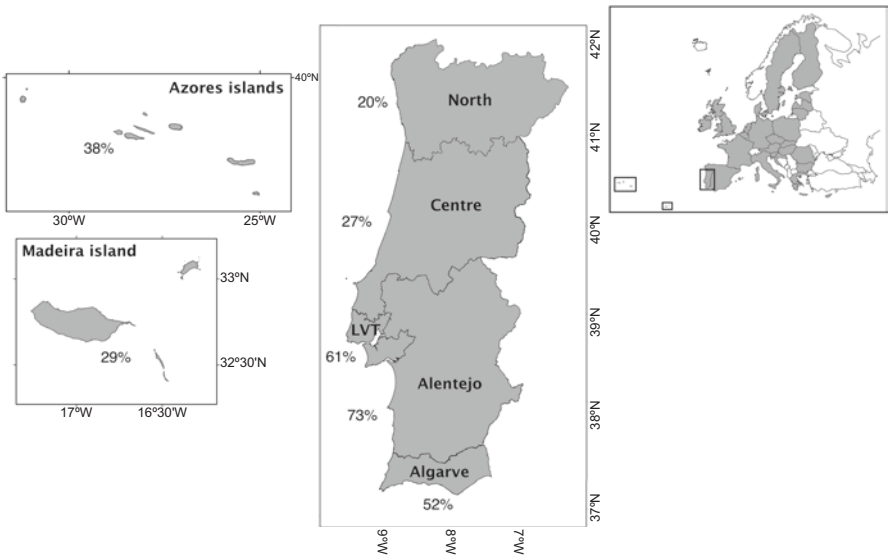


**Fig. 14.2** Proportion of fishers registered in the local multi-gear fleet (vessel <9 m in total length) per region. (Data refers to 2016; data source: INE fisheries statistics, 2017)

even exports) reported as far back as the fifteenth century (Pita et al. 2015). Figure 14.3 shows a typical small-scale octopus trap vessel operating in the Algarve.

In terms of trends, over the last decade, there have been no significant changes in the relative importance of small-scale fishing employment, the local multigear fleet (vessels <9 m in total length) employed 6262 fishers in 2006 (36% of the total) and 5785 fishers in 2016 (33% of the total). However, there was a decrease of 8% in the number of fishers registered in the local multi-gear fleet, while the total number of fishers in Portugal has actually increase by 24 fishers over the past decade (Fig. 14.1). It is also important to note that several authors, in independent surveys, highlight that fishing is a family tradition (with most fishers being descendant of fishers) and that there is a general lack of interest in the fishing activity amongst the younger generations from traditional fishing communities, with most not interested in finding a job in fishing (Seruca 2000; Pita et al. 2010; Gaspar et al. 2014), leading, many times, to difficulties finding crew.

Employment in the fishing industry, and especially small-scale fisheries, goes beyond the number of direct jobs in fishing. This sector is also a major indirect contributor to employment and income in coastal communities (Pita et al. 2010). It supports fishing-related businesses (suppliers and sellers of nets, buoys, towing cables, fish boxes, etc.), shipyards and the fish processing industry (Ifremer 2007; Pita et al. 2010). It also supports women's employment. Moreover, small-scale fisheries are major supporters of the food and tourism industry, supplying fresh fish to local restaurants and being the "visiting card" for many small coastal communities along the Portuguese coast.


**Fig. 14.3** Small-scale fisheries in Portugal. (**a**) Beach seine fishery (*"Arte Xávega"*) in Costa da Caparica, (**b**) a fisher's wife baiting hooks in the Algarve, (**c**) a small-scale octopus trap vessel operating off the Algarve, (**d**) a retired fisher preparing the rope for a gillnet in Porto Covo (Alentejo). (Photo credit: (a) Sandra Amoroso Ferreria, (b) to (d) Miguel Gaspar)

### *14.3.3 Women in Fishing*

There is no official data on women's employment in fishing. However, women have traditionally been, and still are, an important part of the Portuguese fishing industry.

Women were heavily involved in the iconic cod fishery. Caught in Newfoundland (Canada) and Greenland, cod was initially salted on board and when it arrived in


**Fig. 14.3** (continued)

Portugal, women completed the conservation process, drying the cod (Garrido 2004). Women also worked on board of the vessels before the departure to the cod fishery, transporting salt to the vessels, as late as the 1950/60s (Azevedo 2013). Nowadays, women still play an important role in companies involved in salting and drying cod, accounting for around 70% of employment (Iborra-Martin 2011).

Another example of the importance of women in fishing comes from a traditional fishing community in the centre of Portugal (Nazaré), which is quite well known for its fisher family division of labour, especially since the beginning of the twentieth century, in which men worked only at sea and women worked onshore and were responsible for transporting fish from the harbour to markets, processing and selling the fish (Escallier 2003, 2014). These women were not only known for selling the

fish (which was – and still is – traditionally done by women in the centre and north of Portugal) but for the well-organised distribution of fish, which went beyond the local area (Escallier 2014). The social organisation of this community remained virtually unchanged until the 1950s, then fishery-related activities evolved and an important canning industry, which mostly employed women, was established in the area (Escallier 2014). Even today, the Portuguese canning industry employs mostly women (employing directly, in total, around 3500 workers, 85% of which are women) (Pita et al. 2014).

Women employment directly in fishing, if yet unknown in terms of numbers, are exclusively carried out in local fisheries (Franca et al. 1998). Seruca's (2000) in-depth study carried out in the south of Portugal two decades ago reported a few women employed as fishers. For instance, out of the 151 fishers registered in Santa Luzia (a fishing community in the Algarve region traditionally targeting exclusively octopus) at the time, 8 were women. The proportion of women was even higher in Azenha do Mar, a small fishing community in the Alentejo region, where out of the 48 registered fishers, 9 were women. The same happens in other small fishing communities, and a total of 39 registered fisher women were accounted for in the 30 small fishing communities in the study (representing 4% of the total number of active fishers) (Seruca 2000).

Women's work in fisheries tends to be of "little visibility". Although it is not common for women to go fishing, traditionally there is a strong presence of women in fishing enterprises, especially in the north of Portugal; where they are usually in charge of all the management activity, from hiring personnel to work on board, accountancy, maintenance of gear, buying bait and fuel, transportation and selling catches (Franca et al. 1998). In the Azores islands, women have always had an important role in fisheries, despite not usually being recognised; and their visibility has increased in recent years due to their increasing involvement in international organisations, for instance through AKTEA (Network of Women in Fisheries and Aquaculture) (Sempere and Sousa 2008). In addition, women make up an important proportion of shellfish gatherers in the Ria Formosa (Algarve region) and Aveiro lagoons (Centre region). In 2014, the Portuguese aquaculture sector employed 2357 workers, of which 20% were women (DGRM 2017). There is a large number of activities (still) performed by women in fisheries and much of this work is not considered work, as it is not paid, such as accountancy work, cleaning the vessels, or baiting gear (Sempere and Sousa 2008). Figure 14.3 shows a wife of a fisher baiting hooks in the Algarve.

### *14.3.4 Organisational Structure of the Small-Scale Fishing Enterprise*

In Portugal, fishing is traditionally a family activity. Indeed, the results of independent studies, which carried out interviews and questionnaires with fishers in Fuseta (Algarve) (Pita et al. 2010), artisanal fishers all over the country (Gaspar et al.

2014), dredge fishers in the Algarve (Ifremer 2007) and octopus fishers in different locations around the country (Pita et al. 2015; Silva et al. 2019), all point to the fact that fishing is a family traditional activity. These studies find a constantly high proportion of fishers reporting they come from fishing families, and that they had or have relatives in the fishing activity.

Most of the small-scale vessels are family owned (owning usually one vessel only), and in general the skipper is also the owner of the vessel. Traditionally, the remuneration on small-scale fishing vessels in Portugal is done through a fishing share system, i.e., the crew receives a proportion of the revenues from the sale of the catch, after deducting fishing and other costs (social security, crew insurance, operational costs, etc.). The share system is not the same in every case and there are different share systems on different vessels and depending on previous arrangements (Ifremer 2007; Pita et al. 2010). There is also a substantial amount of informal and unpaid work carried out by family members (such as mending nets, preparing gear, baiting gear, etc.), which is an important support for the family enterprise by reducing the costs of fishing. Figure 14.3 shows a retired fisher preparing the rope to assemble a gillnet and a fisher's wife baiting hooks, unpaid work which is important to keep production costs under control.

Small-scale fisheries can have low profitability, due to the difficulty operating (mostly) during the winter season as a consequence of weather conditions and harsh seas along some parts of the Portuguese coast, and due to low first-sale prices of their high-quality fish at auction. To add to this, small-scale fisheries' products compete for markets with aquaculture products, imported seafood, and (in some parts of the country) with illegal selling from recreational fisheries.

## 14.4 Management, Institutional and Organisational Context of Small-Scale Fisheries

### *14.4.1 Fisheries Management*

The responsibility for implementing domestic fisheries policies lies with the Ministry of the Sea and is delegated to the State Secretariat for Fisheries. The Directorate General for Natural Resources, Security and Maritime Services (DGRM), the national authority for fishery, assists with the implementation of policies, and the Portuguese Institute for the Sea and Atmosphere (IPMA), proposes technical measures in order to protect and maintain stocks. DGRM is also in charge of coordinating control,[2] and DOCAPESCA S.A., state-owned company, is responsible for organising the first sale of fish, and supporting fishing and fish ports. The

[2] Control is carried out by several entities (Navy, Air Force and tax authorities). DGRM is also in charge of the collection and processing of information related to fisheries, and reporting to the European Commission, European Fisheries Control Agency (EFCA) and other member-states.

autonomous regions of the Azores and Madeira have exclusive competences in terms of fisheries.[3]

Most fisheries' regulations aim to reduce or limit fishing effort (input controls) or to restrict the total catch (output controls). Input management measures tend to include limits on gear (e.g. minimum mesh sizes) and engine power, restrict entry to the fishery (limited number of licenses) and impose closures (closed seasons, biological closures). Output management measures tend to comprise minimum landing sizes and quotas.[4]

Most fisheries in Portugal (especially in the mainland) are managed at the national level through a top-down system, with no differentiated management regime for small-scale fisheries. The centralised management system may cause problems in the small-scale sector, as these fisheries can be very localised with local problems. A few fisheries are managed at the regional level, for example the small-scale dredge fishery (carried out by vessels with an average length of 9.8 m) (Ifremer 2007; Oliveira et al. 2009; Guyader et al. 2013). Some other fisheries, although managed at the national level, also have specific regional measures in place, for example the common octopus fishery, which has some regulations only applicable in the Algarve region (Pita et al. 2015).

Although enforcement of rules and regulations has been improving, efficiency is still low (Ifremer 2007). For instance, in the small-scale dredge fishery in the Algarve, some fishers often surpass daily quotas and do not respect minimum landing sizes (Ifremer 2007). The same happens in the octopus fishery, where minimum landing weights are not respected by some fishers and fines are low, and of little dissuasive power against the continuous breaking of rules.

### *14.4.2 Selling of Fisheries Catch*

All fish landings are required to pass through an auction system of first sale, managed by DOCAPESCA S.A. (in the mainland), Lotaçor (in the Azores) and Regional Directorate for Fisheries (in Madeira). Fishery products are sold using the Dutch

[3] In the Azores, the Regional Secretariat for the Sea, Science and Technology is responsible for managing marine resources, the Regional Directorate for Fisheries defines the regional policies for fisheries and aquaculture, and Lotaçor is the regional state-owned company responsible for the first sale. In Madeira, the Regional Secretariat for Agriculture and Fisheries is responsible for managing resources, the Regional Directorate for Fisheries defines the regional policies and is responsible for the first sale. In both autonomous regions, inspection is also conducted at the regional level, by their respective Fisheries Regional Inspection authorities.

[4] The legal framework for the exercise of fisheries is given by Decree Law 278/87, which defines the legal exercise of fisheries and marine culture in Portuguese waters (changed by Decree Law 383/98, with respect to management and penalties). Decree 43/87 (changed by Decrees 7/2000, 15/2007 and 16/2015) defines conservation measures applied to fisheries. Ordinance 1102-B/2000 (republished as Ordinance 1228/2010) regulates gathering. There are also specific laws exclusively for the autonomous regions of the Azores and Madeira. The fisheries resource management system is based on the on the EC regime.

auction system, a descending-bid type of auction (Pita et al. 2015). Buyers at the auction include exporters and fishmongers (wholesalers, mobile fishmongers, retailers), and require a license to be able to buy at auction. In some cases, fishers have direct contracts established with wholesalers. This is, for instance, the case for some octopus fisheries in the centre, namely in Aveiro region, where fishers have contracts with big supermarket chains (Pita et al. 2015), or bivalve landings in the Algarve, where fishers have contracts with wholesalers that are owners of shellfish expedition centres (Ifremer 2007).

Small-scale fishers complain about the fact that prices at auction have remained fairly unchanged over the last years, and blame these low prices on lobbying from middlemen, high amounts landed by the coastal fishing fleet, illegal fishing, as well as imports of large quantities of fish products from non-EU countries at low prices (Gaspar et al. 2014).

### *14.4.3 Fishers' Organisational Capacity and Influence on Governance*

The fisheries sector in Portugal is organised into cooperatives, fishers' associations, producers' organisations and unions, with different roles and purposes (from managing quotas, adding-value to products, to dealing with day-to-day life issues). These organisations are not established under Portuguese law, and there is an important number of small-scale fisheries not being represented at all (30 to 40%) (European Commission 2017).

In 2016, there were 26 fishers' associations and 16 Producers Organisations (POs) in Portugal. POs had 1754 vessels associated with them (most from the north and centre), corresponding to 43% of the total fleet (INE 2017), but they hardly represent small-scale fisheries (European Commission 2017). The role of associations is somewhat anecdotic dealing mostly with day-to-day life issues of associates (European Commission 2017). Indeed, there are too many fishing associations, most of them represent few small-scale fishers, they are poorly organised, there is a generalised lack of cooperation between associations, and a general lack of capacity to deal with strategic issues (such as fisheries management) and they have little to no political influence (Ifremer 2007; Pita et al. 2015; European Commission 2017). Part of the reason for this lack of political influence is the fact that for most local and coastal fisheries, the legislation is implemented at the national level and does not consider the specificities at the local level. Indeed, small-scale fisheries have tended to be overlooked over the years probably as a consequence of the low literacy and education level of small-scale fishers, which have led them to have little voice among decision-makers. Moreover, small-scale fishers tend to not feel represented by their representative organisms, such as guilds, since the majority of these organisms do not include solely small-scale/artisanal fishers (but all fishers), weakening, even more, their small-scale fishers negotiating power.

Over recent years, governance interactions are changing in Portugal, fishing organisations are increasingly called to participate in the decision-making process, based on a consultative approach and therefore with limited influence. With this purpose, some local/regional "Fishing Monitoring Committees" have been established by the Government in order to involve small-scale fishers in the decision-making process. These Committees are composed of representatives from DGRM, which usually chairs them, IPMA, DOCAPESCA, Maritime Authority, Fishing Associations and/or Producers' Organisations and Unions. Whenever necessary, other stakeholders may also participate in the meetings. An example of this is the participatory management and monitoring for the beach seine fishery ("*Arte Xávega*") described in detail in Box 14.1. Despite these recent evolutions through some experiences of co-management for some specific fisheries (e.g., sardine, bivalves), POs and association have limited influence on the decision-making process, as has been shown by the recent decision of the Portuguese state to re-allocate sardine quota ignoring POs' historical catches (European Commission 2017). Still, authorities are increasingly open to discussing with fishing representatives and appear to be open to fishers' opinions and proposals.

Fishers are also progressively becoming more interested in being involved in decision-making. Two surveys of octopus fishers (Rangel et al. 2019; Silva et al. 2019) revealed that around half of the Algarve fishers interviewed were interested in being involved in a local management plan for the octopus fishery and were of the opinion it should be developed in cooperation between authorities and fishers. Ifremer (2007) and Guyader et al. (2013) also noticed small-scale dredge fishers from the Algarve actively participated in the decision-making process at the local and regional levels, but with a moderate level of influence as ultimately decisions were taken by authorities.

## 14.5 Interactions and Conflicts with Other Activities

Small-scale fisheries mostly operate within 3 nm of the coast, the area of operation results in permanent engagement, and sometimes competition for space, between small-scale fishing operations and other marine coastal activities, such as coastal tourism, recreational activities, conservation, aquaculture, urban development, etc. Gaspar et al. (2014) noticed, in a large survey of small-scale fishers carried out all over the country, that small-scale fishers complain about increased competition for space over the past 15 years, and consequent reduction in fishing areas. To add to this, small-scale fisheries operate in areas, as well as in a particular economic, legal and administrative framework, in permanent engagement, and sometimes in competition with larger scale fisheries and recreational fisheries.

The EU marine environment is going through a phase of unprecedented change, which has dramatically changed fisheries management, with impacts on the EU fishing industry, especially small-scale fisheries. Over the past decades, international obligations and legislation (e.g., agreement by OSPAR and HELCOM mem-

**Box 14.1: Increased Participation of Small-Scale Fishers in the Decision-Making Process**

The beach seine fishery (*"Arte Xávega"*) is an artisanal fishing carried out with nets from the beach (in which an extremity of the net is left on the beach tied to a tractor, the net is then carried out to sea by a small vessel and returned to the beach to be hauled in), employing around 12 people, 5 working onboard the vessel and 7 working on land. This fishery is an ancient commercial fishing activity on the Portuguese coast, with reports dating as far back as the early fifteenth century (Franca and Costa 1979; Martins et al. 2000). Nowadays, the beach seine fleet is composed of 46 vessels, fishing seasonally (typically from March to November) along the Portuguese mainland coast, and targeting mainly small pelagic (such as Atlantic chub mackerel, horse mackerel, sardine, and anchovy).[5]

The "*Arte Xávega*" fishery has been the focus of much attention in recent years. The recognition of the importance of this fishery for the identity of coastal fishing communities where it is practised, and its great ethnographic, cultural and historical value resulted in its recent registration in the National Archive of intangible Cultural Heritage (e.g., Costa da Caparica beach seine fishery; announcement 14/2017 in DR 34/2017, series II).

The fishery is highly constrained by the tourism activity. It can only operate in very restrictive locations and is not allowed during the beach season in concession areas between 10.30 am and 6.30 pm in order not to interfere with tourism. Interestingly, some Tourism Offices, such as Sesimbra (near Lisbon), in recognition of the great ethnographic and cultural value of the beach seine fishery, launched an activity where tourists can participate in the fishery, pulling the net back to the beach and sorting fish. Figure 14.3 shows a typical beach seine fishery landing in Costa da Caparica during the summer, with fishers' landing surrounded by curious beach goers.

A participatory management and monitoring regime for the "*Arte Xávega*" fishery was established into Law (Ordinance 172/2017). In order to do this, the law established a Committee coordinated by the fisheries management body DGRM, and composed of representatives of a long list of stakeholders: DGRM, researchers (IPMA), the fish auction (DOCAPESCA), Maritime Authority, Maritime police, representatives from local authorities and local parishes where the fishery takes place, the Fishing Association, the syndicate of fishers, representatives of fishers (from the South, Centre and North), representatives of buyers and non-governmental organisation. Whenever necessary, other stakeholders may also be invited to participate in the meetings. The committee meets 3 times per year to monitor the fishing activity and contribute to develop and implement medium- and long-term management plans, considering the economic and social importance of the fishery. This will be carried out following an adaptive management format, where the adequacy of proposed measures will be evaluated and adapted if needed.

[5] "Novo Regime da Arte Xávega". Flyer DOCAPESCA, 2p.

bers, Habitat Directive, Marine Strategy Framework Directive (MSFD), and Maritime Spatial Planning (MSP) Directive), as well as pressures to build on the existing network of Marine Protected Areas (MPAs) and to extend their coverage, have put restrictions on the freedom of movement of the fishing industry. Portugal has 71 national and local MPAs, covering almost 5% of territorial waters (0.8% if we include the Exclusive Economic Zone). Most of the MPAs are moderately protected, allowing for a variety of fishing activities to take place inside the MPA (WWF, Horta e Costa 2017). Portuguese small-scale fishers operating within MPAs, especially in Parque Luiz Saldanha (an MPA with a no-take zone), complain that MPA legislation that regulates the use of these areas does not take into consideration the particularities of small-scale fisheries, with many fishing gears operated by small-scale fishers not allowed within MPAs. Therefore, fishers feel that if the legislation in force is not altered the small-scale fishing fleet in these areas will have to cease their activity in the near future, mostly due to the need to travel to new fishing grounds (longer distances) and fish at greater depths than they used to. As a result, the running costs will (and in some cases already have) increase dramatically, which they cannot endure for long (Gaspar et al. 2014).

The great concentration of marine tourism and leisure activities along the Portuguese coast also raises some problems for small-scale fisheries activity, making it difficult (and sometimes impossible) to operate (Gaspar et al. 2014); but it may also result in opportunities to get a better price for the products they sell. For instance, on most beaches in the Algarve dredging is only allowed to be carried 300 meters off the coast in order to minimise potential conflict with the tourism activity (Ifremer 2007). On the other hand, the shellfish caught is highly appreciated by tourists and gets a good price at first auction. Moreover, beach seine fishery (*"Arte Xávega"*), can only operate in restricted locations and times of the day in order not to interfere with tourism, but it is also a tourist attraction, and in certain cases, tourists can even participate in the fishery (Box 14.1). Figure 14.3 shows a typical beach seine fishery landing in Costa da Caparica during the summer, with fishers' landing surrounded by curious beach goers.

## 14.6 Looking to the Future of Small-Scale Fisheries in Portugal

### *14.6.1 Challenges Faced by Small-Scale Fisheries*

The main challenges faced by the small-scale fishing activity are related to the low revenue from fishing, an old workforce and lack of generational renovation, problems related to the marketing and commercialisation of products, poor management and lack of control and enforcement, lack of participation of the fishing industry in the management of their activity, lack of empowerment, increased restrictions to the fishing activity, high operational costs over the last few years, overexploitation of

resources, and an increasingly high dependence on a limited number of species in some parts of the country (e.g., octopus) (Gaspar et al. 2014; Pita 2014; Pita et al. 2015; Silva et al. 2019).

Most small-scale fisheries in Portugal are not lucrative. The low-income level of fishers and boat owners is identified as one of the major problems faced by the sector (Gaspar et al. 2014; Pita 2014). Fishers frequently refer the need to guarantee a reasonable and "decent" level of revenue from the fishing activity for both fishers and boat owners. Fishers tend to point to the increase in operational costs (especially fuel costs) over the last few years, which is not reflected in an increase in value of catch at first sale, as prices at auction have remained fairly unchanged, as one of their main concerns and the reason for the lack of profitability of the activity (Gaspar et al. 2014; Pita 2014). Still a few artisanal fisheries are attractive to fishers due to the relatively high incomes that can be achieved, as is the case of the octopus fisheries (€4.60/kg in auction in 2016) (INE 2017).

In terms of management, fishers are concerned about the inadequate legislation for small-scale fisheries, and lack of control and enforcement over illegal fishing, and recreational fishing (Gaspar et al. 2014; Pita et al. 2015; Silva et al. 2019). Fishers identify the need to implement fisheries management measures adapted to the local situation, fleet, target species, and most importantly, which involve fishers in the solutions adopted to solve fishing problems. The low mobility of this fleet and its area of operation near the home harbours result in the problems associated with this activity being frequently local in nature, and the solutions to these problems demand local approaches, considering the local habitat, type of gear used, target species, and local social and economic context (Pita 2014).

Despite the socio-economic importance of small-scale fisheries, this sector is not treated in a differentiated way by the Portuguese authorities (Oliveira et al. 2009; Pita et al. 2015), leaving the sector exposed to severe market competition from several sources, including imports, aquaculture, larger scale fisheries, and even recreational fishing. Fishers frequently mention the need to have a differentiated fishery management system for small-scale fisheries, both differentiating small-scale artisanal fisheries from larger-scale fisheries, as well as southern from northern European fisheries. They frequently complain that the EU does not tend to differentiate between southern and northern European fisheries and implements measures which might make sense in the north of Europe but not in the south. This leads to the implementation of measures which are not adapted to the local reality (Pita 2014).

Fishers claim that control and enforcement is insufficient and ineffective. They also point to the fact that control is disproportionately targeted at them, being more lenient with recreational fishers, some of who sell their catch, which is illegal, and compete directly for markets with small-scale fisheries products, lowering their value at first sale (Gaspar et al. 2014).

The lack of participation of the fishing industry in the management of their activity, lack of ownership of resources and generalised lack of stewardship is a serious problem (Gaspar et al. 2014; Pita 2014). Fishers tend to especially emphasise the lack of empowerment of fishing communities and frequently mention the need to increase the participation and involvement of fishers in policy-making and the man-

agement of their own activity (Pita 2014). Most representatives of fishers, although recognising that the administration has been more careful to involve fishers in the decision-making process in recent years, report they distrust management and research bodies (Gaspar et al. 2014; Pita et al. 2015). They also point to the fact that most fishers are still not consulted and, sometimes when they are consulted their needs and viewpoints are not considered in the drafting of management measures and legislation (Gaspar et al. 2014).

Resources are heavily exploited, and many small-scale fishers call for better surveillance and measures to protect resources, e.g., biological closures, as is the case of many octopus fishers in the Algarve region (Rangel et al. 2019; Silva et al. 2019).

Another potential challenge for the future of small-scale fisheries is climate change. The Portuguese coast is located in a biogeographic transition zone (between temperate and subtropical waters), where the northern or southern distribution limits of several species can be found. It is likely to suffer more accelerated changes in temperature and precipitation than the global average rate (Gamito et al. 2016). The impact of climate change (still largely unknown) will depend on the reliance of the fleet on species which are vulnerable to changes in water temperature, and the ability of the sector to adapt. The limited geographical mobility of the small-scale fleet means that climate change might exacerbate existing vulnerabilities. On the other hand, the fact that this sector uses on average four gears means that they may be more flexible in changing target species or fishing gear, which makes them potentially less vulnerable to climate change (Gamito et al. 2016). Plus, despite the challenges climate change may bring, it may also result in new fishing opportunities in some geographical areas or for some *métiers* (Gamito et al. 2015, 2016).

Finally, there is a great lack of knowledge about this economic activity among the general public, which results in it not receiving the attention and importance it should. There is a need to increase ocean literacy among the public in order for them to make more informed decisions about the products they buy, amongst other (Potts et al. 2016).

### *14.6.2 Opportunities for Small-Scale Fisheries*

A few initiatives and measures could be implemented to improve the situation of small-scale fisheries in Portugal, and some are, indeed, already taking shape.

Over recent years, the Portuguese authorities have shown an openness towards increased participation of the fishing industry in decision-making, increasingly calling the industry to participate in the decision-making process. No doubt that this openness to increased participation presents an opportunity to improve fisheries governance, and some changes can already be observed, like the recent establishment of the Law (Ordinance 172/2017) for the participatory management regime for the beach seine fishery ("*Arte Xávega*") (See Box 14.1 for detailed description). The developments of initiatives such as the "*Tertúlias do polvo*" (Octopus workshops) in the Algarve (south of Portugal), to create knowledge sharing spaces between

researchers, fishers and managers for the sustainable exploitation of octopus in the region (Sonderblohm et al. 2017) are also important starting points for local/regional co-management initiatives.

Increasing the value of small-scale fishery products and the economic viability of small-scale fishing activities is of the utmost urgency. Over the last decade, several initiatives to improve market opportunities for small-scale fishers and contribute to increasing the added-value of the catch have been put in place in Portugal, such as the "fish basket" (a direct market initiative consisting of a short local supply scheme; cutting-off the middle-man), and numerous campaigns to promote the consumption of Portuguese fresh fish (e.g., seafood festivals, show-cooking events), most with the support of DOCAPESCA S.A. (e.g., campaign promoting Atlantic chub mackerel, *Scomber colias*). A label for small-scale fisheries products has also been suggested by numerous fishers during interviews (e.g., Gaspar et al. 2014; Rangel et al. 2019; Silva et al. 2019). An interesting example to follow is the "*Pesca Artesanal"* label, recently developed in the Canary Islands (Spain), a collective label aimed at differentiating local fresh products and improving the penetration of small-scale fisheries products in the local markets (Pascual-Fernandez et al. 2019).

Despite the cultural, social, economic, and environmental importance of small-scale fisheries, the information available for this segment is scarce and scattered in time. Indeed, information about which fishing areas and gears are used or about the spatial and temporal distribution of the fishing effort is still lacking, which hampers the management of these small-scale fisheries. This information is also paramount to protecting the fishing grounds on which small-scale fishers depend. The introduction of real-time tracking devices in small-scale vessels can be a solution to overcome this issue. These devices have already been tested in several Portuguese small-scale fisheries and revealed to be effective in the acquisition of fishing effort data. Moreover, the data obtained also allow the fishing gear used to be identified. The scarcity of reliable social and economic data on the small-scale fisheries activity is also a major problem which needs to be urgently addressed. The Data Collection Framework (DCF) (Regulation (EU) 2017/1004) is going to contribute to bridge this knowledge-gap, collecting social and economic data by segment of the fleet and including the collection of new information, such as data on gender and number of unpaid workers.

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# Chapter 15
# From Protest to Participation: Learning from Experience in Irish Inshore Fisheries Management


**Mike Fitzpatrick, Ruth Brennan, and Emmet Jackson**

**Abstract** Approximately 86% of Irish fishing vessels, as of 2018, are classified as small-scale or inshore (under 12 m in length). These vessels are predominantly active within Ireland's territorial waters (up to 12 nautical miles) and as such are subject to national management to a greater extent than the larger vessels that operate in the shared waters that are directly governed by the European Union Common Fisheries Policy. Despite the social, cultural and economic importance of the inshore sector to small coastal communities, a governance framework for small-scale fisheries in Ireland has only recently been established. This paper gives a brief overview of Irish inshore fisheries including the numbers and profile of participants, target fisheries and its social, cultural and economic significance. An account is given of a previous unsuccessful attempt to establish a governance system for the sector. The paper then describes and gives some fishers' perspectives on a second iteration of inshore management established in 2014, the Inshore Fisheries Forums, and the recent emergence of a number of representative bodies for Irish inshore fishers. These initiatives are discussed in the broader context of the fragmented nature of marine governance in Ireland.

**Keywords** Co-management · Fragmented governance · Coastal communities · Island communities · Fisheries institutions

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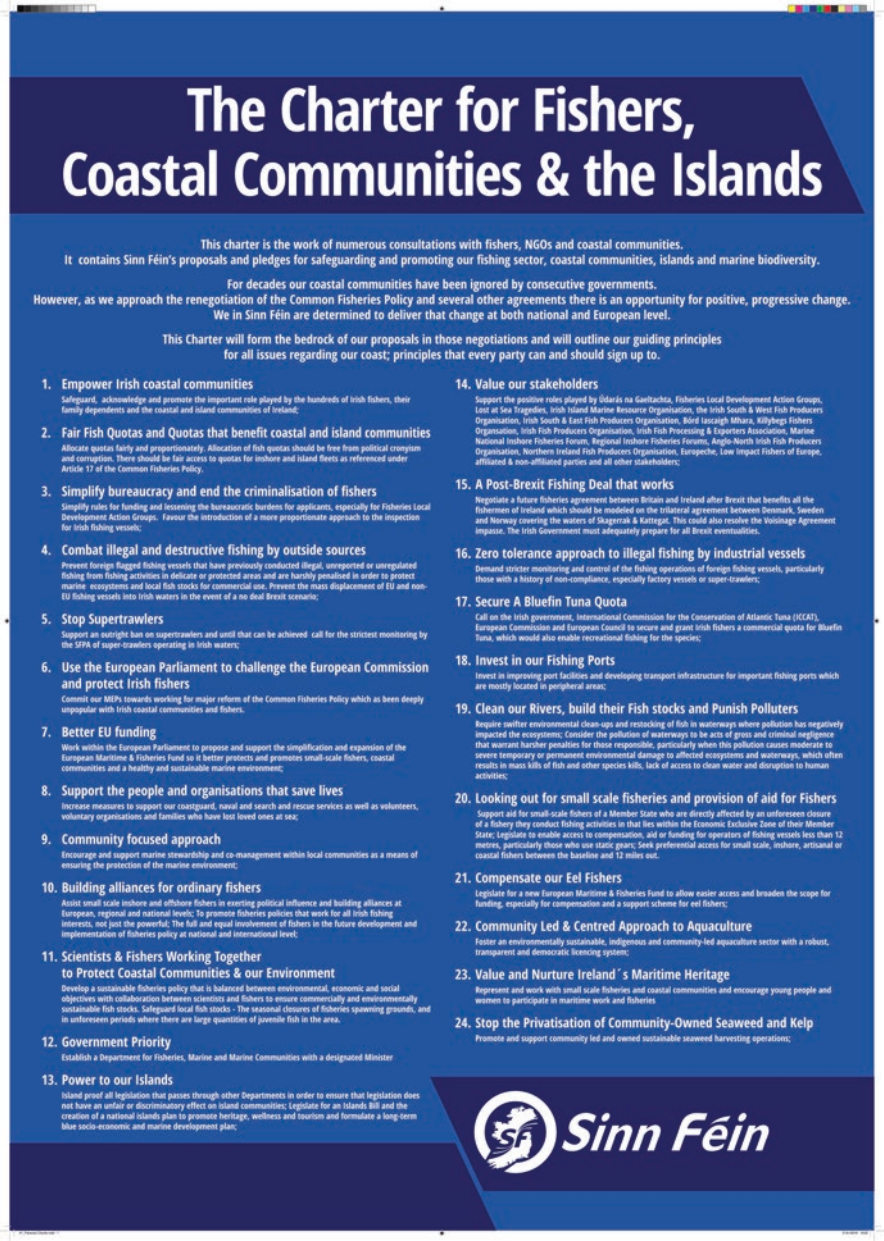
## 15.1 Introduction

Ireland, being an island with a long coastline, extensive continental shelf and productive fishing grounds, has a long history of subsistence and commercial fisheries. However, the low prominence of fishing in economic, political and social terms, has never matched the high level of natural resources available. Explanations for this anomaly range from blaming centuries of English occupation and a lack of recognition by Irish independence activists of the importance of fishing (McLaughlin 2010) to the prioritisation of agriculture over fisheries in negotiations during Ireland's entry to the European Union (EU) and its Common Fisheries Policy (CFP) (Irish Times 1995; Fitzpatrick 2013).

When Total Allowable Catch (TAC) and quota shares for Member States were allocated in 1983, the small Irish allocation (based on historic catch records) did not reflect its significant contribution to the common pool of European fisheries resources (DAFF 2009). The Irish Exclusive Economic Zone (EEZ) represents 10% of the total EU EEZ (DAFM 2018a) but Ireland averages only about 4% of total EU fisheries production (Eurostat 2016). However, when we consider inshore fisheries, laying the blame for poor management at the door of the EU or the UK does not make much sense. Ireland has been an independent state for almost 100 years, yet there have only recently been attempts to establish a management framework for the inshore fleet.

The first strategic review of the sector was carried out in 1998, by Bord Iascaigh Mhara, the Irish Sea Fisheries Board. The resulting report recommended the establishment of a national Inshore Fisheries Advisory Council to consult on and discuss inshore fisheries policy and strategy (BIM 1999; Bresnihan 2016). More recently, in 2014, a cross party Oireachtas (governmental) sub-committee produced a 243 page report setting out a management framework with 29 recommendations for Irish coastal and island fisheries. The priority focus of this sub-committee was "*to examine the socio-economic challenges facing rural coastal and island communities*" (Oireachtas 2014, 5). Towards the end of 2018, Bord Iascaigh Mhara held a public consultation to inform the future Irish Inshore Fisheries Sector Strategy 2018–2023 (BIM 2018). On 25 January 2019, Irish Member of the European Parliament Liadh Ní Ríada launched 'The Charter for Fishers, Coastal Communities and the Islands' (Fig. 15.1) which sets out 24 principles designed to protect the Irish fishing sector, coastal communities, islands and marine biodiversity, with a particular reference to a community focused approach, small-scale fisheries and fisheries-dependent island communities (Afloat.ie 2019). On 30 January 2019, a 'Strategy for the Irish Inshore Fisheries Sector 2019–2023' was presented to the Minister for Agriculture, Food and the Marine (DAFM 2019).[1]This focus on the inshore fisheries sector is timely

[1] At the time of writing, the new strategy had been presented to the Minister but not yet been officially launched and therefore it was not available online. The consultation document for the strategy can be found at http://www.bim.ie/media/bim/content/about/7667-BIM-Strategy-for-the-Irish-Inshore-Fisheries-Sector-2018-2023.pdf



# The Charter for Fishers, Coastal Communities & the Islands

This charter is the work of numerous consultations with fishers, NGOs and coastal communities.
It contains Sinn Féin's proposals and pledges for safeguarding and promoting our fishing sector, coastal communities, islands and marine biodiversity.

For decades our coastal communities have been ignored by consecutive governments.
However, as we approach the renegotiation of the Common Fisheries Policy and several other agreements there is an opportunity for positive, progressive change.
We in Sinn Féin are determined to deliver that change at both national and European level.

This Charter will form the bedrock of our proposals in those negotiations and will outline our guiding principles for all issues regarding our coast; principles that every party can and should sign up to.

1. **Empower Irish coastal communities**
   Safeguard, acknowledge and promote the important role played by the hundreds of Irish fishers, their family dependents and the coastal and island communities of Ireland;
2. **Fair Fish Quotas and Quotas that benefit coastal and island communities**
   Allocate quotas fairly and proportionately. Allocation of fish quotas should be free from political cronyism and corruption. There should be fair access to quotas for inshore and island fleets as referenced under Article 17 of the Common Fisheries Policy.
3. **Simplify bureaucracy and end the criminalisation of fishers**
   Simplify rules for funding and lessening the bureaucratic burdens for applicants, especially for Fisheries Local Development Action Groups. Favour the introduction of a more proportionate approach to the inspection for Irish fishing vessels;
4. **Combat illegal and destructive fishing by outside sources**
   Prevent foreign flagged fishing vessels that have previously conducted illegal, unreported or unregulated fishing from fishing activities in delicate or protected areas and are harshly penalised in order to protect marine ecosystems and local fish stocks for commercial use. Prevent the mass displacement of EU and non-EU fishing vessels into Irish waters in the event of a no deal Brexit scenario;
5. **Stop Supertrawlers**
   Support an outright ban on supertrawlers and until that can be achieved call for the strictest monitoring by the SFPA of super-trawlers operating in Irish waters;
6. **Use the European Parliament to challenge the European Commission and protect Irish fishers**
   Commit our MEPs towards working for major reform of the Common Fisheries Policy which as been deeply unpopular with Irish coastal communities and fishers.
7. **Better EU funding**
   Work within the European Parliament to propose and support the simplification and expansion of the European Maritime & Fisheries Fund so it better protects and promotes small-scale fishers, coastal communities and a healthy and sustainable marine environment;
8. **Support the people and organisations that save lives**
   Increase measures to support our coastguard, naval and search and rescue services as well as volunteers, voluntary organisations and families who have lost loved ones at sea;
9. **Community focused approach**
   Encourage and support marine stewardship and co-management within local communities as a means of ensuring the protection of the marine environment;
10. **Building alliances for ordinary fishers**
    Assist small scale inshore and offshore fishers in exerting political influence and building alliances at European, regional and national levels; To promote fisheries policies that work for all Irish fishing interests, not just the powerful; The full and equal involvement of fishers in the future development and implementation of fisheries policy at national and international level;
11. **Scientists & Fishers Working Together to Protect Coastal Communities & our Environment**
    Develop a sustainable fisheries policy that is balanced between environmental, economic and social objectives with collaboration between scientists and fishers to ensure commercially and environmentally sustainable fish stocks. Safeguard local fish stocks - The seasonal closures of fisheries spawning grounds, and in unforeseen periods where there are large quantities of juvenile fish in the area.
12. **Government Priority**
    Establish a Department for Fisheries, Marine and Marine Communities with a designated Minister
13. **Power to our Islands**
    Island proof all legislation that passes through other Departments in order to ensure that legislation does not have an unfair or discriminatory effect on island communities; Legislate for an Islands Bill and the creation of a national islands plan to promote heritage, wellness and tourism and formulate a long-term blue socio-economic and marine development plan;
14. **Value our stakeholders**
    Support the positive roles played by Údarás na Gaeltachta, Fisheries Local Development Action Groups, Lost at Sea Tragedies, Irish Island Marine Resource Organisation, the Irish South & West Fish Producers Organisation, Irish South & East Fish Producers Organisation, Bórd Iascaigh Mhara, Killybegs Fishers Organisation, Irish Fish Producers Organisation, Irish Fish Processing & Exporters Association, Marine National Inshore Fisheries Forum, Regional Inshore Fisheries Forums, Anglo-North Irish Fish Producers Organisation, Northern Ireland Fish Producers Organisation, Europeche, Low Impact Fishers of Europe, affiliated & non-affiliated parties and all other stakeholders;
15. **A Post-Brexit Fishing Deal that works**
    Negotiate a future fisheries agreement between Britain and Ireland after Brexit that benefits all the fishermen of Ireland which should be modeled on the trilateral agreement between Denmark, Sweden and Norway covering the waters of Skagerrak & Kattegat. This could also resolve the Voisinage Agreement impasse. The Irish Government must adequately prepare for all Brexit eventualities.
16. **Zero tolerance approach to illegal fishing by industrial vessels**
    Demand stricter monitoring and control of the fishing operations of foreign fishing vessels, particularly those with a history of non-compliance, especially factory vessels or super-trawlers;
17. **Secure A Bluefin Tuna Quota**
    Call on the Irish government, International Commission for the Conservation of Atlantic Tuna (ICCAT), European Commission and European Council to secure and grant Irish fishers a commercial quota for Bluefin Tuna, which would also enable recreational fishing for the species;
18. **Invest in our Fishing Ports**
    Invest in improving port facilities and developing transport infrastructure for important fishing ports which are mostly located in peripheral areas;
19. **Clean our Rivers, build their Fish stocks and Punish Polluters**
    Require swifter environmental clean-ups and restocking of fish in waterways where pollution has negatively impacted the ecosystems; Consider the pollution of waterways to be acts of gross and criminal negligence that warrant harsher penalties for those responsible, particularly when this pollution causes moderate to severe temporary or permanent environmental damage to affected ecosystems and waterways, which often results in mass kills of fish and other species kills, lack of access to clean water and disruption to human activities;
20. **Looking out for small scale fisheries and provision of aid for Fishers**
    Support aid for small-scale fishers of a Member State who are directly affected by an unforeseen closure of a fishery they conduct fishing activities in that lies within the Economic Exclusive Zone of their Member State; Legislate to enable access to compensation, aid or funding for operators of fishing vessels less than 12 metres, particularly those who use static gears; Seek preferential access for small scale, inshore, artisanal or coastal fishers between the baseline and 12 miles out.
21. **Compensate our Eel Fishers**
    Legislate for a new European Maritime & Fisheries Fund to allow easier access and broaden the scope for funding, especially for compensation and a support scheme for eel fishers;
22. **Community Led & Centred Approach to Aquaculture**
    Foster an environmentally sustainable, indigenous and community-led aquaculture sector with a robust, transparent and democratic licencing system;
23. **Value and Nurture Ireland´s Maritime Heritage**
    Represent and work with small scale fisheries and coastal communities and encourage young people and women to participate in maritime work and fisheries
24. **Stop the Privatisation of Community-Owned Seaweed and Kelp**
    Promote and support community led and owned sustainable seaweed harvesting operations;

Sinn Féin

**Fig. 15.1** Recently published Charter for Fishers, Coastal Communities and the Islands by Irish political party, Sinn Fein

given that more than 80% of the approximately 2000 registered commercial fishing vessels in Ireland, are under 12 m in total length and are largely or completely dependent on Irish territorial waters (Tully 2017).

## 15.2 Definition of Small-Scale Fisheries

In Irish fisheries management the term "inshore" is used more than "small-scale" when describing and defining fleet sectors. According to the Department of Agriculture, Food and the Marine (DAFM), "Irish inshore fishing boats are deemed to be sea-fishing boats of less than 12m overall length" (DAFM 2014, n.p.). This 12 m threshold is used to define which vessels can participate in the management framework for small-scale fisheries recently established in Ireland, the National Inshore Fisheries Forum (NIFF) and its regional subgroups. The operation of this management framework is described in greater detail in later sections.

The definition of 'inshore' used in Irish fisheries management does not map exactly onto the EU's definition of 'small-scale'. The European Commission's advisory Scientific, Technical and Economic Committee for Fisheries (STECF) specifies that small-scale only covers vessels under 12 m using static gears, whereas the Irish inshore fishing fleet includes towed and non-towed gear.

Inshore fisheries within the 6 nm limit fall within the sole competence of national authorities, except for changes to technical measures when it must consult the EU even in relation to species caught only within the 6 nm limit. Similarly, quota species caught within the 6 nm limit are subject to the CFP so that inshore fishermen operating mixed fisheries are required to comply with the landing obligation for such species and are therefore affected by the occurrence of 'choke species' (where a species with a low quota can prevent a fisherman from continuing to fish for other species that they have quota for). Although the national authorities also manage and control inshore fisheries within the 12 nm limit, some Member States have traditional fishing rights for certain stocks within Ireland's 6–12 nm zone, as defined in Annex 1 of the CFP (Tully 2017). Inshore fisheries (which operate within the 12 nm limit) are also indirectly affected by the CFP via the EU's environmental directives (Habitats Directive (92/43 EEC), Birds Directive (79/409 EEC) and Marine Strategy Framework Directive (2008/56 EC)). The conservation focus of these Directives is echoed in Article 1(a) of the CFP Basic Regulation (1380/2013 EC) which requires "the conservation of marine biological resources and the management of fisheries and fleets exploiting such resources."

## 15.3 The Irish Fishing Fleet

The Irish fleet is nationally divided into the following four subsections (Licensing Authority 2017):

- The Refrigerated Seawater Pelagic segment. These are 23 large vessels exclusively targeting pelagic species.
- The Beam Trawler segment. This contains 8 vessels that target demersal species with beam trawls.
- The Polyvalent segment. This is the largest and most diverse segment comprised of approximately 1726 vessels using a range of gears and targeting a mix of fisheries. The majority of small-scale vessels are registered in this section.
- The Specific segment which contains 140 vessels which fish for bivalve molluscs including scallops.

Within the polyvalent segment there is a sub-segment containing vessels licensed to fish exclusively with pots, which must be under 12 m length and less than 20 tonnes in registered volume. This segment was created in 2006 to accommodate a large number of small-scale vessels which were previously unregistered. The number of vessels in this subcategory in 2017 was 344 (DAFM 2018a). The majority of other small-scale vessels are registered within the polyvalent <18 m segment and also to a lesser extent in the Specific segment.

There is a trend towards increasing numbers of vessels in the Irish inshore fleet with an increase from 806 active licensed vessels in 2009 to 909 in 2016 (STECF 2018). Care must be taken with these figures as these are estimates of activity because as previously described vessels less than 10 m do not have logbooks and as such their activity is not well defined. This trend was made possible by the fact that inshore fisheries operate under a *de* facto open access framework. A number of factors may have incentivised new entrants to the sector including the recent economic crisis, rising unemployment and also the purchases of inshore vessels following the decommissioning of older larger vessels between 2005 and 2008 (STECF 2016).

## 15.4 Irish Inshore Fisheries

The majority of Irish vessels under 12 m in total length target shellfish using static gears (63% of the Irish fleet, Fig. 15.2). However, there are also a significant number of active vessels under 12 m in length that use towed gears such as trawls and dredges, and if the small-scale fleet is defined to include all active vessels under 12 m the percentage figure rises to 86%. These vessels fish almost exclusively within the 12 nautical mile limit with the majority of their activities being within the 6 nautical mile limit (Tully 2017). Figure 15.3 shows a recent breakdown of vessel sizes in the Irish fishing fleet.

As demonstrated in Table 15.1, the most significant inshore fisheries, both by volume and value, are for Brown Crab (*Cancer pagurus)*, Whelk (*Buccinum undatum*) and Lobster (*Homarus gammarus*). Other significant shellfish fisheries are for Shrimp (*Palaemon serratus*), Velvet crab (*Necora* puber), Spider crab (*Maja brachydactyla*), native oyster (*Ostrea edulis*), Razor clams (*Ensis* sp) and Scallop (*Pecten maximus*). Significant finfish species targeted by inshore vessels include Pollock

**Fig. 15.2** Irish small-scale fishing vessel on Arranmore island, Co. Donegal. (Photo credit: S. Bonner)

(*Pollachius pollachius*), Hake (*Merluccius merluccius*), Cod (*Gadus morhua*), Mackerel (*Scomber scombrus*), Herring (*Clupea harengus*) and Sprat (*Sprattus sprattus*). Figure 15.4 shows a map of Irish inshore commercial fisheries and some relevant boundaries.

Landings data given for the small-scale fisheries in Table 15.1 are taken from the STECF 2018 Annual Economic Report (AER) and are based mainly on shellfish landings, most of which are non-quota species. They exclude small-scale vessels fishing for demersal or pelagic species with towed gears (as per the STECF and Data Collection Framework (DCF) definition). The Irish experts in the STECF (2018) report have highlighted that the DCF definition's "operational division of the fleet into 'small-scale' and 'large-scale' fisheries is not a satisfactory aggregation for the Irish Fleet" and recommends that "in future AER reports the term 'small-scale fleet' should be changed to an alternative that includes all vessels under 12m".

Another issue with the data reported for small-scale fisheries as part of DCF is that the landings volume and value for small-scale fleet is likely to be a significant

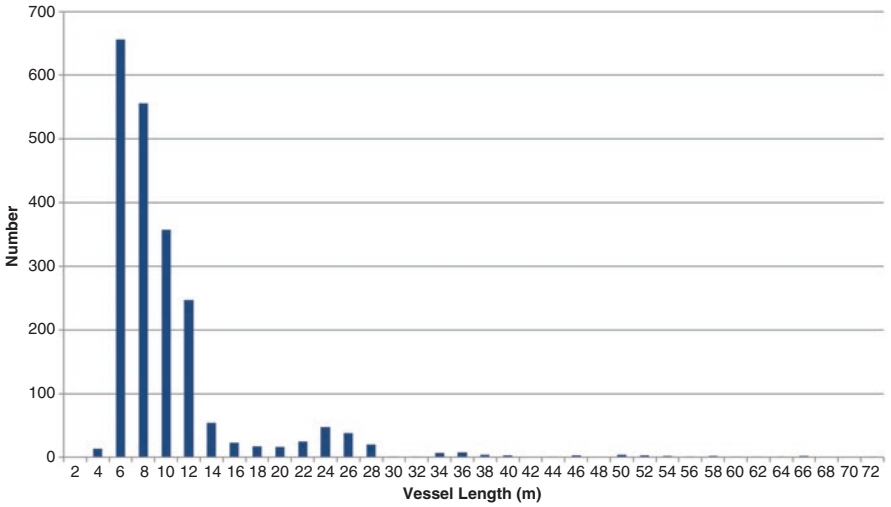



**Fig. 15.3** Vessel Length distribution in the Irish registered fishing fleet 2018

underestimate as vessels under 10 m are not required to carry logbooks, as noted in Sect. 2 above. The lack of logbook data from the under 10 m fleet means that the reporting of landings, activity and true economic performance of this segment (which makes up 75% of the Irish fleet) is based solely on the limited results from a sentinel vessel programme and the DCF economic survey which is returned by those vessels applying to grant aid.

The lack of data available on the number of women involved in Irish small-scale fisheries will hopefully be rectified under the new EU Data Collection Multi-Annual Plan which requires the collection of data on gender by Member States (EU 2016, 170). The current gap in knowledge means that we cannot account for the vital roles women play in the small-scale fishing industry. There is increasing recognition of the importance of these roles, for example by BIM's new Women in Fisheries Network, Women in Seafood Programme and podcast (Athena Media 2018; Mills 2018), in principle 23 of the 2019 Sinn Fein Charter for Fishers, Coastal Communities and the Islands (Afloat.ie 2019) and more generally at a European level (see Frangoudes 2013 and AKTEA[2]).

A bi-annual report on shellfish stocks and fisheries is produced jointly by the Marine Institute (MI) and the Irish Sea Fisheries Board, Bord Iascaigh Mhara (BIM). Their 2017 review of shellfish stocks and fisheries (Marine Institute and BIM 2017) points out numerous inconsistencies with landings data for several shellfish species. These inconsistencies arise from large differences in landings estimates depending on whether data is gathered from sales-notes, fisher surveys, sentinel fleet logbooks or other sources. An additional complication with using the landings

[2] AKTEA – Women in fisheries and aquaculture http://akteaplatform.eu

**Table 15.1** Most recently available statistics describing Irish small-scale fisheries

| | Total (all fisheries) | Small-scale fisheries[a] |
|---|---|---|
| Fleet | | |
| Total number of vessels | 2044 | |
| Total number estimated active vessels | 1440 | 908 (63%) |
| Capacity (GT) | 59,900 | |
| Total active (GT) | 56,500 | 2786 (5%) |
| Number of active fishers | 3461 | 1385 |
| FTE | 2672 | 856 |
| % women | Unknown | Unknown |
| Average age of fishers | 35-39 | 30-34 |
| Landings | | |
| Quantity (ton) | 239,347 t | 14,507 t |
| Value (€) | €265 million | €25 million[b] |
| Most common gear used (top 3) (% in total) | Demersal trawl (41%) | Pots (96%) |
| | Pots (36%) | Fixed nets (3%) |
| | Dredges (10%) | Hooks (1%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Mackerel (34%) | Brown crab (37%) |
| | Blue whiting (18%) | Whelk (35%) |
| | Horse mackerel (9%) | Lobster (4%) |
| Top 3 in values (% in total) | Mackerel (21%) | Brown crab (28%) |
| | Nephrops (20%) | Whelk (25%) |
| | Monkfish (5%) | Lobster (18%) |

Note: [a]Vessels < 12 m using static gear; [b]Total landings may be underestimated due to lack of data
Data from STECF 2018 Annual Economic Report (AER), using 2016 data

data presented in the MI/BIM report is that it presents data for shellfish landings by all vessels and for some species there is a significant proportion of those landings made by vessels over 12 m in length, e.g. Scallop. As a result of the issues outlined above the landings data for small-scale fisheries must be interpreted with caution and regarded as indicators of general trends at best.

## 15.5 Irish Small-Scale Fisheries Management

Although, as noted in Sect. 15.2 above, the majority of Irish fishermen (who fish within the 12 nm territorial limit) are largely indirectly governed by the CFP, shellfish stocks fall within the competence of the CFP. However, these stocks are generally not limited by Total Allowable Catch (TAC). The Department of Agriculture, Food and the Marine manages these fisheries by setting minimum landing sizes and, increasingly, by managing fishing effort (input controls) and catch management (output controls) (Marine Institute and BIM 2017).

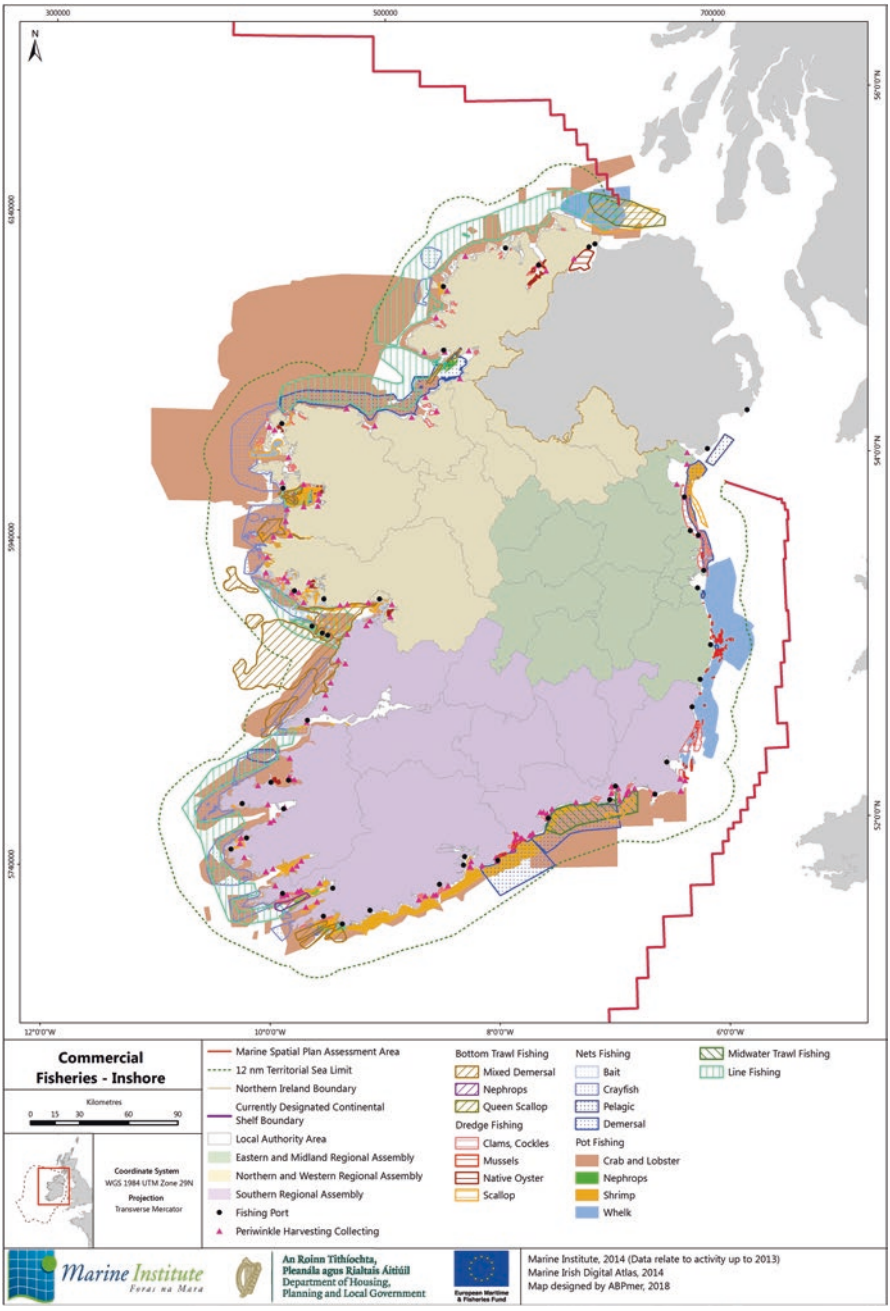



**Fig. 15.4** Map of Irish Commercial Inshore Fisheries. (Department of Housing, Planning and Local Government 2018)

Considering that 100% of the inshore catches are landed in Ireland it would appear that effective national governance arrangements for the inshore sector should be a priority. However, with the exception of some local arrangements, such as for oysters in Tralee bay and other areas where management has been devolved to co-operatives (Tully and Clarke 2012), and requirements under the EU Habitats Directive such as the Fisheries Natura Plan for cockles in Dundalk Bay (DAFM 2016), inshore fisheries management structures have only recently been established. Catches of some of the most economically important shellfish stocks have declined and there are concerns about the status of a number of stocks (Tully 2017). For example, lobster catches have fallen from a peak of 856 tonnes in 2004 to 371 tonnes in 2015 despite the use of technical measures such as minimum and maximum sizes and v-notching which prohibits the landing of notched females to improve the sustainability of lobster stocks by protecting female lobsters so that they can breed a number of times.

A number of significant developments in Irish inshore fisheries have occurred within the past decade. In 2006 a polyvalent potting segment was created to accommodate a large number of vessels which were previously unregistered. In addition, in 2006, the Irish Government imposed a moratorium on the use of drift nets to catch wild Atlantic Salmon (*Salmo salar L.*) and a financial scheme to compensate fishermen for the loss of this fishery was introduced. Not all fishermen accepted the compensation as one of the conditions of the package was a loss of the right to fish Atlantic Salmon in the future should the moratorium be lifted (Brennan and Rodwell 2008). As predicted by fishermen's organisations at the time, many of those fishermen who accepted financial compensation for the loss of their Salmon fishing entitlement invested that money in shellfish pots, thereby increasing pressure on inshore shellfish stocks (Cawley et al. 2006). Pressure on shellfish stocks was further increased as many boats who would have hitherto operated a mixed fishery by fishing salmon seasonally were now forced to target crab and lobster all year round due to a lack of other opportunities. The Cawley strategy review report of 2006 also recommended the designation of specific coastal areas with exclusive or priority access for inshore vessels and recognised that "*the traditional preoccupation with the off-shore sector and the lack of a clear and coherent resource management policy is threatening the sustainable development of the inshore sector, coupled with the lack of State resources, both in administration and enforcement*" (Cawley et al. 2006, 12).

At that time there were very few specific management arrangements for Irish inshore fisheries and a number of attempts to remedy this have since taken place. The first attempt to establish a management framework for inshore fisheries in Ireland began in 2005. Following extensive meetings around the coast, a management plan and structure was published by Ireland's seafood development agency, Bord Iascaigh Mhara (BIM 2005). Local Advisory Committees (LAC), a national Species Advisory Group (SAG) and an Inshore Fisheries Review Group to co-ordinate across the species-based frameworks were established. The framework was designed in consultation with experts from other regions, notably Tasmania, but also the UK and France, and in accordance with best co-management practice. As part of

this process a draft lobster management plan and access control scheme was published (BIM 2008), which proposed authorisation requirements for all those involved in the fishery, limitations on new entrants, regional management and reporting requirements. Similar plans were also developed for other shellfish fisheries such as crab, shrimp and scallop.

The initial success of the framework did not last long and by 2009 inshore fisheries management had reverted back to its *ad hoc* nature as participants had lost faith in the process. One of the chief instigators and supporters of the management framework in an interview outlined the following reasons for its failure (Fitzpatrick 2013):

- Institutional commitment to the process from the fisheries department was lacking and there were delays of up to a year in scheduling meetings of the national Inshore Fisheries Review Group. As a result, the overall decision-making capacity of the framework was severely curtailed.
- The de facto open access situation created a significant hurdle to making decisions on meaningful management measures. It created a context where the predominant motivation for fishermen was to maintain the value of their licences in the short-term.
- The requirement for strong top-down drivers was greater than anticipated. The access and licensing issue was a particular example of how clear legislative policies and strong departmental engagement are often necessary conditions to guide and incentivise nascent co-management institutions.
- The culture of inshore fisheries in Ireland had not been one that included participation in management, and individual and institutional capabilities were not sufficient to make the rapid transition to co-management.

### *15.5.1 Development of National Inshore Fisheries Forums*

The difficulty with implementing governance change, even with well designed and well intentioned efforts, within a complex system influenced by political, social, biological and economic factors, is well illustrated in the above example. Recognising the need for a new governance framework the national agri-fishery policy statement, ‘Harvest 2020’, included the objective that “implementation of a specific Inshore Fisheries Management framework should proceed as speedily as possible” (DAFF 2010, 54).

Additionally, Ireland’s EMFF (European Maritime and Fisheries Fund) Operational Programme for 2014–2020 (EMFF 2014a) recognised that the limited management regime for inshore stocks and the lack of data on the activities of under 10 metre vessels was a significant weakness with an associated risk of stock declines. A Small-Scale Coastal Fisheries Action Plan developed under the EMFF identified the requirement to develop supports for the enhanced management and conservations of inshore stocks, including v-notching of lobster, more selective fishing gear and preparation and implementation of management plans for inshore stocks. The

"Action Plan for the development, competitiveness and sustainability of small-scale coastal fisheries" is sparse, consisting of a 2 page appendix of bullet points (EMFF 2014b). The plan was informed by contributions from the 6 Regional Inshore Fisheries Forums and the National Inshore Fisheries forum (EMFF 2014a). These new regional and national management frameworks were established in 2014 and partly funded by the EMFF.

The National and Regional Inshore Fisheries Forums were set up to enable inshore fishermen (under 12 m vessels using towed and non-towed gear) to have a greater involvement in sustainable fisheries management within the 6 nautical mile limit, and to facilitate communication between inshore fishermen and managers. The new management structure is comprised of 6 Regional Inshore Fishery Forums (RIFFs) and an overarching National Inshore Fisheries Forum (NIFF). There are approximately 12 members on each RIFF representing mainly inshore fishing but also covering other marine sectors such as aquaculture, recreational fisheries, tourism and environmental interests. Two delegates from each RIFF participate in meetings of the NIFF where issues raised at regional level with national relevance are discussed. The NIFF members also report back to the RIFFs on national issues.

Although inshore fishermen, via the NIFF, now have formal involvement in meetings ranging from national quota management to EMFF allocation and industry-science research partnerships, not all inshore fishermen feel that their voices are adequately represented. Thus, while some inshore fishermen feel that Inshore Forums have good engagement with administrative officials in DAFM and that decision-making is moving from opaque and exclusive to transparent and participative,[3] others, such as members of the Irish Islands Marine Resources Organisation (IIMRO[4]) do not feel adequately represented by the Inshore Forums. For example, the NIFF Terms of reference are limited in a number of key areas[5] and the makeup of the group is not member based meaning that nominees of member based grassroots organisations are not necessarily included on the forums. This has led to some issues with poor communication of outcomes of regional and national inshore forum meetings back to individual fishers who are not participants in the forums.

[3] Personal communication, National Inshore Fishermen's Association representative, July 2017.

[4] IIMRO is a national organisation set up in 2014 to represent the voices of island communities on marine related matters. It works in partnership with LIFE (Low Impact Fishers Europe) and the European Small Islands Network. http://www.iimro.org/index.html

[5] The terms of reference of the NIFF specify that "forums will not spend time on issues that do not have significant impact on inshore fisheries (for example, management of many offshore fisheries…)" (http://inshoreforums.ie/wp-content/uploads/2015/03/IFF-TOR-Jan-2016-with-Env.pdf). While the intention may understandably be to focus discussions on inshore fisheries so that the process stays on track, it is highly political to assume that the management of offshore fisheries does not have significant impact on inshore fisheries and therefore should not be discussed in the forum.

The wider context of Irish marine governance is also relevant here. Governance of Irish fisheries and Ireland's marine environment more generally is spread across several different government departments. The Department of Agriculture, Food and the Marine is not the only government department relevant to inshore fisheries. The Marine Strategy Framework Directive team sits in a different government department: the Department of Housing Planning and Local Government (where the priority of the relevant minister has been the housing and homelessness crisis in Ireland over the past decade) and the Department of Culture, Heritage and the Gaeltacht are also relevant for rural coastal and island fishing communities. In total 11 government departments and 21 state bodies are involved in governance of Irish marine affairs (Kelly et al. 2018). The fragmented nature of this governance is not conducive to effective co-management of Irish inshore fisheries. In this regard it is noteworthy that both Recommendation 2 of the cross party parliamentary report on the socio-economic challenges facing rural coastal and island communities (Oireachtas 2014) and the more recent Charter for Fishers, Coastal Communities and Islands (Fig. 15.1) call for a dedicated Department of Fisheries, Marine and Marine Communities with a designated Minister (Afloat.ie 2019).

The process of participation in management and improving the influence of the inshore sector is an incremental one which is dependent on learning and building capacity (Fitzpatrick 2013). There is currently a feeling of frustration amongst certain inshore fishers that consultative processes lead to reports that are then ignored or sidelined by the Government.

The frustration of the inshore sector is all the more keenly felt as inshore fishermen have finite resources in terms of time and finances to devote to the participatory process. An example of this is the trend of increased inshore fishing effort or "fishermen working harder every year for the same money". There are diverse views within the Inshore Forums on how best to address this complex issue. How well it is tackled will be a significant test of the inclusiveness, representativeness and problem solving capacity of this participatory management process.

The quota allocation process, particularly for non-shellfish species, can be very problematic for inshore fishers. This is despite the existence of traditional inshore fisheries for many whitefish and pelagic species using a range of fishing gears. Although inshore vessels with a polyvalent license are given monthly vessel-specific allocations for whitefish species, in practice a number of issues can create quota shortages or in some cases, a lack of access to quota. For inshore vessels the averaging of allocation throughout the year has a disproportionate impact as they are more vulnerable to weather disruption than larger offshore vessels and there are frequently times when they cannot catch their allocations. Conversely there are also occasions when a greater allocation of quota within a calendar month would be needed. It is imperative for such vessels to have sufficient quota when they can go to sea. Inshore vessels also have more restricted mobility than offshore vessels and quota allocations at times when the relevant species are not in their area or during bad weather are of no benefit to them. Measures such as the restrictions on fishing

with trawls or gill-nets in ICES Area VIa under the Cod Recovery Plan which ran from 2008 to 2018 (DAFM 2017b) also have a disproportionate effect on inshore vessels as they do not have the option to steam to a different area in order to avail of other quota opportunities there. The fisheries-dependent small island communities on the Donegal islands, off the north-west coast of Ireland, are located within ICES Area VIa.

Inshore vessels have also been negatively affected by the allocation of some pelagic quotas based on track record. Such allocations favour larger vessels with more stable fishing patterns. In addition, the fact that under 10 m vessels have not been required to carry logbooks has mitigated against them in establishing track record. A more flexible quota allocation regime accounting for the needs of inshore vessels is possible under CFP provisions such as Articles 7 and 17 which allow for Member States to promote and incentivise low impact fishing methods and to consider environmental, social and economic criteria when allocating quota. A recent report on the national marine planning framework acknowledges this "limited access to some quota stocks (e.g. mackerel and herring)" but highlights the maintenance of inshore water quality as the main issue to focus on as regards the inshore fisheries sector (Department of Housing, Planning and Local Government 2018, 53).

Practical limitations on access to quota, as described above, mean that many of the 63% of inshore fishers that are using static gear (as opposed to mixed gear) are not doing so by choice. These fishers now target non-quota species such as crab, lobster, whelk and scallop all year round which they would traditionally have fished seasonally. In addition, prior to the Irish Government's moratorium on drift net fishing for salmon in 2006, some inshore fishermen depended on mixed stock salmon fishing (using drift nets) as part of a seasonal fishery system. A more flexible quota access regime would likely see many inshore fishers returning to a mixed gear seasonal fishery which would present a different picture.

In recent years IIMRO have been proactive in finding ways to address this challenge. From a policy perspective, these island inshore fishing communities have relied on paragraph 20 of the CFP which recognises that "*small offshore islands which are dependent on fishing should, where appropriate, be especially recognised and supported in order to enable them to survive and prosper*" and on Article 17 of the CFP (as described above).

A ministerial review of mackerel quota allocations was conducted in 2017 and IIMRO requested that 0.1% percent (106 tonnes of a total of 86,426 tonnes) of Ireland's mackerel quota be allocated to island inshore fishers. However, the Minister of Agriculture, Fisheries and the Marine decided to maintain the existing share-out in the allocation of mackerel quota (DAFM 2017a). The Minister's decision was arguably not in line with Recommendation 7 of the 2014 parliamentary committee report on promoting sustainable rural coastal and island communities (Oireachtas 2014, 73) which stated: *"The sub-Committee recommends that in the event of an extra mackerel quota being given to Ireland, a more equitable distribution of mackerel should be decided on and that the inshore fishing fleet should be accommodated"*. IIMRO have summarised the existing licensing and quota alloca-

tion regime as one which "*is driving fisheries and access to the fishery resource towards industrial scale operations that cannot help island communities*[6]".

Recommendation 10 of the 2014 parliamentary committee report on promoting sustainable rural coastal and island communities recommended a change in licensing policy as follows: "*The sub-Committee recommends that the Government examines the feasibility of 'heritage licences' to be issued by the Department for rural coastal and island communities. Such licences would, optimally facilitate traditional fishing practices in conjunction with the establishment of a producer organisation representing vessels under a certain LOA in these designated areas*" (Oireachtas 2014, 95).

Box 15.1 provides details of the Island Fisheries (Heritage Licence) Bill which is currently going through the parliamentary legislative process In Ireland.

Interviews conducted by one of the authors with representatives of the inshore sector reveal that they encounter a persistent perception among policy makers that inshore fishing is a vocational or lifestyle choice with limited economic and social importance. Although the inshore fleet contributes a smaller proportion of the fishing industry's overall income than the offshore fleet, inshore fisheries have a particular social, cultural and economic value for smaller coastal communities (Bresnihan 2016; Fig. 15.5). Entry costs to the inshore sector are prohibitively high, ranging from €80,000 to as much as €300,000. Making a strong case as to the economic importance of the sector is particularly difficult given the lack of inshore fisheries data with the result that the contribution made by inshore fisheries is routinely undervalued.

In addition to the recent emergence of the Regional Inshore Fisheries Forums a number of inshore fishermen have recognised that there was a difficulty in relying on existing representative or Producer Organisations with low membership rates of inshore fishermen. In some cases there are significant conflicts between inshore and offshore fishing interests, particularly on pelagic issues. Although IIMRO has been a representative organisation since 2006 for Donegal island inshore fishers and since 2014 for Irish island inshore fishers (under 12 metre vessels with non-towed gear), IIMRO do not represent non-island inshore fishers. Accordingly, a dedicated representative organisation, the National Inshore Fishermen's Association (NIFA), was established in April 2017 to represent inshore fishers (under 12 m vessels with non-towed gear). One of the goals of NIFA, in addition to improving the influence and representation of inshore fisheries, is to reinvent the inshore sector and to differentiate it from offshore fisheries. The intention is that this will be done through a stronger emphasis on the local economic, social, employment and environmental benefits of sustainable inshore fisheries with a good governance framework as opposed to one that is predominantly driven by economic efficiency. Within this framework, individualisation of quotas, including the use of ITQs, is opposed due to what is seen as an inevitable move towards concentration of ownership and an

[6] IIMRO submission to Joint Oireachtas Committee on Island Fisheries (Heritage Licenses) Bill, May 2018.

**Box 15.1: The Island Fisheries (Heritage Licence) Bill 2017**

The 2014 Common Fisheries Policy (CFP) recognises that "small offshore islands which are dependent on fishing should, where appropriate, be especially recognised and supported in order to enable them to survive and prosper" (para 20). In 2014, the Irish government was advised by a national sub-committee to examine the feasibility of issuing "heritage licences" to rural coastal and island communities to allow for traditional fishing practices on offshore islands (Oireachtas 2014). In July 2017, the Island Fisheries (Heritage Licence) Bill 2017 was introduced to the Dáil (Irish Parliament) and it is currently at Stage Three of a five stage legislative process. The Island Fisheries (Heritage Licence) Bill 2017 provides for non-transferable island community quota for CFP quota species within the six mile limit via heritage licences for under 12 m vessels using low-impact, non-towed gear. The Bill is being driven forward by the IIMRO.

If the Bill becomes law, it will allow for changes in fishing patterns which island fishing communities believe will be more sustainable and appropriate to their needs.

Although the Bill is supported by the opposition parties in parliament, the Government has stated that "The Department's legal advice is that the Bill is not compatible with EU law and the provisions of the Common Fisheries Policy" (Oireachtas 2018a, n.p.). The Bill is also opposed by the existing Producer Organisations, who allege that it could change existing quota allocations and create unfair discrimination against mainland small-scale fishermen (Oireachtas 2018b). In this regard it is noteworthy that advice sought by IIMRO from DG MARE in the European Commission indicated that the Bill would not breach the CFP.[7]

associated dissipation of wider social benefits (see Bresnihan 2016, 2017). Furthermore, links to complementary activities such as coastal tourism and restaurants promoting local fish supply will be developed in contrast to the more typical emphasis on export oriented seafood production. Since fisheries in Ireland also include vessels above 12 m using towed and non-towed gear, a sister organisation to NIFA was also set up alongside NIFA to represent this category of fishers – the National Inshore Fishermen's Organisation (NIFO). It is noteworthy that IIMRO is the only Irish inshore fishing organisation to date that is represented (by the Vice-Chair of IIMRO) on the European North Western Waters Regional Advisory

[7] "It was agreed that quota assignment is a matter of the national authority and that any allocation for islands within the national quota is not contrary to the Common Fisheries Policy; Local management of areas of concern to islands in line with Marine Protected Area guidelines is not contrary to the Common Fisheries Policy." Excerpt from Minutes of IIMRO meeting with Director General Machado, DG MARE, December 2015.


**Fig. 15.5** Fresh pollack from Iasc Inis Oírr, an island-based micro-processing family business set up in May 2018 on Inis Oírr island, Co. Galway

Council (NWWRAC). IIMRO are currently in the process of applying for representation on a number of groups related to marine spatial planning, the Marine Strategy Framework Directive as well as inshore fisheries.

To date, many Irish inshore fisheries representatives have had limited contact with some of their European counterpart organisations such as Low Impact Fishers of Europe (LIFE) and one reason for this is a difference in how some such organisations, in common with the CFP, define small-scale or inshore fisheries. The exclusion of mobile gears such as trawls or dredges, which are included in the Irish inshore fleet, is perceived to be due to the influence of environmental NGOs, even though this distinction is supported by small-scale fishers (under 12 metre vessels) using non-towed gear. With the new EMFF set to increase funding for small-scale fishers to 100%, there is currently pressure from certain Members of the European Parliament on the Fisheries Committee to enable each Member State to adopt their own definition of "small-scale" rather than applying the current EU definition (of under 12 m vessels using non-towed gear) across all Member States. This is unsurprisingly being resisted by the small-scale fishers using non-towed gear. The Irish inshore forums do not exclude vessels using mobile or towed gears so that the NIFF and RIFFs represent all under 12 m vessels. The island inshore fishers are, once again, distinctive in that IIMRO have been a member of, and actively engaged with, LIFE since 2014. For example, in March 2017 the Deputy Director of LIFE brought an IIMRO representative to Galicia to meet with, and learn from, inshore fishermen there; IIMRO have applied for an EMFF grant with LIFE; and most recently IIMRO were involved with LIFE in a campaign against electric pulse fishing.

In December of 2018 the Irish Fisheries Minister announced that vessels over 18 m in length would from 2020 be unable to fish inside the 6 mile limit (Merrionstreet.ie 2018). This decision followed a public consultation process which

received over 900 submissions, many of which came from inshore fishing interests. In a public statement on the decision the Minister said that he was "*very conscious of the exclusive reliance of small-scale and island fishermen on inshore waters and the benefits this change will bring for those fishermen. I firmly believe that this will, in the medium term, provide ecosystem and nursery stock benefits for all fishermen.*"

## 15.6 Conclusion

It appears from the recent history of small-scale fisheries management in Ireland that significant lessons have been learned and that some important progress has been made. A sector that was excluded from a governance perspective, operating without an overall plan, without overall leadership and without influence in national decision-making now has a management framework and has started to gain a voice through the establishment of a number of representative organisations and an industry-led 'Strategy for the Irish Inshore Fisheries Sector 2019-2023' was presented to the Minister for Agriculture, Food and the Marine on 30 January 2019 (DAFM 2019).

There are significant challenges ahead however. Maintaining the commitment of fishers to put significant personal efforts into participation in management forums and achieving agreement between diverse, independent-minded fishermen will not be straightforward while acknowledging the diversity and nuances within the inshore sector. Improvements in communication and representation in the inshore forums while finding ways to address increasing inshore fishing effort are necessary. The emergence of new organisations while being positive in providing more responsive and appropriate representation to the sector will also create challenges in the wider context of fragmented representation within the Irish fishing industry (Cawley et al. 2006).

It is disappointing that the recent report on the national marine planning framework aims to manage inshore fisheries "in a way that is sustainable both economically and environmentally" with no reference to socio-cultural considerations (DAFM 2018b, 56), particularly in light of the recognition within the CFP that "small offshore islands which are dependent on fishing should, where appropriate, be especially recognised and supported in order to enable them to survive and prosper". It is encouraging, however, to see the new Charter for Fishers, Coastal Communities and Islands call for a specific focus on fisheries dependent, small island communities and co-management of fisheries via a community focused approach.

Avoiding the pitfall of creating a small-scale sector which is merely a scaled down version of more industrial fisheries where management is dominated by a narrow, economically rational ethos (Berkes 2003; Bresnihan 2016) is necessary if small coastal and island fishing communities are to retain their identity and viability in the face of change. On the other hand providing the data which demonstrates that inshore fishing can be a viable economic activity in its own right may be more persuasive for policy makers who are operating within the constraints of economic

rationalism. A policy and governance framework which recognises the diversity of contributions inshore fisheries make to the social, cultural, economic and environmental wellbeing of coastal communities is essential. Resolving fundamental policy challenges such as this may well be dependent in turn on higher level issues such as reducing the level of fragmentation in wider Irish marine governance. In this regard it is noteworthy that both Recommendation 2 of the cross party parliamentary report (Oireachtas 2014) and the more recent Charter for Fishers, Coastal Communities and Islands call for a dedicated Department of Fisheries, Marine and Marine Communities with a designated Minister (Afloat.ie 2019).

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# Chapter 16
# Small-Scale Fisheries in Iceland: Local Voices and Global Complexities


**Catherine Chambers, Níels Einarsson, and Anna Karlsdóttir**

**Abstract** Small-scale fisheries make up a small percentage of the total catch in the fisheries sector in Iceland, yet occupy an important part of the cultural and political landscape. The past 30 years in particular have been host to dramatic political, technical, social, and economic changes for Icelandic small-scale fishermen, their families, and their home communities. In this chapter, we first focus on the history of small-scale fisheries in Iceland and define characteristics distinguishing these fisheries from large-scale operations that often target the same fish stocks. Next, we describe historical and current fisheries governance arrangements with particular focus on the disproportionate impact that the privatised national fisheries management system has had on small-scale fisheries. Using the Arctic island of Grímsey as a case study, we show how fishing culture itself, through the logic of the Individual Transferable Quota (ITQ) system, has become inextricably and irreversibly entwined with national and even global financial institutions and processes. We also highlight the various small-scale fisheries and detail limitations in the capacity of small-scale fishermen to achieve collective action. We discuss options for mitigating negative impacts of the ITQ privatised system, such as the open access summer jig season that began in 2009. We then place small-scale fisheries in the larger context of regional and national policy trends and show how the 2008 economic crisis and national policies aimed at economic growth affect local fishermen. Finally, we forecast how both national and international policies may affect future generations of Icelandic small-scale fishermen.

**Keywords** Fisheries access · ITQs · Coastal fisheries · Human rights · Social change

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## 16.1 Introduction

This chapter describes characteristics of Icelandic small-scale fisheries and the specific social, political, and economic factors influencing them. Small-scale fisheries make up a small percentage of the total catch in the fisheries sector in Iceland, yet occupy an important part of the cultural and political landscape. In particular, the privatised ITQ system has impacted small-scale fisheries and the rural communities to which they are so intimately linked. Certain programmes such as community quota and the non-privatised *strandveiðar* fishery, while certainly overall positive, have little significant impact on small-scale fisheries given the national focus on economic efficiency in the large-scale fleet. Icelandic small-boat and small-scale fisheries are markedly different in comparison with other small boat fisheries in Europe and around the world, and below we review the cultural, historical, and political aspects that gave rise to the current state of Iceland's small-boat fleet.

## 16.2 Definition of Small-Scale Fisheries in Iceland

Icelandic small-scale commercial fisheries are currently defined as small-*boat* fisheries: long-line, hand-line and gillnet boats under 15 m in length and under 30GT. Small-boat fisheries land 8% of the total catch in tonnes, but account for 20% of the value of the total catch. Approximately 1418 small boats employ around 1600 individuals full time, and small-scale fisheries are particularly important to rural communities. Small-boat fisheries consist of three major management schemes: ITQ fisheries, hook quota fisheries, lumpfish, mackerel, herring, and a special open access (but with an overall TAC) fishery called *strandveiðar* ("coastal fishing").

## 16.3 Description of Small-Scale Fisheries

Small-scale fisheries in Iceland were carried out seasonally mainly for local consumption by farmhands before the nineteenth century (Pálsson 1991; van den Hoonaard 1992). Around the nineteenth century, permanent fish stations developed near rich fishing grounds as larger foreign vessels increased in Icelandic waters, and intensification of domestic fishing soon followed. After the introduction of trawler operations in 1905 (Thór 1996), the transition from a small-scale peasant economy to a large-scale fishing fleet amplified during Iceland's quest for independence from Denmark in the 1940s (Pálsson 1991). Although large-scale export-driven fisheries continue to dominate Icelandic commercial fisheries, small-scale fisheries remain a vital component of Icelandic culture, identity, and family sustainability.

The official definition of small-scale commercial fisheries in Iceland has undergone a number of significant changes in the last decades but is synonymous with

small-*boat* fisheries and is, therefore, primarily defined by boat size. While technological capacity and market shifts played a part in the re-negotiated definitions, political discourses around fishing ownership rights in the ITQ system have been the main impetus for the definition changes (Dobeson 2016). At the outset of the IQ system in the late 1980s, the small-boat weight class legally defined by the Icelandic Fisheries Management Act included boats under 10GT (Gross Tonnes), and these boats were not included in the IQ system. Then, in 1991, all boats over 6GT and under 10GT were allotted ITQs based on catch history. Most small boat owners were opposed to this change, their main argument focused on opposition to privatisation of a formerly common property resource (Einarsson 1993; Eythórsson 2000). Thus, boats under 6GT were allowed to choose between ITQs or entering a system of catch-per-day restrictions. The next definition change came in 2004 when the small-boat definition was expanded to include vessels under 15GT and finally up to 30GT in 2013 (Icelandic Fisheries Management Act 116/2006 (2006)). Small-boat fisheries are currently further defined by gear type and boat length, consisting of long-line, hand-line and gillnet boats under 15 m in length. By contrast, the large-boat fleet includes shrimp boats, larger long liners, Danish seines, purse seines, and pelagic and bottom trawlers over 30 GT.

In the case of the last definition change, in 2013, allowing for much bigger boats within the small-boat definition, there may have been lobbying by a small group of boat owners with strong political ties to decision makers (Chambers 2016a). The National Association of Small Boat Owners (NASBO) was against the changes, arguing that this would lead to concentration of quota among these big boats, with fishing rights moving from the small to the big. This has turned out to be the case. The 20 or so larger "small boats" allowed under the new definition bear little resemblance to the small-scale activities of fishing with one or two fishermen[1] on board boats that are owner-operated. These new "small boats" are powerful all-year vessels with engines up to 1000 HP (Mariat-Roy 2014) and reach speeds up to 30 knots (Fig. 16.1), with crews that take shifts and the owner may not be present on board. These capital and energy-intensive boats are capable of catching hundreds and even thousands of tonnes of fish per year. The majority of the owners of these vessels have decided not to belong to NASBO and are effectively a different class of "small" boats in Icelandic fisheries, although their catch and quota are in the same category as other smaller boats.

Commercial small boats fall under three major management schemes: ITQ fisheries, lumpfish, and a special non-privatised fishery called *strandveiðar* ("coastal fishing"), reviewed below (Table 16.1). Small boats also take part in the mackerel (98 boats in 2013) and herring (48 boats in 2013) seasons. A personal allowance exists for commercial fishermen so that they can keep a small amount of their catch for friends and family, and anyone can catch fish off a personal boat or fish off the docks provided the catch is not sold (Smith and Chambers 2015). Sea angling

[1] In Icelandic, the term "fisherman" (sjómaður) refers to both males and females, so this chapter uses the English word "fisherman" in the same way to reflect the culturally appropriate term.

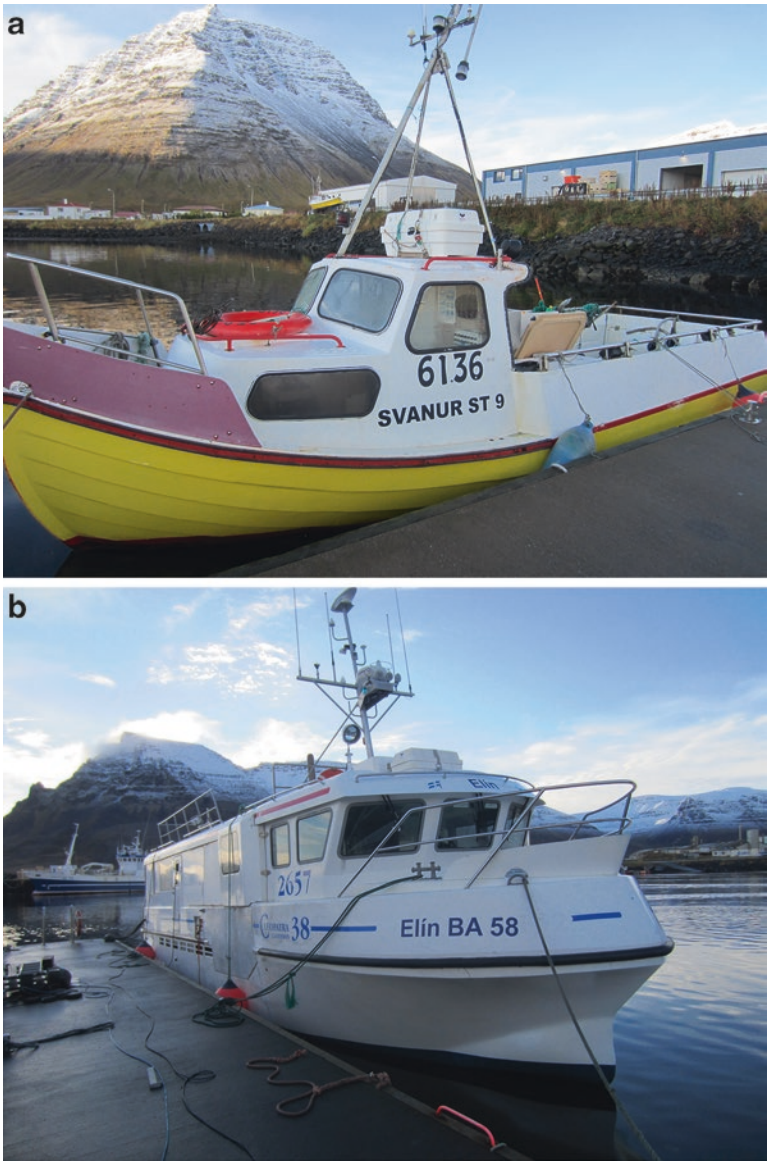



**Fig. 16.1** The range of common Icelandic small boats. (**a**) 4 GT jig boat. (**b**) 15 GT longline boat. (Photo credit: C. Chambers)

tourism boats fall under a different licensing category but their catch counts against the total TAC. Area closures and gear restrictions are also enacted to protect sensitive areas such as spawning grounds or bird or marine mammal habitat. No discards are permitted in any fishery.

**Table 16.1** Small-boat fisheries management systems by catch and boat numbers

| | Main species | Gear | 2014/2015 # active boats | 2014/2015 catch in tonnes |
|---|---|---|---|---|
| Small boat ITQ | Cod | No restrictions | 75 | 10,616 |
| Hook and line ITQ system | Cod, haddock, catfish | Long line, jig | 318 | 64,632 |
| *Strandveiðar* (non ITQ) | Cod and saithe | Jig | 630 | 8599 |
| Lumpfish (non ITQ) | Lumpfish | Gillnet | 231 | 5952 |

**Table 16.2** Icelandic fisheries catch by species and fishery system

| Data refer to 2015 unless otherwise noted | Total (all fisheries) | Small-scale fisheries[b] |
|---|---|---|
| Fleet | | |
| Number of vessels | 1685[a,d] | 1156[b,d] |
| Capacity (GT) | 147,336[a,d] | n.a. |
| Number of fishers | | |
| % women | 6.8%[a,d] | <0.1%[e] |
| Average age of fishers | n.a. | 56[e] |
| Landings | | |
| Quantity (ton) | 1,316,677 tonnes[d] | 86,104 tonnes[d] |
| Value (1000 €) | 913,757[d] | 187,037[c,f] |
| Most common gear used (top 3) (as % of total landings) | Pelagic trawl (40%), purse seine (24%), bottom trawl (20%)[d] | Longline (57%), Jig (20%), gillnet (12%)[d] |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Capelin (27%), cod (19%), blue whiting (16%)[g] | Cod (64%), haddock (13%), Atlantic catfish (wolfish) (4%)[g] |
| Top 3 in values (% in total) | Cod (38%), redfish (9%), mackerel (8%)[d] | Cod (70%), haddock (12%), ling (4%)[a,d] |

Notes: [a]2014 data; [b] < 15 m, <30 GT, longline, handline, gillnet; [c]2013 data
Source of information: [d]Statistics Iceland (statice.is); [e]Chambers and Carothers (2016); [f]Þórðarson and Viðarsson (2014) [g]Icelandic Directorate of Fisheries (fiskistofa.is)
Links to official stats webpages: www.fiskistofa.is, www.statice.is

In the 2014/2015 fishing year (the quota year runs from Sep 1-Aug 31), the total catch for small-boat fisheries was 9% of the total catch landed in Iceland (or 89,799 tonnes, compared to 987,556 tonnes for large-boat fisheries), and 16% of the small-boat catch (or 2% of the total catch) was landed by non-ITQ fisheries. Overall, small-boat fisheries account for 20% of the value of the total catch, or 26.6 billion Icelandic kronur - approximately 186 million Euro (Table 16.2). In the 2012/2013 fishing year, approximately 1922 boats were licensed to operate in one or more

commercial small-boat fisheries although 1248 actively reported catches in that fishing year (Þórðarson and Viðarsson 2014). The management categories are not exclusive and there is often overlap in participation between small-boat fisheries, and between large and small-boat fisheries as many small-boat owners are also crew members on trawlers (Chambers and Carothers 2016).

### *16.3.1 ITQ Fisheries*

There are two separate ITQ systems for small boats, the hook and line quota and a general small-boat ITQ. In 2004, handline and longline small boats under 15 GT were split away from the large-scale industrial ITQ fisheries in a small-boat ITQ system to counteract the accumulation of quota by large factory trawlers and companies. The hook and line quota is restricted to long-line and jig gear, and the major species targeted are cod, haddock and Atlantic catfish. Quota allocations from the hook and line system cannot be transferred to other systems, but quota from the general ITQ system can be sold to the hook and line system. The general ITQ system has no restrictions on gear types. Common gear types include gillnets, seine and long line, targeting mainly cod (Table 16.2).

### *16.3.2 Strandveiðar*

*Strandveiðar,* or "coastal fishing" is a non-privatised fishing season that began in 2009. The reasoning behind *strandveiðar* came as a reaction to a United Nations Human Rights commission ruling that the Icelandic ITQ system violated the human right to work (McCormack 2017). Political pressure to support community development in regions with declining fisheries access also played a part in the development of *strandveiðar* regulations (Einarsson 2011; Chambers and Carothers 2016). The season runs from May–August, and at the time of writing, rules stipulate that those who participate can fish Monday to Thursday, for 14 h a day for a maximum of 650 kg of bottom fish (mainly cod, saithe, and rockfish) a day, using a maximum of four jig machines (Fig. 16.2). The country is split into four areas. Each area also has a total allowable catch per month, which is a portion of the same TAC used in the ITQ fisheries (totalling 8600 tonnes in 2015, less than 2% of the 2015 TAC in cod equivalents). Once the total catch of the area reaches this amount, all fishing is shut down in that area until it opens again for the next month (Icelandic Directorate of Fisheries 2017). Boats are typically operated by a single fisherman, and one cannot fish quota fisheries at the same time as coastal fishing. Quota owners who participate in coastal fishing must therefore finish fishing their quota for the year before fishing in the coastal fishing season. Boat numbers have fluctuated over time as the system and participants change, beginning at 554 boats in 2009, a high of 760 boats in 2012, and 594 boats in 2017 (Icelandic Directorate of Fisheries 2017).

**Fig. 16.2** Typical small-boat jig fishing. (Photo credit: M. Óskarsson/Matís ohf)

### *16.3.3 Lumpfish*

The other non-ITQ small-boat fishery, targeting lumpfish roe using gillnets, has always existed outside of the ITQ system (Fig. 16.3). The lumpfish fishery is regulated by consecutive days at sea per license holder within a specific season length (from around March–August depending on the fishing area), net length (75,000 m per boat), mesh size (10.5 and 11.5 inch gillnets), specific area closures, net soak time (4 days), and boat size (under 15 GT) (Icelandic Directorate of Fisheries 2017). The number of boats is regulated by a limited entry permit system and fluctuates yearly based on roe price projections, weather, and the price of the kronur, among other variables (Chambers 2016a). The male (*rauðmagi*) is considered a delicacy in Iceland and is culturally significant as a herald of spring. Currently, fisheries targeting the male are not regulated as it is primarily for local consumption. Females are almost never consumed in Iceland except for when they are air-dried (*sigin grásleppa*). Roe was traditionally extracted aboard boats and the carcass thrown overboard but after the 2012 compulsory landing of the whole fish began many land-based processing jobs were created. The bodies are now sold frozen whole to China. Additionally, in 2015 the Icelandic lumpfish fishery became MSC certified supported by local fishing and processing companies to increase and stabilise the value of the roe (Chambers 2016a). However, the economic impact of the certification was unclear, and MSC certification was subsequently revoked in 2018 due to concerns over reported high levels of bycatch in the fishery (Burrows 2018).

**Fig. 16.3** Lumpfish gillnet fisherman. (Photo credit: C. Chambers)

## 16.4 Socio-Economic Context

Iceland emerged as a leader in the 1970s and 80s during the international wave of privatisation policies applied to fisheries (see Young et al. 2018 for background on the international popularity of ITQs). An IQ system with transferability restrictions was enacted first for demersal species in the 1980s, but with the 1990 Fisheries Management Act, the majority of species and all boats over 6 GT were included under a national ITQ system (Mariat-Roy 2014). Quota for each species was allotted to vessels based on their fishing record in the 3 years prior to ITQ implementation. Before the ITQ system, Icelandic fisheries were managed by various combinations of gear restrictions, area closures, licensing, effort restrictions and catch quotas, and were subsidised by the Icelandic government with mechanisms such as loans from public funds and debt restructuring (Karlsdóttir 2008).

The ITQ system quickly impacted small boats and rural communities in a disproportionate way. Bigger private companies and boats located in urban areas accumulated quota from smaller companies that were forced to sell quota because their original allotment was too small to be economically sustainable, and they did not have the capital to purchase more. Drastic transformations took place in these small communities where fishing had been the backbone of cultural and economic life for over a century in the "newer" communities and for multiple centuries in many other communities (Pálsson and Helgason 1995; Eyþórsson 1996; Karlsdóttir 2008). After fishing rights in the form of privatised quota left communities, jobs in

processing and other support services soon followed (Skaptadóttir 2007). The effects have been long-lasting: consolidation of privatised quota continues to leave rural communities with reduced fishing access rights, leading to rural depopulation as individuals exit fisheries and move away for other employment opportunities (Benediktsson and Karlsdóttir 2011). For example, in the Westfjords, there has been a 20% population decline since 1990, with up to 40% loss of individuals under the age of 40 (Statistics Iceland 2016).

Despite the overall drastic reduction in quota and fishing activity, small-scale fisheries remain a vital component of many rural communities. It is estimated that 89% of the catch of small boats comes from rural communities (Þórðarson and Viðarsson 2014). Currently, small-boats are fairly equally distributed around the country, except for south Iceland, which has fewer good fishing grounds or harbours for small boats (Fig. 16.4). However, small-scale fisheries can vary in importance by region. In the Westfjords, for example, there is 1 small boat for every 18 people, compared to 1 in 800 in the capital area (Viðarsson et al. 2015).

A history of small-boat fishing exists in the majority of Icelandic communities, although some are more definably "fishing communities"with few other economic activities. It can be hard to label fishing communities because the small numbers in general of the Icelandic population do not tell the full story. Fishing communities range in size from 50–5000 individuals, excluding the large urban areas of Reykjavík (211,830 people in 2015) and Akureyri (18,230 people in 2015), each with small

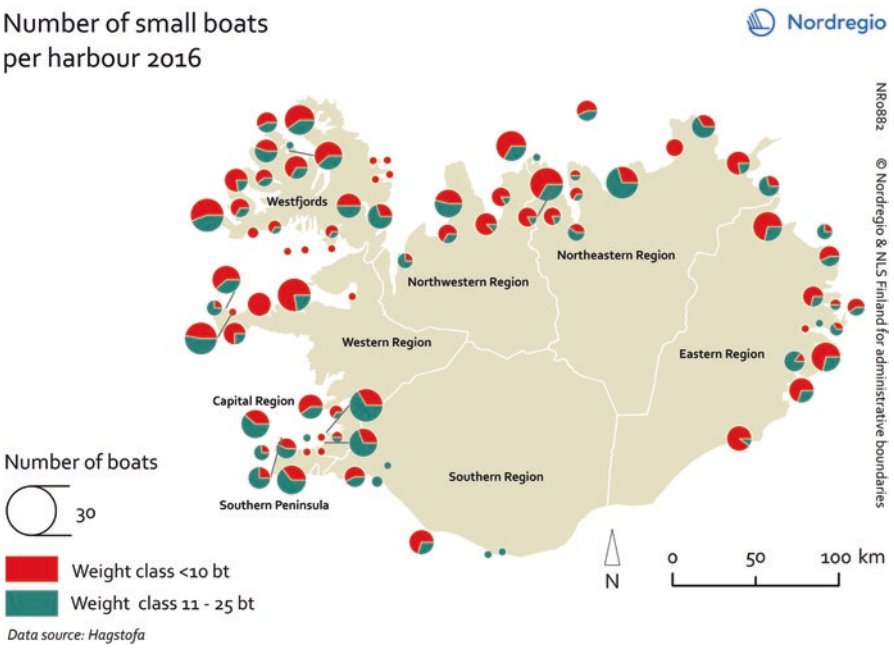


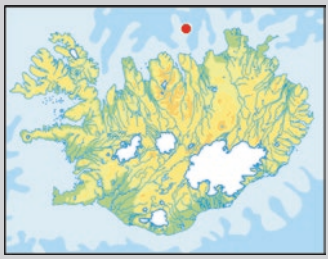

**Fig. 16.4** Small boat numbers by region and harbour. (Data from Statistics Iceland 2018; map credit Anna Karlsdóttir and Oskar Penje, Nordregio)

boats as well. For example, the fishing community of the isolated island Grímsey lands only a small fraction of catch compared to other communities, but with a population of 89, it has 1 small boat for every 8 residents and little other economic activity (see Summary Box 16.1).

**Box 16.1: Community Highlight: Grímsey**

**The Community**

Grímsey is a small island (5.3 km$^2$, 67 people) located in the Arctic Circle 40 km off the North coast of Iceland. Grímsey islanders have always been dependent on fisheries because there are few other economic options on the island. Currently, 14 commercial fishing boats owned by 11 different companies are registered in the harbour: 3 large boats and 11 small boats in the hook and line quota system. Altogether 2292 tonnes of fish were landed in Grímsey in the 2014/2015 fishing year.



*Grímsey island*

**Fisheries privatisation**

The Icelandic Fisheries Management Act clearly states that the allocation of temporary fishing rights or permits under no circumstances should be understood as giving rise to property rights. Quasi de facto rights, which indeed the Act has produced in practice, through allowing quota holders to sell, lease, mortgage, inherit and otherwise treat as commodity the rights they have been allotted, only exist temporarily. A great deal of quota transaction has taken place after the initial allotment, and has been used to justify that fishing rights have become legitimate rights of those quota holders who have bought quotas from those leaving the fisheries.

However, it is important to note that it cannot be said that this has been done *bona fide* due to the clarity to the Fisheries Management Act on the usufruct nature of the annually allotted fishing rights. Still, this has become a major bone of contention with regards to plans to retrieve fishing rights back into the realm of common property. Those who have paid for all or part of their quotas—often with little alternative as in cases when quota holders have decided to sell out and leave fishing villages with little quota left—have argued that they have indeed invested in property and cannot be deprived of it without compensation.

(continued)

**Box 16.1** (continued)

*Community of Grímsey*

**The 2008 economic crisis to today**

There are striking predicaments in fishing communities like Grímsey that have accrued enormous debts due to decisions of individual local firms and fishermen to buy catch rights of quota holders who decided to leave the community and sell their fishing rights. In a small remote community like Grímsey there was little choice within the governance framework in spite of abundant fish in the islands' grounds. The only available option to continue fishing was to invest in quotas in place of the ones sold away from the community using existing quota for bank loan collateral.

After the 2008 economic crash, the debt doubled due to the devaluation of the Iceland Krona. In late 2010, the debts of Grímsey Islanders amounted just over 5.5 billion Icelandic kronur (33 million Euro) or close to 400,000 Euro per capita. In 2016, the community was the subject of deliberations of an emergency committee, composed of members representing the main lender, Íslandsbanki, the municipality of Akureyri to which the community now belongs, and local MPs. This committee was given the tough task of providing advice on actions that might save the livelihoods of the inhabitants of this small and vulnerable community. Measures provided by the emergency committee - including allocation of 400 tonnes of community development quota, more frequent trips by the ferry to the island from the mainland, and lower airfare to the residents - have failed and in 2017, one major company sold 700 tonnes of cod equivalents to a company on the east coast of Iceland, resulting in the loss of 15 jobs.

Through this example we can see how fishing culture itself, through the logic of the Individual Transferable Quota (ITQ) system, has become inextricably and perhaps irreversibly entwined with national and even global financial institutions and processes.

Additionally, labelling of large or small-scale fishermen can be complicated by the fact that many small-scale fishermen supplement income from outside of fisheries (Chambers and Carothers 2016) and part-time fisheries participation is often not

considered in the compilation of larger statistical trends. A small but not insignificant number, 28%, of small-scale fishermen, participate in large boat fisheries as crew or skippers (Chambers and Carothers 2016). Thus, a man defining himself as a small-boat fisherman for cultural and personal reason may actually make yearly income from being a crew member on larger boats. Small-scale fishermen making over 80% of their salary from fisheries reported a median annual income between 4–6.9 million kronur in 2013 (Chambers, unpublished data), just slightly higher than the 3.7 million national median that year.

There is significant consolidation in the hook and line system as well. In 2014, the ten largest hook and line companies owned a third of the quota but new laws state that each company can only own 4% of the hook and line cod quota and 5% of haddock (Viðarsson et al. 2015). Quota ownership plays an important factor in the differences between small-scale fishermen. Just over half of small boat fishermen do not own quota, and only a small percentage rent quota; the remaining fishers who neither own nor rent quota partake in the non-privatised fisheries or community quota. Those who own quota are more likely to rent even more quota and also make significantly more of their yearly income from fisheries, effectively creating two different classes of fishermen, the quota holders who can rent more quota if needed, and the non-quota holders who do not rent quota (Chambers and Carothers 2016). The "no discards" rule in Icelandic fisheries has a particular impact on those that do not own quota. These individuals are forced to rent quota for the day to land catch they do not have quota for, pay the penalty of landing catch without quota, or discard the catch they do not have quota for, which is sometimes the most economically viable option (Chambers and Carothers 2016).

The majority of small-scale fishers are men, although women are often co-owners of the fishing companies or involved in book-keeping and business aspects that are not accounted for in official records (Chambers and Carothers 2016). In general, there is a clear gender division in occupations and access to decision-making in fisheries, even if it is much likelier to be sustainable from a welfare perspective if both women and men were taken into account equally. In a survey distributed among the largest companies involved in fisheries in 2006, the number of women on executive boards who were also owners was 10 out of 73 board members (Karlsdóttir 2006a). Fisheries have for a long time been perceived as a "guys business", even if many daughters or wives have become substantial capital holders of quotas (Ministry of Fisheries 2007; Willson 2016). The stereotypical perceptions of women's ability to exist in the fisheries coincides with the deeply-held perception that some roles suit women better than others, ownership being one of those roles (Karlsdóttir 2004; Willson 2016).

In the 1990s, several socio-economic changes led to an increased number of immigrants in the fishing industry, particularly in processing plants in rural communities, as Icelandic women left the smaller fishing towns for a more diversified labour market and career opportunities in the capital region and regional centers (Skaptadóttir and Rafnsdóttir 2000; Skaptadóttir and Proppé 2005; Karlsdóttir 2009). After the transition to the ITQ system, decreased job security and job losses for inhabitants in smaller villages created negative attitudes towards jobs in fish processing. The jobs were increasingly seen as degrading, associated with low lev-

els of status and skills, and low paid and monotonous resulting in general feelings of disempowerment in fishery communities (Karlsdóttir 2008, 2009). Many women expressed feeling stuck in an industry without future prospects (Skaptadóttir and Proppé 2005; Karlsdóttir 2006b, 2008). Similar trends affected youth in rural communities (Bjarnason and Thorlindsson 2006). Given the trends of quota consolidation and rural depopulation, it is not surprising that youth are markedly absent from small-scale fisheries; the average age of small-boat fishing captains is 56 (Chambers and Carothers 2016). Although long-term crew data are lacking, a recent survey of small boat fishers suggests that less than 1% are under the age of 30, and less than 1% have fewer than 5 years' experience (Chambers and Carothers 2016).

Two industries, aquaculture and tourism, are likely to have the most significant interaction with Icelandic small-scale fisheries, although their current conflict is minimal. Aquaculture is not considered a major industry in Iceland, producing less than 8000 tonnes per year (Statistics Iceland 2016), but regional development plans focused on aquaculture growth signify a trend that could impact small-scale inshore fisheries in the future in contests over marine space. As in many other Arctic regions, there are reports of conflicts between net-pen farming and capture fisheries (Allison 2012; Osmond 2013; Karlsen et al. 2015); however, these instances are minimal at the current time and concentrated in the aquaculture regions of the West and East fjords.

Similarly, as tourism in general continues to expand rapidly in Iceland, so do the marine-based tourism activities of sea angling and marine mammal and bird watching cruises. Sailing and dive tourism do exist but in negligible numbers. Sea angling increased in the mid 2000s but is still considered a relatively small industry, and is located primarily in the Westfjords (Gunnarsdóttir and Halldórsdóttir 2012; Brenner 2014). A "leisure fishing" system exists for tourism angling operations, where the catch cannot be sold. In 2013, 49 vessels were licensed under leisure fishing and caught 220 tons. Leisure fishing is not thought to compete much with commercial fisheries because the overall catch is relatively small, and often small-scale fishers are involved in leisure fishing companies. Marine mammal and bird watching are often included on the same boats as sea angling operations, and although there is known friction that exists between fishers and whale-watching boats (Einarsson 2009), there is unlikely to be a major conflict in the future. Many fishermen also see the economic value in whale watching and many of them also have jobs as skippers on whale-watching boats. Large cruise ships continue to increase in number in ports around Iceland, and at the time of writing it is not known if there are any specific aspects of large-scale cruise tourism that would particularly interact negatively with small boat fisheries.

## 16.5 Institutional and Organisational Context

All fisheries in Iceland are managed under the Ministry of Industry and Innovation (see Chambers and Carothers 2016 for a detailed description). The Freshwater and Marine Research Institute (*Hafrannsóknastofnun*) gives official scientific advice for

all species and fisheries, but final TAC decisions are set by the Minister of Industry and Innovation. “Cod equivalents” are used to standardise quota trade, in which species are given a weighted value in relation to their market value compared to cod. The Directorate of Fisheries (*Fiskistofa*) supervises compliance with other regulations, such as area closures and gear restrictions and general administration of the ITQ system and licensing. No discards are permitted in any fishery, and most catch from small boats is landed at designated “fish markets” that give real time landing and quota status updates to the Directorate of Fisheries and then sell the catch through a centralised daily national auction. The fish markets are, in general, evenly spread throughout the country, but are not in every community that has registered small boats. Buying directly from the fisherman is illegal, which can constrict the fishers in their options for landing the catch. The auction consists mainly of buyers from larger processing companies, who then bid for the fish depending on their customers and their processing capabilities at the time. Therefore, catch from small scale boats is not always processed locally, and when fresh Icelandic fish is purchased in the supermarket, it has likely been caught in one community, shipped over night on ice to be filleted in an urban area with processors, and shipped to a different community based on the processor’s contracts with the supermarket selling the fish. A small amount is also sold directly to processors (Smith and Chambers 2015). The auction system has, however, led to a steady increase in the value of cod sold on the market, compared to vertically integrated companies, which benefits small-boat fisheries (Knútsson et al. 2010).

In this highly centralised governance system, it can be difficult for small-boat fishers to meaningfully engage in decision-making processes. High levels of dissatisfaction in the management processes from small-boat fishermen result from a strong distrust of the political process where there is no formal outlet for participation (Chambers and Carothers 2016). All management decisions are made in meetings with the TAC advice from the Marine Institute. There is the opportunity for the small- boat fishers’ union representative to lobby the Fisheries Minister, but small-boat interests are often over-shadowed by large fishing companies and processors taking part in the same un-transparent political process (see Kokorsch et al. 2015 and Chambers et al. 2017 for further descriptions of the decision-making process). The lumpfish fishery is the only exception to this structure, where stakeholders have much more frequent and influential engagement in management decisions (Chambers 2016a). This exception is due to the relatively small and seasonal nature of the lumpfish fishery, and the strong lobby by lumpfish fishers to maintain control over the fishery. Small-boat fishermen think the best way to govern their own fisheries would be a devolution of quota (and therefore power) to a regional system, as well as tighter restrictions on quota transferability (Kokorsch et al. 2015; Chambers and Carothers 2016). At the same time, small-boat fishermen have suggested that an ITQ system was the best option for large-boat fisheries, attesting to the importance of appropriate management schemes for different types of fisheries, instead of a national ITQ panacea (Chambers and Carothers 2016).

## 16.6 Policy Context

### *16.6.1 International Policy*

After the economic crisis of 2008 hit Iceland particularly hard, EU accession negotiations began formally in 2010. In opinion polls, the public was often undecided on their support of EU accession, and often resistance came from the fishing industry, both large and small boats, because of the uncertainty surrounding how the adoption of EU fishing regulations would affect Icelandic fisheries and the perceived shortcomings of the Common Fisheries Policy on fish stocks (Bjarnason 2010; Wolf 2013). There is also a sense of national pride at play, after Iceland fought hard to win jurisdiction over its fishing grounds with the development of the EEZ and subsequent "Cod Wars," there has been little interest in European political alliances (Thorhallsson 2002). Large companies with vertically integrated fishing, processing, sales, marketing, and product development channels felt that Iceland would lose profits from value-added products if Icelandic companies were opened up to European ownership (Pálsson 2012).

There was also the fear that Icelanders would lose out on part of the catch that was traditionally in Icelandic waters, as well as power in negotiations over straddling stocks. Disagreements over mackerel – fished by both large and small boats – are the primary example of Iceland's perceived right to manage its own fish stocks (Leruth 2012; Popescu and Poulsen 2012; Wolf 2013). Mackerel have been increasing in Icelandic territorial waters due to warming. After not being allowed to participate in mackerel negotiations that are co-managed by Norway and the EU, Iceland unilaterally set national quotas for mackerel in 2010, thus exceeding the TAC recommended by ICES. After this episode, Iceland was allowed to take place in the mackerel decision-making process, but consensus has still not been reached, and this may have played a large part in Iceland's decision to freeze its EU bid (Damanaki and Berg-Hansen 2012; Griswold 2015). In September 2013, Iceland's government suspended its EU application and in March 2015 the Foreign Minister withdrew Iceland's application. Currently, Iceland's EU application could be reactivated in the future depending on the political climate in Iceland, and it could be expected that fisheries would again play a major role in the application process.

### *16.6.2 Domestic Policy*

At the local and national level, several national programmes exist to support small-scale fisheries and fishing communities. While aimed at fisheries, these policies reflect an overall debate in Iceland regarding the future of rural communities, and show how national policy goals of growth and support can directly influence small-scale fisheries. First, there is a "long-line concession" (*linuívilnun*) where longliners landing daily and using a manual baiting process are allowed to land an extra 20%

on top of their quota, the idea being that hand-baiting supports local employment in processing and baiting activities. In 2013, 202 boats were included under this allowance (Þórðarson and Viðarsson 2014).

Second, the community quota programme (*byggðakvóti*) that began in 2003 funnels extra quota directly to fishermen who will land their fish in particular communities under regulations specific to the community. There were 7000 tonnes of cod equivalents assigned to the community quota system in the 2014–2015 fishing year, less than 2% of the 2015 TAC in cod equivalents (a ratio of a species' market value compared to the value of gutted cod - used as a form of species transformations for quota balancing). At the beginning, the idea of community quota was to create and maintain jobs in villages by tying the delivery of community quota fish to specific communities. Therefore, the fish caught under community quota were to be landed in the community that the boat was registered in, and could also be subject to other rules such as the prohibition of renting or selling of that quota. In its original form, the community quota was thought to be a temporary support measure, where the gifting of the quota for a certain time would cause a multiplier effect, and fishermen and processing plants in communities would continue to grow after initial support. In the past, mayors or municipal leaders were given quota directly to divide among fishing operations as they saw fit. Often, community leaders would give the community quota to the boats that already fished the most, as they would make efficient use of the quota and in turn bring the most economic benefit to the community. These actions were contested by those who felt community quota should go to those who needed it the most, and community leaders as well as fishermen were relieved when the system changed to its current status. Now, fishermen send an application directly to the Fisheries Directorate that in turn assigns community quota to individual boats in specific communities. In its current form, community quota acts essentially as individual support to existing fishermen (Chambers 2016b).

And third, as described above, *strandveiðar* was established in partial response to the UN Human Rights Commission ruling on the ethicality of the quota system and right to work options for newcomers to fisheries. Although the *strandveiðar* season can bring more processing employment opportunities to communities and life to harbours (Halldórsson 2010; Einarsson 2011), there is some contention over whether it offers access to newcomers or young fishermen (Chambers and Carothers 2016). The average age of individuals who fish *strandveiðar* is no different from the average of all small-boat fishers, and with an average of 30 years of fishing experience, most *strandveiðar* fishers are not considered to be newcomers. Because of tensions between quota-holders and *strandveiðar* fishers, and between *strandveiðar* fishers in different fishing zones, there have been bumps along the road in the evolution of *strandveiðar* (Chambers et al. 2017). *Strandveiðar* is criticised by large and small-boat quota holders alike as a system that encourages free-riding since participants do not have to pay for quota. *Strandveiðar* participants criticize the derby-style fishing that results in short fishing seasons, which can be less than a week in August for certain fishing zones. The division of quota into four fishing zones also leads to unequal outcomes as fishing grounds, weather, and road conditions to transport the catch can vary between zones. Although the future remains unclear, it

appears as though as of now, the *strandveiðar* system mostly benefits those already invested in fisheries or who already have well-established careers, as opposed to newcomers intent on building up capital to further invest in a fishery business.

## 16.7 Looking to the Future

Icelandic small-boat fisheries exist under a complex mixture of social, political, economic, environmental and technical constraints and opportunities. Future environmental changes may affect certain stocks like mackerel as previously discussed. The opening up of new markets such as lumpfish to China can expand the possibilities for small-boat fisheries. Opportunities in marketing and labelling could play a larger role in the future for small-boat fisheries, as MSC certification continues to grow alongside of other Iceland-based and international labelling schemes. However, the importance of Iceland's position as a fisheries export economy cannot be understated. Although other sectors are growing, such as technology and tourism, fisheries remain a significant contributor to Iceland's GDP. Therefore, Iceland's foreign policies will continue to have a significant impact on fisheries, both large and small-scale. For example, small boat fisheries were negatively impacted after Russia placed a ban on imports from Iceland in August 2015 as a reaction to Western sanctions over the Ukraine crisis because before that, about 10% of Iceland's fish exports went to Russia (Guðmundsson 2015).

It is in this national and international context that small-scale fisheries exist; and Iceland's international politics will be a major factor determining the future of small-scale fisheries. Economic growth in large-scale fisheries has been given top priority through the ITQ system, and fisheries management through the ITQ system continues to be a primary driver of change in small-scale fisheries and rural communities. Increasing costs for boats, licensing and yearly fees, and fluctuations in fish market prices strongly impact small-scale fisheries. In addition, rural migration and other larger social trends will continue to impact recruitment to small-scale fisheries. As young people migrate towards urban areas or abroad for education and employment and as the trend of quota consolidation shows no sign of slowing, the call to develop further policies that meaningfully impact access and participation in culturally and historically important small-boat fisheries becomes ever more imperative.

## 16.8 Conclusion: Main Lessons and Implication of Lessons in Terms of Policy and Future

In Iceland, as in every nation, small-scale fisheries do not exist in a bubble. Strong political and economic forces have generated significant changes in small-scale fisheries in the past decades. The ITQ system has been the principal driver of change for small-scale fisheries and the rural communities that small-scale fisheries are intimately linked to. The impacts of the ITQ system on small-scale fisheries and

rural communities have been widespread and long-lasting, and efforts such as *strandveiðar* and the community quota system are by-and-large considered positive overall, but nonetheless ineffective in the larger national and international atmosphere of large-scale fisheries. As the major focus for Iceland's fisheries continues to be profit generation from large-scale fisheries, small-scale fisheries suffer from a lack of decision-making power. The future remains uncertain for small-scale fisheries due to continued quota consolidation along with other demographic changes in rural communities that reduce participation in fisheries. If viable small-scale fisheries are to continue to exist in Iceland, it will be through (1) stronger regional development policies that take rural communities into account, (2) modifications to the ITQ system that allow for newcomer access to fisheries, and (3) an updated governance system with more equitable power-sharing arrangement.

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# Chapter 17
# UK Small-Scale Fisheries: Status, Devolved Responsibility and the Challenge of Sustainability


**David Symes, Emma Cardwell, and Jeremy Phillipson**

**Abstract** Coastal waters around the UK provide richly diverse fishing opportunities for small-scale enterprises that make up 79% of the active fishing fleet but account for only 11% of overall landing value. In terms of size, fishing activity and governance the small-scale sector exhibits marked regional variation. Fisheries administration is devolved to the four constituent 'nations' (England, Scotland, Wales and Northern Ireland) and the analysis pays particular attention to contrasting systems of devolved local governance for inshore/small-scale fisheries in England and Scotland. Sustainable futures for small-scale fisheries are under threat from internal and external pressures: social renewal faces uncertain recruitment; fishing activity confronts increasing competition for space from conservation, recreation and renewable energy interests; and traditional forms of adaptive behaviour are challenged by restrictive legislation. An ideal governance landscape for building resilience within the sector is posited on the integration and empowerment of local institutional networks.

**Keywords** Adaptive response · Devolved governance · Resilience · Social renewal · Sustainability

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## 17.1 Introduction

The United Kingdom of Great Britain and Northern Ireland lies to the west of mainland Europe. Its fragmented and indented coast yields one of the longest coastlines and most extensive territorial waters in Europe (see Fig. 17.1). This, together with


**Fig. 17.1** The UK fisheries sector, 2014

its proximity to some of Europe's most prolific seas, offers a rich diversity of fishing opportunities reflected in a long standing interest in coastal fishing.

As its name implies, the UK has a complex political structure comprising four separate 'nations': England, Wales, Scotland and Northern Ireland, each with their own administrations.[1] Fisheries and their management are 'devolved matters', resulting in four different departments dealing with fisheries, each making its own mark when it comes to managing small-scale fisheries, formally defined as relating to 10 m and under vessels, herein after termed 'under 10m vessels', rather than the European norm of under 12 m.

Defining small-scale fisheries by reference to vessel size is problematic. In the UK the link between under 10 m boats (which also include vessels using towed gear), limited catching capacity and low impact fishing has been undermined by the ingenuity of small boat builders in designing so-called 'super under 10s' with catching and storage capacities well in excess of what is expected from small-scale fishing enterprises and by the determination of some under 10 m shellfish fishers to maximise output by deploying unusually large numbers of pots. Vessel size has never been a reliable indicator of harvesting capacity in the cultivation of mussels and oysters. Yet vessel length remains the only universal standard for measuring the size of the small-scale sector.

The defining characteristic of the UK's small-scale fisheries is diversity, not only in relation to the range of species and *métiers* used but also the aspirations, behavioural patterns and performance in fishing. For some, small-scale fishing is simply a stepping stone to something bigger, or conversely a scaling down towards eventual retirement, while for others it offers a sufficient and fulfilling way of earning a living. Participation may be full time, part time, seasonal or occasional. And overlapping the realm of commercial small-scale fishing are burgeoning recreational fisheries. Such diversity provides a huge challenge for fisheries management.

Mention must be made of the historical legacy of a situation where from the late 19th to the mid twentieth century the UK fishing industry was dominated politically and economically by large scale, company owned, industrial fishing interests involved in distant water fishing that accounted for a huge share of landings into UK ports (Horobin 1957; Tunstall 1962; Symes and Phillipson 2016). This legacy still appears to exercise some influence – notably in the *laissez faire* approach to small-scale fisheries – despite enforced restructuring of the industry in the aftermath of the spread of 200 mile Exclusive Economic Zones in the 1970s. For the past 35 years the UK fishing industry has been subject to the EU's Common Fisheries Policy. However, with the referendum decision in 2016 to withdraw from the EU, the basic political framework within which policy decisions affecting the fishing industry are made is set to be fundamentally altered.

[1] Situated within the same geographical envelope are two small self-governing UK dependencies: the Isle of Man in the Irish Sea and the Channel Islands closer geographically to France but with historical ties to Britain. Neither dependency is formally a member of the EU. Both have locally important small-scale fisheries, focused mainly on shellfish. Fisheries management agreements with the UK government permit locally registered boats to fish against UK quota allocations.

## 17.2 Current Status of Small-Scale Fisheries

Following the collapse of distant water fishing in the 1970s, the centre of gravity for the UK fishing industry moved northwards from the Humber ports of Hull and Grimsby on the east coast of England to north east Scotland (Peterhead, Fraserburgh) with an outlier even further north on the Shetland Islands. Today Scotland accounts for 63% of UK landings by volume and 60% by value, derived largely from seasonal North Atlantic pelagic fisheries and demersal fisheries in the northern North Sea and off the west of Scotland, prosecuted by the large boat sector (15 m and over vessels).

When it comes to small-scale fisheries, a very different picture emerges. Under 10 m vessels account for 79% of the UK fleet but only 11% of the catch value (MMO 2015a). It is, however, England that boasts the largest inshore fleet and the highest landings by weight and value, distributed across a much wider range of species (see Tables 17.1 and 17.2). This geographical inversion can be explained by environmental and historical factors: a greater variety of habitat and species in warmer, less exposed southern waters; a longer history of commercial shellfish harvesting and cultivation; and a well established, locally devolved system of inshore management in England and Wales.

### *17.2.1 The Fleet*

A striking feature of inshore fishing in the UK is the concentration of commercial activity in a narrow band of 8–10 m vessels accounting for just over 40% of the small-scale sector but 80% of the total catch value (MMO 2015a). It is from within this narrow band that the opportunity arises for small-scale fishing to provide the basis for full time employment, generating a living wage. Rather more surprising, and less readily explained, is the fact that average catch values per vessel are very

**Table 17.1** UK fishing sector 2014

| | England | Wales | Scotland | N. Ireland | UK Other[a] | UK |
|---|---|---|---|---|---|---|
| **Volume of landings (000' Tonnes)** | 200.5 | 11.7 | 480.7 | 57.3 | 5.8 | 756.0 |
| of which <10 m (%) | 12 | 32 | 2 | 4 | 20 | 6 |
| **Value of landings (£ m)** | 268.7 | 14.8 | 513.8 | 55.7 | 8.1 | 861.0 |
| of which <10 m (%) | 18 | 39 | 7 | 7 | 19 | 11 |
| **Total active vessels**[b] | 3128 | 466 | 2048 | 368 | 324 | 6383 |
| of which <10 m (%) | 82 | 91 | 71 | 61 | 92 | 79 |
| **Total fishermen** | 6217 | | 4796 | 832 | N/A | 11,845 |
| of which part-time | 1108 | | 816 | 149 | N/A | 2073 |

Source: MMO (2015a) and additional data supplied by the UK Marine Management Organisation
[a]Includes Isle of Man, Guernsey and Jersey
[b]Excludes mussel dredgers. Includes vessels without an administration port

**Table 17.2** The small-scale sector, 2014: composition of catch by value

| Taxa | Species | England £ | Wales £ | Scotland £ | N. Ireland £ | UK Other[a] £ | Total £ |
|---|---|---|---|---|---|---|---|
| **Demersal** | | **17,471,322** | **836,757** | **280,307** | **18,699** | **8412** | **18,615,497** |
| of which | Bass (*Dicentrarchus labrax*) | 5,843,036 | 616,729 | 4825 | – | 7 | 6,464,597 |
| | Sole (*Solea solea*) | 4,476,530 | 35,114 | 67 | 1602 | 42 | 4,513,356 |
| | Cod (*Gadus morrhua*) | 867,601 | 5185 | 217,845 | 2088 | 317 | 1,093,037 |
| | Pollack (*Pollachius pollachius*) | 1,032,172 | 482 | 9468 | 1419 | 6518 | 1,050,060 |
| | Skates/rays (*Rajo*) | 874,126 | 72,730 | 1805 | 203 | 89 | 948,954 |
| | Monks/anglers (*Lophius piscatorius*) | 713,987 | 6657 | 6941 | 3746 | 75 | 731,405 |
| | Lemon sole (*Microstomus kitt*) | 663,128 | 27,316 | 951 | – | 13 | 691,408 |
| | Plaice (*Pleuronectes platessa*) | 607,472 | 12,825 | 431 | 189 | 0 | 620,917 |
| | Turbot (*Scophthalmus maximus*) | 601,383 | 3869 | 236 | 4209 | 14 | 609,711 |
| | Other demersal | 685,627 | 30,375 | 22,049 | 8 | 10 | 738,069 |
| **Pelagic** | | **1,390,583** | **1398** | **487,354** | **303,851** | **4425** | **2,187,612** |
| of which | Mackerel (*Scomber scombrus*) | 905,643 | 356 | 487,354 | 302,526 | 4099 | 1,699,978 |
| **Shellfish** | | **29,417,186** | **4,952,704** | **36,031,123** | **3,772,749** | **1,508,668** | **75,682,430** |
| of which | Lobster (*Homarus vulgaris*) | 10,367,999 | 1,341,552 | 9,907,641 | 834,558 | 350,574 | 22,802,324 |
| | Crab (*Cancer pagurus*) | 7,027,065 | 332,227 | 8,708,361 | 1,155,679 | 258,135 | 17,481,468 |
| | Nephrops (*Nephrops norvegicus*) | 1,716,803 | 27,849 | 13,305,398 | 805,505 | 5194 | 15,860,749 |
| | Whelk (*Buccinidae*) | 5,775,232 | 2,231,094 | 393,987 | 186,330 | 481,880 | 9,068,523 |
| | Scallop (*Pectinidae*) | 1,219,650 | 544,122 | 2,411,502 | 636,171 | 411,590 | 5,223,035 |
| **Total** | | **48,279,091** | **5,790,859** | **36,798,784** | **4,095,299** | **1,521,505** | **96,485,539** |

Source: Data supplied by the UK Marine Management Organisation

[a]Includes landings by vessels registered in the Isle of Man, Guernsey and Jersey

**Fig. 17.2** Portree, Isle of Skye, UK. (Photo credit: J. Phillipson)

much higher in Scotland and Northern Ireland than in England and Wales. These figures may lend credence to the idea that, whereas in Scotland and especially in western and northern districts (Fig. 17.2) – areas where alternative employment opportunities remain relatively scarce – small-scale fisheries are seen essentially as a means of supporting a family household, a more diverse set of circumstances and motivations is needed to explain the persistence of small-scale fishing in England and Wales. Low average catch values for under 8 m vessels suggest that part time, occasional or 'hobby' fishing with a supplementary income earning role is the norm.

### *17.2.2 The Fisheries*

Traditionally, small-scale commercial enterprises would seek to maximise opportunities presented by the diversity of local fishing grounds either by building a portfolio of seasonal fisheries sufficient to permit year round fishing or limiting their participation to a particularly lucrative fishery combining this with other employment ashore. On the north east coast of England, for example, a typical combination in the 1980s for an under 10 m boat fishing for 45–48 weeks of the year would include crab or lobster potting from March to October, overlapping with a short but rewarding 12 week salmon netting season (May–August) and weather dependent autumn and winter longlining or gill netting for cod (Symes and Phillipson 2001).

Such a combination provides an element of risk spreading and, coincidentally, a means of preventing undue pressure on any one stock.

Today, opportunities for diversifying into different coastal fisheries are limited by restrictive regulation concerning access to quota controlled species and the reduction in coastal salmon licences. One is increasingly likely to find small-scale enterprises forced into a dependence on more specialised, occasionally 'monocultural' fishing activity. An example of such dependence is to be found in the Outer Isles – one of Scotland's most fisheries dependent areas – where 78% of the local fleet is under 10 m and 98% of landings by value are accounted for by shellfish, with 61% of all vessel earnings coming from *Nephrops* (Scottish Government 2010). The recent development of *Nephrops* fishing has provided something of a revival for the west coast industry. Although heavily outgunned by the offshore trawling fleet, the small potting sector is able to deliver a quality product attracting higher prices when sold direct to outlets in Spain.

Latent capacity is becoming a particular problem for small-scale fisheries. Decommissioning schemes offering financial inducements for removal of spare capacity in the offshore sector have excluded under 10 m vessels. Abundant unused capacity exists within the small-scale sector, including vessels operating part time or tied up on a more or less permanent basis but retained against loss of, or retirement from, employment ashore, *inter alia*. Reactivation of such latent capacity could have significant consequences for small-scale fisheries and their ecosystems. However, apart from quota regulated fisheries, where a temporary cap on landings is set at 350 kg/annum for English under 10 m vessels that consistently caught less than 300 kg of quota species during the period 2010–2013, fisheries departments have been reluctant to cap individual fishing effort. The impact has been particularly noticeable in the crustacean fisheries where formerly an under 10 m lobster boat might have set 50–100 pots each trip, today it could be deploying in excess of 500 pots.

Recreational fishing, ranging from diving (for scallops and crustacea), shore- and vessel- based sea angling to casual use of privately owned dinghies fishing for home consumption, also presents a growing problem. This is particularly the case along Britain's southern coasts where anecdotal evidence suggests a weekend's recreational fishing activity can result in catches that exceed the monthly quota allocations for the area's under 10 m commercial fleet.

## 17.3 Socio-Economic Context

The numbers employed in the UK fishing industry have been falling more rapidly than the number of active fishing vessels, implying not only advances in on-board technologies but also structural and operational changes within the fishing enterprises themselves. Thus, between 2004 and 2014, there was a 9% decrease in the size of UK fishing fleet and a 12% reduction in the number of fishers on UK registered vessels (a 15% decrease of part time fishers) (MMO 2015a).

Small-scale fisheries have long been quintessentially family enterprises, owned and operated by members of the family household with crews formed from within the household (father-son(s); brother-brother combinations) and less commonly from within the extended family (uncle-nephew(s)) or the wider local community, with fisher wives commonly contributing to the shore based side of the business (Symes and Frangoudes 2001).

In recent years changes have been occurring in the nature of the family enterprise. Smaller family size, together with uncertainties over the future prosperity of the sector, the effects of extended education and an increasing range of jobs in the regional economies, have meant that fewer sons are choosing to follow their fathers into the family business (Williams 2014). Some sons opting for a future in fishing but anxious to accelerate their chances of skippering their own boats may elect to take employment on larger vessels or ashore in order to accumulate savings to invest in the purchase of a boat, licence and gear. Such actions are reflected in the downsizing of crews on under 10 m boats (White 2015). It is no longer rare to find small-scale enterprises that once provided employment for two or three men now being operated single handed, assisted by changes from wooden or steel hulled boats to much lighter, more manoeuvrable plastic hulled boats and the acquisition of labour saving gear technology. Today, also, the fisher's wife is likely to be contributing to the household income through paid employment. The social reproduction of small-scale fisheries is facing a major challenge and recruitment into the sector is becoming increasingly problematic (see Box 17.1).

All of these changes are reflected in the changing ethos of small-scale fishing – where participation may no longer necessarily be a matter of family obligation but one of personal choice. Though fishing may continue to perform an important role in shaping the identities and values of fishers and coastal communities (Acott and Urquhart 2014; Ross 2015), fishing may no longer dominate the lives and landscapes of those living in small coastal settlements (Williams 2014; Ross 2015). In a recent study of the social impact of England's inshore fishing industry, the 'elusive social group' of inshore fishermen are portrayed in rather negative terms as 'survivors', many in their late 50s relying on strategies designed to keep overheads, labour costs and financial risks low (Reed et al. 2011). Their value to the local economy was portrayed as owing less to revenues from fishing and more to the indirect servicing of the local tourism industry through animating the local harbour scene, providing a living link with fishing heritage and supplying hotels and restaurants with a genuine taste of the sea (see also Acott and Urquhart 2014).

## 17.4 Institutional and Policy Context

To date fisheries management throughout the UK has shared a basically common legislative framework and a broadly similar approach, though a concordat signed by UK ministers in 2012 devolves the allocation and management of quota to the four UK administrations. The governance of small-scale fisheries or, more precisely,

**Box 17.1: Recruitment Issues in the Norfolk Crab Fishery**

The north Norfolk crab industry in eastern England currently involves 48 boats, mostly under 10 m, and around 75 fishermen of whom a third are part time. It includes both small beach launched boats fishing within 3 miles of the coast on trips lasting 2–5 h and a smaller number of larger boats based in harbours such as Wells-next-the-Sea and operating up to 20 miles offshore with trips up to 20 h duration.

Despite good catches, improving market demand and a reasonable level of income, the industry faces a growing recruitment problem triggered by the decline of intergenerational succession. Today around a third of skipper-owners are from non-fishing backgrounds. There are now two distinct recruitment pathways: the traditional route where sons elect to work alongside their fathers from an early age and an increasingly important but more difficult pathway for those from non- fishing backgrounds.

In a region where job opportunities are scarce and often seasonal, it is not unusual to find school leavers expressing an initial interest in fishing. Very few will go on to secure permanent employment in the industry. Those from non-fishing backgrounds face a major hurdle when attempting to secure their first job in fishing – a crucial stage allowing the recruit to gain knowledge and experience and test his resolve and suitability for working in the sector. However, in a fishery, where for reasons of uncertain succession or cost reduction boats are increasingly adapted for one man operation, experienced skippers are reluctant to take on the distraction and cost (wages) of a young trainee.

The final hurdle to becoming an independent skipper-owner is the purchase of a boat. The cost of a second hand 7 m beach boat together with gear and licence is around £45,000 – a not inconsiderable sum especially where the would be skipper is already burdened by the costs of raising a young family. Failure to achieve the final goal may prove a further catalyst for moving to other employment offering more regular income.

Source: White 2015

inshore waters, has however always had varying national approaches, creating a rather confusing situation best described as a mixture of benign neglect and devolved responsibility.

### *17.4.1 The European Union*

Of the three levels of governance, the European Union (EU) has exerted the least effect on small-scale fisheries following the 1983 derogation that effectively delegated responsibility for management of the 6 and 12 nm zones to the member state.

Its direct influence has been limited to setting basic parameters for quota management, including total allowable catches, and deciding the gear regulations and minimum landing sizes for vessels operating in EU waters. The latest reform of the CFP did nothing substantive to alter this situation. Representatives of the small-scale sector have been quick to infer a link between criteria laid down in Article 17 for allocation of quota and small-scale fishing: the Article itself however makes no specific reference to small-scale fisheries and its language is permissive rather than coercive.

The most significant contribution of the EU came not from the implementation of the CFP but the provisions of the European Fisheries Fund (2007–2014) and the Axis 4 programme. Although not designed specifically to answer the needs of small-scale fisheries, the Fisheries Local Action Groups (FLAGS) have attempted to address some of the basic concerns relating to direct marketing of catches and the closer integration of the sector with other sectors of the local economy (Phillipson and Symes 2015). We are yet to see what the UK's exit from the EU will mean for the small-scale sector: on the one hand, there is potential for deregulation, particularly relating to quota. On the other hand, withdrawal from the European Fisheries Fund could leave fishers without important funding for local development and infrastructure.

### *17.4.2 The United Kingdom*

The burden of managing the small-scale sector nominally has fallen on the UK government. In matters relating to the conduct of the CFP the UK (Westminster) government has assumed responsibility as the signatory state. To understand how its obligations have been discharged it is simplest to divide them into those relating to quota management and those dealing with the inshore waters.

A key feature of the UK quota management system is the so-called sectoral quota, whereby c. 99% of the UK's allocation is handled by self-governing producer organisations (POs), whose membership includes the great majority of over 10 m vessels, and managed through an informal system of individual transferable quota (Phillipson 1999). With the exception of the Cornish PO, under 10 m vessels are excluded from PO membership. The remaining 1% of quota is divided into two parts – approximately 0.15% for over 10 m vessels not in PO membership (the so called 'non-sector') and approximately 0.85% for the under 10 m fleet (MMO 2015b). In both cases non-transferable quota is allocated on a monthly or, less commonly, bi-monthly basis. As under 10 m vessels have been exempt from the EU requirement for keeping logbooks to record catches by species and area of catch, the above quota shares were originally based on catch estimates. With the registration of buyers and sellers of fish introduced in 2006, which records all fish at the point of first sale, it soon emerged that landings of quota regulated species had been greatly underestimated, and the amount of quota available to the under 10 m pool was insufficient to maintain the viability of vessels fishing for quota regulated spe-

cies. The premature closure in October 2015 of the under 10 m Channel cod fishery – a valuable winter fishery for small-scale enterprises – is indicative of the problem. There have been some complaints from within the small-scale sector that this centralised system of quota management is unnecessarily restrictive and punitive when compared to PO management, while others appear to favour the *status quo* (Cardwell 2012).

Following a wide ranging inquiry into the future sustainability of small-scale fisheries, a series of proposals were set out in 2012 by the Westminster government in respect of the English fleet. Included were (i) the transfer of c. 3% of English sectoral quota to the under 10 m pool, roughly the equivalent of long-term unfished quota; (ii) the movement of the highest catching under 10 m vessels into PO membership; and (iii) the trialling of community quota schemes for the remaining under 10 m vessels. The package of proposals encountered strong opposition, and the failure of the community quota schemes indicated the unwillingness of the small-scale sector to entertain the idea of community quota, at least while the amount of quota available is so small. At the same time, a legal appeal against the transfer of quota to the under 10 m pool was lodged on behalf of the PO sector, in which the court ruled in favour of the government. The New Under Tens Fishermen's Association's (NUTFA) alternative approach based on an English coastal fishermen's PO, dedicated to the management of the under 10 m quota pool, becomes operational in 2017. Meanwhile, the implications of the EU's landing obligation introduced in 2016 is proving difficult for the under 10 m fleet where a vessel's monthly quota for certain species can be fully taken up within a couple of days of good fishing. However, it may ultimately bring a measure of relief from the underlying problem of inadequate quota with the promise of any uplift attributable to the ending of discards envisaged as an initial allocation of 100 t to the under 10 m sector plus 10% of any remaining additional quota.

The quota management issue has exposed a serious, disabling flaw in the governance of small-scale fisheries in England: the lack of a coherent organisation and effective engagement in the affairs of the small-scale sector (Symes 2013), as evidenced by the weak level of responses to recent government consultations and the high degree of variance in their content. The situation is not helped by the division of representation of the sector between the National Federation of Fishermen's Organisations (NFFO) whose membership covers all of the UK except Scotland and thus must reflect the widest possible range of interests, and NUTFA, which is dedicated to the promotion of small-scale fishing interests. The absence of a single, clearly articulated and coherent voice in negotiations with the fisheries' administrators is a serious disadvantage for the small-scale sector. In England the current division could be resolved with the incorporation of the new coastal fisheries PO within the representational structure of the NFFO. The problem is less apparent in Scotland where small-scale fishing interests are represented through the presence of regional organisations like the Western Isles Fishermen's Association on the board of the Scottish Fishermen's Federation.

### *17.4.3 National Administrations*

Within the UK, responsibility for managing fisheries within the inshore waters is devolved to the *national administrations* and it is from their different institutional arrangements and regulatory instruments that strong contrasts in the approach to small-scale fisheries emerge (Phillipson and Symes 2010).

*England and Wales* have enjoyed the benefits of one of the most comprehensive systems of devolved co-management for over 120 years. Following the *Sea Fisheries Regulation Act* 1888 a total of 12 Sea Fisheries Districts, extending initially to the three mile and now six mile limits, were identified. Despite ranging in size and complexity they were all administered by committees comprising equal numbers of local authority councillors, on the one hand, and representatives of local inshore fisheries and, later, recreational fishing and wildlife conservation interests, on the other, and staffed by a chief fisheries officer and a complement of land based and seagoing officers. The Sea Fisheries Committees (SFCs) had at their disposal two important regulatory powers. Bylaws were used to limit the size and type of vessels operating within all or parts of the District, specify the number and size of fishing gears and vary national minimum landing sizes. Regulating and Several Orders[2] introduced under the *Sea Fisheries (Shellfish) Act* 1967 offered a fairly comprehensive means of managing shellfish stocks, including surrogate methods of capacity limitation such as fishing permits, varying the length of the harvesting season and the number of days fishing per week, together with daily catch limits. Regulating Orders vary in size from only a few hectares to quite extensive stretches of inshore waters: the largest are the Thames Estuary and Wash Regulating Orders covering 116,000 ha and 68,865 ha respectively. A key feature of the SFCs was their independent surveillance and enforcement capability with each District operating at least one patrol vessel (Symes and Phillipson 1997).

Although the system continued to function efficiently up to the end of the twentieth century, it was becoming clear that the terms of reference and structures were in need of reconfiguration in order to cope with increasing pressures of environmental legislation and rising costs of operation (Symes 2002). In 2011 SFCs were replaced by Inshore Fisheries and Conservation Authorities (IFCAs) (Phillipson and Symes 2010). In many respects, IFCAs retained the structures and regulatory instruments of their predecessors but significant changes were made in respect of their remit, extended powers, improved funding and, most significantly, rebalancing the membership of the new authorities. Restructuring the membership included a reduction in representation of the local authorities, no longer the primary source of funding, and an increase in seats for local and national conservation bodies at the expense of commercial fishing interests. At the time of the transition from SFCs to IFCAs the *Welsh administration* decided to abandon the long-standing principle of devolved co-management and assumed direct responsibility for management of its inshore

[2] Several Orders provide for the allocation of shellfish beds among individual or groups of operators for purposes of cultivation, harvesting and renewal of stocks.

waters, linked to the creation of three local inshore fisheries groups (Symes and Phillipson 2009). Here serious doubts remain within the industry about the capacity of the revised system to conduct locally sensitive, financially efficient, and effectively enforced inshore fisheries management arrangements, and its ability to emulate the effectiveness of the former SFCs' lines of communication with local industry. A full review of IFCAs is expected by the end of 2019.

By contrast, the *Scottish administration* continues to favour a more centralised approach to the management of its vast inshore waters, estimated at 35,000 square miles. The principal act governing the approach to inshore management – the *Inshore Fishing (Scotland) Act* 1984 – grants the Minister wide range powers to regulate fishing activity within the 0–6 nm zone. In practice, these powers have been limited to actions prohibiting certain activities within defined areas of the 0–6 nm zone, mainly for stock conservation or in settlement of local conflicts between mobile and static gear use. This minimalist and largely reactive approach was deemed sufficient until, in the early years of the present century and following pressure from within the inshore sector, proposals were announced for the creation of 12 Inshore Fishing Groups (IFGs) responsible for developing local management plans. An initial tranche of six pilot groups was launched in 2009; 3 years later the decision was taken, largely on financial and administrative grounds, to reduce the final number of IFGs to six by extending the boundaries of the existing pilot groups.

Although the introduction of IFGs may be seen as a step towards more inclusive governance, in comparison with their counterparts south of the border IFGs represent a much weaker form of co-management (Phillipson and Symes 2010; Pieraccini and Cardwell 2015). The composition of their executive committees is confined to commercial fishing interests and inclined to favour non-local, nomadic fleet interests at the expense of local static gear fishermen. Access to scientific and wildlife conservation expertise is available through supporting advisory committees. Most importantly, the function of the IFGs themselves is essentially advisory: they lack executive powers, independent means of regulating fishing activity and enforcement capabilities. The decision whether to implement their recommendations remains with the Scottish administration (Marine Scotland). Only in rare instances where local fishermen have succeeded in establishing a Regulating Order – as in the Shetland Islands – can it truly be said that a system of local inshore management has been implemented in Scotland (Symes 2014).

The final piece of the jigsaw is *Northern Ireland*, with the shortest coastline and where, in terms of vessel numbers and landings (Table 17.1), the under 10 m sector makes the smallest contribution both regionally and to the overall UK fishing economy. Inshore fisheries are managed directly by the Department of Agriculture, Environment and Rural Affairs (DAERA) with two important exceptions: Loughs Foyle and Carlingford, both divided by the political boundary separating Northern Ireland and the Republic of Ireland. Legal disputes over jurisdiction and rising levels of illegal fishing of highly valued salmon led eventually to the establishment in 1952 of a bilateral commission to manage and protect fisheries in the two sea loughs. After 1998 the commission became known as the Loughs Agency. Salmon netting,

once a valuable source of seasonal income sustaining locally important inshore fleets, has since been phased out (Britton 2014).

## 17.5 A Sustainable Future?

Defining sustainability in the context of small-scale fisheries involves an approach best conceptualised through 'resilience theory' (Berkes 2010) relating in part to the interdependence of local ecological and social systems. The theory posits that resilience is achieved by learning to live with and adapt to changing environmental, social and economic circumstances rather than trying to override them and that the ability to adapt is consonant with maintaining diversity of opportunity. Without that essential diversity the scope for adaptation is constrained and the prospects for resilience weakened.

Over the past 40 years or so, conventional fisheries management, based on restrictive licensing and quota management, has greatly reduced the scope for diversifying fishing activity, thus reducing opportunities for new entrants and denying access to a traditional form of adaptation. By contrast resilience based management approaches aim to maintain the diversity, productivity and integrity of the local ecosystems that furnish the rich natural resources for inshore fisheries mainly through a combination of conservation measures (minimum landing sizes, closed areas/seasons, gear regulations *inter alia*) that protect fish stocks at critical life cycle stages. These same systems also recognise, respect and support the traditional values, local ecological knowledge and normative behaviours of small-scale fishing enterprises while maintaining a delicate balance between the needs of local fishing interests and the requirement for environmental conservation.

A neglected aspect of resilience concerns the functioning of the local economic system, now often defunct and replaced by regional, national and global systems of distribution designed to handle large volumes of fish. Small-scale fisheries cannot afford to see the value of their small volume, irregular landings of high value, locally caught fish dissipated by involvement in these larger, complex systems. Action is needed to rebuild local distribution networks through the collective efforts of relatively small numbers of enterprises in organising regular direct sales of locally caught fresh fish and shellfish to customers within a short radius of the landing port, or through individual contracts to supply local gastro-tourism outlets, as their core business. In such circumstances, where continuing success is built on personal service, reliability of supply and customer loyalty, the benefits of ecolabelling schemes is negligible. For those looking to sell their produce through regional or national distribution systems, the value of accreditation schemes such as those operated by the Marine Stewardship Council (MSC) that confer a premium price advantage may be considerable. Sadly at present the costs of accreditation lie beyond the reach of many small-scale fisheries (Ponte 2012).

Sustainable small-scale fisheries can only be generated at the local level through inclusive, devolved governance systems that attract the willing support of local fish-

ing and community interests and deliver effective co-management. There is an important enabling role for the national administrations, requiring a non-coercive approach that, for example, does not insist on the small-scale sector's conforming with management approaches designed for the over 10 m sector. National policy frameworks are needed to facilitate the essential diversity that allows small-scale fisheries to function effectively – in a sense permitting the small-scale sector to continue harvesting the fruits of non-intervention. While inshore management might benefit from some basic national regulation concerning capacity reduction and recreational fishing, these issues can be more accurately dealt with through local management systems.

Locally, it is unlikely that a single organisation will be able to ensure the sustainability of ecological, social and economic systems. The ideal governance landscape would see IFCAs (focusing on the integration of local ecological and social systems), the equivalent of FLAGs (linking the fishing community with the wider business community) and community quota groups (with sufficient quota to provide a foundation for sustainable livelihoods) working closely together to forge a robust strategy for resilient and therefore sustainable small-scale fisheries. Nowhere in the UK is this ideal landscape presently realised; but some parts are better positioned to deliver a sustainable future. This is particularly the case in England, where IFCAs can form the cornerstone of an integrated approach, but rather less so in Scotland where IFGs currently lack the necessary breadth of representation and the executive powers to carry through their future plans. In the case of the much smaller Wales and Northern Ireland, it is a question of how far the relationships between the national administrations and small-scale fishing interests can simulate the conditions of co-management in the formulation of strategies for sustainable futures.

Perhaps the greatest future challenge for the UK's small-scale sector concerns continuing access to inshore fishing grounds. Competing uses – industrial, recreational and environmental – and the challenges implicit in marine spatial planning raise questions about the ability of small-scale fishing interests to articulate a clear, coherent and proportionate case in negotiations over access to and use of what only a generation ago was the virtually unchallenged action space of small-scale fishing. Particular issues arise from the renewable energy industry and the expansion of offshore windfarms along England's east coast from the Tees to the Thames estuary; the impact of recreational fishing around the southern shores; and, most importantly, the extension of the MPA network throughout the UK's coastal waters.

Relations between industry, conservation agencies and national administrations are unpredictable. Abundant evidence exists of the fishing and conservation interests' ability to work together at the local level both formally, as in the IFCAs, and informally in voluntary management agreements. Somewhat different circumstances are encountered when dealing with flagship projects such as expansion of the MPA network where, even after constructive negotiations, the final result may appear to discriminate against fishing – as evidenced in the recent heated exchanges following the proposed designation of MPAs off Scotland's west coast. Small-scale fishers operating static gear have been shown to be generally more positive towards MPAs than the large scale fleet (Pita et al. 2013), but the tendency of protected areas

to be concentrated in inshore waters (Jones 2009) can lead to conflict. Although the direct impact on local inshore fleets – in terms of withdrawal of a handful of boats – may seem trivial, the knock on effect for the viability of individual fishing communities may prove far more serious.

## 17.6 Conclusions

The decision in the UK referendum to leave the EU and no longer to be party to the Common Fisheries Policy is not expected to have a major impact on the small-scale sector. Existing arrangements for the governance of inshore fisheries are unlikely to be altered. Certainly the UK will be in a position to decide on its own technical conservation rules, regulate the activity of foreign vessels within its 200 mile EEZ and, with the annulment of the London Convention 1964 permitting certain non-UK vessels to fish within the 6–12 nm zone, restore the integrity of UK inshore waters. The greatest direct threat to small-scale fisheries could arise over the negotiation of terms of access to the European market, as a large proportion of small-scale catches are currently sold for export. A further, more distant challenge to the political geography of the UK's fisheries could emerge from a rerun of the 2015 Scottish referendum on Scotland's independence.

Setting such issues aside, the future sustainability of the small-scale sector is more likely to be influenced by internal rather than external factors. The fabric of small-scale fisheries is coming under increasing pressures that demand a strategic, holistic and carefully orchestrated response. A leading question is where to locate responsibility for the design and implementation of that response, whether centrally in the hands of the national administration or locally through fully devolved co-management institutions. The answer may vary between the different components of the UK according to their geographical scale and existing institutional structures. Forging an integrated response faces an immediate problem in the relative weakness of organisation of small-scale fishing interests, underpinned by a lack of creative energy at the level of the 'fishing community', the sheer diversity of function within small-scale fisheries and fragmented channels of communication between the sector and national administrations.

Rebuilding confidence between fishing and conservation interests as a prelude to creating a genuine working partnership with shared visions for sustainability of both local ecosystems and small-scale fisheries requires a refocusing on low impact fishing as the hallmark of inshore fisheries. Criteria for low impact fishing need to be operationally defined for purposes of accreditation of individual vessels that will serve as a passport to fish all but the most ecologically sensitive of inshore waters.

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# Chapter 18
# The Re-Emergence of Small-Scale Fisheries in Belgium? – An Enquiry


**Katrien Verlé, Klaas Sys, Ellen Pecceu, Thomas Verleye, Frankwin van Winsen, and Ann-Katrien Lescrauwaet**

**Abstract** Belgian commercial fisheries face major socio-economic and environmental challenges. The small-scale fishing fleet in particular has been affected by recent changes in the fisheries' landscape. Small-scale fisheries in Belgium consist of small coastal commercial vessels (<70 GT) that make short trips (max 48 h) mainly in the North Sea. In 2017, the Belgian fishing fleet comprised only 14 such fishing vessels, accounting for 2% of Belgian landings. On the other hand, a substantial number of relevant, small-scale fishing vessels (<12 m) are included in the recreational fleet. Historical circumstances have likely led to a rather unique situation in which the Belgian recreational fleet includes approximately 100 beam and otter trawlers. However, about 87% of the recreational fishing fleet consists of anglers. Another legacy from the past is the complex institutional Belgian context. Jurisdiction over maritime affairs is divided between the federal state and the Flemish region. Fisheries belong to the competencies of the Flemish region, while the federal government is in charge of defining the overall rules and regulations for the Belgian part of the North Sea. A comprehensive, national marine spatial plan is now being implemented with a variety of economic, ecological, social, cultural and security objectives. Thus, small-scale fisheries are but one of many activities in the Belgian part of the North Sea. Several initiatives to promote small-scale fisheries have been launched by authorities and the private sector alike, although major challenges and risks still remain. A focused approach may alter the perspective of small-scale fisheries and potentially create new opportunities. Even though there are considerable barriers, promoting the transition from recreational vessels to small-scale commercial vessels is an appealing possibility.

**Keywords** Small-scale fisheries · Coastal fisheries · Common fishery policy · Marine spatial plan · Recreational fisheries

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## 18.1 Introduction

For centuries, small-scale fishing in Belgian coastal waters has provided coastal communities with an important source of food, employment and income opportunities (Lescrauwaet et al. 2013; Acott et al. 2014). Coastal fisheries were formerly a flourishing part of Belgian fisheries, but over decades their economic importance has diminished (Lescrauwaet et al. 2010, 2013, 2018). Notwithstanding this decline, there seems to be opportunities for coastal fisheries in the future. The indirect effects of coastal fishing are also substantial – for example, coastal fisheries in the port of Ostend have been estimated to generate between 4 and 9 million euros per annum (VLIZ 2014, 2015). The tourism industry in Belgium also values the presence of small-scale fisheries on a local scale with an iconic example being the horseback shrimp fishers towing small bottom trawls over the seafloor with draught horses. This method was historically practised along the North Sea coastline from France to the Netherlands, but is currently limited to the community of Oostduinkerke (Acott et al. 2014) and was declared as part of World Heritage for its unique cultural value (UNESCO 2013).

Defining small-scale fisheries is generally not easy (Symes 2011), and Belgium is a somewhat peculiar case, having only one commercial vessel <12 m. Therefore, this chapter focuses instead on the category of commercial coastal fisheries. First, two terms need to be explained: 'coastal fisher segment' (*Kustvisserssegment*) and 'coastal fishers' (*Kustvissers*).

The '*coastal fisher segment*' is a legal category established in 2006 (Flemish Community 2006). Vessels with ≤221 kW engine power, < 70 gross tonnage (GT), < 48 h trips and departure from and return to a Belgian port need to be formally registered in order to be included in this category (MD 2012). However, approximately half the vessels that could potentially be included in the '*coastal fisher segment*' are not registered as such. We will return to this circumstance later. The term, '*coastal fishers*' is used by the Flemish authority for its annual reports of key figures (Devogel and Velghe 2015, 2016, 2017; Tessens and Velghe 2015). Coastal fishers are defined as fishers making use of vessels with ≤221 kW engine power, typically undertaking <48 h trips, with GT not explicitly specified; the category does not include otter trawlers and vessels using passive gear, which belong to the category 'other' (Department of Agriculture and Fisheries 2017; Devogel and Velghe 2017). One should note that the difference that exists in Belgium between legal and reporting categories creates partially overlapping groups and often leads to confusion. It is also worth noting that the responsibility for fisheries falls under the authority of the Flemish Region and not under the Federal Government (Cliquet et al. 2007).

In this chapter, Belgian small-scale fisheries are defined as fishing activities of small commercial vessels, with less than 70 GT, making short trips (max 48 h) mainly in the North Sea (Fig. 18.1). This definition, which differs from the definition employed by the European Commission (EU 2006), includes vessels formally registered in the '*coastal fisher segment*', vessels referred to as '*coastal fishers*', as well as some in the 'other' category (Fig. 18.2). Belgium has almost no commercial


**Fig. 18.1** Small Belgian otter trawler (≤221 kW, <70 GT, <48 h) targeting brown shrimp and flatfish in the North Sea. (Photo credit: F. Willemkens)

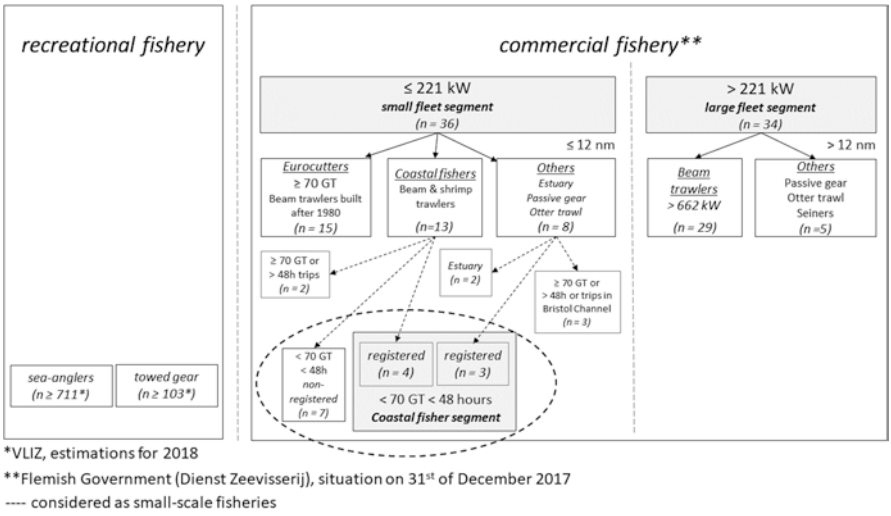


**Fig. 18.2** Overview of the Belgian fleet including commercial and recreational fisheries. This figure combines legal and reporting categories. Small-scale fisheries are encircled with a dashed line

vessels in the size category <12 m, but does have such small non-registered fishing vessels (<12 m) in the recreational fleet. As will be explained below, it is not possible to ignore recreational fisheries when describing the current Belgian case.

## 18.2 Belgian Coastal Fisheries

### *18.2.1 Historical Overview*

Belgium has an enduring tradition of recording fishing activities as the threat of overfishing has long been recognised. Authorities have been involved since as early as the thirteenth century, placing restrictions on gear and establishing mandatory landing sites for certain fish species (Versluys 2014; Lescrauwaet et al. 2018). Centralised reporting on landings of commercial sea fisheries at a species level dates back to 1929, now allowing data and trend analyses to be carried out for over almost a century. These include unique data of the spatial scale of coastal waters (VLIZ 2009). Since reporting started, overall annual landings have increased, peaking in 1947 (when some heavily exploited fish stocks recovered after a cessation of fishing activities during World War II), and then undergoing continuous decline (Lescrauwaet et al. 2010). Since the mid-1990s, total landings have not exceeded those achieved in 1929. Factors such as the loss of access to Icelandic waters, the implementation of Total Allowable Catches (TAC), the energy crisis in the early 1970s, increasing fuel costs and various programmes of the European Common Fisheries Policy (CFP) oriented to decommissioning, led to a decline of 85% in the Belgian fleet size. However, in the meantime, investments resulted in vessels with higher average engine power (×5.7) and a ten-fold increase in average gross tonnage (Lescrauwaet et al. 2013).

Coastal waters used to constitute the main fishing grounds for demersal and pelagic fishers, applying a variety of fishing gear for both passive and active fishing. Before World War I, coastal villages harboured more than 125 small coastal vessels for fishing within 3 nautical miles (NM). Most of these landed their catches on the beaches. After World War II - with the introduction of diesel engines and new technological developments - fishing activities shifted from family-oriented businesses towards commercial fishing companies. This shift transformed the fleet into larger and technically better equipped vessels. As a consequence, fishing activities became concentrated in four Belgian ports: Zeebrugge, Ostend, Nieuwpoort and Blankenberge (Lescrauwaet et al. 2013).

In 1960, smaller coastal vessels (<70 GT) represented 63% of the entire fleet. Their number has now decreased to less than 25% of the total fleet. Direct employment in these coastal fisheries has fallen by 95% since the 1950s, compared to a decrease of approximately 75% in the whole commercial fisheries. The economic value of landings originating from coastal waters represents approximately 25% of the overall economic value of the sector and 20% of all landed and reported weight over the last century. On average, yearly landings from coastal fishing amounted to 8000 tonnes, with a peak of 60,000 tonnes in 1943. Impressive landings of herring caught in coastal waters during World War II were intended to feed the population

and as such, prevented famine. In recent years, commercial landings of fishing from coastal waters have, however, dropped to a mere 2000 tonnes (Lescrauwaet et al. 2010, 2013; VLIZ 2015).

Between 1988 and 1991, vessels registered on the official list of commercial fishing vessels were required to apply for authorisation (RD 1988). From 1993 onward, vessels with such authorisation could obtain a fishing license (*personal comm. Flemish Administration*). It is generally considered, however, that the majority of small scale vessels (<12 m) opted not to register their vessels due to the additional constraints that came with the authorisation. As such, the few vessels (<12 m) that did have a commercial number at that time, did not meet the requirements for vessel specifications. These were excluded from the commercial fishing fleet thereby increasing the quota share for the other larger vessels (*personal comm. Flemish Administration*).

For unlicensed, small trawler vessels a specific legal framework was developed (RD 1989, later replaced by the Flemish Community 2016) allowing these fishers to operate within the first 3 NM for brown shrimp (*Crangon crangon*), albeit with restrictions on the fishing equipment used. These small vessels are prohibited from conducting fishing activities at night (generally the moment with the greatest catches) and from commercialising their catches. Consequently, these vessels were considered recreational vessels. This led to a rather unique situation where the Belgian recreational fleet includes approximately 100 beam and otter trawlers (Fig. 18.2). One must remember, however, that about 87% of the recreational fishing fleet consists of anglers (Verleye et al. 2019).

## *18.2.2 Current Commercial Fisheries*

The Belgian commercial fishing fleet is currently one of the smallest of all EU coastal Member States, with rather limited socio-economic impact (STECF 2018). Despite its size, the fleet is active within a large area: the North Sea, the English Channel, the Celtic Sea, the Irish Sea and the Bay of Biscay (Devogel and Velghe 2017). In 2017, the commercial Belgian fishing fleet consisted of 70 vessels that landed 22,142 tonnes (Velghe and Scherrens 2019).

### 18.2.2.1 Legal Classification

Legally, the Belgian fleet was originally subdivided into two groups based on vessel engine power: a *large-fleet segment* (> 221 kW) and *a small-fleet segment* (≤ 221 kW). In 2006, a '*coastal fisher segment*' was added as a supplementary legal category. As a consequence, the legal definition of the *small-fleet segment* was modified to "all vessels ≤ 221 kW except those part of the *coastal fisher segment"* (Flemish Community 2006). Being part of the '*coastal fisher segment'* brings a number of advantages in terms of quota leniencies (MD 2006). However, the number of members in this segment remains low. In 2017 there were only seven vessels registered in the '*coastal fisher segment*', see Fig. 18.2 (*personal comm. Flemish Administration*).

#### 18.2.2.2 Reporting Classification

In reports, however, the original two segment division was maintained (Fig. 18.2) with no mention of the '*coastal fisher segment*'. The *large-fleet segment* (> 221 kW) includes about 50% of all fishing vessels, and represents about 84% of engine power and 80% of GT (Velghe and Scherrens 2019). This segment mainly consists of beam trawlers that account for the majority of landings and employment of the Belgian fleet. Large-scale vessels target demersal fish species, such as sole (*Solea solea*), plaice (*Pleuronectes platessa*) and anglerfish (*Lophiidae spp.*). Possessing fishing rights in the distant North Sea and the North East Atlantic too, many of these fishers do not return home between fishing trips, landing their catches in foreign harbours. A limited number of vessels in the large-fleet segment use fishing gear such as demersal seines, otter trawls, trammel nets or gillnets (Devogel and Velghe 2015, 2016).

The *small-fleet segment*[1] (≤ 221 kW) mainly consists of *eurocutters* and '*coastal fishers'*. The remainder are labelled as the '*other small-fleet segment*', and include otter trawlers, vessels using passive gear and vessels only fishing in the Scheldt estuary (Fig. 18.2). The *eurocutters* are trawlers constructed after 1980 (≥ 70 GT, < 24 m), whose main fishing grounds are located in the southern and central part of the North Sea and the English Channel. They generally undertake fishing trips of around 4 days, using otter or beam trawls. Most *eurocutters* target demersal fish species such as sole and plaice, but some vessels target Norway lobster (*Nephrops norvegicus*) during the summer and shrimp in subsequent months (Platteau et al. 2014; Devogel and Velghe 2017). '*Coastal fishers'* mainly focus their activities on the 3 NM zone of the Belgian section of the North Sea, in which they have exclusive fishing rights (Flemish Community 2003; RD 2014). Their vessels are equipped with beam trawls and target demersal fish during winter and spring, and shrimp during summer and autumn (Devogel and Velghe 2017).

#### 18.2.2.3 Belgian Small-Scale Fisheries

Small-scale fisheries in Belgium consist of small coastal commercial vessels (<70 GT) that make short trips (max 48 h) mainly in the North Sea. In 2017, there were 14 small-scale vessels (Fig. 18.2), two of which were inactive. The 12 active vessels represented 18% of the active Belgian fishing fleet, but only accounted for about 2% of landings in weight and 3% in value, i.e. 512 tonnes and around 3,000,000 euros (Table 18.1).

Important species included shrimp, sole, plaice, flounder (*Platichthys flesus*) and common dab (*Limanda limanda*) caught with beam trawls, shrimp trawls, otter trawls and gillnets (Fig. 18.3; Fig. 18.4). In 2017, a total of 96 crew members took

[1] Note: the term *Small-fleet segment* is a legal reporting term and differs from the definition of small-scale fisheries used by the authors. Eurocutters are not considered part of small-scale fisheries.

**Table 18.1** Belgium

| Data refers to: 2017 | Total (all fisheries) | Small-scale fisheries[a] | Recreational |
|---|---|---|---|
| | Commercial | Commercial | Recreational[b] |
| Fleet | | | |
| Number of vessels | 67[c] | 12[d] | 814 |
| Capacity (GT) | 13,420[c] | 577[d] | n.a. |
| Number of fishers | 382[e] | 96[f] | 1929 |
| % women | n.a. | n.a. | 2% |
| Average age of fishers | 38.5[e] | 40[f] | 59 |
| Landings | | | |
| Quantity (ton) | 22,142 | 512 | 209 |
| Value (thousand Euro) | 88,200 | 3005 | N/A |
| Most common gear used (top 3) (% in total) | Beam trawl (78%), shrimp trawl (29%), otter trawl (28%)[g] | Shrimp trawl (67%), beam trawl (50%), otter trawl (25%)[g] | Fishing rod (87%), bottom otter trawl (7%), beam trawl (6%) |
| Most important species in landings: | | | |
| Top 3 in quantities (% in total) | Plaice (34%), Sole (10%), Gurnard (7%) | Brown shrimp (46%), sole (16%), Plaice (15%) | Brown shrimp (32%), whiting (18%), dab (17%), sole (9%), cod (9%) and mackerel (6%) |
| Top 3 in values (% in total) | Sole (28%), Plaice (17%), Norway lobster (8%) | Brown shrimp (60%), Sole (30%), Plaice (4%) | N/A |

*N/A* Not Applicable, *n.a.* not available

Notes:

[a]smaller commercial fishing vessels (gross tonnage <70) that make short trips (max 48 h) mainly in the North Sea

[b]Only includes recreational fishing from vessels. Based on data for 2018 from Verleye et al. 2019

[c]Inactive vessels were not included

[d]Two inactive vessels were not included. The total number of vessels in 2017 was 14 with a capacity of 676 GT

[e]Data from Besox, the Social Secretariat of the Coast, number of recognized fishermen in 2017 (Van Bogaert and Platteau 2018)

[f]96 crew members took part in fishing trips on 11 of these vessels which translates to 32 full time equivalents (FTE) based on 220 days worked. Figures exclude vessel owners and unpaid labour. Data from the Social Secretariat of the Coast for 2017, only available for 11 out of 12 vessels. In 2015, there were still 15 active vessels, with a total of 118 crew members and 41 FTE

[g]Percentages based on the number of vessels using a gear. Depending on the season, the same fishing vessels will use a different fishing gear. Therefore, the sum of these percentages exceeds 100%

Source of information: Verleye et al. (2019), Database ILVO (2019), Velghe and Scherrens (2019), Van Bogaert and Platteau (2018), Besox – Social Secretariat of the Coast

**Fig. 18.3** Shrimp are cooked on-board, a practice that was introduced at the end of the nineteenth century. The vessels are usually out for less than 24 h to guarantee that the shrimp are landed and sold without delay. In contrast to shrimp that are sent to peeling companies, these shrimp are not treated with preservatives nor are they frozen. (Photo credit: ILVO)


**Fig. 18.4** Coastal fisheries directly deliver brown shrimp – a local favourite – to the market in Ostend. Catches sold originate from vessels <70 GT that went out to sea for less than 24 h before the opening of the market. (Photo credit: L. Desmit)

part in fishing trips on 11 of these vessels, which translates to 32 full time equivalents (FTE) based on 220 days worked (data from Social Secretariat of the Coast, or BESOX). On average this represents 2.9 FTEs per vessel (excluding vessel owners). In 2015, there were still 15 active vessels, with a total of 118 crew members and 41 FTE.

## 18.3 Socio-Economical Context

### *18.3.1 Employment*

In general, sourcing appropriate staff for the Belgian fisheries is a challenge with the majority of young graduates from the Maritime Institute (*Maritiem Instituut Mercator*) preferring to work for dredging companies or in the tourism sector. According to the Social Secretariat of the Coast, there were 382 registered fishers in 2017, of whom 32% were older than 45 years (Van Bogaert and Platteau 2018). Vessels fishing in coastal waters are generally operated by two or three fishers, earning a percentage of profits from the sale of the landed value on top of a base salary. This income insurance for all fishers ended the 'no catch, no pay' principle and was legally consolidated (RD 2005), which is unique in Europe (Platteau et al. 2014). However, long-term contracts do not exist and each fisher is recruited per fishing trip. A social advantage of coastal fishing is the maximum stay of 48 h at sea. The disadvantage, however, is that these small vessels are more affected by oceanographic and meteorological conditions, limiting the number of potential fishing days and thus income.

A preliminary phone survey conducted by ILVO in autumn 2016 among small-scale vessel owners revealed the family background of coastal fisheries. All fishers were male and often related, or otherwise long term friends. A limited number of female relatives contributed to the business, in particular when landings were sold directly. In addition, women were often involved in the administration and exceptionally in the cleaning of the ships (*personal comm. Sys*). Interviews in 2009 revealed that coastal fishers' wives were less involved in the fisheries than they had been before. In the past, most women selling fish at the market were married to a skipper, who was usually also the vessel owner (Vervaele 2011). Before the introduction of stricter legislation regarding food safety in the 1990s, women from coastal communities would peel shrimp for restaurants and shops. Nowadays, this practice is limited to a small number of home-peelers, who process the shrimp that is not purchased by Dutch companies (Fockedey 2006; Vervaele 2011).

### 18.3.2 Interactions Within the Fisheries Sector

In general, fishing vessels >221 kW are not allowed to fish within the territorial sea (RD 2014). The 1958 treaty of the Benelux Union gave Dutch fishers unlimited rights to fish all species in the Belgian 12 NM territorial zone, and vice versa, Belgian fishers can also fish in Dutch waters. An agreement that was concluded with France in 1975 gave French fishers permission to fish herring in the 3–12 NM zone (Douvere and Maes 2005). These 'historic rights' have been integrated into the CFP and can no longer be modified without involving the European Commission (Pecceu et al. 2014). The amount caught by these two groups of foreign fishers represents a considerable share of the total catches in Belgian coastal waters (Versluys 2014).

Dutch small-scale commercial vessels fishing in the Belgian coastal zone compete with Belgian small-scale fishers. For example, Dutch commercial sea-angling vessels are reported to regularly land sea bass *(Dicentrarchus labrax*) in Nieuwpoort (De Snijder et al. 2014). Belgian and Dutch *eurocutter* vessels are competitors too, because they also fish within the 3–12 NM zone (Flemish Community 2003). Competition increases fishing pressure within these territorial waters and is one of the reasons why the coastal fleet requested the extension of the no-fishing zone for e*urocutters* from 3 to 4.5 NM (FPS 2014; Versluys 2014). This request was granted by the Belgian authorities (RD 2014), but still needs approval from the European Commission (CFP, Art. 11).

### 18.3.3 Interactions with Recreational Fisheries

Until 2014, little was known about the capacity and impact of Belgian recreational fishing vessels. In contrast to commercial fisheries, recreational fishers do not have to report their catches, a situation which impedes data gathering and analyses. However, assessments of the number of Belgian recreational fishers and their activities have now been set in motion. An initial study reported 631 mainly part-time, recreational fishing vessels based in the four Belgian coastal marinas. A monitoring scheme has since been developed and 814 recreational fishing vessels were identified in 2018 (see Table 18.1). Most of these (87%) were angling boats with an average length of 7.5 m, while 13% were equipped for beam or otter trawling or a combination of different techniques, see Fig. 18.5 (Verleye et al. 2015; Verleye et al. 2019). These vessels conducted approximately 11,900 trips and fishing densities proved highest within the 3 NM zone (Verleye et al. 2015; van Winsen et al. 2016; Verleye et al. 2019).

Recreational vessels exploit the same fishing grounds and often target the same species as the coastal fleet. Recreational fishing activities include sea-angling from boats, trawling with boats, shore angling, stationary fishing gear in the intertidal zone and wade-fishing for brown shrimp with small towed nets in the surf zone. Recreational fishers sometimes fish beyond territorial waters and even outside the

**Fig. 18.5** The large majority of recreational vessels in the Belgian part of the North Sea are under 12 m. **Left**: A recreational angler. (Photo credit: VLIZ) **Right**: Small recreational otter trawler. (Photo credit: VLIZ)

Belgian Exclusive Economic Zone. It was estimated that recreational vessels landed an annual total of 209 tonnes. Shrimp (32%), whiting (*Merlangius merlangus*, 18%), common dab (17%), cod (*Gadus morhua*, 9%), sole (9%) and mackerel (*Scomber scombrus*, 6%) were the main target species. Expenditures for recreational fishing activities on these vessels amounted to an estimated 8 million euros (Verleye et al. 2019). These fishers are not permitted to commercialise their landings (Flemish Community 2016).

### *18.3.4 Interactions with Other Sectors and the Marine Spatial Plan*

Small-scale fishers are increasingly competing for space with other economic or environmental initiatives in the Belgian part of the North Sea (Pecceu et al. 2016). A Belgian Marine Spatial Plan has been under implementation[2] since 2014 with a 6-year revision cycle in order to achieve Belgian ecological, economic and social objectives (Fig. 18.6). This plan should accommodate the various sectors available in the Belgian part of the North Sea including nature conservation, fishing, shipping, coastal protection, (renewable) energy, exploitation of other non-biological resources, defence, tourism, cultural heritage, scientific research, pipelines and cables (Pirlet et al. 2015). Space is allocated to different sectors within a certain time frame, based on a long-term vision statement and participation of all relevant stakeholders (FPS 2014; Van de Velde et al. 2015). The long-term vision statement involves what is planned and how legal security should be provided to those wanting to undertake new activities. Evaluation and adjustment of these plans will how-

[2] At the time of writing, the European Commission has withdrawn the subzones with fisheries measures for various reasons. It is now uncertain how the Belgian authorities will cope with this.

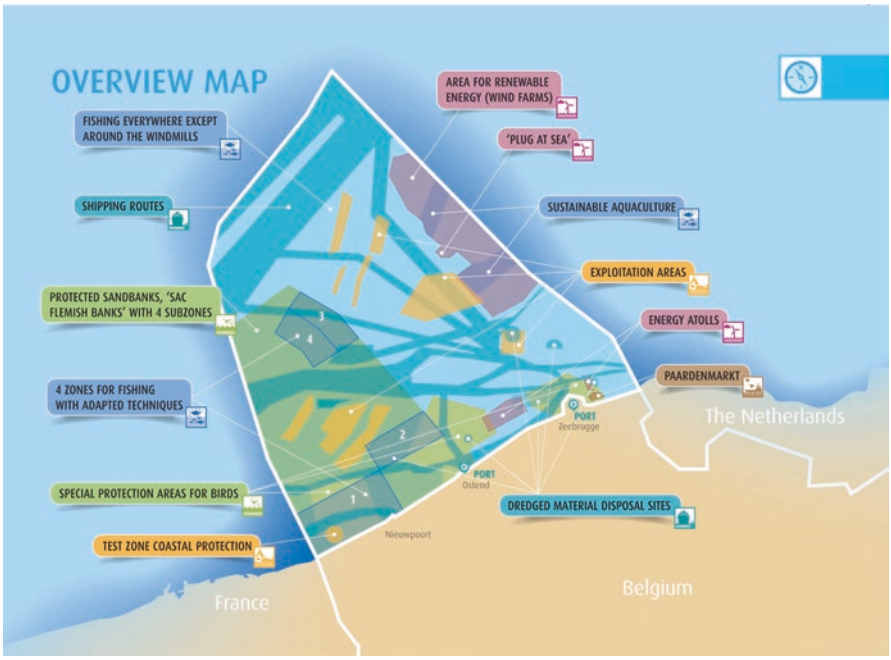


**Fig. 18.6** Overview of the Marine Spatial Plan 2014 of the Belgian Part of the North Sea (Source: Van de Velde et al. 2015)

ever be crucial, considering the fact that Belgian institutional complexity often creates problems of policy overlap, policy gaps and conflicts (Cliquet et al. 2008).

In the framework of Natura 2000, four marine protected areas (MPA) have been delineated so as to form an ecological network of protected zones safeguarding the most valuable species and habitats. These include three Special Protection Areas (Bird Directive) and one Special Area of Conservation called Flemish Banks (Habitat Directive) (Bogaert et al. 2008; Pecceu et al. 2016). In the latter area, four sensitive subzones have been proposed to preserve sea-floor integrity (see Fig. 18.6). In one of these zones, bottom-trawling is restricted, and technical measures have been imposed for shrimp fishers to increase the separation of large and small fish. Two further zones are reserved for testing techniques with low seabed disturbance. Another is reserved for techniques without any impact on the seabed. However, exceptions are made for fishing on foot or on horseback. Recreational angling is also allowed in all four zones, while recreational trawling is essentially forbidden in the entire Flemish Banks MPA (RD 2014).[3] As described in the CFP, these measures needed to be converted into an EU Delegated Act. However, on 14 June 2018 this document was revoked by the European Parliament (EP 2018).

[3] At the time of writing, the European Commission has withdrawn the subzones with fisheries measures for various reasons. It is now uncertain how the Belgian authorities will cope with this.

By 2020, over 400 offshore wind turbines will have been constructed in eight zones where fishing has been prohibited since 2005. These offshore wind farms could also become an asset for small-scale fisheries through a 'spill-over' effect (Degraer et al. 2013). The zones where the Belgian offshore wind farms are being constructed are located on offshore sandbanks characterised by relatively poor benthic and demersal fish fauna. As a result, expectations of ecosystem restoration have generally been limited, but less than a year after the first park became partly operational, a preliminary study found a positive effect on presence and size of some demersal fish species (Derweduwen et al. 2012a). Later studies suggested fringe, refuge and reef effects on soft bottom epibenthos and demersal fish (Derweduwen et al. 2012b). In addition, some Atlantic cod (*Gadus morhua*) and pouting (*Trisopterus luscus*) have been found to return to windmill parks in following years (Reubens 2013). The Marine Spatial Plan includes two areas for future sustainable aquaculture (Van de Velde et al. 2015).

Some areas in the Belgian part of the North Sea are used for dredging or sand and gravel (aggregate) extraction, impeding trawler activity. So far, studies have not yet revealed an impact of these activities on the epibenthic and demersal fish fauna (Lauwaert et al. 2011; Van Hoey et al. 2011). However, fishers experience increased safety hazards due to severe sediment accumulation in the nets around dredging and dumping sites (Van Hoey et al. 2014).

The military base in Lombardsijde, near Nieuwpoort, frequently carries out target practice in restricted marine areas, which are then closed for fishing (MDK 2015). The target practice areas are officially closed for about 150 days per year, but in reality are used less, depending on operational needs (Wouters et al. 2015).

Currently, several initiatives are ongoing regarding marine spatial planning. The multiple use of space is essential both on the short term (preparation of MSP 2020) as on the longer term (North Sea vision 2050; www.thinktank.be).

## 18.4 Institutional and Organisational Context

The Belgian institutional context of small-scale fisheries is complex as jurisdiction is divided over three levels of government: federal, regional and local (Cliquet et al. 2008). Jurisdiction over maritime affairs is divided between the federal state and the Flemish region (Table 18.2), and within each level over several departments. Since there is no hierarchy between federal and regional governmental levels, each can independently adopt legislation and policy measures, within defined competencies (see Table 18.2) (Pecceu et al. 2016). Fisheries belong to the competencies of the Flemish region. The federal government is in charge of defining the overall rules and regulations for the Belgian part of the North Sea and ensures the coordination of all activities on the seabed, in the water column and on surface waters. Except for the registration of vessels, it has no jurisdiction over fisheries (Cliquet et al. 2008; Van de Velde et al. 2015).

**Table 18.2** Maritime jurisdiction in Belgium

| Federal state | Flemish region |
|---|---|
| Environmental protection | Fisheries |
| Nature conservation | Aquaculture |
| (Wind) energy development | Nature conservation on land |
| Disposal of dredged material | Dredging |
| Shipping | Ship pilotage and traffic guidance |
| Aggregate extraction | |
| Military activities | |

Source: (Pecceu et al. 2016)

The Strategic Advisory Council of Agriculture and Fisheries (SALV) advises the Flemish government and the Flemish parliament on decisions with regard to economic, ecological and social aspects of fisheries policy. The Agriculture and Fisheries Department of the Flemish government is in charge of policy implementation. As such, it is responsible for the implementation of European and Flemish programmes for investment and action in support of fisheries. As part of the Department of Agriculture and Fisheries, the Sea Fisheries Service guarantees the coordination, implementation and enforcement of fisheries policy (Polet et al. 2015).

The Agriculture and Fisheries Department is further supported by the Flanders Research Institute for Agricultural, Fisheries and Food (ILVO), the Flanders' Agricultural Marketing Board (VLAM) and the *Flemish Environmental Council* (MINA-Council). Fishing vessel owners are represented by a single producer organisation across all commercial fleet segments (*Rederscentrale).* This organisation participates in the Advisory Councils that are relevant to Belgian fisheries (Polet et al. 2015). The large fleet segment is more heavily represented in the producer organisation. However, specific meetings related to shrimp fisheries include 'coastal fishers' and eurocutter owners (VLIZ 2015).

## 18.5 Policy (National and EU)

Since 1988, all commercial vessels in Belgium require a fishing license (Flemish Community 2006). The landings of fish species are managed through a complicated, collective quota management system. Each registered fishing vessel receives a non-transferable fishing concession for the most important target species (e.g. sole and plaice), essentially based on gear characteristics and engine power. To provide fishers with the opportunity to fish throughout the year, quotas for these species are distributed at regular intervals. Other fish species are subjected to a common (and not individual) national quota (Adriansens 2009; Devogel and Velghe 2017). The vessels belonging to the '*coastal fisher segment*' do not participate in the individual quota system, and can fish until the national allocation is depleted, except for pelagic species and species under a recovery plan (MD 2006). For shrimp fisheries, no

quota regulation exists, but in order to reduce the bycatch of plaice, dab and sole, the gear used must meet specific technical regulations (Tessens and Velghe 2014).

The total capacity of the Belgian fishing fleet is limited in terms of engine power. The official engine power of a vessel can, however, be increased by 'adding' the engine power of another vessel that ceases fishing (Adriansens 2009). This should be seen as a 'fictive' increase in engine power since the actual capacity of the diesel engines remains unchanged. However, it is lucrative for a vessel to have a higher 'total engine power' as for some target species the share of the national quota distributed to individual vessels is directly linked to this factor (Devogel and Velghe 2017). This leads to a 'total engine power' consisting of both actual and fictive engine power. European effort restrictions in terms of total *kW x days* of the entire fleet have been translated into a maximum number of days at sea per vessel, currently set at 275 days (Devogel and Velghe 2017). There are additional effort regulations to limit fishing within Areas IV, VIId and VIIa of the International Council for the Exploration of the Sea (ICES), as imposed by the Cod Recovery Plan (EU 2008a). These additional regulations have been translated nationally into a maximum number of days at sea, depending on the gear used and the fleet segment. For example, in 2016 a maximum of 180 days at sea was permitted in Areas IV and VIId for otter trawlers belonging to the *small-fleet segment,* using a mesh size between 16 and 32 mm. The same maximum was set for passive gears, regardless of the fleet segment (Devogel and Velghe 2017).

To ensure the monitoring of catches (EU 2008b; EU 2009), most fish is landed at the auction markets of Zeebrugge, Ostend or Nieuwpoort. Ostend, where fish can also be sold directly at one site without passing through the auction, is an exception (Fig. 18.3). However, in this landing site, the catch should originate from a vessel of <70 GT that went out to sea for less than 24 h before the opening of the market (Town of Oostende 2010; Tessens and Velghe 2015).

Belgian recreational fishing vessels do not require a fishing licence (NSRAC 2007) but are submitted to a number of spatio-temporal, technical and other regulations (Flemish Community 2016). Recreational beam and otter trawling is not allowed outside the 3 NM zone (RD 1981), with fishing also being restricted around ammunition dumpsites and Habitat Directive areas (RD 2014). In contrast to commercial fisheries, recreational fishers are not allowed to use trammel nets and gillnets (RD 2001; Flemish Community 2015). Regulations have also been developed to secure good management of fish stocks targeted by recreational fishers. For sea-anglers, a bag limit per person was set at 15 kg per day for cod (MD 2017). Sea bass catches are regulated, and revised on an annual basis, by European legislation. Furthermore, in the first 6 months of the year, only catch-and-release is allowed (European Council 2016). Trawlers are only allowed to target non-quota species such as shrimp. When the national quota for a certain species is exhausted, fishing for that species is no longer allowed, either for commercial fisheries or for recreational fisheries (Flemish Community 2016). For both commercial and recreational fisheries, minimum conservation reference sizes have been set for certain species.

## 18.6 Looking to the Future: Challenges and Opportunities

### *18.6.1 Fisheries Policy*

Until recently Belgian fisheries policy focused on beam trawl fisheries, with little attention to small-scale fisheries. As stakeholders in small-scale fisheries were badly organised and coastal fishing communities typically fragmented, their interests were poorly represented.

An initiative called *Vistraject* was launched in 2015, aiming at sustainable and economically viable fisheries. It unites different stakeholder groups, including fishing vessel owners, researchers, an environmental NGO and policy makers. Identifying specific needs and problems of small-scale and coastal fisheries is an explicit objective of this initiative (De Snijder et al. 2014). A working group led by the Province of West-Flanders was set up with the aim of addressing the challenges experienced by both the commercial coastal fisheries and recreational fisheries. Box 18.1 provides a detailed description of local governance interaction with small-

**Box 18.1: Rebuilding Small-Scale Fisheries Through a Place-Based Approach: The Example of Nieuwpoort**

Nieuwpoort has been a fishing port for about 850 years. In 1945, there were 99 vessels and 354 fishers. Since the 1950s, the importance of the fleet has steadily declined. Currently, commercial fishers in Nieuwpoort use towed gear, trammel nets, pots and fykes, make short trips (less than 24 h) and land a small proportion of catches. The small-scale aspect is linked to the shallow depth of the port. As vessels became larger in the past century, they moved to other ports such as Ostend and Zeebrugge (Vandecasteele 2014). Meanwhile recreational fisheries quickly developed and became an important economic driver in the area (Acott et al. 2014; Promovis 2015). Nowadays, Nieuwpoort is especially renowned for selling daily-fresh fish, including sea bass, sole and shrimp. In 2017, a total of 350 tons was landed by 6 Belgian vessels, while 304 tons was actually sold at the local auction for a value over €1,600,000 (the remainder was sold at other auctions in the region). Shrimp represented 24% (€604,000), plaice 17% (€86,000), sole 16% (€545,000) and cuttlefish 11% (€152,000) of the sold weight (data *Flemish Government*; Velghe and Scherrens 2019). Shrimp usually represents a higher proportion of the sold weight in Nieuwpoort, i.e. 50% (€470,000) in 2015 and 40% (€515,000) in 2016 (Devogel and Velghe 2016, 2017). Additionally, 18 small-scale vessels operate under a foreign flag and members of Low Impact Fishery Southern North Sea (LIFSN) landed and sold fish for a value of €118,000 (data for 2015). This represented 13.5% of the value of total landings sold in Nieuwpoort in 2015 (van Winsen, 2016).

(continued)

**Box 18.1** (continued)

The interaction between the local government and the fishing industry is unique in Belgium. Small-scale and artisanal fishery is a policy priority for the town council. The town council owns the fish auction and invested to improve auction opportunities for the fishers. A modern shrimp sieving machine was acquired to comply with EU legislation and fulfil international standards (Vandecasteele 2014). The auction collaborates with the privately-owned auctions of Zeebrugge and Ostend to secure better prices. Since 2013, sales at the three auctions have been synchronised by using an online system to allow buyers to see the supply in all three auction halls and bid on fish from any one of them. This system led to more stable prices, which is particularly important for Nieuwpoort as the auction only provides 1.1% of the total turnover of the Belgian fish auctions (Tessens and Velghe 2015). The town also promotes the sector through collaboration with a non-profit organisation including fish retailers and (retired) fishers aiming to keep a strong link with the fishing community (Vandecasteele 2014; Promovis 2015).

Small-scale fisheries are also important for tourism in Nieuwpoort. The town not only focuses on recreational fishing and the promotion of direct fresh fish sales, but also closely collaborates with traders and local restaurants (Acott et al. 2014). Visitors have the opportunity to be present during the auction. One initiative is to enable visitors to follow fish or shrimp from the moment they are landed early in the morning, until they are served at lunch in the restaurant (Vandecasteele 2014; Promovis 2015). Promotion campaigns to increase public awareness to consume local products will remain a crucial point for success. The implementation of the marine spatial plan related to the use of the North Sea, and especially the location of the Natura 2000 areas, will also influence the future of recreational small-scale fisheries in Nieuwpoort. Fishing is essentially restricted to small recreational vessels using towing gear in the area (FPS 2014; Promovis 2015). In addition, new small-scale vessels are hampered through the present legislation to enter the commercial fishing fleet. About 20 former Belgian recreational anglers have joined the Dutch commercial fleet and are members of LIFSN (van Winsen et al. 2016). The council of Nieuwpoort is urging the transition from recreational to commercial fishing to be facilitated further (Vandecasteele 2014).

scale fisheries and tourism in Nieuwpoort. Furthermore, in this town, a platform specifically uniting coastal fishers was launched (Promovis 2015). These initiatives are expected to strengthen the voice of the coastal fisheries in the fishing sector and influence Belgian policy in favour of small-scale fisheries.

### *18.6.2 Socio-Economic Opportunities*

Different studies have been conducted to assess the profitability of a transition from large-scale commercial fisheries to small-scale fisheries (vessels <12 m). In addition, the profitability of a possible transition from recreational to commercial small-scale fisheries has been assessed. High uncertainty about their profitability remains, though. Opportunities to build up reserves against set backs are probably limited, partly due to the impact of bad weather on the number of fishing days for small-scale fisheries (van Winsen et al. 2016).

The Belgian fleet as a whole has undergone difficult times and was generally not profitable between 2008 and 2014 (STECF 2018). In addition, small-scale fisheries are on average less productive than larger ones (MacFadyen et al. 2011). Therefore, converting from large-scale to small-scale fisheries holds the risk of becoming unviable. One way to increase economic efficiency would be to obtain a higher price for the catch. After all, a specific feature of coastal fisheries is the delivery of daily-fresh fish, which commands a higher price amongst a certain segment of consumers. At this moment, however, only a limited amount of fish is sold in this manner. One possible solution is to create more official landing points for daily-fresh fish, which could shorten the fish chain, reducing the gap between fishers and consumers. New market systems are also being explored. An example is a pilot cooperative in the harbour of Ostend that purchases daily-fresh fish from local coastal vessels (‘*Vesche Vis’*). This fish is then distributed in packages to cooperative members.

A tool called VALDUVIS (Valorisation of sustainably caught fish) has been developed to grade the sustainability of Belgian fishing activities, based on ecological, social and economic criteria (Kinds et al. 2016). The tool currently includes eleven indicators and can be used for different purposes: it can be used as a learning tool for the fishers as well as to monitor the evolution of the entire fleet. Finally VALDUVIS can be used as a more widespread information tool. Since June 2018, buyers can see on the auction clock which fishing vessels have agreed to be monitored by the tool. The long-term hope is that fishers will evolve towards more sustainable fishing practices and that buyers will notice efforts made and adjust their bids. Other awareness-raising activities have been launched to introduce unknown fish species to consumers. This is expected to contribute to sustainable fisheries by reducing fishing impact on the more popular fish stocks (De Snijder et al. 2014).

There is also a long-term vision to develop a generation of fishers who are not only entrepreneurs, but also ‘guardians of the sea’ (De Snijder et al. 2014). The involvement of fishing crews in removing plastic from the sea and in monitoring protected areas might improve the long-term prospects of the profession, but this implies appropriate training and education. Furthermore, sourcing appropriate crew members is currently a challenge. In the short-term, therefore, policy adaptations should render the fishing profession more attractive (VLIZ 2015).

### *18.6.3 A Transition from Recreational to Commercial Fisheries?*

A commercial fishing license includes non-transferable quotas for all fish species concerned in all relevant fishing grounds, except for vessels registered in the 'coastal fisher segment'. A number of quotas are in proportion to engine power, but do not account for the target species of a particular fishery (FAO 2006; Adriansens 2009). As small-scale fisheries target a small number of fish species in a limited area, the scope of the quota they obtain when purchasing a license from an existing vessel is usually beyond their needs. This leads to relatively expensive fishing licenses as fishers in the existing commercial fleet attribute a value to their engine power. A license is needed before one can register their vessel in the 'coastal fisher segment'. For example, commercial sea-anglers who target sea bass would also receive a quota share for other fish species, which they will not use. In the Netherlands, where another quota system is in place, it is possible to buy a much cheaper license for non-quota species than in Belgium (van Winsen et al. 2016). Belgian regulations for crew and safety are also stricter than in the Netherlands, leading to higher exploitation costs.

The current policy therefore impedes smaller recreational vessels from becoming part of the Belgian commercial fishing fleet. This situation will possibly inhibit the recognition of historical fishing rights for non-quota species that may later become quota-species. Meanwhile, at least sixteen commercial sea-angling vessels (< 12 m) under a Dutch license, but exploited by Belgian nationals, have regularly landed sea bass in Flemish ports from 2012 onwards (De Snijder et al. 2014). One objective of the *Vistraject* initiative mentioned above is the transition from recreational to commercial fisheries. Bottlenecks that impede a transition from recreational to commercial vessels have been assessed (van Winsen et al. 2016; De Snijder et al. 2014). As a result, a proposal has been developed to create a 'small-scale segment' (vessels <12 m) in addition to existing fleet segments and thereby to circumvent current bottlenecks, such as expensive licences and strict vessel requirements. A transition from recreational to commercial fisheries could also affect the development of the commercial fishing fleet, initiating a technological diffusion process leading to increased usage of passive fishing gear. Without making a statement with regards to economic viability, such an evolution would have advantages for fishers, including lower fossil fuel costs, selective fishing, less bycatch and higher prices for fresh fish (van Winsen et al. 2016). The number of vessels leaving the Belgian fleet has been substantial over the past decades. This has created some reserve with regards to the Belgian capacity ceiling established in the EU 'entry-exit' system (EU 2002; EU Fleet Register 2018).

### *18.6.4 Technical Innovations*

Technical restrictions in the *Flemish Banks* MPA have encouraged innovation. Some coastal fishing vessels are thus already using roller shoes with reduced impact on the benthic ecosystem. In shrimp fisheries, sieve nets are being applied during certain periods of the year to reduce the bycatch of mainly dab and plaice. Electric pulse trawling in which the heavy tickler chains are replaced by lightweight electrodes is another innovation. These electrodes produce an electric pulse field that either startles shrimp or induces a cramp reaction in flatfish (Verschueren et al. 2014; Verschueren et al. 2019). If applied correctly, there is less intense seafloor contact and hence less disturbance of the benthic ecosystem along with lower fuel usage. Preliminary studies showed high economic potential and evidence of ecological advantages over traditional trawling methods (Renders et al. 2011; Soetaert et al. 2015). In addition, selectivity for target species is often higher, while the bycatch of undersized fish is lower (van Marlen et al. 2014). However, electric fishing is currently prohibited in the European Union (EU Reg. 850/1998) while the debate with regards to the unknown effects pulse stimulation has on the marine environment is still on-going. The European Parliament voted against pulse fishing on the 16th of January 2018 with a two-thirds majority, while the European Commission favoured this technique (European Parliament Legislative Observatory 2018). The trialogue - also including the European Council - should reach a decision by the end of 2018. In addition, certain knowledge gaps have yet to be addressed (Quirijns et al. 2015) and investment costs are relatively high (*personal comm. Verschueren*). Therefore the true potential of pulse fishing for small-scale fisheries remains to be seen.

## 18.7 Conclusions

The maintenance of small-scale fleets is a policy objective in many EU member states and the social and cultural role of small-scale fishers has clearly been recognised (MacFadyen et al. 2011). Scholars argue that the environmental impact of small-scale fishers in terms of bycatch, discards and overall effect on the local ecosystem is far less than that of large-scale fishers (Kolding et al. 2014). This explains why these fisheries have explicitly been included in the European Commission's Green Paper on the Reform of the CFP (MacFadyen et al. 2011).

In recent years, small-scale and coastal fisheries have received increased attention in Belgium and the expectations of resolving or at least tackling existing problems over the coming years are high (De Snijder et al. 2014). However, the use of different definitions remains confusing and there is a need for further clarification. In this chapter, we have defined commercial small-scale coastal fisheries as including vessels (< 70 GT) that make short trips (< 48 h) mainly in the North Sea. In 2017, there were only 12 of these vessels active. Even though these family businesses represented about 18% of the entire active Belgian fleet, they only contributed about 2% to total landings.

Following the adoption of stricter regulations in Belgium, small fishing vessels (< 12 m) have become part of the recreational fleet (RD 1989). This has led to a rather unique situation where the recreational fleet also includes trawling vessels. Current regulations hamper small recreational vessels involvement in the commercial fleet, although there is proven interest to do so. Challenges include the confusing legal framework, strict safety regulations for the crew and vessel, and the high cost of a commercial Belgian fishing license (van Winsen et al. 2016). A transition from recreational to commercial fisheries has become an explicit objective of the *Vistraject* initiative (De Snijder et al. 2014). One proposal is to create a small-scale commercial fisheries segment consisting of vessels <12 m. Consequently, modalities and potential adaptations to the current legal framework have been discussed and a proposal submitted to the competent cabinet.

Several other initiatives have been launched to promote small-scale fisheries, recognising that such fisheries also play an important social and cultural role as illustrated in Nieuwpoort (Box 18.1). However, some important conflicts and challenges with regards to the recently adopted Marine Spatial Plan need to be addressed. An example is the request to extend the exclusive fishing zone for coastal vessels from 3 to 4.5 NM, illustrating that coastal fisheries are in increased competition for space in the Belgian part of the North Sea. The course of history has led to a complex institutional context where the jurisdiction of maritime activities is divided between different levels of government, complicating matters. Furthermore, changing policy does not happen overnight. A focused approach may alter the perspective of small-scale fisheries and potentially create new opportunities for a re-emergence in Belgium.

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# Chapter 19
# Small-Scale Fisheries in the Netherlands: Fishing on the Margin


**Marloes Kraan and Fenna Hoefsloot**

**Abstract** This chapter focuses on the small-scale fisheries sector in the Netherlands. This sector operates on the margin of the Dutch fishing fleet, which is dominated by larger-scale fisheries. The gillnet-, handline-, small trawl- and fyke fishers make only a small contribution to total landings and revenue. The Dutch government has not formulated a specific small-scale fisheries policy, resulting in unintended consequences for small-scale fishers. The fact that a clear definition of what small-scale fisheries in the Netherlands entails is non-existent, combined with the 'rest-category' approach in data collection, contributes to the marginality of the sector. Nevertheless, small-scale fisheries in the Netherlands do take place, with almost 500 fishers active in more than 200 vessels. It is a varied, flexible and culturally embedded sector that is important, especially in the Zeeland Delta and the Wadden Sea. The chapter describes this sub-sector in relation to the rest of the fishing sector and investigates how institutional arrangements and market developments impact small-scale fishers using the Dutch ITQ system as an example. It subsequently investigates the possible impacts of ongoing developments (Brexit, pulse fishing, wind parks, the landing obligation and the trend of consolidation). The authors argue that a reassessment of the value of small-scale fisheries in the Netherlands is required in the light of environmental and social challenges.

**Keywords** Small-scale fisheries · The Netherlands · ITQ · Landing obligation · Tourism

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## 19.1 Introduction

Small-scale fisheries in the Netherlands have received little attention from national fisheries management or from fisheries science. This is mainly due to the fact that their relevance for or contribution to for the national revenue from landings is relatively small, and because the Dutch government does not make the distinction between large and small-scale fisheries in its policies (de Vos and Kraan 2015). Nevertheless, small-scale fisheries in the Netherlands do take place and can be characterised as a varied, flexible and culturally embedded sector.

In the international fisheries debate, there is growing attention on small-scale fisheries. It has been established that most fishers globally are small-scale, that these fisheries are often crucial for livelihoods and food security and can also be important for community resilience (Johnson 2006; Chuenpagdee 2011). In the European context, the relevance of small-scale fisheries is more subtle; locally they can have socio-economic importance (especially in fisheries dependant and more remote places); they have a distinct role in debates on food and value chains, and are often held up as being exemplary as fisheries with a low environmental impact (Johnson 2006; Guyader et al. 2013). It is in this context that this chapter describes the Dutch small-scale fishing sector, highlighting the difficulty in defining small-scale fisheries, as well as their values, challenges and diversity. By focusing on the quota system, it will demonstrate how small-scale fisheries are impacted by management arrangements and market developments. As small-scale fisheries in the Netherlands are relatively out of sight, many impacts are also relatively invisible, leaving (unintended) consequences unaccounted for.

## 19.2 Small-Scale Fisheries in The Netherlands

Small-scale fisheries in the Netherlands can be described qualitatively and quantitatively. Both approaches have pros and cons. And both approaches result in descriptions of the sub-sector that are not completely comparable. There is no formal definition of small-scale fisheries in the Netherlands. Small-scale fisheries can, however, be described based on what they are not: small-scale fisheries are neither industrial nor large-scale and are often confined to coastal or inland waters (de Vos and Kraan 2015). However, this description leads to a simplification and dichotomy between small and large-scale fisheries without being very specific about the characteristics of small-scale fisheries in the country (see also Johnson 2006 about categorisation of small-scale fisheries). Therefore, another way of characterising the small-scale fisheries sector was developed using the characteristics of small-scale fisheries as indicated by small-scale fishers themselves. The group of small-scale fishers, part of the small-scale fisheries Learning Circle in the Netherlands in 2012, was asked at that time how they categorise small-scale fisheries, and their initial

definition was later discussed with 16 additional small-scale fishers (de Vos and Kraan 2015). The consensus was that small-scale fisheries are carried out in small areas close to the coast with fishing trips of maximum 1 day. Capital investments are low and investments are made mostly paid with savings. The owner should be actively fishing and have a small crew, including the owner and one other crew member maximum. The fishery is weather dependent. Whether or not a vessel is small-scale also depends on the combination of fishing technique, type of vessel and the number and/or length of nets and hooks used. It should result in a relatively low catch capacity and low environmental impact. Small-scale fishers are supposed to be active in marketing their own catches and often sell their catch to local markets, restaurants or organic fish shops. The fishers often focus on the quality instead of quantity of the catch (de Vos and Kraan 2015).

A quantitative description of the small-scale fishing sector of the Netherlands is based on how the research institutes, gathering the data, have categorised the fishing fleet segments. The site where (economic performance) data on the Dutch fishing sector is gathered is Agrimatie, set up by Wageningen Economic Research (WEcR 2017a). From 2007 onwards WEcR started integrating small-scale fisheries in a 'rest'-category in the annual publication 'Fisheries in Figures' (WEcR 2017b). This 'rest'-category named 'remaining coastal fisheries' includes the majority of fishers that are commonly perceived (in a more qualitative way) as small-scale coastal fishers. The category includes all fishers that apply passive fishing techniques. It also includes fishers who apply active fishing gear but have an income which is below 50 k euro per year and/or fishers who have been active only part of the year. Yet as it is a rest-category, the group of fishers falling in this category is rather heterogeneous. The razor-clam (*Ensis directus*) fishers for instance are part of this category, using vessels of 35–43 m and contributing strongly (up to 86%) to the total value of the 'remaining coastal fisheries' category (see Table 19.1). Not only does the category include fishers with small vessels, passive gear or low incomes working part-time but also fishers that are not required to fill in a logbook. The data for this part of the fleet are collected by means of an annual survey as opposed to the other fleet segments, where data are available from e-logbooks (in most cases at a haul level). The survey is sent to all skippers owning vessels that fall into the remaining category of coastal fisheries (de Vos and Kraan 2015).

Coastal small-scale fishing in the Netherlands is largely concentrated in the Zeeland delta and the Wadden Sea. Both regions contain a relatively large number of small-scale fishing enterprises which deploy a variety of fishing methods and gears (see Fig. 19.2 for an overview of the main fishing areas in the Netherlands). Traditionally small-scale fishers in the Netherlands were highly specialised in a certain type of gear or fishing method. While some specialised sectors still remain, such as handpicking cockles *(Cerastoderma edule)* or oysters (*Crassostrea gigas)* (see Fig. 19.1), the majority of today's small-scale fisheries enterprises use a mix of fishing gear such as gill nets, beam trawl, pelagic trawl and fykes (see Table 19.2). Gill nets and fykes are either set from land or by boat (Werkgroep Scholten 2015).

**Table 19.1** Overview of key data from overall fisheries in the Netherlands and the small-scale sub-sector for the last 4 years (2014–2017)

| Data refers to 2014/2015/2016/2017 | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| Fleet | | |
| Number of vessels | 619 (2014), 597 (2015) and 597 (2016) and 594 (2017) | 255 (2014), 240(2015), 240 (2016) and 231 (2017) |
| Inactive vessels | | 171 (2014), 191 (2015), 206 (2016) and 211 (2017) |
| Capacity (GT) | 134 thousand GT (in 2014) 116 thousand GT (in 2017) | 0.5 thousand GT (2014) |
| Number of fishers | 2184 (2014), 2123 (2015), 2075 (2016), 2212 (2017) | 455 (2014), 467 (2015), 465 (2016) and 485 (2017) |
| % women | N.A. | N.A. |
| Average age of fishers | N.A. | N.A. |
| Landings | | |
| Quantity (ton) | 331 mln kg (2015) & 368 mln kg (2016), 375 mln kg (2017) | 6.5 mln kg (2015) & 7.7 mln kg (2016) and 7.2 mln kg (2017) |
| Value (Euro) | 428 mln (2015), 495 mln (2016) and 483 mln (2017) | 11.6 mln (2015) & 13.7 mln (2016) and 14.1 mln (2017) |
| Most common gear used (top 3) (% in total) (looking at HP days) | Pulsetrawl<br>Shrimp trawl fishing<br>Flyshoot<br>Sumwing trawl<br>Twinrig<br>Beamtrawl<br>Pelagic trawl | Gill net fishing[a]<br>Line fishing<br>Trap fishing<br>Small (shrimp) trawl fishing<br>Shellfish fisheries |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | 2015 | 2015 |
| | 1. Atlantic herring (*Clupea harengus*) (76 mln kg) 27% | 1. Razorclams (*Ensis directus*) (5604 × 1000 kg) 86.5% |
| | 2. Blue whiting (*Micromesistius australis*) (56 mln kg) 20% | 2. Other sea fish[b] (538 × 1000 kg) 8.3% |
| | 3. Atlantic mackerel (*Scomber scombrus*) (39 mln kg) 14% | 3. Sole (*Solea solea*) (130 × 1000 kg) 2.0% |
| | 2016 | 2016 |
| | 1. Atlantic herring (*Clupea harengus*) (103 mln kg) 31% | 1. Razorclams (*Ensis directus*) (6101 × 1000 kg) 79% |
| | 2. Blue whiting (*Micromesistius australis*) (58 mln kg) 18% | 2. Other sea fish (1251 × 1000 kg) 16% |
| | 3. Atlantic mackerel (*Scomber scombrus*) (38 mln kg) 12% | 3. Sole (*Solea solea*) (116 × 1000 kg) 1.5% |

(continued)

**Table 19.1** (continued)

| Data refers to 2014/2015/2016/2017 | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| | 2017 | 2017 |
| | 1. Atlantic herring (*Clupea harengus*) (96 mln kg) 29% | 1. Razorclams (*Ensis directus*) (5993 × 1000 kg) 77% |
| | 2. Blue whiting (*Micromesistius australis*) (82 mln kg) 25% | 2. Other sea fish (1509 × 1000 kg) 19% |
| | 3. Atlantic mackerel (*Scomber scombrus*) (44 mln kg) 13% | 3. Sole (*Solea solea*) (95 × 1000 kg) 1.2% |
| Top 3 in values (% in total) | 2015 | 2015 |
| | 1. Common sole (*Solea solea*) (94.4 mln €) 30% | 1. Razorclams (*Ensis directus*) (5.6 mln) 86% |
| | 2. Common shrimp (*Crangon crangon*) (57.3 mln €) 18% | 2. Other sea fish (538,237 €) 8% |
| | 3. European plaice (*Pleuronectes platessa*) (46.8 mln €) 15% | 3. Sole (*Solea solea*) (130,255 €) 2% |
| | 2016 | 2016 |
| | 1. Common shrimp (*Crangon crangon*) (117.7 mln €) 29% | 1. Razorclams (*Ensis directus*) (6.1 mln) 79% |
| | 2. Common sole (*Solea solea*) (100.6 mln €) 25% | 2. Other sea fish (1.2 mln) 16% |
| | 3. European plaice | 3. Seabass (*Dicentrarchus* |
| | (*Pleuronectes platessa*) (53.9 mln €) 13% | *labrax*) (118,980 €) 1.5% |
| | 2017 | 2017 |
| | 1. Common sole (*Solea solea*) (96.6 mln €) 26% | 1. Razorclams (*Ensis directus*) (5.9 mln €) 77% |
| | 2. Common shrimp (*Crangon crangon*) (83.7 mln €) 23% | 2. Other sea fish (1.5 mln €) 19% |
| | 3. European plaice (*Pleuronectes platessa*) (54.3 mln €) 15% | 3. Sole (*Solea solea*) (94.822 €) 1.2% |

The table shows data on the fleet, the number of fishers, landings, most common gear used and most important species landed. Source of information: (www.agrimatie.nl). Capacity & Total (all fisheries) – most important species from landings from the Annual Economic Report (STECF 2015, 2018)

[a]The vessels mainly using gill nets reduced drastically between 2013 and 2017 (see Box 19.1)

[b]See Table 19.2 to observe the diversity of fish species under 'other sea fish'

**Fig. 19.1** Manually gathering oysters on the oyster banks. (Source: Stichting Geïntegreerde Visserij, H. Punter)

The use of multiple gears combined with different activities in the fish chain characterises modern coastal small-scale fisheries in the Netherlands, which results in a versatile sector with a strong adaptive capacity (Strietman and Zaalmink 2014). Strietman and Zaalmink (2014) describe the transition that has been made as moving from "craftsmanship to entrepreneurship" whereby the modern small-scale fisher has a broad range of competencies. The choice for a certain fishing method is largely determined by the seasons, weather conditions, the availability of fish species and available quota. Fishers can therefore quickly respond to variations in fish stocks arising from natural or anthropogenic sources. On the other hand, barriers to this flexibility exist such as the limits imposed by quotas and permits and capacity for investment in gear (Kraan and Paijmans 2014). Nevertheless, small-scale fisheries are still more flexible than the capital intensive cutter fleets that also operate in the Netherlands, some of which having specialised in a gear-target species combination (i.e. sole and pulse) and are financially locked in. The national policy has facilitated what has been called 'integrated fisheries' (*geïntegreerde visserij*) by introducing a pilot for a so-called group licence, providing a group of fishers the opportunity to exchange fishing licences and individual transferable quotas within the group, thereby promoting the spread of income risks and a more sustainable fisheries (Kraan and Paijmans 2014). Strietman and Zaalmink (2014) found that this type of fisheries distinguishes itself from other forms by its flexibility and broad range of activities, its efficiency and its integration in all parts of the fisheries value chain. The pilot resulted in a new kind of cooperative venture entitled *Vissers van de kust* (coastal fishers) (Vissers van de kust 2018).

**Table 19.2** Small-scale *métiers* in the Netherlands

| | Characteristics | |
|---|---|---|
| *Métier* description | Gear | Target species |
| Shrimp fishery (<20 m vessel) | Bottom trawl/pulse | Shrimp (*Crangon crangon*) |
| Gill net fishery | Gill net | Sole (*Solea solea*) |
| | Gill net | Cod (*Gadus morhua)* |
| | Gill net | Grey mullet (*Mugil cephalus*)/Seabass (*Dicentrarchus labrax*) |
| Shellfish gathering | Rake | Cockles (*Cerastoderma edule*) |
| | Knife | Oysters (*Crassostrea gigas*)/Mussels (*Mytilus edulis*) |
| Hook and lines | Line with one or several hooks | Seabass (*Dicentrarchus labrax*)/Cod (*Gadus morhua)* |
| Fyke nets and baskets | Fyke nets and baskets | Eel (*Anguilla anguilla*), Flounder (*Platichtys flesus*), Smelt (*Hyperoplus lanceolatus*), Crab (*Cancer pagarus*) |
| Recreational / angler fishery | Gill net/seines/hook and lines, baskets, fyke nets, cages. Sports = with hook and line | Sprat (*Sprattus sprattus*), Eel (*Anguilla anguilla*), Mackerel (*Scomber scombrus*), Garfish (*Belone belone*), Whiting (*Merlangus merlangus*) |
| Pelagic nets (<300 hp) | Pelagic net, demersal bottom trawl | Smelt (*Hyperoplus lanceolatus*) |
| Demersal trawl (<300 hp) | Demersal trawl | Plaice (*Pleuronectes platessa*), Dab (*Limanda limanda*), Flounder (*Platichtys flesus*) |
| Anchor nets | Anchor nets | Smelt (*Hyperoplus lanceolatus*), Shrimp (*Crangon, crangon*), Sprat (*Sprattus sprattus*) |
| Razor clam fishery | Suction dredges | Razor clams (*Ensis directus*) |

Source: adapted from De Vos and Kraan (2015, 634)

## 19.3 Socio-Economic Context

The importance of the Dutch fisheries sector as a whole is currently relatively small in terms of employment and number of vessels (van Ginkel 2009). However, relative to its population size, the Netherlands is one of the most productive fishing nations in the EU (Carpenter and Kleinjans 2017, 202). It is also one of the few member states with more large-scale vessels than small-scale vessels (ibid.). In 2017, a total of 594 fishing vessels, large and small, with a collective capacity of 116 thousand tonnes were registered (see Table 19.1). The most common gear in terms of the number of vessels using the gear is the beam/pulse trawl. The total value of Dutch landings in 2017 amounted to 483 million euros. Sole (*Solea solea*), shrimp (*Crangon crangon*) and plaice (*Pleuronectes platessa*) are the species that contribute most in terms of monetary value (Table 19.1).

The small-scale fisheries fleet, consisting of 442 vessels in 2017 (of which 211 were considered non-active – see below for an explanation), contributed an estimated 14.1 million euros in landings. Most of that value was generated by the razor-clams fishery. The majority of the landed fish species by small-scale fishers are non-quota fish, only some small-scale fishers own ITQs (Hoefnagel and de Vos 2017). In 2015, it was estimated that the small-scale hook and line fishers caught 25 tonnes of cod (*Gadus morhua*) (3% of Dutch cod landings); 75 tonnes of sea bass (30% of Dutch landings), and small-scale set nets caught 12 tonnes of sea bass (5% of Dutch landings) and 100 tonnes of sole (*Solea solea*) (1% of sole landings) (info A. Heinen, referring to Helmond and Steins 2016).

In their socio-economic assessment of the importance of fishing for fisheries' communities, Salz et al. (2008) found that while municipal authorities believe that small-scale fisheries only contribute marginally to the economy, they are still considered to be of great traditional and social importance. Also, jobs in the fishing sector can *locally* still have an impact; in 2016, for instance, more jobs were generated in Urk, compared to other villages and cities in the Flevoland Province, due to the growth of the fishing industry (De Noordoostpolder 2018). Moreover, in remote areas such as the coast of Friesland and Groningen, fisheries can have relatively large importance, if not economically than certainly culturally (Verroen 2016). Generally though, years of declining fish revenues have resulted in many inhabitants of traditional fishing villages having to seek alternative forms of employment, reducing the employment rate of fisheries to less than 1% of the total employment figure (Salz et al. 2008; Hoefnagel and Bogaardt 2010). Still, researchers state that many of these villages still strongly identify themselves as being fishing villages, with a distinct mentality and culture, which is the direct result of the nature of the profession and less intensive social contacts on land (Salz et al. 2008; see also Urquhart and Acott 2013).

It should be noted, however, that too much attention to the dichotomy between large and small-scale fisheries might hide important linkages between the two subsectors. The presence of a large-scale fleet in a harbour ensures the availability of that harbour also for small-scale fishers including the availability of fishing gear supplies in harbour shops that can only maintain a business due to a large clientele. Likewise, small-scale fishers often interact directly with consumers, telling stories about fishing, the sea and the fish to consumers. This directly contributes to a positive image of fishing which can also positively 'rub off' on large-scale fishers, as one small-scale fisher once told us (presentation small-scale fisher J. Vegter at the MARE policy day 2013). Thus, large and small-scale fisheries in the Netherlands are linked and can 'support' each other.

### *19.3.1 Policy Context*

The Dutch national fisheries policy aims at achieving sustainable fisheries, regardless of scale (de Vos and Kraan 2015). This entails that Dutch national fisheries policy does not make a distinction in its objectives based on gear type or size. Rather, the Dutch fisheries law of 1963 categorises fisheries only based on their fish-

ing grounds. It thereby distinguishes between marine fisheries (>12 nm of the coast), coastal fisheries (<12 nm of the coast), shellfish-fisheries (mostly in coastal waters) and inland fisheries (freshwater lakes, rivers, polders, canals, estuaries and enclosed salt inshore waters in Zeeland). All fisheries in the North Sea (thus excluding the inland fisheries) fall under the regulation of the CFP, to which national governments can add additional rules (de Vos and Kraan 2015).

Small-scale fisheries are primarily found in the categories 'coastal fisheries' and 'inland fisheries', for which national governments are the main or sole authority (de Vos and Kraan 2015). In the Netherlands, the Ministry of Agriculture, Nature and Food Quality has the responsibility of maintaining fisheries resources in these waters. However, especially with regard to inland waters, other governmental institutions are also important since the maintenance of water bodies and water governance is shared by, *inter alia*, the Ministry of Infrastructure, the Dutch water boards (regional governmental bodies charged with the management of water barriers and waterways), and private sector organisations (Werkgroep Scholten 2015). Local governments (such as the municipalities and provinces) can also play a role – for instance in relation to nature goals as set under Natura 2000.

### *19.3.2 Cultural Identity*

A number of fishing villages along the Dutch coasts have different connections to large and small-scale fisheries. Places such as Vlissingen, Arnemuiden, Ouddorp, Colijnsplaat, Stellendam, Scheveningen, Katwijk, IJmuiden, Den Helder, Den Burg (Texel), Oudeschild (Texel), Harlingen, Zoutkamp, Lauwersoog and Urk (nowadays an inland village bordering the IJsselmeer, but this used to be an island in the Zuiderzee) have a strong social and cultural connection to marine fisheries (see Fig. 19.2). Van Ginkel (2009) describes how fishers in Texel, one of the Dutch islands in the Wadden Sea, take pride in their long-standing fishing tradition and identity. Besides economic value, small-scale fisheries also have social and cultural value. In some areas, the cultural identity of the entire population is interwoven with the fisheries sector, such as in Zoutkamp located near the Wadden Sea (Verroen 2016). This fishery experience, driven by tradition, culture and 'love for the profession' rather than economic gain, is the reason why the small-scale fishing sector persists, despite its financial losses (Salz et al. 2008). Something that also holds true for the other fleet segments such as the trawl fleet, which have continued to exist despite years of economic losses (Hoefnagel et al. 2004; Hoefnagel and de Vos 2017). Recent data have shown that this declining trend has been reversed, and in general, the fishing sector in the Netherlands is earning good revenues again (data 2016), with the best economic results of the last 50 years (WEcR 2017a).[1]

[1] A situation which might change rapidly if pulse is banned and pending developments with Brexit (see Sect. 19.5).

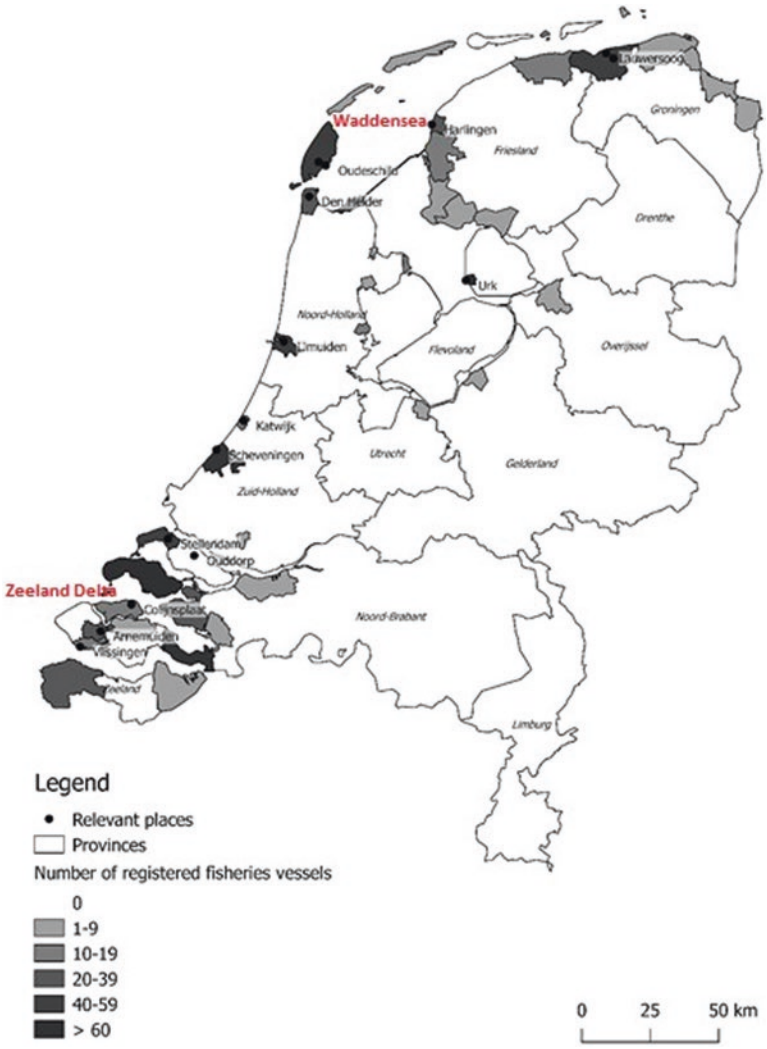


**Fig. 19.2** Map of the Netherlands showing the provinces, the main coastal fishing villages/harbours and the number of registered fishing vessels per area. (Source of information: Ministerie van EZ (2017); OpenStreetMap contributors (2015))

### *19.3.3 Tourism (Heritage)*

In the Wadden Sea area, which is a UNESCO World Heritage Site and N2000 area, fisheries and tourism are linked, as various entrepreneurs provide paid fishing trips for tourists. In total, 11 ships provide these kinds of trips to tourists in the Wadden Sea area. These trips combine fishing with education, recreation and tourism.

Often these entrepreneurs are professional fishers who have partly made the switch to the tourism sector (Verroen 2016). Indeed, it is common for some fishers to combine many roles apart from just fishing, such as selling fish at local markets, running a restaurant or providing fishing expeditions (see for example 'tAiland 2018). Such initiatives can be supported by municipalities that try to diversify the local economy by stimulating jobs in the tourism and recreation sectors (Salz et al. 2008). In Salz and co-authors' research (2008), municipalities and fisheries representatives of fishing villages were asked what role tourism plays in fisheries. Both groups of respondents suggested that the economic value was moderate. Yet the indirect value of harbours that are (still) actively used by fishers is a positive factor, as many tourists value this kind of activity when visiting coastal towns. In Scheveningen, the local municipality recently decided to invest in the harbour, explicitly linking the importance of the fishing activity (which in Scheveningen is still considerable both from small-scale as well as large-scale fleets) with tourism (Haagmedia 2018). Another initiative is that of '*Fisk Paad, vis op de kaart'* (Fisheries path, fish on the menu) in the northern province Friesland connecting fish and fisheries with tourism by providing a platform where initiatives are connected, and entrepreneurs and tourists can find each other (Fiskpaad 2018). This provides a means for consumers to meet fishers and creates awareness of the value of fish and fisheries in / for the province.

### *19.3.4 Certification and Market Approaches*

A number of small-scale fisheries in the Netherlands have obtained eco-labels for their fish. Some line fishers of seabass (*Dicentrarchus labrax*), the hand-rake cockle *(Cerastoderma edule)* fishery, the shrimp (*Crangon crangon*) fishery (including small-scale fishers), as well as the razor clam (*Ensis directus*) fishery, have obtained MSC certification. The highly valuable razor clam fishery is part of the category 'other small-scale marine fisheries' of WEcR, yet is arguably not small-scale. This fishery obtained a Marine Stewardship Council (MSC) certificate in 2012, making it the first invasive species fishery in the world to be given such certification (Verroen 2016). Razor clams account for the highest landings in the small-scale fisheries category in the Netherlands, with 5604 tonnes and a value of 5.6 million euros in 2015 (Table 19.1). Fishing razor clams is carried out on the North Sea coast with approximately six vessels (all larger than 30 meters), using suction dredges. International certification, such as MSC, can be hard to obtain because of the costs and the uncertainties of the fish stocks. The gill net fishers had obtained MSC for their sole (*Solea solea*) fishery in 2009, but this certification was not prolonged in 2013 due to its high costs. Often local labels are preferred, for example, *Waddengoud* and *Zeker Zeeuws*.

Besides the positive effects that certification may have on sustainability these labels are also a way of empowering small-scale fisheries. Since, as small-scale fisheries become more visible in the market, they gain a voice at government level

and could possibly obtain a license to produce (de Vos and Kraan 2015). Another way of empowering small-scale fisheries and make fisheries more sustainable is through the Slow Fish movement. Slow Fish Netherlands is a 'local food' movement that draws attention to small-scale fisheries. It is part of the Dutch and the international Slow Fish movements (Trapman 2016). The Slow Fish movement fits in with the new trend of thinking about food and value chains, where locally produced and healthy foods, which preserve the local knowledge of food production, are an alternative to the industrial, mass production of food.

## 19.4 Institutional and Organisational Context of Small-Scale Fisheries: Capacity for Collective Action and Influence on Governance Arrangements

### *19.4.1 National Representation of Small-Scale Fisheries*

On May 9, 2015, a new national organisation Netviswerk (Netviswerk 2018) was launched aimed at representing the interest of inland and small-scale coastal fishers at a national and European level. This organisation aimed to fill the void that existed in terms of national representation of small-scale fishers. In 2 years, the size of this organisation tripled to 180 members in 2017 (Visserijnieuws 2017). The initiative of this organisation was taken by the Combinatie van Beroepsvissers (Group of professional fishers), one of the national inland fisher organisations, which has now dissolved. The membership targeted by the new national organisation falls under a broad category of inland fishers of polders, lakes and rivers and coastal fishers including gill net fishers, professional hand line fishers and shell fishers on foot. Small-scale shrimp fishers can still be part of one of the two national mainstream fisher organisations, VisNed and the Nederlandse Vissersbond (Dutch fishers union). Members are obliged to commit themselves to the vision of the organisation and a list of principles. Principles range from care for the environment, collaboration and participation in research, to respect for colleagues and other resource users. The new national small-scale fisheries organisation will deal with government departments, water managers, national and international environmental NGOs and representatives of recreational fishers' organisations.

The implementation of fisheries policy in coastal waters (<12 nm) is the responsibility of the Ministry of Economic Affairs. Reacting to the persistence of social conflict within the sector and the over-exploitation of fish resources, the Dutch government changed its regulatory system in 1993 into co-management of quotas. Co-management groups have been created; these greatly overlap with Producer Organisations (POs) yet have different goals (Ministerie van LNV 1996). POs are officially approved bodies, based on EU legislation, set up by fishery or aquaculture

producers. In general, POs are meant to guide producers towards sustainable fishing and aquaculture, help them match supplies to market demands, and support them in creating added value (European Commission 2018).

De Vos and Kraan (2015) stated that the main policy focus of the Netherlands' government was to secure fisheries sustainability, thereby giving less attention to the structure of the fisheries fleet and to the size of the vessels. Because of this, small-scale fisheries are discussed as part of stock management, area management or gear management and not as a separate issue. The Dutch government over the last decade has increasingly worked towards a reduction of its role; a process which can be labelled as 'the fewer rules and taxes the better' motto. In this context there has been a push towards increasing the responsibility and participation of fishers themselves in designing and managing the quotas in the fisheries sector (van Ginkel 2009). One of the clear outcomes of such thinking has been the closure of the Dutch Fish Product Board (along with all other sectoral boards). The product boards were industry boards with co-management tasks and were financed by sectoral taxes (de Vos and Kraan 2015).

### *19.4.2 The Impact of the Dutch Quota System on Small-Scale Fisheries*

As an example of how the institutional landscape can have unintended consequences for small-scale fisheries,we will look at the quota system. Currently, many commercial fish species in Europe are managed by quotas.[2] Each year a total allowable catch (TAC) is set by the ministers of the EU countries, based on political negotiations, taking ICES advice on the state of the stocks into account. These TACs have been in place since 1974 when they were first agreed upon by the North East Atlantic Fisheries Convention (NEAFC) (Hoefnagel and Buisman 2013). Since 1977, the European Community has taken over this task and since 1983 this has been dealt with in the Common Fisheries Policy (CFP) of the EU. TACs have been divided amongst the EU coastal states based on historical catches and on the principle of relative stability. Each country thus has a portion of the TAC, called a national quota. At the national level, each EU member state can decide how to divide the quotas amongst their fleets (van Hoof 2013).

Not all stocks are managed under quotas and not all quotas are organised the same way, however. For example, gurnard *(Chelidonichthys lucerna)* and shrimps *(Crangon crangon)* have no quotas, sea-bass (*Dicentrarchus labrax*) has only a

[2] The Netherlands had quotas for the following species in 2015: Saithe, Turbot, Skates and Rays, Haddock, Whiting, Northern Prawn, Plaice, Spiny Dogfish, Sprat, Mackerel, Horse Mackerel, Norway Pout, Blue Whiting, Hake, Cod, Herring, Norway Lobster, Anglerfish, Dab, Ling, Megrims, Lemon Sole, Tusk. https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/poster_tac2015_nl.pdf. Accessed 15 Feb 2018

minimum landing size, turbot (*Sophthalmus maximus*) has a national quota, sole (*Solea solea*) and cod (*Gadus morhua*) have individual transferable quotas (ITQs) and hand-picked oysters (*Crassostrea gigas)* have a daily quota (de Vos and Kraan 2015; Verroen 2016). The Dutch fleet was differentiated in two major segments in 2004: Main Fleet 1 (Mfl1) and 2 (Mfl2). Vessels in Mfl1 are allowed to target quota species whereas the vessels in Mfl2 are not, but can fish on non-quota species. This was instigated to constrain the number of vessels geared towards targeting quota species (Carpenter and Kleinjans 2017). Many of the Mfl2 vessels are small-scale fishers.

The system of ITQs, whereby quota ownership is individual, has resulted in a situation that fishers can hold on to their share even when they are not fishing anymore. Estimations have been made that in 2010, 30% of the quota was in the hands of non-active fishers (Taal et al. 2010 in Hoefnagel and Buisman 2013), this has reduced to 7% in 2016 – due to deaths of quota holders and selling of quota by heirs (Hoefnagel and de Vos 2017). Although fish quota must be connected to a fishing vessel that needs to leave the harbour at least 1 day per year, in practice these 'divan-fishers' -as they are called in Dutch or 'slipper-skippers' (English) – can simply rent out their quotas to active fishers and thereby earn a salary without fishing, something some fishers have 'counted on' when planning their businesses. A recent development is that many of these quotas have been bought by large fish processors and pelagic trawler companies. These enterprises in some cases have even been able to buy complete fishing enterprises (vessel with licences and ITQs) (Hoefnagel and de Vos 2017). This has resulted in a certain level of consolidation, with more quotas piling up in a smaller number of companies (Hoefnagel and de Vos 2017). Small-scale fishers could have bought the quotas coming on the market by making use of the same construction – in theory – but often lack financial means to do so. A recent study by Carpenter and Kleinjans (2017) that assessed the performance of the diverse allocation systems of fishing opportunities in EU member states against defined objectives concluded that the Netherlands perform very low on 'equity and fairness' (lower than any other of the EU member states) due to the earlier mentioned division in fleet segments (Mfl1 and Mfl2), making it practically impossible for Mfl2 fishers (mostly small-scale fishers) to access quota species; and the fact that the fishers active 3 years before the introduction of the system received the quota 'for free' whilst nowadays buying quotas is practically impossible and was deemed 'unfair' (Carpenter and Kleinjans 2017, 202–223). Why small-scale fishers in Mfl1 have not purchased quotas is not clear and requires further research.

In principle, small-scale fishers have the same opportunities as the other fishers; if they own quotas, they can rent quotas from quota owners, and swap quotas. *De facto,* however, if they do not own quotas, which is the case for many small-scale fishers, they cannot lease them – according to the ITQ regulation of 1985

(Hoefnagel and de Vos 2017). The fact that often the uptake of quotas is less than 100% questions the efficiency of the system (Carpenter and Kleinjans 2017, 215) and suggests that there is room for more fishers to take part when organised differently. Also, the Netherlands could set aside part of the quota for new entrants as is done in other countries such as Denmark (Carpenter and Kleinjans 2017, 96). Furthermore, the opportunity to rent and swap is of course impacted by quota prices, which are impacted by market and fishing opportunity developments (see Box 19.1).

**Box 19.1: How Developments in Pulse Fishing Impact on Small-Scale Gill Net Fishers**

Small-scale gill net fishers targeting sole (*Solea solea*) need quotas to be able to fish. If they need more quotas than they own, they can lease sole quotas. This opportunity is, however, affected by the market, which is in turn impacted by fisheries policy. If there is a sharp rise in prices of renting sole quotas, some fishers may not be able to pay those prices. In this situation, it sometimes becomes more attractive to rent out the amount of quota you have to others. Between 2013 and 2017, the number of vessels specifically fishing with gill nets declined from 48 in 2013 to 12 in 2017, resulting in landings dropping to one fifth (see Fig. 19.3).

In 2013, the opportunities for small-scale gill net fishers to target sole shrank, under influence of developments in the cutter fleet. As a growing number of cutter fishers transformed their beam trawl vessels into electric pulse vessels, the demand for sole quotas rose, as the pulse gear is a targeted sole fishery. This resulted in a higher price for sole quotas (rent and sales) (Fig. 19.4), affecting other fishers making use of the rental market for sole. Whereas rental price for sole in previous years equalled 5% of the value of the catch, this percentage rose to 41% in 2015 (Hoefnagel and de Vos 2017).

However, as the price for sole on the market did not rise, margins diminished. As gill net fishers own only a very small part of sole quotas, they depend on the rental market (Trapman 2015). This is an example of how a particular group of small-scale fishers (gill net fishers targeting sole are impacted by developments taking place in another part of the sector (the transition of beam trawl fisheries targeting sole and plaice (*Pleuronectes platessa*) to pulse trawl fisheries targeting sole. Access to fishing opportunities for the gill net fishers *de facto* became limited due to rising prices for sole quota.

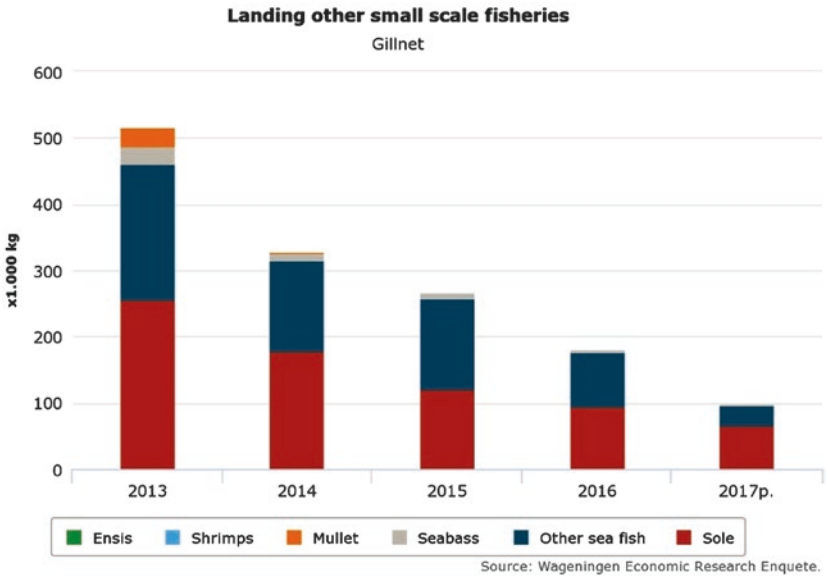


**Fig. 19.3** The landing volume of specialised gill net fishing vessels, which are part of the 'remaining coastal fisheries' (or 'other' small-scale fisheries) (see section 19.2) (Source: www.agrimatie.nl; Dec 2018)

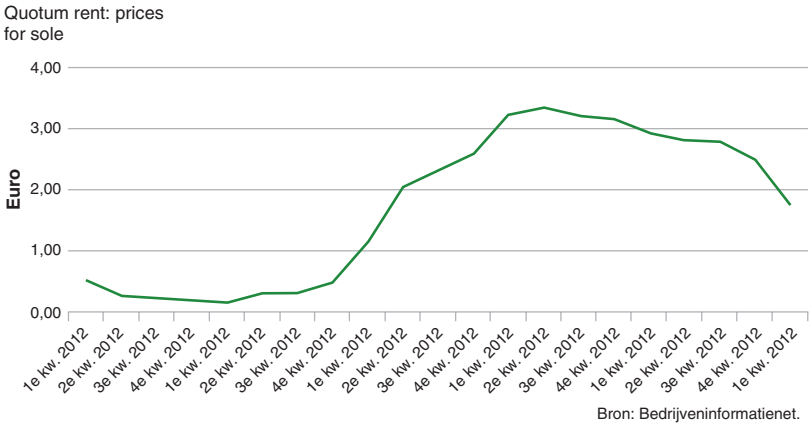


**Fig. 19.4** Prices for quota rent – sole (*Solea solea*); in Euro's per quarter of the year. (Source: www.agrimatie.nl; Feb 2018)

## 19.5 Looking to the Future: Challenges and Opportunities of Small-Scale Fisheries for the Future

The growing international attention for small-scale fisheries offers opportunities to the Dutch small-scale fishing sector too. The major challenge, however, seems to be how to organise a sub-sector that is characterised by its diversity. As there is no specific policy for 'small-scale fisheries' in the Netherlands, data collection requests of the government will not be focused on these segments – amplifying the 'out of sightness' of this sub-sector. This has earlier been described as a 'self-reinforcing vicious circle' (de Vos and Kraan 2015, 645). However, the development of a national organisation 'Netviswerk' is a hopeful step, which might improve the visibility of the sub-sector at the policy level.

Three major new developments impacting on the Dutch fleet in general, may also indirectly impact small-scale fishers in the Netherlands. These impacts are the introduction of a landing obligation, the Brexit process and the ban on pulse fishing per 2021 as decided by the European institutes in 2019. The landing obligation will impact fishers who catch fish species under the quota system as bycatch. Whereas in the past they were obliged to discard these (for instance undersized plaice (*Pleuronectes platessa*) in the shrimp (*Crangon crangon*) fishery), from 2019 onwards, they will need to land them and, therefore, will need quotas to do so. How this will play out for the various groups is still unknown. For shrimp (*Crangon crangon*) fishers (including small-scale fishers) probably an exemption will be requested, based on survival of fish, increased selectivity of the gear and the impossibility to sort whatever small bycatch is left (Vissersbond 2018).

How Brexit will work out is also still unknown. It appears that this will probably have major implications for the large-scale fishing segment of the Netherlands, as large parts of its catch is caught in UK waters (Seijdel 2018). A situation where much Dutch effort needs to leave British waters and seek new fishing spaces, which might lead to increased competition in Dutch coastal waters.

Both developments have resulted in a need to re-evaluate the current quota system. In the past, if fishers caught quota fish without having a quota, they were obliged to discard the fish, now they will have to land the fish. This conflicts, however, with the national rule prohibiting the landing of fish for which one does not have a quota, so the question is how will this be solved (Coöperatieve Visserij Organisatie 2014)? Will part of the quota be set aside for fishers targeting non-quota fish, yet catching quota fish? In addition, 'the recent Brexit decision will impact Dutch quota hoppers as well as possibilities of quota swaps, and consequently the distribution of fishing possibilities' (Hoefnagel and de Vos 2017, 86). A reassessment of the quota system might provide opportunities for small-scale fishers, whom currently are not really benefitting from the current system. Perhaps an evaluation of the system as made by Carpenter and Kleinjans (2017) will spur societal debate as to what is fair and just, which could have positive implications for small-scale fishers seeking opportunities to expand their fishing practice.

The ban on pulse fishing per 2021 will result in a reshuffling of the opportunities in the fleet and a restructuring of the sector. Perhaps some small-scale fishers will profit if prices for renting quotas drop or if sole quotas have to be sold when pulse fishers need to stop fishing as they cannot afford the return to beam trawling (with 50% more costs). It is expected, however, that the trend of consolidation as described by Hoefnagel and de Vos (2017) will accelerate, with wealthy fish processors and pelagic trawler companies buying quotas, which might be the best option for pulse fishers without a future, but will result in even more concentration of rights, reducing opportunities for small-scale fishers, as corporate interests become more vested in the system.

There is one major development that might positively affect small-scale fishers directly, and that is the deployment of large-scale wind parks in the Dutch North Sea (up to an additional 11,000 megawatt in 2030) (Rijksoverheid 2018). Possibilities for multi-use are currently under research and as only small vessels will be allowed in the wind parks, with most opportunities being linked to static gears (pots, baskets, gillnets, lines), small-scale fishers seem to have the best chances in this area.

## 19.6 Conclusions

This chapter has described the Dutch small-scale fishing sector. It has become clear that the sector is characterised by diversity and invisibility in fishing policy and data collection. The sector is small, approximately 240 vessels are active with about 1–2 people working parts of the year in many different locations spread over the country, mostly in Zeeland and the Wadden Sea area, using many different gears targeting many different species. However, the way small-scale fishers see themselves does not fit with the perception of an economically negligible sub-sector. Instead, their activities can have local importance, and in many cases offer ‘good stories’ valuable for local identities in fishing villages and for tourism (Verroen 2016) and contribute to the general positive image of fishers in society.

However, the fact that small-scale fisheries are quite invisible at the policy level means that the sector (or parts of the sector) can be impacted negatively by developments that – as they are not ‘seen’ – cannot be corrected for. We have focused on the quota system in the Netherlands and the fact that its dynamics tend to influence small-scale fishers negatively. With the ITQ system in the Netherlands, rights holders own part of the Dutch share of the TAC. A right they accessed decades ago without major initial costs, which currently are hugely valuable. The rule that ITQ’s can only be held, leased and bought by active fishers in practice plays out differently than intended, with the existence of ‘divan fishers’ and their inactive vessels to park quota and companies buying complete fishing businesses as a way in. Small-scale fishers without quotas and new entrants are generally excluded from being able to access many fish species. Yet the fact that the yearly uptake of the Dutch part of the TAC is often less than 100% raises questions about the access to these quotas. It would be useful to look

into this, to see what the reasons are for some of the small-scale fishers, being part of Mfl1, not accessing quotas: Is it lack of financial means or is it because they have to rent large quota amounts at a time? There at least seems to be room for making full use of what is available – in combination with setting aside part of the quotas for new entrants. The combined effect of all the developments described in Sect. 19.5 (Brexit, pulse fishing, wind parks, the landing obligation and the trend of consolidation) is yet unclear. Consequently, this might be a good opportunity to reassess the Dutch fishing sector in relation to the objectives of fishing policy and to make explicit choices on how these developments might best serve the various needs of the groups in the Dutch fishing sector, including the small-scale fishers, and society as a whole.

**Acknowledgements** The input of Arjan Heinen and Cornelie Quist and the suggestions of the two anonymous reviewers are gratefully acknowledged.

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# Chapter 20
# Denmark: Small-Scale Fishing in a Market-Based Management System


**Mathilde Højrup Autzen and Hanne Lyng Winter**

**Abstract** The introduction of a market-based management system of individual, transferable fishing quotas has meant a radical change in Danish fishing, with widespread consequences for the small-scale fleet, fishing practices, strategies, harbours and communities. It has led to a concentration of fishing rights, weakening small-scale fishing and making it hard for new generations of fishers to enter the sector. In this chapter, the authors describe and reflect on the process of privatisation, the consequences, and possible ways forward for small-scale fishing. The chapter also looks at recently introduced fishing policies that strive to address some of the consequences of the privatisation for young fishers and the coastal, small-scale fishing fleet in Denmark.

**Keywords** Individual transferable quotas · Danish small-scale fishing · Coastal fishing · Coastal communities · Fisheries policies · Privatisation of fishing quota · Concentration of fishing rights · Quota Kings

## 20.1 Introduction

Historically, small-scale, coastal fishing with nets, hooks and traps has been essential for Danish coastal communities. Net fishing dates back to the Stone Age (Andersen et al. 2007), it paved the way for net fishery further out at sea and is still widely used today. In 1848, a Danish fisher, Jens Væver, developed the fishing method known as Danish seine (also known as anchor seining) in Limfjorden, a method that became a catalyst for the development of Danish fishing in the North

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Sea (Høst 2015). Furthermore, in 1967 a small-scale Danish fisher invented the net hauler, a technology that advanced Danish net fishing noticeably. Before Danish seine became widely popular, fishing with hooks was the most important fishery, and many of the large fishing harbours along the west and north coasts of Jutland were founded when hook fishing was the main fishing strategy (Andersen et al. 2007). Therefore, thanks to Danish seine and certain other features, Danish fishing was, up until the 1950s, characterised largely by shared-organised, small- and medium-scale Danish seine fishing boats (Høst 2015).

Today, however, small-scale fishing with Danish seine, hooks, and nets play an ever less important role in Danish fisheries in general, despite its significant role for certain local economies (NaturErhvervstyrelsen 2016a; Miljø- og Fødevareministeriet 2017a). Small-scale, coastal fishing has been slowly declining, and in 2006–2007 this decline began to accelerate. Up until 2007, principles of equal (*rationsfiskeri,* see Sect. 20.5) and free ('Olympic' fisheries) access to national fishing resources were the tradition of Danish fishing despite European Union regulations of national quotas (TACs), days at sea, etc. However, with the introduction of a new market-based management system of individual and transferable fishing quotas, Danish fishing for consumption species changed radically. This had widespread effects on the small-scale fleet, fishing practices, strategies, as well as on harbours and the people working in the fishing industry in Denmark (Høst 2015; Ounanian 2016; Dinesen et al. 2018; Young et al. 2018). This is the reason why this chapter focuses mainly on the introduction of Vessel Quota Shares (VQS; *Fartøjs Kvote Andele*) in Denmark and the consequences that followed for small-scale fishing.

In Denmark, a variety of measures have been taken to deal with growing fishing capacity, the decline of fish stocks and an economic situation that kept worsening. However, the VQS system is only one among many possible management systems that could have been chosen to regulate the sector. The introduction of this system cannot be explained as *the* logical solution to a simple story of the tragedy of open access, fleet motorisation, technological development and declining fish stocks. Several other contexts, political debates – also in the EU, the geopolitical seascape, the general closure of the sea, experiments in Iceland, changes of opinion in the Danish Fisheries Organisation (*Danmarks Fiskeriforening*) led to the adoption of this particular solution. The Individual Transferable Quota (ITQ) concept, on which VQS is based, has a long history internationally, building partly on the Total Allowable Catches (TAC) from the 1970s and national quotas introduced in EU.[1] Beginning in the 2001, the Danish Ministry of Fisheries began experimenting on small parts of the fleet, and an ITQ system was introduced as an experiment in the herring fisheries in 2003. On the basis of a certain catch history, quotas were allocated and tied to specific fishing vessels, enabling the individual boat owners to sell their quotas. As a consequence, market mechanisms replaced the state as the

[1] For an elaborate, in-depth analysis of the introduction of VQS, the history and the many contexts see Høst (2015).

distributors of access to the fishing resource. Within a few years, this rather radical management system, was widened to include other species, and in 2007 after much debate, a small majority in the Danish Parliament decided to introduce it in the demersal fishery for consumption species[2] completely changing the dynamics of the sector (Hegland and Raakjær 2008; Høst 2015).

We will return to this new management system several times in this chapter, explaining how it has affected different fishing practices. The small-scale fishing community of Thorupstrand will be presented as a brief case study in Box 20.1 to explain how a guild of coastal fishing families have faced the challenges of this market-based management system. The Thorupstrand model represents a new way forward, though a challenging one, to the problem of young people being unable to enter the fishing sector, and it demonstrates how fishers might organise themselves to stop the decline of small-scale fishing.

Currently (2017), the small-scale fishing sector in Denmark is facing an interesting time, as a majority in the Danish parliament recently enforced a new agreement called the "Growth and Development Package for Danish fishing"[3] specifically aimed at enhancing the small-scale sector through a protected coastal fishing scheme (Landbrugs- og Fiskeristyrelsen 2017a). We will analyse this new fishing policy and its potential later in this chapter; first, however, we will provide some general information and background on small-scale fishing in Denmark.

## 20.2 Description of Danish Small-Scale Fisheries

The Danish fishing sector is varied in terms of target species, fishing gear and vessel sizes, and the fishing can be separated into roughly three main categories: a fishery for industrial species, a pelagic fishery for consumption species, and a demersal one for consumption species (white fish, flatfish, Norway lobster and deep-water prawns). The small-scale fleet belongs to the latter category (Hegland and Raakjær 2008; Eurofish 2017). There is no official definition of "small-scale fisheries" in Denmark; however, there is a politically negotiated definition of "coastal fishery" for the purpose of regulation. Currently (2017), the definition of coastal fishery used in the fishing regulation refers to vessels under 17 m with 80% of their fishing trips being less than 48 h long (Landbrugs- og Fiskeristyrelsen 2017a).

[2] The management system of 2007 was made virtually permanent, although technically the system could be cancelled with 8 years' notice. However, as bank loans control the sector in various ways, most people agree that this is not actually an option (Høst 2015).

[3] One of the authors of this chapter, Lyng Winter, works as a consultant for the new national fishers' organization for low impact coastal fisheries, *Forening for Skånsomt Kystfiskeri*, developing some of the suggestions in this agreement. Indeed, both authors have taken part in making statements at hearings on it. Højrup Autzen is actively engaged, and lives, in the small-scale fishing community of Thorupstrand.

**Table 20.1** Fisheries in Denmark (data refers to 2016; data adapted from the dynamic statistics provided by the Danish Fisheries Agency (https://fiskeristyrelsen.dk/fiskeristatistik/dynamiske-tabeller/)

| | Total (all fisheries) | Small-scale fisheries[a] |
|---|---|---|
| **Fleet** | | |
| Number of vessels | Registered: 2273<br>Commercially active: 556 | Registered: 1201<br>commercially active: 417 |
| Capacity (GT) | 67,889 | 12,402 |
| **Number of fishers** | 4866 | 2341 |
| % women | n.a. | n.a. |
| Average age of fishers | 50.87 | n.a. |
| **Landings** | | |
| Quantity (ton) | 670,209.19 | n.a. |
| Value (1000 €) | 495,844.4 | n.a. |
| **Most common gear used** | Trawl, seines, nets | Gill nets; seines and trawl; hooks and traps |
| **Most important species in landings:** | | |
| Top 3 in quantities | Sprat and sand eel (for industrial purposes); herring; crustacean and mollusc | n.a. |
| Top 3 in values | Sprat and sand eel; herring; cod | Flatfish; cod fish; Norway lobster |

Note: [a]Due to the nature of available statistics, small-scale fisheries here is defined as any vessel below the length of 17 m

In 2016, there were a total of 1201 fishing vessels less than 17 m, the majority of which were boats using nets, trawl, seine and nets or uncategorised dinghies (Udenrigsministeriet 2017). Small-scale vessels <12 m[4] primarily target flatfish, codfish and Norway lobster, but also a variety of other species (Table 20.1). Many of these small-scale vessels are operated by part-time fishers, who are considered important for keeping small harbours and coastal communities active. Many owners of boats under 10 m are believed to fish mainly for social and recreational purposes and are not financially dependent on fisheries. Therefore, there is a significant number of inactive vessels less than 10 m, for instance in 2015, only 104 vessels <12 m were "commercially active", although the potential capacity is estimated to be around 1900 vessels (The Danish Agrifish Agency 2016).

Since many registered fishers do not fish on a fulltime basis, it is hard to make accurate estimations of the employment in the catch sector. In 2016, there were 4866 registered commercial fishers in total, and 2341 of these were employed on

[4] In this specific statistics, vessels are divided into <12 m, 12–24 m etc., we focus on solely on the <12 m group, although it does not fully fit the definition of coastal vessels in Denmark.

vessels below 17 m (Miljø- og Fødevareministeriet 2017b), but not all fish on a full-time basis or are considered active. Smaller vessels contribute significantly to employment, but vessels over 17 m contribute with most of the sector's earnings. A group missing in the current statistics is women involved in small-scale fisheries. Wives of vessel owners have traditionally been essential partners in the fishing, and in the past, the whole family took part in fishing activities, for instance by gutting the fish, fixing the gear, selling the fish, maintaining the boats and so forth. Today, although it is rare that women take such an active part in fishing, in the small-scale sector it is still common for the fishers' partners to take care of the accounts and paperwork, and in some coastal communities women and young people still mend nets and gut fish. We can only speculate about how many women today help their partners with accounting, paperwork, repairing gear, sowing nets and other essential parts of the practice of fishing. According to statistics, nearly all Danish fishers are men, and not many women (do visible) work in the sector. The lack of opportunities for women to enter the fishing sector has indeed been identified as a concern (NaturErhvervstyrelsen 2014b).

In 2016, the average age of commercial fishers was 51 years old (Miljø- og Fødevareministeriet 2017b). This relatively old age is identified as a serious problem by state authorities (NaturErhvervstyrelsen 2014b). This is also an issue in small-scale fisheries. The relatively old work-force is to some extent connected to the difficulties of entering the fishing sector in a VQS system. As the quotas were handed out to one generation, new generations of fishers have had to buy into the quota market, and with the increasing concentration of fishing quotas, this has proved a challenge. Owners of smaller vessels and young people wanting to join the sector are often unable to offer as much money for fishing quotas as larger companies as independent, small-scale fishers are struggling to get loans from banks at the same low interest rates as large-scale and capital-strong companies. Thus, many fishers only have access to fishing quotas through quota pools, where owners of quota earn money from renting out quotas (Høst 2014; Ounanian 2016; Eurofish 2017).

Danish fishing vessels land their catches in 282 different Danish harbours (Miljø- og Fødevareudvalget 2015) all over the country (Fig. 20.1). Most of the total landed value is registered in the five largest harbours: Skagen, Hanstholm, Thyborøn, Hirtshals and Hvide Sande (Nielsen et al. 2013). Small-scale fishers, who are a part of a voluntary coastal fisher's scheme, have the largest share of landings in the ports of inner Danish waters and on Bornholm. Only 20% of the fishers in the scheme belong to bigger harbours, and smaller vessels below 12 m land much more often in their home harbour than larger vessels (Arbejdsgruppe om kystfiskeri 2013).

In 2016, the total catch value of all Danish fisheries set a record at about 3.7 billion DKK (about 496 million euros) of which fishing for consumption species constituted 2.9 billion DKK (about 390 million euros). In the past years, landing patterns have changed significantly due to the general concentration of fishing quotas on larger vessels; there has been a large reduction in the fishing capacity, the percentage of the total Danish catch value landed in foreign harbours has increased from 10% in 2004 to 20–25% in 2016, and in 2015 vessels over 18 m were

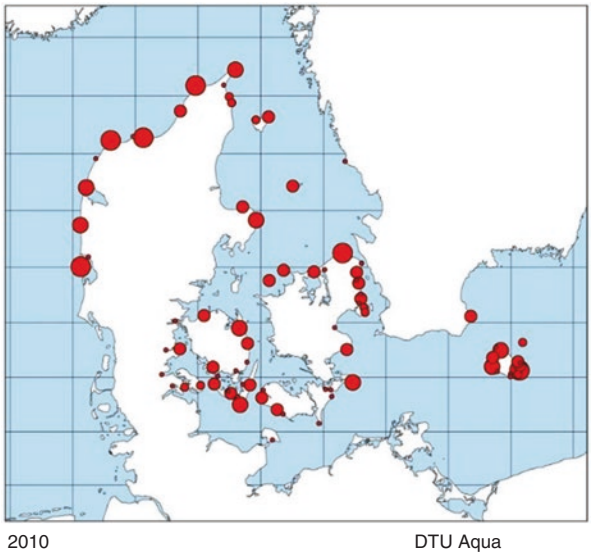


**Fig. 20.1** The distribution of small-scale fisheries in Denmark, based on catch values from 2010. (Source: Nielsen et al. 2013)

responsible for about three quarters of the total landed value, with approximately half of the total landed value coming from vessels >40 m (The Danish Agrifish Agency 2016; NaturErhvervstyrelsen 2016a; Danmarks Statistik 2017; Eurofish 2017; Landbrugs- og Fiskeristyrelsen 2017b). Overall the Danish small-scale fishing fleet only contributes a small percentage of the total landed value, and boats under 12 m generally have a negative return on investment,[5] but it is commonly recognised, also at the political level, that small-scale, coastal fishing is essential for small harbours, the tourist industry on the coast and coastal communities (The Danish Agrifish Agency 2016; Eurofish 2017; Miljø- og Fødevareministeret 2017a). In the Danish Ocean- and Fishing-development Program 2018–2020, it is stated that while Danish fishing in general is progressing, coastal fishing and, therefore small harbours, are struggling. This identified as a concern as coastal fishing contributes to employment and growth, especially in smaller harbours, and it is "an important part of Danish culture" enriching tourism and local communities (Fig. 20.2) (Miljø- og Fødevareministeriet 2017a).

[5] This can to some extent be explained by the fact that the calculation is based on a high standard salary (The Danish Agrifish Agency 2016).

**Fig. 20.2** Small-scale fisheries in Denmark. A small-scale fisher from Langø unloading the day's catch. (Photo credit: Gregerson (for FSK))

## 20.3 Interactions and Conflicts with Other Activities

### *20.3.1 Conservation*

The EU habitats directive from 1992 obligates member states to designate areas at sea in order to protect certain species as well as habitats (Directive 92/43/EEC). Currently, Denmark has designated 97 marine areas, covering almost 18% of its marine waters under Natura 2000 (NaturErhvervstyrelsen 2016b). So far, Denmark has taken steps to protect a number of stone reefs against bottom trawling and certain bubbling reefs against bottom trawling, net fishing, pots and fyke-nets. More reefs are to be protected in 2017 (NaturErhvervstyrelsen 2016c). Denmark is likewise obligated to implement the Marine Strategy Framework Directive (Directive 2008/56/EC). The aim of the directive is to gain "good environmental status" in the European sea by 2020. On the list of measures to reach good environmental status is the protection of certain key areas. Denmark has started this process in Kattegat, where six areas covering 4% of Kattegat will be protected against bottom trawling and net fishing (Miljø- og Fødevareministeriet 2016). In southeast Kattegat, a fully protected area was established in 2009 to protect spawning cod (Fødevareministeriet 2010). This area is a key area for trawlers under 17 m targeting Norwegian lobster. Fishers have, since the closure in 2009, worked for reopening the area, and it is also a priority for the current government (2017) to do so. As the area is protected in cooperation with Sweden, Denmark needs to negotiate such a reopening with Sweden. Local Swedish authorities are against this, unless it can be opened for fishing with pots only (Länsstyrelsen 2015).

Concerns have been raised as to the polemic of harbour porpoises and their bycatch in net fisheries. Denmark is obligated both under the Habitats Directive and regional cooperation (e.g. ASCOBANS) to maintain a favourable conservation status for harbour porpoises. Bycatch is considered a considerable threat to harbour porpoises (Carlström et al. 2009). No estimates of the current overall bycatch has been made in Danish waters, but the current total bycatch rate in the North Sea is thought not to exceed the ASCOBAN set limit of a bycatch rate of 1.7% (Folketinget 2010). In the Baltic Sea, the population seems to be in better condition around Bornholm, but there are still concerns related to the overall population as well as the level of bycatch (SAMBAH 2015). Some net types have been banned due to bycatch problems, and in certain areas, nets need to be equipped with pingers. A number of Danish small-scale fishers have for several years been participating in trials with CCTV cameras onboard that document bycatches of harbour porpoises, and scientific studies are being conducted to investigate and monitor pingers on nets (NaturErhvervstyrelsen 2012).

Denmark has for many years had a political focus on reducing discards. Indeed, one of the political arguments for introducing the VQS system was that such a system would reduce discards. However, so far it has not been possible to link any discard reductions to this management system (Folketinget 2013). Under a fully implemented discard ban, choke species, such as cod in the Skagerrak, will possibly increase in price (on the quota marked), making it more expensive for the small-scale sector to rent quotas for these species.[6] As such a fully implemented discard ban in certain areas would prove a problem for small-scale fisheries, even though these fishers are responsible for the smallest amounts of discards.

Two species of seal inhabit Danish waters. The harbour seal (*Phoca vitulina*), the most common one, and the grey seal (*Halichoerus grypus*). Both species are protected, and populations have grown over the last two decades. Harbour seals have grown from approximately 2000 seals in the mid-1970s to 18,000 seals in Danish waters in 2014. The population of grey seals in the Baltic Sea has increased from 2000 in the 1970s to 40–50,000 animals in 2014. With the population increase, more and more fishers – fishing with nets and hooks – are experiencing problems, as seals eat a large proportion of fishers' catches. This is especially a problem around Bornholm, where fishers are leaving the fishery or changing from net fishery to trawling due to conflicts with seals. Different "seal initiatives" are currently being funded, for instance the development of seal-proof gear for cod fishery (Larsen et al. 2015; Eurofish 2017).

[6] This is due the fact that other fisheries have a significant bycatch of cod that these fishers will now have to buy quotas for, i.e. we can expect a rise in the price of cod quotas.

### 20.3.2 Dependence on Larger Vessels and Local Facilities

While politically there have been, and still are, tensions between the large-scale fishing sector and some small-scale fishers, the small-scale sector is very dependent on the development in the large-scale sector. The general development in the fishing sector with fewer vessels, a concentration of the remaining fleet in the larger fishing harbours and the closure of several fish auctions has for a longer period made it difficult for small-scale fishers in the small harbours. Although many small harbours and landing places have the advantage of being physically close to the fishing grounds, several of these places face challenges with maintaining and developing harbour facilities and subsidiary industries. In addition, fishers belonging in small harbours far from a fish auction are generally receiving lower prices for their catches that are often bought by professional buyers that have the capacity to come and pick up the fish at the harbour. In some harbours as the fishing activity decreases, local authorities choose to develop and use the harbour areas for other purposes than fishing such as marinas, but also other more conflicting purposes such as new residential areas (Teknologisk Institut 2001; Eurofish 2017).

### 20.3.3 Tourism and Marketing

Coastal fishing landing places in Denmark have long been tourist attractions, and in several of these places tourism has become an alternative income for small communities as small-scale fishing has declined or disappeared completely. In some places, local municipalities support small-scale fishing mainly because of tourism and not because fishing itself is viewed as a viable industry. For locals some of the side effects of a transit from a small fishing village to a tourist area are rising house prices and the shift from an active fishing community to a more or less active and lively village during the summer season followed by an inactive winter season, where shops are closed and it is hard to find full-time employment (Ounanian 2016).

Although there are several well-known coastal fishing tourist sites, studies show that the potential earnings from tourists buying fish from small vessels, or eating locally caught fish sold in a harbour restaurant, is not fully utilised everywhere (Therkelsen and Halkier 2015). Some point to this tourist potential as a possible way of developing and sustaining the declining small-scale fishing sector (Arbejdsgruppe om Kystfiskeri 2013). However, infrastructure and policies prove challenging to small-scale fishers trying to create a direct link to consumers, although in some places fishers have already succeeded in doing so (Ounanian 2016). One example is Gilleleje, north of Zealand, where the harbour offers different ways tourists can buy and taste fish. Another is Thorupstrand, in North Jutland, where a boat landing on the beach is (almost regarded as) a touristic event, and here people have the opportunity of buying fish directly at the landing place (Fig. 20.3). The small-scale sector is also beginning to find new partnerships


**Fig. 20.3** Small-scale fisheries in Denmark. The small-scale fishing boat Kikani lands on the beach in Thorupstrand. (Photo credit: K. Monrad Hansen)

and establish brands in order to reach consumers more directly. A group of small-scale fishers from across the country are using an SMS service, where fishers can text people who have signed up, when they are approaching harbour, to inform consumers when they are able buy freshly caught fish (Ounanian 2016).[7] Furthermore, some small-scale fishers have established direct delivery agreements with some of Copenhagen's top restaurants that appreciate the storytelling of the local small-scale fishers. The fishers of Thorupstrand have entered a partnership with one of the largest retailers in Denmark – COOP – with the vision of creating a unique brand. In 2013, these fishers opened their own fish shop on a fishing boat in the centre of Copenhagen.

## 20.4 Institutional and Organisational Context of Small-Scale Fisheries: Capacity for Collective Action and Influence on Governance Arrangements

Today's organisational structures of small-scale fishers are connected to the recent history of the introduction of the VQS system (see Sect. 20.5), which spurred new ways of and needs for organising. Before the introduction of VQS, fishing was for a period regulated, among many other ways, by non-transferable quotas and

[7] For more information see their homepage: http://www.havfriskfisk.dk/

"days at sea" (The Danish Agrifish Agency 2016). The national Danish Fisheries Organisation, representing both the small-scale and large-scale sectors, fought against this with the argument that it was an awkward mixing of two different regulation systems. In 2000, the discussion of future regulation of Danish fishing was rising, ITQ systems were discussed, and as a majority of the coastal, small-scale fishers were against privatisation, they established the Working group for Coastal Fisheries (*Arbejdsgruppen for det Kystnære Fiskeri, AKF)*. AKF wanted to be heard in the political discussions, as they felt that their national organisation, the Danish Fisheries Organisation, was too focused on owners of larger vessel, many of whom were in favour of the idea of privatisation. The Danish Fisheries Organisation was originally against privatisation in the form of an ITQ system, but after much discussion the opinion of the board of the organisation shifted and started supporting the idea of transferable quotas, which were soon to be a reality (Højrup 2011; Højrup and Schriewer 2013; Høst 2015; Ounanian 2016). In 2004, the Danish Parliament decided to form the Small-scale Committee (Kystfiskerudvalget) in parallel with establishing new guidelines for the development of this fishery. In 2012, the committee published a report concluding that small-scale, coastal fishing was (still) declining, and that one of the major issues, besides the dropping prices of fish, was that a generational change was almost impossible because of the high quota prices (Kystfiskerudvalget 2012). In 2012, three of seven members left the committee due to disagreements within the group about what was needed to keep the small-scale sector alive. One reason for the disagreements within the group was the great discrepancies in needs and problems for a 17-m trawler and a 9-m boat fishing with gillnets (both categorised as "coastal vessels"). The three members who left co-founded a new national organisation for small-scale, low impact[8] fishery, called Forening for Skånsomt Kystfiskeri (FSK; Organisation for Low Impact Coastal Fishery).

Today, there is a small-scale committee under the umbrella of the Danish Fisheries Organisation and this new fisheries organisation for small-scale fishers using low impact gear. The latter, FSK, is still in its infancy, but it is growing and gaining more political influence, and has joined the pan-European small-scale organisation Low Impact Fishers of Europe. With the establishment of FSK, small-scale fishers have an organisation with the only aim of creating better conditions for small-scale, coastal fisheries using "low impact" gear. In 2016, FSK managed to strongly influence the political parties who in December 2016 agreed on a new fishing agreement focused on small-scale fishing, and FSK is now a part of the Commercial Fishing Committee (*Erhvervsfiskeriudvalget*) under the Danish Fisheries Agency guiding the minister on fisheries related issues (Eurofish 2017; Landbrugs- og Fiskeristyrelsen 2017c).

[8] Defined broadly as nets, Danish seine, hooks and traps; see http://skaansomtkystfiskeri.dk/om-skaansomt-kystfiskeri/

## 20.5 Policy Context

Danish fisheries regulations are framed within the EU Common Fisheries Policy, but it is a national decision how Denmark chooses to manage its yearly EU allocated Total Allowable Catches (Hegland and Raakjær 2008). As described in the introduction of this chapter, the establishment of the VQS system in 2007 has been a prime catalyst for the development within Danish fishery since then. Some of the reasons behind the introduction of this marked-based management system were to improve the economic performance of the fishing, encouraging capital investments and create a flexible management system (NaturErhvervstyrelsen 2016a; Eurofish 2017). Indeed, the VQS system provides fishers with more flexibility than for instance the so-called *rationsfiskeri,*[9] as it gives fishers the opportunity to plan their fishing throughout the year. In addition, the VQS system enabled private quota leasing, which technically makes it possible for fishers to rent quotas in different sea areas, making them less tied to one fishing area. The ITQ system (on which the VQS system is based) introduced in the pelagic sector in Denmark is considered a success as it has enabled quota concentration on larger and more efficient vessels that have benefitted from economies of scales because of the specificities of targeting shoals (Høst 2015; Ounanian 2016). However, this similar VQS system has proved a challenge, especially, but not only, for coastal, small-scale fishers in the demersal sector.

For the small-scale, coastal fishery, one of the challenges of VQS has been the undermining of *share-organised fishing*. Small-scale fishing often consisted, and still consists, of self-employed fishers, who fish together in small and flexible crews, sharing the earnings (Box 20.1). To give an example, three fishers on one boat might share the income from their catch equally by dividing it into five parts; one part for the boat, one part for the gear (which the owner can use for maintaining the boat and gear) and a part for each of the fishers, one of whom is the owner of the boat. Share organisation has been central to Danish fishing for centuries and is found in many other countries as well. As a consequence of the VQS system, only boat owners maintained their access to the resource, now as a capitalised property. In other words, the access to the resource was allocated to individual boat owners, not acknowledging the fishers without boat ownership (Højrup 2011; Højrup and Schriewer 2013).

Ownership of VQS gives a fisher access to a certain share of the national TAC of a specific species in a specific catch area. The VQS system is a multi-species[10]

[9] In "ration fishing", fishers can fish freely on a specific (non-privatised) quota until the quota has been fished up.

[10] The following species are managed through VQS: "cod, sole, plaice, Norwegian lobster, coalfish, haddock and deep sea prawns in all catch areas, hake and turbot in the North Sea, monkfish in Norwegian territory, demersal fishery of sprat and herring and salmon in the Baltic Sea" (Høst 2015).

management system covering all parts of the Danish catch area. The quota amount (VQS) that the individual vessels were allocated in 2007 was based on a 3-year catch history (Høst 2015; The Danish Agrifish Agency 2016). A catch history that the share-organised, non-boat owners had contributed to, but were not recognised for. In the share-organised fishery, the general consequence was an exclusion of fishers without boat ownership, which in many places led to unemployment (Højrup 2011; Høst 2015). In some places, the inequality between those boat owners suddenly owning valuable quotas and their colleagues, with whom they had been interdependent before, losing their value, meant a fundamental change in fishing traditions.

### *20.5.1 The Coastal Fisheries Scheme*

When VQS was introduced, vessels were categorised in three segments: vessels with VQS, Less Active Vessels (*Mindre Aktive Fartøjer*) and Other Vessels (*Øvrige Fartøjer*). Less Active Vessels, who are primarily small-scale, do not have quotas, but are allowed to catch a specific (small) amount (regulated several times a year) of the same species as the VQS vessels (NaturErhvervstyrelsen 2016a). VQS vessels defined as "coastal" can voluntarily join the Coastal Fisheries Scheme. This scheme was introduced in 2007 as part of the political agreement about VQS with the aim of ensuring that coastal fishing would continue to constitute "an important part of Danish fisheries [our translation]" (Fødevareministeriet 2005). Vessel owners can join the scheme for a time-limited period and while a part of the scheme, fishers are not allowed to sell their vessels (with their VQS) to fishers outside of the scheme. In return they receive, free of charge, a premium (non-transferable) quota of cod, plaice and sole. Since 2014, fishers fishing with "low impact" gear in the scheme have received 50% more of the extra allocated quota than fishers using bottom trawls, beam trawls and fly shooting. As there is a specific amount of extra quotas in the scheme, the more who join, the less each fisher in the scheme gets out of it. The amount of extra quotas, fishers receive, is based upon what they already own of the VQS, and there is a maximum ceiling (Miljø- og Fødevareministeriet 2015). From 2009 to 2012, 341 vessels were members of the scheme, in 2012 there were 278 vessels and in 2013, 178 vessels (Arbejdsgruppe om kystfiskeri 2013). In 2009, the Small-scale Committee was asked to evaluate if the Coastal Fisheries Scheme was achieving its goal for coastal fishing to continue to constitute an important part of Danish fisheries. The conclusion in the report clearly stated that the scheme was not enough to reach this goal and that the small-scale, coastal sector was disappearing (Kystfiskerudvalget 2009).

### *20.5.2 Quota Concentration and "Quota Kings"*

The most notable consequence of the ITQ and VQS systems has been the fast concentration of fishing quotas. Until recently, owners of quotas in the pelagic sector did not buy demersal quotas, but as this changed small-scale fishers have had to compete with them when bidding for quotas (Høst 2015). In 2012, the Danish state introduced ceilings on how many quota shares one fisher is allowed to own. For instance, ceilings for cod in the North Sea were set at 5% (meaning that in principle, 20 fishers can own all the fishing rights to cod) (Miljø- og Fødevareministeriet 2015). The ceilings were supposed to address quota concentration, but quotas today are still highly concentrated. For instance, in the pelagic sector, four vessel owners hold over 70% of the quota for North Sea herring, one of the most valuable pelagic species (NaturErhvervstyrelsen 2014a). In the demersal sector, the concentration is slightly delayed due, among other things, to the later introduction of VQS. The 10 quota owners, who own the most in this sector, owned in 2011 40% of all the VQS within the sector. In 2017, despite introduction of maximum ceilings in 2012, this number had risen to 47% (Rigsrevisionen 2017).

From 2015 to 2017, there has been a public and political debate over the concentration of quotas and the so-called "Quota Kings" (holders of large amounts of quotas) in the Danish fishing industry. Critiques of the above-mentioned concentration rules have been put forward, arguing that it has not limited further concentration, and currently (2017) new rules specifically aimed at addressing "Quota Kings" and quota concentration are being developed (Miljø- og Fødevareudvalget 2016; Socialdemokratiet et al. 2016). The new rules will address the conclusions of the National Audit Office (*Rigsrevisionen*), who in 2017 analysed the ministry's administration of the rules of quota concentration. The report from the National Audit Office was leaked and the conclusions brought yet a new wave of public and political attention. In short, the report heavily criticised the Ministry of Environment and Food's administration of quota-ownership and concluded that the administration "*has not supported the Danish Parliament's intention of ensuring that the quotas are not concentrated on too few hands* [our translation]." (Rigsrevisionen 2017). This conclusion was built on two observations. First, the report concluded that the ministry had not successfully created rules that prevented quota concentration, and that the ministry had used incomplete data and had not systematically followed up on the quota concentration taking place. The rules introduced to address quota concentration, maximum ceilings, have been sidestepped because the ministry has changed the methods of calculating quota concentration twice, enabling fishers to purchase more quota without crossing the established ceilings. As such the ceilings of quota concentration have been characterised by flexibility more than firm limits. Secondly, the ministry has not established a system that could ensure an administration of quota purchase, quota ownerships etc.: "*Completely usual administrative procedures such as exact rules for notifying purchases of vessels and quotas, instructions for case officers and quality assurances procedures of the forwarded documentation has until today been non-existent* [our translation]." (Rigsrevisionen

2017). The National Audit Office found that in practice this meant that fishers have gone over the quota ceilings multiple times. The National Audit Office concluded that the ministry's registrations of quota concentration were too incomplete to be used, that the way the ministry had tried to investigate if the rules were being followed was incomplete, and that the ministry had imparted wrong information to the parliament. The National Audit Office requested the police to begin investigations into specific cases (Rigsrevisionen 2017).

### *20.5.3 New 'Protected' Coastal Fisheries Scheme*

In December 2016, when the Quota King debate was ongoing, a majority in the Danish parliament enforced an agreement specifically addressing the decline of small-scale fishing. As part of the new agreement there is an additional time-unlimited coastal scheme that coastal vessels can choose to join. As this scheme is time-unlimited, vessel owners joining tie their own VQS, vessels and vessel capacity to the scheme, meaning that they are only allowed to sell or rent this to other members of the scheme, ensuring that capacity and VQS remains in the coastal, small-scale sector for a time-unlimited period (unlike the original open, time-limited scheme where vessels owners can withdraw their vessels and sell on the open market). The incentive for joining this new time-unlimited scheme is a substantial extra non-transferable quota allocation based on how much VQS the vessel already holds. In addition, fishers in this scheme can apply for more quotas, if they manage to fish at least 70% of their own and the allocated quota before the end of the year. Vessels using "low impact fishing gear"[11] are favoured in the scheme (Socialdemokratiet et al. 2016; Landbrugs- og Fiskeristyrelsen 2017a).

The extra quotas of cod, plaice and sole allocated to the coastal fisheries schemes in the new agreement are four times the amount that has been distributed in the past 3 years in the original scheme, and when the time-unlimited scheme began in spring 2017, 60 fishing vessels joined, while 140 fishing vessels joined the open, time-limited scheme. During the first year (2017) of existence, this scheme has been heavily debated among fishers. Especially the question of whether it is financially beneficial to tie one's vessel capacity and quota, presumably forever, in this rather small scheme, and it is still too soon to say if the quota market within the scheme can match the prices outside of it. The success of this scheme depends on how many vessels join, how efficient these vessels will be at fishing the quotas, and what the balance between the number of vessels and the amount of extra allocated quota turns out to be (Eurofish 2017).

[11] These gear types include gill nets, trammels, pound nets, trotlines, jigs, pelagic trawls, anchor seines and purse seines (not including fly shooting), pots, traps and fyke nets (Landbrugs og Fiskeristyrelsen 2017a).

**Box 20.1: The[12] Thorupstrand Fishermen's Co-operative**

In Thorupstrand, a landing place in the North West of Jutland, small-scale fishers own most of their quotas together, which makes it easier for younger fishers to enter the fishing sector. And actually, Thorupstrand fishers are on average much younger than in other places in Denmark (in 2016, the average age of fishers was 39 years old, while the national average age is 51). To become a part of their quota co-operative, one must give a deposit of 100,000 DKK (13,401 Euros). When a part of the co-operative, a fisher has a right to a part of the shared quota (they share their common quota equally through a flexible distribution system). In order to pay interest and repayments to the banks that have lent the fishers money for buying the quota, the fishers pay a rent to the co-operative (to themselves) for the quota they each catch.

Co-operatives like this is one are a way of dealing with the problem of an ageing work-force in the Danish fishing sector simply by making it easier for young fishers to enter the fishing activity without a large initial investment. Likewise, this is an example of trying to address the problem between the VQS system and the strong tradition in Thorupstrand for share-organised fishing. When the resource was privatised, many boat owners were attracted to the idea of selling their boats with the quota that they had had allocated. Their boats suddenly rose so much in value that this seemed to be a good choice. For the share-organised fishers who had been fishing all of their lives, but had never owned a boat, this meant losing their jobs without any profit. However, as the fishers in Thorupstrand agreed that their much-valued home village would vanish without the fishing industry, and as they wanted their children to be able to enter the fishing, a majority of them chose to start the co-operative. The idea of the co-operative is to ensure that fishers in Thorupstrand will continue to have access to the resource. To become a member of the co-operative, and thereby get access to a part of their quotas, one does not have to be a boat owner. This means that fishers without a boat wanting to fish can continue to be a valuable part of the fishing community by bringing quota from the co-operative to the boat owning fishers with whom they fish. The boats in Thorupstrand are still owned by the individual boat owners, but with the co-operative, the fishers now own the resource together. If a fisher decides to leave the co-operative, (s)he will get the 100,000 DKK invested in the co-operative when (s)he joined in, but a member can never draw any quota out of the co-operative, hence the

(continued)

[12]The information provided in this section is based on the knowledge of Thorupstrand and its activities from one of the authors living in the community, but descriptions of the "Thorupstrand model" can also be found in Høst (2015), Højrup (2011) and Ounanian (2016).

**Box 20.1** (continued)
values of the co-operative can never be an object of speculation. One of the challenges of this way of sharing the resource is that the co-operative needs to continue buying quotas when the number of its members increases. For the Thorupstrand fishers the biggest challenges are interest rates in the banks and the competition for buying quotas. Since they do not consider selling their quotas, they have joined the time-unlimited, protected coastal fisheries scheme, providing them with a substantial extra quota allocation.

## 20.6 Looking to the Future and Conclusion

The Danish small-scale sector has been facing a number of challenges in the past years. Some of them are problems across the entire fishing sector and some are specific to small-scale, coastal fishing. The most notable are:

- Quota concentration on larger vessels, draining the resource base of the small-scale fleet.
- The difficulties faced by younger generations to become self-employed fishers because of the large investments they must make to buy quotas and vessel capacity.
- Low (or fluctuating) prices of fish.
- Policies designed for large-scale vessels that do not consider the challenges and nature of smaller vessels. For instance, when areas are closed for long periods for conservation purposes, larger vessels can move to other areas, whereas small vessels are more likely to be limited to their local areas. Also, Illegal, Unreported and Unregulated (IUU) fishing regulations and food safety regulations pose a comprehensive, and sometimes unmanageable burden for a one-person boat owner.

Small-scale, coastal fishing in Denmark is being increasingly recognised as important politically, and 2016 and 2017 have brought new opportunities for the sector. First of all, the Growth and Development Package focusing on coastal fishing with the new, time-unlimited, protected coastal fishing scheme might be key to stop the drain of resources from the sector in the future. In addition, the scheme supports fishers under the age of 40 trying to establish themselves by providing (time-limited) quotas and vessel capacity that these fishers can apply for in order to start the activity. The scheme also focus on marketing of coastal fishing by setting up a working group that will consider the possibility of establishing a state-led eco-labelling scheme for fish caught by small-scale fishers using low impact fishing gear (Socialdemokratiet et al. 2016; Eurofish 2017). Some small-scale fishers using low

impact fishing gears are already working towards establishing brands guiding consumers to buy their high quality, freshly- and low impact caught fish. A labelling scheme which considers the nature of small-scale fishing could strengthen these initiatives.

The European Maritime and Fisheries Fund's 2014–2020 program for Denmark also contains several potential improvements for the small-scale, coastal fishing (The Danish Agrifish Agency 2016). In 2017, a majority in the Danish Parliament formulated the Ocean- and Fisheries Development Agreement 2018–2020 (*Aftale om Hav- og Fiskeriudvikling 2018–2020*), which is the financial instrument for the EU's common fisheries policy in Denmark. This agreement, among other things, has earmarked funds for experiments with selective fishing gear addressing the discard ban. There are funds for projects working on value- and quality optimisation (of the catch), funds for improvements of vessels creating a better work environment – where small-scale, coastal fishers from the time-unlimited scheme are prioritised along with fishers under the age of 40. Funds are also provided for the laying-up vessels due to closed areas (conservation), funds for sustainable resource utilisation; such as seal proof fishing gear and low impact gear. There are also funds for coastal fishers experimenting with selective and low impact fishing in conserved areas such as Natura 2000 areas, funds for the marketing and sales promotion of fish – prioritising coastal fishers, and lastly funds for improving and developing the infrastructure of harbours and landing places – prioritising places that are home to coastal, small-scale fishers (Miljø- og Fødevareministeriet 2017a). Although several of these funds are rather small, they indicate an important tendency of prioritising small-scale fishing in policies. Whether these new initiatives will be enough to stop the decline of coastal fishing, and more importantly, secure a growth in the small-scale sector, is yet to be seen.

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# Chapter 21
# Small-Scale Fisheries Governance in Norway: Hierarchy, Institutions and Markets


**Jahn Petter Johnsen**

**Abstract** Small-scale fisheries are highly relevant in Norway. Until 1989, small-scale fisheries were open access and, like other Norwegian fisheries, subsidised; since then they have changed radically. The closure of major fisheries in the early 1990s, following collapses in important stocks and the removal of direct subsidies, has affected fisheries of all sizes. Societal changes have also had an impact on Norwegian small-scale fisheries. There have been changes to the welfare state and the adoption of strategies designed to make the fishing industry ecologically and economically sustainable. These have contributed to new developments in fishing technology and practices and altered the social organisation of fisheries. Although Norwegian fisheries' policy has focused on the structural adaptation of the fishing fleet and economic efficiency, it has also attempted to protect the small-scale fishing fleet, originally defined as vessels under 11 m in length. This has meant that the national fisheries' policy framework, though focusing on sustainability and profitability, has allowed small-scale fishing to survive both as a part-time activity and a full-time profession, and ensured its full integration into the fishing industry. This chapter presents the background to this situation and describes important drivers behind these changes in Norwegian small-scale fisheries and concludes with some lessons that can be learnt from developments in Norway.

**Keywords** Norway · Small-scale fisheries · Governance · Institutions · Mandated Sales Organisations

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## 21.1 Introduction

In Norway, fisheries are more productive than agriculture. The warm water from the Atlantic current keeps the Norwegian coast ice-free throughout the year, and the natural conditions make the shallow coastal waters and fjords a perfect spot for fish to spawn and feed. Thus, from January to April, there are huge winter fisheries for Arctic cod (*Gadus morhua*) and Atlantic herring (*Clupea harengus*) taking place typically less than an hour from the nearest harbour. As much as 70% of the total catch of cod and herring is landed in these months. In addition, species like saithe (*Polaccius virens*), haddock (*Melanogrammus aeglefinnus*), mackerel (*Scomber scombrus*) and capelin (*Mallotus villosus*) and several other fish species and crustaceans form a resource base for year-round fisheries. The abundance of near shore fish has made small-scale, labour-intensive commercial, subsistence and recreational fishing important to Norway's coastal population. For centuries small-scale vessels from all over Norway fished cod in the northernmost regions in the spring. Owing to the seasonality of fishing, with less fishing in late spring and summer, fishers combined small-scale, seasonal fishing with small-scale farming or other livelihoods. Although most of the commercial fishers were men, women and children were also heavily involved in preparing the boats, gear and supplies and in processing the catch.

In Norway, coastal and inshore fishing took place in an open-access regime with few regulations for many years. Self-ownership and cooperative institutional arrangements have always been fundamental to the Norwegian fishing industry (Jentoft and Johnsen 2015). Moreover, the organisation of the fisheries has traditionally been "organic" (Johnsen et al. 2009a), consisting of a network of close affective relationships between fishers, family and other community members, and the industry has been labour-intensive and low-capital. Part-ownership was quite common. Recruitment and knowledge transfer took place inside this local network (Wadel and Jentoft 1984; Johnsen 2005; Sønvisen et al. 2011). During the 1960s, 70s and 80s fisheries policy was focused on the low profitability of the fisheries sector. For these three decades, the industry was dependent on state subsidies. This organic, social network-based organisation of small-scale Norwegian fisheries and the subsidies that sustained them persisted until 1989, when the cod stock collapsed resulting in the closure of cod fisheries. Moreover, in 1989, Norway also agreed to phase out subsidies to the fisheries sector under the European Free Trade Agreement (EFTA). The changes in resource management and market policies that followed during the early 1990s changed the climate in which small-scale Norwegian fisheries operated.

After 1989, a new regime designed to limit participation in the fisheries, control capture capacity and ensure profitable fisheries developed. The profitability focus followed from the EFTA agreement and an agreement with the European Community

(EC).[1] Phaseout of subsidies forced economic rationalisation of the industry. The new resource management regime was based on a tragedy of commons image with measures inspired by Gordon-Schaeffer's bio-economic model. Over time, a partly market based allocation system also developed, although this was modified by the Norwegian "mixed and negotiated economy". Regulation of market forces, collaboration and negotiations between state and organised interests are central elements in Scandinavian negotiated economies (Nielsen and Pedersen 1991). One outcome of the need to rationalise – and the wish to control – was a rather complex fisheries governance system in which protection of small-scale fisheries was the central objective (Holm and Nielsen 2007; Johnsen 2014; Jentoft and Johnsen 2015).

The earlier fisher welfare-oriented policy that focused on fisheries' populations and communities dependent on the fisheries changed, and biological sustainability became the first objective, with closed access and fish quotas as the main measures. In addition, economic sustainability became the secondary objective, whilst employment, maintaining settlement and equity were given lower priority. Nevertheless, although neo-liberal, market-based approaches gained ground in Norway, market mechanisms were deployed in society's service and subject to legal and political controls. Neo-liberalism is about deregulation, liberalisation, privatisation and marketization, and shifting power from state governance to private interests (Mansfield 2004). Norwegian coastal fisheries went from being subject to very few formal regulations to being strictly regulated and controlled. Market mechanisms were deployed, but as a part of the Norwegian "mixed economy" approach. The idea of a mixed economy is that state power, cooperative institutions and market instruments should work in concert. Today, Norwegian fisheries governance is a hybrid of hierarchical control by a powerful ministry, and modified by a culture of negotiated solutions through co-management and challenged by market dynamics following the EFTA and EC agreements (Jentoft and Johnsen 2015; Johnsen and Jentoft 2018). As the small-scale fleet is the backbone of coastal communities, its protection became a major policy focus (Royal Norwegian Ministry of Fisheries 1991, 1991–1992). Despite this protection, the policy changes and technological developments affected the small-scale fleet's profitability, employment and relationship with local communities. The small-scale sector has continued to change since the new regime was introduced. Changes notwithstanding, political control and stakeholder influence have helped to maintain fishing as a rural industry (Figs. 21.1 and 21.2). This chapter shows that small-scale fisheries can still be important in a modern, industrialised fishing industry. The next section defines what constitutes a small-scale fishery in contemporary Norway today. The subsequent sections describe some of the changes that have taken place, the developments in small-scale

[1] Norway is member of EFTA and through an agreement between EFTA and the European Community, now the European Union (EU), EFTA and EU are united in an internal market governed by the same basic rules (http://www.efta.int/eea, accessed 09.06.2017)

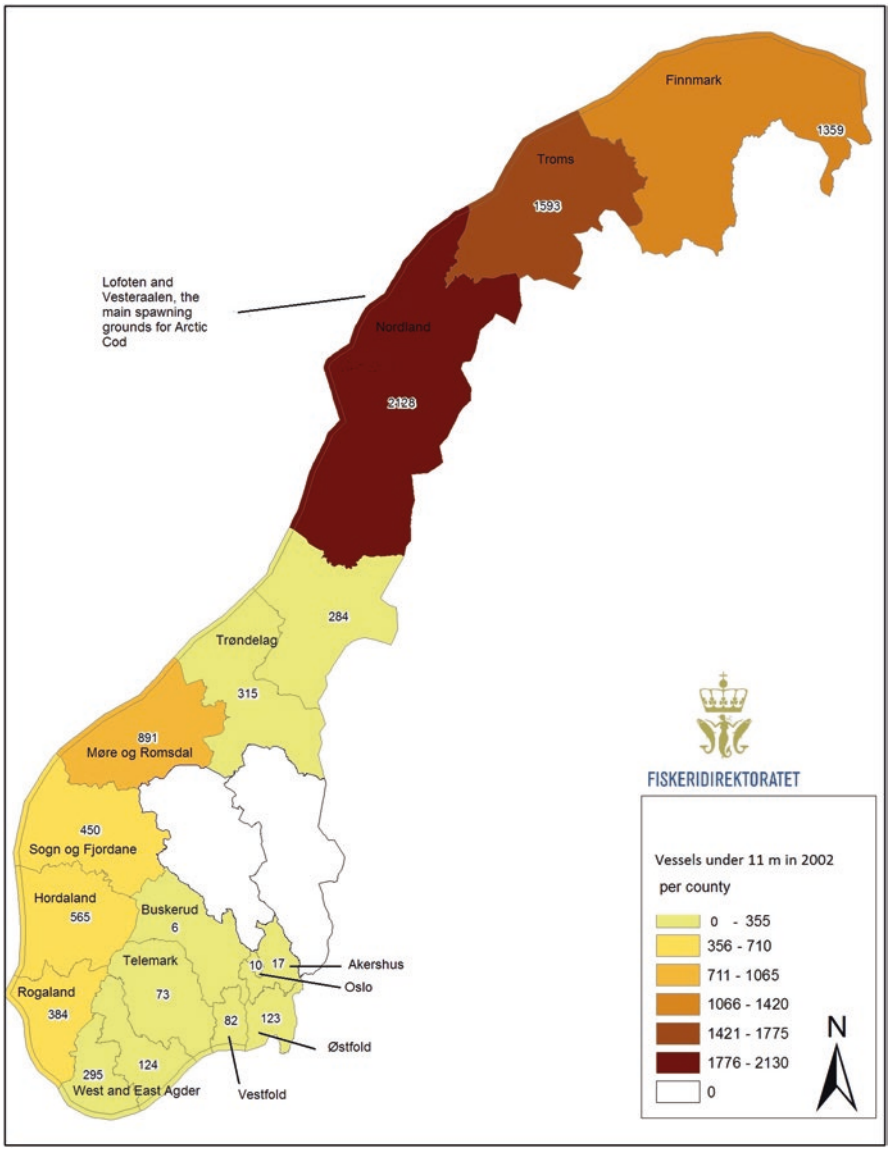


**Fig. 21.1** Vessels under 11 m in 2002 Norway

fisheries' regulations and the organisation of the market. Finally, the chapter discusses the potential future for the small-scale fishing industry in Norway. The data sources for this chapter are research literature, official reports, political documents, newspaper articles, official statistics and personal experiences from work and research in the Norwegian fisheries sector.

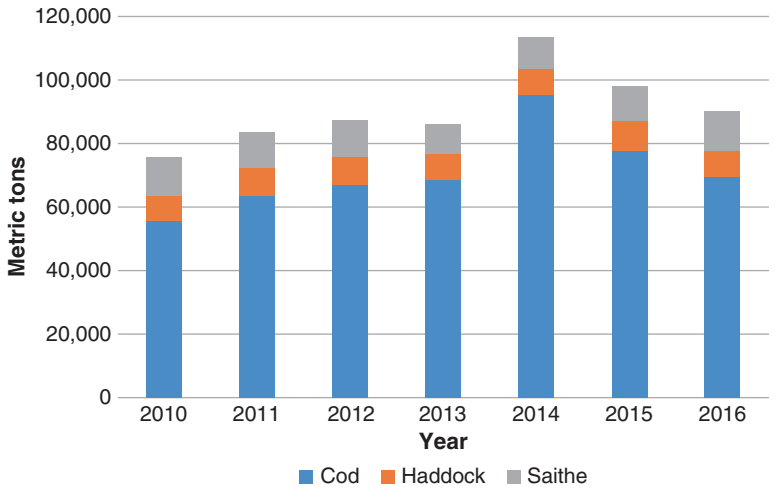


**Fig. 21.2** Catch for commercial fishing vessels under 11 m in Norway 2010–2016

## 21.2 What Are Small-Scale Fisheries in Norway?

Norway has no official definition of small-scale fisheries. In Norway, the policy and regulatory framework for fisheries define three different categories of fishing that are designated as small-scale: "free-for-all" recreational fishery, open access commercial fishing with boats less than 11 m long and closed commercial fishing with boats under 11 m in length. This categorisation is based on the fact that in commercial fisheries the regulatory regime governing vessels less than 11 m long is different from that for larger vessels, even if, in terms of landings and capture efficiency, some Norwegian small-scale fishers, particularly in the closed commercial fisheries, would be regarded as large-scale operators in many countries. By quantity, cod, haddock and saithe are the main species fished by vessels under 11 m, but these vessels also land a wide range of smaller quantities of other species such as crab, lobster, king crab, herring, eels, flat fish and other ground fish species. Small-scale vessels have the most varied catch composition in the Norwegian fishing fleet and the catch varies according to the area of the coast in which the vessels fish (Figs. 21.1 and 21.2). In this chapter, the focus is on all fishing with vessels that are less than 11 m long and where the vessel length is used as the main criterion of small scale. Small-scale fishing is important along the entire Norwegian coast, particularly in the north (Fig. 21.1), and it remains important, although the number of vessels is declining (Fig. 21.3).

The Marine Resources Act (Norwegian Parliament 2008) states that all living marine resources in Norway and in the Norwegian exclusive economic zone (EEZ) are the property of the people of Norway. The state has a mandate to regulate all extraction of living marine resources on behalf of the people. Fishing for consumption and recreation is an important part of Norwegian coastal culture. Recreational

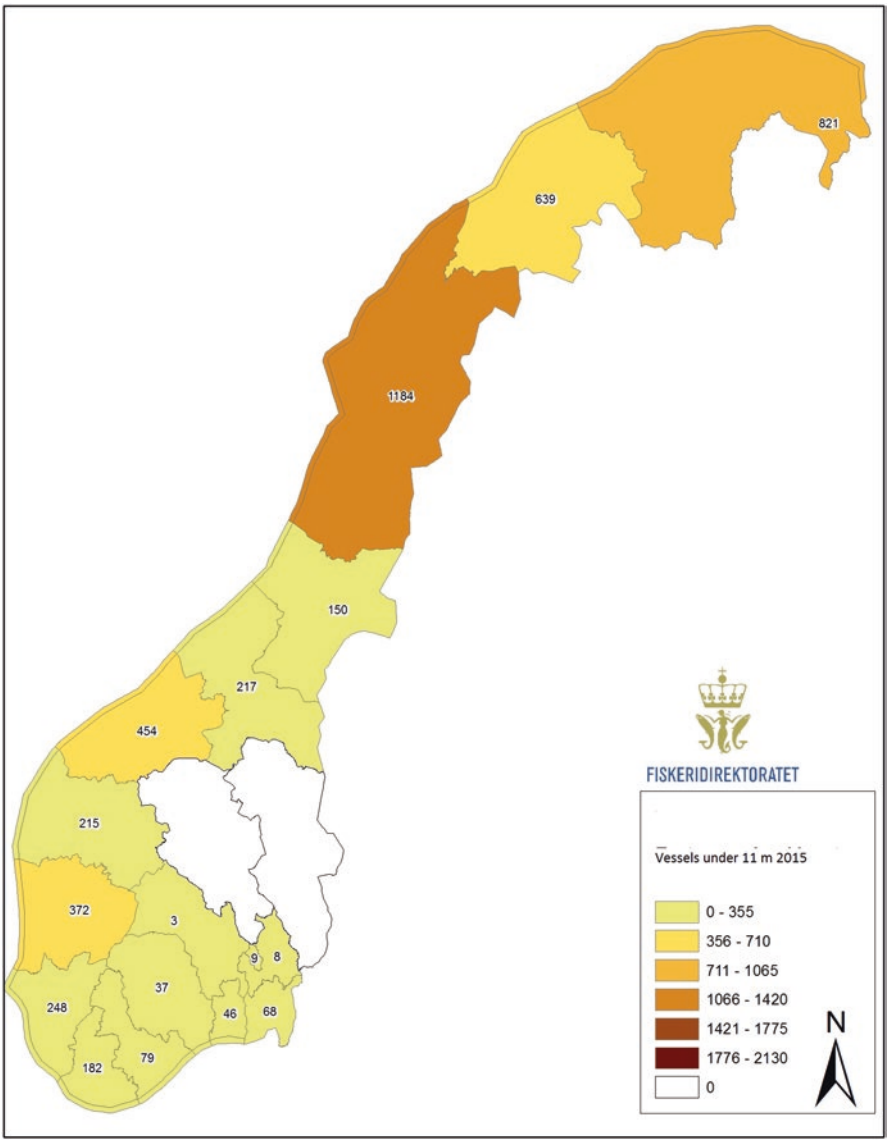


**Fig. 21.3** Vessels under 11 m in 2015 Norway

fishing for marine species, including fishing for subsistence and personal consumption and for registered sales of up to 50,000 Norwegian kroner (about 6000 Euros) is free to all legal residents of Norway both in principle and in practice. In addition to the value limit, subsistence and recreational fishers have to comply with a number of fishing gear restrictions and specific regulations for different species. Under certain conditions, foreign tourists can fish for marine species in Norway (Solstrand

2014). The principle appears to be that recreational fishing in Norway should be subject to "as little management as possible", although there is continuous discussion about the need for management of recreational fishing. However, for the time being, there is neither public nor political will to restrict the Norwegian population's right to fish for food and recreation. Free recreational and subsistence fishing is a manifestation of the people's ownership of fish resources. On the other hand, unregistered commercial fishing is illegal in Norway and special licences or permits are required for closed commercial fisheries.

## 21.3 Regulations and Requirements for Participation in Norwegian Fisheries

Commercial fishing is a professional year-round activity in Norway, even though the peak season for the small-scale fleet is during the winter fisheries for cod from January to April. The winter fishery is hard and intense, and there are no interactions or combination with for example tourism. Due to strict safety regulations, commercial fishing vessels are used mainly for commercial fishing. The commercial fisheries regulations in Norway are complex and relate to a variety of often-conflicting objectives. Many of the regulations are intended to protect smaller fishing vessels from competition from larger ones.

In Norway, commercial fishing can only take place from registered fishing vessels with a general fishing permission that allows the owner to use the vessel for commercial fishing. In addition to the general fishing permission, specific permissions for participation in different fisheries may be required. Registered fishing vessels can only be owned by registered active fishers or by companies where more than 50% of the shareholders are registered active fishers.[2] All registered fishers can obtain a general permission for commercial fishing with a registered fishing vessel under 15 m long. Moreover, all legal residents of Norway can register as fishers, as long as their income from other sources is not too high and can, in principle, buy a registered vessel and obtain general permission for commercial fishing with that specific vessel. In the case of legally resident foreigners in Norway, they can only own vessels under 15 m long if they register as fishers. Crewmembers on fishing boats have to be registered as employees on the fishing vessels, but do not have to register as fishers in the Fishers' Register (FR) (although most of them do). For all owners and non-owner skippers registration in the FR is mandatory (Fisheries Directorate 2016). As well as obtaining general permission for commercial fishing, specific fishing licences and permits may be required in addition, depending on the type of fishing and vessel length. Licences are not time-limited and they specify

[2] The Fishers' Register is the official record of active commercial fishers in Norway and is administered by the Fisheries Directorate (FD). The Fishing Vessel Register is a record of commercial fishing vessels in Norway and is also administered by the FD.

what fisheries a vessel can participate in, what gear can be used and the criteria for setting the vessel's annual quota. At present, special licences are only required for large-scale offshore fishing such as industrial trawling and large-scale pelagic fisheries. Vessels with a hold capacity of under 500 $m^3$ (or length less than 28 m) are regarded as coastal vessels and do not need licences; they fish under the general permission (open group) or on a specific annual permit (closed group). Specific annual permits allow a vessel to fish a specified vessel quota in a specific fishery in a particular year. Annual permits are renewed if the owner meets the requirements for the fishery concerned. The small-scale fleet (vessels <11 m long) comprises vessels in the open group, which have only general permission for commercial fishing and vessels in the closed groups, which have annual permits for specific fisheries. I explain this further below. Coastal vessels in the open and closed groups both over and under 11 m can use all types of fishing gear, except otter trawls. Next, the regulatory regime will be described for the open and closed groups and some facts about them presented.

## 21.4 The Open Commercial Small-Scale Fishery

When the individual vessel quota (IVQ) system for Arctic cod, haddock and saithe fishery was introduced in 1990, quotas were given to those who had landed catches over a threshold during the reference period (1987–1989). Those who had participated in the Arctic cod fishery, but had fished less than the threshold could fish in the open group. The threshold for participation in the open group is low: anyone registered as a commercial fisher who does not already participate in the specific fishery as an owner of a closed or open group vessel can participate in the open group fishery with one vessel under 11 m. The owner must be on-board during the fishing. Fishers who sell out from the closed group can also start to fish in the open group.

Open group fishers can participate in all open fisheries and fish on group quotas for cod, saithe and haddock. Fishing on a group quota means that vessels compete until the group quota is fished, but normally a part of the group quota is allocated to each boat as a guaranteed minimum quantity, while they have to compete about the remaining part. Some years the authorities have allowed a free, open-group fishery for cod in the second half of the year and group quotas for haddock and saithe are often so high that in practice there is a free fishery for these species. Many of the fjord fishers, who mainly fish close to where they live, fish in the open group. In northern Norway, small-scale fishing is an important part of the livelihood of the coastal Sami population (Johnsen and Søreng 2018). The Sami are Norway's indigenous people. Many of the fishers in Sami areas participate in the open fishery. Thus, the open group provides an important element of protection of the economic foundations of coastal Sami communities in Norway. For this reason, the group quota is higher for vessels registered in Sami areas. Traditionally, small-scale fishery have been combined with small-scale farming, but this combination has steadily

declined during the last years.[3] Moreover, certification and safety requirements, insurance issues and fisheries regulations restrict the use of commercial fishing vessels for other purposes than fishing.

It is also possible for young fishers to start their own fishing business in the open group. Participating in the open group fishery does not lead to a quota in the closed fishery, but a young fisher can learn how to fish, because the fishing practices, technology and fishing gear, are the same as in the closed group. Participating in the open group also allows fishers to build up equity to invest in the closed group.

The Fisheries Directorate (2013) reported that during 2008–2012 an average of 2243 vessels participated annually in the open group fishery for cod, haddock and saithe. The number of boats in the group was relatively stable over this period, and there is no indication that there have been major changes since. Many of the open group vessels only fish the cod quota. Only about 180 of the 2243 vessels in the open group fished their minimum guaranteed quantity of saithe and/or haddock during the 2008–2012 period, although the group quota was so high that in practice the vessels had a free fishery. This suggests that open group fishery is a part-time activity for many fishers, who may participate in other fisheries as well. Moreover, it is not possible to estimate exact year-round employment in the open group, but since at least one person is needed to operate a boat; throughout the year, at least 2200 fishers must be involved in the open group.

## 21.5 The Closed Group

In 1990, the Fisheries Ministry established the closed group to give priority to coastal vessels that were regarded as being most dependent on cod fishing, based on the catch in the reference period. These vessels were granted annual permits that allowed them to fish an IVQ. In 2016, the closed group comprised about 2089 vessels ranging from under 11 m long to vessels without any length limitation, but with a hold capacity of less than 500 $m^3$. These vessels have annual permits and IVQs for cod, haddock and saithe, and for some pelagic species. They can also fish in all unregulated fisheries (Fisheries Directorate 2017). IVQ size is determined by vessel length; in principle a 9-m vessel should have a smaller quota than a 12-m one. Today, however, the vessel length and IVQ do not necessarily correspond and quotas are based on "permit length". The permit length is the length of the vessel, which the owner had got a specific permit for, on a "cut-off-date" that was set by the Ministry. Thus, in practice, the vessel can be lengthened or replaced by a new vessel with a different length, but the quota is locked to the original permit length to avoid

[3] Those who combine fishing with other activities will normally be registered as second occupation fishers in the FR. The number of people with fishing as a secondary occupation has declined from 2668 in 2010 to 1834 in 2017. Fishers may invest in or be involved in other businesses in their local communities, but there are no records or registered that can be used to explore how common this is.

boat owners investing in bigger boats just to get a higher quota. This rule means that today there are vessels in the closed group that are as long as offshore vessels, but fish on small-scale vessel quotas; similarly there are smaller vessels that fish on larger vessel quotas. The owner is not obliged to be on-board during fishing, but has to have the main income from fishing.

In 2014, the closed sub-11 m group with permit length under 11 m comprised 1321 vessels (ground fish and pelagic), of which 1021 participated in the ground fish fisheries for cod, saithe and haddock. Fisheries Directorate (2016) estimates suggest that there are on average 1.4 fishers working year-round on vessels under 11 m in length. This implies that these sub-11 m sections of the closed group employ 1500–1700 fishers.

Figure 21.2 shows changes in catch of three main species over the 2010–2015 period for both the open and closed groups under 11 m. Together, these two groups can fish around 19–20% of the annual quota for Arctic Cod per year. In 2015, the combined catch of these two groups accounted for about 18% of Norway's cod catch. In years when sub-11 m vessels could fish more or less freely, they were able to catch more than the original group quota. This indicates that even the smaller vessels represent a considerable catch effort and should be subjected to some form of regulation. This high catch capacity is mainly due to technological and organisational changes in the small-scale fleet that have increased its efficiency.

Table 21.1 shows the relative importance of small-scale fisheries in relation to the total fisheries in Norway.

## 21.6 Changes in Fisheries, Communities and Households

Coastal fishers have considerable power and influence in Norway. Since 1926, the Norwegian Fishermen's Association (NFA) has been a significant partner of the Norwegian authorities with respect to fisheries' governance. Later, in 1987 a new union, The Coastal Fishermen's Association (CFA) was formed to work for the smallest vessels. Still, NFA is organising most of the small-scale fishers, but both organisations participate in all relevant processes like international fisheries negotiations, management meetings and in the boards of the mandated sales organisations.[4] The establishment of the mandated sales organisations (MSOs) for first-hand fish sales in the 1930s secured the power and income of the fishing population (Holm 1995). Politically, fishing was regarded as an industry of huge importance to settlement, employment and rural development. The institutional arrangements that developed gradually in the 1930s were intended to protect coastal fishers against competition from industrial capitalist fishing interests. The system developed fur-

[4] The English name is the official English name from NFA's home page. The two associations do not publish figures for membership.

**Table 21.1** Overview Norwegian fisheries. Total and small-scale

| Data refers to: 2015 | Total (all fisheries) | Small-scale fisheries (vessels under 11 m) |
|---|---|---|
| Fleet | | |
| Number of licenced vessels | 5887[a] | 3564[b] |
| Capacity (GT) | n.a. | n.a. |
| Number of fishers (2017) (full time)<br>Part time | 9486<br>1834 | 4–5000[c] |
| % women full time<br>Part time | 3,2<br>3,9 | n.a. |
| Average age of fishers | 45,5 (full time)<br>64 (part time) | n.a. |
| Landings | | |
| Quantity (ton) | 2 334 394[d] | 130,831 |
| Value (1000 Norwegian kroner) | 16,890,000 | 1,716,000 |
| Most common gear used (top 3) (% in total) | Trawl (30%) passive gear (70%)[e] | Passive gear (100%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Pelagic (52%), cod (18%), Antarctic krill (8%) | Cod (60%), haddock/saithe (15%) other (25%) |
| Top 3 in values (% in total) | Pelagic (32%), cod (33%), saithe (9%) | Cod (47%), other (43%), king crab (10%) |

Notes: [a]Norwegian Fishing Vessel Register (figures for 2015, see web link at the end of the table), accessed 06. May 2016
[b]Fisheries Directorate (FD) average participation 2008–2012 in the open group and participation in 2014 in the closed group
[c]Based on FD estimate of average crew size on vessels under 11 m
[d]2015
[e]Ground fish only
Source of information: Fisheries Directorate (2015), Links to official stats webpages: http://www.fiskeridir.no/accessed 06. May 2016

ther after World War II. The 1972 Participation Act ensured that only active fishers could own commercial fishing vessels and the 1983 Saltwater Fishing Act gave the state the power to regulate fishing activity. These three acts, together with the Main Agreement between the NFA and the state over fisheries subsidies that came into force in1964,[5] represented the legal and economic foundations for the development of coastal fishing that took place in the 1970s and 80s, when small-scale fishing increasingly became a full-time, year-round activity. Before 1970, small-scale fishing was mainly a part-time activity that was combined with farming, other types of fishing or other work (Finstad 2005; Hundstad 2014). In 1948, there were 86,000

[5] In 2014 the Raw Fish Act of 1939 was replaced by Fiskesalslagslova (Mandated Sales Organisation Act) and in 2009 the Salt Water Fisheries Act was replaced by the Marine Resources Act. Current and previous Norwegian laws can be accessed through the portal Lovdata (https://lovdata.no). See also: Ministry for Fisheries and Coastal Affairs 2013.

registered commercial fishers, and 36,000 earned additional income from farming. By 1971, the number of commercial fishers had declined by over 50%. Many of those who left the industry were part-time fishers, whereas others expanded their fishing activity, becoming full-time fishers (Ibid).

Norwegian society changed radically in the 1970s and 1980s. General national industrial policy was intended to facilitate the transition from a fisheries and agriculture-based economy to a more industrial economy. Reducing employment in fisheries and agriculture in favour of manufacturing industries and the public sector was a political objective, both to increase general productivity and to improve the living standards of those who remained in the fisheries (Johnsen 2004; Sønvisen et al. 2011; Johnsen and Vik 2013). Even among fishing communities, the public service sector produced new jobs in education and health care. The public sector became an important source of female employment, women could get permanent jobs rather than taking seasonal work in fish processing or as "land crew" for their fishing husbands. The improving economy and expansion of the educational system also increased educational opportunities for young people.

Although subsidies helped to guarantee a minimum income for the fishing population, a huge number of fishers left the industry in the 1960s, 70s and 80s. A lot of younger people and families moved away from coastal communities (Finstad 2014). The combination of small-scale farming and fishing became less common and fishers started regarding earning a living from fishing as a last resort due to its low incomes, unstable conditions and rather poor working conditions (Hersoug 1985). When the cod crisis occurred in 1989, the focus of policy shifted from protecting the fishers to protecting fish resources. To some extent, this resulted in a political shift towards a resource management-oriented policy designed to ensure sustainable resource exploitation and – through removal of subsidies – the profitability of the remaining fisheries. Employment and settlement in rural areas became secondary concerns. To achieve the goal of sustainable resource exploitation, the IVQ system was introduced in 1990.

Since the 1990s, fishing households have been affected by population centralisation, the increase in double income families, changes in gender equality, education and expectations about how life should be lived. Norway has high living costs and a certain income is required to maintain a reasonable living standard. Wives and partners of fishers expect to balance their own interests and careers against their fishing partner's needs. Most fishers are men, but they must now meet higher expectations about participation in family life in general and involvement in their children's lives and activities in particular. Households are not solely organised around fishing as the main income; the spouse's work may be just as important. Fishers are therefore adopting a similar lifestyle to others. However, it is difficult to combine the freedom of the sea that is praised by many fishers with the requirements of being a modern citizen and member of a community and family (Johnsen and Vik 2013).

## 21.7 Development of the Small-Scale Fleet

In accordance with the UN Law of the Seas (UNCLOS), Norway established a 200 NM EEZ in 1977. Until 1977, foreign fishing vessels could fish to within 12 nautical miles (NM) of the Norwegian coast. The EEZ did not have an immediate impact on the coastal fleet, which normally operates within 12 NM of the coast, but it laid the foundation for a more sophisticated national governance system. Without the 200 NM EEZ, the current Norwegian regulatory system, which has been essential to the continued existence of the small-scale commercial fleet, would not have existed.

With the introduction of the IVQ system in the 1990s, protection of the small-scale fleet became important. The IVQ system evolved over several years, with protection of the most "cod-dependent" vessels as the guiding principle. IVQs were based on the average of annual catches during 1987–1989, before the collapse in stocks. Only vessels that had fished over the threshold were granted a quota. Second, the smallest boats (under 10 m) that qualified got a quota that was 100% of their average annual catch during the reference period, whereas the larger vessels got quota cuts, varying from 20% of their reference catch for the smallest vessels to 50% for bigger vessels. This meant that under the quota system the smallest vessels avoided the cuts and thus smaller boats could survive under the new closure regime (Hersoug 2005; Standal and Hersoug 2014).

Smaller fishing vessels became progressively more effective during the 1970s and 80s due to developments in vessel and gear technology. In the 1970s, mass-produced glass-fibre boats 7–10 m long became increasingly popular as commercial fishing vessel. New, more seaworthy designs of small-scale wooden vessels were also introduced. In fact, smaller fishing boats became somewhat standardised in terms of size, equipment and rigging (Johnsen et al. 2009b). Year-round highly specialised, professional small-scale fishing became possible, although winter and spring remained the main fishing seasons. Many fishers responded to the cod collapse of 1989 by investing in new technology and organising their operations in new ways. Capital replaced labour; increased living costs and higher wage expectations combined with largely stable prices forced the rationalisation of the fleet. The number of vessels fell. Small-scale vessels, which had once been seen as old-fashioned technology (Figs. 21.4 and 21.5) became highly effective capture machines that fished more efficiently than much larger vessels had done just a decade earlier with just one to three crew members (Johnsen 2005). Small boats now have good working conditions and high safety standards and comfort (Fig. 21.6). The boats have automated equipment for gear handling and the latest navigational and fish-finding equipment; some are even certified for offshore fishing. In fact, some of these smaller vessels land larger catches than larger boats because the regulatory regime favours smaller vessels under certain conditions. As technology, organisation and work processes have changed and the number of fishers has declined, the fishing industry as a whole has become more governable, effective and profitable (Johnsen et al. 2009b; Johnsen 2014).

**Fig. 21.4** Traditional small-scale fishing vessel. (Photo credit: J.P. Johnsen)

## 21.8 Regulations for a Governable, Profitable and Effective Small-Scale Fishery

Since the introduction of the IVQ system of quotas based on vessel length, the sub-11 m segment of the closed group has become a profitable segment of Norwegian fisheries. During the first decade the IVQ system was in operation fishers could get a higher quota and thus higher income by lengthening their fishing vessels. This resulted in a reduction in the quotas of those that did not increase vessel length, and the Finnmark model was established in 2002 to address this problem. Thus, the closed group has been divided into four length groups based on permit length: under 11 m, 11–14.9 m, 15–20.9 m and over 21 m, and in 2007 IVQs were locked to

**Fig. 21.5** Working onboard a traditional small-scale fishing vessel. (Photo credit J.P. Johnsen)

permit length and transfer of quotas between length groups became impossible (Standal and Hersoug 2014).

Today, vessels with permit lengths greater than 11 m are allowed to buy out other vessels in the same permit length group; decommission them and transfer their quotas to a single boat and retain the combined quota for 20 years. These arrangements are called the structure adjustment policy. Vessels with permit lengths of less than 11 m cannot permanently transfer quotas; instead the skippers on two vessels can decide to "buddy up" and fish two quotas with one boat on a temporary basis. Both vessels have to be equipped and have permits to fish and both skippers must participate in the fishing.

To give the smallest vessels in the closed group more opportunity to operate when fish are abundant and close to the coast, sub-11 m vessels have also been given an IVQ with "overregulation". Overregulation means that they can overfish their IVQ by as much as 50% (even more in the case of saithe and haddock) as long as the total quota for their length group is not overfished. This creates competition between vessels in the sub-11 m group. Thus, the most effective vessels can fish more at the expense of those that are less effective. Overregulation reduces the need for the authorities to reallocate quotas from smaller to larger vessels to ensure that the total allowable catch is fished, because there are always some vessels in each length group that will be able to catch more than others. Vessels whose permit length is smaller than the actual vessel length have lower overregulation percentages and vessels whose actual length is over 15 m will often have no overregulation. This is


**Fig. 21.6** New autoliner. (Photo credit: J.P. Johnsen)

to ensure that quotas remain in the actual length group (Standal and Hersoug 2014). Overregulation is a flexible way of giving the smallest vessels opportunities to fish when fish stocks are abundant; however it also creates an incentive to fish more effectively. The small-scale autoliner described in Box 21.1 (Fig. 21.6) is an example of an innovation that increases small-scale fishing's capture capacity and highlights the need to monitor such developments in small-scale fisheries.

Finally, there is also a special management regime to protect inshore areas from larger fishing vessels. Larger vessels have to fish outside limits called the "Fjord Lines", whereas small-scale vessels are not bound by these limits, which gives them a further advantage and puts some limit on the competition they face from larger vessels over fishing areas. Both overregulation and spatial restrictions were adopted to meet the needs of the small-scale fleet. The regulatory regime plays to the small-scale fleet's advantage and makes it possible for the fishers to make a profit when fish are available. That the Norwegian small-scale fleet is able to make a profit is also due to market regulation through a system known as mandated sales organisations (MSOs).

**Box 21.1: Different Adaptations in Coastal Longlining in Norway**

It is almost two o'clock in a mid-April morning, and we are heading out of a small harbour in northern Norway towards a fishing ground that is about 2 h from land. It is dark when we leave the harbour, but as we are in April, dawn will be breaking here, north of the Arctic Circle, in an hour. I am on board a small one-man boat, fishing for Arctic cod with a longline.

Arctic cod spawn in shallow waters along the Norwegian coast between January and April, and this large annual migration of cod is the basis for a rich coastal winter cod fishery. The cod fishery is the most important fishery for small-scale fishing in Norway.

The sub-11 m small-scale fishing vessels, like the one I am on (Fig. 21.3), can fish almost any species and have almost complete freedom to choose gear, so there is a great variety of gear and techniques in the Norwegian small-scale fisheries. Our fisher uses a hand-baited longline that is baited onshore between trips. He deploys and hauls a longline with about 3600 hooks every second or third day, depending on the weather (Fig. 21.4). He fishes with a "floatline", which involves the use of floats and weights to keep the longline a few fathoms from the sea bed. This allows the fisher to place the longline at a planned depth, but because fish are less abundant higher in the water column the line needs a longer soaking time. On the other hand, bottom-dwelling organisms do not prey on the bait or caught fish. Floatline is a common technique and does not require small boats to go to sea every day. The amount of gear varies between boats depending on the space on board (although boat length is limited there are no regulations on width), the crew size and the onshore baiting capacity. Some fishers bait themselves, sometimes with help from family members; others hire baiters, get baited lines from the processing plant or have land- based crew members: land-men, who bait the line. The organisation varies a lot. Most boats that bait on land fish with 3500–10,000 hooks per trip. Some fish with a floatline, like our fisher, whereas others fish with a bottom-set line. Bottom-set lines have to be hauled every day because bottom-dwelling organisms prey on bait and catch. Every time our fisher goes to sea, he takes tubs of baited lines with him. Normally, he sets the line in three fleets with two tubs in each fleet; a fleet is called a "stub". The length and number of stubs varies between boats. At the fishing ground, our fisher hauls the first "stub" with 1200 hooks. Because the fishing is good he sets a new stub with 1200 hooks in the same position. He then moves to the next stub and repeats the process. After hauling 3600 hooks, we head for shore to land the catch and bait the lines.

This morning, we are passed by an "autoliner" with automatized baiters whilst we are hauling (Fig. 21.5). On this small (under 11 m long) autoliner with sheltered deck, four men fish with 15,000–20,000 hooks per day. It is one of several vessels owned by a fisher-controlled company specialising in high

(continued)

**Box 21.1** (continued)
tech small-scale fisheries. The four-man crew sets and hauls bottom lines continuously until the boat is full and then returns to land the catch. They fish all year round. Our fisher works out of a specific harbour where he baits his lines, stores his gear and lands his catch, but the autoliners are more self-contained and can follow fish migrations. They can fish and land anywhere, as long as they get fuel, water and bait. However, due to their size (under 11 m), they also need to go to shore to unload and fill up with bait at least every second day. If the fishing is good, they land every day and most boats of this type have landing agreements with specific processers. Thus, even if they can migrate with the fish, they tend to operate from one harbour, but can change location during the season if it is required.

Two different worlds of small-scale fisheries meet this morning. I am on board a small-scale fishing vessel linked to the traditional household and community organisation of small-scale fisheries, while the autoliner represents something new. A small-scale fishery more detached from the local community and its structures.

Based on observation and author's field notes from fieldwork on a fishing vessel 15 April 2016.

## 21.9 Mandated Sales Organisations

The two professional organisations, NFA and CFA, are both involved in management. According to Jentoft and Mikalsen (2014, 3), fisheries management in Norway is "a system of centralised consultation based on institutionalised bargaining between government and a key group of industry stakeholders". Hence, the fisheries authorities, normally discusses all important decisions with the organisations. However, the most important institutional element in Norwegian fisheries are the Mandated Sales Organisations (MSOs), owned and controlled by the fishers, small-scale as well as large scale. In an unregulated market, fishers would be dependent on the processors' willingness to pay for fish. In Norway, however, the raw fish market is controlled by MSOs that guarantee the fishers a minimum price. The 1938 Raw Fish Act gave MSOs a monopoly on the sale of fish from fishers to the processing industry (Holm 1995), and they are still the main market regulatory instrument in Norwegian fisheries, although they now operate under a new law (see footnote 2). MSOs are cooperatives owned and controlled by fishers and funded by a fee on first-hand sales. MSOs also issue the permits that allow processors to buy fish directly from fishers. All processors that fulfil certain technical and financial standards are granted permits. MSOs have no interest in limiting the market, since they run Internet auctions for fish, and they can support transport and ensure supplies for processors if necessary. No money is exchanged directly between fishers and

processors. The MSOs' credit and guarantee function reduces risks for both parties. Hence, for both fishers and processors, it is illegal to sell and buy fish outside the MSO system. For fishers there is an economic risk attached to illegal sales as there is no guarantee of payment. MSOs cooperate with the authorities over quota control. The control is both based on fishers' logbooks (electronic for all vessels) from 2015 and registration of landings.

In addition, MSOs protect the fishers from the direct impact of markets fluctuations and create economic stability. Although the rules are sometimes violated – unregistered overfishing of quotas, transfer of fish between boats, false registration of species – the constantly evolving control system makes cheating increasingly difficult. Hence, the MSO system is of crucial importance for the small-scale fleet; individual small-scale vessels would have little power in the market and would normally lose in price negotiations with processors. In Norway, MSOs negotiate on behalf of the fishers and secure a decent price for all (Holm 1995; Ministry for Fisheries and Coastal Affairs 2013).

## 21.10 Conclusion – The Future of Small-Scale Fishing in Norway

Small-scale fishing in Norway may involve small boats, but as this chapter has described the fleet is "too big to ignore". A lesson to be learned from Norway is that it is possible to regulate small-scale fisheries as ecologically, economically and socially sustainable commercial fisheries even in a climate where neo-liberal ideas have become more influential in fisheries governance. Moreover, arrangements that take the social, cultural and geographical features of small-scale fisheries into account can modify the effects of the market instruments used to govern fisheries.

The Norwegian fishing fleet has had to cope with the change from a liberal, open access regime to a complex regulatory regime. As discussed the regime consists of hierarchical state governance, market instruments and institutionally negotiated regulations. It has developed incrementally within Norway's mixed and negotiated economy tradition and reflects pragmatism and political willingness to find solutions, rather than any consistent ideology. It also reflects organised interests in Norway. Even when the state has the power to decide, there is a preference for negotiated solutions amongst stakeholders. In the Norwegian governance system, negotiations and partnership arrangements form a bridge between hierarchical state control and market forces. The legal framework in Norway mandates co-management solutions. However, the laws do not specify in detail the regulatory instruments to be used, thus giving freedom to find practical solutions. Negotiated solutions between stakeholders and authorities that are politically guaranteed through compromises in the Parliament are thus common in Norwegian fisheries' policy. Some of the compromises, such as the system for allocating quotas to vessel groups, have survived for more than 25 years.

Critics claim that the Norwegian system is too diverse to function properly, too costly to be copied and in urgent need of a reform (Hannesson 2006; NOU 2014; Ministry of Trade, Industry and Fisheries 2015). The many political compromises makes it difficult to change in the short term, but both the system and the stakeholders are willing and able to adapt to new situations when required (Jentoft and Johnsen 2015).

What will happen to small-scale fisheries in the future? In 2020, parliament will vote on a reform proposal (NOU 2016, 26, Meld. St. 32 (2018–20)). The proposal acknowledges the need for special arrangements for the small-scale fleet, but does not give clear advice on a structure adjustment policy for the smallest vessels. It recommends that the open group should remain open because of its important role in the recruitment of fishers. To date there has been a political consensus in Norway that a structure adjustment policy for the sub-11 m fleet should not be market-based. The future policy also depends on what the stakeholders want. A market-based structure adaptation policy will not be implemented unless it is supported by the industry. Such support may emerge in the future.

Permanent combining of quotas is currently not allowed in the sub-11 m segment of the closed group. Those in favour of permanent quota transfers argue that the use of buddying up indicates that there are too many vessels in the sub-11 m segment of the closed group, and hence permanent buy-outs should be allowed in this segment as they are for larger vessels. As described in Box 21.1, developments in fishing technology have contributed to increasing capitalisation, capture capacity and effectiveness of the small- scale fleet. Pressure for structural adaptation measures may come from inside the closed group and from society in general. If permanent quota transfers are allowed, one would expect some closed group fishers to sell up and enter the open group, thus increasing competition in this group.

Annual economic surveys indicate that sub-11 m vessels have the lowest profit margins in the Norwegian fishing fleet (Fisheries Directorate 2016). If this is reflected in low incomes, it may be difficult to meet family, community and the broader societal income norms from small-scale fishing. Low profitability can drive policy change. However, it is worth noting that small-scale fishing offers a flexible occupation that makes it possible to sustain a livelihood based on several income sources (Jentoft and Johnsen 2015). The small-scale segment of the fishing industry thus represents an important source of income in smaller communities, where there are few employment opportunities, and so it should be of special concern to legislators and to the wider society.

In conclusion, Norway's mixed and negotiated economy approach has sheltered the small-scale fleet from neo-liberalism, even though fishing policy has been aimed at improving profitability. Moreover, the political willingness to limit the extent to which small-scale fisheries are governed by market forces indicates that fisheries governance will continue to be a political issue and will not solely be left to market mechanisms. In the future, strong institutions and co-management will influence the extent to which Norway moves towards greater neoliberal policies or not.

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# Chapter 22
# History, Status and Governance of Small-Scale Fisheries in Arkhangelsk Oblast, Northwest Russia

**Masha Shaw**

**Abstract** This chapter examines small-scale fisheries in Arkhangelsk Oblast in the northwest of Russia, where maritime activities of the local population have given rise to a distinct *Pomory* identity. These small-scale fisheries have significantly diminished since the collapse of the Soviet Union, as the centralised system of state support ceased to exist, while free market conditions have presented new challenges. Analyses of the predicaments of fishers' everyday lives as they unfold in Arkhangelsk Oblast are relevant for small-scale fisheries across the country. Russian legislation does not recognise small-scale fisheries as a sector in its own right, ascribing them the same legal status as large-scale fisheries. Participation in commercial small-scale fishing therefore does not bring operators any additional benefits. Yet, at the same time, small-scale fishing practices continue to comprise the socio-economic backbone and cultural tapestry both in rural and urban areas of Arkhangelsk Oblast.

**Keywords** Small-scale fisheries · Russia · Arkhangelsk Oblast · The White Sea · Kolkhoz · Salmon · Tonia system · Fyke net · Stake net

## 22.1 Introduction

This chapter looks at small-scale fisheries in Arkhangelsk Oblast[1] in northwest Russia, where fisheries play a key role in the socio-economic wellbeing of people both in rural and urban areas. Arkhangelsk Oblast is an administrative entity in the

[1] Oblast is a type of administrative region of the Russian Federation. It has its own bodies of legislative and executive powers.

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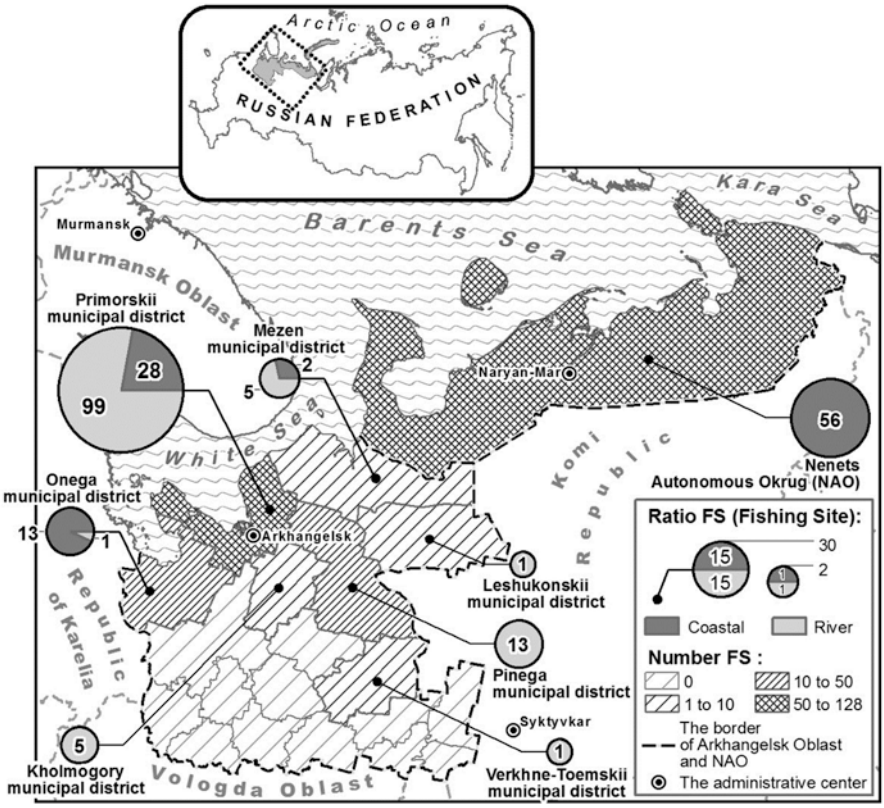


**Fig. 22.1** Map of Arkhangelsk oblast with the distribution of small-scale fishing sites across municipal districts. (Designed by Aleksandr Levitskii, from the Northern branch of Knipovich Polar Research Institute of Marine Fisheries and Oceanography (SevPINRO), the city of Arkhangelsk, Russia)

northern part of European Russia, bordering on the White Sea (Fig. 22.1). It consists of 21 municipal districts, as well as including the Nenets Autonomous Okrug, which is a separate administrative region of the Russian Federation (Fig. 22.1). This chapter focuses solely on fisheries in Arkhangelsk Oblast.

Data for this paper was gathered in 2014–2016 in the city of Arkhangelsk and in several villages of Arkhangelsk Oblast. Study methods included interviews with managers, scholars, chairpersons of fishing collective farms, and local people in the city and village. Participant observation and engagement in informal activities, including fishing, was conducted in several villages.

Arkhangelsk Oblast's most significant small-scale fisheries take place in the sea, whereas many river and lake fisheries are of secondary importance, except for fishing for salmon and other valuable species (Stasenkov et al. 2011). This chapter will thus focus primarily on Arkhangelsk Oblast's White Sea fisheries.

The following subsections provide some historical background to the White Sea fisheries. Modern Arkhangelsk Oblast contains only a fraction of the White Sea coastline. However, the outlined historical features are relevant for many parts of contemporary Arkhangelsk Oblast too.

### *22.1.1 Establishment of the White Sea Fisheries*

Abundant fish and sea mammal resources were the major reason that initially attracted settlers to the Russian North.[2] Russian people settled along the White Sea coast in several waves between the twelfth and seventeenth centuries (Bernshtam 1978). They were given the name '*Pomory'*, from Russian *po moriu,*[3] which means *by sea*, because the subsistence activities of inhabitants became sea fishing and hunting and seafaring. This made *Pomory* distinct from the rest of the Russian peasant population, who were mainly involved in agriculture.

The White Sea fishers were busy all year round. They fished herring throughout the year; engaged in salmon and plaice fisheries in June and July; they resumed salmon fisheries in autumn, and fished for navaga, plaice and smelt during winter. The village community controlled fishing grounds in most important fisheries (Bernshtam 1978). Many fishing grounds also belonged to monasteries until the secularisation in 1764 when the state appropriated monasteries' possessions and gave most fishing grounds to peasants who had previously been dependent on the monasteries (Lajus 2011). People fished individually and in self-organised collectives, where several families or neighbours usually came together for the most labour consuming fisheries (Alekseeva 2002).

The abrupt change in political regime in Russia in the aftermath of the 1917 Revolution had a dramatic impact on all sectors of the Russian economy including fisheries.

### *22.1.2 Soviet and Post-Soviet Ruptures and Continuities*

The Soviet state appropriated and actively exploited fishing resources throughout most of the twentieth century. Compulsory *kolkhozes* (collective farms) replaced the diversity of previous forms of labour organisation. *Kolkhozes* in the White Sea area became specialised in fisheries and sea mammal hunting. All commercial fishing in

[2] The Russian North is a geocultural concept that refers to a particular historical region of Russia (Shabaev et al. 2016). It has never had clear administrative boundaries. Geographically, the Russian North can be broadly described as "the area stretching from the border with Scandinavia to the Northern Urals, bordered in the north by the White and Barents Seas, and in the south going down to the Vologda region" (Lajus 2011).

[3] The author uses the US Library of Congress transliteration system, but without ligatures.

Russia was now done by *kolkhozes* and various state enterprises. Individual fishing for precious species such as salmon was entirely forbidden (Nakhshina 2012b).

Fishing *kolkhozes* of Arkhangelsk Oblast struggled to make a profit until the 1950s when they received loans from the state in order to purchase fishing trawlers. This allowed *kolkhozes* to operate large-scale fisheries in the Barents Sea as well as in the world's oceans and generate significant profits. Collective farms became financially sustainable and soon exceeded the role of the countryside's major employer and producer and started to invest money into maintaining the infrastructure and social welfare in villages, supporting local education, medical and leisure facilities.

The newly established Soviet government invested heavily into bringing the fisheries to an industrial level to provide food security for the state. The industrialisation of fisheries significantly increased their share in the national economy and contributed to the economic viability of many rural fishing settlements. The creation of fishing collective farms allowed for the mechanisation of fisheries, centralised procurement of equipment, purchase and transportation of catch. These measures maintained production levels in fisheries at a high level for several decades. At the same time, industrialisation had some detrimental impacts on small-scale coastal fisheries and fishing communities. Consolidation of the fishing fleet and fish-processing infrastructure favoured large-scale ocean fisheries and led to the neglect of small-scale coastal fishing practices (Stasenkov et al. 2011).

The situation in the fisheries changed drastically after the collapse of the Soviet Union in 1991. The state introduced fishing concessions. State organisations and collective farms had their quotas severely cut, as they now had to compete with newly emerged private enterprises. Prices for fuel and equipment rocketed towards market levels. The system of centralised provision of equipment, transportation and marketing of fisheries produce ceased to exist, which made small-scale operators face many infrastructural challenges. Larger operators focused on most profitable species that could be exported (Stasenkov et al. 2011). Many coastal small-scale fisheries became largely unprofitable and ceased to exist.

## 22.2 Description of Small-Scale Fisheries in Arkhangelsk Oblast

### *22.2.1 Definition of Small-Scale Fisheries*

There is no established term for "small-scale fisheries" neither in legal nor public discourse in Russia. The federal law recognises seven types of fisheries (Federal'nyi zakon article 16): industrial; coastal; fishing for scientific and monitoring purposes; fishing for educational and cultural purposes; aquaculture fisheries; amateur and sports fisheries (the rest of the chapter will refer to them as "recreational fisheries"); and traditional subsistence fisheries of indigenous people. "Industrial" and "coastal"

fisheries refer to any commercial fishery regardless of scale, whereas the rest of the categories encompass fisheries that are usually non-commercial and small-scale.

While there is no separate term for small-scale fisheries in the Russian legislation, the Russian notion of "coastal fisheries" (Rus., *pribrezhnoe rybolovstvo*) resonates in some respects with the concept of small-scale fisheries as adopted in Europe and elsewhere. The term "coastal fisheries" originates in the Soviet period and refers to fisheries carried out near the seashore. It remains popular in contemporary public discourse and has connotations of small-scale, less mechanised and more labour-intensive fishing practices.

The state incorporated the concept of "coastal fishery" into federal law in 2004, defining it as a subtype of industrial fisheries where catches have to be landed at locations specified by local governments of coastal regions (Federal'nyi zakon article 1, item 10). The assumption was that vessels would land live or fresh catches, for further processing on the coast, which would contribute to the development of coastal economies. There was an attempt to introduce restrictions on the size of vessels used in coastal fisheries as smaller ships are more likely to land their catches regularly, but it was eventually dropped, because northern sea conditions were often unsuitable for smaller ships to operate efficiently and safely (Fishnews 18 Nov 2014; Lim 2014). Many operators applied for a share in coastal fisheries in order to receive additional quotas. However, they often interpreted the requirement for landing catches in specified locations as not obligatory and continued to bring catches to their preferred ports. As a result, the categories of large-scale industrial fisheries and coastal fisheries have largely coincided in practice, which made the coastal quotas initiative ineffective.

Although Russian legislation does not recognise small-scale fisheries as a category in their own right, there are commercial fishing practices in Russia that are small-scale, both in a technical sense (vessel length and engine power) and in terms of their impact on the life of local communities. Some industrial fisheries include small-scale fishing practices that make a positive social and economic contribution at a local level. People who run these fisheries usually fish with labour-intensive gear and land their catches every day. In the following sections, the term "small-scale fisheries" will be used to refer to labour intensive fishing practices that involve either no engine-powered vessel at all or use a small vessel suitable for river or near shore fishing and where catches are landed every day.

### *22.2.2 Overview of Small-Scale Fisheries in Arkhangelsk Oblast*

The vast majority of small-scale commercial fisheries in Arkhangelsk Oblast exist along the White Sea coast (Fig. 22.1) and on big rivers. The most prominent current operators in the coastal area are fishing cooperatives. All of them are the successors of the Soviet fishing collective farms that reorganised into cooperatives in the early

1990s. There were some cases where two or more *kolkhozes* came together to form a cooperative, but for the majority of them, a single fishing kolkhoz evolved into a single fishing cooperative. Some *kolkhozes* also run a number of fisheries on rivers.

Apart from *kolkhozes*, other small-scale commercial fisheries operators include individual entrepreneurs, limited liability companies (Rus., *obshchestva s ogranichennoi otvetstvennost'iu*), public limited companies (Rus., *otkrytye aktsionernye obshchestva*), and church organisations.

Fishery managers stated in interviews that existing commercial small-scale fisheries in Arkhangelsk Oblast do not generate much profit and most operators do something else to supplement their income. For example, one limited liability company supplements its fisheries with providing services in construction, vehicle maintenance, logistics and fish processing.

### *22.2.3 Socio-Economic Relevance*

Small-scale fisheries play an important socio-economic role in Arkhangelsk Oblast in a number of ways, including the provision of regional food security, mitigation of unemployment and nourishing the sense of local identity.

The demise of the Soviet Union and Russia's transition to a market economy led to the closure of many industrial enterprises and a significant retreat of state support across the country, which affected rural areas particularly deeply. The lack of employment opportunities is one of the most acute problems in villages of Arkhangelsk Oblast, and jobs in small-scale fisheries, however limited, make an important contribution to mitigating rural unemployment. For example, small-scale salmon fisheries in villages Koida and Maida in Mezen municipal district (see Fig. 22.1 and Box 22.1) provide employment for 11% of working age people.

Small-scale fisheries also have a wider cultural significance for Arkhangelsk Oblast. Fish, and especially salmon, is an iconic resource for many rural settlements particularly in the White Sea area. Many families in villages along the White Sea coast have salmon on the table when people get together on important social occasions. When guests leave, hosts often regard it as their obligation to supply them with salmon. Being able to fish and consume salmon in a village on the White Sea coast is part and parcel of being local (Nakhshina 2012a).

Salmon fisheries also occupy a special place among small-scale businesses based in urban parts of Arkhangelsk Oblast, due to the high value of wild salmon and low availability of fishing grounds. Nakhshina's research highlights that some "entrepreneurs keep running this business more for prestige than money, as they take pride in bringing friends or high profile officials to their wild salmon fishing grounds" (Nakhshina 2016).

Salmon fisheries have played a key role in the history of many Arkhangelsk fishing *kolkhozes* since their establishment in the 1920s. Today they are often the only small-scale coastal fisheries still run by *kolkhozes*, as collective farms' pri-

mary oceanic focus is on large-scale fisheries that bring most profit. *Kolkhozes* often run salmon fisheries at a loss, because fishing quotas (see Sect. 22.4) are very low and income from the catch does not usually cover the costs. They maintain these fisheries mainly for social reasons, as they provide local people with access to employment and traditional food. *Kolkhozes* sell part of the catch in village shops, which is often the only way people can access wild salmon legitimately, since individual fishing for salmon is entirely forbidden. There are opportunities for recreational salmon fishing, but they are limited and do not exist in all villages (Nakhshina 2016).

*Kolkhozes* can afford to run small-scale coastal fisheries alongside other marginal rural enterprises, mainly due to the financial support from their large-scale fisheries in the Barents Sea. Crew members on big trawlers in the Barents Sea and artisanal fishers on the White Sea coast work for the same organisation – the fishing *kolkhoz*. *Kolkhozes'* large-scale and small-scale fisheries have historically provided for each other's existence, having formed a viable idiosyncratic assemblage. Within this assemblage, the existence of a few jobs in small-scale coastal fisheries in a remote rural location on the White Sea coast directly depends on global prices for highly commercial species such as cod and haddock.

### *22.2.4 Statistical Information*

The non-recognition of small-scale fisheries as a separate category within the Russian legislation makes it difficult to obtain any consistent statistical data. There are also wider economic factors that have contributed to the lack of reliable statistics. Stasenkov et al. (2011) inform that the fragmentation of fisheries during the end of the twentieth – beginning of the twenty-first century created favourable conditions for concealing part of the catch. At the same time, the deterioration of economic conditions since the collapse of the Soviet Union forced many people to fish informally. Fishery protection bodies struggled to control commercial fisheries and verify the authenticity of data provided by fisheries operators. Furthermore, commercial fisheries often took place under the guise of recreational fishing practices. As a result, the official statistics on fisheries during the 1990s-early 2000s deviated considerably from reality. Although the situation with compliance has improved since then, some discrepancies in the data still occur.

Our attempts to access statistical data from fishery management institutions did not yield much success. Managers often said during interviews that information that is not published online is internal and cannot be shared. The online statistics published by fisheries governance institutions are very limited and fragmented. Fisheries experts from the city of Arkhangelsk provided this study with some statistical data on small-scale fisheries in the region, as shown in the Table 22.1. This data is still incomplete, especially for small-scale fisheries, because such statistics are often non-public or even non-existent in the first place.

**Table 22.1** Statistical data on small-scale fisheries of Arkhangelsk Oblast

| Data refers to: (2015) | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| Fleet | | |
| Number of vessels | n.a. | n.a. |
| Capacity (GT) | n.a. | n.a. |
| Number of fishers | There are four large-scale operators in Arkhangelsk oblast. Together, they employ more than 2700 fishers | There are 168 small-scale fishing sites in Arkhangelsk Oblast |
| % women | No more than 5% | No more than 5% |
| Average age of fishers | 42 | 37 |
| Landings | | |
| Quantity (ton) | n.a., because landings occur also in ports outside Arkhangelsk oblast | 1200 |
| Value (€) | Very approximately: 48,113,600 | 4,948,830 |
| Most common gear used (top 3) (% in total) | Trawls (98%), long lines (2%) | Stationary nets and traps (70%), gillnets (30%) |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Atlantic cod (*Gadus morhua morhua*) – 60%<br>Haddock (*Melanogrammus aeglefinus*) – 30%<br>Halibut (*Reinhardtius hippoglossoides*) – 10% | Atlantic Salmon (*Salmo salar*) – 20%<br>Herring (Genus *Clupea*) – 40%<br>Navaga (*Eleginus navaga*) – 40% |
| Top 3 in values (% in total) | n.a. | n.a. |

Source of information: The data was provided by Studenov Igor Ivanovich from the Northern branch of the Knipovich Polar Research Institute of Marine Fisheries and Oceanography (SevPINRO), the city of Arkhangelsk, Russia, February 2016

### *22.2.5 Age/Gender Dimensions*

Men currently comprise the majority of the workforce in officially registered small-scale commercial fisheries in Arkhangelsk Oblast. However, both men and women engage in informal commercial and subsistence fishing practices, as well as in recreational fisheries, albeit women participate in much lower numbers than men. Women usually fish for leisure and subsistence purposes rather than for making a living. This might have to do with the fact that more women than men find cash employment in rural areas, as they take jobs in public services, education and commerce. There are currently fewer jobs in what have been traditionally male spheres of occupation because of the economic decline in rural areas over the last few decades. Men have so far struggled to adapt to the new economic situation and step into traditionally female spheres of activity. They are therefore more likely to engage in informal commercial fishing practices.

One of the biggest problems in small-scale fisheries in Arkhangelsk Oblast is the ageing labour force. Young people are reluctant to become fishers, as low salaries and the hard nature of the work put them off. This leads to a severe problem with the continuity of knowledge and practices in commercial fisheries. The current fisheries legislation, which imposes a nearly complete ban on traditional fishing for valuable species, such as salmon, contributes to further alienation of people from fishing practices and disrupts the continuity of tradition and transmission of skills.

### *22.2.6 Resources Used, Current Fishing Practices and Boats/ Gear Used*

Many fishing resources, practices and gear currently used in the White Sea fisheries are the same as they have been in the area for centuries. The most harvested marine species in territorial waters of Arkhangelsk Oblast are navaga (Eleginus nawaga), herring (Genus *Clupea*)[4] and Atlantic salmon (Salmo salar). The most harvested fresh water species include whitefish (*Coregonus lavaretus*), European cisco (*Coregonus albula*), pike (*Esox lucius*), ide (*Leuciscus idus*), roach (*Rutilus rutilus*) and bream (*Abramis brama*). Other harvested marine species include White Sea cod (*Gadus morhua marisalbi*), Arctic cod (*Boreogadus saida*), several species of flounder (*Limanda limanda*, *Liopsetta glacialis* and *Pleuronectes platessa*), wolffish (*Anarhichas lupus marisalbi*) and ocean perch (*Sebastes species*).[5]

Severe climatic conditions, relatively low abundance of stocks and biological characteristics of fish species have determined the nature of fishery practices in the White Sea. Most fishing is done with the help of stationary gear. This allows fishing on a 24-h basis, with little effort to look for fish concentrations, and without mechanisation of the fisheries (Stasenkov et al. 2011).

Navaga, herring and salmon have always occupied a special place in the history of the White Sea fisheries. They were important for the economy of pre-Soviet *Pomory* households, the Soviet and post-Soviet fishing *kolkhozes* and remain crucial for the provision of Arkhangelsk Oblast's population with good quality fish produce until today.

The fishing season for navaga takes places during winter months, as it is a winter-spawning fish forming concentrations during the spawning period. It is also known to taste best when freshly frozen. Navaga is the most harvested fish species in the White Sea today. Nowadays, the same as hundreds of years ago, people fish navaga with the same type of a stationary trap called *riuzha*. A *riuzha* is similar to a "fyke

[4] "In the White Sea there are two species of herring, White Sea herring, which is subspecies of Pacific (*Clupea pallasi* Berg) and Atlanto-Scandian herring (*C. harengus* L). […] These two species are not distinguished in historical documents and in modern catch data" (Lajus et al. 2007).

[5] The data was provided by experts from the Northern branch of the Knipovich Polar Research Institute of Marine Fisheries and Oceanography (SevPINRO), the city of Arkhangelsk, Russia, February 2016.

net", which is "a type of fish trap. It consists of long cylindrical netting bag usually with several netting cones fitted inside the netting cylinder to make entry easy and exit difficult. This net is then mounted on rigid rings or other rigid frameworks and fixed on the sea bed by anchors, ballast or stakes. It also has wings or leaders to help guide the fish towards the entrance of the bag. They are commonly used in estuaries or inshore shallow water" (Fyke Net). *Riuzhas* are set up under the ice, which is a very labour-intensive process. *Riuzhas* vary in size, and handling of bigger traps might require several people. People fish navaga for personal consumption with the help of a rod, as the use of *riuzhas* for non-commercial navaga fishing is prohibited.

Herring fisheries became especially significant in the seventeenth and eighteenth centuries, providing food for the growing population of the White Sea area (Lajus et al. 2007). They became a leading industry in some parts of the White Sea coast and reached their peak in the 1920s, whereas subsequent decades saw a gradual decline. White Sea herring fishery nevertheless remains an important commercial activity in Arkhangelsk Oblast. Stasenkov et al. (2011) suggest that current herring resources in the White Sea could allow a five or six-fold increase in the harvest. However, this cannot not be achieved via the current extensive use of stationary nets, as there are not enough people in coastal settlements to operate them anymore.

Salmon has been one of the most crucial commercial resources for the population of the White Sea coast for many centuries, and is still important today. However, the construction of power stations on northern rivers, timber industry and intensification of fisheries throughout the twentieth century have led to the significant decline of salmon populations (Lajus et al. 2010a). Commercial salmon fisheries currently exist only in few areas.

Salmon fisheries are organised around the *tonia* system (see Box 22.1). It developed on the White Sea coast in the beginning of the sixteenth century (Lajus et al. 2010b).

Fishing operators have *tonias* on a long-term lease from the state. Most of the *tonias* along the White Sea coast are run by fishing cooperatives, which have remained the main fishery operators in coastal villages after the demise of the Soviet Union. River *tonias* tend to concentrate in the vicinity of urban centres and are mainly leased to more recently established operators, such as individual entrepreneurs, limited liability companies and church organisations.

The state has over the years imposed restrictions on the use of certain types of traditional fishing gear in order to protect fishing resources from depletion. Our fieldwork observations and talks to local people indicate that this has contributed to the gradual reduction of fishing techniques, types of gear, skills and rich cultural knowledge associated with fishing over the last few decades.

Many other factors apart from the legislation have led to the marginalisation of small-scale fishing practices in Russia. The next section provides more detail on the role of socio-economic factors in small-scale commercial fisheries in Arkhangelsk Oblast.

**Box 22.1: The *Tonia* Fishing System**

Salmon fisheries along the White Sea coast have been historically organised around the *tonia* system. A *tonia* is a stretch of a coastline together with adjacent sea waters allocated to fishing. It includes various premises on the coast, such as a hut and steam bath house for fishers, an icehouse for storing fish, storehouses for fishing equipment and often a chapel.

Villages Koida and Maida in Mezen municipal district (see Fig. 22.1) have run salmon fisheries in the White Sea for centuries. They used to have many *tonias* along the coast, though now, there are only two left.

The two existing *tonias* are operated by a fishing *kolkhoz* that encompasses both Koida and Maida. The *tonias* are located on the coast a few kilometres from the villages. There are seven men currently employed in *tonia* fisheries. They are organised into brigades that rotate every few days, so there is always one of them present at a *tonia* throughout the season.

The fishing season usually lasts from June to the end of September. Harvested species include the Atlantic salmon (*Salmo salar*), pink salmon (*Oncorhynchus gorbuscha*) and lumpfish (Cyclopterus lumpus). Every year, fisheries management bodies inform the *kolkhoz* of a fishing quota for each of the three species. The quota for salmon in 2018 was about five tons for both *tonias*, which was double the amount compared to the previous year, as fisheries scientists had registered an increase in salmon population. The quota for pink salmon was about eight tons, and for lumpfish, it was 10 tons.

Fishing at Koida and Maida *tonias* is done with the help of a stake net set up in the water not far from the shore (see Fig. 22.2). The trap remains in place for an entire fishing season, except when there is a severe storm, in which case it has to be dismantled and assembled again later.

The brigade checks the net with each low tide. They collect salmon from the ground, load them onto a tractor and bring them to the processing station on shore where each fish is washed, gutted and stored away in an icehouse until being transported to a large refrigerator in the village (see Fig. 22.3).

Most of the catch goes to the *kolkhoz* shop in the village. The ultimate price of salmon depends on its weight and quality as all the fish are graded into several weight categories and two quality categories.

Working on a *tonia* is hard but rewarding. Villagers often say that people working on the *tonias* are the only true fishers left, since no one fishes the sea the way their parents' generation did anymore.

*Tonia* salmon fisheries in Koida and Maida, however small in scale, are important for the transmission of fishers' knowledge, mitigation of unemployment and provision of nutritionally and culturally valuable fish to the local people. They are also an important source of local identity, especially in a situation when many traditional fisheries have ceased to exist.

**Fig. 22.2** The White Sea Coast, summer 2014. The brigade is cleaning the stake net after having collected the catch: a dozen of salmon and a couple of lumpfish. (Photo credit: M. Shaw)


**Fig. 22.3** At the *tonia*'s processing station. The brigadier is pleased: the catch has been good today. (Photo credit: M. Shaw)

## 22.3 Wider Socio-Economic Context

The current Russian legislation does not provide any advantages to small-scale fishing operators. A number of officials mentioned during interviews that there are currently more fishing grounds available for commercial fisheries than there are operators. Among reasons for an insufficient number of operators are low profitability of a small-scale fishery business and cumbersome bureaucracy involved in registering and running a commercial fishery. Any commercial fishing used to be done by state organisations and collective farms during the Soviet period. Individual business is still a recent phenomenon in Russia, and the required paperwork might be obscure for someone who wants to start a brand new fishing business.

Commercial fishing in Russia can only be done on allocated fishing grounds. People who want to run commercial or recreational fishing business have to be a registered enterprise who can then rent allocated fishing grounds from the state (Federal'nyi zakon article 29.1, item 6; Federal'nyi zakon article 33.3). Bureaucracy of registering a business can be especially challenging for rural dwellers who often lack the legislative and administrative knowledge required to register a business. Managers said during interviews that there is help available in Arkhangelsk with how to fill in paperwork required for registering a fishing ground. However, many Arkhangelsk Oblast villages are in very remote locations, which makes traveling to the urban centre prohibitively expensive for most rural dwellers. In 2015, a one-way plane ticket from one of the villages to the Oblast centre cost almost one third of the official monthly minimum wage. To run a business involves inevitable travel to the city for a variety of reasons, which makes it too expensive for people who live in economically deprived rural areas. Commercial fishing grounds therefore tend to concentrate in urban areas. There are few individuals registered as fishing operators that live in rural areas. Paradoxically, people in the village have become increasingly dependent on local fishing resources to secure their living, as state support has deteriorated in the post-Soviet Russia and employment opportunities in rural areas have become extremely scarce.

## 22.4 Institutional and Organisational Context of Small-Scale Fisheries

There are two layers of territorial division within the Russian fisheries' governance system. They represent legislative and executive powers. The legislative layer consists of eight *promyslovye basseiny* (fishing basins) that roughly correspond to Russia's geo-political diversity. Each 'basin' spans across several administrative regions of Russia and has its own fishing rules.

Arkhangelsk Oblast fisheries belong to *Severnyi Bassein* (Northern Fishing Basin). The catch in *Severnyi Bassein* accounts for a quarter of all Russian fish and seafood harvests (Lim 2014). While large-scale trawlers bring most of the catch,

small-scale fisheries comprise the socio-economic backbone and cultural tapestry of many territories within the region.

The executive layer of Russian fisheries' governance system comprises eighteen *territorial'nye upravleniia* (territorial management boards). Each of them includes from one to several administrative regions of Russia and is responsible for the organisation, management and control of local fisheries. Territorial management boards are subordinated to *Federal'noe Agentstvo po Rybolovstvu* (Federal Fisheries Agency) in Moscow. Arkhangelsk Oblast, together with the Nenets Autonomous Okrug and Komi Republic used to belong to *Dvinsko-Pechorskoe Territorial'noe Upravlenie* until the latter was incorporated into the much larger *Severo-Zapadnoe Territorial'noe Upravlenie* in April 2016 (Prikaz Federal'nogo agentstva 2016). The enlarged management board includes nine administrative regions of the Russian Federation. The following paragraph describes the functions of *Dvinsko-Pechorskoe Territorial'noe Upravlenie* at the time of data collection for this article, i.e. before the board's amalgamation into a larger unit.

*Dvinsko-Pechorskoe Territorial'noe Upravlenie* represents the federal level[6] of governance and covers three administrative regions, whereas Arkhangelsk Oblast also has a regional executive body that governs fisheries at the level of the Oblast only. It is called *Agentstvo po Rybnomu Khoziaistvy* (Fisheries Agency) of Arkhangelsk Oblast. *Agentstvo po Rybnomu Khoziaistvy* and *Dvinsko-Pechorskoe Territorial'noe Upravlenie* have a lot of overlapping functions in the organisation of fisheries. The managerial division between them is mainly territorial: *Territorial'noe Upravlenie* organises marine fisheries, while *Agentstvo po Rybnomu Khoziaistvy* governs freshwater fisheries, as well as some coastal fisheries (except salmon fisheries, which are under the control of *Territorial'noe Upravlenie*). Such an overlapping governance structure, where a regional body has wide managerial functions might not exist in fisheries in other parts of the country, as it is more common for a federal organisation in Russia to have a full control over fisheries governance.

Fisheries management bodies in Russia develop most of their policies based on recommendations they receive from fisheries scientists. State institutes for fishery research evaluate existing fishing practices and estimate fishing resources, make forecasts for future levels of fish stocks and propose the amount of fish that can be sustainably extracted. Scientific organisations are responsible for holding regular public hearings where anyone can express their opinion on fisheries management and propose changes. While fishers are welcome to attend these meetings, they almost never participate. One possible reason is that many fishers live in remote rural locations and for a person to travel to such a meeting could cost a significant proportion of their monthly salary. A more profound reason is the lack of a culture of community participation in resource management in Russia. While the mechanism for such participation is technically in place, people are not prepared to make use of it (Nakhshina 2016).

[6] "Federal level" refers to the national level of governance, which is the top state level.

Apart from state research institutes, there are no other organisations in Arkhangelsk Oblast that actively work on sustainability of fishing resources in the area. Furthermore, "there are no social scientists collaborating with fisheries research or management institutions in Arkhangelsk Oblast, who could help bridge the gap between policymakers and ultimate users of fish resources" (Nakhshina 2016). Fishing communities remain largely outside the generation of knowledge about fish stocks. There is a lack of publicly available information about the methods and statistical data scientists use to make their forecasts about fishing stocks and come up with suggestions for quota allocations. People, therefore, do not often fully comprehend the strict limitations that the state imposes on some fisheries. Science communicates with fishers indirectly, via official fishing regulations. "Ultimate users of fishing resources remain mostly unaware of the process that leads to managerial translations of rigorous scientific research" (Ibid).

One of the legal mechanisms for public participation in state governance available in Russia is through a Public council (Rus., *Obshchestvennyi sovet*). Public councils can be created in affiliation with a state government body. They serve in the public interest, providing expert consultation to the government and monitoring civil rights' protection. *Dvinsko-Pechorskoe Territorial'noe Upravlenie* established a Public council in 2014. Members of the council included fishery experts, chairpersons of fishing cooperatives and representatives of non-governmental organisations and fishing businesses. The Public council has held only two sessions since its establishment. It has been a promising initiative, as it brought together key actors in the regional fisheries sector who have looked at topical and sensitive issues in local fisheries governance, including traditional access to fishing grounds, control over unlawful fishing practice and quota distribution ("02 aprelia 2015 goda" 2015). However, the Public council's resolutions are of advisory nature and most decisions are still made at the federal level in Moscow.

## 22.5 Policy Context

Russian fisheries, like many other sectors of the national economy, went through a period of a legislative vacuum in the wake of the collapse of the Soviet Union, when new laws had not yet emerged to accommodate Russia's changed economic and political reality. The lack of adequate legislation caused a lot of damage to many fisheries. In particular, fishing cooperatives and other successors of Soviet fishing organisations struggled to stay afloat, as they went through a radical change in their organisational and financial structure and work ethos. The newly emerged private small-scale fisheries face multiple infrastructural challenges and could benefit from a formal consolidation of administrative, political and financial resources. However, the sector remains too weak and disparate to successfully lobby for its interests.

The current fisheries legislation in Russia has travelled a long way since the initial turmoil of the 1990s. The parliament passed the Federal Law on Fisheries in December 2004. The new law provides the main guidance for the organisation and

governance of fisheries. Apart from the Federal Law, each Fishing Basin in Russia has their own Fishing Rules that regulate actual fishing practices, outlining what species, when, where and with what gear can be legally extracted.

Russian fisheries have found themselves in an ambivalent situation as a result of recent political tensions triggered by Russia's actions in Crimea and later in Ukraine. Russia's response to the European Union's sanctions after the annexation of Crimea in 2014 was to ban the import of agricultural produce and food products including fish, from the USA, Canada, Australia, Norway and the European Union. In June 2016, the Russian president extended the embargo until December 2017 ("Sanktsionnaia ryba" 2016).

Opinions within the Russian fishery sector are divided between supporters of the ban and those holding a more critical view. Supporters claim that the embargo will be good for Russia's domestic fish processing industry and aquaculture. They also suggest that since Russia's fish exports are higher than its imports, it should be possible to compensate the loss of imported fish by reducing exports. The embargo's critics say that simply re-channelling exports are not going to be enough to satisfy needs of domestic consumers. They argue that Russian aquaculture has not yet developed enough to substitute imported fish; furthermore, it is highly dependent on imported resources such as feed and technologies in the first place (Fishnews 08 Aug 2014).

## 22.6 Looking to the Future

It is currently difficult to make predictions about the future of the Russian economy, including the fisheries sector. The recent drop in oil prices and Russia's ambivalent foreign policy have led to a rather volatile economic situation within the country.

In the context of financial instability and uncertainty about the future, the importance of small-scale fishing practices is likely to increase at the local level. Fisheries scientists' forecasts have been encouraging, both for marine and fresh water fisheries. Based on scientific recommendations, the quota for the White Sea salmon fisheries in Arkhangelsk Oblast was nearly doubled in 2018 compared to the previous year (Protokol zasedaniia komissii 2017; Protokol zasedaniia komissii 2018), which indicates an increase in salmon population. This could potentially create a demand for more jobs in coastal salmon fisheries.

In addition, Stasenkov et al. (2011) estimate that Arkhangelsk Oblast's freshwater fishing resources would allow extraction to be at least doubled. However, this would require improvement of the overall system of procurement, storage, transportation, processing and marketing of fishing produce, especially in remote rural locations. Moreover, the recent amalgamation of *Dvinsko-Pechorskoe Territorial'noe Upravlenie* into a much larger management unit might make it more difficult to introduce changes in the small-scale fisheries at a local level.

Continuous centralisation of governance remains one of the main challenges for the fisheries sector in Russia, regardless of scale. Many voices among the higher managerial ranks of the fishing industry advocate for the devolution of powers from the federal to regional level. However, in the light of recent political developments in Russia, these voices are likely to continue to remain unheard.

## 22.7 Conclusions

Many small-scale fisheries found themselves particularly vulnerable in post-Soviet Russia, due to their marginal financial and political status. As Russia embraced the market-based approach for regulating fisheries after the collapse of the Soviet Union, larger operators focused on large-scale export fisheries, leaving the small-scale fisheries sector that usually focuses on less valuable species without crucial financial support.

Russian small-scale fisheries are politically marginal because Russian legislation does not recognise small-scale fisheries as a sector in its own right. Small-scale fisheries operators are too disparate and weak to make a powerful political presence. The majority of small-scale fisheries in Arkhangelsk Oblast do not generate much profit and most operators have to do something else to supplement their income. Political marginality goes hand in hand with the financial weakness as the lack of capital makes it even more difficult for small-scale fisheries operators to lobby for their interests.

Although there is no legislative recognition of small-scale fisheries in Russia, small-scale fishing practices continue to make up the socio-economic backbone and cultural tapestry of people's lives in many parts of Russia. In Arkhangelsk Oblast, they continue to be a significant source of livelihood and an integral part of the identity of many people.

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# Chapter 23
# Small-Scale Fisheries in Germany: A Disappearing Profession?


**Ralf Döring, Jörg Berkenhagen, Solveig Hentsch, and Gerd Kraus**

**Abstract** This chapter provides an overview of the small-scale fishing sector in Germany. The small-scale fleet is defined here as including vessels up to 24 m in length that are usually family owned and operate in the Baltic and North Seas. The fleet comprises of beam trawlers, cutter trawlers and vessels employing passive gears. Target species are brown shrimp and flatfish in the North Sea and herring, cod, flatfish and certain freshwater species in the Baltic Sea. Beam trawlers only fish in the coastal North Sea, whereas the small gill netters are based exclusively along the Baltic coast. The North and Baltic Seas have very different physical conditions. The North Sea has substantial tidal influence and normal marine salinity, while the Baltic Sea has minimal tidal influence and brackish water. After the introduction of the Common Fisheries Policy in 1983 (in East Germany 1990), individual quotas were issued. Most small-scale fishers are organised by producer organisations. They can be subject to additional conservation regulations which only apply to coastal zones. The increasing demand for fish stemming from fisheries which are certified as sustainable might impose further restrictions on small-scale fisheries. Most fishers employing passive gear have been in a steadily precarious economic situation due to very small quotas. Thus, their number is continuously decreasing. The shrimp and cutter fleets are in a healthier economic state, owing to their fishing of unregulated species (shrimp) or having the possibility to fish in both the Baltic and North Seas (cutter trawler fleet). Despite these advantages, investment in new vessels is extremely scarce in German small-scale fisheries.

**Keywords** Small-scale fisheries · Wadden Sea/Southern Baltic Sea coast · Passive fishing gear · Beam trawler

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## 23.1 Introduction

The German fishing fleet principally operates in the North and Baltic Seas. The German federal government negotiates the conditions for the German fleets together with the other European Union member states and defines a number of general regulations for the German fishing fleet (such as the distribution of fishing opportunities in the form of quotas for certain fish species). The federal states of Lower Saxony (NDS), Schleswig-Holstein (SH) and Mecklenburg-Western Pommerania (MV) are responsible for the management of the small-scale fisheries' fleet and the establishment of regulations for vessels in coastal waters up to 12 NM. Over recent decades, fishing areas have been restricted due to the designation of areas for nature conservation and wind farms.

Annual landings of German marine fisheries have fluctuated around 200,000 tons since 2010 (BLE 2011–2016), accounting for about one sixth of total German seafood consumption. Although the German fleet is relatively small, consisting of about 1500 vessels, a large amount of public interest in overfishing and environmental impact exists in the country.

Little more than a handful of high-sea trawlers, owned by internationally operated enterprises, account for about half the German landings. In terms of numbers, the bulk of the German fleet consists of small scale vessels: approximately 220 shrimp trawlers, fishing exclusively in the North Sea, about 60 fresh-fish cutter trawlers operating in the North and Baltic Seas, all below 24 m in length, and slightly more than 1100 small vessels, employing passive gears (gill nets, fyke nets or longlines), ranging from approximately 5 to 18 m in length. The latter mostly operate within eyeshot of the Baltic shoreline and contribute less than 4% to overall German catches.

Small-scale fisheries cannot be characterised by simple metrics, as they can take many different forms and modes of operation in the countries and cultures in which they are found. FAO states that a universally applicable definition for a sector as dynamic and diverse as small-scale fisheries is not useful (Staples et al. 2004). In Germany there is no established definition of the small-scale fisheries. There is just a distinction for licences when three categories are distinguished: high seas, small high seas and coastal fisheries. However, we decided for pragmatic reasons, in this chapter, to use the criterion of vessels below 24 m in length as small scale. They are usually owner-operated, and the businesses can be regarded as family enterprises. Moreover, they generally fish close to the coast and have high regional affinity as they fish in traditional fishing grounds (like the shallow Wadden Sea), specific species typical for the region (e.g. brown shrimps at the North Sea coast, herring at the Baltic Sea coast) and land still mostly in small ports at the coast (opposite to the larger vessels). The customary threshold of 12 m would exclude the entire North Sea fishery where larger vessels are common, due to environmental conditions (strong wave and tidal energy which makes fishing with small vessels almost impossible).

In this chapter, we outline the historical development of small-scale fisheries in Germany, define and describe the structure of the current fleet, and provide some

insights into the socio-economic situation of the sector. This includes a description of the institutional background and the policy context of the sector being part of the fisheries management framework of the European Union, complemented by specific German regulations. We conclude the chapter with an outlook for the future of small-scale fisheries in Germany.

## 23.2 Historical Background

Small-scale fisheries in the North and Baltic Seas developed differently due to the diverse characteristics of these two waters. The Wadden Sea is a large shallow coastal zone of the southern North Sea with strong tidal influence. In contrast, the Baltic Sea coast is characterised by a lack of tides, low salinity (the Baltic Sea is a brackish marine ecosystem) and contains many small shallow lagoons.

In olden times, typical Wadden Sea resources like clams, mussels, oysters and shrimp were harvested by walking onto the tidal flats during low tide, while in the Baltic Sea intensive fisheries had already developed in the Middle Ages, targeting large schools of herring spawning in the bays and estuaries (e.g. the western Baltic herring stock spawning in the bay of Greifswald). Herring was preserved by salting and thus suitable for trade across long distances. For the coastal cities of the Hanseatic League, salted herring was a very valuable trading good (Lampen 2000, 174ff). When the production of pickled herring was developed in the Netherlands, demand for Baltic herring, which was preserved by salting, decreased substantially along with the large herring fishery.

Dukes and other regional sovereigns regulated access to the fishery as the fishing rights were connected with the land use rights in coastal regions. Additionally, some cities (such as Stralsund and Greifswald) and sovereigns with inland territories held fishing rights (Raillard 2012, 15ff). Starting in the Middle Ages (ca. 1300), Baltic Sea fishers were already restricted to a maximum number of fishing gears and the time they were allowed to fish. The main fishing gear employed at that time was large trap-nets set in shallow waters near the coast operated by groups of fishers (so-called 'trap-net communities' as this large fishing gear could only be operated by a group of fishers). The regional princes allocated space for the trap-nets to communities, which had to pay rent for it. Additionally, the princes regulated other fishing gear employed by individual fishers when not using trap-nets; for example, gill-nets were limited in length and certain areas, especially spawning grounds were closed to fishing altogether. As huge herring catches occurred over a short period, merchants were able to pay relatively low prices. Thus, fishers decided to organise themselves into cooperatives so as to have greater negotiating power and later also to plan the operations of the group. Some of these cooperatives still exist today.

Regarding fishing rights, nothing changed until the lifting of the serfdom. From that point in time, farmers were able to cultivate and harvest their own land, while regional authorities and municipalities began to distribute fishing rights. At the end

of the nineteenth century, new technological advancements like steamboats and bottom trawls were developed and fishers started working full-time.

The situation on the North Sea coast was different. Due to the character of this coast (the shallow Wadden Sea with only a few deeper tide-ways especially at the mouths of the larger rivers), fisheries did not develop in the same way as on the Baltic Sea coast. In addition, its princes, and later the regional authorities, did not regulate access to the Wadden Sea area. The most important fishery today, the brown shrimp fishery, was originally carried out using trap-nets with the overall fishing effort being extremely low. However, with rapid technological development during the nineteenth century, new fisheries developed quickly. Steamboats were able to employ effective bottom trawling and dredging techniques and later, with the introduction of beam trawls, a large fishery targeting brown shrimp and flatfish developed (Schnakenbeck 1953, 49ff). As a consequence of such advances, some species like the European flat oyster were already overharvested in the Wadden Sea by the beginning of the twentieth century (Gätje and Reise 1998). Notwithstanding, there was no regulation of fishing effort in place until the introduction of the Common Fisheries Policy in 1983.

Along with the German separation during the early 1950s, the differences between coastal fisheries of the North Sea and Baltic Sea fisheries became even more pronounced. The largest difference between West and East Germany was that Eastern fleets (of the former German Democratic Republic, GDR) were heavily subsidised by the authorities in the form of elevated fish prices. Until re-unification in 1989, East German fishers earned a relatively high income compared to the average wage in the rest of the GDR. Hence, there was no economic pressure to change the practice or invest in larger vessels. Additionally, fishers could trade their goods (such as smoked eels), which were scarce in the former GDR. Another difference was that in the GDR all fishers had to be members of a cooperative (some already existed before the time of the GDR) with some of the newer cooperatives owning the vessels. Fishers at that time were to a large extent employed through cooperatives, and thus were not self-employed or owners of vessels (Raillard 2012, 327ff).

On the other hand, in West Germany, fishers owned their vessels and were self-employed. In many cases, owners of smaller vessels also formed cooperatives, while larger vessels were mostly private, family-owned businesses outside of cooperative organisations. With the introduction of the Common Fisheries Policy (CFP), fishers were urged to form producer organisations as a central part of managing the fleet and marketing fish. Today, almost all fishers are part of a larger producer organisation, which in many cases also allocates fishing quotas among its members (see below).

However, the fishing quotas[1] in Germany are in principle assigned to vessels with owners receiving quotas for each area and fish species (commercially important

[1] The main instrument for regulating fishing pressure in the CFP is the total allowable catch divided up among member states. States then distribute the fishing opportunities to their fishing sectors (in Germany with individual quotas).

species include herring and cod in the Baltic Sea and saithe, plaice, herring and mackerel in the North Sea), which are based on vessel catch contributions during a historical reference period (1976–78). With the re-unification of Germany, the same principle was applied to former GDR fishers. Nevertheless, not all species are regulated by quotas; for example, brown shrimp and most of the flatfish and freshwater species off the Baltic Sea coast are not.

Compared to other industries, the economic situation of most vessel owners in the Western part of Germany was precarious due to small quota shares and overall limited fishing opportunities. This was also the reason for low investment, so subsidies were introduced at the beginning of the 1970s to aid the technological modernisation of the fleet. In particular, owners of cutter trawlers benefitted from subsidies, which aided investment in new vessels. Since then, a small number of new vessels have been built, yet the vessel age in this segment now averages more than 30 years.

With the declaration of Exclusive Economic Zones (EEZ) after 1977, Germany (East and West) lost many traditional fishing grounds in the North Atlantic region (e.g. Grand Banks in Canadian waters or Icelandic waters), which resulted in the decommissioning of numerous high-sea vessels in the West German sector. Companies and vessels, as well as some of the smaller trawlers, went out of business, as they lost access to several neighbouring coastal waters. The GDR reacted differently and intensified its fisheries in the Baltic Sea by supporting small-scale fisheries and by providing additional services (e.g. processing of herring with factory trawlers directly in the fishing grounds at the coast). Additionally, the government invested in the exploration of new fishing grounds, finding them in offshore waters of so-called 'Eastern Block' countries (e.g., Mozambique).

Fishing agreements for long-distance waters, e.g. Mozambique, ended with entry into the EU. As a consequence, a large part of the high-sea fleet of the former GDR had to be scrapped, yet the small-scale fleet on the Baltic Sea coast remained large. Due to the fact that several species in the Baltic Sea coastal waters were not regulated by fishing quotas, this segment was not so hindered by catch-limiting quotas and nearly all fishers continued their work. However, since then, a considerable number of fishers have retired or changed to part-time fishing. Nowadays, this segment has severe problems recruiting successors.

Moreover, prices dropped significantly after 1990 and the fishers in former East Germany needed additional catch options to stay in business. Although the number of fishers decreased and the quotas were redistrubted to the remaining fishers or sold with the vessel to a colleague, this was not sufficient to allow the few remaining ones to achieve an economically stable situation with the possibility to invest in new vessels.

Many fishers diversified their businesses to a certain extent (e.g. increasing direct sales to consumers and restaurants) and embarked on longer trips throughout the year, in an attempt to balance lower revenue due to a fall in herring prices for some time after 1990 with additional landings of unquoted species. However, this was not sufficient to provide the sector with hope for a prosperous future (Döring 2001). Nowadays, the problem of fixed individual quota per vessel (see *Conclusions*) is an additional obstacle for younger fishers entering the fleet, as they need to buy a vessel

to receive a quota share. As a result, many retiring fishers have not been not able to find a successor or sell their vessel and associated quota.

The economic situation of the small-scale fishery in the North Sea (dominated by brown shrimp beam trawlers) continues to differ from that of the Baltic Sea. Over the last two decades, the number of vessels has been decreasing constantly, although the economic situation is still better for those remaining in business. Brown shrimp (*Crangon crangon*) can be marketed as a unique regional product for a relatively high price, as it is a typical Wadden Sea species, which cannot be substituted with any other product.

## 23.3 Description of the Fisheries

Following our definition of the German small-scale sector as vessels under 24 m, we will consider three different segments: fresh-fish cutter trawlers, brown shrimp beam trawlers, and vessels using passive gear, e.g. mainly fixed nets.

The fresh-fish cutter trawler fleet catching demersal and pelagic fish species in the North and Baltic Seas contains approximately 60 vessels (see Fig. 23.1). The beam trawler fleet (see Fig. 23.2) consisting of about 220 vessels fishes for brown shrimp and occasionally flatfish in the North Sea. There are about 800 vessels fish exclusively in the Baltic Sea using passive gear (see Fig. 23.3).

The cutter trawler fleet targeting mainly demersal, round and flatfish assemblages is the smallest fleet sub-segment in terms of vessel numbers. The vessels regularly use fishing quotas in the Baltic Sea or in the North Sea. Some of these

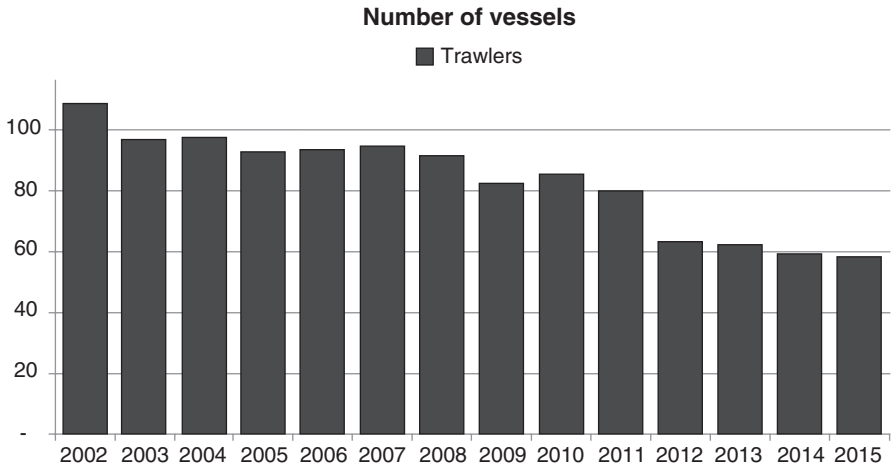


**Fig. 23.1** Number of vessels within the German cutter trawler fleet. 2002–2015. (The data used for figures, tables etc. come from the databases of the BLE and the Thünen-Institute, which are responsible for data collection within the Data Collection Framework of the EU (BML 2015). Therefore, the figures and tables are the authors own compilations)

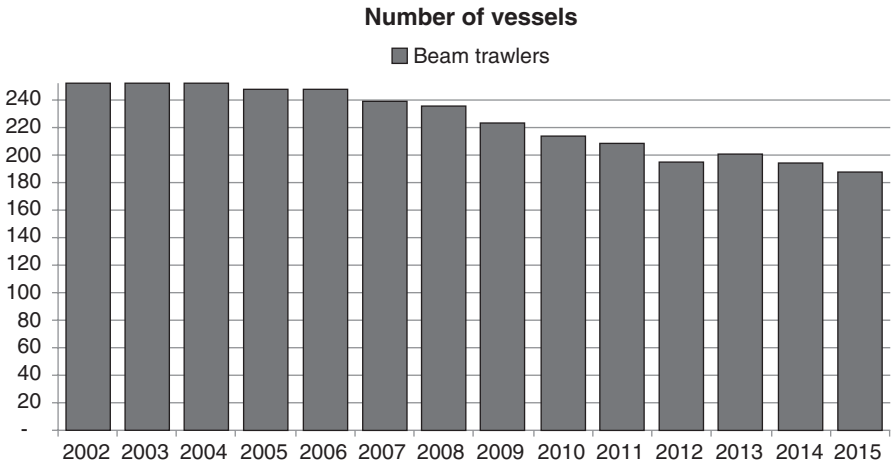


**Fig. 23.2** Number of vessels within the German shrimp trawler fleet. 2002–2015

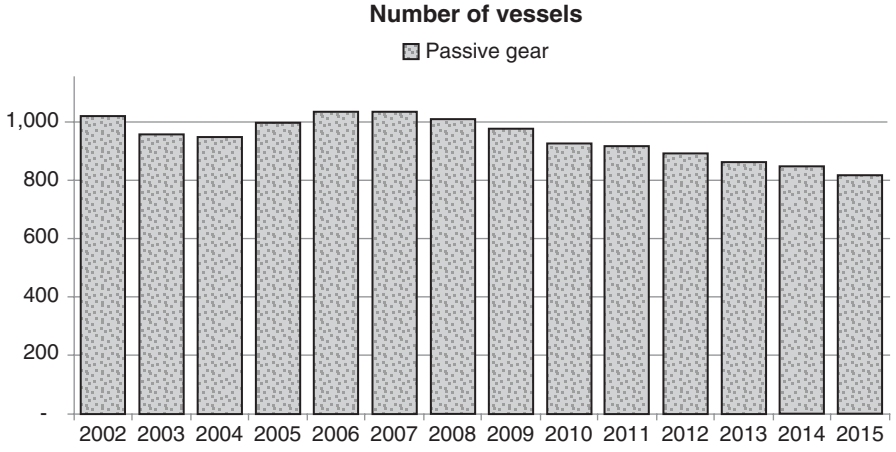


**Fig. 23.3** Number of vessels within the German fleet utilising passive gear. 2002–2015. (The increase in 2005 and 2006 is due to the inclusion of very small vessels in the statistics)

vessels even switch seasonally to pelagic trawling for sprat and herring in the Baltic Sea. In contrast to brown shrimp fishing, these fisheries are constrained by input and output regulations of the CFP for most of the species (especially herring and cod in the Baltic Sea and saithe, cod, plaice and sole in the North Sea).

By contrast, the brown shrimp fishery, using specialised beam trawlers, is not subject to an EU quota or effort regulation, but general rules such as mesh size regulations and restrictions on the number of licenses apply (see Fig. 23.4). North Sea brown shrimp is highly abundant and the most commercially impor-


**Fig. 23.4** Shrimp fishing vessels. (Photo credit: Thuenen-Institute of Baltic Sea Fisheries)

tant fishery resource in the Wadden Sea and shallow areas of the German Bight. The brown shrimp fishing fleet (basically organised into one large and two small producer organisations with more market power than before) is certified according to the standard of the Marine Stewardship Council (MSC), which required implementation of a management system in order to ensure an environmentally sustainable fishery.

In Germany, fishing with passive gear, e.g. gill-nets, trap-nets or longlines, is almost exclusively performed in the Baltic Sea using smaller vessels, mainly <10 m (see Fig. 23.5). Very few vessels are involved in setting pots, traps or flatfish gill-nets in the North Sea. The passive fishery in the Baltic is dominated by part-time fishers targeting herring, cod and flatfish and in the eastern, brackish parts, freshwater species. Part-time and also full-time fishers have other sources of income from tourism through renting apartments or operating restaurants. The passive gear fisheries are regulated by maximum length of gill-nets, number of hooks or trap-nets, with the main species, in particular cod, plaice and herring, being subject to fishing quotas. The small vessels, however, are exempted from the obligation for logbooks which makes it nearly impossible for the authorities to control all catch activities.

All three sub-segments of the small-scale fisheries in Germany are well adapted to the specific ecological conditions in the coastal areas of the North and Baltic Seas (see Fig. 23.6 for the distribution of the fleet along the German coast and Fig. 23.7 for the workforce per harbour) (Table 23.1).


**Fig. 23.5** Vessel employing gill nets at the Baltic Sea coast. (Photo credit: Thuenen-Institute of Baltic Sea Fisheries)

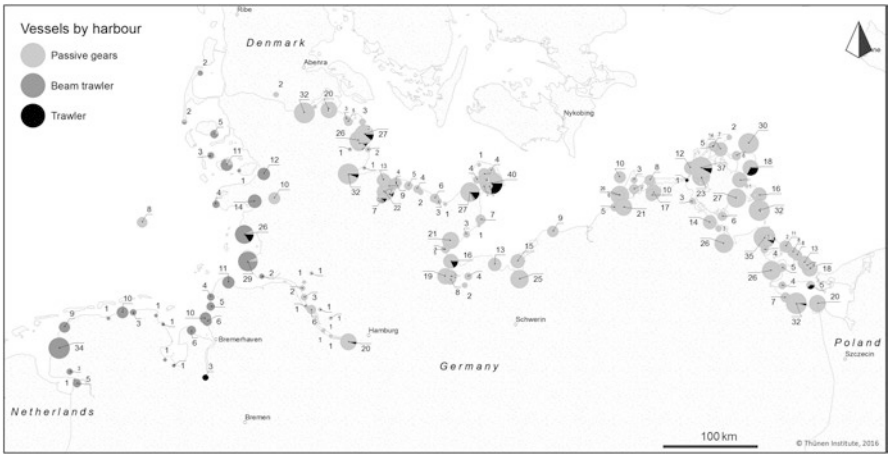


**Fig. 23.6** Spatial distribution of the German fleet – number of vessels

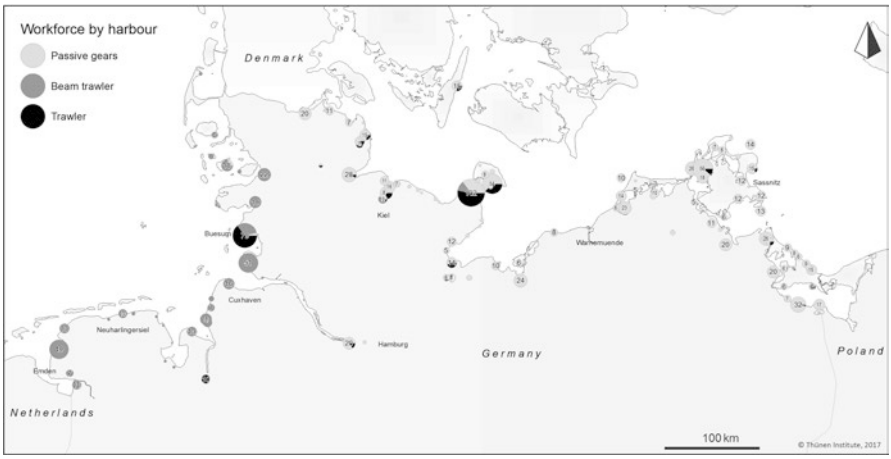


**Fig. 23.7** Spatial distribution of the German fleet – onboard jobs

**Table 23.1** Small-scale fleet overview Germany

| Data refers to: 2015 | Total (all fisheries) | Small-scale fisheries[a] | Fisheries with vessels <12 m using passive gear |
|---|---|---|---|
| Fleet | | | |
| Number of vessels | ~1520 | ~1470[b] | ~1150 |
| Capacity (GT) | ~64,000 | ~14,000[c] | ~2800 |
| Number of fishers | ~1600 | ~1200 | ~750 |
| % women | Negligible | Negligible | Negligible |
| Average age of fishers | Unknown | Unknown | Unknown |
| Landings | | | |
| Quantity (ton) | ~238,000 | ~35,000 | ~8000 |
| Value (Mill. €) | ~226 | ~61 | ~8 |
| Most common gear used (top 3) (% in total) | Pelagic trawls, demersal trawls, beam trawls | Gillnets, beam trawls, demersal trawls | Gillnets, traps |
| Most important species in landings: | | | |
| Top 3 in quantities (% in total) | Herring (28%), mackerel (12%), blue whiting (10%) | Brown shrimp (34%), herring (30%), cod (9%) | Herring (51%), freshwater species (22%), cod (15%) |
| Top 3 in values (% in total) | Brown shrimp (18%), cod (12%), herring (12%) | Brown shrimp (64%), cod (8%), plaice (6%) | Freshwater species (27%), cod (24%), herring (23%) |

Notes: [a]all vessels <24 m
[b]thereof ~400 inactive
[c]thereof ~1.400 inactive
Source of information: Fleet register, sales notes, logbooks, EU Annual Economic Report
Links to official stats webpages:
European Commission fleet register (n.d.) http://ec.europa.eu/fisheries/fleet/index.cfm
STECF data reports (n.d.) https://stecf.jrc.ec.europa.eu/data-reports
STECF economic final reports (n.d.) https://stecf.jrc.ec.europa.eu/reports/economic

## 23.4 Environmental Issues of Small-Scale Fisheries

In Germany, fisheries are often criticised for overfishing and for inducing negative impacts on non-target species and benthic habitats. In small-scale fisheries, beam trawlers are most heavily criticised as the gear not only impacts habitat structure, but also benthic communities. Fisheries with static gears are also targets of criticism due to their associated by-catch of marine mammals and seabirds (Sonntag et al. 2012).

With the introduction of Natura 2000 sites following the EU Habitat (Council Directive 92/43/EEC) and Bird (79/409/EEC)-Directives, further limitations on fishing activities will be introduced soon. The management measures taken affecting the fishing sector outside of 12 NM (which is also relevant for vessels from other EU Member States) must be decided at federal level and negotiated at EU level between affected countries. The design of these measures took some time to determine, as they had to be negotiated between two ministries: Ministry for Agriculture and the Ministry for the Environment (Sell et al. 2011). Within 12 NM of the coast, federal states are responsible for the management within the Natura 2000 sites. In Schleswig-Holstein, the fishers' organisation agreed to a voluntary accord with the state's federal government so as to protect diving birds from being caught in gill-nets. The government's original plan, therefore, was one of stricter regulations with longer closures. The fishers agreed to report areas with high bird densities and to avoid the deployment of gill-nets in areas containing large numbers of mussels (the staple food for seabirds).

For the fishing sector, the increasing number of closed areas (besides the Natura 2000 sites there are also areas for wind farms, military use, etc.), has forced fishers to move to other areas. This in turn could reduce revenues and it is unsure whether fishers will be able to catch the same amount of fish in the same time in alternative areas (this would also mean increased costs). Therefore, there is ongoing discussion on the possible effects of the closures (Berkenhagen et al. 2010).

During the 1990s and early 2000s, environmental NGOs increased pressure, especially on the wholesalers, retailers and supermarket chains (including discounters) aiming to change consumer behaviour by specifically promoting environmental sustainability of seafood production. As a consequence, many supermarkets currently intend to sell only eco-labelled products and the fisheries, including several of the small-scale segments, are under heavy pressure to get certified. In the North Sea, the brown shrimp fishery successfully applied for MSC certification. As this fishery is not officially catch or effort regulated and proper stock assessment for this short-lived species with a multi-cohort annual reproduction cycle is hardly possible, it was not easy to prove that the fishery fulfils the certification criteria. The trawl fishery targeting cod in the Eastern Baltic Sea was certified, but lost the certification in 2016 due to a change in the scientific perception of the stock's status, quotas set too high and indications that the fishery was not sustainable any more. The herring trawl fishery in the western Baltic was successfully MSC certified in 2015, which increased the landing value by 20% in the first year after certification, but the label was suspended in 2018 after the stock fell below the limit reference point. The MSC

certification of the passive gear western Baltic herring fishery was unsuccessful for a variety of reasons, most prominently the unknown bycatch of seabirds. Most likely, a combination of voluntary measures from the fisheries (eco-labelling, voluntary agreements) and enhanced legal environmental sustainability requirements, will characterise products of small-scale fisheries in Germany in the future.

## 23.5 Socio-Economic Context

The overall sum of fish and fish products entering the German market in 2014 amounted to 2.1 million tonnes, of which 88% were imported. Approximately 41,000 people are employed in fisheries and aquaculture, including the secondary and tertiary sectors (processing and trade), of which only about 1500 are still employed in the primary sector of fisheries. The number of women is lower than in the secondary sectors, with only approximately 250 women working in producer organisations, in restaurants, processing facilities or shops selling fresh fish, and with very few actually working on the vessels. However, especially in the case of smaller vessels, family members often work in the business with the Baltic Sea herring spring fishery being a good example as entire families are engaged in extracting the herring from the gill-nets. Before the European Union introduced stricter hygiene standards, shrimp fishers specifically employed women to de-shell the brown shrimp onshore. In part, these were the fishermen's wives but many low-income households also used the de-shelling of the shrimps to supplement their incomes.

In total, the primary sector for fish is of minor relevance to the German economy. The fish-processing sector, however, is much more important with approximately 6500 employees with the percentage of women employed in this sector being much higher than in the primary sector (app. 50%).

When looking at the distribution of landings by fleet segment, those of small-scale fishing fleets are less important in terms of landing volume compared to other fleet segments (see Fig. 23.8). However, in terms of employment and cultural

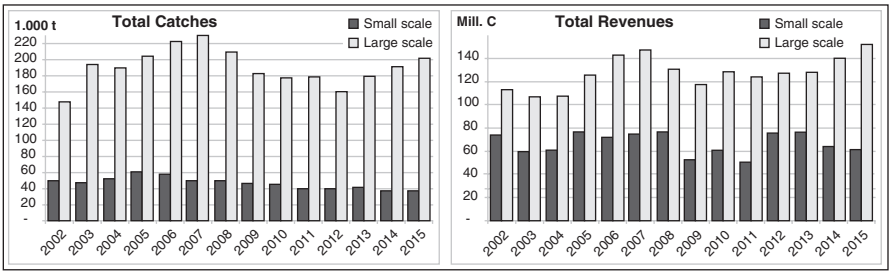


**Fig. 23.8** Total catches and revenues of the German small-scale and large-scale fleets. (The Thuenen-Institute of Sea Fisheries collected all the data provided in this chapter via the Data Collection Framework of the European Union)

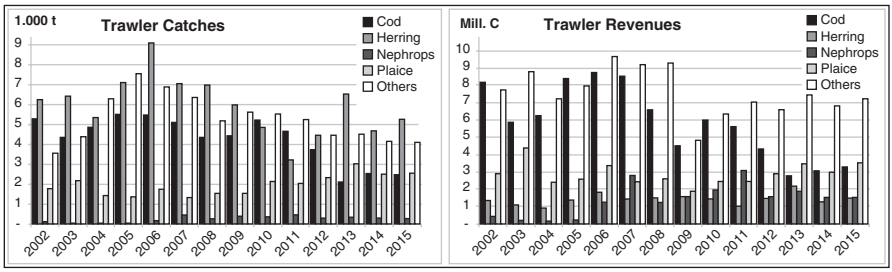


**Fig. 23.9** Catches and revenue of the German small-scale trawler fleet

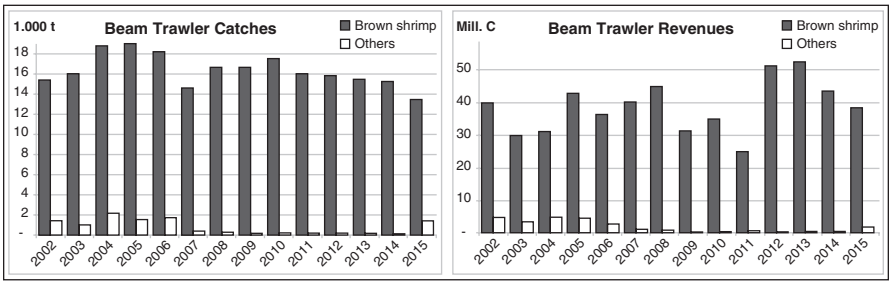


**Fig. 23.10** Catches and revenues of the German small-scale beam trawler fleet

aspects, the small-scale sector is of considerable importance. Figure 23.8 also demonstrates that revenue for a given amount of catch is higher in small-scale fisheries compared to large-scale ones, indicating that small-scale catches per unit of weight are generally of higher value due to the possibility for direct marketing and local processing activities.

The German cutter trawler fleet has been facing reductions in both catch and revenues since 2002 (Fig. 23.9). Both the number of vessels and the quotas for the main species, cod and herring, have decreased. Most evident is the huge drop in revenue derived from cod catches. While catches of and revenues from plaice have developed more favourably, they have not been able to compensate for the losses of cod.

Brown shrimps account for almost the entire catch and revenue of the German small-scale beam trawler fleet with annual catches having fluctuated around 15,000 t since 2002, while revenues show a much broader range than expected from the quantity of catches (see Fig. 23.10). In 2011, revenues had dropped to €25 million. Two years later in 2013, they stood at €52 million while in 2014, the total catch was again approximately 15,000 t while revenue stood at €44 million.

The volatility of market prices is mainly a result of an oligopoly on the part of the wholesalers. The recovery of prices in 2012 is to some extent due to re-organisation of the fishery to single, larger producer organisations, providing a stronger position on the market.

The target species of the passive gear fleet in the Baltic Sea varies greatly between the coast of SH in the West and the shallow lagoons ('Bodden') of MV due to the differences in ecosystems in part due to the salinity gradient ranging from marine conditions in the west to almost freshwater conditions in the shallow Eastern lagoons (see Box 23.1). The main species for the small-scale fleet in the Baltic Sea are herring (the western Baltic spring spawning stock), cod and freshwater species (e.g., perch, pike-perch and eel). Many of the freshwater species in the east are not regulated through a quota system. Figure 23.11 indicates that in particular, catches of herring and cod have decreased over the years. In fact, over recent years, the revenue from freshwater species has exceeded that from cod and herring. These species have a relatively high value and are basically sold directly to consumers or restaurants.

**Box 23.1: German Small-Scale Baltic Sea Herring Fishery in the Biosphere Reserve South-East Rügen**[2]

The biosphere reserve South-East Rügen was established to preserve traditional agricultural and fisheries production systems. The small-scale coastal fisheries in the shallow bay of the 'Greifswalder Bodden', employing passive gear, are the focus of that initiative. The Bodden is the main spawning ground of the Western Baltic herring stock and, therefore, dense spawning aggregations in spring are easy to catch with trap and gill-nets. The fishers have individual herring quotas, and to a smaller extent cod, which they fish during the remaining months of the year. Additionally, the fishers land fresh water species, which are abundant in the coastal areas due to the brackish character of the lagoon. During the time of the GDR, fishers received comparably high prices. Nevertheless, with the reunification in 1990 the situation changed, and fishers now receive much lower prices for the fish, which has resulted in a substantial decrease in earnings. Thus, many now rely on other activities, such as renting rooms to tourists so as to earn a sufficiently high income. As a result, many fishers have ceased fishing since 1990 with no successors, with quotas redistributed to other fishers. Although the remaining fishers can now catch larger quantities, in many cases there is still insufficient income to ensure a future for the small-scale fishers in the biosphere reserve.

To improve the situation the small vessels located in the biosphere reserve have applied for MSC certification but only after a long hesitation ('we don't need it'). The certifier refused to certify Baltic herring fisheries (as the trawl fishery has applied earlier on) for several years due to the precarious situation of the stock and later on because of the missing long-term management plan which needed to be adopted by the EU and Norway. This management plan

(continued)

[2] The basic background document for this text is Döring (2001).

**Box 23.1** (continued)
was finally implemented in July 2016 (Regulation (EU) 2016/1139) and the trawl fishery certified. In May 2015, the government of the regional state Mecklenburg-Vorpommern had already funded part of the costs for the certification, thus the process of certification was started. In 2018 the certifier refused to certify the small-scale fishery due to the once again precarious stock situation.

Although, certification was at the beginning introduced in order to improve the prices and to receive a premium for fishing sustainably, later on the main reason for seeking certification is to avoid a further decrease in prices. Nowadays, non-certified landings are barely marketable in Germany, therefore, prices for those fish dropped significantly. With the certification, the fishers hope to keep a comparably high-price level, with the objective of hopefully improving the overall economic situation of the small-scale Bodden fishery and attracting successors into the fishery.

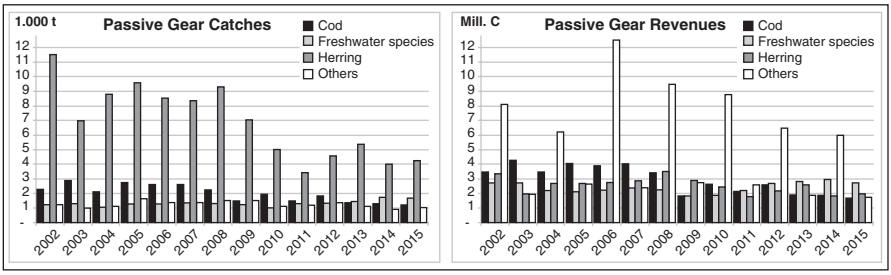


**Fig. 23.11** Catches and revenues of the German small-scale passive gear fleet

Marketwise, small-scale fisheries compete with the large-scale fisheries' sector when it comes to products that have lost their regional status. Fishers often have to transport the fish to auctions where their catches are sold to the processing sector/retailers together with the landings from large vessels. In Germany, the latter applies mainly to cod and herring and to some degree, plaice and other flatfish. As larger vessels are able to catch fish more efficiently, small-scale fisheries have to choose a different marketing strategy, e.g. selling their catches directly to consumers and thus obtaining a higher price. Figure 23.12 provides a comparison of catches between large and small-scale fleets for the two most important species, cod and herring. For cod, both the total catch and the catch share of the small-scale fleet decreased considerably over the years, although this is less evident for herring. Competition in the market is not only determined by stock-specific fishing quotas, due to the fact that

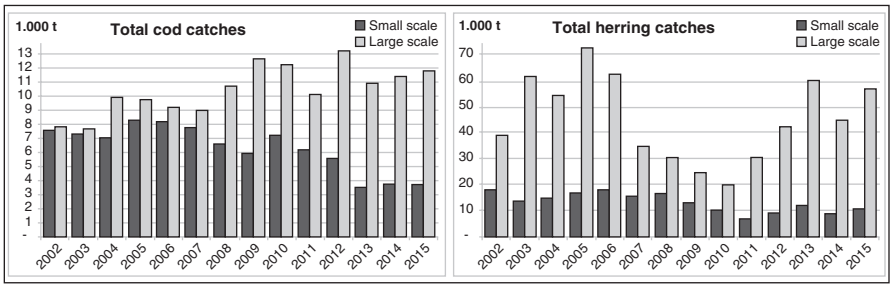


**Fig. 23.12** Comparison of catches of cod and herring (in 1000 t) by small and large-scale fleets

various species are interchangeable and can be substituted for each other on the market. This is especially evident for so-called "whitefish", which is a generic term used for a variety of species that are sold as both fresh and frozen fillets. For example, at the time when plaice catches were low, it was substituted by processors with species such as pangasius. Moreover, fish sticks were originally produced from cod but now commonly Alaskan Pollock is used.

The brown shrimp fishery is a typical example of offering a unique regional product, which cannot be substituted by any other species, nor caught by another fleet segment (except similar vessels in the Netherlands, Belgium and Denmark). However, current market prices are biased through a high number of fishers acting as vendors as opposed to only two dominant first hand buyers. Thus, the result was that the pricing system was detrimental to the fishery (Aviat et al. 2011). The fishery for Baltic fresh water species offers regional specialties and prices are in principle high enough to ensure competitiveness of these fisheries on the market. However, catches of individual fishers are often too low to provide sufficient income.

## 23.6 Institutional and Organisational Context

Most German fishers are organised into cooperatives, whose main objective is to market the landings of their members. Some of the cooperatives are also officially registered producer organisations (PO) or members of a larger PO. These are required by European regulations to organise the marketing of the fish and represent their members in negotiations with the authorities. Although individual fishers hold separate fishing quotas attached to the vessel, some have the arrangement that the PO receives the quota for a group of members and distributes quotas on behalf of their members. Such a model ensures efficient distribution of catch options and provides more flexibility for individuals.

Despite the need to have access to fishing quotas for target species, fishers need a license, which they only receive after a formal 3-year training phase. Such licenses not only provide the formal right to operate a ship, but also to conduct fishing operations. Fishing regulated species is, however, only possible with an individual quota.

Any newcomer needs to inherit a vessel (with attached quota) or has to buy a vessel to receive the quota allocated to the vessel. The latter model makes it especially difficult for young fishers to enter the fishery.

Although shrimp fishers target species not subject to a fishing quota or effort regulations, they are still required to obtain an official license. Indeed, the fishery is not completely unregulated, as there are other legal restrictions which the fishers have to respect, such as mesh size regulations or area restrictions. The main problem for shrimp fishers is the market power of the processing companies. This forced the fishers to introduce their own effort regulations, which are sometimes extremely susceptible to European cartel regulations. Nevertheless, self-regulation has kept brown shrimp prices at a comparably high level and the segment in an economically stable situation as the shrimp fishers limited themselves with weekly quotas, which the majority accepted.

Recently, wholesalers and retailers have exerted strong economic pressure on the fishery to seek MSC eco-labelling. As a consequence, shrimp fishers in the Netherlands, Denmark and Germany applied for the MSC label and it was granted in 2017.[3] The sector has introduced a voluntary management system for the fishery (as there is no EU regulation). It is not yet clear, if the increased production costs for certified shrimp will be compensated by higher market prices for the product.

The reason why shrimp fishers still receive relatively high prices for their product is that it is a specific regional product and is also due to the fishers having restricted their catches to some degree. There were, however, some fluctuations in prices as the weekly catch limits were not always obeyed by everyone along with the contributing factor of the market power of the three processing companies. In this case the main objective of the MSC certification initiative was not primarily to achieve higher prices, but about maintaining access to supermarkets and retailers.

At present there are no major on-going initiatives regarding the development of specific regional labels as has been the case for agricultural food products in Germany.

## 23.7 Policy Context

In general, fisheries in European Union waters are managed through output and input regulations of the EU CFP. The federal government is responsible for negotiating the regulations for Germany within the EU. For most marine species, Total

[3] The small-scale herring fishers at the Baltic Sea coast also applied for certification but the process is still ongoing. The problem is now that to receive the same price the herring fishery needs to be certified in the future. Otherwise it will not be easy to sell the catch and prices will drop. Certification is, therefore, not (only) to receive a price premium. Sometimes it is to simply keep or get market access.

Allowable Catches (TAC) and national quotas limit landings and fishers with vessels above 8 m have to document all landings larger than 50 kg (also applies to non-regulated species) in logbooks. More recently, the landing obligation initiated a transformation towards a true-catch quota system, in which catches, rather than landings, are limited by quotas, at least for TAC-regulated species. The EU also introduced a broad range of so-called technical measures like minimum landing sizes, minimum mesh sizes, and seasonal or total closures of certain areas, for instance, spawning grounds.

For species not regulated by TACs, such as most freshwater species, effort limitations by federal states along with minimum landing sizes are frequently in place restricting fishers to operate a limited number of longlines, gill or trap-nets. The 'regulation of coastal fisheries' in MV (GVOBl. Mecklenburg-Vorpommern 2006) is an example of additional regulation by the federal states.

The federal states are able to regulate the following:

- Species not allowed to be caught
- Minimum landing sizes
- Closed seasons
- Permitted fishing methods within the 3 NM zone (German coastal waters)
- Fish protection areas and protection of spawning grounds
- Effort limitation in the fish protection areas
- Minimum mesh sizes
- Permits for trap-nets
- Bans on fishing for reduction of fishing pressure
- List of administrative offences

Due to these regional and/or national rules, fishers face many restrictions in addition to the regulations of the EU CFP. In their regional regulations, federal states also include measures to fulfil the requirements of the national and federal nature conservation regulations (e.g. Natura 2000 network). Fishers argue that the regulations are too detailed and the limitations too far-reaching in limiting individual decision-making, often to the detriment of enhancing sustainability. Many of the measures lead to increased costs and, therefore, do not incentivise compliance. Federal states are responsible for controlling and enforcement of regulations and cooperate with the federal governmental agencies by means of a common coast guard in order to enforce rules in the EEZ. There are numerous debates regarding alternative management strategies that could improve incentives for good compliance. Although the days at sea regulation was abandoned in the meantime in the North Sea one measure is still a good example of an alternative incentive by the possibility to grant additional days at sea in the North Sea bottom trawl fishery. The incentive was designed to offer additional days at sea to fishers that avoid the bycatch of cod by moving to other fishing grounds. These additional days allowed fishers to catch their quotas of other species more easily, even in cases where they have to leave the best fishing grounds. Another example is the trilateral self-management of the North Sea brown shrimp fishery as part of the MSC certification

process. In this instance, the fishery is developing an effort management system that reduces catches when catch rates drop below a reference value indicative of unsustainable fishing practices.

## 23.8 Conclusions – Looking to the Future

The future of small-scale fisheries in Germany is uncertain. Many small-scale fishers are close to retirement with only a few younger successors willing to take on the heavy workload of a fisher's life and the financial risks resulting from uncertainties of future fishing opportunities, fishing regulations and market prices. Due to such uncertainties, there has been very little investment in new vessels over the last decades, hence the average vessel age is quite high.

In Germany, fishing quotas are generally attached to the vessel. When quotas were assigned to German vessels, the vessel owners were not charged for this asset, receiving it free of charge. Nowadays, when fishers sell their vessels they usually charge prices which include an estimated quota value. This hampers young fishers' access to the business. This mechanism does, however, not apply to fisheries targeting unregulated species such as brown shrimp or freshwater species in the Baltic Sea.

The increase in regulations is an additional reason why fishers resign from their profession and fishing rights are moved to larger companies or producer organisations with more solid financial foundations. Due to their low quotas, the remaining individual fishers have little power with regards to negotiations with retailers or wholesalers. In the Baltic Sea, in particular, fishers appear to be largely unable to generate additional profits by marketing their catches as regional products (until now they have sold directly to consumers or restaurants but without a specific logo), whereas in the North Sea, this is quite different since brown shrimp are sold as a typical regional product at high prices, at least on the retail market.

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# Chapter 24
# Small-Scale Fisheries in Poland


**Marcin Rakowski, Adam Mytlewski, and Iwona Psuty**

**Abstract** Small-scale fisheries in Poland represent almost 85% of the fleet but are only responsible for 30% of the catch volume. They are important because of their impact on employment and the cultural heritage of coastal regions. Although the value of small-scale fisheries in economic terms is not significant, they influence other economic activities in the area and are seen as an important factor in local development. The Polish central government has appreciated the role of small-scale fisheries in coastal regions and currently supports this segment by financing harbour infrastructure and supporting producer organisations in the organisation of local markets. The future of the sector, however, depends primarily on the availability of resources in the Baltic Sea. If these allow for a balance between operating costs with revenues from fish sales and subsidies for administrative suspensions of fishing, income from other economic activities should be sufficient for fishers to continue their profession.

**Keywords** Poland · Small-scale fisheries · Baltic Sea · Common Fisheries Policy · Producer organisation

## 24.1 Overview of Small-Scale Fisheries

The first important question regarding small-scale fisheries in Poland is which people should be considered small-scale fishers. Traditionally, small-scale fisheries are defined as fishing with "boats" up to 15 m long (Polanski 2000). These are fishing units with low maritime prowess, operating most often near their place of harbouring and using passive fishing gears. The scale of fishing and forms of ownership divide small-scale fishers into two basic groups: unit owners and crew members. The latter are generally associated with a given boat for many years.

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The traditional designation of small-scale fisheries is still commonly used, despite different segmentation for European Union (EU) statistics. According to EU Reg. No. 508/2014, Art. 3.14, small-scale fisheries are defined as vessels up to 12 m in length, using passive gears. In order to compare Polish small-scale fisheries to the rest of this segment's fleets in European countries, vessels up to 12 m are reported in this chapter, leaving aside the class of vessels between 12 and 15 m length.

In the 1960s, 1970s and early 1980s, Poland had a large industrial fleet, which caught significant amounts of fish, to a large extent using the fishing grounds outside the Baltic Sea. In the global statistics, Poland ranked among the top 20 fishing nations of the world. Indeed, the Baltic Sea Fishery was recognised as a minor part of Polish fisheries, and, what is more, it was centrally planned, managed and fished by state-owned companies and vessels. In the 1990s, a transformation from centrally planned to market-oriented economy led to a rapid and substantial decrease in the fisheries' share of the national economy. The fleet began to be privatised and reduced (Małkowski and Richert 2007). Moreover, access to the key deep-sea fishing grounds was gradually being limited for Polish vessels by the introduction of Exclusive Economic Zones. In 1988, the fisheries sector employed 16,813 people, and the number has been steadily decreasing since then (Martín 2011; Kuzebski et al. 2016).

Until the fall of the Iron Curtain (1989), and also shortly after, boat-fishing was organised in fisheries cooperatives that bought fish from affiliated members, and some of these cooperatives also engaged in processing. There was also a group of non-affiliated fishers, who most often supplied local fresh fish markets. The establishment of private fish processing plants, which started in 1989, resulted in increased sales opportunities and expectations of higher incomes. However, cooperatives were deprived of daily fish supplies, as fishers were selling fish at more favourable prices outside these structures. This situation led to the collapse of cooperatives (only one remains in Kąty Rybackie harbour) and the disruption of fisheries to small suppliers. The number of boats remained relatively stable until May 2004, when the programme for adjusting fishing effort to the size of resources was launched. In the past decade, the number of small-scale fisheries vessels in Poland first decreased, to rise again due to the transfer of capacity from bigger vessels. Vessels owners have used a loophole in the regulation allowing them to enter a few smaller vessels into the Fishing Fleet Register instead of a larger one, with the restriction that they do not increase the total capacity and power of the main engine of scrapped vessels. The sector, at the end of 2015, comprised 682 vessels up to 12 m in length (Mytlewski et al. 2016). In comparison to the whole Polish fleet (872), the number of vessels from the small-scale fisheries sector is relatively large and constitutes 78% of the fleet. The boats are registered in 63 harbours, of which 53 are home ports only for small-scale fishers. The number of boats per harbour differs from single vessels in some beach harbours to 48 in Ustka. In spatial terms, the small-scale fleet in Poland is situated in three main areas: the Vistula Lagoon, Szczecin Lagoon and the Gdańsk Bay (mostly the Puck Bay, which is a western part of the Gdańsk Bay). In other parts of the coast, small-scale fisheries share fishing grounds with the fleet over 12 m (see Fig. 24.1). In 2015, in 23 ports in the Gdańsk

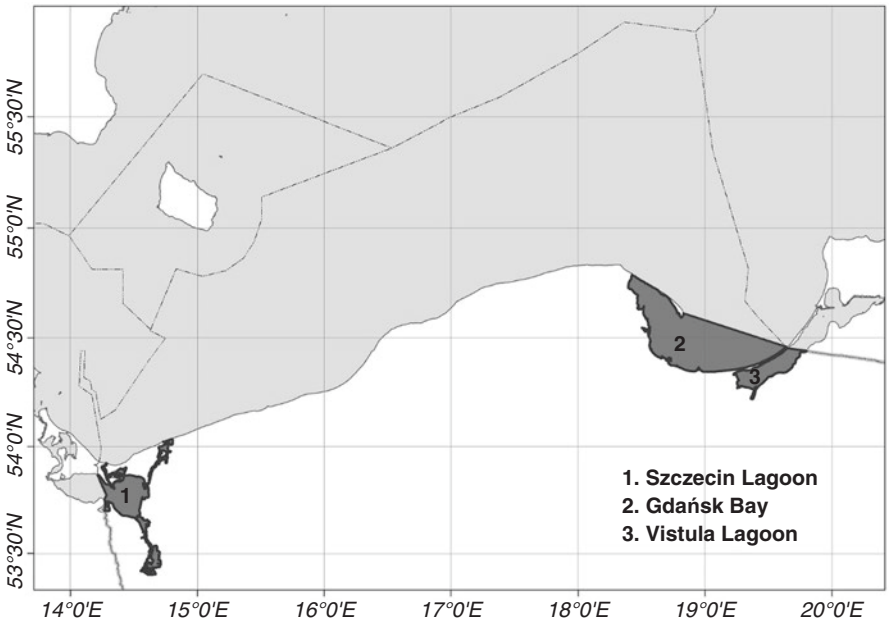


**Fig. 24.1** Main areas of small-scale fisheries operation. (Photo credit: L. Szymanek, NMFRI)

**Table 24.1** The financial data of Polish small-scale fisheries for vessels <12 m in 2013 and 2014 (thousand Euro -EUR)

| No. | Specification | PG VL0010 | | PG VL1012 | |
|---|---|---|---|---|---|
| | | 2013 | 2014 | 2013 | 2014 |
| 1 | **Total revenues:** | **15,041** | **12,170** | **5635** | **4582** |
| | Landing revenues | 8105 | 7885 | 3769 | 3286 |
| | Other revenues | 9 | 28 | 30 | 32 |
| | Subsidies (not included) | 6927 | 4258 | 1836 | 1264 |
| 2 | **Total costs:** | **7713** | **8168** | **4080** | **3661** |
| 3 | **Profit/loss (without subsidies)** | **401** | **−255** | **−281** | **−343** |
| 4 | **Fixed assets (value)** | **16,744** | **16,976** | **10,885** | **11,610** |
| 5 | **ROI (return of investment without subsidies)** | **2.39%** | **−1.50%** | **−2.58%** | **−2.96%** |

Source: Luzeńczyk et al. (2015)

Bay, 206 boats were registered. In 8 ports in the Vistula Lagoon, there were 96 boats and in 11 ports in the Szczecin Lagoon 107 boats. There were also 273 boats registered in 21 ports in other coastal areas.

In terms of catches, small-scale fishers (vessels 0–12 m) landed 14.18 thousand tonnes of fish or 10.5% of the volume of total catches made in the Baltic Sea (see Table 24.1). Main target species and fishing gears differ among areas. In the Gdańsk Bay, the gillnet effort is directed at cod, flounder, herring and trout. Only in the Puck Bay (a semi-closed area of the Gdańsk Bay) are eel caught in fyke nets and pike

caught in small-mesh sized gillnets. Garfish are also an important species during the spawning season. In other coastal areas, cod and flounder constitute the major part of catches. In these areas, longlines (set or drifting depending on species and fishing ground) are sometimes used. In the brackish water of the Vistula Lagoon, the most important species are herring caught during the spring spawning season in large pound nets, eel in fyke nets and pikeperch, perch, roach, bream, trout caught in gillnets. In the Szczecin Lagoon (very low salinity – the direct influence of the Oder river) only freshwater and diadromous species are caught both by fyke nets and gillnets in the Vistula Lagoon, Szczecin Lagoon and Puck Bay.

Fishing gears used in the small-scale fisheries are mostly passive, although some boats use trawls as well, such as when two vessels tow one trawl. Small-scale fishers generally use traps (cages), gillnets, driftnets and longlines (drifting longlines). Traps are more commonly used in both lagoons and in a shallow part of the Gdańsk Bay (western part).

Small-scale fisheries in Poland can be described as multispecies fisheries depending on fish availability (spawning, migration). Some boats using bottom trawls (single or paired) target mainly cod and flatfish. The Vistula Lagoon, Szczecin Lagoon and Puck Bay are highly regulated with many protective restrictions (spatial and temporal closed areas, fishing gear restrictions). The other coastal areas are regulated mainly by EU fisheries rules (closed seasons and fish sizes). Only cod, herring and salmon are caught under quota regulations but boats up to 8 m are not included in the individual quota system.

A boat crew consists usually of 2 or 3 men. Not all of the vessels are active during the year and most of them do not operate in the winter. Altogether boats spend 51 thousand days at sea, which gives an average of 75 days per boat per year (Mytlewski et al. 2016).

## 24.2 Socio-Economic Context

Despite a relatively large number of vessels in the small-scale fisheries, their role in national fisheries catches (and also in the entire Polish economy) is small in economic terms. Nevertheless, for the local community in the coastal areas, small-scale fisheries are important as they provide year-round employment and make up one of the main income components. There is no official data describing fisheries' role in Gross Domestic Product (GDP), but research from 2005 shows that the local municipalities' fisheries sector share in the local economy was between 0.025% and 7.5% (internal National Marine Fisheries Research Institute – NMFRI data). It is estimated that small-scale fisheries employment on boats in 2014 was 1526 persons and the full-time equivalent equalled 1422 (PBSSP 2016).

Research among boat fishers shows that this group is very attached to the profession (Polański 2001). They understand that their income is dependent upon unpredictable environmental conditions throughout the year. However, the fact is that in coastal villages fishing is usually the only full season work they can get, so fishers

just keep fishing as their way of life. This gives them independence and the feeling that their income depends on them. If young people come into the profession, they are usually from fisher families who decide to continue their parents' way of life. This is particularly noticeable in regions where fishing is treated as a tradition (the area of the Gdańsk Bay), and not as a random profession (areas attached to Poland after the Second World War).

For local society, small-scale fisheries are an important factor in development, as these fisheries are year-round port users, an attraction for tourists and part of the area's cultural heritage. Local governments see them mostly as an additional tourist offer rather than as tax payers. Research into fisheries' benefits to the local economy shows that fishers' activities are important as local tourist attractions, sources of income for fisher families and the only reason for maintaining beach harbours along the coast. These fisheries are also seen as an important supplier of flatfish to the local gastronomy.

For the last 10 years, small-scale fisheries have been supported by EU operational programmes (European Fisheries Fund, followed by the European Maritime and Fisheries Fund) and national government activity. The effort adjustment programme induced changes in the fleet segmentation potential. Some fishers decided to scrap vessels and part of the reduced power and tonnage was used to introduce one or more boats. This situation led to a substantial reduction in the fleet over 12 m, but after a short period of boat reduction, their numbers started to grow again, achieving in 2015 larger figures than before the programme. According to regulations (Maritime Offices safety regulations) there should be at least 2 persons on a boat, so the increased number of vessels has impacted employment levels.

## 24.3 The Economics of Small-Scale Fisheries

The analysis of the financial condition of the Polish small-scale fisheries was based on official data collected annually by the NMFRI within the Fisheries Data Collection Framework.[1] The fisheries data are collected using the statistical forms (RRW-19 – report on the financial conditions of fishing vessel) sent annually to all vessel owners. Owing to a division of data resulting from dividing the small-scale fishing fleet in Poland into two segments, we first discuss the data pertaining to vessels up to 10 m in length (PG VL010, 526 vessels in 2014) and then vessels between 10 and 12 m in length (PG VL1012, 107 vessels in 2014). The financial figures are presented in Table 24.1 below.

The analysis of the fisheries situation could be described as operational (Gréboval 1999) in financial terms. The first element of the Polish small-scale fisheries financial situation analysed in this chapter are vessel incomes measured by revenue. Total

[1] NMFRI is responsible for fisheries data collection in Poland under the DCF framework http://dcf.mir.gdynia.pl/

| No. | Specification | PG VL0010 | | PG VL1012 | |
|---|---|---|---|---|---|
| | | 2013 | 2014 | 2013 | 2014 |
| 1 | **Total revenues:** | **15,041** | **12,170** | **5,635** | **4,582** |
| | **Landing revenues** | **8,105** | **7,885** | **3,769** | **3,286** |
| | **Other revenues** | **9** | **28** | **30** | **32** |
| | **Subsidies (not included)** | **6,927** | **4,258** | **1,836** | **1,264** |
| 2 | **Total costs:** | **7,713** | **8,168** | **4,080** | **3,661** |
| | **Wages (gross value with unpaid labour)** | **4,880** | **5,494** | **1,788** | **1,662** |
| | **Energy consumption** | **812** | **782** | **613** | **629** |
| | **Maintenance and repair** | **438** | **274** | **448** | **440** |
| | **Other variables costs** | **1,009** | **1,008** | **521** | **463** |
| | **Fixed costs** | **404** | **446** | **475** | **285** |
| | **Depreciation** | **170** | **164** | **235** | **182** |
| 3 | **Profit/loss (without subsidies)** | **401** | **-255** | **-281** | **-343** |
| 4 | **Fixed assets (value)** | **16,744** | **16,976** | **10,885** | **11,610** |
| 5 | **ROI (return of investment)** | **2.39%** | **-1.50%** | **-2.58%** | **-2.96%** |

**Fig. 24.2** Structure of total income in two segments of the small-scale fisheries in 2013 and 2014. (Source: NMFRI data collected by RRW-19 forms)

revenues are composed of three main elements: landing incomes, subsidies and other incomes (Fig. 24.2).

The main component of revenues are landing incomes, which, in 2014, were within the range of between 54% of total revenues (for vessels <10 m) and 72% for vessels 10–12 m in length. This level of revenues is not enough to make a profit. The financial situation of the Polish small-scale fisheries profits are, however, improved by subsidies which constituted 28% (for vessels 10 > 12 m) to even 46% (for vessels <10 m) of its revenues. The subsidies from Operational Programme are transferred to these segments because of periodical limits in harvesting (fish population protection, temporary area closures, other). The other sources of income (additional services and ancillaries) were marginal and ranged from 0.5% to 3% of income.

A typical vessel in both segments annually grossed 15–16.7 thousand EUR in landing revenues. This is usually too low to cover incurred costs. The average total cost reported in the two analysed segments was quite diverse in 2014. According to available figures, the total average cost per vessel in segment 10 > 12 m amounted to 34.2 thousand EUR but for segment <10 m it amounted to only 15.5 thousand EUR (Fig. 24.3). The factors responsible for the total cost level in segment 10 > 12 m are mostly wages (more numerous crew), energy, maintenance, other variable costs and depreciation.

We have noted that the operational results of typical small-scale fisheries vessels are usually negative. In 2014, both segments reported unprofitability with a range of between −3.2% and −10.3% of their operational revenues (landings and other revenues). This financial condition was, in the past, regularly improved by subsidies but the income from this source has decreased annually. This negative operational

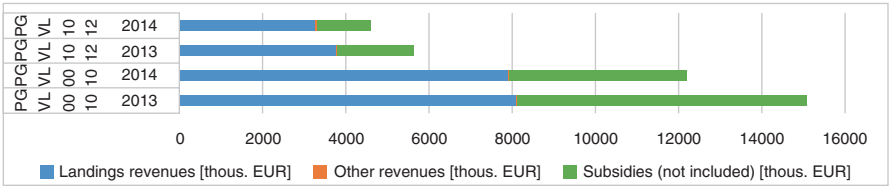


**Fig. 24.3** Economics of typical vessels in 2014. (Source: NMFRI data collected by RRW-19 forms)

situation is caused and correlated with the state of fish stocks in the Baltic Sea (Horbowy et al. 2015). The smaller size of cod and the decreasing number of other valuable fish species (Baltic salmon, catfish, perch) lead to lower catches. In combination with lower prices, especially of cod, and stable prices for other species, the supply value on the market is therefore lower. This situation has resulted in a decrease in the number of small-scale fisheries vessels operating in the Polish area (Kuzebski and Marciniak 2009). Despite these facts, the government's fisheries policy promotes small-scale fisheries and an extensive fisheries' model which seems more appropriate to conservation and regeneration but results in lower fisheries efficiency but sometimes –in better quality of fish landed and higher fish prices. It is also possible that lower subsidies could make the fishers close their business because of unprofitability and the negative long-term return of investments (Table 24.1). This mechanism is typical of a sector in decline (Porter 2000).

## 24.4 Threats

The main threats we can identify in the Polish small-scale fisheries sector are caused by the environmental conditions, internal competitions with other fishing sectors, current regulations limiting the period, size or time of fishing and an ageing fisher population.

Environmental threats to small-scale fisheries are the quality and quantity of fish stocks in the Baltic Sea. During the last 5 years, the condition of cod, salmon, flounder and herring decreased systematically (Horbowy et al. 2015). The same situation was also noticed regarding quantity. Small-scale fishers report the decreasing availability and condition of cod and flounder in the coastal area of the open sea. At the same time, first sale prices of these species have decreased or remained stable, which has significantly reduced fishers' incomes.

The second problem is the internal competition between fleet segments. In 2015, fleet segments over 12 m length constituted 23% of the number of vessels, but their capacity was 83% and engine power 66% of the whole fleet. Small-scale fisheries vessels are dependent on local fishing grounds, so there is a conflict between small-scale fishers (usually using passive gears) and trawlers (vessels larger than 12 m using active gears), mainly with regard to cod. New regulations (2016) have, how-

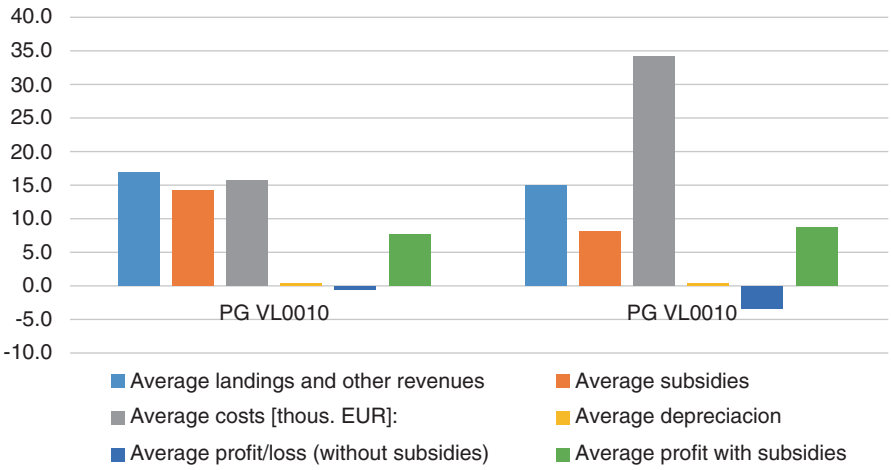


**Fig. 24.4** Marine areas covered by nature protection acts. (Source: Zaucha, Matczak (2015), Study of conditions for spatial development of Polish Marine Areas, Maritime Institute, Gdańsk)

ever, set an area with 'no-trawl' catches from the present 3 NM from the shore to 6 NM in different coastal areas.

In Poland, protected areas now cover an area of 6449 km$^2$, which is nearly 20% of Polish marine areas (Zaucha and Matczak 2015). Figure 24.4 indicates the territorial range of protected marine areas around the Polish coast.

The use of gillnets is considered as the main threat to marine birds in their wintering and resting area and the protection plans for Natura 2000 areas impose many restrictions on small-scale fisheries. These plans caused a lot of protest and are still pending. Their enforcement is expected to cause negative changes in small-scale fisheries catch possibilities.

Like the entire Polish fisheries, small-scale fisheries suffer from the prevalent age structure and lack of new 'professional entries'. The relatively low income, hard work and the increased number of regulations and controls do not attract young people to continue a family business. High costs of entrance, like the purchase of a boat and equipment, the cost of permissions, certification and personal training are barriers for newcomers. And an even bigger problem is to gain permission for introducing new effort (Horse Power – HP and Gross Tonage – GT), because, according to EU regulations, permission has to be related to the effort reduction in the existing fleet. Fishers who have been in the business for years have diversified their income by developing other activities like direct sale of catches, gastronomy, hospitality or other services for tourists. They emphasise (unpublished internal survey data in BaltSpace Project) that they usually have no successors and for many boats this may be the last generation that uses them. Using the DCF data collected from 393 vessels owners up to 12 m in length, Fig. 24.5 presents the age structure in small-scale fisheries in Poland in 2014.

Restrictions on fishing gear use, temporary closures and minimum fish size, regulations against discards, closed areas and many other biological, administrative and spatial regulations pose another threat to the activities of small-scale fisheries.

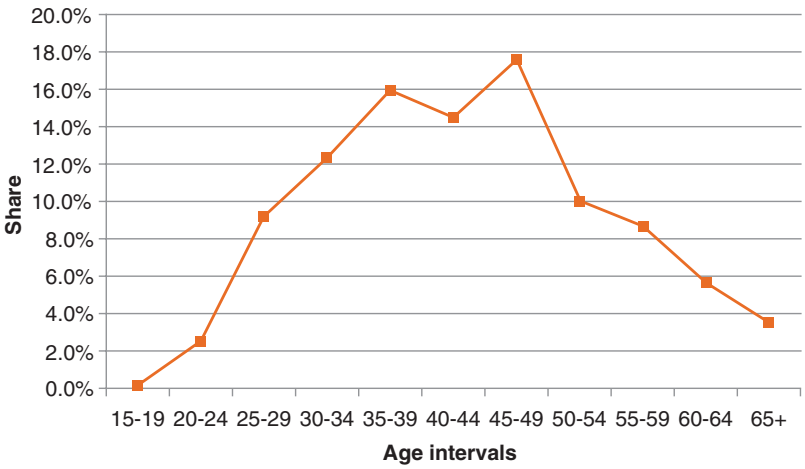


**Fig. 24.5** Age structure in Polish small-scale fisheries in 2014. (Source: NMFRI data collected by RRW-19 forms PBSSP (2016))

Preliminary research on the distribution channels in small-scale fisheries shows that fishers use every opportunity to increase their incomes and each channel is equally important to them (Rakowski et al. 2017). It is hard to qualify it as a threat, but the fact that small-scale fisheries generally sell their catches only on the local market is a limitation. On the one hand, it makes small-scale fisheries dependent on the local market, on the other hand, it gives stability of sold volume. Especially flatfish and cod are bought by local restaurants and offered in the summer season. Some fish are sold directly in the harbours as fresh. To achieve higher income from landings, fishers often sell them directly to local consumers and tourists, accumulating added value. This situation occurs seasonally, and after the tourist peak they use professional distribution channels.

It is hard to evaluate the role of the tourist sector in relation to small-scale fisheries. Although water sports occupy marine areas historically used by fishers, they do result in a substantial growth of visitors who become new buyers of fresh fish, as well as an increased harbour movement by generating better income and funds for infrastructure maintenance and development. For fishers, services for tourists (hospitality, gastronomy, trade) are considered as diversification of activities, which in many cases is more profitable than fishing. This situation leads to the conclusion that in the future small-scale fisheries may act as a tourist attraction rather than as a real business.

## 24.5 Institutional and Organisational Setting

Polish small-scale fishers used to belong to producer cooperatives, which collapsed shortly after democratic changes and free market introduction. Only one of them, located in Kąty Rybackie (Vistula Peninsula) survived and operates as an indepen-

dent body. Many contemporary fishers are voluntary members of fisheries associations and other forms of unions acting as producer organisations (PO). Overall, there are 17 Producer Organisations registered in Poland, of which 5 are not connected with marine fishery (aquaculture or processors) and 4 are not associated with the small-scale fisheries sector. Of the 8 POs, which have small-scale fisheries members, the largest operates along the coast, while others are focused on specific areas. POs are supported by the EU and allow Operational Programme (European Marine and Fisheries Fund – EMFF) funds to be obtained. Thus, many associations have transformed into producer organisations and invest in fisheries infrastructure in harbours, joint activities and organisation of the local market of fresh fish. They are obligated to develop a Local Management Plan and promote sustainable resource use. POs are founders and managers of Local Centres of First Sale of Fish (LCFSF), which are promoted as a local marketing organisational model. These Centres are a tool in the hands of Producer Organisations to increase the market power of fishers and provide most of the infrastructure for fish landing, sorting and storage. These organisations also act as agents in fish sales and warrantors of transactions. There are now 16 LCFSF in Poland.

POs associated with small-scale fishers along the Baltic Sea coast are: Union of Sea Fishers (from eastern border to Ustka), National Chamber of Fish Producers (Harbours Łeba, Ustka and Darłowo), Darłowo Group of Fish Producers and Fishing Boats Owners (Ustka, Darłowo,Kołobrzeg), Organisation of Boat Fishers – Fish Producers (Kołobrzeg, Chłopy), Kołobrzeg Group of Fish Producers (from Darłowo to western border), Westpommeranian Group of Fish Producers (Dziwnów, Świnoujście). A very strong group associated with small-scale fisheries is also the Central Pomeranian Fisheries Group. The latter organisation is not a PO, but is a member of LIFE (Low Impact Fishers of Europe) – umbrella organisation for European small-scale fisheries (http://lifeplatform.eu/).

In the area of the Vistula Lagoon (both sides of the peninsula) one Producer Organisation (Association of Boats Fishers "*Mierzeja*") operates and another (abovementioned Union of Sea Fishers) manages a LCFSF in Krynica Morska. In this area, there are 2 more organisations ("*Rybak*" from Tolkmicko, "Association of fishers from the Vistula Lagoon" from Frombork) which have no status as Producer Organisations.

In the area of Szczecin Lagoon two association operate: "Association of Fishers from Szczecin Lagoon, Kamien Lagoon and Dabie Lake", which in 2018 should enter the national PO register as the Szczecin Group of Fish Producers and Wolin Group of Fishers, which is associated with small-scale fisheries and is a member of LIFE.

There is no PO founded exclusively for small-scale fisheries. Even if there is an organisation which includes the term 'boats' in its title, (i.e. Organisation of Boat Fishers – Fish Producers, Darłowo Group of Fish Producers and Fishing Boat Owners) their members also own vessels that are over 12 m long. The small-scale fisheries sector members usually operate from the same harbour and are locally integrated as 'harbour users' or 'area users'. There are many connections between local associations, Fisheries Local Action Groups (FLAG), co-ops and business

partners. Many members of POs and associations are also members or leaders of FLAGs, representing fishers or the business sector.

All the associations cooperate during processes of dialogue with the government and other branches involved in the use of the maritime area, which is an important factor in the decision-making process. Most of them are involved in many consultations and research projects. They cooperate as well with scientists, FLAGs, other branch organisations, etc. To strengthen the voice of fisheries, they cooperate with each other, setting common position in negotiations with others.

Nevertheless, not all associations have transformed into Producer Organisations. Some focus on representing the interests of their members, who are local fishers. Some of them support POs involved mostly in the small-scale fisheries (thus the Central Pomeranian Fisheries Group strongly cooperates with a PO from Darłowo) and in some harbours a local division of the POs operate.

For small-scale fishers, who are actively involved in the catching process, all the administrative procedures are new, and they admit that they may have problems understanding them. For example, the PO in Świnoujście was founded by local fishers to protect the local market and fishers from the strong pressure of private wholesalers. Lack of experience and proper staff to organise the office has meant that this organisation is not active, even with the modernised harbour, new infrastructure and local market.

The small-scale fishing community, usually seen as full of local and personal conflicts, is surprisingly united when there is a need to organise something important for the local community, infrastructure or regulations. It shows the potential of this group for collective action. The small-scale fisheries have strong leaders, relatively large numbers and support of current politicians.

## 24.6 National and International Policy Role

The main function of Polish national policy is to establish a framework for various activities in marine areas and on the coast. In the case of small-scale fisheries administration, policies should ensure sustainable catches, supervision and monitoring and set rules to protect and balance the activity of different fleet segments (Polish Operational Programme for Fisheries).

After the post-1989 rapid privatisation of the fleet and development of a private processing industry, small-scale fisheries focused on catching the most profitable species, such as cod, perch, eel and flounder, traditionally demanded on the local market during the tourist season.

In May 2004, Poland joined the European Union and now follows the rules of the Common Fisheries Policy. The number of vessels, which up to 2003, was on a rather stable level decreased as the result of the EU effort adjustment programme. Owing to the specific features of the Polish fleet, where almost all the vessels target multi-

species, it has been impossible to protect all ‘segments’ from boat scraping. Each owner might decide to de-register their vessel for compensation and for 40% of fleet over 12 m this has led to scrapping. In small-scale fisheries, usually old fishers without successors decide to scrap their boats. It is considered a better solution than a real need (Marciniak et al. 2007).

Anyway, in 2007, a new European regulation governing fisheries entered into force, i.e. the European Fisheries Fund (EFF, Council regulation 1198/2006) with a new approach to fisheries governance. This approach promotes small-scale fisheries as important for the coastal region employment and supports boat owners in organising their work. This promotion of small-scale fisheries has resulted in the increase in vessels number. Instead of scrapping vessels for compensation, some fishers registered a number of small boats in place of a larger one. This legal gap was quickly fixed, but it gave fishers enough time to use it and enlarge the small-scale fisheries segment.

Another change provided by the EFF was putting more responsibility for managing fisheries on local structures instead of the central government. The EU recognises that coastal areas still have great dependency on a decreasing fishing sector and has decided to support structural changes and diversification of incomes.

In 2008, the Polish fleet severely overfished its cod quota and came under the EC penalty procedure. After negotiations, Poland had to give back the overfished amount of cod in 3 years (2009–2011). It resulted in a 3-year programme of effort reduction, whereby only 1/3 of the fleet over 8 m was allowed to catch cod in a particular year. Boats under 8 m in length were not covered by this restriction. This programme caused a lot of damage to the supply chain. Processors and wholesalers replaced Polish catches with imported fish. Fishers’ position on the Polish market has also been weakening (Rakowski 2015).

## 24.7 Future of the Small-Scale Fisheries in Poland

With the new approach of European and national fisheries policies, which support small-scale fisheries as an important element of the local economy and way to neutralise impoverishment of coastal regions, the future of this sector should be safe. On the other hand, there are a lot of threats to this sector, of which the most important are nature conservation, protection of birds and sea mammals, increased interest in areas from the tourism sector and the condition of fish stocks. All these lead to decreasing catch volumes by limitation of fishing areas, increasing selectivity of fishing gears and the reduction of fishing days due to fish conservation reasons. Data gathered on the financial position of the fishing fleet (PBSSP 2016) has recently indicated the weak economic condition of the small-scale fishing sector and tendency to diversify income. Many fishers tend to keep boats to obtain subsidies or compensation.

With the new operational programme (EMFF), there will be a new project of effort adjustment introduced, which may be the last chance for small-scale fisheries

to achieve sustainable profitability. Opinions from the sector show that this project may result in a substantial fleet reduction.

The National Spatial Development Concept 2030 (KPZK 2030) establishes coastal regions as being tourist dependent. In combination with the Natura 2000 environment protection programme, the lack of sites suitable for heavy industry and, what seems to be the most important factor, decreasing fish resources in the Baltic Sea, small-scale fisheries are the best way to save the culture of fishers. As an activity consuming work effort, small-scale fisheries should be treated as a year-round employer and source of income diversification from seasonal tourism.

## 24.8 Conclusions

Small-scale fishers in Poland make up the majority of the Polish fishing fleet and are distributed over 3 major areas: the Vistula Lagoon, Szczecin Lagoon and Puck Bay (western part of Gdańsk Bay). The majority of fish landed by small-scale fisheries are sold on the local market. There are some exceptions like spring herring from the Vistula Lagoon, but this does not change the general rule.

The family background of fishers is different on the western coast, where they treat fishing as a profession to that of the eastern part, where fishing is considered more as a traditional way of living. However, along the whole coast, owners of boats are mostly multi-generation families having strong bonds with the sea. There is, however, a shortage of successors, which makes the average age of small-scale fishers relatively higher than in the over 12 m fleet.

Up to 2015, there were no government programmes dedicated exclusively to the small-scale fisheries sector in Poland. Nowadays, this sector has, however, become an important issue in the policy of the Polish government and in EU policy. From an economic point of view, this sector is not important, even on the local scale, the income from boat fisheries has marginal share in regional income.

Data show that small-scale fisheries as a whole sector is not profitable without subsidies. Only because of this financial support and tradition will boat fisheries probably continue their existence, though in most cases being considered as additional or temporary activities. In addition, reduction in fishing days of most vessels may result in avoiding fleet reduction. However, profitability without subsidies will only be possible for certain number of boats, which only specialise in fish catches.

The most important conclusion to be drawn from this research is the role of small-scale fisheries as a complementary sector to tourism activity. Tourism in small-scale fisheries regions can stimulate the local demand for fresh fish and also for other activities like recreational angling, fish processing and storage. This stimulation can diversify fishers' distribution channels and increase local first-sale prices. Therefore, a strong emphasis should be put on developing new ways of using boats and fisheries activity as a whole.

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# Chapter 25
# A Critical Insight into Fisheries Policies and Its Effects on Small-Scale Fisheries in Estonia


**Joonas Plaan**

**Abstract** This paper gives an overview of and examines the ways in which national and international policies and strategies regulating trade, labour, development and environmental matters have influenced small-scale or coastal fisheries in Estonia. The transition from the Soviet system to market economy in the 1990s had negative effects on small-scale fisheries in Estonia, which have been corrected only recently, after the country joined the European Union. Today, small-scale fisheries in Estonia are characterised by low incomes, dependence on external financial support, geographical mobility, ageing fisher population, the combining of income sources, and the rise of tourism. In conclusion, while there are still many serious difficulties in coastal fisheries and the economic importance of fisheries is declining, investments from the European Fisheries Fund (EFF) and European Maritime and Fisheries Fund (EMFF) are slowly, but steadily helping small-scale fishers to regain their footing.

**Keywords** Estonia · Small-scale fisheries · Fisheries development · European Fisheries Fund · European Maritime and Fisheries Fund

## 25.1 Introduction

This chapter gives an overview and examines the ways in which national and international policies and strategies regulating trade, labour, development and the environmental matters have influenced small-scale fisheries in Estonia. The chapter has two aims. First, it attempts to give a general overview of small-scale fisheries in Estonia. Second, it analyses the effects of various European funds, including the

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European Fisheries Fund (EFF), European Maritime and Fisheries Fund (EMFF) and Common Fisheries Policy (CFP) on Estonian small-scale fisheries.

The EFF has brought remarkable changes to Estonian small-scale fisheries since Estonia gained its independence in 1991. From the mid-1990s, Estonian small-scale fisheries, both coastal and inland, faced a decline in their main target species catch rates (Vetemaa et al. 2002; Ådjers et al. 2006; Bernotas et al. 2016). Along with this, the fisheries were characterised by their unstable marketing opportunities and low income, amortisation of fishing equipment and other infrastructure (Rural Development Research Center 2010; Ministry of Rural Affairs 2013; Armulik and Sirp 2018). After restructuring small-scale fisheries in 2008, and after the EFF funding period in 2007–2013, the negative trend slowly changed and Estonian small-scale fisheries have started to become more economically sustainable. More young people are joining the fisheries and the activities of fishery-related communities have diversified (Kaljuvee 2015; Fisheries Information Centre 2017). Nevertheless, restructuring and the EFF have not helped to solve the socio-economic hardship that had accumulated over past decades. Moreover, some changes have created confusion between fishers and fishery managing institutions, and fostered inequalities among fishing communities.

This chapter has been structured into several parts. First, it gives an overview of small-scale fisheries in Estonia, including a brief history, description of current socioeconomic situation, and insight into fishing practices. In the second part, it describes the policy context of Estonian fisheries and gives an overview of the institutional and organisational structure. This is followed by critical insight into the current situation and list of challenges small-scale fisheries in Estonia is facing. The chapter ends with a future perspective.

Different methodologies are used for investigating small-scale fisheries in Estonia. The overview relies on official reports, management plans and fishery surveys considering coastal fisheries. In addition, in the last section, there are examples from collected data during ethnographic research in the Pärnumaa Fisheries Area in the period of 2012–2014, and research into various stakeholders in Saaremaa and Hiiumaa Fisheries Areas in 2013. This includes semi-structured interviews, phone interviews, and participant-observation among various stakeholders in coastal communities, including fishers, fisheries scientists and managers, local politicians and entrepreneurs (see Plaan 2018).

### *25.1.1 Definition of Small-Scale Fisheries in Estonia*

Estonian fisheries are divided officially by the Estonian Ministry of Rural Affairs into six categories: Ocean fisheries (*kaugpüük*), coastal fisheries (*rannakalandus*), Baltic Sea open sea fisheries or trawling (*Läänemere traalpüük*), inland fisheries (*sisepüük*), recreational fisheries, and aquaculture. This chapter will focus on the coastal fisheries, including both Baltic Sea coastal fisheries and inland fisheries, both of which are described as small-scale fisheries.

Coastal and inland fisheries are defined by boat size and fishing capacity. Accordingly, maximum boat length is 12 m and maximum fishing capacity is 183 kW and 38 gross tonnage (GT). Coastal fishery is allowed within 20 nautical miles of the coast or inside the 20 m isobath zone (Ministry of Rural Affairs 2013). Small-scale coastal fleet constitutes 97% of total national fleet (European Commission 2016).

### *25.1.2 Historical Background*

Before the Soviet Union occupied Estonia in 1941, the entire Estonian fisheries fleet could be described as small-scale, a situation which changed with the Soviet power. During the Soviet occupation (1944–1991), fisheries were managed centrally and all small-scale fishers were forced to collectivise. No one was allowed to own a personal boat or ship. The fleet was modernised and motorised, and small-scale fisheries were forced to shift towards large-scale fisheries.

Before 1970s, there were few if any regulations concerning fisheries. By the beginning of the 1970s, Baltic Sea fish population was in decline and in 1975 the Soviet Union ratified the Gdansk Convention[1] (1973) and issued a new Fishery Law. This change marked an even stronger move from local management towards central governance. Since 1975, the regulations have become more internationalised and fisheries' management started shift away from local communities to external institutions.

After Estonia regained its independence in 1991, the state kept internationalising fishery regulations. All this has meant that the regulations were modified and changed very often, especially in the second half of the 1990s, when Estonia was harmonising its laws and regulations with international organisations. In 1991, Estonia joined Food and Agriculture Organisation (FAO). In 2003, Estonia became a member of the North East Atlantic Fisheries Commission (NEAFC), and in 2005 a member of the North West Atlantic Organisation (NAFO) and International Baltic Sea Fishery Commission (IBSFC). Vetemaa (2002) gives a detailed overview of the changes in small-scale fisheries. Overall, the constant restructuring and changing of laws created an atmosphere that was characterised by instability and few perspectives for the future. This was reinforced by economic difficulties.

With the collapse of the Soviet Union, the economic system of Estonia also collapsed and this had a devastating effect on the lives of all fishers in the country. The effects of the transition from the Soviet economic system to the market economy have been analysed in detail by Vetemaa et al. (2001, 2002, 2006) and Eero et al. (2005). To give a brief overview, after the collapse of Soviet Union, fishers were able to privatise cheaply the fishing gear and boats that used to belong to collective

[1] The Gdansk Convention is Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts. The Gdansk Convention was signed on the 13 September 1973 by Governments of the Baltic States (Denmark, Finland, German Democratic Republic, Federal Republic of Germany, Poland, Sweden and Soviet Union).

farms. In addition, the abolition of the border regime increased pressure on stocks as the first-buyer prices for fish increased (Vetemaa et al. 2006). For this reason, by the mid-1990s most coastal fish stocks in Estonia were being overfished (Ådjers et al. 2006). In addition, production costs grew, the traditional market in Russia was closed, and possibilities to find new markets were restricted due to the low profitability of the coastal fisheries under the capitalist economic system.

## 25.2 Description of Estonian Small-Scale Fisheries

Estonian small-scale fisheries are in a process of significant change. At the beginning of the century, the fisheries were on the verge of collapse: according to International Council for the Exploration of the Sea (ICES) fish stocks in the Baltic were at a historical low, many old fishing ports were breaking down and the fishing population was ageing (Ministry of Rural Affairs 2007; ICES 2012). This is believed to have been caused by the transition from the Soviet system to a market economy (Vetemaa et al. 2006). As Vetemaa et al. (2006) describe and fishers explained in interviews, there were three main reasons for this collapse. Firstly, in the 1990s, there was little or no investment from the Estonian state in coastal fisheries. Secondly, weak monitoring of fisheries allowed overexploitation in the beginning of the 1990s, which may have caused the decline in fish stocks. Finally, declining profitability in the second half of the 1990s discouraged new generations of fishers to enter fisheries. Today small-scale fisheries may be described on a much more positive note. With the help of the EFF money in the period of 2007–2103, 61 harbours and landing sites have been renovated, 8 harbours received investments to build cold storage and 28 fishers have renewed their fleet (Ministry of Rural Affairs 2013). Nevertheless, while various funds have allowed the fleet to be renewed and port facilities improved, the earnings of costal fishers remain low compared to the average Estonian salaries, which have risen 18 times since 1993 (Vetemaa et al. 2006; Statistics Estonia 2018). Today most small-scale fishers have diversified their economic activity. Fishing takes place mainly in spring and autumn and is supplemented with a variety of business activities, e.g. tourism in mid-summer and forestry in winter. While most of the fish is still bought by large fish mongers, many communities are increasingly processing, branding and selling the catch themselves. Overall, all this has attracted young people from coastal communities to get involved with the fisheries and for the first time in 20 years, the future of Estonian small-scale fisheries looks more promising. Relatively, the younger generation of Estonian small-scale fishers are fairly well trained – EFF funding has been used to offer different courses and educational trips to other small-scale fisheries in Europe. (Fisheries Information Centre 2017) (Fig. 25.1 Small-scale fisheries in Estonia).

**Fig. 25.1** Small-scale fisheries in Estonia. Kihnu fishers taking out Baltic herring fish traps after spring season. (Photo Credit: J. Plaan)

### *25.2.1 Socio-Economic Relevance of Small-Scale Fisheries for Estonia*

Estonian fisheries, including distant-water fishery, Baltic Sea and inland fishery[2] provided 0.2% of Estonia's Gross Domestic Product (GDP) in 2015: Small-scale fisheries represented 17.9% of this figure (Statistics Estonia 2018). The most profitable segment is the distant-water fishery, targeting shrimp as the main species in Svalbard, the North West Atlantic and the North East Atlantic fishing grounds. The Baltic Sea trawling sector, relying exclusively on sprat and Baltic herring, is the biggest segment: fishing 65% of the total catch of Estonia (Armulik and Sirp 2018; Statistics Estonia 2018). Based on first-sale prices, small-scale fisheries' sales revenues are estimated to have amounted to 10,421 million euros in 2016 (Armulik and Sirp 2018), making small-scale fisheries the second most profitable fishery segment. The Estonian population is 1.323 million people (as of January 2019) with 2376 (0.18%) registered as small-scale fishers. Small-scale fishers make up the largest percentage among these three sectors: distant water fisheries 100 fishers (3.7%), Baltic Sea fisheries 215 fishers (8%), and small-scale fishers 2376 (88.3%). Despite the smaller scale, revenues from inland waters are relatively large, contributing

[2] Estonian fisheries also include recreational fishing and aquaculture. These sectors are excluded from the comparison.

almost 20% of all revenues from fishing (Vetemaa and Eero 2005). The Estonian fishing sector, including small-scale fisheries, is considered as a part of a wider sector, including agriculture, forestry and fisheries in general.

The areas where small-scale fisheries are carried out are inhabited by approximately 175,000 people, excluding major cities in the areas. According to the Fisheries Information System of the Ministry of Rural Affairs, in 2016, there were 2376 registered small-scale fishers: of whom 1952 people were registered as Baltic Sea coastal small-scale fishers and 424 as inland small-scale fishers (54 in Lake Võrtsjärv and 370 in Lake Peipus). Women constitute 2% of fishers. For most fishers, fishing is a supplementary occupation combined with other occupation(s). It is estimated that just 3–10% of fishers obtain most of their income from fisheries and only 8% get more than 50% of their income from them (Armulik and Sirp 2014).

### *25.2.2 Locations*

Small-scale fisheries are conducted in an area, which is defined in Estonia as the coastal fishery area. This includes sea coasts, lakes, or ponds and river estuaries, where the fishing sector provides notable employment. This excludes bigger cities within the costal fishery area. As mentioned above, small-scale fisheries are divided into Baltic Sea coastal fisheries and inland fisheries. Seaside coastal fisheries are divided geographically into four areas: Baltic Proper, Gulf of Riga, Väinameri, and Gulf of Finland. Inland coastal includes fisheries-related areas around Lake Peipsi or Peipus, Lämmijärv and Pihkva or Pskov Lake (3555 km$^2$), and Lake Võrtsjärv (271 km$^2$) (Estonian Ministry of Agriculture 2007). Baltic Sea coastal fisheries cover a shoreline that is 3794 km long, excluding fresh-water fishing areas (Ministry of Rural Affairs 2013).

In 2008, the Estonian coastline, both the sea coast and the inland coast, was divided into eight Fishery Areas. These Fishery Areas follow administrative division of Estonia.[3] Baltic Sea coastal fisheries include Harjumaa, Hiiumaa, Läänemaa, Pärnumaa, Saaremaa and Virumaa Fishery Areas. Inland fisheries include Lake Peipsi and Lake Võrtsjärv Fishery Areas (Fig. 25.2 Estonian small-scale fishery areas). Some Fishery Areas share geographical areas, where, for example, fishers from Hiiumaa, Pärnumaa and Saaremaa Fishery Area may share same fishing grounds in Gulf of Riga or Väinameri. Each Fishery Area includes a Local Action Group (LAG), whose most important task is to mediate EFF (2007–2013) and EMFF (2014–2020) subsidies between the local fishers and Estonian Ministry of Rural Affairs (formerly Estonian Ministry of Agriculture).

[3] At time of writing, the administrative division of Estonia changed due to administrative reforms in 2018. The impact on small-scale fisheries is yet to be seen.

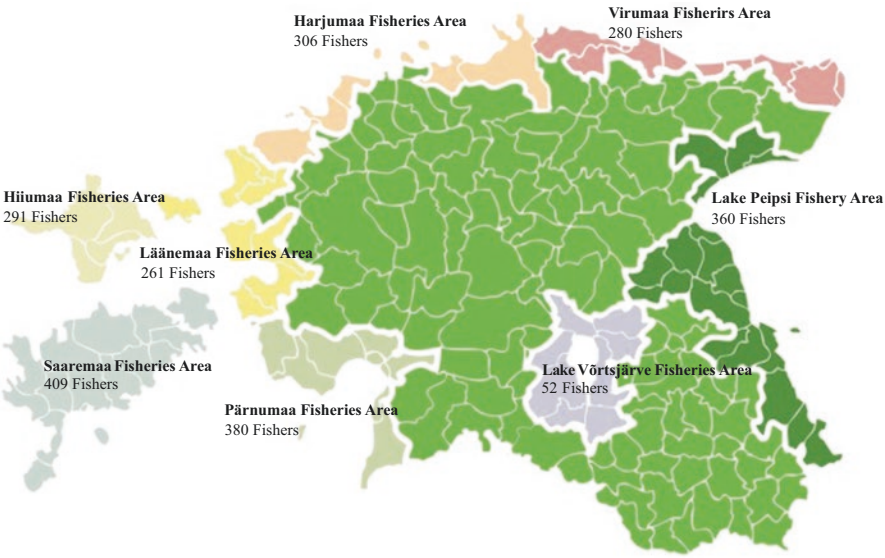


**Fig. 25.2** Estonian small-scale fishery areas (Kalandusvõrgustik 2010)

### *25.2.3 Small-Scale Fisheries Target Species, Gears and Practices*

Economically, the most important coastal fisheries species are Baltic herring (*Clupea harengus membras*) and European perch (*Perca fluviatilis*). In 2016, the Baltic herring fishery constituted 73.7% of the yearly catch while European perch fishery only 12.6%. Nevertheless, Baltic herring is a fairly cheap fish and represents only 30.8% of the entire coastal fisheries' gross value (European perch comprises 41.8%). During the period 2013–2015, the revenues of fishers have declined because herring and perch prices as the most lucrative species are showing long-term term downward trends (Armulik and Sirp 2018). Most important freshwater species are European perch (*Perca fluviatilis*), Zander (*Sander lucioperca*) and Common bream (*Abramis brama*) (Eschbaum et al. 2014). Inland fisheries comprise 21% (Lake Võrtsjärv 1.3%, Lake Peipus 19.7%) of the entire small-scale fisheries catch in Estonia (Armulik and Sirp 2018). For both fisheries, Vetemaa et al. (2006) have divided target species into three categories: (1) herring, (2) high-value species such as perch, pikeperch, eel, pike, whitefish, salmon and sea trout, (3) less valuable species such as cyprinids, flounder, burbot, etc.

Estonian small-scale fisheries fleet consists of 1557 boats, with a fishing capacity of 22.065 kW and 2201 GT (Petron 2018). The fisheries use four types of fishing gear: (a) line fishing, different types of hand line fishing and longline fishing equipment; (b) gill net; (c) fish traps; and (d) seine net. Coastal fishing metiers can be divided into two groups: (1) large quantity fisheries targeting herring, and (2) small quantity fisheries targeting various high-value and low-value species. Often coastal

fishers combine these two fisheries. Large quantity fisheries are carried out from a 10 to 12 m boat with a crew of 3–4 fishers. Under the 'derby-style' system (*Olümpiapüük* in Estonian) large numbers of crews compete with each other to catch the herring quota in a particular fishing area during a limited time window in early spring and late autumn. Fishing lasts 1–3 weeks until the quota is filled, forcing fishers to work day and night (Plaan 2018). The consequences of this "race for fish" system have been reported by Hannesson (2000). Small quantity fisheries are practiced from small 4–6 m row or motorboats. Crew does not exceed two fishers. Depending on the species the fisheries may be open year around. Because of the low quantities and labour characteristics (fishing is done only as a part-time job), fishers spend on the water only few hours a day, sometimes fishing only at weekends.

## 25.3 Socio-Economic Situation: State of the Art

Today, Estonian small-scale fisheries socio-economic situation may be characterised by: (1) low incomes, (2) dependence on external financial support, (3) geographical mobility, (4) an ageing fishing population, (5) the combining of income sources, and (6) the rise of tourism.

First, fisheries are characterised by low-income. According to a survey in 2012, the average income in the fishery sector was 698 euros per month, which is 17% lower than Estonian average gross-salary (Estonian Ministry of Agriculture 2013). It is worth bearing in mind that the official statistics may not show income from the fish sold 'under the table'. After 2012, the fishery sector is viewed as one with the agriculture and forestry sectors. In the sector, the average gross salary was 1151 euros per month in 2017 (Statistics Estonia 2018). In 2010, 44% of small-scale fishers earned less than 1000 euros per year (Eesti Uuringukeskus 2012). The study has not been repeated later but even these old data highlight what is one of the biggest socio-economic problem in Estonian small-scale fisheries. The main cause of the low-income is low first-sale prices (Fisheries Information Centre 2017; Armulik and Sirp 2018). Estonian Ministry of Rural Affairs defines this as one of the main factors that has caused youth to leave fishery-related communities, and is one of the major reasons why small-scale fishers' average age has been increasing and the population dropping between 1999 and 2008 (Ministry of Rural Affairs 2013).

Second, small-scale fisheries have become increasingly dependent on external financial support, especially on monetary support from the EU. In the period 2007–2013, Estonian Ministry of Rural Affairs used the European Fisheries Fund (EFF) to improve the situation of small-scale fisheries in Estonia. The EFF was created by the European Commission with the aim to provide funding to the fishing industry and coastal communities to help them to adapt to changing conditions in the sector: the fisher population was declining, the low income was not attracting young people and the infrastructure was slowly falling apart. The aim was to restructure small-scale fisheries in such a way they would become economically resilient and ecologically sustainable. For the period of 2007–2013, the EFF allocated €84.6 mil-

lion for Estonia, including €28.2 million added by Estonian State. Today, most small-scale fishing related communities find it hard to survive without external financial support. In accordance with the EMFF, the Estonian Ministry of Rural Affairs has already created a development plan for the years 2014–2020. The largest amount of monetary support has been assigned to be invested in technology (e.g. fish plant machinery, cold storage units) and innovation (e.g. collaboration with science). The aim is to make fishing ports more multifunctional and to use the existing infrastructure as efficiently and economically viable as possible (Ministry of Rural Affairs 2013).

Third, since joining the EU and implementing CFP, Estonian small-scale fishers have become geographically increasingly mobile. There is little research on the topic but personal conversations and interviews with fishers provide evidence that before joining EU there was little or no seasonal migration among coastal fishers. Conversely, in the study area in Pärnumaa Fisheries Area, several small-scale fishers were interviewed who stated that they migrate seasonally to other EU State waters to work on trawlers. In 2013, almost half of the Baltic herring trawlers in Bothnia Gulf, Finland, were owned by Estonian fishers, accompanied by Estonian crew (Nylander 2013). In addition, many men work seasonally as crew on trawling boats in Norway. Several Estonian small-scale fishers also move between the coast of Finnmark in Northern Norway and Estonia taking advantage of different fishing seasons and Norwegian fishery legislation (Gerrard 2013).

Fourth, Estonian small-scale fishery is facing the problem of an ageing population. In 2012, only 9.9% of small-scale fishers were under 30, while over 60 year-old fishers constituted 24.7% of fishers (Ministry of Rural Affairs 2013). While, there are signs that there are more young fishers entering the sector, there is still long way to go. Young fishery related community members have brought entrepreneurial activity and diversified income for coastal communities (interviews with LAG members 2013; Kaljuvee 2015). All fishery areas have been using EFF funding to train and offer technical skills to their small-scale fishers. The main focus has been on how to start a business; how to write a business plan; how to add value to the catch; and how to apply for external funding. The period of 2007–2013 shows that the most active fishers are the younger generation, who have just entered the small-scale fishing sector or are planning to do so in the future.

Interestingly, coastal fisheries are characterised by entrepreneurial activity and occupational diversity. Many fishing communities are enhancing the value of their catch within the community: all fishery areas (except Lake Võrtsjärv) have their own small regional fish processing plant(s) and several areas have created their local brand. This has allowed fishers to eliminate the middle man and sell their fish directly to customers. In 2010, 48% of fishers were processing and marketing their catch (Eesti Uuringukeskus 2012). In 2013, the number was already 66% (Statistics Estonia 2013). For example, Koguva Fishing Port in Saaremaa Fishery Area has its own brand, and it processes, packs and sells most of its catch to locals and visiting tourists directly from the wharf. Läänemaa Fishery Area has also created its own brand *Kipperi Kala* which is used for better marketing for the regional catch. The most active regions in developing new marketing schemes are Läänemaa, Lake Peipsi, Saaremaa, Harjumaa and Hiiumaa Fishery Areas. Nevertheless, because of

the low profitability and seasonality, the majority of coastal fishers are part-time fishers, supplementing their income with off-season work mainly in forestry or tourism (Vetemaa et al. 2006; Lambing and Reinma 2014).

Lastly, tourism has become an important secondary source supplementing fishing (Fisheries Information Centre 2017). Most fishery areas have their own fishery-tourism information centre (Hiiumaa, Läänemaa, Pärnumaa, Saaremaa, Peipsi Lake and Lake Võrtsjärv). All fishing harbours are renovated, so that in the future they can accommodate next to fishing boats also recreational boats and yachts. Coastal communities have used, besides EFF funds, various EU funding schemes to renovate old sheds into small bed and breakfast cabins, to build new conference centres for smaller groups, and to organise various events to attract visitors. In a few fishery areas (Hiiumaa, Harjumaa), fishers organise fishing tours for tourists. Rural and fishery related tourism is supported at a state level and has become an important characteristic of small-scale fishing communities.

## 25.4 Policy Context

After Estonia's accession to the European Union, local fisheries are regulated by the European Union's Common Fisheries Policy (CFP), which covers the use and protection of fishery resources, the structure and market organisation policy, and foreign policy on fisheries. The latter also includes fisheries' agreements with non-EU countries, and negotiations in international organisations.

The management of small-scale fisheries is divided between three institutions: the Estonian Ministry of Rural Affairs, the Ministry of the Environment, and the related Environmental Inspectorate. Scientific research is carried out by University of Tartu and University of Life Science.

The areas of the Ministry of Rural Affairs are the development of market organisation system, the award of structural support and state aid and the management of commercial fishing. All these areas are in correlation with the EU Common Fisheries Policy (CFP), including the structure of fisheries' markets. The structural support and state aid rely on and follow the guidance of the European Fisheries Fund (EFF) (2007–2013) and the European Maritime and Fisheries Fund (EMFF) (2014–2020).

The Ministry of the Environment drafts and implements the Policy of the Protection and Use of Fishery Resources, including the regulations to assure the reproduction of fish stocks and the protection and restoration of spawning grounds and habitats. Most of the fisheries are also regulated by international organisations. Today the distant-water fisheries are regulated through annual meetings of the Scientific Committee of the member-states of The Northwest Atlantic Fisheries Organization (NAFO) and the North East Atlantic Fisheries Commission (NEAFC), Baltic Sea trawling management is entirely regulated by the European Commission. Coastal and inland fisheries are managed nationally, with the exception of the migrating Baltic Sea fish species (Baltic herring, European sprat, Atlantic cod, Atlantic salmon), which are regulated by the European Commission under the

Common Fisheries Policy. The fisheries of local fish species (European perch, Zander, etc.) are managed and regulated by the Ministry of the Environment. In both cases the principles of the CFP have been implemented. While the fishing legislation has been coordinated with the EU legislation, the definitions, rights and obligations of small-scale fishers have been structured according to national legislation.

The monitoring of fishing activities is carried out by the Environmental Inspectorate belonging to the Ministry of the Environment. Environmental Inspectorate exercises supervision in all areas of environmental protection. It coordinates and executes supervision regarding the use of natural resources and the protection of the environment.

The Ministry of the Environment and the Environmental Inspectorate cooperate closely with the University of Tartu and University of Life Science, which carry out scientific research into the environment and distribute information regarding what is happening in the environment, including the data needed to make decisions for the organisation of inventories and monitoring.

At the local level, small-scale fisheries are supported and guided by Local Action Groups (LAGs), initiated and funded largely from EU. All LAGs belong to the Fisheries Groups Network. The Fisheries Groups Network acts as a supporting structure between the ministries and the LAGs and was formed with the aim of fulfilling the objectives set by European Fisheries Fund (EFF) and to allow better usage of the different EU funds.

### *25.4.1 National and EU-Policy Measures and Influences*

The CFP has increased geographical mobile activity of Estonian small-scale fishers between other EU states. This has affected both Estonian small-scale and large-scale fisheries. This is a new form of migration, which can be linked directly to the CFP, as fishing beyond territorial waters was not allowed before implementing the policy. As the fish stocks in Baltic Sea keep declining and the allotted quotas become smaller, many fishers migrate seasonally to Finnish waters in spring. Today, more than half of the Baltic herring trawlers in Bothnia Gulf, Finland are owned by Estonian fishers, accompanied by Estonian crew members, and the number is increasing (Armulik and Sirp 2018). According to Nyland (2013), the ownership of Baltic herring trawlers in Finnish waters was 46.3% Estonians, 46.9% Finns and 6.8% Swedes in 2013. This movement has occurred because of several reasons. First, CFP allows fishers in every member state to allocate and purchase fishing quotas from neighbouring member states. Second, many fishers from richer Scandinavian countries happily sold their quotas and vessels to Estonians (and other Baltic State fishers), who were more willing to work for the lower incomes that the Baltic herring and the European sprat catches provided. Lastly, Estonians, who used their Soviet trade connections, managed to get better prices for the herring and sprat. Mainly by selling it to the Ukraine, Belorussia, and Russia, where canned Baltic herring and sprat is a highly popular dish. Overall, while CFP has affected

Estonian fisheries in general, it has increased mobility for small-scale fisheries and allowed them to stretch the fishing season and improve earning opportunities.

## 25.5 Institutional and Organisational Context of Small-Scale Fisheries

Each fishery area has its LAG. The aim of the LAG is to support practices involved with fishery and to support coastal communities, to support sustainable development, and to develop a strategy plan for the local small-scale fishery sector. LAGs connect different stakeholders in the fisheries sector, including fishers, NGOs, various entrepreneurs and local municipalities. They act as a mediator between different stakeholders at both Estonian and EU level.

### *25.5.1 LAGs – The Current Situation*

Initially, LAGs were established to improve the capacity for collective action and allows fishers to influence governance arrangements according to local particularities. Phone interviews and analysis of LAG organisational structure show that by 2015 only a fraction of fishers have joined their local association (LAG) making their voices hard to hear. The smallest involvement is in Harjumaa Fishery Area, where only 7% of the small-scale fishers have joined the association. Also, both in Virumaa and Lake Peipsi Fishery Areas less than 17% of fishers have joined the association. Overall in 2015, only 33% of fishers have joined such associations.

There are several reasons for the low involvement among fishers. In the Harjumaa Fishery Area, it may be explained by its geographical location near to capital city Tallinn, providing better access to fisheries related organisations and other occupations. In East-Virumaa and in Lake Peipsi Fishery Areas, most small-scale fishers are Russian speaking minorities, making them hard to integrate into Estonian speaking institutions. In several fishery areas (Läänemaa, Pärnumaa, and Hiiumaa), fishers explain their low involvement due to a lack of trust in the state. In some fishery areas (Hiiumaa, Saaremaa), some fishers complained during interviews that the associations have been ‘highjacked by entrepreneurs’. For example, 60% of the members of the Hiiumaa Fishery Area LAG are local entrepreneurs, whose main activity is not fishing.

Interviews with Hiiumaa, Pärnumaa and Saaremaa LAG members showed that some entrepreneurs have joined a LAG in order to become eligible for EFF and EMFF funding. In addition, several fishers have registered themselves as entrepreneurs in order to save on taxes. This has had both positive and negative effects. On the positive side, many entrepreneurs are local young community members who use the EFF, EMFF and other EU funds to diversify their activities, while seasonally participating in small-scale fisheries (see Box 25.1).

**Box 25.1: Illustration of Small-Scale Fisheries in Estonia**
Hiiumaa, the second biggest island in Estonia, has a long tradition of coastal fisheries, since it was inhabited 5000 years ago. During the Soviet era, fisheries in Hiiumaa were organised through cooperatives "Hiiu kalur", employing about 1400 fishers (Põllu 2004). In 2015, Hiiumaa had a membership of 8589 people, out of which 317 individuals were registered as coastal fishers (3.7%). Since 2008, when a Local Action Group "Society of Hiiumaa Sustainable Fishery" or better known as NGO Hiiukala was formed and the first investments came through the EFF, fisher population has risen by 26 individuals. However, only 30% of coastal fishers consider fishing as their main income and 65% supplement their income from state pensions. Because of poor fish stocks, the fishers in the area are focusing more on fisheries-related tourism services than in any other fisheries area. Small-scale fishery catches have also declined significantly in recent years, while seal and cormorant numbers have increased. Cormorants are believed to be one of the biggest reasons for the decline in fish populations (Vetemaa et al. 2010). Fisheries of Hiiumaa share the same problems as most coastal fishing areas in Estonia: the fisher population is ageing and youngsters do not enter the fisheries mainly because of the high investment required in fishing gear and licences, and also low profitability. The seasonal characteristics of fisheries and lack of alternative job opportunities in Hiiumaa force young people to leave the island. The representatives of the society feel that EU investments in small-scale fisheries have helped the local fisheries to survive so far but for a better future the policies concerning fishing licences need to be changed and the state and local municipalities have to rethink regional development in general.

The second main issue is that some of the tasks of the organisations that manage and organise small-scale fisheries overlap and some of the aims contradict each other (Plaan 2014). Many high officials, scientists and specialists who work for the organisations have admitted either openly or in personal interviews that because of the long process of restructuring fisheries since independence in 1991, it is hard to follow all the changes. Many regulations are outdated, the work has become more bureaucratic and sometimes decisions are made far from the LAGs. Research in Pärnumaa Fisheries Area showed that this has created mistrust between fishers and fisheries officials, and in some cases, between fishery scientists, all of which has resulted in poaching and not following the regulations.

In addition, often the aims of the EFF, EMFF and LAGs contradict the aims and measures of environmental conservation Estonia has taken, for example contradicting the aims of NATURA 2000 network.[4] Both Läänemaa and Pärnumaa Fishery

[4] Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. As prerequisite for becoming

Areas are covered by extensive environmental restrictions, which do not allow fishers to enter into protected areas throughout the year or in certain periods of the year. Interviews with top environmental officials and fishery scientists revealed that in many cases fish stocks have recovered but often the conservation measurements and fisheries regulations are outdated (Plaan 2014). One of the biggest problems has been the increase in the cormorant population and its effect on fish stocks (Rattiste and Saks 2009; Vetemaa et al. 2010). Conservation regulations and policy that do not allow fishers, themselves, to regulate cormorant population has made the situation in some cases critical (e.g. Debout et al. 1995). Hence, when the EFF and EMFF attempt to support the environmental, economic and social sustainability of small-scale fishery communities, in many cases, fishery regulations and conservation measurements impede them.

## 25.6 Small-Scale Fisheries and Its Challenges

Despite several positive trends that have been highlighted earlier, Estonian small-scale fisheries still face a number of challenges.

First, often investments made with EFF funds have not solved societal problems which have cumulated during years of fluctuations in fish stocks (Vetemaa et al. 2006), low first-sale prices (Ministry of Rural Affairs 2013), economic instability and conflict with the state officials (Plaan 2014, 2018). Solving the problem of instability in fisheries and socio-economical hardship with better infrastructure (e.g. new fishing equipment or renovated ports) has not delivered a better life for already stressed communities. If mitigation and adaptation to low fish prices and declining population can be tackled along with the immediate needs for employment, economic development, and public health, there is a greater likelihood of a successful sustainable life for small-scale fishers. Nonetheless, there is a concern that the focus of the state's plans is mostly on the technical and infrastructural interventions with little, if any, attention to social and institutional issues. For example, Koguva Port in Saaremaa Fishery Area was renovated using funds from the EFF and European Union Structural Assistance in 2008. The cost of renovation work was €483,000. In 2008, the traditional fishing community Koguva had 3 small-scale fishers, today there are 2 fishers left. Hence, the funds used for infrastructure do not necessarily fixed the societal problem, where there are just not enough fishers in the community. Young men have moved away a long time ago and soon there will be no one who knows how to pass on the knowledge about fishing.

Second, often, those few fishers who have stayed in the coastal communities do not have enough qualifications or education to write or manage projects funded by the Estonian State, EU or EFF/EMFF. According to study in 2012 (Eesti Uuringukeskus 2012), 48% of small-scale fishers have primary education, 44%

an EU Member, Estonia had to submit proposals for Natura 2000 sites meeting the same criteria as earlier EU Member States.

have secondary education, and only 8% have higher education. In some cases because of the lack of experience and knowledge, several projects have failed and fishers have lost their personal capital or ended up in debt to funders. For example, a group of Kihnu fishers in Pärnumaa Fishery Area invested personal capital together with EFF funds into cold storage in 2007. Unfortunately, due to mistakes in managing the newly created business, the cold storage was declared in bankrupt after just the second year and fishers who invested in the scheme were left broke. Hence, low education and little experience have kept many potential fishers away from EFF/EMFF funds.

Third, in some cases EFF funding has been used by outsiders who have little relation with small-scale fisheries, if any, and have used the funding schema for personal gains. As an overview and analysis of LAGs reveal, many members are from non-fishery related fields and are members only to become eligible for funds. Interviews with EFF fund users in Saaremaa and Hiiumaa fisheries areas also showed that in some cases people unrelated to the traditional communities use the funds to start personal tourism business. This has created conflicts within the community and does not support the wellbeing of local people. For example, a new owner of newly renovated port in Saaremaa Fishery Area admitted that in spite of the 'beautiful words' in the reports, he is actually into real estate business and is not that interested in developing small-scale fisheries. In his words the EFF fund has been used to add value to his property (anonymous, interview 2014).

Finally, despite the fact that EU funds support fishery-related tourism as one of the main tools to create economically sustainable fishery-related communities, these funds do not support everyone in the communities. Ethnographic research in Saaremaa and Pärnumaa Fishery Areas show that tourism supports only few families in the community (Plaan 2014). Newcomers to the tourism sector are usually pushed away from the sector and fund providers prefer to support already established entrepreneurs. This again has created conflicts and envy within community members and social inequalities in the traditional fishing villages.

## 25.7 Looking to the Future

Thanks to restructuring and the EFF, the socio-economic situation of Estonian fishery-related communities has improved and community members look to the future with a positive spirit. Interviews with the heads of the Local Action Groups reflect this mood.[5]

First, they believe that one of the most important objectives for the future is to continue to keep building small regional fish processing plants and to create better marketing opportunities for fishers. This is seen as the best way to get better prices

[5] Phone interviews with heads of Saaremaa, Peipsi Lake, Harjumaa, Lake Võrtsjärv and Pärnumaa LAG (2015).

for the catches and increase fishers' incomes. Local processing, adding value to the catch and direct marketing are seen as key to decreasing reliance on large fish mongers.

Second, an important task is to continue to diversify income opportunities for coastal communities. The EFF funding period has shown that tourism and other supporting businesses help to keep young generations in the communities (Lambing and Reinma 2014). Moreover, small-scale fisheries add value to new tourism enterprises and support traditional lifestyle. In the future, LAGs hope to integrate small-scale fisheries better with other local businesses and hope to provide more off-season activities for fishers.

There is also a crucial need to integrate small-scale fishers into the activities of LAGs. The heads of the LAGs hope that the success of the EFF will attract more fishers to join the association. This will give fishers much better access to decision-making and help them to get their voices heard.

Nevertheless, many heads of the LAGs agree that there have been mistakes with funding. Some projects have failed because of a lack of training and knowledge. In some cases, EFF funding has been misused. There is a need for better supervising and training in the future.

## 25.8 Conclusion

Estonian small-scale fisheries are a small sector that only makes a small contribution to the Estonian economy. The tumultuous period after the collapse of Soviet Union has left them with challenges that are hard to overcome. Nevertheless, the numbers of small-scale fishers has remained stable in the previous decade, showing its social and cultural importance among coastal communities. While the Estonian fishing community is ageing, there are signs that more young people have decided to stay or return to fishery-related communities and are more actively participating in small-scale fisheries. A major factor has been state level support and the input from various EU funds, most importantly the EFF and EMFF – encouraging the belief that economically resilient and ecologically sustainable small-scale fisheries are possible. Fishing communities have diversified their occupations, learned how to give more value to their catches, and tourism has become an indispensable part of the local life. Fishing communities and Local Action Group members are looking more positively toward the future. More active communities have already renovated their harbours and fleet, diversified their activities and most importantly, they give good examples and ideas to other communities in the future. Nevertheless, investments in infrastructure, buildings and gear may not be enough to fix the socioeconomic burden that has its roots in the transition from Soviet system to market economy. The biggest problem small-scale fishers face – migration of youth and ageing population – can only be fixed through all-inclusive rural development policies and not just with local investment into concrete and machines.

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# Chapter 26
# Finnish Small-Scale Fisheries: Marginalisation or Revival?


**Pekka Salmi and Juhani Mellanoura**

**Abstract** Small-scale fisheries continue a long tradition of natural resource use along the Finnish coast, archipelagos and in lakes. Moreover, despite larger-scale open sea fisheries in the Baltic Sea being important when considering landing quantities, 96% of Finnish fishers are small-scale. However, seasonality and uncertainty of income limit small-scale fishers' chances of competing in the scale of production with fish farming and open sea fisheries. Although the number of commercial fishers and the economic weight of the profession have decreased, a fishing livelihood still generates notable economic and cultural value in many localities. Finnish small-scale fisheries are often operated on a family basis with pluriactive household strategies that adapt to changing circumstances. During recent decades, post-productivist practices, interests and values, such as biodiversity conservation and recreation, have challenged Finnish small-scale fisheries. In addition to tighter fishing restrictions implemented in line with the EU Common Fisheries Policy, environmental policies have also increasingly influenced small-scale fisheries. As a result, protected fish predator populations are considered substantial problems for fisheries. Moreover, fishers feel powerless – they consider that decisions are made far from the realities of small-scale fisheries. On the other hand, consumers' high appreciation of fish as a healthy and environmentally-friendly source of food may open new opportunities for the revival of profitable fishing livelihoods. This chapter focuses on the status, challenges and future opportunities of Finnish small-scale fisheries. The data consist of statistics, policy documents, research and newspaper articles, as well as personal interviews made in case study areas.

**Keywords** Small-scale fisheries · Commercial fishing · Finland · Pluriactivity · Post-productivism · Marginalisation · Common fisheries policy · Fisheries local action groups · Winter seine fisheries · Fisheries governance · Collective action

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## 26.1 Introduction

Finnish commercial fishing has become increasingly challenged by reduced profitability and strengthened emphasis on recreation and nature protection. Thus, it is surprising that an artisanal livelihood such as small-scale fisheries still continues its story in a modern welfare state. Although heavy fishing work is scantly rewarded, and fisher communities have diminished, the livelihood still has notable cultural and economic value in many localities. One explanation for the continuance of small-scale fisheries can be found in the fishing traditions and socio-cultural significance of natural resource use along the Finnish Baltic coast, archipelagos and in lake systems. The fisher life mode is appreciated and the opportunities for fishing are abundant as there are 188,000 lakes, 314,000 km of coastline and extensive archipelago regions in Finland (OECD 2008).

Finnish small-scale fisheries flourished in the first decades of twentieth century and especially during the World Wars, when fish prices were high due to the shortage of food supplies. However, in just one century the number of commercial fishers has decreased from at least 20,000 (Eklund 1991) to the current total of 2500. Particularly since the 1950s, the number of Finnish commercial fishers has dramatically decreased owing to changes in society and fish resources (Salmi et al. 2008). Fishing, like hunting, has been an important element in people's subsistence throughout past centuries, but the emphasis has shifted towards leisure use. Presently, Finland is one of the leading recreational fishing countries: 30% of the Finnish population is involved in fishing as recreational fishers (Natural Resources Institute Finland 2015).

The future of Finnish small-scale fisheries depends on their success in coping with multiple changes in society and the environment. In many regions small-scale fishers are worried about their narrowing opportunities to utilise local natural resources. This development stems from the so-called post-productivist transformation (Wilson 2001) in the use of natural resources, where strengthened emphasis is being placed on environmental conservation and recreational interests and values (Salmi 2015). Moreover, the national fisheries governance system and the Common Fisheries Policy (CFP), established by the EU, have limited commercial fishers' space for operation, despite, in many cases, also supporting their activities.

This chapter uses information from various policy documents, newspaper articles and findings of research projects conducted over the last 10 years by the Finnish Game and Fisheries Research Institute (presently Natural Resources Institute Finland, Luke). The material is complemented by three face-to-face and telephone interviews with experts carried out in 2015. In addition, the statistical division in Luke has provided unpublished demographic material concerning Finnish commercial coastal and lake fisheries.

The chapter focuses on the fishers' societal position, strengths and challenges connected: (1) to the post-productivist transformation of society and (2) the mismatch experienced between EU fisheries' policy and the realities of Finnish small-scale fisheries. We discuss the processes behind marginalisation of Finnish small-scale fisheries, but also opportunities for its revival. The latter may include providing new services for the local community, the natural environment and the leisure sector. Beforehand, we describe the structure and peculiarities of Finnish small-scale fisheries.

## 26.2 Small-Scale Fisheries in Finland

### *26.2.1 Categorisation of Small-Scale Fisheries*

This section analyses the position of small-scale fisheries in Finnish society with an emphasis on interaction with governance systems. For this purpose, we have divided the fishers into three categories (Table 26.1). The basis of this categorisation is in the division between professional and part-time fishers. The professionals (who derive more than 30% of their total income from fishing) are further divided into (A) those who concentrate on fishing only (fishing oriented) and (B) the pluriactive professional fishers (resilient fishers). The resilience perspective in category (B) is connected to adaptability enabled by pluriactive household strategies (Salmi 2015). The third category, (C), is called rural combiners. The majority of small-scale fishers fall into categories B and C, but fishing-oriented entrepreneurs form the most visible and influential group, the 'real fishers' in the minds of many.

The vast majority of Finnish commercial fisheries can easily be labelled as small-scale fisheries, although this term is seldom used in Finland. Instead, fishers are categorised according to various parameters: the fishing location (coastal, open sea, lake fishers), the length of the boat, fishing gear, target fish species, and the importance of fishing income. According to the divisions applied in fisheries statistics, *coastal fishers* use boats less than 12 m in length and a range of gears except for trawls that target Baltic herring (*Clupea harengus membras*) and sprat (*Sprattus sprattus*). *Open sea fishers*, on the other hand, use longer vessels, which are mainly herring and sprat trawlers operating in the Baltic Sea. Finally, all commercial *lake fisheries* are operated on a small scale, e.g. using pair-trawling and summer seining methods with boats of up to 8–12 m in length.

In this chapter, we define small-scale fisheries as the combined total of coastal and lake fisheries[1]. In both settings, most fishers operate on a seasonal basis, own their fishing equipment and fish the waters close to their home with relatively small boats. Boats are typically equipped with an outboard motor and half of all these

**Table 26.1** Categorisation of small-scale fishers according to relevance of fishing income

| Relative economic importance of fishing | Income source orientation | |
|---|---|---|
| | Fishing | Pluriactivity |
| Professional fishers | A. Fishing oriented | B. Resilient fishers |
| Part-time fishers | | C. Rural combiners |

[1] The strengths and challenges of Finnish lake fisheries are studied in more detail by Salmi and Sipponen (2016).

**Table 26.2** Comparisons between Finnish small-scale fisheries and total national commercial fisheries (Data refers to 2012)

| | Total (all fisheries) | Small-scale fisheries |
|---|---|---|
| Fleet[a] | | |
| Number of vessels | 3359 | 3287[b] |
| Capacity (GT)[c] | 16,509 | 7743[b] |
| Number of fishers | 2538 | 2428 |
| % women[d] | n.a. | 9 |
| Average age of fishers[d] | n.a. | 60 |
| Landings | | |
| Quantity (ton) | 137,687 | 18,022 |
| Value (1000 €) | 35,672 | 20,809 |
| Most common gear used (top 3) | Gill net, trap net, wire trap | Gill net, trap net, wire trap |
| Most important species in landings: | | |
| Top 3 in quantities (% in total) | Baltic herring (85%), sprat (7%), vendace (2%) | Baltic herring (40%), vendace (14%), roach (7%) |
| Top 3 in values (% in total) | Baltic herring (50%), vendace (15%), pikeperch (8%) | Vendace (32%), pikeperch (17%), whitefish (13%) |

Notes: [a]Marine vessels only, no data available on lake fisheries; [b]Vessels <12 m in total length; [c]Year 2013; [d]Marine fisheries only, no data available on lake fisheries
Sources:
1. Ministry of Agriculture and Forestry 2014. Selvitys kalastuskapasiteetin ja kalastusmahdollisuuksien välisestä tasapainosta 2013 (In Finnish).
2. Links to official stats webpages: http://stat.luke.fi/en/commercial-marine-fishery; http://stat.luke.fi/en/commercial-inland-fishery

boats are shorter than 6 m. The official register of fishing vessels includes 3287 coastal boats and 72 open sea boats (Table 26.2)[2].

The total number of Finnish small-scale fishers cannot be inferred directly from the published statistical reports, due to coastal fisheries and open sea fisheries being separated only when indicating fish landings. Thus, we have calculated the number of small-scale fishers by subtracting the estimated number of open sea fishers from the total of Baltic and lake fishers. This results in 2428 small-scale fishers in 2012. The number of open sea fishers is estimated at 110[3], which accounts for 4% of the total number of Finnish Baltic commercial fishers. The open sea fishers, however, catch the major proportion of national landings (Table 26.2), mainly consisting of Baltic herring and sprat targeted by trawlers.

For management and statistical purposes, Finnish commercial fishers have been separated into two categories according to the importance of fishing income. Here, the most active fishers are called *professional fishers*, deriving at least 30% of their

[2] Vessel data concerning lake fisheries is not available due to the incomplete register.

[3] This is our estimation of fishers operating the 72 open sea vessels.

income from fishing. Other commercial fishers are named *part-time fishers*. In so far as the number of enterprises is concerned, the part-timers form the most important fisher groups, although most professional small-scale fishers land the greatest volumes of fish.

### *26.2.2 Seasonality, Spatial Distribution and Resources*

Small-scale fishers have adapted their fishing practices to the fluctuating seasonal availability of the targeted fish species. Fishing is typically discontinued for the ice cover period of 3–6 winter months. Nevertheless, some fishers also operate during the winter. In lake areas, winter seining is an important fishing method enabling year-round operation, with fishers using snow mobiles, quad bikes or tractors to move on the ice (Fig. 26.1). A detailed description of winter seine netting for vendace is given in Box 26.1.

The economic importance of the fisheries sector in Finland was studied in the 1990s, when it accounted for 0.1% of the GDP (Nylander and Virtanen 1999). The most important coastal fishing regions are the Gulf of Bothnia and the Archipelago Sea (Fig. 26.2). Trap nets are core fishing methods among most professional coastal fishers (Fig. 26.3). Gill nets are popular among part-timers and professionals, who target non-quota species such as whitefish and pike-perch. Gill net and trap net fisheries are commonly seasonal activities, but whitefish fishers use gill nets more

**Fig. 26.1** Winter seine net being lifted. One seine netting team employs typically 2–5 fishers. (Photo credit: P. Salmi)

**Box 26.1: Winter Seine Netting For Vendace**[4]

Commercial fishing without a vessel has been oddity in the context of European fisheries. Seine net fishing on ice is, however, a traditional fishing method in Finnish lakes. Before the nineteenth century seining contributed to the subsistence of rural population. Lake fisheries became professionalised along with societal change towards money-based economy and improvements in fish transportation.

Winter seine netting has been of particular importance in the lakes of Eastern Finland. In the Lake Puruvesi, famous for its vendace fisheries, seine netting under the ice began in 1912 as a consequence of applying seines with a vertical span of 12 m. At the peak time in the 1950s over 60 winter fishing teams operated in Lake Puruvesi, while currently the number of teams is 10–15. Each team had its own name and reputation. In the past a winter seining team used horse and man power to move the seine nets and catches. Motorisation made the fishing operation easier and in good conditions it could be handled by two persons only. Still many groups consist of three or four members.

Until recently winter fishing provided a complementary source of livelihood with agriculture – in winter the resources and work force used in agriculture were available for harvesting local fish stocks. Currently this fishing-peasant combination has become rare. As commercial fishing is today often considered as a full time occupation, many winter seine netters harvest vendace also in the open water season with seine nets and pair-trawls. A common denominator among the fishers is that they have been introduced already as young to their occupation by going fishing with their fathers.

A winter seining season lasts up to 4 months. The first teams go fishing when the ice thickness exceeds 10 cm. In the mid-winter the work becomes harder because of thickened snow layer and water flowing up on the ice, which hampers moving with snowmobiles. In the beginning of the season the teams drag one haul per fishing day, but later as the day gets longer also two hauls may be dragged. Fishers drive early in the morning to the haul they have decided to harvest. A long-blade chain saw is used for making two large holes in the ice for one for placing the net under the ice and the other for dragging it back onto the ice. Two strong ropes are floated from the first hole to the second with the help of e.g. a remote control device. Then the seine net, up to 20 m high and several hundred meters long, is dragged under ice by a mechanical winch. The fish ends up at the back end of the net which is lifted last from the water.

(continued)

[4] Sources: Kitkan viisas (2018), Kuusisto (1999), Lappalainen (1999), Pennanen (1986) and Pesonen (2011).

**Box 26.1** (continued)

The Finnish consumers consider vendace as tasty, healthy and easy species for making a fish dish. Consumers' appreciation guarantees reasonable producer prices, two or three euros per kilo, especially when the density of vendace stocks is on moderate level. Natural fluctuations of the stocks pose the major long-term problem for fishers. Dense stocks may lead to too small size of fish individuals. The latest crash in vendace stocks in Lake Puruvesi, for instance, was recorded in 1985, after which they took more than 10 years to recover. High quality of fish during transportation and marketing can be sustained comparably easy in winter because of the cold weathers. Before selling to consumers, restaurants or processors, most of the catch is gutted by using special machines.

consistently throughout the year (Huhmarniemi and Salmi 1999). The coastal small-scale fisheries benefit from Baltic salmon (*Salmo salar L.*) and European whitefish (*Coregonus lavaretus*) stocking programmes that aim to compensate for catch losses caused by damming of spawning rivers (Karlsson and Karlström 1994).

In lake areas, most small-scale fishers operate in Eastern and Northern Finland (Fig. 26.2). There are no general quota systems in lake fisheries, with access rights being allocated mostly locally by the owners of the lake water areas. In Eastern Finland, the most important fish species, vendace (*Coregonus albula*), is landed by using pair-trawls and winter and summer seine nets. Winter seine fishing is also popular in Northern and South-western Finland. In the world's northernmost reservoirs in Lapland, small-scale fishers mostly use gill nets for whitefish. Bottom gill nets are also important fishing methods in South-western and Eastern Finland.

In terms of income, numbers and value in small-scale fisheries, in coastal regions, 68% of registered fishers derived less than 30% of their income from fishing in 2012 (Fig. 26.2). The corresponding proportion in lake areas was only 34% (Commercial Inland Fishery 2012). As for numbers, official part-time fisher numbers in lake areas have been underestimated, since registration in the commercial fisher register was not compulsory before 2016 (Salmi and Sipponen 2016). Moreover, although fisher numbers are substantially greater in coastal fisheries compared to those of lake fisheries, their landing values are similar. In coastal fisheries, the total value of landings was 10.3 million Euros (landings of fish: 13,256 tons) and in lake fisheries 10.5 million Euros (4766 tons) in 2012 (Unpublished demographic material by the statistical division of the Natural Resources Institute Finland). The explanation for the high value of lake fisheries is the high appreciation of vendace, which makes up 43% of the total value of the commercial lake fishery, ranking as the most important species for all Finnish small-scale fisheries (Fig. 26.4). In addition, pikeperch (*Sander lucioperca*) is of substantial importance both along the coast and in lakes, and

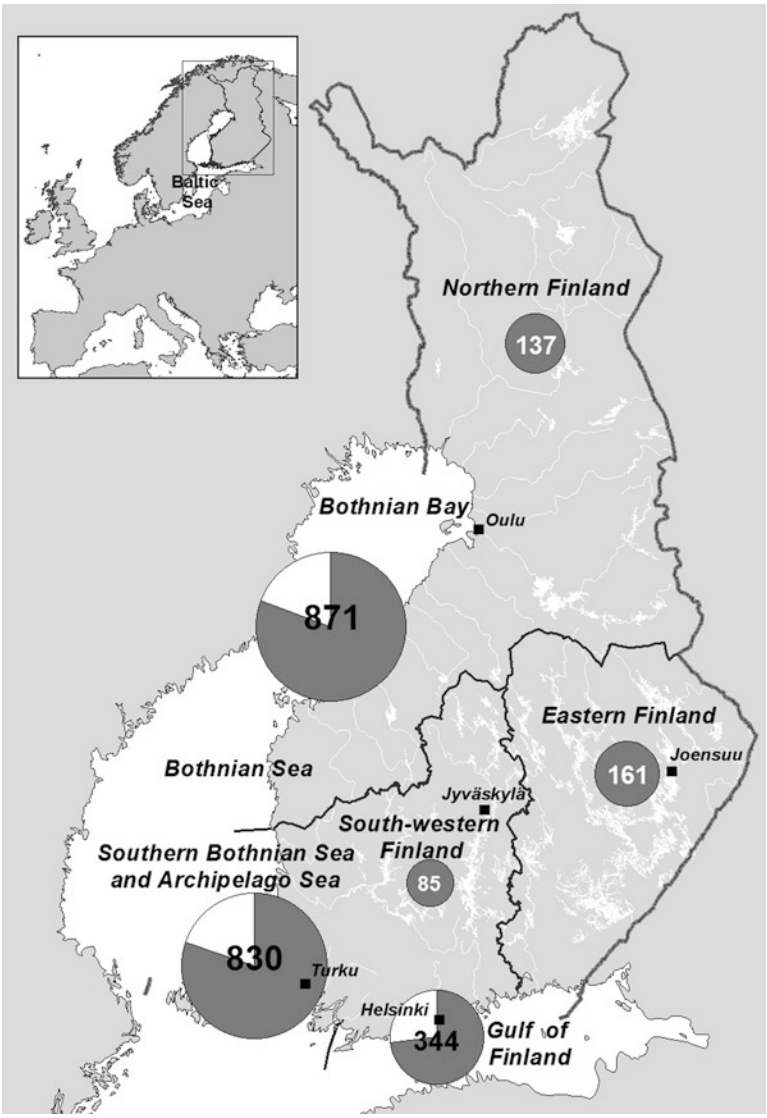


**Fig. 26.2** The distribution of registered Finnish small-scale fishers (n = 2428) in the three inland and three coastal regions in 2012. The circled figures in each region illustrate the numbers of small-scale fishers, where the white sections show the proportion of fishers who earned at least 30% of their income from fishing. This division was not available in inland regions. (Source: Unpublished demographic material by the Statistical division in the Natural Resources Institute Finland)

**Fig. 26.3** Trap nets with pontoons are important especially in coastal salmon fisheries. These 'push up' type trap nets have been constructed in order to avoid damages caused by grey seals. (Photo credit: P. Salmi)

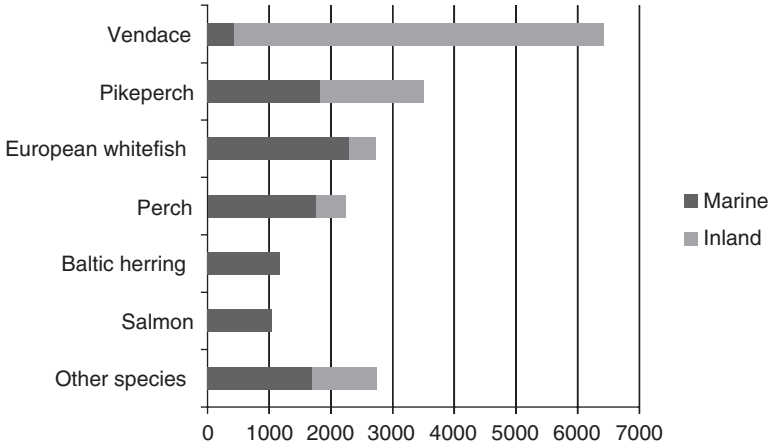


**Fig. 26.4** Landing values ('000 Euros) according to fish species in Finnish small-scale fisheries in 2012 (Commercial Marine Fishery 2012; Commercial Inland Fishery 2012)

European whitefish and perch (*Perca fluviatilis*) are also landed particularly by the coastal fishery.

### *26.2.3 Fishers and Their Families*

The average age of Finnish coastal small-scale fishers is 60 years old, but most professional fishers are younger.[5] In the Archipelago Sea, only 17 fishers out of 146 professionals were under 35 years of age (Saarinen 2005). Part-time fishers are typically older in lake fisheries as well. The fishing livelihood, including skills, equipment and fishing grounds, has traditionally been inherited by the next generation, as fishers have followed in the footsteps of their fathers and have rarely been recruited from outside the fishing industry (Salmi and Salmi 1998). However, this pattern is no longer so obvious. Nowadays, formal and practical education and training is provided for newcomers, albeit the interest has been low recently. On the other hand, there is evidence of newcomers being interested in participating in fishing training in Northern and Eastern Finland.

Most small-scale fishers are self-employed. In many cases the catch is landed at the fisher's private jetty with coastal fishers typically operating alone. Cooperation is most common on the lakes among winter seiners, pair trawlers and trap net fishers. In winter seining, a group of fishers may consist of 2–5 people. With regards to seining and pair-trawling, group members may possess vessels and fishing gear separately. Thus, some vessel owners pay a fixed salary to non-owners, but usually all fishers receive their payment calculated according to an agreed share of the catch.

The role of family members is also often important in small-scale fisheries (Salmi et al. 2008). In coastal fisheries, 9% of fishers are women (Table 26.1). This proportion was even higher among professional fishers in the Archipelago Sea in 2013: 15% were women (Saarinen 2013). Women contribute more often to fish processing and marketing than actually working on the boats. For instance, in coastal fisheries women often process and pack salted and marinated Baltic herring products to be sold at fish marketing events. Fish processing and selling self-processed products directly to the consumers add to the value of the fish, but these are labour intensive activities. Therefore, on many occasions, other family members are invited to take part.

[5] The average age of professional sea fishers was 51 years old in 2012. (Pro Kala 2014) Correspondingly, that of professional lake fishers in Eastern Finland was 49 years old in 2010 (Salmi et al. 2011).

### *26.2.4 Pluriactivity and Life Mode*

The uncertainty and seasonality of income limits the possibilities of small-scale fisheries to achieve year-round employment exclusively from fisheries. Thus, most Finnish small-scale fishers combine fishing revenues with other income sources. These pluriactive strategies are, however, not visible in official statistics. In a study conducted in the Archipelago Sea and Åland islands, many fisher households relied mostly on fishing and fish farming or combined fishing incomes with those from farming, forestry and horticulture (Salmi 2005). A more recent pluriactive adaptation strategy in the archipelago fisheries involves fishing households receiving most of their income from paid work, e.g. from working on a ferry boat or in the public sector. The service-oriented fisher households acquire part of their income directly from the tourist industry or from their own firm by providing services for the leisure sector.

In lake fisheries, the combination of agriculture and winter seine netting has been a traditional strategy for securing year-round income (Salmi et al. 2008). According to a case study among professional lake fishers in Eastern Finland (Salmi et al. 2011), commercial fishing was most often combined with forestry. Other income sources comprised paid work in other types of enterprises or income from pensions.

In addition to pluriactive household strategies, fishers' capability of adapting to changing circumstances have often relied on local community support and the highly-valued fisher life mode. Small-scale fishers value the independence, freedom and lifestyle of their livelihood and regard the local community as their support. Many have a life-long commitment to their occupation and community and they emphasise the non-monetary value of their work (Salmi 2005). Instead of earning a high income, they stress the goal of earning enough to make a living for the long haul.

## 26.3 Interactions with Other Sectors

Finnish small-scale fisheries are squeezed between globalisation of trade, the aquaculture industry, environmental protection and recreational use of waters. Only a small proportion of the fish consumed in Finland now originates from domestic capture fisheries. The voluminous and steady supply of imported and reared fish products keeps the prices paid to small-scale fisheries' landings – characterised by unpredictability and relatively small quantities – at a relatively low level (Setälä et al. 2007). On the other hand, the marketing of wild fish has benefited from the rainbow trout marketing chain and cold storage systems in grocery shops.

As for the large-scale open sea trawl fisheries for Baltic herring, these do not affect the opportunities of small-scale fisheries, although some small-scale coastal fishers are periodically hired as crew members in open sea vessels. These job opportunities have improved the chances of achieving year-round employment in the fishing sector.

Another singular characteristic of Finnish fisheries in lake and coastal areas is the local collective decision making by water owners (Salmi 2012). Lake waters are

typically owned by private land owners, but in many cases also by municipalities, companies and communities. The ownership secures limited fishing rights for the owner, and opportunities for joint decision making in numerous local shareholder associations. Most shareholder associations are in favour of granting access rights to both commercial and recreational fishers. On the other hand, due to the fragmentation and non-localisation of water ownership, and suspicions regarding the fish stock implications of commercial fisheries, many small-scale fishers have faced difficulties in renting sufficiently large water areas (Salmi 2012).

In addition, small-scale fishers find the one-sided and rigid decisions made in the name of environmental protection as serious obstacles to fisheries development. Fishers are frustrated about the distorted public image with regards to commercial fisheries' detrimental fish stock effects, which are often mistakenly attributed to small-scale fisheries (Salmi 2015). This image, stemming most obviously from the problems in large-scale ocean fishing, is nurtured by the media and environmental lobby groups. The environmental effects of locally harvested fish products, however, are often much less than those of imported high-volume fish products, and significantly lower in comparison with meat production (Silvenius et al. 2015).

In short, the basic causes of the Finnish fisheries conflicts can be found in tensions with interest groups, rather than in actual, severe fish stock effects. The fish stocks targeted by small-scale commercial fishers, such as vendace, perch, pikeperch and European whitefish are not under threat (WWF 2014). In Finnish lake fisheries for instance, the potential ecologically sustainable vendace yield is very likely much higher than the present yield (Marjomäki et al. 2016). However, in large lake areas, there have been tensions between small-scale fishing and local water owners regarding fishing rights of commercial vendace fishing with small pair trawls and seine netting (Salmi and Auvinen 1998). Moreover, tensions and controversies have also persisted for decades in Baltic salmon fisheries, in this case between commercial coastal salmon fishers and proponents of local tourist fishing in salmon rivers (Salmi and Salmi 2010).

Another relatively recent problem for many Finnish small-scale fishers has been the increase in fish predator species. The debate between the conservation of the endangered Saimaa ringed seal and local gill net fishing rights in the Saimaa Lake system, Eastern Finland, has become a prominent topic in the Finnish media. Gill net fishing in particular, has been heavily restricted in order to prevent the drowning of seals in the nets. These restrictions narrow small-scale fishers' opportunities especially for pike-perch fishing, which is an important additional income source for many multi-gear lake fishers (Salmi et al. 2013).

In coastal fisheries, grey seals are commonly regarded as the main threat to fishers' livelihoods. In addition, the effects of rapidly increasing cormorant populations on fish stocks and fisheries are also hotly debated. Seals and cormorants swim or dive into fishing nets, where they eat fish, damage fishing gear and scare away the fish (Salmi 2009). Room for local action to prevent the damage is limited due to the conservation status of these species.

On a positive note, co-operation between small-scale fishers and tourism enterprises is developing in some coastal communities. The increase in tourism has opened up possibilities for some fishers to earn additional income by arranging

guided fishing trips or sightseeing on the sea or lake. So far, however, the results of projects promoting fishers' participation in tourism have been quite sparse.

## 26.4 Fishers' Collective Action and Influence on Governance

The political power of Finnish small-scale fisheries has been weak throughout their history. A period of crisis in commercial fisheries after the Second World War was deepened by the fact that the Finnish state did not provide noteworthy support to the livelihoods of the people affected – as opposed to the situation in Norway or Sweden (Eklund 1993). The weak status of small-scale fisheries has continued until today, partly as a result of the state not having been particularly interested in the economic problems of this relatively small occupational group, in contrast to agricultural production.

Additionally, following the decline in fishing activity during the twentieth century, the remaining fisher families became more widely separated from each other in remote rural areas. As a consequence, the reduced local community support hampered fishers' organisation and co-operation. In order to foster small-scale fisheries' political influence and weight in decision making, for instance, concerning subsidies and regulation of salmon fisheries, the Finnish Fishermen's Association was established in 1980. This organisation gained influence representing Finnish commercial fishers in formal and informal working groups and projects. During the initial decades, the Finnish Fishermen's Association emphasised protecting the interests of open sea fishers, although today the interests of small-scale fisheries are also considered.

The most active small-scale fishers – particularly the fishing oriented ones (see Fig. 26.1) – have collaborated in order to work in regional fisher organisations or in informal networks. Rural combiners are seldom active in collective fisheries' actions or invited into networks and working groups, even though they form the largest group of Finnish small-scale fisheries. Local co-operation between fishers, researchers and technical experts has created an important platform for practical context-dependent innovations, for instance in developing gear technology (Salmi 2009).

As illustrated above, the fact that most water areas near the Finnish coastline and in lakes are under private ownership complicates commercial fishers' access to fishing grounds in many locations. Compared to the waters under private ownership, fishers' access is at first glance, less problematic in public waters. However, public waters, in the Baltic Sea in particular, have been increasingly affected by top-down fishing restrictions. National and international levels of fisheries governance have largely replaced the established local owner-based management system. Whereas in previous times, the framework for fishing was set by the local community, nowadays major decisions – e.g. regarding fishing restrictions – imposed on local fishers are made far away from the areas they affect (Storå 2003). This trend towards the increasing influence of national and international policies means fishers' collective action and collaboration with new stakeholder groups is even more urgent.

## 26.5 The Effects of National and International Policies

### *26.5.1 Criticism Towards the EU*

At first glance, Finnish EU membership since 1995 has reduced small-scale fisheries' competitiveness and prices of fish products on the Finnish food market. On the other hand, according to Setälä et al. (1999), most of the changes would have occurred even outside the EU, due to other international trade agreements. Removing trade barriers between the EU and other countries has boosted the import of fish products and decreased the role of domestic capture fisheries. The price of salmon, for instance, has declined drastically when compared with the early 1980s (Setälä et al. 2003). In addition, the system of price subsidies for Baltic herring, and investment subsidies allocated as part of regional policy, were discontinued when joining the EU (Setälä et al. 1999). According to commercial fishers, the parallel introduction of value-added tax was a further addition to their economic burden.

Thus, it is clearly challenging to strike a balance between centralised policies, such as the Common Fisheries Policy, and the interests of local livelihoods. National authorities are key players in applying EU legislation and international agreements to local real-life contexts. Finnish small-scale fishers claim that fishing restrictions and control have become tighter with the adoption of the CFP and other international agreements (Salmi and Salmi 2005). Most fishers in the Archipelago Sea, for instance, claim that the authorities, the state and the EU do not support their livelihood – in contrast to the local community (Salmi 2005). The increase in bureaucracy and regulation hampers small-scale fishers' livelihoods by diminishing the opportunities for continuing their life mode.

The CFP was aimed at reducing fishing effort in connection with crises in large-scale ocean fisheries. Finnish fishers argue that commercial fishing is *per se* regarded as an unsustainable activity with little appreciation of regional differences. For example, the CFP does not take specific northern circumstances into account: Finnish local fisheries cannot be compared with those, for example, in Greece or Spain (Salmi and Salmi 2005). On the other hand, the CFP does not directly control or restrict harvesting of most fish species targeted by Finnish small-scale fisheries, with the management of fisheries targeting freshwater species falling mainly under national legislation.

The total ban of drift net fishing in the Baltic Sea since 2008, initiated by the EU, terminated not only open sea netting for salmon, but also the traditional drift net fishing for Baltic herring. Special boats had been developed in drift net fishing, which since the nineteenth century had played a key role in the year-circle of many communities along the coast of the Finnish Botnian Sea (Salmi and Salmi 2009). The ban was motivated by the conservation of the porpoise. According to small-scale fishers, this case is one example of centralised decision making based on insufficient knowledge, as, for instance, porpoises have seldom entered Finnish coastal areas (Mellanoura 2015). Moreover, in 2006–2007, the EU funded the hiring of porpoise observers, whose duty it was to go out to the Baltic Sea on fishing

vessels in order to observe the existence of porpoises. Nevertheless, no porpoises were detected. The public media raised this case as one of many examples reflecting the absurdity of EU directives and policies (e.g. Kansan Uutiset 2012).

As mentioned, the main aim of the CFP has been to reduce fishing capacity, which is contradictory to the goals of the Finnish fisheries sector that aims to engage more young fishers in this occupation and revitalise the utilisation of fish resources (Mäkinen et al. 2013). The set maximum capacity of the fishing fleet cannot be surpassed, which has hindered recruitment of new entrants to coastal small-scale fisheries, as new fishing vessels can be registered only when another is removed. Today however, the registration of new fishing boats is possible due to the decreasing trends in Finnish fisheries.

### *26.5.2 Measures Supporting Small-Scale Fisheries*

There is also another side of the coin to EU membership, as it has opened up new financial streams to support small-scale fisheries and new export markets for domestic fish products. Financial support has been mostly focused on promoting the fish processing industry, wholesale trading and investing in fishing harbour facilities (Valtiontalouden tarkastusvirasto 2007). Particularly in lake small-scale fisheries, the construction of modern harbour facilities has promoted the fishing livelihood. Small-scale fisheries have also benefitted from exploring new export channels to fish products and employing new fish-quality standards.

The channelling of EU funding, especially for the development of lake fisheries, has been challenging. This is due to the system having been initially developed in the context of open sea fisheries. Direct EU investment subsidies for commercial fishers have covered funding for substituting old boat motors for new ones, and lately, also for investment in ice-fishing equipment, such as snow mobiles and quad bikes. However, the core problem has been that subsidies for investment in fishing boats have not been possible. Despite this, young fishers have the possibility of receiving financial support when investing in their first fishing boat (Muje 2013).

EU funded Fisheries Local Action Groups (FLAGs) have operated in Finland since 2008: a total of 408 projects have been conducted under the supervision of eight FLAGs (FARNET 2018). In their specific localities, FLAGs have supported small-scale fisheries through investment in boats, other vehicles and cooling equipment for ensuring fish quality. FLAGs have also provided training, for example, in the fields of trap net construction and fishing tourism and also arranged seminars for fishers (Rannikko 2013). One prominent FLAG project in the lake area has developed commercial trap fishing methods that prevent Saimaa ringed seals from drowning in the fishing gear.

Small-scale fisheries have also been supported by subsidised fishing gear insurance systems and VAT refunding of fuel (Valtiontalouden tarkastusvirasto 2007). In addition, the state authorities have allocated subsidies to the fishers for investing in seal-proof fishing gear and built a system of ‘tolerating payments’ to compensate the Baltic coastal

fishers for income loss caused by grey seals. In many cases, these payments have become important elements in securing the continuation of coastal small-scale fisheries, although fishers would rather eliminate the seals than receive subsidies. Furthermore, commercial lake fishers have received compensation payments for reduced income due to the fishing restrictions for the protection of the Saimaa ringed seal.

The emphasis of national and EU fisheries policies on the largest and most professional fishing units seem to have – directly and indirectly – supported opportunities for small-scale fishers rather than for resilient fishers or rural combiners. This is because most of the financial support for small-scale fisheries is available only to professional fishers, i.e. those who earn more than 30% of their total income from fishing. Rural combiners criticise this income limit for contributing to the exclusion of many small-scale fishers (Salmi et al. 2000).

## 26.6 Opportunities for Revival

Owing to the substantial diversity of Finnish small-scale fisheries, challenges and future opportunities are multifold. The image of small-scale fisheries as a regressive livelihood of the past is widespread – even within the fisheries sector itself, where the focus is often placed on aquaculture and commercialisation of leisure water use. On the other hand, many small-scale fishers still believe in a bright future for their livelihoods. For instance, fishers in the Archipelago Sea region feel the fish stocks, marketing opportunities and professional skills are the strengths of their occupation (Saarinen 2005).

However, a prerequisite for revitalising the utilisation of fish resources is to make small-scale fishing attractive enough to new generations (Mäkinen et al. 2013). How can this be achieved? On the whole, younger generations are interested in nature and natural resources. Thus, one future strategy for recruiting new small-scale fishing entrants is to combine the fishing livelihood with producing other natural products and services. As stated above, most small-scale fisher families depend on pluriactive household strategies. Income diversification, acting as a 'buffer' against fluctuations in fishing revenues, is an option in the future, where the sources of uncertainty can only be guessed at. Though, it can already be observed that the increased leisure use of coastal and lake areas could provide opportunities for strengthening a more service-oriented strategy, which combines fishing with tourism and services.

An increasing number of consumers are interested in the origin, quality and sustainability of primary production, although the crucial question is whether they are willing to pay a surplus for the products they value. On the positive side, the appreciation of domestic fish as a healthy and environmentally-friendly source of food can help raise the value of fishers' products and lead to a brighter future for small-scale fisheries. This could be achieved, among other measures, by better distinction of wild fish products from the farmed and imported ones supplied in supermarkets and grocery shops. One future option for raising public awareness of small-scale fisheries' products – and revitalising small-scale fishing – is labelling or 'branding' local fish stocks.

In fact, the concept of 'local food' has emerged as a counter-force to the social and economic effects of globalisation. For many consumers, supporting local producers is an important motive for buying local food products (Jokinen et al. 2009). The future of small-scale fisheries could, therefore, be seen as part of 'nature entrepreneurship' (Rutanen and Luostarinen 2000) – based on rich and versatile local wild nature resources – providing guided fishing trips, mushroom and berry picking-trips and other nature experiences for tourists. This type of pluriactivity, especially suitable for rural combiners, could also consist of producing, besides fish, honey, berries and herbs, for instance, and include direct marketing of these natural products.

Many customers experience an extra value in face-to-face communication with producers – reflecting the long traditions and cultural values that people attach to fishing (Salmi et al. 2008). This adds an extra dimension to local tourism that utilises fishing culture as one element (Salmi 2008) and is also connected to the direct marketing strategies, which are often applied by fishing-oriented households. The work is typically divided between family members in such a way that the wife is responsible for processing and marketing, and the husband for fish capture. Direct marketing of artisanal fish products is a strategy that is well suited to Finnish small-scale fisheries and could be more widely targeted at those customers who place high value on environmental friendliness, rural employment and quality products.

In addition, there is growing global demand for fish protein, which highlights the versatile utilisation of fish stocks. In Finland, a start-up subsidy system has been adopted for removing low-value fish and supplying these catches to the market. Many projects, e.g. in the Archipelago Sea Region, have studied opportunities to utilise low-value fish species for human consumption. The idea is to recycle nutrients from the sea to land, which both helps to mitigate the eutrophication problem in the Baltic Sea and also provides income for small-scale fisheries. Fisher organisations stress that, besides producing healthy food and employment, fishing is the only activity that removes large quantities of nutrients from the Baltic Sea and consequently improves water quality (SAKL 2014). They promote this message with the hope that recognition of these benefits will improve not only the profitability, but also the public image of their livelihoods.

## 26.7 Conclusions

In contrast to many other European countries, Finnish small-scale fisheries utilise multiple fish stocks that are viable enough to sustain, or even revitalise fishers' livelihoods. As highlighted in the previous sections, new values and ideologies may provide opportunities for such a revival. Moreover, the widespread appreciation of fish among consumers, greater commercial production and a variety of technical, social and financial adaptation strategies provide a solid base for future small-scale fisheries development. Cultural resources, the valued life mode and commitment to the occupation will also support the continuation of fishing as a livelihood. Though, in spite of these factors, there are still uncertainties for many fishers, especially in coastal areas.

As described above, post-productivist practices, interests and values, have increasingly influenced Finnish small-scale fisheries and new types of contradictions have emerged both in lake areas and along the coast. Many small-scale fishers feel marginalised and powerless when trying to cope with the new circumstances. Marginalisation can also be detected inside small-scale fisheries, as rural combiners especially are excluded from official support systems. There is clearly a need to widen the perspective of the fisheries' policy, which typically focuses on full-time entrepreneurs, towards greater consideration of resilience-building pluriactive strategies (Salmi 2015). Moreover, as small players become squeezed between larger water-user groups, small-scale fisheries need greater and more in-depth understanding and collaboration beyond the borders of the fisheries sector.

In Finland, conservation-driven approaches to fisheries and environmental decision-making are typically in favour of science-based, hierarchical modes of governance, which lack real stakeholder participation and inclusion of local knowledge (Salmi 2013). The increased interactions – and contradictions – between fisheries' and environmental policies have forced the rather hermetic fisheries sector to become more open, despite fishers' views having received scant attention. In order to mitigate these contradictions, there is a need to more thoroughly discuss the differing views with the help of co-governance arrangements that include small-scale fishers in the decision-making processes.

Finns are more critical towards EU policies than many other member states (European Commission 2015). The public media frequently highlights cases representing decisions or directives by the European Commission that are unsuitable to the Finnish context and against common sense. Fisheries is a 'paradigmatic case' in this sense, as the Common Fisheries Policy is often steered in the direction of the fisheries' contexts of the major European fishing nations, which differ substantially from the realities of Finnish small-scale fisheries. Thus, a common view is that the implementation of CFP has poorly recognised the specific circumstances of member states even though, particularly in lake areas, small-scale fisheries have benefitted from the support channelled through EU funds.

Notwithstanding the numerous challenges posed by the post-productivist transformation, we conclude that new societal circumstances can be harnessed in favour of Finnish small-scale fisheries. This means taking advantage of societal trends, such as the environmental ethos and recreational trends, and concentrating on synergies with other groups and sectors. There is potential in the reinvented appreciation of tangible and intangible small-scale fisheries' outputs, and in the inherent resilience and strategic diversity of the fisher's livelihood. To a great extent, the future path and success of Finnish small-scale fisheries depends on actions taken by fishers, themselves, but collaboration and understanding is needed from other societal groups.

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# Chapter 27
# Swedish Small-Scale Fisheries in the Baltic Sea: Decline, Diversity and Development


**Emma Björkvik, Wiebren J. Boonstra, Jonas Hentati-Sundberg, and Henrik Österblom**

**Abstract** Can Swedish small-scale fisheries escape decline and live up to their attributed potential to make fisheries more sustainable? Here we address this question by highlighting diversity within these fisheries. Through a specific focus on the Baltic Sea, we demonstrate that small-scale fisheries, defined by scale of operation, are neither sustainable nor unsustainable and have different social and ecological impacts. Based on our analysis we discuss general opportunities and challenges for future development of Swedish small-scale fisheries. Opportunities exist in connection to the creation of niche-products and branding fish as a local and/or exclusive commodity, while major challenges are linked to complexity and extensiveness of regulations, lack of recruitment of new fishers, and ecological sustainability of fishing practices. We argue that attention to diversity in Swedish small-scale fisheries has to be the starting point for meeting future challenges and fulfilling their attributed potential as a sustainable primary production sector.

**Keywords** Swedish small-scale fisheries · Baltic Sea · Decline · Diversity · Sustainable development

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## 27.1 Introduction

The role of fisheries in Swedish society has changed radically during the last century. Hundred years ago, fisheries were highly important for creating local and regional economic value and providing food security. Today, the value of commercial fishing as an income and livelihood strategy is relatively low.

The changing role and economic importance of fisheries are closely related with the transformation of agrarian Sweden into a modern, industrialised country, where most citizens live in urban areas and work within the industry or service sectors (Lagerqvist 2012). With industrialisation and modernisation, the Swedish fisheries sector diverged internally regarding the level of mechanisation and capitalisation of vessels and companies. Just as in many other primary production sectors, this divergence is conventionally associated with the scale of operation; it is common practice to divide the sector in large-scale fisheries and small-scale fisheries.

The future of Swedish small-scale fisheries is often considered as bleak. In the Swedish media, for example, small-scale fisheries have been portrayed as a profession depending heavily on subsidies and struggling with strict and complicated regulations (Härdmark 2008), hidden unemployment (Rossander 2008), low opportunities for succession and recruitment (Dahlgren 2015), and competition with large-scale fisheries (Bengtsson 2015; Säwe and Hultman 2015). On the other hand, Swedish small-scale fisheries are attributed potential to improve sustainability of Swedish fisheries. They are commended for their contribution to local economies and coastal livelihoods (Swedish Environmental Protection Agency 2012; Säwe et al. 2014); their role in reproducing cultural heritage, craftsmanship, and local ecological knowledge (Garavito-Bermúdez 2016), and for being ecologically sustainable. According to Swedish Board of Fisheries (2010), small-scale fisheries have low carbon dioxide emissions, low bycatch and discards due to their use of selective gear, low impact on bottom sediments, and are geographically bound, which assumes that small-scale fishers hold incentives to sustain fish stocks in the long-term.

The aim of this chapter is to nuance the understanding around if and how Swedish small-scale fisheries can escape decline and live up to their attributed potential to make fisheries more sustainable. To evaluate their future potential, we believe that it is necessary to pay attention to the diversity that exists within Swedish small-scale fisheries. We have already highlighted differences in scale of operation, but there are more differences to consider. To begin with, there is a pronounced difference between the ecosystems that Swedish fishers operate in. The Baltic with its low salinity is very different from the waters of the Swedish west coast, while other Swedish fishers fish in lakes and streams. There are also important differences in terms of gears used, target species, motivations and attitudes that underpin various fishing practices (Boonstra and Hentati-

**Fig. 27.1** Swedish eel fishers in the Baltic operating their traps. (Photo credit: H. Dahlgren)

Sundberg 2016). This social-ecological diversity (re)produces small-scale fisheries responding differently to changes, which means that the future for Swedish small-scale fisheries does not by definition look bleak or hopeful, but rather depends on the type of fishery under consideration. A valid assessment of the development and future of small-scale fisheries thus requires attention to more than just vessel size.

To develop this argument and demonstrate its relevance, we describe and explain differences in three cases of Swedish small-scale fisheries in the Baltic Sea: the European eel (*Anguilla anguilla)* fishery, the Atlantic cod (*Gadus morhua)* fishery and the vendace (*Coregonus albula*) fishery (Figs. 27.1, 27.2 and 27.3). We focus on Baltic Sea small-scale fisheries because the contrasts in development potential between different types of small-scale fisheries is most conspicuous here. In what follows, we first provide a general description of Swedish small-scale fisheries. We continue by presenting the three cases from the Baltic Sea. We then discuss opportunities and challenges for sustainable development by concluding that attention to diversity is not only warrented in evaluations of sustainability, but also required to strengthen resilience of Swedish small-scale fisheries.

**Fig. 27.2** Swedish fisher operating a gillnet for catching cod. (Photo credit: P-A. Berglund)

**Fig. 27.3** Two Swedish vendace fishers emptying their trawl. (Photo credit: E. Björkvik)

## 27.2 Swedish Small-Scale Fisheries

### *27.2.1 Socio-economic Relevance and Demographics*

As indicated in the introduction, from a national economic perspective, Swedish fisheries have low significance: they represent a negligible fraction of the total Swedish GDP (Davelid et al. 2014). In comparison to other primary production sectors, such as forestry and agriculture, the sector generates a low value added and employs relatively few people (Table 27.1).

Today there are ca. 900 professional fishers using vessels below 12 m in Sweden today (Table 27.2). Circa 500 of these operate along the Baltic coast. The number of Swedish Baltic small-scale fishers is highest in the south eastern and northernmost parts of the Baltic coast (Fig. 27.4). The average fisher is male and older than 55 years old. There are few female commercial fishers, only around 20 are active today. Many small-scale fishers use pluriactivity to cope with low profitability. They often obtain additional incomes outside fishing e.g. carpentry, or in many cases their households also depend on the income of a partner or spouse (Boonstra and Hentati-Sundberg 2016).

The number of Swedish fishers has declined since the 1960s (Hentati-Sundberg 2017). The expectation is that it will decrease further as the remaining fishers reach retirement in the coming decade, and recruitment of young fishers is low (Swedish Environmental Protection Agency 2012). It used to be the case that fishers' sons participated in the fishing business from a young age and gradually took over from their parents. Nowadays, young people from fishing families choose other jobs over fishing due to, amongst other things, the low profitability of fishing, its legal complexity, working conditions, and the considerable start-up investments (Blomqvist et al. 2016). A formal education for (small-scale) fisheries does not exist in Sweden.

**Table 27.1** Socio-economic value of fisheries compared to other primary sectors in 2016

| Sector | Value added | Number of companies | Number of employees |
|---|---|---|---|
| Agriculture | 2500 million € | 108,000 | 25,500 |
| Forestry | 1600 million € | 137,600 | 15,500 |
| Fisheries and aquaculture | 100 million € | 1700 | 800 |

Source: Swedish Statistics
The difference between number of companies and number of employees is explained by a large number of self-employees in these sectors

**Table 27.2** This table refers to Swedish fisheries in the Baltic Sea in 2015

| | All fisheries | Small-scale fisheries[c] |
|---|---|---|
| *Fleet*[a] | | |
| Number of vessels | 780 | 730 |
| Capacity (GT) | 6800 | 2800 |
| Number of fishers | 560 | 530 |
| % women | <1% | No data |
| Average age of fisher | Above 55 years | No data |
| *Landings*[b] | | |
| Quantity (ton) | 12,100 | 2800 |
| Value (K €) | 46,300 | 5100 |
| Most common gears (by catch quantity) | Pelagic pair trawl (44 %), Midwater otter trawl (39 %), Bottom otter trawl (12%) | Gillnets (76 %), Pound nets (11 %), Long lines (11 %) |
| Most important species in landings (by quantity) | Herring (56 %), Sprat (36 %), Cod (6 %) | Cod (47 %), Herring (24 %), Salmon (6 %) |
| Most important species in landings (by value) | Herring (45 %), Sprat (20%), Cod (14%) | Cod (31 %), Eel (17 %), Herring (11 %) |

The number of vessels included in this table are vessels registered on the east coast. However, large pelagic trawlers registered on west coast fish in the Baltic too

[a]Data refers to all registered fishing licence holders and their fishing vessles. Source: The Swedish Agency for Marine and Water Management

[b]Source: The Scientific, Technical and Economic Committee for Fisheries

[c]All vessels below 12 m using passive gears. We use the EU definition due to the structure of accessible data but see discussion on defining small-scale fisheries in Sect. 2.1

### *27.2.2 Defining Small-Scale Fisheries*

Scale is the most common denominator used to define small-scale fisheries and features prominent in the operational EU definition in which fishing vessels under 12 m using passive gear (not trawls) are included. Although it is common to assign the scale of the fishing vessel a prominent place in definitions of small-scale fisheries, we believe that categorising fisheries using scale as the only or most important indicator risks associating vessel size too readily with other values often attributed to small-scale fisheries. When this happens, assumptions are made that vessels below a certain size cannot be economically profitable, or that they are by definition more ecologically sustainable. As Johnson (2006) points out, economic and ecological outcomes do not necessarily correspond with vessel size (see also de Vos and Kraan 2015). This problem can be usefully illustrated with the vendace fishery.

According to the EU definition of small-scale fisheries, the vendace fishery does not qualify as small-scale because some vessels measure 14 m and trawls are used. Yet from a Swedish perspective, the vendace trawl fishery is considered as small-scale and is one of few highly profitable small-scale fisheries that also has been certified as sustainable by the Marine Stewardship Council (MCS) (see Swedish

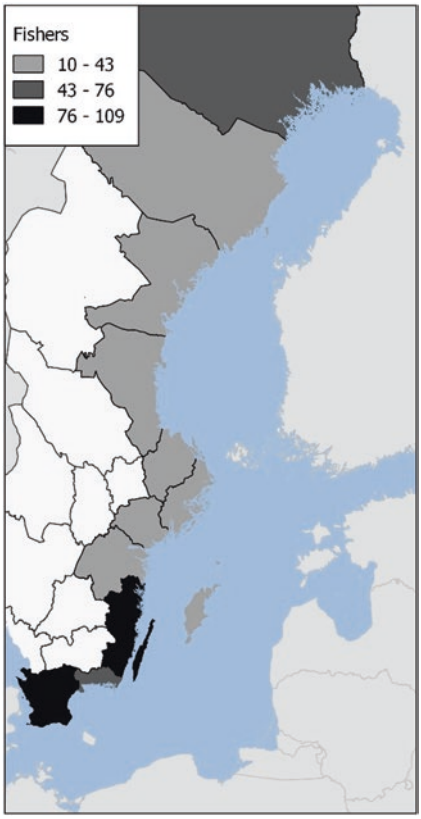


**Fig. 27.4** Geographical distribution of Swedish small-scale fishers operating along the Baltic coast. The fishers are aggregated in administrative regions called counties. (Data refers to 2015)

Board of Fisheries 2010).[1] This example illustrates that fisheries scientists and policymakers need to carefully account for fisheries' different impact, and avoid direct associations between scale and sustainability.

There exists no unified official definition of small-scale fisheries other than the EU definition in Sweden. The practical and legal consequences of the EU definition imply that vessels below 12 m using passive gears are exempted from some rules.

[1]The national Swedish Board of Fisheries (now Swedish Agency for Marine and Water Management) included the vendace fishery as small-scale fisheries in a 2010 report on Swedish small-scale fisheries. In the report, a seven criteria definition was applied to provide a guiding tool to identify and describe coastal small-scale fisheries (Swedish Board of Fisheries 2010). The seven criteria include: (1) vessel length below 12 m; (2) use of passive gears; (3) fishing trips no longer than 1 day; (4) fishing is performed within 12 nautical miles from the coast; (5) fishing is performed from one and the same harbour; (6) fishers are situated in rural areas; and finally, (7) fishing is combined with other types of fishing, or enterprises. These criteria are not absolute and fisheries do have to fulfil all of them to be categorised as small-scale fisheries. The vendace fishery meets all criteria except the use of passive gears and we therefore use it as a case of small-scale fisheries in this chapter.

For example, a specific permit connected to Individual Transferable Quotas on pelagic species is required for all vessels above 12 m but not for vessels below this length. However, vessels over 12 m and/or using trawls are also sometimes exempted from certain rules through national fisheries regulations. For example, the specific pelagic permit is not needed for vessels below 12 m trawling in the central Baltic Sea or for vessels between 12 and 15 m trawling after herring (*Clupea harengus)* and sprat (*Sprattus sprattus*) in the most northern areas of the Baltic. These exemptions have been implemented to protect and benefit the small-scale sector (Swedish Agency for Marine and Water Management 2014). Consequently, the EU definition is not always applied and some rules are modified to better fit the conditions for small-scale fisheries in the Swedish context.

### *27.2.3 Fishing Practices in Swedish Baltic Small-Scale Fisheries*

Great diversity exists within the Swedish Baltic small-scale fisheries (see also Boonstra and Hentati-Sundberg 2016). Some fishers specialise and use one type of gear to target a few species, while others diversify and use several types of gear to target a mixture of species. Many fishers fish seasonally and target different species during different times of the year. Interestingly, it seems that small-scale fishers further diversified through combining different types of fishing practices during the previous decade (Hentati-Sundberg et al. 2015). According to the EU definition of small-scale fisheries, the most commonly used gear types in Swedish Baltic small-scale fisheries are gillnets, pound nets, and set longlines, and the most valuable species are cod, eel and herring (Table 27.2).

## 27.3 Management of Swedish Small-Scale Fisheries

Small-scale fisheries are primarily managed through a top-down system. The whole Swedish fishery sector has been regulated within the framework of the EU's Common Fisheries Policy (CFP) since Sweden joined the EU in 1995. The CFP is then complemented by other national policies developed by the Swedish Agency for Marine and Water Management (SwAM, former Swedish Board of Fisheries) and the Swedish Board of Agriculture (SBA). SwAM has the overall legal responsibility of regulating fisheries, while SBA is responsible for arranging support from the European Maritime and Fisheries Fund, and collaborates with SwAM on national strategies and policies.

Fisheries regulation in Sweden has increased substantially over time, in order to overcome latent overfishing and fleet overcapacity problems (Hentati-Sundberg and Hjelm 2014). There are several measures regulating both catch and effort.

First of all, to become a Swedish commercial fisher, you need to apply for a fishing license. To get a fishing licence approved, fishing needs to be performed for commercial purposes. Both physical and legal persons (i.e. companies) can obtain a licence for fishing in marine ecosystems, while only physical persons can obtain a licence for fishing in lakes and rivers. There are no requirements of any formal training connected to the fishing licences, but the use of a fishing vessel requires training in security and in other areas depending on aspects like vessel length or gross tonnage. Second, fisheries of some species are regulated with specific technical measures. The eel is, for example, regulated with a permit system (that is, to fish eel you need a special permit and a fishing license), a limitation of the fishing season, gear restrictions and a minimum landing size. Also, a general discard ban is currently being implemented as a consequence of the CFP, but this ban does not apply for many of the gears used and for most species targeted within small-scale fisheries. As the detailed implementation of the discard ban is still to be carried out, it is too early to say how small-scale fisheries will be influenced. In general, it is difficult to fully assess the impact of the regulations that apply to small-scale fisheries because of their complexlity. Yet it is very likely that they reduce small-scale fishers' overall ability to respond to changes (Boonstra and Hentati-Sundberg 2016).

Compliance in Swedish fisheries seems to be high compared to other contexts (Jagers et al. 2012), but has recently also been described as 'reluctant compliance' (Boonstra et al. 2017), which refers to fishers who follow regulations but are unconvinced of their efficiency and effectivness, and therefore lack committment to uphold them. This reluctant compliance may be contributed to a top-down management regime with limited opportunities to influence the formation and implementation of regulations (Jentoft 1989; Telemo 2018). As a result, fishers often distance themselves from management and government. Many fishers share witnesses of being ignored when trying to mobilise and organise political support and have discontinued their membership in fisher organisations. Several of fisher organisations, such as EU-approved Producer Organisations as well as other more local organisations, do however exist, but according to some fishers we talked to, neither of these look out for their specific interests or have capacity to improve their situation.

Nevertheless, not all small-scale fisheries are managed only from the top-down; there are cases of co-management arrangements, where fisher organisations are included fisheries management. One example is the vendace fishery, which we provide more details on later in this chapter. Another example is the prawn fishery in Kosterhavet on the Swedish west coast where a fisheries co-management system was set up in parallel to establishing the first marine national park in Sweden in 2009 (http://samforvaltningnorrabohuslan.se). It has been demonstrated that inclusion and involvement of fishers in local and regional decision-making significantly improves not only compliance, but also fishers' willingness to collaborate and align fishing practices with sustainability goals (Rova and Larsson 2001; Eggert and Ellegård 2003; Birnbaum et al. 2015).

## 27.4 Small-Scale Fisheries in the Baltic Sea

According to the Swedish Board of Fisheries (2010, see also note 1), most fisheries in the Baltic Sea can be considered small-scale. The exception are bottom trawl fisheries for Baltic cod, and bottom and pelagic trawl fisheries for herring and sprat; in both of these a combination of fishers from the Baltic Sea coast and the Swedish west coast participate (Berggren 2013). There is a whole set of general and specific challenges impacting the development of Baltic small-scale fisheries (Hammer et al. 1993; Björkvik 2013; Boonstra et al. 2016). First, ecological conditions in the Baltic are vulnerable and rapidly changing. The sustainability of Baltic fish stocks is impeded due to overfishing, climate change, and eutrophication (Blenckner et al. 2015; Casini et al. 2016). These changes together make fish stock dynamics volatile and unpredictable (Lade et al. 2015). Moreover, populations of grey seal (*Halichoerus grypus)* and great cormorant (*Phalacrocorax carbo sinensis)* have increased during the previous decade (Ovegård 2017). These animals compete with fishers over fish, and seals also destroy fishing gear when they try to catch fish from nets or traps (Königson 2011). Second, due to agricultural and industrial runoff, the water and fish in the Baltic contain high levels of dioxins. This makes certain fish species, such as herring, unsuitable for human consumption, and lowers its market price (Karl and Ruoff 2007). Next to these specific challenges, Baltic small-scale fisheries have to deal with more general trends that complicate fishing, such as stricter regulation (Hentati-Sundberg and Hjelm 2014), low economic profitability (Waldo et al. 2010) and diminishing political influence (Symes and Hoefnagel 2010). In the following sections we describe the socio-economic context of three types of small-scale fisheries in the Swedish Baltic in more detail.

### *27.4.1 The Eel Fishery*

Commercial eel fisheries in northern Europe developed around the late 1800s and early 1900s (Dekker 2018). Nowadays, the future of eel fishing is highly uncertain. The species is classified as critically endangered on the International Union for Conservation of Nature red list of threatned species and has been in decline probably since the early 1800s (Dekker and Beaulaton 2016).

Eels found in European waters are born in the Sargasso Sea. As newly born larvae, they follow the Gulf Stream to European coasts and continue to migrate to fresh or brackish waters. Many eels find their way into the Baltic Sea and its adjacent freshwater systems, where they then spend several years growing into adult, mature silver eels (Tzeng et al. 2000). When the silver eel stage is reached, the eels start to migrate toward the Baltic Sea outlets, probably aiming to return to the Sargasso Sea and reproduce (Sjöberg et al. 2015). It is, however, uncertain how many silver eels ever manage to reach the spawning grounds (Sjöberg 2015), and before they even find the Baltic outlets they need to get past the Swedish Baltic fishers targeting these migrating eels.

The majority of the Swedish eel catches are in the south-eastern coastal and archipelagic areas. Large fixed traps called pound nets (Berntsson 1971), account for the majority of the total catch (over 50% between 2006 and 2016), but fishers also use other smaller types of traps such as various fyke nets. Eel fishing is traditionally performed on a seasonal basis often combined with other species, such as cod, herring, pike *(Esox lucius)*, whitefish *(Coregonus spp.)* and non-fishing income activities (Boonstra and Hentati-Sundberg 2016), and on private waters tied to ownership of properties on land. In general, private waters include all waters that extend 300 m from the coast and islands. This qualifies most archipelago waters as private and fishers either own the right to fish themselves or lease it from the property owners.

The 1950s represent a period when eel fishing became more efficient and intensive (Björkvik et al. 2019). Catches exceeded 2000 tonnes and fishing accounted for 40% of total silver eel mortality (Dekker and Sjöberg 2013). Catches in recent years have, in contrast, varied around 200–300 tonnes and fishing mortality is lower than 5% (Dekker 2015). Although recent catches are lower than before, Sweden is one of the countries in Europe that catches the most eels (FAO 2012). The majority of the catch is exported, while a smaller proportion is sold on the national market. The eel is an economically important species for the active fishers and they can probably obtain a fairly high economic return from their catches because of the eel's high price per kilo (Björkvik et al. 2019).

Eel fishing is prohibited in Sweden except for commercial fishers that hold a special permit. The general prohibition together with the permit system were implemented in 2007. Also in 2007, the European Union decided on a regulation that established measures for recovery of the eel (EC 2007). Through the EU regulation, Sweden was obliged to adopt a national eel management plan (Anonymous 2008). One of the main objectives of the management plan is to restrict fishing effort, and this objective has been addressed through regulations that limit the fishing period, gear used, size of landed eels as well as through the permit system. Through the permit system, a cap was placed on each fisher's catch and succession within this fishery became impossible (Anonymous 2008). As the permits can neither be transferred from one fisher to another nor applied for, no other fishers than the fishers eligible for a permit in 2007 can start to fish eel. Of the 260 Baltic fishers that were approved permits in 2007, around 150 were still active in 2017. The number of eel fishers will continue to decrease, and because no new fishers are allowed entry, it is just a matter of time before Swedish eel fishing ceases to exist.

### *27.4.2 The Vendace Fishery in the Bothnian Bay*

The vendace in the northernmost part of the Baltic Sea, the Bothnian Bay is a small pelagic salmonid that lives in cold and nutrient poor freshwater. Its southward distribution is limited by an increasing level of salinity, and at this margin of distribution, vendace is fairly short-lived and can mature within its first year (Lehtonen

1981). The specific environmental conditions of the Bothnian Bay gives the vendace's roe a unique taste and it is considered an exclusive delicacy. This roe is typically served in high-end restaurants and on special occasions like the Nobel prize banquette. The fillets remaining after extraction of the roe are sold to mink farms. Recently, some fisheries companies have also tried to introduce vendace fillets for human consumption.

The name of the roe, *Kalix löjrom*, is protected through the EU laws of Protected Designation of Origin (PDO) safeguarding local and regional products with a specific character (EC 2006). This implies that vendace roe can only be called *Kalix löjrom* if it has been caught, processed and prepared in a certain region of the Bothnian Bay. The extraction and preparation process and requires involvement of people from the local village who have the required knowledge and skill. The vendace fishery thus provide job opportunities for coastal communities in the region.

Vendace is commercially fished with trawls and different kinds of nets and traps. Fishers often combine vendace trawling with trap net fishing for whitefish and Atlantic salmon (*Salmo salar*) and gillnet fishing for herring (Swedish Board of Fisheries 2010). Even though vendace catches are smaller compared to catches of other species, it is the most important target species economically. Moreover, the trawl fishery stands by far for the largest proportion of the catch (96% in 2016) (Swedish University of Agricultural Sciencies 2017) Trawling is restricted to a 5-week period between 20th September and 31st October and the number of fishers (currently 35) is controlled through a trawling permit system. The majority of vessels are less than 12 m, even though the maximum allowed vessel length is 14 m.

The vendace trawl fishery is one of the few Swedish commercial fisheries with high economic returns, which are explained by the high prices of vendace roe (≈ 200€/kg). The fishery is also considered to be ecologically sustainable and was certified by the Marine Stewardship Council (MSC) in June 2015 (Pontes Coelho Borges et al. 2015). The fisher organisation initiated the MSC-certification process because they thought it could be beneficial for marketing of the vendace fillet for human consumption. In contrast to the roe that already is a well-established product on an exclusive market, the MSC-certification was thought to attract large wholesalers and supermarkets chain to buy the fillets (Boonstra et al. 2018).

The fishery was granted the certification due to a number or reasons such as restricted fishing effort, a highly monitored stock and the presence of a co-management arrangement. The co-management started in 2001 and has proven instrumental to secure the sustainability of this profitable fish. The co-management group was formed in response to declining catches in the late 1990s and received a mandate to discuss and decide the implementation of fishing restrictions together with SwAM. To reduce fishing pressure and catches of immature vendace, the fishers decided on a larger net mesh size, to refrain from fishing in areas with high number of juveniles and decrease the number of trawl permits. After 3 years of co-management, catches started to increase (Rova 2004).

A precautionary and adaptive approach to management is essential because the vendace is highly vulnerable to environmental changes. Recruitment fluctuates greatly and depends largely on variations in salinity and temperature, as well as on

the number of spawners and the level of fishing (Bergenius et al. 2013). During the last years, the vendace stock has started to decline in the Bothnian Bay (Swedish University of Agricultural Sciences 2017), and the MSC-certification was withdrawn on the 9th of November 2019. To regain the certification, the co-management group need to take further actions to halt decline of the vendace.

### *27.4.3 The Cod Fishery*

The cod fishery currently represents the second highest landing quantity and landing value of the Baltic Sea fisheries after the mixed pelagic trawl fishery for herring and sprat (Table 27.2). The Swedish cod fishery ranges from small-scale gillnets, traps and long-line fishers making one-day fishing trips, to relatively large (up to 32 m) bottom trawlers making multiday trips from their home harbours on the Swedish Westcoast (Boonstra and Hentati-Sundberg 2016). Despite a history of mixed fishery, combining cod fishing with fishing for herring, flounder (*Platichthys flesus*), Atlantic salmon and freshwater species, most cod fishers today are highly specialised. One reason for specialisation is regulations inhibiting the fishers to target other species. For example, keeping a license for cod fishing and fishing for pelagic species is generally not allowed today (Hentati-Sundberg and Hjelm 2014). Also, salmon fishing, which was an important side activity for many cod fishers, is today prohibited in the southern Baltic Sea.

From a long-term perspective, the intensity of cod fishing in the Baltic has closely followed the population dynamics of the species. Cod showed a gradual yet slow increase from the early decades of the twentieth century until the early 1970s, when it increased rapidly resulting in a historical peak of nearly 700,000 tonnes in spawning stock biomass (Eero et al. 2008). Baltic Sea landings peaked at 392000 tonnes in 1984 (International Council for the Exploration of the Sea 2017). After the peak, fishing in combination with lowered recruitment brought the population down to historically low levels, reaching a low of 60,000 tonnes in 2005 (i.e. less than 10% of the peak biomass). Since then, the status of the cod stock has been subject of on-going scientific and political debate. Initially, the stock seemed to recover, partly attributed to politicians' stricter compliance and implementation of scientific advice on setting sustainable quotas but also to fishers' greater compliance with regulations (Eero et al. 2012). Recently, however, data indicates further declines, also because previous stock assessments were based on overestimations (Eero et al. 2015).

During the 1970s–1980s, the high abundance and profitability of Baltic cod attracted trawling fleets from outside the Baltic, while many Baltic fishers increased their cod fishing. The subsequent decline has hit the fishing industry hard, creating low economic profitability (Waldo et al. 2010), increased regulation (Hentati-Sundberg and Hjelm 2014) and competition from increasing grey seal and cormorant populations (Königson 2011). In the last 15–20 years, the number of vessels

pursuing small-scale cod fishing with gillnets and longlines declined, quite dramatically, with 60% between 2003 and 2015 (Bergenius et al. 2018).

The EU-wide Baltic Sea international cod management plan from 2007 has put significant regulatory pressure on cod fishing; in addition to the internationally negotiated Total Allowable Catch. The regulations today include effort regulations, special landing harbours, limitations on combining cod fishing with fishing for other species and license requirements (Hentati-Sundberg and Hjelm 2014). Moreover, external factors such as the increase in quantities of cod landed in the Barents Sea has led to a price drop which negatively affected the profitability of Baltic cod fisheries.

In the late 2000s, some Swedish Baltic Sea cod fishers started preparing for a possible MSC-certification, and in 2011, the trawl, long-line and trap fisheries (51 vessels in total) were certified. However, due to the sudden deteriorating situation of the stock (Eero et al. 2015), the certification was withdrawn on December 17th, 2015. The gillnet fisheries (i.e. the bulk of the small-scale sector) have been denied certification because of presumably large numbers of unreported and undocumented by-catches of seabirds (Österblom et al. 2002) and harbour porpoises (Koschinski 2011).

Clearly, several challenges lie ahead for small-scale cod fishing in the Baltic Sea. In the long-term, climate change is expected to further deteriorate the already suboptimal environmental conditions for cod reproduction (Niiranen et al. 2013). Some fishers have now started to establish local markets where they can sell their cod directly to customers (Box 27.1). Through these arrangements,

**Box 27.1: Selling the Fish Locally**

The infrastructure of how small-scale fishers sell their fish has changed considerably over time. In the past, most fishers sold their fish at local markets and auctions that were to be found all over the Swedish coast, and used a considerable part of the catch for their own consumption and subsistence. Today, two main fish auctions remain in Sweden, Göteborg and Smögen, both located on the west coast, far from the Baltic Sea. However, the demand for locally caught fish have increased in recent years (Swedish Board of Agriculture 2014), and several new initiatives have emerged in response to this expectation. A fish auction has, for example, been reestablished in the vicinity of the Swedish capital Stockholm (http://stockholmsfiskauktion.se). Another example is a web-based initiative called 'FiskOnline' (http://fiskonline.se) that was introduced in 2013. The purpose of 'FiskOnline' is to help fishers to sell their catch and consumers to buy fish from local waters. The fishers report their landed catch on a webpage, where consumers can search for recently caught fish in their local area. The consumers then pay online and meet the fisher to pick up the fish. 'FiskOnline' allows fishers to sell their fish

(continued)

**Box 27.1** (continued)
at a lower price without risking profit, as intermediate trade costs are avoided. Through these arrangements, local fishers can get higher wholesale prices from local consumers, and improve their profitcs even on decreased catch quantities. The consumers, on the other hand, get to buy fresh fish that has not been transported over long distances, and can feel that they are contributing to reducing carbon-dioxide emissions. Overall, the trend for locally produced fish allows the establishment of new, bottom-up initiatives, linking consumers and producers more directly.

fishers can get higher wholesale prices from local consumers, and may therefore make profits even when experiencing decreased catch quantities. Coupling local producers and consumers directly may further create an opportunity for consumers to adapt their choice and purchase of fish to changing fish stock dynamics (Crona et al. 2016).

## 27.5 The Future

Predictions and future scenarios for Swedish small-scale fisheries hover between collapse or sustainable regeneration. Above, we emphasise the importance of paying attention to diversity to improve such predictions and scenarios. In this section, we discuss general opportunities for development and challenges that need to be overcome in order to escape decline and ensure resilience of Swedish small-scale fisheries.

A promising opportunity for sustainable development of Swedish small-scale fisheries is related to a strategy of maximising price per kilo of fish, instead of conventionally increasing the quantity of the catch. Branding the catch and supply of seafood as local, unique or exclusive (like in the vendace fishery) can add significant value (Box 27.1). At the same time, it needs to be acknowledged that selling fish locally is not a generic solution. A market for local fish requires a population of consumers large enough and with enough purchasing power and interest. Fishers also have different desires, abilities and opportunities for this type of fishing (Boonstra et al. 2016). Some fishers have opened up restaurants where they sell their catch, some advertise eel fishing and smoking as a tourist attraction, while others just want to fish without having to deal with customers directly.

A major challenge that needs to be overcome for small-scale fisheries is the extent and complexity of fisheries regulation. Swedish small-scale fisheries are traditionally multi-species and multi-gear operations, while fishery regulation is often organised per species and gear type without consideration as to how these are com-

bined in practice (Murray et al. 2010). For example, many important commercial species require a specific permit, but acquiring multiple permits is discouraged. Permits for different fisheries have been gradually implemented in the Swedish fishery since the early 2000s, mainly as a mean to reduce fishing effort (Hentati-Sundberg and Hjelm 2014). This hampers fishers' ability to target multiple species, while diversification is precisely the strategy many small-scale fishers apply to earn an income and make ends meet.

Another major challenge for development of Swedish small-scale fisheries is the lack of recruitment and succession. As we highlight, few start a small-scale fishing operation because the economic payoff is relatively low. However, in addition to this challenge, it is not easy to obtain a fishing license. A prospective fisher first needs to own a fishing vessel. Buying a vessel already involves considerable risk because it is unsure if a license will be granted, and if the profitability will be sufficient to pay off the vessel. Also, opportunities for aspiring fishers to learn the required skills and knowledge are limited due to a rapidly shrinking fisher population. A final challenge that needs to be mentioned is the increased uncertainty of future ecosystem, especially in the light of climate change (MacKenzie et al. 2007). The future development of small-scale fisheries obviously depends on fish stock dynamics and all the environmental factors influencing them over time.

Maintenance and creation of fishing diversity is key for a viable future for small-scale fisheries. Studies suggest that fostering diversity helps to maintain overall resilience (Kotschy et al. 2015). Small-scale fisheries are likely to be better prepared to respond to the challenges outlined above when they can target multiple species and use multiple gears. For example, if the vendace continues to decline and further fishing restrictions are implemented, the fishers will likely be better off if they can increase fishing pressure on other species. Practically, this means that fisheries management would do well in opening up as many fishing opportunities as possible and ecologically sustainable. In turn, the regulatory regime needs ready capacity to adapt rapidly to local situations and social-ecological changes (Armitage et al. 2009). In line with Mahon et al. (2008), we argue that such capacity best can built in a management system that, through a mix of top-down control and regulatory actions enabling self-organisation, explicitly considers the complex and diverse social-ecological interactions shaping fisheries development.

## 27.6 Conclusion

It is still common practice to use scale as shorthand for the assessment and justification of certain fishing techniques in relation to ecological, social and economic sustainability. In this chapter, we argue and demonstrate why scientists and managers should be careful when using or referring only to scale. Small-scale fisheries, defined by their scale of operation, are neither sustainable nor unsustainable. Careful

analysis is required to determine each fishery's prospects and potential for sustainable development (Arias-Schreiber et al. 2017). Such analyses must rely on data and knowledge of ecological sustainability – the inevitable fundament for any resource-based activity – complemented with analyses of social-economic opportunities and challenges facing a particular fishery. The three empirical examples of Baltic Sea fishery featured in this chapter illustrate how and why assessments of the social-ecological impact of fisheries can be best approached from multiple angles and variables.

We acknowledge that some small-scale fisheries can have unique opportunities for future development due to locally adapted fishing practices, knowledge of the local environment and low impact fishing techniques. If a fishery can maintain these characteristics, we think it has the potential to contribute to a resilient and sustainable exploitation of marine ecosystems today and in the future. However, it also clear that other small-scale fisheries have lost (or never had) the potential required to sustain a fishery ecologically in the long-term. The eel fishery is a good example here; the eel is critically endangered and there is probably no way for it to become sustainable in the foreseeable future.

Furthermore, attention to diversity in fisheries and small-scale fisheries is not only warranted to better identify and anticipate the potential for sustainable development. Maximising diversity is also important to foster resilience of Swedish small-scale fisheries. It is though important to emphasise that diversity can only be maximised with respect to what is ecologically sustainable. We believe that such an objective is best reached with a mixture of top-down and bottom-up approaches that can rapidly be adapted to meet local situations and changes. A first step for policymakers towards reaching this objective could be to abandon the active promotion of scale enlargement, rationalisation and modernisation of the Swedish fleet.

We believe that more awareness and comprehensive analyses of the diversity of small-scale fisheries, and the (lack of) potential for sustainability of various fishing practices, could help make fisheries development and management more effective, and steer clear of overconfidence in market liberalisation, or romantic images of times past.

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# Chapter 28
# Small-Scale Fisheries in Europe: Challenges and Opportunities


**Cristina Pita, José J. Pascual-Fernández, and Maarten Bavinck**

**Abstract** Small-scale fisheries play a major role in Europe, employing large numbers of people, shaping the socio-economic life of coastal communities, and providing fresh, high-quality seafood to local, regional, national and international markets. This chapter synthesises findings from the 25 country chapters in this volume, bringing together key lessons regarding the nature of European small-scale fisheries and their national contexts. It focuses on the socio-economic characteristics, governance arrangements, markets, interactions with other coastal activities, and the challenges encountered by small-scale fisheries. Finally, it reflects on the future of small-scale fisheries in Europe and concludes that, although this sector has faced hard times, there are now significant policy trends in its favour.

**Keywords** Common Fisheries Policy (CFP) · Competition · Conflicts · Diversity · Decision-making · European Union (EU) · Participation · Governance · Socio-economics · Seafood products · Markets · Women

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## 28.1 Introduction

Small-scale fisheries enjoy a strong presence along the entire European coastline, contributing to food security, employment and cultural identity. In terms of numbers, in 2016 the European Union (EU) small-scale fleet, i.e. the "*vessels of an overall length of less than 12 metres and not using towed fishing gear*" (Commission Regulation (EC) No. 26/2004), employed 78,304 fishers (i.e. 48% of the EU total fishing jobs), making use of 49,029 vessels (i.e. 74% of the EU total) and accounting for 12% of the total value of EU landings (STECF 2018).

Despite the marginalisation of small-scale fisheries in the policy realm, to which we return below, the sector still plays a major role in Europe, often shaping the socio-economic life of coastal regions. However, information on small-scale fisheries, and especially on the human dimensions of this activity, is missing in many countries. As a result, small-scale fisheries are often overlooked and/or undervalued (Pita et al. 2019). The situation is changing, however, and the visibility of the sector is improving globally. The sector is receiving increasing attention from the Food and Agriculture Organization (FAO) of the United Nations (UN), which considers that, among the different fisheries sub-sectors, small-scale fisheries (together with aquaculture) require the most urgent attention. As such, FAO member states endorsed the "*Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* (SSF Guidelines)" which call for States and other stakeholders to improve the understanding of small-scale fisheries (FAO 2015). In addition, the UN Sustainable Development Goals (Target 14b) call for access to marine resources and markets for small-scale artisanal fishers. Furthermore, the UN recently declared 2022 the *"International Year of Artisanal Fisheries and Aquaculture"*, further focusing attention on small-scale fisheries and the men and women that work in this sector.

The present chapter synthesises and compares findings from the 25 country chapters in this volume, which include most European Union coastal Member States as well as a number of non-Member States. It investigates the nature of small-scale fisheries, their social and economic importance, markets and governance arrangements, the interactions that occur with other fisheries and other societal sectors, and the capacity of small-scale fishers to engage in collective action. In addition, this chapter enquires into the extent to which the EU's Common Fisheries Policy (CFP) has affected small-scale fisheries in the region. Finally, we will reflect on the future of small-scale fisheries in Europe.

## 28.2 The Diversity of Small-Scale Fisheries in Europe

Defining small-scale fisheries is not an easy task (Garcia-Florez et al. 2014; Natale et al. 2015; Davies et al. 2018) and a 'global' definition for the sector is deemed to be impossible by some (Chuenpagdee et al. 2006). As expected, the analysis of the 25 European small-scale fisheries in the present book demonstrates that the varia-

tions are huge, even within one continent. It is not our aim to carry out the herculean task of defining small-scale fisheries in Europe; instead we aim to point out that – in contrast to the relatively simple EU definition of small-scale fisheries which reads: "*fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear*" (Commission Regulation (EC) No. 26/2004) – the sector is actually very diverse. The reason for this condition is that small-scale fisheries are embedded in distinct local contexts and environments and possess long, meandering histories. This has resulted in pluralities of fishing technology, practice and culture.

What constitutes small-scale fisheries in one place might therefore be different in another. While the official definition of small-scale fisheries in many countries follows the EU definition, this is not the case in all countries. Small-scale fisheries also have a multitude of names, often used interchangeably, to define the sector (e.g., inshore, artisanal, local, coastal) (Table 28.1).

In practice, each country employs its own perspective in what it considers to be small-scale fisheries; while the EU definition is mainly relevant for statistical purposes, as well as a requirement for the allocation of EU subsidies under the European Maritime and Fisheries Fund (EMFF). In some countries, vessels around 20 m in total length are considered small-scale (e.g. Belgium, Denmark, Netherlands, Germany), while in others 12 m are considered too large (e.g. Greece, Portugal). In some countries, the small-scale activity allows for vessels using towed gear, as is the case in the United Kingdom, where the inshore fleet relates to vessels up to 10 m regardless of the gear they use. The same happens in Spain, where the category of 'small-scale gears' also includes towed gears with a strong tradition in small-scale fisheries, such as small purse seiners or dredgers.

In most of the EU Member States analysed in this book, the defining characteristics of small-scale fisheries go beyond the EU definition. Governments apply a range of additional criteria for what constitutes small-scale fisheries including: gears allowed, maximum vessel length, engine power, maximum duration of fishing trips, distance from port at which vessels can operate, area of operation, maximum allowed travel time, vessel ownership, and/or the need to depart and return to the same harbour (see Table 28.1). In this diverse landscape, Sweden stands out with a total of seven criteria being defined by its National Fisheries Board as a guiding tool to identify and describe coastal small-scale fisheries.

According to Symes (2014), the parameters used to define small-scale fisheries are associated with specific management styles. For instance, structural parameters (e.g. vessel length) point to a management style that views small-scale fisheries as one of several parts of the fisheries sector. On the other hand, functional parameters (e.g. area of operation) point to the management of small-scale fisheries as a differentiated social-ecological entity (Symes 2014).

The divergence in defining and identifying what constitutes small-scale fisheries between the EU and national authorities, as well as the diversity of individual national defining characteristics, make it difficult to put a single face to small-scale fisheries in Europe. It becomes even more difficult when considering relevant social and cultural dimensions, such as gender roles, family life and spiritual outlook.

**Table 28.1** Characteristics of small-scale fisheries (SSF) in Europe

| Country | % of fishing vessels[a] | % of fishers[a] | Name given to SSF | Existence of a national definition | National definition matches EU definition[b] | Characteristics of SSF | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Vessel length | Vessel tonnage | Ownership of vessel | Presence owner onboard | Type of gear allowed | Area of operation | Engine power | Manner of operation | Type of licence | Duration of the trip | Depart/return harbour | Need to be in rural area | Needs to be combined with another activity | Importance of fishing income |
| Belgium | – | – | Small coastal fisheries | ✓ | Ø | Ø | ✓ | Ø | Ø | Ø | ✓ | ✓ | Ø | Ø | ✓ | Ø | Ø | Ø | Ø |
| Bulgaria | 90% | 83% | SSF | Ø | – | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Croatia | 81% | 64% | Small coastal fishery | ✓ | ✓ | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø |
| Cyprus | 95% | 87% | Small-scale inshore vessels | ✓ | ✓ | ✓ | Ø | ✓ | Ø | ✓ | ✓ | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ |
| Denmark | 71% | 24% | Coastal fisheries | ✓ | Ø | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø |
| Estonia | 98% | 93% | Coastal fisheries | ✓ | Ø | ✓ | ✓ | Ø | Ø | Ø | ✓ | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Finland | 96% | 90% | Coastal fisheries/lake fisheries[c] | Ø | – | ✓ | Ø | Ø | Ø | ✓ | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| France | 73% | 51% | Small fisheries | ✓ | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø |
| Germany | 73% | 48% | SSF[c] | Ø | – | ✓ | Ø | Ø | ✓ | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Greece | 93% | 79% | Coastal fisheries | ✓ | Ø | Ø | Ø | ✓ | ✓ | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Iceland | 68%[d] | – | Small-boat fisheries | ✓ | Ø | ✓ | ✓ | Ø | Ø | ✓ | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ireland | 63% | 40% | Inshore fisheries | ✓ | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Italy | 65% | 49% | Small-scale coastal fisheries | ✓ | ✓ | ✓ | Ø | Ø | Ø | ✓ | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Malta | 91% | 78% | SSF | ✓ | ✓ | ✓ | Ø | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Ø | ✓ | Ø | Ø | Ø |
| Netherlands | 34% | 16% | Remaining coastal fisheries[e] | Ø | – | Ø | Ø | ✓ | ✓ | Ø | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø |
| Norway | – | – | Coastal fisheries | Ø | – | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Poland | 76% | 56% | SSF | Ø | – | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Portugal | 79% | 51% | Local artisanal fisheries | ✓ | Ø | ✓ | Ø | Ø | Ø | ✓ | ✓ | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Romania | 86% | 77% | Small-scale coastal fisheries | ✓ | ✓ | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| NW Russia | – | – | Coastal fisheries | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø |
| Slovenia | 87% | 79% | Small coastal fisheries | ✓ | ✓ | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Spain | 51% | 28% | Small scale gears | ✓ | Ø | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| Sweden | 76% | 60% | Coastal SSF | Ø | – | ✓ | Ø | Ø | Ø | ✓ | ✓ | Ø | Ø | Ø | ✓ | ✓ | ✓ | ✓ | ✓ |
| Turkey | 90%[f] | 61%[f] | SSF | Ø | ✓[g] | ✓ | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |
| UK | 70% | 46% | <10m vessels | ✓ | Ø | ✓ | Ø | Ø | Ø | Ø | ✓ | Ø | Ø | Ø | Ø | Ø | Ø | Ø | Ø |

Notes: ✓ yes, Ø no; SSF small-scale fisheries; [a]Data from STECF (2018), data refer to 2016; [b]"vessels of an overall length of less than 12 m and not using towed fishing gear", as per the European Maritime and Fisheries Fund (EMFF) definition (Commission Regulation (EC) No 26/2004); [c]Name given by authors in the respective chapter; [d]Data from Statistics Iceland (2014); [e]Wageningen Economic Research (WEcR) database 'rest category' in which most small-scale fishers can be found; [f]Data from TUIK Fishery Statistics (2018); [g]Despite not having a legal national definition, the general accepted definition matches the EU definition

It must be noted that the EU definition of small-scale fisheries is essentially an administrative definition. It does, however, play a role in shaping the composition of fishing fleets, such as through the allocation of EU fisheries funds (which are based on the EU definition). For instance, the EU definition excludes vessels using some traditional gears (i.e. beach seines or small purse seines), which struggle to obtain funding as a result of this exclusion. The fact that these traditional practices are excluded from the EU definition also reduces the visibility of small-scale fisheries, and their importance in EU statistics, as these units are not counted as belonging to the sector.

## 28.3 Characteristics of Small-Scale Fisheries in Europe

### *28.3.1 Socio-Economic and Cultural Importance*

All along European coasts, small-scale fisheries contribute to coastal community development and rural livelihoods, as well as to national identity. However, some variations stand out. The first of these is the difference between small-scale fisheries in southern and eastern Europe, on the one hand, and north-western Europe on the other. In southern and eastern Europe, the small-scale sector is dominated by a large number of small-scale fishing units dispersed over many landing sites, operating a variety of fishing gears (static nets, gillnets, longlines, pots and traps, hooks and lines), and targeting a vast range of species. This stands in contrast to north-western Europe, where the implementation of Individual Transferable Quotas (ITQs) for many species has greatly diminished small-scale fishing fleets and pushed them to the margins.

A second obvious pattern is the difference between countries on the two sides of the former so-called Iron Curtain (1945–1991) that separated the countries of the western bloc from the eastern bloc. Whereas small-scale fishers in countries of the former western bloc underwent a gradual set of transitions since the second World War as a result of industrialisation, market integration and the creation and implementation of the CFP, those of the former eastern bloc experienced an abrupt transition with the fall of the Iron Curtain from communist to liberal market economies. The industrial fishing fleets of former eastern bloc countries were then largely dissolved, with new spaces emerging for small enterprises. However, in general, small-scale fisheries have received little attention (e.g. in Estonia and Romania). Incorporation into the regulatory regime of the CFP often brought about new shocks, to which we return below.

Another interesting pattern is the fact that in some country chapters (e.g. Belgium, Croatia, Finland, Norway, Turkey), authors felt that they could not discuss small-scale fisheries without also talking about recreational fisheries. Belgium constitutes a unique case. In this country, vessel size is not taken into consideration when defining small-scale fisheries; instead the commercial small-scale fleet is composed of

vessels that make short trips (maximum 48 h) – these include smaller fishing vessels (engine power ≤ 221 kW and gross tonnage <70 GT). In addition to this 'official' small-scale fleet, however, there is also a substantial number of fishing vessels below 12 m in length in the recreational fleet, of which around 100 are beam and otter trawlers. These small trawlers operate under a specific legal framework (including spatio-temporal and technical regulations). Thus, Verlé et al. (Chap. 18 this volume) suggest that the combination of the commercial coastal and recreational fleets represent the totality of Belgian vessels that conduct fishing on a small-scale basis. Norway is another interesting example. In this country, the catch from recreational fisheries, which can be carried out free-of-charge by all residents in the country, can be sold (up to a certain value per year), inviting the question whether these should also be included in the small-scale fisheries category.

Croatia provides an interesting example of transition from subsistence fisheries into small-scale commercial and recreational fisheries. Croatia's accession to the EU (July 2013) resulted in the previously existent category called *"small-scale fishery for personal needs"* being divided into two sectors: small-scale commercial and small-scale non-commercial fisheries. A total of 3500 vessels, out of the 11,000 in the previous category of small-scale fishery for personal needs, now make up the commercial small coastal fishery in Croatia. The number of commercial small-scale vessels has been increasing, with many recreational vessels acquiring licences to operate commercially. The ongoing process of issuing licenses for small-scale fisheries has resulted in an increase of 78% in the number of commercial vessels from 2015 to 2016 (STECF 2017). See Matić-Skoko and Stagličić (Chap. 8 this volume) for a more detailed description. In Bulgaria, 90% of all fishing vessels are small-scale, but most fishers practice this trade only on a seasonal basis. Their activity is therefore closer to a hobby than a commercial activity, as most catch is for private consumption.

A demographic trend common to most European countries is the fact that the European small-scale fishing workforce is now relatively old, and that in several countries (e.g. Greece, Portugal, Italy), such fishers also possess relatively low educational qualifications. The old age of fishers is identified as a serious problem by authorities in several countries (e.g. Denmark).

Gender patterns are also pronounced in the small-scale sector. In line with global trends (Acheson 1981), small-scale fishing in Europe is a male-dominated activity. After all, it is generally men who occupy the landing sites and travel to sea to fish, so their presence is obvious. Yet, despite the number of women employed in small-scale fisheries in Europe being unknown (with a general lack of official statistical data on women's employment), the sector employs a greater proportion of women than larger scale fleets (STECF 2019). Traditional roles of women in small-scale fishing activities are recognised by authors from most countries in this volume. Small-scale fisheries have always been structured around the family; women have therefore been heavily involved in the fishing activity in the past, carrying out activities such as baiting and mending gear, gutting and cleaning fish, selling the catch, cleaning the vessel, and doing the day-to-day management of the activity. As identified in several chapters of this volume, women continue to play an active, though frequently also *'invisible'*, role in fishing. For instance, in Iceland and Croatia, many

women are owners/co-owners of fishing companies. In other countries, women make up an important proportion of shellfish gatherers (e.g. Portugal, Spain, France) and are strongly involved in seafood marketing and processing (e.g. Portugal).

### *28.3.2 The Weak Voice of Small-Scale Fisheries in Europe*

Small-scale fishers have, for a long time, not been part of the EU decision-making process (Pita et al. 2012; Leite and Pita 2016) and are therefore poorly represented. As pointed out recently by a high-level bureaucrat with DG MARE and the International Council for the Exploration of the Seas (ICES):

> It is a problem in its own right that the calendars of apparatniks from DG MARE and ICES like myself are full of meetings involving 'representatives' from fisheries, who tend to be only from those subsectors which have enough money to afford to pay professionals to take on that role.[1]

This situation obviously affects the ability of small-scale fishers to influence the policy process. In addition, other factors also contribute to limiting collective action by small-scale fishers, such as the large number of actors in the small-scale fisheries sector, their geographical dispersion, the nature of the business (i.e. small-family enterprises), the lack of trained staff devoted to management, the lack of financial support for small-scale fisheries organisations to take part in the decision-making process, and (even) competition and lack of trust between fishers. All of these factors further impede small-scale fishers from developing organisational muscle.

The visibility of the 'forgotten' small-scale fleet is, however, slowly increasing in Europe, as is their capacity for collective action. This trend is evidenced by the establishment of the *Low Impact Fishers of Europe* (LIFE) platform (see Percy and O'Riordan, Chap. 2 this volume, for more detail). LIFE has been successful in raising the profile of small-scale fisheries in Europe, although the sector still lags behind large-scale fisheries in decision-making power in Brussels, as well as in the capitals of many European nation states.

At the national level, there are clear differences in the capacity of small-scale fishers to influence decision-making, and in most Member States the participation of small-scale fishers in the decision-making process is still weak, with small-scale fishers complaining about being under-represented (e.g. Croatia, Cyprus, Greece, Portugal).

The European fisheries sector is currently organised into Producer Organisations (POs), unions, cooperatives and fisher associations, with different roles and purposes. The officially recognised POs exist all along the EU coastline (there are over 200 of them[2]); they are self-governed and play an important role in implementing

[1] Personal communication Poul Degnbol, May 8, 2019.

[2] https://ec.europa.eu/fisheries/cfp/market/producer_organisations_en [accessed on February 2019].

the rules of the CFP and the common organisation of markets. However, in many countries small-scale fishers are excluded from PO membership, being instead part of local organisations, with a much weaker voice. This is the case in the United Kingdom, where, with the exception of the Cornish PO, under 10 m vessels are completely excluded from POs (Symes et al., Chap. 17 this volume). In addition, in some countries (e.g. Greece, Portugal), 'associativism' is weak and there is a general tendency among fishers to distrust collective action, resulting in limited political influence (Pita and Gaspar, Chap. 14 this volume; Tzanatos et al., Chap. 7 this volume). In Croatia, as a result of joining the EU, fishers are slowly becoming more involved, but in general their confidence in the outcomes of participation in policy-making is weak (Matić-Skoko and Stagličić, Chap. 8 this volume). Low participation in the decision-making process is not restricted to southern Europe. For instance, in Sweden many small-scale fishers complain of being ignored and have discontinued their membership in fisher organisations (Björkvik et al., Chap. 27 this volume). In other cases, however, small-scale fisher organisations are quite influential at local and regional levels, but not so much at national or international ones (e.g. France, Italy, Spain).

There are some cases of successful co-management, such as in the vendace fishery in Sweden (see Björkvik et al., Chap. 27 this volume, for more details). In other countries, there is currently awareness and willingness to engage in power-sharing (e.g. Turkey). On the other hand, there are also cases (e.g. Ireland), where the governance style of fisheries is not very conducive to co-management (see Fitzpatrick et al., Chap. 15 this volume, for more details), and others where local co-management and Territorial Use Rights for Fisheries (TURFs) are no longer viable (e.g. Italy) due to changes in recent European funding regulation (see Raicevich et al., Chap. 10 this volume, for more details). Thus, there is no 'one model fits all' for small-scale fisheries governance in Europe. In addition, an arrangement that works in one place might not be suitable elsewhere. Still, the inclusion and involvement of fishers in local and regional decision-making, amongst other benefits, seems to improve compliance with rules and regulations, and increase fishers' willingness to collaborate and seek sustainable practices (Pita et al. 2012; Birnbaum et al. 2015; Leite and Pita 2016;), so it is an endeavour that should be pursued.

### *28.3.3 Securing a Place for Small-Scale Fisheries*

Small-scale fisheries in Europe interact and are often in competition for space with other fisheries (larger scale commercial fisheries and recreational fisheries), with other sectors of the local economy, and with efforts toward environmental protection. The authors of country chapters in this volume often mention such competition for resources and space as major challenges for the small-scale sector.

Competition for resources with larger scale and recreational fisheries is commonplace in many locations. Problems related to equity and access rights occur frequently in northern Europe. For instance, in Denmark, Germany and the United

Kingdom quota shares have drained resources from the small-scale fleet. In the United Kingdom, after all the quota is divided, the under 10 m fleet gets a share of less than 1% of the total fish quota (MMO 2015). See Symes et al. (Chap. 17 this volume) for a detailed description of the United Kingdom quota management system. Denmark, with its well-known market-based management system of ITQs, implemented a Vessel Quota Share (VQS) system in 2007 with severe consequences for the small-scale sector. The ITQ and VQS systems concentrated fishing quotas, and in 2017 the scandal around *"Quota Kings"* (holders of large amounts of quotas) resulted in public and political debate over this issue. Refer to Autzer and Winter (Chap. 20 this volume) for a detailed description of the Danish quota management system. Some countries along the North Sea and the Baltic coasts have experienced more quota and catch share concentration than others (e.g. Belgium, the Netherlands, Germany, Denmark), demonstrating that a market-based approach is liable to inflict damage on small-scale operators (Copes and Charles 2004; Stewart et al. 2006; Pinkerton 2017).

Conflicts with other economic sectors of the local economy, as well as with conservation imperatives, are also identified as problems for small-scale fisheries. The expansion of coastal recreation and tourism activities, and the subsequent dispossession of marine and coastal space for small-scale fishing, appears to be a serious challenge, especially in southern Europe (e.g. in Cyprus, Italy, Malta and Spain). In the United Kingdom, increasing claims on space by conservation, recreation and renewable energy interests makes access to inshore fishing grounds perhaps the greatest future challenge for the small-scale sector (Symes et al., Chap. 17 this volume).

In addition, a gentrification process occurring in many coastal areas has made it increasingly unaffordable for fishers to live in coastal areas near their place of work. This is the case, for instance, in the United Kingdom and Malta. On the other hand, small-scale fisheries are increasingly seen as an indirect service to local tourism, providing a living depiction of fishing heritage to the local harbour scene (Acott and Urquhart 2014). In Portugal, during the summer the areas and hours of operation of beach seine fishing are restricted so as not to interfere with beach-goers. On the other hand, this same beach seine fishery is also a tourist attraction, and in some places, tourists can even take part in the activity (Pita and Gaspar, Chap. 14 this volume).

### *28.3.4 Securing Market Access for Small-Scale Fisheries Products*

The European small-scale fisheries catch is mostly destined for local, regional and national markets, and (in some cases) for international markets, providing consumers with fresh, high-quality products. However, small-scale fisheries compete for market share with products from aquaculture, the large-scale sector, imports and, in

some locations, even with catch from recreational fisheries (which are sometimes sold illegally). As a result of changing market dynamics, many small-scale fishers are now pursuing new ways to market and sell their catches (Stoll et al. 2015).

Over the last decade, a diversity of experiences to promote and differentiate small-scale fisheries products have been developed in Europe and elsewhere, as reported by several authors (Bolton et al. 2016; Godwin et al. 2017; Pascual-Fernandez et al. 2019). Several chapters in this volume mention initiatives to differentiate small-scale fisheries products in the market (e.g. Denmark, Greece, Portugal, Spain, Sweden, United Kingdom). The most common strategies to add-value to small-scale fisheries products and improve their market opportunities involve direct marketing, certification and labelling strategies.

Direct sales of locally caught fresh products to consumers, or short, local supply chains (e.g. through fish basket or fish box schemes) are increasing in Europe and are seen as a major opportunity to increase revenues in some countries (e.g. Portugal, United Kingdom). The branding of small-scale products as local, unique and fresh can add significant value to the catch, as has been observed in Sweden. In Denmark, a new programme is starting to focus on the marketing of coastal fishing through a state-led ecolabel for small-scale, low-impact caught fish (Autzer and Winter, Chap. 20 this volume).

All of these initiatives focus on local branding, which despite being an interesting mechanism, is not a panacea for the economic viability of the sector. It is important to acknowledge that selling fish locally is not always possible, as it requires a large enough local market along with consumer with buying power and interest in these products. Alternatives such as larger international labels, like the Marine Stewardship Council (MSC) certification, are also being used in some small-scale fisheries (e.g. western Asturias octopus trap fishery, Spain). However, this label is costly, with the value of accreditation lying beyond the reach of many small-scale fisheries (Ponte 2012). Furthermore, when these eco-labels become dominant and a pre-requisite in a market, as seems to be the case in Germany, small-scale fishers can be at a disadvantage, as they do not have the data or the financial capacity to initiate a certification process (Döring et al., Chap. 23 this volume).

### *28.3.5 The Need for Generational Renewal in Small-Scale Fisheries in Europe*

The total number of fishers in Europe has been declining for decades. Considering the current average age of the fishing workforce in Europe, as described in Sect. 28.3.1, the expectation is that the sector might decline further as the remaining fishers reach retirement age.

Challenges related to low succession and recruitment in the small-scale sector are identified by authors in most countries. The ageing workforce, the low appeal of the activity to younger people, the difficulty of entering the fishing activity, and the

low level of recruitment of young fishers are identified as major challenges (e.g., in Denmark, Estonia, Germany, Greece, Portugal, Sweden, United Kingdom). In northern Europe, younger fishers experience difficulties in entering the sector due to the large capital investment required for buying quotas and vessels (e.g. in Germany, Denmark, Sweden). In several other countries, formal training requirements impede youngsters from entering the profession.

In spite of these difficulties, in many parts of Europe small-scale fisheries still keep small, remote coastal communities alive all year-round. The sector is particularly critical to the survival of traditional fishing communities in rural areas with few existing employment opportunities (Pita et al. 2010). A reversal in the decline in employment and the ageing trend will depend on the creation of new prospects in the small-scale fisheries sector, the realisation of which will differ from country to country.

## 28.4 The Legal Framework of Small-Scale Fisheries in Europe

The European fishing sector has always been deeply affected by public policies, the most important of which, in the current context, is the CFP. Fisheries policies under the CFP are mostly aimed at large-scale fisheries, tending not to consider the challenges faced by the small-scale sector. The main reason for this has been the successive derogations (i.e. exemptions from a rule) of the 'equal access principle' since the inception of the CFP, and especially the 1982 derogation which effectively delegated responsibility for management of waters within 12 nm to the Member States (Churchill and Owen 2010). Still, while these policies have not paid explicit attention to small-scale fisheries, some of the measures implemented under the CFP have had an undue impact on this sub-sector. For example, TACs set for many commercial fish stocks around Europe have also affected small-scale fisheries, as the sector also targets some of these stocks. TACs are shared between EU countries in the form of national quotas that subsequently are distributed nationally amongst the several segments of the fleet. Issues related to securing small-scale fisheries' access to resources have become a serious problem in several parts of northern Europe (e.g. Denmark, Germany, Iceland, Ireland, United Kingdom). The situation is now such that small-scale fishers in many of these countries cannot diversify into different fisheries due to the difficulty of accessing quotas. This stands in the way of typical small-scale fishing strategies, which often involve shifting from species to species. Now many small-scale fishers in northern Europe are forced to depend on a single species, which is not always viable.

With the aim of improving governance, the 2002 reform of the CFP created Regional Advisory Councils (RACs) to allow stakeholders an opportunity to give input into policy development. RACs are now called Advisory Councils (ACs), stakeholder-led organisations which advise the European Commission on fisheries

management. Though still heavily under-represented, small-scale fishers finally sit at the table of most ACs (of which there are now ten in total).

The latest reform of the CFP, in effect since January 2014, introduced the landing obligation, which might not be feasible or appropriate for small-scale fisheries and can have a strong negative impact on the activity (Veiga et al. 2016; Villasante et al. 2016, 2019). It also introduced Article 17 (referring to the allocation of fishing opportunities), which infers (but does not specifically mention) preferential access for small-scale fisheries.

Structural and investment funds, namely the European Fisheries Fund (EFF; 2007–2013) and the subsequent European Maritime and Fisheries Fund (EMFF; 2014–2020), have had as much of an impact on small-scale fisheries as the CFP. The EFF brought about Fisheries Local Action Groups (FLAGs), which have addressed some basic concerns of small-scale fishers, especially related to generating alternative sources of income. The EMFF continues to provide opportunities for small-scale fishers, for example by helping them to purchase their first vessel (thus helping young fishers enter the activity), invest in diversifying activities, or receive compensation for engaging in 'sustainable fishing' activities. However, the effectiveness of these funds for small-scale fisheries is not yet proven, as was observed in Spain where the predominance of tourism-related projects financed by EFF (Miret-Pastor et al. 2018) raises questions as to who is actually receiving these funds: fishers or tourism operators?

A recent and very important development for small-scale fisheries under the EMFF is the demand for all Member States to submit an action plan for the development of small-scale fisheries as part of their national Operational Programmes for the next EMFF funding period (2021–2027). This request had already been made to Member States with more than 1000 small-scale coastal vessels (i.e. 13 nations) in the previous financial period. However, this request left out many smaller Member States that, despite the importance of small-scale fisheries in their territories, host less than 1000 small-scale vessels. This measure has the potential to have a strong impact on the sector in the near future.

Any discussion of policy is incomplete if it disregards the process of implementation and compliance. Compliance is reportedly low in much of southern Europe. Even in northern Europe, where compliance is apparently high, it is sometimes described as 'reluctant compliance', such as in Sweden; fishers in this country follow regulations but are not committed to them and remain unconvinced of their effectiveness (Björkvik et al., Chap. 27 this volume). This condition is possibly linked to the dislike many fishers in northern Europe have of the CFP. Furthermore, the limited institutional capacity to effectively carry out surveillance and monitoring of small-scale fishing activities in some countries (e.g. in Bulgaria, Croatia, Greece, Portugal and Romania, to name just a few) means that a proportion of small-scale catches goes unreported.

In addition to fisheries policies, over the past decade the EU has been implementing environmental policies which have dramatically affected, and will continue to affect, small-scale fishing activities. International obligations and legislation, such as the agreement by OSPAR and HELCOM members, Habitat Directive, Marine

Strategy Framework Directive (MSFD) and Maritime Spatial Planning Directive (MSP), have generally restricted access to space and resources and impacted the mobility of the fishing industry. The Aichi target to protect 10% of the ocean by 2020 will extend the coverage of Marine Protected Areas (MPAs) in European waters, further restricting the freedom of movement of fishing fleets. An existing example is Malta, where MPAs occupy almost 50% of the inshore fishing zones and seriously inhibit small-scale fishing activity (See Vella and Vella, Chap. 11 this volume). Environmental policies also challenge coastal small-scale fisheries in Finland, as the ongoing protection of seals is considered a substantial problem for fishers' livelihoods (See Salmi and *Mellanoura,* Chap. 26 this volume).

The Blue Growth Strategy, a long-term EU approach to support sustainable growth in the marine and maritime sectors, aims to encourage new economic sectors in the marine environment (e.g. aquaculture, coastal and maritime tourism, energy, biotechnology) (COM 2012; SWD 2017). This constitutes a further incursion into what have traditionally been the fishing grounds of the small-scale sector.

Small-scale fisheries are important for the future of European societies, as they constitute an important part of European maritime cultural heritage. Additionally, small-scale fisheries may partner easily with the slow food (fresh food) movement. Therefore, we argue for a differentiated management approach which would protect sustainable small-scale fishing operations. This approach is in line with the recommendations of the Small-Scale Fisheries Guidelines (2014) and other international agreements.

The prevalent legislative framework in the EU frequently hampers the operation of small-scale fishers, if only because of its complexity. For instance, Björkvik et al. (Chap. 27 this volume) argue that the extensive and complex fisheries regulations in Sweden are a major obstacle for the future of Swedish small-scale fisheries. Similarly, Tzanatos et al. (Chap. 7 this volume) note that the modernisation of the legal context of Greek small-scale fisheries is the biggest challenge for the future of the sector in Greece. On the other hand, there is evidence of positive changes to legislation in several countries (e.g. Denmark), which protect the sector and may provide new opportunities for small-scale fisheries.

Geopolitical changes are also affecting small-scale fisheries. The impact of the transition from communist to liberal market economies in Eastern Europe has already been mentioned above. The subsequent dissolution of Yugoslavia has also made itself felt; for example, in Slovenia one of the factors that had the strongest impact on the daily lives of fishers was the establishment of the new state border after Slovenia's independence in 1991, which resulted in a significant loss of fishing grounds. See Janko Spreizer and Rogelja Caf (Chap. 9 this volume) for a detailed discussion. The United Kingdom's exit from the EU (also known as Brexit) fits into the same category of events. Despite the still unknown consequences of Brexit, it has the potential to drastically change the landscape of fisheries governance in Europe, the North Sea and the United Kingdom. It is not unreasonable to expect that it may have large negative impacts on the catch of several fleets from different nations operating in the North Sea, including small-scale fisheries fleets. Additionally, as argued by Symes et al. (Chap. 17 this volume), the withdrawal of British fisheries

from the EMFF could leave small-scale British fishers without important funding for local development and infrastructure, and potential problems of market access. On the other hand, Brexit may also create momentum for deregulation, particularly relating to quotas, which could benefit UK small-scale fishing activities.

## 28.5 Looking to the Future of European Small-Scale Fisheries

In light of the insights from the chapters of this volume, we pose the following questions: What does the future look like for European small-scale fisheries? Are European small-scale fisheries at risk of extinction or are they adapting? And if so, how? What opportunities are there for a sustainable future for small-scale fisheries in Europe?

The Too Big to Ignore partnership[3] has consistently argued for the value of small-scale fisheries throughout the globe, and its arguments are valid in Europe as well. The sector is viewed as particularly critical to the survival of coastal regions and communities, providing employment and strong evidence of sustainable fishing practices. It contributes to local food provision and tourism activity, as well as to the maintenance of fishing heritage. Additionally, as pointed out by Johnson (2018), the value of small-scale fisheries goes beyond these individual contributions: it is crucial for the well-being of coastal populations and makes an important contribution to society at large.

As noted in the sections above, the European small-scale sector is facing enormous challenges. The sector is under threat due to coastal/ocean displacement and competition for ocean space (e.g. by tourism, renewables, etc.), blue growth interests, the policy focus on large-scale fisheries, the difficulties of accessing markets, environmental degradation and overfishing, and – in the longer term – climate change. Some of these challenges are problems across the fishing sector, and some are specific to small-scale fisheries. Moreover, small-scale fishers may have less capacity to address these challenges than stronger societal groups sharing the same coastal areas or targeting the same resources.

In addition, the small-scale fishing sector has undergone substantial changes lately – in terms of management systems, governance, market access, and engagement with other sectors – that are detrimental to fishing livelihoods. However, the contributors to this volume point out that small scale fishers have adjusted in many ways to new circumstances. Yet, their future can still be considered uncertain in many European countries. This uncertainty is reflected most poignantly in the ageing of the fishing population and in the unwillingness – or inability – of young peo-

[3] Too Big To Ignore (TBTI) is the evocative title of a global research network focusing on all aspects of small-scale fisheries. http://toobigtoignore.net/

ple to enter the sector. Reversing this trend is one of the biggest challenges for small-scale fisheries in Europe.

Some of the above challenges, however, may also be creating new opportunities. Competition for space with other economic activities, such as tourism, can provide new opportunities for diversification. Indeed, fishing tourism is frequently mentioned throughout this volume as a potential strategy for diversification, with FLAGs in various locations around Europe facilitating its development (e.g. Cyprus, Finland, Poland, Slovenia, Spain). Other diversification opportunities could involve capitalising on fishers' professional knowledge and experience to play a role as 'guardians of the sea', removing plastic, monitoring protected areas and contributing to surveillance, amongst others. The possibility of obtaining 'compensation for sustainable fishing' under the EMFF allows fishers to request reimbursement for participating in activities to protect the marine ecosystems, such as the collection of marine litter or ghost nets, the protection of exclusion zones from towed gear, or the management of protected areas (European Commission 2017). This possibility could create job opportunities for fishers who decide to leave the fishing sector.

Competition for scarce resources and the lack of access rights for small-scale fishers are a problem in many countries, especially in northern Europe. However, lessons can be learned from Norway and Sweden, where measures and exemptions have been put in place to protect and benefit the small-scale fleet (Johnsen, Chap. 21 this volume; Björkvik et al., Chap. 27 this volume). An important lesson to be learned from Norway is that it is possible to have ecologically, economically and socially sustainable small-scale fisheries, even in a climate where neo-liberalism has become increasingly influential in fisheries governance.

Increasing market opportunities and differentiating small-scale seafood products in markets is identified as a key need for the future economic viability of the sector in many countries. The branding of small-scale products, marketing and selling directly to local consumers can add significant value to catches and are seen as a major chance for increasing revenues in many locations.

The fact that the importance of small-scale fisheries is now recognised the world over has greatly benefitted the sector. The increased interest of UN agencies in small-scale fisheries, as demonstrated by the FAO endorsement of the Small-Scale Fisheries Guidelines (FAO 2015), the UN Sustainable Development Goal (SDG) 14b, and the UN proclamation of 2022 as the '*International Year of Artisanal Fisheries and Aquaculture*', has given global prominence to the sector. The visibility of small-scale fishers in Europe is also growing, as is their capacity for collective action at the EU level. However, small-scale fisheries still lag far behind, despite trying to catch-up with the influence the large-scale fisheries sector exerts. There is an urgent need to increase the participation of small-scale fishers in management at the national level, thus building a more conducive governance landscape. Finding ways to speak with one voice at the EU level (but also at national levels) is and will continue to be a challenge.

It is often mentioned that small-scale fisheries, due to their essential characteristics (i.e. large number of fishers, employing a multitude of gears, catching a large and diverse number of species, operating in large geographic and often remote

areas) are a complex sector to manage and monitor. An underlying problem which hinders the effective management of small-scale fisheries is data scarcity. The lack of stock assessment of many target-species of the small-scale sector is seen as a problem for many managers. Management of small-scale fisheries under *data poor* scenarios is challenging, but can be improved through a diversity of innovative approaches for data collection and stock assessment (Pita et al. 2019). Also, the current Data Collection Framework (DCF) – the EU framework for the collection and management of fisheries data – will provide much needed social and economic information about the sector and fisheries in general.

## 28.6 Conclusion

This concluding chapter has attempted to synthesise some of the lessons provided by the authors of the 25 country chapters that are contained in this volume on small-scale fisheries in Europe. We have argued that these chapters provide us with a unique window to the many faces of small-scale fisheries in the continent. Going beyond the technical ambit of the EU definition of small-scale fisheries, we have attempted to bring out the human dimensions of this remarkable and resilient occupational group that continues to play a significant role in Europe's inshore zones. We have noted the many challenges facing the sector as well as the policy environment, which is slowly changing course and beginning to provide the sector with the attention it needs and deserves.

However, there is clearly still a long way to go. It is for this reason that Percy and O'Riordan (Chap. 2 this volume) conclude their assessment on the status of Europe's 'forgotten fleet' on a pessimistic note:

> The ageing workforce, the increasing consolidation and privatisation of access rights to the resource, and the immensely variable and often declining stocks all conspire against the prospects of small-scale fisheries. [So] does the laissez faire, top-down "too little, too late" style of fisheries management.

Most contributors to this volume will probably acknowledge the reality of these challenges facing the sector. Still, small-scale fishing communities continue to dominate the coastal landscape in Europe, and many inhabitants in these communities continue to partake in the age-old tradition of making a living from the sea. Despite appearances and multiple stumbling blocks, small-scale fisheries have not disappeared from the continent, even in those countries where they are holding on by the skin of their teeth. In other countries, however, small-scale fishers are still numerous, and in some instances thriving, adapting to new circumstances, and looking for opportunities to continue into the future.

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