A Sea Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources

Edited by

Syma A. Ebbin, Alf Håkon Hoel and Are K. Sydnes

Springer

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Edited by

SYMA A. EBBIN
Institutional Dimensions of Global Environmental Change, Groton, U.S.A.

ALF HÅKON HOEL
University of Tromsø, Norway

and

ARE K. SYDNES
University of Tromsø, Norway

Springer

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Contributing Authors

Ma. Carmen A. Ablan is a Marine Scientist and head of the molecular genetics laboratory of the WorldFish Center, an international centre for multi-disciplinary research on fisheries and aquaculture in developing countries. Dr. Ablan currently leads the Population Interdependencies in the South China Sea Ecosystem (PISCES) project, which involves research groups and management agencies from the seven countries around the South China Sea. For the past 15 years, she has been involved with research on population genetics of coral reef associated species, and on establishing biologically meaningful fisheries management units for coastal fisheries and species of interest to aquaculture. Her research, which started at the University of the Philippines Marine Science Institute, has expanded into multi-country and multi-site initiatives in Southeast Asia and the Pacific.

David J. Doulman is Senior Fishery Liaison Officer in the Fisheries Department, Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy. He has published widely on South Pacific fisheries issues and more recently on global issues relating to responsible fisheries, illegal, unreported and unregulated fishing and the role of regional fishery bodies. Prior to joining FAO, Dr Doulman was Deputy Director of the South Pacific Forum Fisheries Agency in Honiara, Solomon Islands.

Syma A. Ebbin is a Research Fellow with the project on the Institutional Dimensions of Global Environmental Change (IDGEC) and is teaching environmental studies at Eastern Connecticut State University. She was formerly the Executive Officer of the IDGEC project office. Dr. Ebbin has focused her research on the management of Pacific salmon, specifically co-management efforts involving indigenous peoples, American Indians and Native Alaskans, in the US. For five years, she worked as a harvest management biologist for various Indian tribes and tribal organizations in Washington State. Dr. Ebbin is the author of numerous articles and has recently completed editing a special issue of the journal *International Environmental Agreements* on 'Institutions and Knowledge: Empirical Evidence from Marine and Terrestrial Systems'.

William R. Edeson has worked at the Legal Office of FAO for 15 years before returning to Australia in 2003. During that time he was involved in the preparation of legislation to give effect to international agreements such as the UN Convention on the Law of the Sea, the FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement. He was also closely involved in the preparation of the Code of Conduct for Responsible Fisheries and the International Plan of Action to Prevent Deter and Eliminate Illegal Unreported and Unregulated Fishing. He has worked extensively in the Caribbean, the Pacific, and in Namibia, South Africa and Vietnam. He has published widely on law of the sea issues. He is presently Professorial Fellow at the Centre for Maritime Studies, Wollongong University.

Len R. Garces is a Fisheries Scientist of the WorldFish Center. He is involved with the implementation of multidisciplinary coastal fisheries projects at the Center, including the project on 'Sustainable Management of Coastal Fish Stocks in Asia', more widely known as TrawlBase. This project has documented a 5-30% decline of fisheries resources from their original levels prior to the expansion of fishing industry in South and Southeast Asia. He is also involved with site assessments on coastal fisheries and marine environments in fishing grounds in the Philippines (e.g., San Miguel Bay, Lagonoy Gulf, Manila Bay, Carigara Bay, Honda Bay, Visayan Sea) and the innovation of rapid means to assess resources and manage fishing effort for small-scale fisheries in developing countries.

Serge M. Garcia holds an ScD of the University of Marseille and has specialised in shrimp population dynamics and tropical fisheries management. He worked in West Africa from 1968 to 1979 as staff of the French Institute for Research for Development and headed the national Oceanographic Research Centre of Dakar-Thiaroye (Senegal). He joined FAO in 1979 and was responsible for West African fisheries, headed the Marine Resources Service of FAO from 1984 to 1990 and since then has been the Director of the Fisheries Resources Division. His most recent contributions relate to the precautionary approach, sustainability indicators, the ecosystem approach to fisheries and integrated information systems. He has recently developed a collaborative web-based Glossary on responsible fisheries, a World Atlas on Fisheries and Aquaculture, and is responsible for the coordination of the web-based UN Atlas of the oceans (www.oceansatlas.com).

Alf Håkon Hoel writes on international politics as played out in marine affairs and fisheries in particular. He is an associate professor in the Department of Political Science at the University of Tromsø in Norway. Current projects include analysis of global change and fisheries, the experiences of selected countries with various institutional arrangements, and the relationship between international trade regimes and resource management regimes.

Geir Hønneland is a political scientist and Director of the Russian and Polar Programme at the Fridtjof Nansen Institute, Norway. He has published widely on the management of natural resources and the environment in the European Arctic, most recently *Russian Fisheries Management* (Martinus Nijhoff Publishers, 2004), *Russia and the West: Environmental Co-operation and Conflict* (Routledge, 2003) and *Implementing International Environmental Agreements in Russia* (Manchester University Press, 2003).

Lawrence Kalinoe is Professor and Executive Dean of the School of Law at the University of Papua New Guinea. The focus of his research is natural resources law; property law, as well as indigenous and cultural property rights. He is the author of several books and publications including: *Water Law and Customary Water Rights in Papua New Guinea* (UBSPD New Delhi, India 1999); *Rationales of Ownership* (ed. with Dr James Leach) (UBSPD New Delhi, India 2000); Editor of the official Papua New Guinea Law Reports.

Russell E. Reichelt is the CEO of the CRC Reef Research Centre, a non-profit company that coordinates research for the Great Barrier Reef World Heritage Area. He is also the Chairman of Australia's National Oceans Advisory Group (reporting directly to the group of five Commonwealth Ministers responsible for Australia's Oceans Policy), and was recently elected Chairman of the Great Barrier Reef Consultative Committee. He is Chairman of the scientific advisory committee for the Great Barrier Reef Foundation and for the Queensland Environment Protection Agency, and Chairman of the not-for-profit company Seafood Services Australia Ltd, which promotes seafood quality and seafood safety through development of standards and promotion of best practice in the seafood industry. He is an adjunct Professor at James Cook University and the University of Queensland, and an elected Fellow of both the Australian Institute of Company Directors and the Australian Academy of Technological Sciences and Engineering. In 2003, he received an Australian Centenary Medal in recognition of services to marine sciences and fisheries.

Are K. Sydnes is an associate professor at the Department of Political Science, University of Tromsø, Norway. He has previously served as a research fellow at the Norwegian College of Fisheries Science at the same university, and as a visiting research fellow at the Center of Maritime Policy, University of Wollongong, Australia. He has published widely on regional fisheries cooperation and the impact of the 1995 UN Fish Stocks Agreement.

Joeli Veitayaki, a native of Fiji, is the Coordinator of the University of the South Pacific's Marine Affairs Programme and Director of the International Ocean Institute-Pacific Islands. His research interests are in human ecology. Together with other practitioners from Fiji, he is working to involve as many communities as possible in the effective management of their marine resources and to encourage others to do the same for the other communities in the Pacific. Veitayaki has published widely and in the areas of customary marine tenure, capacity building, marine resources management and regional cooperation. He is currently writing his second book based on rural development and fisheries development projects.

Geoff C. Wescott is an Associate Professor of Environmental Management on the Melbourne Campus of Deakin University. Geoff has been actively involved in coastal and park management for 25 years and has published extensively in these fields. He was the Chair of the National Reference Group (NRG) of the Marine and Coastal Community Network until 2003. He continues as a member of the NRG and represents the Network on Australia's National Oceans Advisory Group. He is also Deputy Chair of the Board of Directors of Parks Victoria (Australia) and a former member of the Victorian Coastal Council.

Oran R. Young is the author or co-author of over twenty books and numerous scholarly articles. Dr. Young is a professor in the Bren School of Environmental Science and Management at the University of California at Santa Barbara. He is also an adjunct professor of Political Science at the University of Tromsø in Norway. Dr. Young served for six years as the founding chair of the Committee on the Human Dimensions of Global

Change of the National Academy of Sciences in the United States and is now chair of the Scientific Steering Committee of IDGEC. In addition, he served for six years as vice-president of the International Arctic Science Committee and is currently a leader in the development of a decentralized University of the Arctic. Dr. Young's scientific work encompasses both basic research focusing on collective choice and social institutions and applied research dealing with issues pertaining to international environmental governance and to the Arctic as an international region. Among his recent books are: *The Institutional Dimensions of Environmental Change*; *Governance in World Affairs*; *Creating Regimes: Arctic Accords and International Governance*; *International Governance: Protecting the Environment in a Stateless Society*, and *International Cooperation: Building Regimes for Natural Resources and the Environment*.

Preface

A Sea Change in a Changing Sea

The oceans, seas and coastal areas encompass over 70% of the earth's surface. They are a critical driver of the earth's hydrologic cycle and climate system, important for commerce, transport, and tourism, a source of economically important living marine resources, minerals such as hydrocarbons, as well as new pharmaceutical compounds. The marine environment provides essential habitats for thousands of marine living resources, which in turn contribute significantly to global food security,[1] employment,[2] and trade.[3] Overall, the sea's contribution to human welfare, in terms of market and non-market resources and environmental services, has been estimated at US$21 trillion/year (Costanza, 2000). However, despite the importance of the ocean realm to humans, there is a growing sense that human impacts are destabilizing this system. Some experts believe that current fishing levels are approaching or exceeding the total productivity of the ocean ecosystem (National Research Council, 1999).[4]

The oceans present the archetypal commons problem,[5] where the tragedy of the commons has been played out numerous times in the open access fishing arenas on the high seas, beyond national jurisdictions. However, as the last several decades of literature focused on common property issues has amply demonstrated, humans have been able to devise arrangements in which they have overcome these constraints with varying degrees of success. Humans have the capacity to act collectively to avoid or redress these types of problems. In the case of the oceans, one of the most pivotal changes in this regard has been the enclosure of the oceans through the extension of property rights in the form of exclusive economic zones (EEZs). EEZs brought over 20% of the oceans, a substantial proportion of its primary productivity and 90-95% of the world's fisheries under the national jurisdiction of coastal states. This volume focuses on the results of this enclosure. How has the EEZ regime performed? What have been in its outcomes in terms of generating governance structures to remedy these common pool problems?

We now have over 25 years of experience with the EEZ regime. Over 100 coastal states have established EEZs, providing a wonderful opportunity for a retrospective analysis in which we evaluate the EEZs' impact and performance in different nation-states and in a variety of oceanic regions. The aim of this book is to provide such an analysis. Most of the contributions to this edited volume came out of a series of

[1] Fish supply the primary source of protein for over 950 million people (FAO, 2002).
[2] Approximately 35 million people are employed in fishing activities worldwide, 95% in developing countries, primarily Asia ((Dommen, 1999; FAO, 2002).
[3] International trade in fish products has increased to an all-time high of US$ 55.2 billion.
[4] The FAO estimates that as of 2002 only 25% of marine fish stocks are considered under or moderately exploited while the remainder are fully (47%) or over (18%) exploited or depleted (10%) (FAO, 2002).
[5] The oceans and their resources exhibit certain characteristics – fluidity, mobility and extensiveness – that make them more difficult to manage than other types of systems and resources. These characteristics generate a set of constraints that include subtractibility, where each user has the capability of decreasing the resource stock; and excludability, which recognizes the difficulty and expense of controlling potential users or total effort, due, in part, to a lack of clearly defined boundaries (Oakerson, 1986; Feeny, et al., 1990).

workshops[6] that were held under the auspices of the project on the Institutional Dimensions of Global Environmental Change (IDGEC).

IDGEC is a core project of the International Human Dimensions Programme on Global Environmental Change (IHDP). The project focuses on the role of social institutions in determining the nature of human-environment interactions and the outcomes arising from these interactions. The Performance of Exclusive Economic Zones (PEEZ) is one of three IDGEC flagship activities. PEEZ examines the performance of social institutions in the marine realm. The main research thrust of the PEEZ flagship activity is to assess how this enclosure of the oceans has affected the conservation and use of marine resources. The large number of coastal states that have implemented this change creates a rich opportunity for comparative analysis. The PEEZ research framework focuses on the performance of the EEZs with respect to biophysical, socio-economic, governance and knowledge criteria. PEEZ research seeks to answer the following questions:

- *How has the creation of EEZs changed traditional notions of sovereignty?*
- *How have EEZs affected the way in which knowledge about management and conservation is produced?*
- *How can we account for variation in the performance of EEZ regimes?*
- *How have EEZs affected the conservation, distribution and efficient use of marine resources?*

This volume is timely for a number of reasons, one of which is the growing interest and concern with the ocean realm and along with this has come an upsurge in international and national policymaking aimed at protecting this environment. This volume provides an initial effort to reflect on the outcomes associated with the third Law of the Sea Conference and to begin to assess how the reforms and changes brought on by this conference have performed. We believe that this volume will be interesting and relevant, providing useful information and analyses to policy-makers, practitioners and scholars in the fields of international relations, marine resource management, global environmental governance, and more generally, institutions and organizations.

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Our deep appreciation goes to the contributors to this volume, who diligently completed their chapters and helped bring this project to fruition. We also thank all the participants in the two workshops that were held on the Performance of the Exclusive Economic Zones in Tromsø, Norway in March 2001 and Bali, Indonesia in June 2002,

[6] These include the Workshop on the Performance of the Exclusive Economic Zones: Management, Trade and Knowledge, held at the University of Tromsø, Norway on March 30-April 1, 2001, and the Symposium on Sustainable Use of National Exclusive Economic Zones in the Seas of the Asia Pacific Region, held in Bali, Indonesia on June 4-6, 2002.

and who contributed much to our thinking on these subjects, even if they did not all contribute a chapter to this volume.

A special thanks goes to Oran Young, the Chair of the Scientific Steering Committee (SSC) for the IDGEC project, and IDGEC SSC member, Merrilyn Wasson, who served as our editorial board as we developed this volume.

We thank Maryanne Rygg at the Fridtjof Nansen Institute for her superb work in formatting this manuscript and Martine van Bezooijen and Suzanne Mekking, our editors at Kluwer Academic Publishers, for help in answering the many questions that were posed to them.

Syma A. Ebbin
Alf Håkon Hoel
Are K. Sydnes
Groton, Connecticut and Tromsø, Norway

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Section I

Overview

Chapter 1

Ocean Governance and Institutional Change

Alf Håkon Hoel,[1] Are K. Sydnes[2] and Syma A. Ebbin[3]
[1, 2] *Department of Political Science, University of Tromsø, N-9037 Tromsø, Norway* (*hoel@sv.uit.no and ares@sv.uit.no*); [3] *51 Jupiter Point Road, Groton, CT 06340 USA* (*syma.ebbin@aya.yale.edu*)

1. INTRODUCTION

The extension of coastal state jurisdiction, culminating with the widespread establishment of 200-mile Exclusive Economic Zones (EEZs) is one of the most far-reaching institutional changes in the international society of the twentieth century. Vast ocean areas with an enormous wealth of natural resources that were previously open to all as part of the high seas, have been turned into assets of coastal states. A principal justification for this change was the growing sense at the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place from 1973 to 1982, that international efforts to manage human uses of marine resources had failed. A new approach was required, that vested the responsibility for the sustainable use of the oceans with those most dependent upon them: the coastal states.

The implementation of EEZs granted coastal states extensive rights to natural resources located in a zone extending out to 200 nautical miles (360 kilometres) off the coastal states' baselines. The recognition and formal establishment of EEZs has brought a significant part of the world's oceans under the jurisdiction of coastal states. In addition, the majority of the ocean's primary productivity and fisheries production is located in the coastal shelf regions within the EEZs. Today, 145 states[1] are parties to the 1982 United National Law of the Sea Convention (LOSC), enabling them to establish EEZs. The EEZs of the world now cover most continental shelf resources and the majority of the world's fisheries (United Nations, 2004).

There is substantial variation in the nature of the challenges that face countries that attempt to conserve and manage the natural resources in their waters. The status of fisheries, pollution, minerals exploitation, transportation and other ocean use activities varies among the different countries. Because of this, although the concept of EEZs constitutes a common institutional framework for meeting the many governance challenges relating to the use of this area, we expect that there will be variation in the institutional responses to meeting these challenges. When a country develops and implements its EEZ-regime, it does so in response to its particular needs and interests.

The principal goal of this book is to analyse the institutional consequences emerging from the transition from an ocean governance regime based on 'open access' to the resources of the ocean to a regime based on EEZs from the 1970s onwards. The

[1] Other entities are also party to the LOSC, such as the European Union.

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focus is on the performance of EEZ regimes in the management of living marine resources, specifically with the development of institutions for that purpose. The key issue we examine is the *governance effects* of the introduction of EEZs.

Although institutions based on the EEZ regime share fundamental legal attributes, the national regimes vary with regard to legislation, administrative structures, and effectiveness. By accounting for the sources of this variance, this volume also seeks to contribute to our understanding of the roles that institutions play in global environmental change and, more specifically, to address the reasons why some institutional responses to environmental problems prove more effective than others (Young et al., 1999). In doing so, we have taken the following research questions as our point of departure:

- What is the nature of the institutions that coastal states have created within the framework provided by the EEZs?
- How has the creation of the EEZs affected the interplay among international regimes, national management systems, and traditional systems of marine tenure and co-management operating at the local level?
- How has the development of EEZ-based regimes affected the fit of marine resource management institutions with biophysical systems?

In the remainder of this chapter we provide a brief historical background and set the institutional context for the case studies that are presented in this volume.

2. INSTITUTIONAL FRAMEWORK FOR OCEAN GOVERNANCE

2.1 Background

The oceans are governed by a multitude of institutions that address a number of issue areas including navigation, fishing, and pollution. From the seventeenth century onward, the oceans were separated into 'territorial waters', a narrow band where coastal states possessed rights similar to the rights they exercised over their land territory, and 'high seas', a vast area in which all states enjoyed the freedom to use those waters and associated natural resources as they saw fit (Juda, 1996). This system rested on the premise that the resources of the ocean were infinite or, in any case, greater than the demands placed upon them by human users. As it became evident that the oceans and their natural resources were in limited supply, the system of rules implying that the natural resources of the high seas belonged to no one (*res nullius*) came under pressure. In the early post-World War II period, a number of coastal states introduced a series of unilateral extensions of their maritime jurisdictions to reduce pressure on natural resources and secure for themselves a greater share of the wealth of the oceans (Miles, 1989; Churchill and Lowe, 1999).

These unilateral actions provided the impetus for the United Nations conferences on the law of the sea, the first and second of which were held in 1958 and 1960. They produced four conventions but did not go far in creating a governance system capable of

managing the growing uses of the oceans and its resources. Several events during the 1960s and early 1970s, among them continued unilateral assertions of rights on the part of coastal states and the prospects of exploitation of metallic nodules at the deep seabed, provided the impetus for UNCLOS III, which commenced in 1973. By then, the idea of extended coastal state jurisdiction had matured, and a consensus soon emerged that coastal states should be accorded 'sovereign rights' over the natural resources located in a zone stretching 200 nautical miles seawards, as measured from their coastal baselines (Miles, 1998; Orrego Vicuna, 2001). A critical step in achieving this was the decoupling of security and economic issues during the negotiations, and the upholding of traditional high seas rights as far as maritime transport and naval activities were concerned (Friedheim, 1993).

Extended coastal state jurisdiction changed the prior system of ocean governance by adding the category of EEZs, which cover a large area located between territorial waters and the high seas. In the EEZ, the coastal state is awarded *sovereign rights* over the natural resources in the zone for the purposes of '…exploring and exploiting, conserving and managing the natural resources, whether living or non-living' (Article 56). As regards living marine resources, these rights on the part of the coastal states are accompanied by obligations to conserve the resources, utilise them, and cooperate with other countries to those ends.

The conservation obligation entails that coastal states shall determine the allowable catch of living resources based on the best scientific evidence available, and ensure that the resources in the EEZ are not endangered by overexploitation (Article 61(2)). The provision regarding the utilisation of resources maintains that the coastal state shall 'promote the objective of optimum utilization' of the living marine resources in the EEZ (Article 62(1)). Many of the world's fisheries are based on fish stocks that are shared with other countries or have a migratory range that extends into the high seas. In cases of shared fish stocks (in which a stock spans the EEZs of two countries) or straddling fish stocks (in which a stock occurs in at least one EEZ as well as the high seas), states have an obligation to seek to cooperate on the management of these stocks (Article 63). Cooperation may take on various forms – it can be direct, or it can take place in a regional organisation. An obligation to cooperate also pertains to fisheries for highly migratory species (Article 64),[2] as well as marine mammals (Article 65). The fisheries regime of the LOSC also has provisions for anadromous and catadromous species, as well as sedentary (bottom-dwelling) species. A corresponding set of provisions for the high seas are also set out in the convention (Articles 116-119).[3]

In the second half of the 1970s, a large number of states claimed 200-mile zones. By the time that UNCLOS III came to an end in 1982 and the final text of the LOSC was signed, the EEZ concept was already established in customary international law (Churchill and Lowe, 1999). When the LOSC entered into force in 1994, more than one hundred coastal states had enacted legislation establishing extended jurisdiction in some form. The EEZs constitute a common framework within which coastal states have been enabled to create arrangements governing human activities taking place within their zones. Administrative structures – ministries and agencies – as well as policies and

[2] Highly migratory species are defined in an annex to the convention.
[3] A more thorough discussion of the fisheries regime of the LOSC is presented in Chapter 2 by William Edeson.

legislation have been developed. At the same time, the EEZs are nested into the larger framework of the Law of the Sea and embedded within overarching institutional arrangements in international society.

The creation of EEZs did not solve all the problems attributable to the authority deficit in ocean governance (Sætersdal and Moore, 1987). Initially, few states had the domestic arrangements necessary to manage the natural resources in these extended zones. Substantial variation exists in the character and effectiveness of the regimes that coastal states have put into place to govern activities taking place in their EEZs (Hoel et al., 1999). Moreover, the fit between these new institutional arrangements and the biophysical features of the problems they are intended to solve is still far from perfect. A large number of fish stocks have come under the jurisdiction of two or more countries, necessitating the negotiation, and, in some cases, judicial settlement or creation of new territorial boundaries or joint management systems for shared resources.

High seas fisheries for stocks that straddle the boundaries between waters under national jurisdiction and the high seas emerged as a serious problem in the 1980s (Burke, 1994; Stokke, 2001a). Collapses in major fisheries combined with the growth of a broader interest in protecting marine environments prompted calls for institutional change. Reform of the global framework for ocean governance found its way onto the agenda at global fora such as the 1992 United Nations Conference on Environment and Development (UNCED) and the UN Food and Agriculture Organization (FAO). It was widely recognized that the provisions of the convention dealing with straddling fish stocks and highly migratory fish stocks were too ambiguous to provide states with sufficient guidance to resolve the issues, and that more specific rules were needed to rectify this.

2.2 Recent Developments

At the request of UNCED, the UN General Assembly (UNGA) initiated a conference to negotiate an agreement to clarify the content and scope of these provisions. The resulting 1995 UN Fish Stocks Agreement[4] was adopted in August 1995, and entered into force in December 2001.[5] The 1995 UN Fish Stocks Agreement contributes significantly to the existing institutional framework for ocean governance (Orrego Vicuna, 2001). Aiming to ensure the long-term conservation and sustainable use of straddling and highly migratory fish stocks through effective implementation of the LOSC (Article 2), the 1995 UN Fish Stocks Agreement outlines the conservation and management of these fish stocks on the high seas (Article 3). The 1995 UN Fish Stocks Agreement breaks new ground in developing the global rules governing fisheries management in four areas.

First, it introduced new principles to marine resource management, to be applied universally – on the high seas as well as within the EEZs. Notably, all signatory states

[4] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

[5] At the outset, it was not at all clear that this was to become a treaty, but during the negotiating sessions in 1994 a majority of countries came out in favour of a legally binding agreement to supplement the LOSC, rather than a soft-law set of guidelines.

must implement a precautionary approach (Article 6), outlined in an annex to the agreement. In addition, the management of resources inside and outside the EEZ should be compatible (Article 7), so that management actions consider the full extent of the stock in question, rather than stock components inside or beyond the EEZ. In particular, the measures adopted for the high seas shall not undermine the conservation measures adopted by coastal states for the same stock(s) in their EEZ(s). Second, Part III of the Fish Stocks Agreement expands on Article 118 of the LOSC that obligates states to cooperate on a regional basis in the conservation and management of straddling fish stocks and highly migratory fish stocks at the high seas, by providing a framework for the organisation of and participation in regional cooperation efforts[6] (see Sydnes, Chapter 8, for further discussion). Third, the 1995 UN Fish Stocks Agreement strengthens the legal framework for enforcing regulatory measures, *inter alia* by specifying and strengthening flag state obligations, as well as, under certain circumstances, permitting enforcement actions on the part of states other than flag states on the high seas.[7] Finally, on the basis of the framework laid down in the LOSC, the 1995 UN Fish Stocks Agreement lays out a mandatory regime for the settlement of disputes. An important aspect of this is that parties to the 1995 UN Fish Stocks Agreement, which are not parties to the LOSC, thereby submit to this dispute resolution system. The provisions of the 1995 UN Fish Stocks Agreement can be viewed as responses to the 'problem of fit', in which the institutional scope or jurisdiction of the EEZ regime fails to match the biophysical context of a problem found within the EEZ. This lack of fit may in turn impede the resolution of the problem. By strengthening the provisions for cooperation of high seas fisheries management, the 1995 UN Fish Stocks Agreement, helped to achieve a better fit between management regimes and the resources they are managing.

Also in 1995, the FAO Conference adopted a Code of Conduct for Responsible Fisheries (FAO Code of Conduct), which addressed virtually all aspects of fisheries from conservation principles to marketing practices. While non-binding in nature, the FAO Code of Conduct provides standards for countries to strive towards in developing and implementing fisheries policies. The FAO Committee of Fisheries (COFI) oversees the implementation of the Code of Conduct and the FAO supports its implementation through the FishCode, a designated programme of assistance.[8] COFI has since negotiated and adopted four International Plans of Action (IPOAs) for seabirds, sharks, capacity reduction, and illegal, unregulated and unreported (IUU) fishing. The implementation of these IPOAs demonstrate that the FAO Code of Conduct can be adapted to changing circumstances and needs in a more flexible and rapid manner than would have been possible with binding legal agreements. However, a significant part of the Code of Conduct is the 1993 Compliance Agreement, which is a legally binding agreement that was negotiated to strengthen flag state obligations to control vessels flying their flag.[9]

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[6] This rule, of course, applies only to parties to the 1995 UN Fish Stocks Agreement.
[7] Part VI of the 1995 UN Fish Stocks Agreement.
[8] See the FAO homepage at www.fao.org for more information on the FishCode.
[9] 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.

A notable tendency during the last decade is that fisheries issues increasingly are viewed as environmental issues (Hoel, 1998). The 1995 UN Fish Stocks Agreement and the FAO Code of Conduct are heavily influenced by concepts and principles derived from the realm of environmental politics. The precautionary approach as laid out in the 1995 UN Fish Stocks Agreement is one example. This is not to imply that these developments were driven solely by environmentalists pushing a reluctant fisheries community towards more environmentally inspired approaches to conservation and management. Rather, the processes referred to here were by and large dominated by fisheries administrators and legal experts, working on the basis of a general recognition that the current EEZ-based system had failed to deliver the expected conservation benefits, and that improvements needed to be made in the global framework of LOSC overlying the operation of regional and national governance systems.

Another environmental concern that has influenced the management of marine resources is the growing emphasis placed on the protection of marine biological diversity and the resultant effort to apply the principles of the 1992 Convention on Biological Diversity (CBD) to activities in the EEZs (DeFonteaubert et al., 1998). While the provisions of the CBD arguably are less potent than those of the LOSC and 1995 UN Fish Stocks Agreement with respect to the conservation of ocean biodiversity (Hoel, 2003), work under the CBD on marine issues has gradually developed since the Djakarta Mandate, a work agenda with focus on marine affairs was adopted at the CBD Conference of Parties in 1995. Since then, a marine programme has been adopted, and at the 8th CBD Conference of Parties in 2004, the programme was extended to 2010.[10] It has not proved to be of great significance to the management of living marine resources in a broad sense, but has helped to address specific issues such as threats to coral reefs and biodiversity on the high seas, and has raised the issue of marine protected areas as a regulatory tool in this regard.

The 2002 World Summit on Sustainable Development (WSSD) adopted a plan of implementation with an unprecedented level of ambition and precision as regards oceans management.[11] The WSSD plan of implementation encourages the application of an ecosystem approach to fisheries management by 2010 (Paragraph 29), and states that to achieve sustainable fisheries, fish stocks should be maintained or restored to levels that can produce the maximum sustainable yield – 'with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015' (Paragraph 30). The WSSD plan of implementation builds on the FAO IPOAs. Countries are asked to 'urgently develop and implement national and, where appropriate, regional plans of action, to put into effect the FAO international plans of action, in particular the international plan of action for the management of fishing capacity by 2005 and the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004' (Paragraph 30). Chapter 12 by Serge Garcia and David Doulman further addresses these issues.

When the LOSC entered into force in 1994, the UNGA established an annual review of its implementation as well as developments in oceans affairs. Related to this has been the negotiation and adoption of a series of resolutions on ocean affairs. From 1999 onwards, the UNGA review has been preceded by preparatory meetings, in the

[10] Decision VII/5, see in particular Paragraphs 61-62.
[11] World Summit on Sustainable Development: Johannesburg Plan of Implementation.

format of an open-ended informal consultative process, established by the UNGA in resolution 54/33, in order to facilitate its annual review and the preparation of resolutions. The informal consultation process, as it is commonly referred to, operates by way of discussion of a few themes at each meeting, thereby preparing the ground for substantive resolutions and debate in the UNGA.[12] The informal consultations constitute a process where new issues and concerns are brought to the attention of the UN. This process is an important arena for issue-raising and developing a global framework for oceans management.

To summarise, the transformation of the institutional framework for ocean governance over the last century can be divided into three distinct phases: 1) the recognition that the open access system based on the principle of the freedom of the high seas is untenable in the face of increasing pressures and uses of the oceans and its resources; 2) the negotiation of the LOSC providing coastal states with the legal basis to conserve and manage the uses of the ocean areas off their coasts; and 3) the supplementation of this legal framework with other instruments, based on the realization that the implementation of obligations to protect the ocean environment needs increased attention. In this most recent phase, environmental concerns and ideas have come to dominate the fisheries agenda. This has led to 'treaty proliferation', where numerous agreements, binding and non-binding, at the global level constitute the framework within which coastal states are to define their oceans policies and devise sustainable management regimes. In addition, this global regime has increasingly come to be seen as a continuous process, rather than one composed of clearly delineated negotiating conferences. This situation, in which states interact both among themselves as well as with international institutions and processes, has created a highly dynamic and complex situation. An analytical framework and tools able to address the interplay among institutions are essential to developing nuanced understandings of the developments in this global arena.

3. ANALYTICAL THEMES

3.1 Institutions and Regimes

Analyses of the performance of EEZs must take into account the operation of local, national, and international institutions through which the effects of EEZs manifest themselves. The creation of EEZs would not have far-reaching consequences if the process were not accompanied by changes in national and international institutions intended to capitalise on and implement the rights and obligations established under EEZ regimes.

The analytical core of the volume is focused on the creation and transformation of institutions, at different levels of social organisation, which have resulted from the introduction of the EEZs. Institutions refer to 'sets of rules of the game or codes of conduct that serve to define social practices, assign roles to participants in these practices, and guide the interactions among the occupants of these roles' (Young, 1994:

[12] The formal name of the process is the United Nations Open-ended Informal Consultation Process on Oceans and the Law of the Sea.

3). Unlike organisations, which are material entities that typically figure as actors in social practices, institutions may be thought of as the rules of the game that determine the character of these practices.[13] Institutions can encompass both formal and informal rules and codes such as bodies of law, non-binding agreements, established practices, as well as organisations. Regimes are institutions that establish principles, norms, rules and decision-making procedures within spatially and/or functionally defined issue areas (Young and Osherenko, 1993:1).[14] Although the terms frequently are used interchangeably, regime is a more narrowly defined concept than institutions in the sense that regimes are issue-specific.

The focus on individual regimes, as institutional mechanisms defined by their functions and scope, has been a salient feature of regime theory (Young, 2002). However, there is increasing acknowledgement in the research community that analyses of institutions in isolation are inadequate in developing a comprehensive understanding of their role in international relations. In practice, institutions may be linked in ways that affect their individual and collective performances. Institutional interplay refers to those situations in which the contents, operations or consequences of one institution influence other institutions (Stokke, 2001b).

3.2 Institutional Interplay

Interplay may occur among institutions at the same level of social organisation (horizontal interplay) or among institutions at different levels of social organisation (vertical interplay) (Young, 2002: 23). These interactions may enhance or impede a regimes' effectiveness and have distributive consequences. It is not surprising, therefore, that states seek to influence the interplay of institutions (Stokke, 2001b). The authors of the case studies in this volume have taken as a primary focus the institutional interplay among the institutions of fisheries governance, in particular the interactions of the global EEZ regime with regional, national and local institutions. One main concern is the extent to which the provisions of the EEZ regime and other global governance institutions have affected the establishment and operations of regional, national and local institutions of fisheries governance, instances of vertical interplay. A secondary concern is, the extent to which institutions of fisheries governance have been influenced by and in turn influence institutions within other issue areas, such as trade and environmental protection, instances of horizontal interplay.

A main contribution of the institutional interplay approach is the recognition that institutions cannot be analysed in isolation, but must seen within the context of their institutionalised environments. Institutional interplay directs attention to the ways in which 'classic' regimes and institutions (Levy, Young and Zurn, 1995) affect each other's substantive content and operations. As the institutional density within international issue areas increases, as is the case in the subject matter at hand here, such

[13] Therefore, we interpret institutions according to their behavioural consequences. An alternative would be to define institutions as formally agreed-upon arrangements. However, this would include arrangements that have not been acted upon by participants (so-called 'dead-letter' agreements). In practice international and domestic politics are littered with agreements formalising cooperation between parties, which have not been acted upon and thereby have no behavioural consequences. For a discussion of the term 'institution' see, for example, Hasenclever et al. (1997).

[14] As such, all regimes are institutions, but not *vice versa*.

interplay may be expected to become an increasingly dominant feature of international relations. Central questions addressed in this volume revolve around how and to what extent the establishment of EEZs have impacted the interactions of institutions engaged in the management and conservation of fisheries.[15]

3.3 The Problem of Fit

The issue of fit, the extent to which institutions match the characteristics of the biophysical environment and natural resources in question (Young et al., 1999), sets the stage for an examination of how the development of the global EEZ framework facilitates improvements in resource management by extending the scope and authority of national and regional institutions. The protection of a migratory species would be difficult if the geographic scope or membership of a regime established to conserve a species did not encompass the migratory route or extent of human impacts. The protection of the North Sea would not be effective if it did not take into consideration all toxics that enter and affect the marine ecosystem. Similarly, in order for institutions of fisheries management to be effective, there needs to be a high degree of fit between the scope of an institution and the nature of the resources being managed. Among the main challenges of fisheries management are establishing the rights to participate in and exploit fisheries, understanding the extent and the abundance of fish stocks, and ascribing the authority to manage the fisheries to specific actors and institutions.

Our main concern in this volume is with the *governance* effects of the EEZs. Changes in governance systems, such as the creation of EEZ-based regimes, often have ramifications beyond the boundaries of the regimes themselves. In the case of EEZs, these effects have flowed downward to the domestic regimes established by states and upward to institutional arrangements operative at the level of international society. Looking downward, EEZs constitute an institutional umbrella within which a variety of related initiatives have unfolded. Regional fisheries institutions are also important in this regard (Sydnes, 2001). Thus, individual coastal states have created distinct national regimes to deal with fisheries and other marine resources over which they have acquired jurisdiction as a result of the creation of EEZs. All these arrangements build on the same framework, but they differ significantly in other respects, including the biophysical and socio-economic effects they have produced. By privileging national regimes, the establishment of EEZs has subordinated local and customary systems of marine tenure to new and formal rules governing the use of ocean resources. The formal policies and decision-making procedures characteristic of national institutions can displace or undermine informal, local arrangements, and can generate important biophysical and socio-economic consequences (Apostle et al., 1998).

On the other hand, it is possible to explore the impacts of EEZ-based regimes on the ways in which states define their roles and interests and, more broadly, on the theory and practice of sovereignty in international society. The rights of coastal states in the EEZs are far-reaching, but not identical to the bundle of rights generally associated with sovereignty over territory. By introducing a new configuration of rights, distinct from those exercised in territorial waters or those associated with the high seas, UNCLOS III

[15] As Kalinoe (Chapter 7) demonstrates, the interplay between the EEZ regime and local regimes of fisheries management may have a limited impact.

initiated an institutional experiment in which sovereignty is not approached in absolute or indivisible terms. The rights conferred on coastal states through the creation of EEZs place them in the roles of managers and caretakers of marine ecosystems. With the passage of time the rights associated with EEZs have also been tempered by a growing understanding of the need for cooperation among adjacent states and between coastal states and distant water states to ensure the sustainability of fish stocks. Both the theory and the practice of sovereignty undergo transformations in response to functional problems arising from interdependencies (Litfin, 1998). Recent developments in state practice in cooperative fisheries management, for example, the activities of the North-east Atlantic Fisheries Commission with regard to the enforcement of regulations, and in other areas, such as joint development zones for oil and gas, suggest that new ways of thinking about sovereignty with regard to the resources of the EEZs are emerging.

4. OUTLINE OF CHAPTERS

The chapters of this volume cover case studies from both the north and south, in the Pacific and the Atlantic Oceans. The case studies critically examine the impact of the EEZ regime on institutions at local, national, regional and international levels of social organisation. The broad range of contributions by the authors highlights the diversity of institutions and outcomes that have emerged from the implementation of the EEZs, providing a rich opportunity for comparative analysis. The volume is organised into four sections. The first section focuses on the development of global institutional frameworks. The second presents several case study analyses from different countries and regions. The third offers a discussion of regional applications of the EEZ regime, and is illustrated with two case studies. In the fourth and concluding section, we set forth new and emerging initiatives as well as some possible directions for future development. The volume offers an institutional approach to a topic that current literature commonly addresses in legal terms, but contains only one chapter written from an explicitly legal perspective.

Completing the first section, William R. Edeson (Chapter 2) lays out the main features of the fisheries regime in the LOSC and assesses its development. He concludes that, overall, the balance of interests represented in the LOSC have been respected, and that practice has largely has adapted to the LOSC since its adoption. As regards more recent legal developments, he argues that while concepts such as the precautionary approach have been accepted in broad terms, much remains to be done in terms of their practical implementation. Overall and in legal terms, the regime has stood well up. However, the themes that dominated discussions under UNCLOS, such as the rights of land-locked states, have been replaced by other concerns, such as conservation of the marine environment.

In the first chapter of the second section, which focuses on national case studies of EEZ implementation, Alf Håkon Hoel (Chapter 3) discusses the foundations of Norway's marine policies in general and fisheries policies in particular. With two million square kilometres of ocean and rich fisheries, Norway is one of the major beneficiaries of the developments in ocean law in recent decades. Norway's ocean management regime is to a large extent defined by the fact that most significant stocks

of living marine resources are shared with other countries, and that international cooperation is a precondition for effective resource management. Currently, major efforts are directed at reconfiguring the domestic regime in response to calls for ecosystem-based management approaches.

Geir Hønneland (Chapter 4) presents a case study on the development of the management of the Northwest Russian fisheries. The author provides an overview of the Russian Federation's system for fisheries management. He reviews the legislative base, formal objectives and institutional set-up of the management system at the federal level. Further, he discusses the institutional interplay among various federal management institutions, as well as the interplay between federal and regional authorities in Russia's northern fisheries basin. Hønneland concludes that the overall trend in Russian fisheries is one of centralising management authority to institutions at the federal level.

Russell E. Reichelt and Geoffrey C. Wescott (Chapter 5) discuss the conditions for the effective implementation of the 1998 Australian Ocean Policy. The authors deliberate on the institutional and political challenges that were confronted in implementing the policy through ecosystem-based Regional Management Plans. In particular the authors examine challenges related to integrated management, the establishment of marine protected areas, and developing an adequate knowledge base for marine resource management. They conclude that, although the making of the Australian Ocean Policy took a mere two years, its implementation through the development of Regional Management Plans, may take decades. This is partly due to relations between the Commonwealth and the Australian states and territories, on the one hand, and between different sectoral user groups, on the other.

Syma A. Ebbin (Chapter 6) examines the governance impacts of the implementation of the US Fishery Conservation and Management Act, focusing on the management of Pacific salmon in the Pacific Northwest. Ebbin explores the vertical interplay between the national, regional and local level management efforts through the use of four case studies that involve cooperative management of salmon by the indigenous peoples of the Pacific Northwest. She finds that the 200-mile EEZ in the US has led to the elimination of foreign interceptions of salmon within the EEZ and the stabilisation or reduction of domestic interceptions. Additionally, the federal government has worked to eliminate the harvest of salmon in international waters. The federal government has set up a framework for cooperative management between the sub-national state governments and indigenous groups. In these respects, federal oversight of the EEZs has enhanced equitable access, use and management of salmon resources indigenous fishermen.

Lawrence Kalinoe (Chapter 7) presents a case study of customary marine tenure among indigenous Papua New Guineans with specific reference to the Trobriand Islanders. He elaborates on their uses of the marine resources and to the extent to which these practices establish customary rights in different zones of jurisdiction. The author comes to the interesting conclusion that the EEZ regime has no consequences for the traditional rights of Trobriand Islanders, as their fishing activities take place primarily in near-shore waters. He concludes that rights under customary marine tenure cannot be claimed and exercised within Papua New Guinea's 200-nautical mile EEZ.

In the third section of the book, Are K. Sydnes (Chapter 8) analyses the historical role of regional fisheries regimes in the evolution of international fisheries

governance. The author introduces a typology, distinguishing between the scientific, development and management roles of such regimes. He further argues that the EEZ regime adopted by UNCLOS III was partly a reaction by coastal states to the ineffectiveness of regional fisheries regimes to provide for the sustainable conservation and management of fisheries. While the introduction of EEZs temporally diminished the role of such regimes, developments during the 1990s put the role of regional fisheries management on the international political agenda. With the prominence given to such organisations in the 1995 UN Fish Stocks Agreement and other international agreements, their role in fisheries management is set to increase considerably in the future.

Carmen A. Ablan and Len R. Garces (Chapter 9) examine the impacts of the EEZ regime within the South China Sea. They find that the implementation of EEZs in this region fostered an increase in investments in the fisheries sector by coastal states. They further find that the focus on national ownership and property rights has not adequately addressed some management issues, especially those involving transboundary fish stocks and various ecosystem-level processes that span multiple jurisdictions. The authors examine these problems of fit and note that sustainable management will require multilateral cooperation, the pooling of capital, financial, and human resources, the development of transboundary management strategies and the creation of regional management institutions. They conclude that greater recognition of the different spatial scales found in marine ecosystems, the creation of appropriate institutions for management and improved incentives for transboundary cooperation, are required if fish stocks are to be restored to sustainable levels by 2015.

Joeli Veitayaki (Chapter 10) analyses the regional approach taken by the member countries of the South Pacific Forum Fisheries Agency as a response to the LOSC. The majority of the member countries are small island developing states, heavily dependent on fisheries, but with limited technical and financial resources to manage them independently. Veitayaki lays out the regional institutions and agreements that have been negotiated by these coastal states to enforce their claims to the living marine resources in the EEZs and extended fisheries zones. He concludes that the regionalist approach has proved to be a success. However, the sustainable development of the regional fisheries hinge on further development and the political will to implement the appropriate regional institutions.

Oran R. Young (Chapter 11) examines developments in the Bering Sea large marine ecosystem, which encompasses parts of the jurisdiction of the two coastal states in the area, Russia and the US, as well as a portion of the high seas. While, on the whole, the fisheries of the Bering Sea stand out as being comparatively well managed, ecosystem shifts in the Bering Sea region represent a major challenge to the current regime. Young proposes an integrated meta-regime approach as an alternative to the current fragmented situation in which a number of different institutions and regimes operate. He finds that this holds considerable promise for achieving robustness and resilience in the face of major environmental changes.

Serge M. Garcia and David J. Doulman (Chapter 12) review current efforts under the purview of the FAO to fulfil the mandates laid out by the FAO Code of Conduct and the four IPOAs. They discuss the relation between these instruments and the WSSD plan of implementation, and assess the current status of work with regard to the WSSD mandate. As such they provide a global overview of international trends in

institutional development and implementation. Moreover, they point out that there are substantial overlaps and synergies between the instruments and programs under the auspices of the FAO, and the WSSD plan of implementation.

In the final chapter we integrate the findings presented in the various case studies and put forth several generalisations that emerge from this comparative examination of the performance of the EEZ regime. We examine the volume's findings in terms of the governance impacts of the EEZ on marine living resources, implications for institutional interplay, as well as issues of fit. We conclude with some thoughts on future work that should be done to assess the performance of the EEZs.

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Chapter 2

A Brief Introduction to the Principal Provisions of the International Legal Regime Governing Fisheries in the EEZ

William R. Edeson
Centre for Maritime Studies, University of Wollongong, Australia (*bill.edeson@netspeed.com.au*)
mailing address: 6 Knibbs St, Turner ACT, 2612 Australia

1. INTRODUCTION

In this paper, I discuss the provisions of the 1982 UN Convention on the Law of the Sea (LOSC)[1] that concern fisheries conservation and management in an Exclusive Economic Zone (EEZ), focusing on the general regime as opposed to the specific regimes provided for in Articles 64 to 67. These regimes have been supplemented in important ways by the Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (referred to hereafter as the 1995 UN Fish Stocks Agreement). The paper concludes with some tentative views about how the regime has stood up since its inception over 25 years ago.

2. THE RIGHTS AND DUTIES OF STATES IN THE EEZ

The provisions of the LOSC – and its predecessor draft texts – were carefully drafted in order to achieve a balance between the resource interests of the coastal state in its offshore waters and the interests of those states who wished to ensure that any new oceans regime did not encroach unduly on the traditional freedoms of the high seas. Article 55 of the LOSC emphasizes this by describing the EEZ as an

> area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this part under which the rights and jurisdiction of the coastal state and the rights and freedoms of other States, are governed by the relevant provisions of this Convention.

The rights and duties of the coastal state are set out in Article 56. Paragraph (a) of that article gives to the coastal state sovereign rights

> for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the sea-bed and sub-soi1 and the

[1] For a discussion on problems associated with the use of the acronym 'UNCLOS', see Edeson (2000).

S.A. Ebbin et al. eds. , A Sea Change:
The E clusive Economic Zone and Governance Institutions for Living Marine Resources, 17–30.

> superjacent waters, and with regard to other activities for the economic exploitation of the zone such as the production of energy from the water, currents and winds.

Although these sovereign rights are described in wide terms, it is nonetheless only in respect of these predominantly economic rights that the coastal state has sovereign rights. Thus, the military interests of the noncoastal states are to a large extent preserved in the EEZ. Article 56 proceeds in Paragraph (b) to set out certain jurisdictional powers that the coastal state has in its EEZ regarding: (i) the establishment and use of artificial islands, installations and structures (ii) marine scientific research; (iii) the protection and preservation of the marine environment. These matters are elaborated upon in more detail elsewhere in the LOSC, though each, especially the latter two, is capable of having a significant impact on the coastal state's powers with respect to fisheries.

Paragraph c of Article 58(1) provides that the coastal state has 'other rights and duties provided for in this Convention'. Although the EEZ brings considerable advantages to the coastal state, it does also assume certain obligations, which under the LOSC regime are inseparable from its rights.

3. CONSERVATION, MANAGEMENT AND UTILIZATION OF THE LIVING RESOURCES OF THE EEZ

At the core of the LOSC provisions on fisheries are Articles 61 and 62 that deal with conservation, management and utilization of the living resources of the EEZ. These three concepts are not defined as such in the LOSC, and a degree of overlap exists between them as they are used there. Article 61 deals primarily with conservation, while Article 62 is concerned primarily with utilization, though both articles contain management provisions.

Article 61(1) requires that 'The Coastal State shall determine the allowable catch of the living resources in its exclusive economic zone'. The use of 'shall' suggests that such a determination is mandatory. Article 297(3)(a) which deals with settlement of fisheries disputes refers to the 'discretionary powers for determining the allowable catch' of the coastal state which might suggest that Article 61(1) was not intended to be mandatory. Provision is made, however, in Article 297(3)(b) for a conciliation procedure where a coastal state has 'arbitrarily refused to determine...the allowable catch...' Despite the use of the term discretionary, therefore, it is arguable that the power in Article 61(1) is only discretionary as to the result achieved though mandatory as to the fact of its exercise. Such a view is supported by the consideration that if the coastal state fails to determine the allowable catch in its EEZ, the ensuing provisions of Articles 61 and 62 become redundant to a large extent.

The fundamental importance of conservation of the living resources under the LOSC is underlined by a reference to it in its preamble. The objective of conservation and management measures is set out in Article 61(2), and is said to be to 'ensure...that the maintenance of the living resources in the exclusive economic zone is not

endangered by over exploitation'. Paragraph 3 of the same article also requires that the measures of the coastal state shall

> be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing (patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.

Article 61(4) requires the coastal state to take 'into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened'.

It will be noted that the conservation and management measures referred to above are, with the exception of Paragraph 4, worded in mandatory terms. Further, the reference to maximum sustained yield (MSY) in Paragraph 3 would by itself suggest that only biological criteria would need to be employed in determining conservation and management measures, but this is qualified by reference to the various economic and environmental factors referred to in the article. Also the reference to 'levels which can produce the maximum sustainable yield' in Article 6l(2) suggests that the MSY is not itself a mandatory objective. This also relates to the notion of optimum utilization as set out in Article 62. It involves, however, the important consequence that the coastal state will have a significant measure of discretion in determining precisely what conservation and management measures it will apply in its EEZ.

Article 62, which deals with utilization, is a key article, not only in relation to fisheries management, but also in regard to the LOSC as a whole, for it contains the requirement that the coastal state will grant access to fishermen from other states to any declared surplus.

Article 62(l) states that without prejudice to Article 61 (which includes the important power to determine the allowable catch), the coastal state 'shall promote the objective of optimum utilization of the living resources of the zone'. As with 'conservation' and 'management', 'optimum utilization' is not defined. It is possible to give it some content, however, by reference to other provisions in Articles 61 and 62. First, Paragraph 2 of Article 62 requires the coastal state to allow other states access to any living resources that are surplus to its own national requirements as determined by it. This requirement is both central to the concept of optimum utilization and forms one of the more important restrictions on the sovereign rights of the coastal state that resulted from the negotiations at the Third UN Conference on the Law of the Sea (UNCLOS III). Secondly, in granting access to the surplus, the coastal state is to take into account all relevant factors, including, *inter alia,* 'the significance of the living resources of the area to the economy of the coastal state concerned and its other national interests'. Thus, it is apparent that the notion of optimum utilization allows the coastal state to take into account important economic and arguably also political factors that might justify a utilization of the surplus that is less than the maximum. This is supported by the reference in Article 61 (already mentioned) that conservation and management measures are to be 'designed to maintain or restore populations of harvested species at

levels which can produce the maximum sustainable yield as qualified by relevant environmental and economic factors'. In short, a considerable amount of flexibility is retained by the coastal state in achieving the objective of optimum utilization.

As regards highly migratory species, it may be noted that Article 64 of the LOSC also sets the objective of optimum utilization for such species throughout the region, both within and beyond the EEZ.

These conservation and management objectives have now been supplemented by those contained in Articles 5 and 6 of the 1995 UN Fish Stocks Agreement, at least as regards straddling fish stocks and highly migratory fish stocks. However, while that Agreement is limited by its terms to such stocks (with only one or two exceptions), it is clear that the principles, including in particular the precautionary approach recognized in the 1995 UN Fish Stocks Agreement are being given a much wider currency. For example, when the General Fisheries Council for the Mediterranean Agreement was amended in 1997, there was included a reference to the precautionary approach (Article III.2) even though the stocks covered by that convention were not restricted to straddling fish stocks and highly migratory fish stocks. Likewise, in several recently enacted national laws, references are included to the general principles found in this agreement.[2]

4. CONDITIONS OF ACCESS

Under the LOSC, the coastal state is left with considerable latitude in choosing the particular measures to achieve the stipulated conservation and utilization objectives. A non-exhaustive list of measures that the coastal state may adopt is set out in Article 62(4). These include: licensing, payment of fees and other forms of remuneration, determining species to be caught, fixing catch quotas, regulating seasons and areas of fishing, gear characteristics, vessel type and number, fixing the age and size of fish and other species that may be caught, specifying information to be provided, requiring fisheries research programmes and regulating their conduct, placing observers or trainees on board fishing vessels, requirements for landing catches in the ports of the coastal state, stipulating the terms and conditions of joint ventures or other cooperative arrangements, requirements concerning the training of personnel and transfer of fisheries technology, and enforcement procedures.

The list in Article 62(4) is only a guide to what laws and regulations the coastal state may impose on foreign fishing. In modern legislation dealing with fishing in a 200-mile zone, it is not uncommon to find that the legislative provisions are significantly wider in their scope than Article 62(4).

5. CRITERIA FOR GRANTING ACCESS

While the LOSC grants to the coastal state the right to determine the allowable catch, and its own capacity to harvest the living resources of its EEZ, it is nonetheless under an obligation to give other states access to the surplus of the allowable catch 'having

[2] See further Edeson et al. (2001) and Edeson (1999a).

particular regard to the provisions of Articles 69 and 70 especially in relation to the developing States mentioned therein' (Article 62(2)). Article 62(3) makes further reference to access by other states. That paragraph requires that in granting access, the coastal state shall take into account all relevant factors including *inter alia*:

> the significance of the living resources of the area to the economy of the State concerned, and its other national interests, the provisions of Articles 69 and 70, the requirements of developing States in the region or sub-region in harvesting part of the surplus, the need to minimize economic dislocation in States whose nationals have habitually fished in the zone or which have made substantial efforts in research and identification of stocks.

The various references to developing states and to Articles 69 and 70, which deal with landlocked states and states having special geographical characteristics reflects the objective stated in the preamble to the LOSC of realizing

> a just and equitable international economic order which would take into account the interests and needs of mankind as a whole, and in particular the special interests and needs of developing countries, coastal or landlocked.

It will be obvious that the coastal state retains a wide measure of discretion regarding which states it shall admit to exploit any surplus fish stocks. This is supported by the dispute settlement provisions of Article 297(3) under which a coastal state is not obliged to submit a dispute regarding, *inter alia,* 'the allocation of surpluses to other States' though a conciliation procedure may be invoked if no settlement has been reached and it is alleged, *inter alia,* that

> a coastal State has arbitrarily refused to allocate to any State, under Articles 62, 69, and 70 and under the terms and conditions established by the coastal State consistent with this Convention, the whole or part of the surplus it has declared to exist.

6. COLLECTION OF SCIENTIFIC DATA

The words 'available scientific information' were probably employed in part to avoid imposing too onerous a burden on countries in the collection of data, especially developing states, or in the need to undertake scientific assessments of the living marine resources. This phrase was most probably linked to the requirement in Article 61(2) that the coastal state shall take 'into account the best scientific information available to it'.

Article 61(5) reflects the increasing importance that was attached to the exchange of information through international organizations. The reference to 'including states whose nationals are allowed to fish in the exclusive economic zone' does not of itself emphasize a primary role of the flag state in providing data, indeed, it seems merely to underline the intention at that time for available information to be exchanged.

The other provisions in Part V which have a bearing on the issue are to be found in Article 62 which deals with the utilization of the living resources. These are: Article 62 (4)(d) which allows the coastal state to impose on 'nationals of other States fishing in the exclusive economic zone', amongst a number of other conditions, laws and regulations relating to 'specifying the information required of fishing vessels, including catch

and vessel statistics and vessel position reports'. Another article of relevance is Article 62(4) (i), which relates to 'terms and conditions relating to joint ventures or other co-operative arrangements'. These two provisions would allow a coastal state, to impose conditions on foreign fishing in its EEZ. These include the provision of catch data (format, content, frequency, to whom the reports should be made, etc).

Overall, Part V of the LOSC does not mandate any specific or primary responsibility to collect data with respect to fishing in the EEZ. Thus, it would be open to the coastal state to do this, either in respect of its own vessels fishing in the EEZ or in respect of foreign vessels being authorized to fish in the EEZ as a condition of fishing. It would also be open to the flag state of a foreign fishing vessel to collect data, either as a condition of a licence imposed by the coastal state under a bilateral access agreement or under a joint venture agreement. Alternatively, it could be provided voluntarily.

What is made clear, however, is that there exists an obligation to exchange available information through competent international organizations, and that would imply the capacity on the part of such bodies to set data reporting standards for states to follow.

For the sake of completeness, it should be added that a coastal state does have the power to control marine scientific research in its EEZ or on its continental shelf. The coastal state should in normal circumstances grant its consent to undertake marine science research projects, though it has the discretion to withhold that consent if it is of direct significance for the exploitation of the natural resources of the zone (LOSC: Article 246).

The 1995 UN Fish Stocks Agreement reflects a much more elaborate and sophisticated approach to the collection of data. Whereas the LOSC only addressed the question of collection and exchange of data in passing, it has come to be recognized that it should be addressed much more vigorously. Further, it imposes quite specific obligations on states, in contrast to those found in the LOSC, some of which, we have seen, are at best implied.

The 1995 UN Fish Stocks Agreement is also quite complex in its operation. There is nothing to prevent states from collecting and sharing the information required under the Fish Stocks Agreement even though they are not yet parties to it. Indeed, with respect to sharing of information under the 1993 Compliance Agreement,[3] some states were already providing the information required under that agreement before it entered into force, and there is no reason why states should not be able to do the same (unless their national law imposes a restraint) with respect to the obligations under the 1995 UN Fish Stocks Agreement.[4]

It is beyond the scope of this paper to explore this question further, except to note that there have been significant developments in the area of data collection following the completion of the 1995 UN Fish Stocks Agreement.[5]

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[3] Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas of 1993.

[4] For a discussion of this, see R Grainger (2000).

[5] See further, Edeson (1999b).

7. ENFORCEMENT

Article 73 allows the coastal state in the exercise of its sovereign right to explore and exploit, conserve and manage the living resources of the EEZ, to take measures, including boarding and inspection, arrest and judicial proceedings; as may be necessary to ensure compliance with its laws and regulations adopted in conformity with the LOSC.

Important limitations are however imposed. First, arrested vessels and their crews are to be released promptly upon the posting of a reasonable bond or other security. Although worded generally, it is probable that this requirement is intended to operate only in respect of foreign vessels and their crews, and it would seem that the coastal state would retain the power to take more drastic action with respect to its own fishers and vessels should it choose to do so, though whether it would want to do that is another matter.

Secondly, coastal state penalties for violations of fisheries laws and regulations may not include imprisonment in the absence of agreements to the contrary by the states concerned or any other form of corporal punishment. The key question here is what is a violation of a fisheries law or regulation? Some guidance on the meaning of this phrase can be gained from Article 62(4), which sets out a list of matters that coastal state laws may deal with regarding conservation and management measures. Although the matters referred to on this list are stated to be '*inter alia*', it would seem reasonable to assume that the list provides a useful guide to the content of the concept 'fisheries laws and regulations' in Article 73(3).

More problematic, however, is the situation where an offence is committed in the course of fishing operations and indeed may be an offence against the fishing law itself, but which also qualifies as being a more general offence. Can imprisonment be imposed in respect of such offences? For example, could a coastal state law impose imprisonment for using violence to resist arrest or detention in the course of fishing operations on the basis that the offence is really an assault? The point can also be put the other way around: if a fisheries offence is dealt with in a criminal code, and is not referred to in a fisheries law as such, can it be argued that imprisonment is possible because the matter is not contained in a 'fisheries law [or] regulation'.

Similar questions arise, for example, if there is a persistent breach of fisheries laws by an individual or a refusal to pay a fine where it might be argued that the offence is characterized more as a contempt of justice rather than as a fisheries offence. More problematic perhaps is the situation where a person is required, as a condition of holding a licence, to provide information regarding catch and effort statistics and vessel position reports. If false information was given, would that person be guilty of a violation of a fisheries law only, or could his conduct be additionally characterized as equivalent to providing false information, thereby attracting the local penalties for such an offence?

In answering these points it is important to bear in mind that the LOSC does not authorize the coastal state to extend its general laws into the EEZ (a point confirmed by the International Tribunal for the Law of the Sea (ITLOS) in the Saiga cases.[6] A coastal

[6] M/V Saiga (no.2) St Vincent and the Grenadines v Guinea Judgment 1 July 1999. ITLOS was established under Part XV of the LOSC on the settlement of disputes. On proceedings and judgments, see ITLOS homepage www.itlos.org/start2_en.html

state's powers in the EEZ are limited to its sovereign rights for the purposes of exploring and exploiting, conserving and managing the natural resources (Article 56), while Article 73(1) specifies that in exercising these rights with respect to the living marine resources, it may take such measures including, *inter alia*, judicial proceedings as may be necessary to ensure compliance with its laws, 'adopted by it in conformity with this Convention'. This would suggest that the term violation of its fisheries laws and regulations should not be interpreted literally.

One of the problems in this area lies in determining what amounts to state practice: it is necessary to distinguish, on the one hand, between the existence on the statute books of a law, which on the face of it is capable of transgressing the requirements of the LOSC, and, on the other, actual action being taken by the state to enforce that law. This is especially so where the law in question provides for a discretionary power to impose a bond or to impose imprisonment. While it is possible to have statutes enacted by states as evidence of state practice, there are many instances where there exist statutes that are in excess of international law obligations, but which are not necessarily enforced in such a way. This question has not so far been addressed directly in the context of the law of the sea, however, in the latest decision of the ITLOS, in the 'Monte Confurco' case, which concerned an application for prompt release under articles 73.2 and 292 of the LOSC, ITLOS sidestepped this question with respect to the bond provisions of French law. It merely said,

> The balancing of interests emerging from articles 73 and 292 of the Convention provides the guiding criterion for the Tribunal in its assessment of the reasonableness of the bond. When determining whether the assessment made by the detaining state in fixing the bond or other security is reasonable, the Tribunal will treat the laws of the detaining state and the decisions of it courts as relevant facts.[7] (Paragraph 72).

In Australia, for example, and in a number of other countries with the common law tradition, it is common to find in such legislation provisions stating that a prosecution can only be brought in respect of a foreign vessel which has been operating on the high seas with the consent of the Attorney-General. This enables the state to have strong laws on the statute books but accompanied by the safety net of the consent of the Attorney-General. In deciding whether or not to give that consent, the Attorney General is able to assess a number of legal and policy matters.

8. SOME CONCLUSIONS

To assess the success or failure of the EEZ regime would be a massive task in its own right. Some aspects of such an assessment would require the collection of considerable material. For example, the delimitation of EEZs is one area that would be difficult to assess in terms of success or failure in the absence of considerable information of both geological and political character from different countries. Even then, a judgment could prove difficult. There is also the problem of how you would judge success. The delimitation provisions set out in Article 74 of the LOSC could hardly be put forward as

[7] Monte Confurco Seychelles v France Judgment 18 December 2000

an instance of clear drafting.[8] Indeed, the language is highly opaque. However, it would be possible to assert that the provisions, along with the provision for compulsory dispute settlement, have worked reasonably well in addressing the formidable problem of boundary delimitation, even if certain boundary disputes have proved to be intractable.[9]

To focus specifically on the fisheries provisions of the EEZ, from a purely legal point of view, the fisheries provisions of the EEZ regime have been a success. Like the so-called 'Castaneda Compromise'[10] which hammered out the overall relationship between the rights of the coastal states to the economic resources of the zone and the protection of the navigational rights and other freedoms of the international community as a whole, the basic regime has stood up well from a legal point of view. Since its formulation in the late seventies, the fisheries provisions have been adopted in state practice. To some extent it could be argued that these provisions had already become part of customary law through state practice even before the adoption of the LOSC, or its entry into force in 1994.

In sum, the text of Part V of the LOSC represented a very careful balance of different interests, which on the whole has been respected. Practice on the whole has adapted to this regime, rather than the regime crumbling in the light of a contrary practice.

8.1 Conservation and Management

The evolution of management concepts, especially those now found in the 1995 UN Fish Stocks Agreement, has generally been accepted at a theoretical level. For example, while there is much debate about whether the 1995 UN Fish Stocks Agreement applies to states which are not Parties to it, few would seriously contest the relevance of the precautionary approach, and the principles set out in article 5 of that agreement, even though these are specifically asserted with respect to straddling fish stocks and highly migratory fish stocks. The debate revolves more around the application of the LOSC provisions to particular instances of fisheries management decision making.[11] In fact, this evolution has occurred by relying on a number of different instruments, ranging from the Rio Declaration, General Assembly resolutions, the voluntary Code of Conduct for Responsible Fisheries, the more recent international plans of action (IPOAs), especially the latest on Illegal, Unregulated, Unreported Fishing (IUU) fishing, and now by the World Summit on Sustainable Development (WSSD) held in Johannesburg.[12]

However, while these concepts have been accepted in broad terms, there is still a long way to go before they are put into practical effect in the form of conservation measures. There is also a problem of classification. A provision could be classified as, for example, precautionary, though it may not make any reference to the term. Its

[8] Art 74.1 states: 'The delimitation of the EEZ between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in article 38 of the statute of the International Court of Justice in order to achieve an equitable solution'.
[9] In the cases of Turkey and Venezuela, it led to the non-participation of these two countries in the LOSC.
[10] So called because it had been fashioned by the Mexican representative of that name at UNCLOS III.
[11] For further discussions of these issues, see Franckx (2000) and Rayfuse (1999).
[12] For a discussion of the how this evolution has occurred in non-legal instruments, see Edeson (1999c).

precautionary character might have to be implied from the context. There is of course the obverse problem. A measure might be described as 'precautionary' but the reference to the concept could be as close as it will ever get to meeting that goal.

Of course, a more pessimistic picture can be painted. It is not enough merely to point to some successful legal drafting if the basic regime is not delivering the goods in other ways. Fisheries scientists would rightly point to some dramatic failures in management which would hardly support a rosy assessment of the regime. One of the more startling failures in fact occurred with the closure of the Canadian Atlantic Northern Cod fishery. As the point was put by J. Caddy and K. Cochrane, 'What makes this event particularly significant was that the Canadian approach to fisheries assessment and management was seen by many as being among the best in the world' (2001: 660).

In fact, at the level of the application of conservation and management measures, as opposed to a purely legal analysis of its provisions, there is little doubt that the EEZ regime has been a failure if viewed from a global perspective. Bringing vast areas under the control of coastal states might have been thought once to have brought about improved management, inasmuch as coastal states would have a greater incentive to manage their resources more effectively than if they were left to the vagaries of the freedoms of fishing on the high seas, but there scant evidence for that.

8.2 The Duty to Cooperate

One aspect of the regime that has not been successful is in respect of the duty of states to cooperate with respect to fisheries management. This problem is as much a result of the state of the law as with the regime itself. It is hardly surprising, for example, that it has been found necessary to address cooperation amongst states through regional fisheries bodies in the 1995 UN Fish Stocks Agreement, at least as regards straddling fish stocks and highly migratory fish stocks. However, there exists in both the EEZ and the high seas regime a problem that derives from the weakness of international law, namely, that, while international law recognizes a duty to negotiate in good faith, it does not as such require the parties to reach agreement provided that efforts to reach agreement have been bona fide. This traditional view of international law is of course open to question but is generally accepted. For example, if ITLOS were presented with a case in which this question of the duty to cooperate arose in the context of seriously declining stocks, they might consider that this traditional view of international law is no longer tenable; they might place a heavier duty on states to cooperate. In this regard, ITLOS might draw upon numerous declarations and statements that have been made by the international community and use them to bolster an approach that stresses a community interest in dwindling fish stocks rather than merely reiterate a classical application of international law on a duty to cooperate.

8.3 The Objective of MSY

At the heart of the conservation and management regime of the EEZ is the objective of achieving MSY. This objective was already regarded as outmoded by some scientists by the time of UNCLOS III, however, its inclusion in the LOSC gave it a semi-sacrosanct

status for the simple reason that to tamper with it involved the risk that other language or concepts in the LOSC could be tampered with. It is interesting, therefore, to see how MSY was dealt with in the 1995 UN Fish Stocks Agreement. While MSY remains one of the general principles, indeed in language that is identical to language found in article 61, it is now supplemented by other important new principles. The most important of these are: the precautionary approach, the need to adopt, where necessary, measures for associated species, minimization of pollution, waste, discards, catch by lost or abandoned gear and the need to protect biodiversity. These principles are backed up by Article 6, which elaborates on the precautionary approach in some detail. In addition, the precautionary approach is further addressed in an annex focused on its implementation. These provisions are of course stated to apply only with respect to straddling fish stocks and highly migratory fish stocks. Nonetheless, they do give strong indications of what might have been included in the LOSC had it been possible to amend its conservation objectives. Curiously, in the WSSD plan of implementation, which, being a non binding instrument, might not have raised quite the same political sensitivities, we find again the concept of MSY:

> Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015. (Para 31 (a))

The WSSD plan of implementation also urges the adoption of an ecosystem approach to fisheries management, as well as the promotion of marine biodiversity.

8.4 Access to the Surplus of the Allowable Catch

Granting access to the fisheries 'surplus' in article 62 of the LOSC was a major reason for the negotiation of the LOSC, along with securing for landlocked and geographically disadvantaged states a preferential access to the living resources in the same region. It is difficult to assess the extent to which access to the surplus has been an issue in the negotiations of coastal states and other fishing nations as it was contemplated during the negotiations in UNCLOS III. There is anecdotal evidence that provisions such as the access provisions, which limit the right of the coastal state, are often not acted upon. There is, in any event, evidence that the emphasis is shifting from 'access' to the establishment of partnership agreements. In this regard, the introduction by the European Commission on 23 December 2002 of so-called fisheries partnership agreements is important. In a press release issued on 6 March 2003, Dr Franz Fischler stated:[13]

> On 23 December 2002, the European Commission issued a Communication on the reoriented approach of our Fisheries Agreements with third countries, especially those with financial compensation. As you know most of these agreements have been concluded between the EU and your countries...
>
> What we are aiming at for the future are fisheries partnership agreements. To this end we believe that four aspects should form the backbone of our fisheries relationship with you:

[13] http://europa.eu.int/comm/fisheries/news_corner/discours/speech36_en.htm

> 1) First and foremost, we need a better management of resources based on sound scientific and technical advice.
>
> 2) Secondly, we need to improve the control and surveillance of fishing activities. Only then can we tackle the issue of illegal fishing and only then can we avoid the overexploitation of stocks, which clearly runs against the interest of your local population.
>
> 3) Thirdly, we need to involve public and private stakeholders in the design and monitoring of our fisheries partnership agreements. We should promote the transfer of technology, capital and know how from the EU for the benefit of your local fishing industry. I would like to confirm my clear commitment to doing this in accordance with the guidelines of the co-operation partnership agreement between the Community and your countries....

In addition to this change of direction, it can be expected that, instead of focusing on arguments about the existence of a surplus, and basing decisions on access or non-access, it might be expected that a state wishing to limit access would instead focus on arguments based on ecosystem considerations, or possibly, the need to take a precautionary approach if the scientific evidence is unclear. While these were not addressed by the LOSC, it would be difficult to reject arguments based on such considerations against the background of the 1995 UN Fish Stocks Agreement and the emphasis on such considerations in the Code of Conduct for Responsible Fisheries.

8.5 Access by Landlocked States

As to the rights of landlocked states, there is no direct evidence of their having negotiated preferential access as was contemplated in Article 69 of the LOSC. There is a passing reference to be found in the Regional Convention On Fisheries Cooperation Among African States Bordering The Atlantic Ocean, 1991, where article 2 (objectives) states:

> The objectives of this Convention shall be to enable Parties:
>
> (e) to reinforce solidarity with African landlocked States and geographically disadvantaged States of the Region.

Likewise, article 16 states:

> Parties affirm their solidarity with landlocked African States and with geographically disadvantaged States of the Region and shall establish active cooperation with them.

In fact, the emphasis for landlocked states has shifted to trade concerns about rights of transit across neighboring states. For example, in the report of the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States by the Landlocked States/Geographically Disadvantaged States, the predominant concern is with /market access/transit and customs duties issues in the world trade context, rather than the fisheries access intended in article 69 of the LOSC.[14]

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[14] See for example www.un.org/special-rep/ohrlls/lldc/reports.htm

9. OVERALL ASSESSMENT

To give an overall assessment of the performance of the EEZ even as regards its fisheries provisions would of necessity involve a mixed conclusion. Legally, the basic regime has stood up well. However, the issues, which so dominated the negotiations such as access to fisheries surpluses and that of landlocked and geographically disadvantaged states, no longer have the same prominence, or, perhaps more accurately, have disappeared as issues of concern, and have been replaced by other concerns.

One test of a regime that is quasi-constitutional in its scope and impact is how it is able to absorb or adapt to change. The EEZ regime clearly constitutes a fundamental shift in the regime of the oceans. With all of the imperfections and new emphases that can be detected, the EEZ regime, if viewed as similar to a constitutional text intended to survive for decades, or even centuries, while revealing its preoccupations with the seventies (and all constitutions can be expected to reveal the preoccupations of the era of their negotiation), then the EEZ, has survived remarkably well. A fisheries scientist with a focus on whether the regime has delivered effective conservation and long-term sustainable use, could, of course, see the regime very differently.

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Section II

National Strategies for EEZ Implementation

Chapter 3

The Performance of Exclusive Economic Zones

The Case of Norway

Alf Håkon Hoel
Department of Political Science, University of Tromsø, N-9037 Tromsø, Norway (*hoel@sv.uit.no*)

1. INTRODUCTION

Norway is a significant beneficiary of the changes in the global ocean regime conferring sovereign rights over natural resources in the oceans to coastal states. With the introduction of an Economic Zone (EZ) (1977)[1] and the zones around the Svalbard and Jan Mayen islands, the ocean area under Norwegian jurisdiction increased to more than two million square kilometres, or about six times its land territory. The natural resources in these areas are crucial to the country's economy. Petroleum revenue accounts for nearly 60% of its exports by value, fisheries for approximately 6%. The performance of the oceans management regime is however not dictated by concerns for conservation and resource use alone. Norway's oceans management functions within the broader context of North Atlantic security politics (Orheim, 2001).

An important feature of the Norwegian Economic Zone regime is its international orientation. A number of pollution-related problems originate outside the Norwegian EEZ. Living marine resources often straddle the boundaries of neighbouring countries' EEZs and international waters, necessitating international cooperation in their management. At the same time, with a population of only 4.5 million people, the domestic market is small and most of the production based on natural resources has to be exported. More than 90% of the fish landed is exported, to more than 150 countries.[2] The Norwegian marine sector is therefore crucially dependent upon international cooperation in resource management and careful handling of international trade issues.

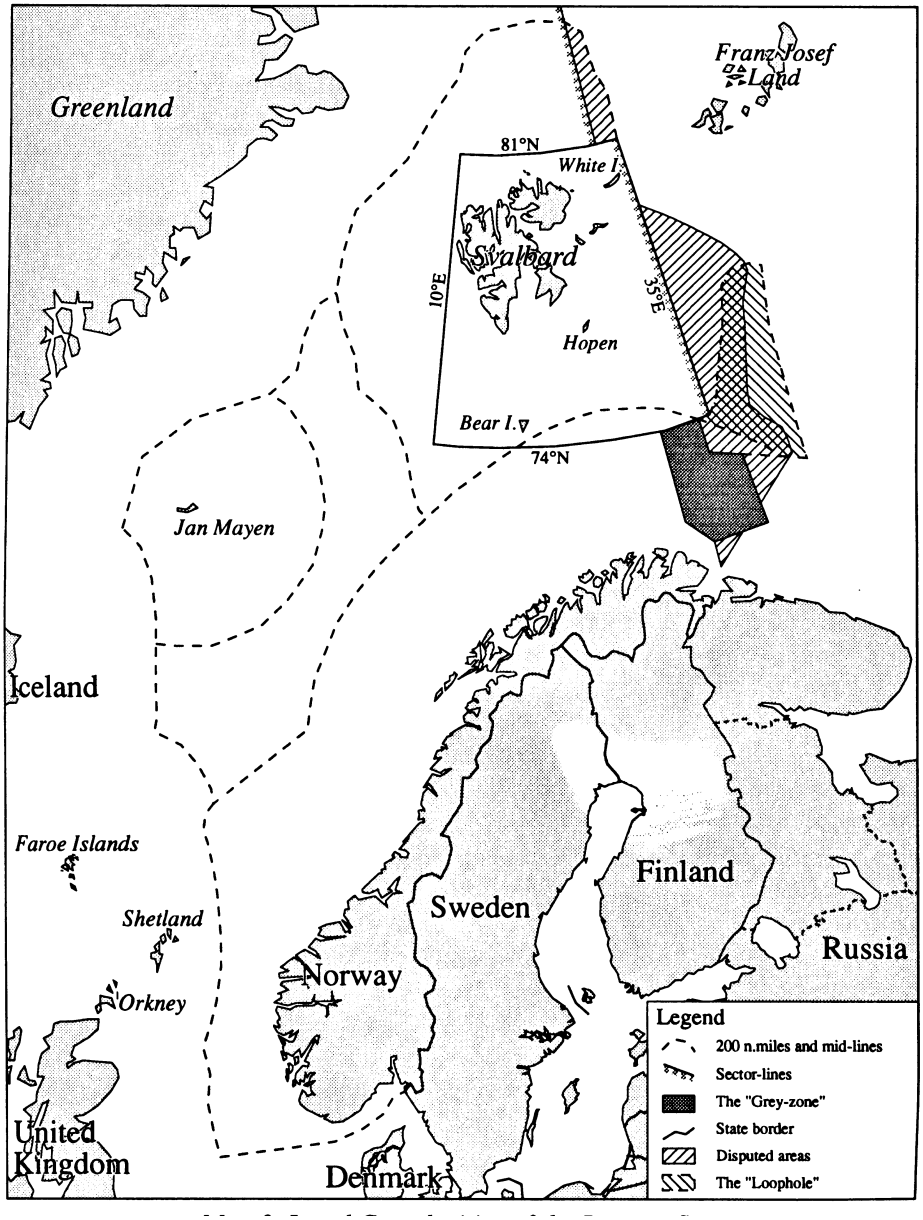
2. THE NORWEGIAN EEZ REGIME

2.1 Background

The Norwegian EZ regime is defined primarily by its geography (Map 3.1): a 23000 kilometre coastline with the North Sea to the south, the Norwegian Sea to the west and the Barents Sea to the North. In the south the EZ is delimited by boundaries to Sweden, Denmark, Germany, the UK and the Faroese Islands. In the Norwegian Sea the EZ

[1] Norway established an Economic Zone, rather than an EEZ.
[2] Norwegian Seafood Export Council at: www.seafood.no.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 33–48.



Map 3.1. Zones of Norwegian Jurisdiction

Source: Hønneland (2000), Fig. 4.3 on p. 63 with kind permission of Springer Science and Business Media

borders on international waters, while in the north it borders both international waters and the unsettled boundary with Russia. In addition, two islands in the Arctic are under Norway's jurisdiction: the Svalbard archipelago to the North of the Barents Sea, and Jan

Mayen, East of Greenland and North of Iceland. Norway also holds territory in the Antarctic, being the only country with territorial interests in both polar regions.[3]

The marine environment in the Norwegian EZ is generally healthy, but is exposed to climate related stresses as well as pollution (Sjøtun, 2004). The major sources of pollution are found outside Norwegian waters. Emissions of nuclear materials from British plants have been the single most threatening pollution source,[4] but also emissions of persistent organic pollutants (POPs) are also a cause for concern (AMAP, 1998). In areas under Norwegian jurisdiction, petroleum activity and the dumping of toxic materials are among the dominant sources of pollution. The protection of the marine environment in the Northeast Atlantic is based on the international cooperation established under the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention).[5] Other important international fora in this context are the North Sea Conference[6] and the Arctic Council.[7]

The Norwegian EEZ covers numerous rich fishing grounds. The fisheries are sustained by a marine environment with high primary production. Its fisheries average over two million tonnes annually. Arctic cod, Atlanto-Scandic herring, and northern shrimp are the economically most important fisheries, providing income for some 14000 fishers and about 12000 workers at fish plants. In addition, the sheltered coastal waters harbour an aquaculture industry producing some 500,000 tonnes of Atlantic salmon annually. Total export value is currently about four billion US$, making Norway one of the world's major fish exporters. Contrary to the situation in other major fishing nations, the domestic market is very small, so most of the production has to be exported. This leaves the fishing industry in Norway particularly vulnerable to the vagaries of international trade politics, and dependent on beneficial terms for market access.

2.2 Legislation

The legal structure of the current oceans regime is based on the 1963 Continental Shelf Act[8] and the 1976 Economic Zone Act,[9] as well as the 2004 act extending the territorial waters to 12 nautical miles. The 1976 Act extends jurisdiction over living marine resources to 200 nautical miles, and reserves the utilization of those resources for Norwegian vessels. Regulation of access to fisheries was regulated for larger vessels through a 1972 act on participation in fishing.[10] A 1983 act on marine fisheries, subsequently updated several times, provided a broader regulatory framework for the living marine resources. The fisheries acts provide for extensive use of enabling legislation, facilitating the adjustment of policies to changing circumstances.

The essence of the legislation, as revised and updated, is that the natural resources found in these waters belong to the Norwegian state. The overall objectives

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[3] Norway claims jurisdiction over Queen Maud Land, The Bouvet Island and Peter I Island in the Antarctic.
[4] In April 2004 the British government decided that the Selleafield plant should introduce new cleansing technologies, reducing emission of technetium-99 with more than 90%.
[5] See www.ospar.org.
[6] See, for example, http://odin.dep.no/md/nsc/
[7] See: www.arctic-council.org/index.html
[8] Replaced with subsequent legislation, the 1995 Petroleum Act is the most recent.
[9] Act of 17 December 1976 No 91: Norway's Economic Zone
[10] Replaced by an updated act in 1999.

for their management are sustainable development and optimum utilisation, as balanced with the need to maintain viable local communities. These are concerns that need to be balanced and reconciled through the policy process.[11]

The regulatory approach in Norwegian fisheries is based on a combination of limited access to fisheries, limitations on catches in the form of quotas, as well as technical regulations determining type of fishing gear to be used and fishing seasons and areas. Important features of the regime are discard bans and flexible closures of areas with undersize fish. In addition, vessels with heavy fishing gear (trawls) generally have to fish in the areas beyond a 12-mile limit.

2.3 Decision-making

In a parliamentary democracy a government needs to have its policy development grounded in a majority in the parliament (Andenæs, 1998). In the Norwegian case this is done by reports from the government to the parliament, laying out the policy priorities and mechanisms to achieve them. The parliament may accept, adjust or reject the proposals in such reports, and the government would normally subside to the opinions of parliament. The management of living marine resources has generally been an issue of relative policy harmony. The establishment of the EZ did not bring about a major change in the institutions involved in resource management. The mandates of the Ministry of Fisheries as well as its underlying agencies were modified to reflect the increased geographical mandate area. The Ministry and the Fisheries Directorate has been considerably expanded over the years in response to the increasing demands for resource management. The regulatory framework for the management of fisheries in the Norwegian EZ is extensive, covering the activities of some 8,000 Norwegian fishing vessels and several hundred foreign vessels fishing in Norwegian waters.

Also the enforcement of regulations is a comprehensive task. A Coast Guard was established as an independent organization within the Navy since the extension of jurisdiction in 1977. Since then the activity of the Coast Guards activity at sea as well as shore-based compliance control by the Fisheries Directorate and sales organisations[12] has expanded greatly. Annually, the Coast Guard performs some 2000 inspections at sea, while the Directorate checks landings at some 400 designated landing sites.

The knowledge base for resource management in the Norwegian EZ is produced by the Institute of Marine Research, whose activity and manpower also has expanded greatly after the introduction of the extended jurisdiction. Due to the shared nature of much of the resource base, cooperation with research institutions in other countries in the North Atlantic is critical to the quality of scientific advice. Fundamental to the operation of the management regimes for living marine resources in the EEZs, as well as on the high seas in the Northeast Atlantic, is the existence of an international organisation for cooperation in marine science and provision of scientific advice to national authorities and various international organisations. The International Council for the Exploration of the Sea (ICES) has a 100-year history functioning as an advisory

[11] For further deliberation, see Ministry of Fisheries (1998).

[12] The first hand sales of fish from vessels to processors is regulated by a raw fish act that provides for sales organisations to organise the transactions. The sales organisations are also mandated to assist in the enforcement of regulations by collecting landings data.

body, and its work, based on contributions from scientists in member countries, is fundamental to the management of natural resources as well as the marine environment (Stokke and Coffey, 2004).

An important aspect of Norwegian politics is the involvement of interest groups in public policy-making (Olsen, 1983). Such corporatist traits, where industry interests are given a role in the decision-making processes that affect their business, can be found also in the fisheries sector. The organizations representing the interests of the fishing industry have been given access to the committee that elaborates mandates for the annual negotiations with other countries under various bi- and multilateral agreements (see below).[13] Due to the shared nature of most important fish stocks, the conservation aspect of fisheries management is basically settled in these international negotiations, while the subsequent domestic policy process is mostly concerned with distribution of fishing rights at the domestic level. A Regulatory Council, again with heavy industry representation, plays a crucial role in that regard (Mikalsen and Jentoft, 2003). Both committees were set up in the early 1970s, well before the establishment of the EZ, but have since taken on additional tasks as a consequence of the establishment of the EZ and the development of fisheries management in general.

While domestic changes following the introduction of the EZ were gradual and did not involve major changes of existing institutional structures, developments were totally different at the international level. The living marine resources in the Northeast Atlantic typically have a geographical distribution ranging over the EEZ of more than one coastal state, necessitating international cooperation for their conservation and management.

2.4 International Cooperation

The introduction of the EZ on 1 January 1977 required complex negotiations with the neighbouring countries to establish a number of new boundaries, as well as new institutions for bi- and multilateral cooperation in the management of living marine resources (Andresen et al., 1984). The drawing of boundaries was straightforward in the North Sea where the continental shelf had been divided according to a median line principle in the 1960s. However, setting up a management regime for living marine resources proved difficult. But over time a cooperative arrangement between Norway and the European Community (EC) evolved, based on a 1978 agreement on cooperation in fisheries management that came into effect in 1983 when the EC adopted its Common Fisheries Policy. Cooperation with the European Union (EU)[14] on the management of North Sea fisheries covers seven shared stocks,[15] and entails annual negotiations on management strategies and the setting of total allowable catches (TACs) for these stocks, as well as an exchange of quotas for other stocks such as Arctic cod in

[13] Recently also the views of regional authorities and environmental organisations have been taken on board in this context, although these interest are not represented in the committee that prepares for the negotiations.
[14] The European Community became the European Union in 1995.
[15] Fisheries management in the European Union is basically a community matter. Therefore, the opposite party in this arrangement is the European Commission, not the EU member states. The seven stocks are from different species, among them North Sea herring and North Sea cod.

the Norwegian EZ in the North. The EU also has a quota for Arctic cod in the Svalbard Fisheries Conservation Zone.

In the north, the difficulties encountered in attempts to resolve a boundary dispute between Norway and the Soviet Union in the Barents Sea (Kvalvik, 2004) have not prevented the development of a joint Norway-Soviet Union fisheries regime from 1975 onwards. A joint fisheries commission established in 1975, a 1976 bilateral agreement providing for mutual access to each other's waters, a Fisheries Conservation Zone around Svalbard (1977), and an arrangement for the handling of enforcement issues in a part of the disputed area (the 'Grey Zone Agreement') are the key features of this regime (Churchill and Ulfstein, 1992). Under the Agreement with Russia, a Joint Fisheries Commission meets at least once a year to agree on TACs for the major shared fish stocks fished in the Barents Sea: cod, haddock and capelin.[16] The total quotas are shared between the two countries, with an additional quantity being traded to third countries[17] in exchange for fish quotas to Norwegian and Russian fishermen in their waters. The cooperation between Norway and Russia has led to the development of joint efforts also in fisheries research and in the enforcement of fisheries regulations.

The joint arrangements with the EU and Russia are by far the most important in terms of dividing and managing fish resources. These agreements have evolved to include more fish stocks, more aspects of fisheries management, and ever more ambitious goals for management. Following their accession to the 1995 UN Fish Stocks Agreement and modifications to ICES advice, Norway and Russia has moved towards a precautionary approach in the work in the Joint Fisheries Commission (see section 3 below). Progress has been slower in that regard in the cooperation with the EU.[18] In addition to the arrangements with Russia and the EU, there are several other operative bilateral arrangements between Norway and Iceland, Greenland, the Faroese Islands and Poland.

Beyond the waters under Norway's jurisdiction there are two areas of high seas: the so-called 'Loophole' in the Barents Sea, and another area in the Norwegian Sea. A number of regional agreements are in effect to manage fishing in the waters beyond national jurisdiction, notably an agreement among some coastal states in the Northeast Atlantic to manage Norwegian spring spawning herring. Here total allowable quotas for the following year's herring fishery are set, and divided among the parties. A separate quota is set for the area on the high seas beyond the EEZ of the member states. The high seas quota, most of which is given to the same coastal states, is formally managed by the Northeast Atlantic Fisheries Commission (NEAFC) (Churchill, 2001).[19] NEAFC also regulates other fisheries at the high seas in the Northeast Atlantic. It has the formal competence to regulate fisheries in the Loophole in the Barents Sea, but is not operative there. Normally there is very little fishing activity in this area. However, during the 1990s exceptional oceanic conditions made substantial fisheries possible. This triggered a major IUU[20] fishery, in which Icelandic owned vessels were the most active. This

[16] Recently, king crab has been added to the list of shared stocks.
[17] EU countries, Iceland, and the Faroese Islands.
[18] The EU and its member states did not accede to the Fish Stocks Agreement until late 2003.
[19] Norway is also party to the Northwest Atlantic Fisheries Organization (NAFO) and is currently engaged in shrimp fishing in that area.
[20] Illegal, Unregulated and Unreported. The term is used when one of the three concepts apply.

fishery was brought under control in 1998 by a trilateral agreement between Norway, Russia and Iceland.

The establishment of the EZ involved particular problems for Norway's Arctic islands.[21] The Svalbard archipelago is under Norwegian sovereignty by virtue of the 1920 Svalbard Treaty (Ulfstein, 1995). The treaty requires Norway to regulate economic activity and protect the environment. It also obliges the authorities not to discriminate between treaty parties when regulating economic activities on the archipelago. Therefore, rather than a fully-fledged EZ, a non-discriminatory Fisheries Conservation Zone was set up in 1978. This borders the Norwegian EZ to the south and the disputed area with Russia to the east. The area has rich fishing grounds and conflicts have arisen over access to the resources there (Churchill and Ulfstein 1992). Around Jan Mayen, a small island east of Greenland and North of Iceland, a Fishery Zone[22] was set up in 1980.[23] A case before the International Court of Justice to resolve the boundary with Greenland was settled in 1993.

Management measures for marine mammals are decided on by the International Whaling Commission (IWC), the North Atlantic Marine Mammals Commission (NAMMCO) and the Joint Norwegian-Russian Fisheries Commission. Due to deep-seated controversies over its role, the IWC has not been able to follow the advice provided by its Scientific Committee and adopt a Revised Management Scheme (Andresen et al., 2000). Therefore, the IWC does not set quotas. Norway has reserved its position in accordance with the whaling convention[24] to the 1982 moratorium adopted by the IWC, and is therefore not bound by the non-quota regime. Since 1993 Norway has set unilateral catch quotas of the Northeast and Central Atlantic stocks of minke whales, on the basis of the assessments made by the Scientific Committee of the IWC.[25] NAMMCO adopts management measures for small whales and seals in the northern North Atlantic area.

3. CHALLENGES TO THE CURRENT OCEANS REGIME AND IMPLICATIONS FOR DOMESTIC EEZ MANAGEMENT

The waters under Norwegian jurisdiction are governed by a multitude of institutions dealing with diverse issue areas such as navigation, fishing, and pollution, which operate at different levels of social organization. As stated in the introduction to this volume, the creation of EEZs did not solve the problems in ocean governance that continued to emanate from the freedom of the high seas doctrine (IWCO, 1998; Borgese, 1998). Nor did the EEZ regime mean the end to international ocean politics and its salience for domestic ocean governance. Over the last decade the EEZ based

[21] The EZ legislation does provisionally not apply to the country's Antarctic territories.
[22] The Fishery Zone around Jan Mayen does not contain provisions for non-discimination, as do the Fishery Conservation Zone around Svalbard.
[23] This required the negotiation of a complex arrangement with Iceland involving the establishment of a boundary, sharing of fisheries resources, and an arrangement for the eventual exploitation of petroleum.
[24] 1946 International Convention on the Regulation of Whaling.
[25] An annual catch quota of 6-700 animals has been set in recent years.

oceans regime has been challenged in several global processes relating to the environment and international trade, necessitating policy developments at the national level in response to those challenges,

The *environmental* challenge to fisheries management at the global level is a relatively new development (Hoel, 1998; Hey, 1996). As a consequence of global environmental change related problems as well as over-fishing and management failures, marine conservation has found its way into global environmental fora. This has brought a range of new actors and concerns into fisheries politics, domestically as well as internationally. Another challenge to current EEZ management regimes is the increasingly strong linkages between *trade* in fish products on the one hand, and the management of living marine resources on the other. Such linkages include private labelling efforts like that of the Marine Stewardship Council[26] to negotiations under World Trade Organization (WTO) auspices,[27] as well as the work arising from the Convention on International Trade in Endangered Species (CITES). These have the potential of substantially affecting the way living marine resources are managed.[28]

An important question that has arisen is how these global developments referred to above may affect domestic efforts at resource conservation and environmental protection.[29] One cluster of challenges deals with the development of new conservation principles and approaches. The implementation of a precautionary approach in the management of the ocean environment and its natural resources, as well as the development of an ecosystem approach is prominent in this respect. The other cluster of challenges targets the distribution of rights to resources. Rights issues are closely related to the conservation issues, as attempts to resolve distributive concerns may impact upon conservation policies, and vice versa.

3.1 Conservation and Environmental Protection

A major rationale for the creation of EEZs was the perception that international fisheries management organizations were unable to prevent collapses in fish stocks, and that coastal states, due to their dependency upon the resources, would be more responsible managers of resources than others. Yet the implementation of national EEZ-based regimes has been accompanied by growing problems of stock depletions (FAO 2003) and other signs of unsustainable harvesting (Pauly et al., 2003; Garcia and Doulman, chapter 11 this volume) in addition to increasing pollution levels.

Assessing the performance of a state's fisheries conservation policy is a difficult endeavour. Fish stocks tend to vary considerably for a number of reasons, only some of which are under human control. Natural factors like climate change, predation and stock recruitment can heavily influence a fish stock, along with fishing. Determining the relative significance of the various factors is difficult at best. On the whole, the

[26] See: www.msc.org

[27] Fisheries subsidies are addressed with a view to developing trade rules that regulate the use of subsidies. Ministerial Declaration of the 4th Ministerial meeting of the World Trade Organization in Doha, November 2001.

[28] Work is in progress to adapt its listing criteria to situations involving living marine resources, following initiatives to include commercial fish species in CITES appendixes (FAO, 2002).

[29] Early attempts to assess the conservation impact of the global ocean regime include Sætersdal and Moore's 1987 study which attempts to summarise developments in the world's major fishing regions.

conservation policies for fish stocks in Norwegian waters appear to be relatively successful, rather than the opposite, at least if compared with the experiences in Eastern Canada or the EU. A few stocks, like cod in the North Sea that are shared with the EU and coastal cod in North Norway, are in a depleted condition, and exploitation is severely restricted by regulations on the quantity that can be taken. At this time, the economically most significant stocks,[30] however, are in a generally sound state, within or near what is termed 'safe biological limits' (Institute of Marine Research, 2004). Heavy fishing pressure necessitates strict regulation of all fisheries, and the previous system of open access to fisheries for smaller coastal vessels has been all but obliterated.

3.1.1 The Precautionary Approach

Ideas of sustainability have led to significant changes in the intellectual frameworks of managers operating under the EEZ framework. The most significant development over the last few years is the advent of the precautionary principle (VanderZwaag, 2002; Tickner, 2003). It was developed into a precautionary approach in the 1995 UN Fish Stocks Agreement (Balton, 1996), and subsequently it has been implemented by a number of countries in their fisheries management. This change involves new and more restrictive ways of understanding and incorporating risk and uncertainty in the management of living marine resources. In the Northeast Atlantic a precautionary approach has been introduced into the management of fisheries and marine ecosystems by the International Council for the Exploration of the Sea (ICES), which has translated the requirements of the Fish Stocks Agreement into scientific management advice (ICES, 1997). Essentially, this means that scientific advice on catch levels now relies on two parameters: spawning stock biomass and the rate of decline or growth in a given fish stock. To be classified as sustainable, a fishery must be above the defined, stock-specific reference points on both parameters.

In practical terms, the precautionary approach is now the basis of the scientific advice provided for all major fisheries that Norway is involved in. Additionally, the regulations of most fisheries are based on a precautionary approach. However, in many instances it has not been possible to arrive at agreement with Russia and the EU on regulatory schemes that fully comply with such an approach. Economic and social concerns often take precedence, and the need for conservation is balanced against the need to maintain economic activity.[31] In 2002 Norway and Russia decided in the Joint Fisheries Commission that from 2004 onwards multi-annual quotas based on a precautionary approach should apply. A new management strategy adopted in 2003 shall ensure that TAC (total allowable catch) levels for any three-year period shall be in accordance with the precautionary reference values. It remains however to be seen whether this can be achieved over a longer period of time. Russia has not taken steps to implement a precautionary aproach, and the proposed Russian Fisheries Act does not mention it (Hønneland, 2004).

The long-term success of precautionary management strategies also depends on compliance with regulatory measures. Over the last decade it has been evident that

[30] These include Arctic cod, Norwegian Spring Spawning herring, and Northern shrimp

[31] The Law of the Sea Convention as well as the 1995 Fish Stocks Agreement obliges countries also to take such concerns into consideration when establishing management measures.

substantial overfishing has taken place on several fish stocks that Norway share with Russia and the EU. A recent concern is the rise of IUU fishing in the Barents Sea and transhipments of catches at the high seas or in the Svalbard Zone.[32]

The demands for knowledge in fisheries management in the North Atlantic area has largely been driven by managers' needs (Gullestad, 1998). In practice, the application of a precautionary approach has meant that science has been given a more prominent role in an essentially politically driven decision-making process, since the approach demands the use of science-based information and resources. This poses challenges related to the direction of scientific work, and the development of an environment where sound science can be fostered, in spite of being integrated within a political process.

3.1.2 Ecosystems-based Management

Another development in improving the sustainable use of resources is the emergent thinking on eco-system based management of living marine resources. Most fisheries management systems are still based on single-species models, aiming at producing a maximum sustainable yield. In some cases management practices have evolved to include multi-species interactions, where relationships among commercial species are considered with a view to bio-economic optimal management strategies (Sandberg et al., 1998; Flaaten, 1988). In an ecosystems perspective, however, the relationships among harvested species and their physical and biological environment are the central concern (Ecosystem Advisory Panel, 1999). In an ecosystem-based management perspective the basic objective is to minimise negative impacts from harvesting on the ecosystem as a whole, and to incorporate the impact of physical factors such as climate change on fisheries production. There is an extensive debate on what the ecosystem principle should mean to fisheries management and how it should be implemented.[33] At the World Summit of Sustainable Development in 2002, the Plan of Implementation adopted for the global environment specifies that states are to implement an ecosystem-based approach to fisheries management by 2010. Nothing is said about what this should mean in practice, but the Norwegian case may offer some suggestions.

While little has been achieved at this stage with respect to implementing regulatory schemes based on an ecosystem-based approach, significant developments have taken place in the realm of science. An important step in this regard is the reorganization of marine science. The Institute of Marine Research (IMR), the country's pre-eminent marine research institution,[34] has undergone a major restructuring in response to the ecosystem-based management challenge. While previously organized around four sectors: resource management, aquaculture, coastal zone management and the marine environment, it is now based on 19 research groups which deliver research to

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[32] Such transhipments occur when illegal catches are transferred from a fishing vessel to a transport vessel in areas where the Coast Guard are unable to inspect the vessels. The activity has however been closely monitored, and it is estimated that more than 100,000 tonnes of cod has been taken illegally over the last 2 years.

[33] An important event in this respect was an FAO-sponsored conference in Reykjavik, Iceland, 1-4 October 2001, resulting in a Declaration on Responsible Fisheries in the Marine Ecosystem. www.refisheries2001.org/index.htm .

[34] The IMR has some 500 employees in three cities (Arendal, Bergen and Tromsø), a budget of nearly 100 million USD, and operates a fleet of research vessels.

several advisory programmes, which in turn serve various 'customers' – the Ministry of Fisheries, and to a lesser extent, the Ministry of the Environment. This way of organizing science allows for the transcendence of traditional barriers between researchers in the marine environment and the more fishery-related stock assessment researchers, thereby facilitating interactions among scientists that yield scientific advice that is informed by ecosystem considerations.

It is important to differentiate between ecosystems-based management in the context of living marine resources on the one hand, and that of an ecosystem approach to oceans management on the other. In a wider sense, ocean ecosystem oceans management is also about reconciling the concerns of different societal interests. How should, for instance, interests related to offshore petroleum exploitation be balanced against the interests of the fishing industry or environmental concerns? Such 'type II' ecosystem approaches to oceans management are even less developed than 'type I' ecosystem approaches that are confined to fisheries. However, in a report to parliament (Ministry of Environment, 2002), the government established a major initiative towards the development of type II ecosystem management, in the format of a 'Management Plan for the Barents Sea' (MPBS). The idea is that such management plans should provide decision-makers with systematic information on benefits and costs of various options for economic development, and clarify how activity in one sector has consequences for other sectors. The major impetus for this initiative was the northward expansion of petroleum exploitation, as well as increasing shipping activity off the northern Norwegian coast stemming from the rapidly growing petroleum production in the Russian North. The work on the MPBS is governed by an interagency committee chaired by the Ministry of the Environment, with participation from relevant ministries and agencies, including fisheries.

To facilitate the implementation of the precautionary and ecosystem-based management approaches, in 2003 the government appointed a committee to draft a new Oceans Resources Act that will take these concerns into account. The work on the new act, to be completed in 2005, has three objectives: to extend current legislation so that it takes all living marine resources into account, rather than merely those subject to commercial exploitation; to modernize fisheries regulations according to the needs of the fishing industry and society in general, as well as simplifying the regulatory framework; and to take into account the international environmental obligations that Norway has undertaken. The protection of biodiversity and the regulation of the emerging genetic resource industry is a central concern.[35] Another committee has been tasked with developing criteria for the establishment of Marine Protected Areas.

3.2 Rights to Resources

The establishment of EEZs and the development of a continental shelf regime triggered a global redistribution of ocean resources. Access to and control over the enormous natural resources in offshore areas came under the control of coastal states. The criteria for distributing wealth internationally as well as domestically have nonetheless remained unclear. One question in this regard, relates to the specification of the criteria

[35] See http://odin.dep.no/fid/norsk/aktuelt/taler/artikler_politisk_ledelse/008041-090038/dok-bn.html.

for the distribution of ocean wealth created by the global oceans regime. Another question is how these criteria are implemented in practice.

The expanded jurisdiction made it possible for coastal states to capitalise on the resources off their coasts on a larger scale than before. As a consequence, the global fishing capacity has multiplied. This significantly accounts for the poor state of fish resources globally (McGinn 1999).[36] Norway is no exception to the global picture. With the introduction of EEZs, distant water fishing fleets were in most cases forced to leave their traditional fishing grounds, as these came under the jurisdiction of coastal states. In Norway, as well as in many other countries, the void left by departing distant water fishing nations was filled by an expanding domestic fleet.

The Law of the Sea Convention (LOSC) does not provide specific criteria for the sharing of resources and distributions of rights, beyond specifying that coastal states are given sovereign rights over the natural resources within the EEZ. This right is not an unabridged ownership right, however. If there is a surplus of resources, the coastal state is obliged to give other states access to it (Article 62). The provision may not mean much, as it is up to the coastal state to set TAC levels and decide whether there is a surplus (Burke, 1994; Edeson, chapter 2 this volume). In practice the coastal state's right can be described as a right to manage the living marine resources. This is relatively straight-forward as long as the resources are located within the jurisdiction of only one state. But when the resources are shared with other countries, or straddle the boundaries of international waters, things become more complicated and the fit of the EEZ regime with the nature of the resource is inadequate to ensure the operation of an effective management regime.

The 1995 UN Fish Stocks Agreement is an attempt to remedy such situations. The agreement specifies certain criteria for participation in regional fisheries management organisations (Sydnes 2001, see also Sydnes chapter 8 this volume) for the high seas (Article 11) as well as criteria for distribution of rights among participants (Article 7). In doing so, the agreement establishes two categories of rights: the right to participate in management, and the right to a share in the resource in question.[37] In addition numerous other criteria have emerged from state practice. When living marine resources are allocated among countries, a number of distributive criteria are brought to bear on the negotiations: the zonal distribution of the stock in question, the country's history of fishing, contribution to science, and dependency on the fishery, among others.

In the case of Norway, whose major fish stocks are shared with other countries and in some instances also straddle the boundary with international waters, this is an issue of great importance. As mentioned above, numerous bi-, tri- and multilateral fisheries regime have been set up in the North Atlantic involving Norway. In all of these

[36] Overfishing is generally associated with three inter-related problems: insufficient knowledge of stocks, regulations that do not restrict fishing to a level where stocks are not depleted or that fail to rebuild depleted stocks, and lax enforcement of regulations and failure on the part of fishermen to comply with regulations.

[37] As to the criteria for the distribution of fishing rights, the agreement refers to *inter alia* measures established for the high seas should not undermine the effectiveness of conservation measures for the same stock in waters under national jurisdiction, previous measures, biological and geographical characteristics, and states' dependence on the stock in question. Participation rights in a fishery on the high seas are regulated by part III of the Agreement. Specifically, only parties to such arrangements or those who comply with the measures adopted by them, shall have access to the fisheries (Article 8).[37] The Agreement also specify criteria for how new members can be accommodated (Article 11).

the issue of quota allocation and distribution of rights is critical, as the resources available are scarce and TACs are set in almost all cases.

From the perspective of Norway, the most significant issues that involve the distribution of fishing rights takes place in the cooperation with Russia (simple 50-50% share formulas), the EU (complex formulas), and a multilateral coastal state herring arrangement (complex formulas). Sharing arrangements under these agreements are based on a mix of historical fishing records, geographical distribution of fish stocks and political factors. Such political factors may for instance involve small actors exploiting their relative small size and economic vulnerability to get bargaining leverage with large actors, as the case appears to be in the relationship between Iceland (260000 inhabitants) and Norway (Asgeirsdottir, 2000). Another form of power-wielding is this realm the EU demands to Norway for additional fishing rights in Norwegian waters, in exchange for access of Norwegian fish products to the European market (Hoel, 1999).

4. CONCLUSIONS

The establishment of the EZ in Norwegian and neighbouring coastal states waters over time led to an improved fit between the living marine resources in this area and the governance structures established to mange them. In a first phase in the late 1970s, what were previously the high seas where living marine resources were subject to an open access regime, to a large extent became waters under national jurisdiction. The economically most important stocks of living marine resources are shared with other countries, especially Russia and the EU. This necessitated the establishment of joint arrangements for the management of these resources. Conservation strategies and the level of exploitation of such shared resources are therefore largely determined through the cooperation under various bilateral and regional arrangements.

With the 1995 UN Fish Stocks Agreement a second phase was initiated, with a framework for strengthening management regimes also at the high seas. This has largely been implemented in the Northeast Atlantic. This contributed to a further improvement of regime fit, as the institutional platform for getting IUU fishing for straddling fish stocks at the high seas under control was reinforced. The coastal-state based agreement for conservation and management of herring is a good example of such vertical interplay. The improvement of the global framework for fisheries management has set the stage for strengthening of regional cooperation that can resolve problems of overfishing and prevent the undermining of regulatory measures that the coastal states have adopted for straddling fish stocks.

On the whole, the living marine resources regime has therefore been restructured to one with a better fit between its institutions and the problems they are to resolve. With the establishment of the EEZs, most of the living marine resources came under coastal state jurisdiction. Where resources are shared between countries or are straddling the boundary to the high seas, bilateral and regional arrangements have been established to ensure institutional fit to such problems. The previous open access regime has therefore to a large extent been replaced by a cooperative coastal state based regime in the Northeast Atlantic region. International cooperation is still required – the fit depends upon the ability of the states involved to cooperate to establish and implement

conservation strategies through actual regulations. That way, the fit of the regime to the problem at hand becomes dependent on how the states concerned manage vertical interplay.

The domestic management institutions in Norway are primarily occupied with distributing resources among domestic user group and devising regulations for the fisheries activities in Norwegian waters. Vertical interplay between bilateral and international institutions on the one hand, and the domestic management institutions on the other, is therefore a significant aspect of the Norwegian EEZ regime. At the domestic level, the EEZ constitutes an institutional umbrella within which management regimes are established in a variety of sectors. The regime for living marine resources is based on a strong central administration and a system of 'centralised consultation'. It has a mixed track record with regard to resource conservation, but new developments in applying a precautionary approach and ecosystem-based management hold promise for improvement. A major problem for resource conservation, as mentioned, is the hurdle of international negotiations, bringing numerous non-conservation concerns like sovereignty issues to bear on fisheries management.

Possibly, the biggest domestic challenges to EEZ management are found in the intersections between living marine resource management, offshore petroleum development and environmental protection. The living marine resources are vulnerable to pollution stemming from petroleum-related activities, and their exploitation also raise the issue of biodiversity conservation. While horizontal interplay is well developed at the global level, as can be witnessed by the way environmental and trade concerns influences fisheries management, such interplay is less mature at the national level. What we have termed 'type II' ecosystems management, where the concerns of fisheries, petroleum development, environment and other sectors are reconciled in a process set up for that purpose, is emerging, in the format of a Management Plan for the Barents Sea. However, while having well formulated policy objectives, regulations and administrative systems for each of the policy sectors, an integrated oceans policy for comprehensive EZ management is in its infancy. There is no formal mechanism for coordinating policies across sectors nation-wide. This is a problem both in terms of handling the coordination of cross-sectoral problems, as well as meeting the international challenges discussed above. Developing an integrated oceans policy will be the greatest challenge for Norwegian EEZ management in the years to come.

The facts that most resources are shared with other countries, that they must be traded on an international market, and that the most significant environmental problems originate outside the Norwegian EZ, set the stage for Norwegian EZ management. An international contractual environment is more difficult to operate in than a domestic one. The basis for resource conservation, environmental protection and market access has to be negotiated with other countries rather than decided on solely within a domestic context. For a small country such negotiations present a substantial challenge, in terms of having the administrative capacity as well as the political clout necessary to further its interests in relation to major powers such as the EU and Russia.

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Chapter 4

Fisheries Management in the Russian Federation

Geir Hønneland
The Fridtjof Nansen Institute, PO Box 326, N-1326 Lysaker, Norway (*geir.honneland@fni.no*)

1. INTRODUCTION

Russia is one of the world's most important fishing nations, with considerable catches both within the country's exclusive economic zone (EEZ) and on the high seas. While there is an abundant body of literature on systems of fisheries management in the West, and also a growing focus on such systems in developing countries, little has been written about how post-Communist states organize the management of their marine living resources.[1] The present chapter – which focuses on the largest of the post-Communist countries, the Russian Federation – contributes to filling this gap, setting out the basic principles and organizational structure underlying Russian fisheries management.[2]

The Russian Federation consists of 89 federal subjects (administrative entities constituting the federation). The governing structure of the state is situated at two main levels: the level of the federation and the level of federal subjects, normally referred to as the regional level. There is also a certain degree of coordination between the two levels, for instance in the eight inter-regional economic associations set up between 1992 and 1994 and, more importantly, the seven federal districts – each covering a number of federal subjects – introduced by President Putin in 2000 to enhance the implementation of federal decisions in the regions. In the area of fisheries management, governance takes place at the federal level, at the regional level, and at the inter-regional level in the country's five fishery basins: 1) the far eastern, 2) the northern, 3) the western, 4) the Caspian Sea and the Azov, and 5) the Black Sea.[3]

The aim of this chapter is to give an overview of the Russian Federation's system for fisheries management in an EEZ context. It reviews the legislative base, formal objectives and institutional set-up of the management system at the federal level.

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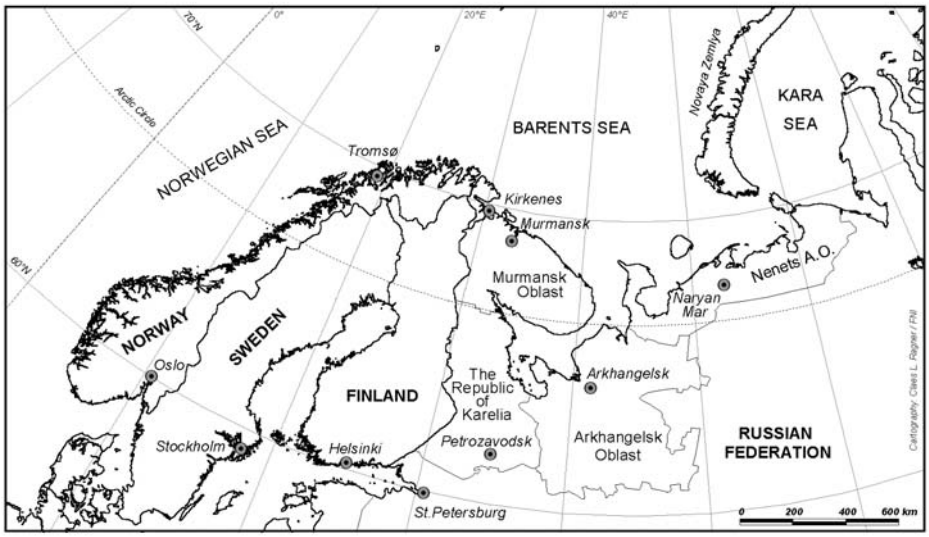
[1] Exceptions include Riggs (1994), Marciniak and Jentoft (1997), Pautzke (1997), Vetemaa et al. (2001) and Vetemaa et al. (2002). See also some of the previous work by the author (Hønneland, 1998, 2001; Hønneland and Jørgensen, 2002; Hønneland and Nilssen, 2000, 2001). This chapter in particular draws on Hønneland (2004).

[2] Where not otherwise indicated, the information presented in this chapter is built on interviews with stakeholders in the Russian fisheries complex. All translations from Russian are by the author.

[3] The fishery basins are not related to specific ocean areas, but cover a group of federal subjects of the Russian Federation. Hence, each basin embraces those fishing vessels whose home port is in one of the federal subjects that constitute it.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 49–63.



Map 4.1. The Barents Sea and the northern fisheries basin of the Russian Federation

Further, it discusses the institutional interplay among various federal management institutions, as well as the interplay between federal and regional authorities in Russia's northern fisheries basin. Russia's northern fisheries basin embraces the fishing activities of all vessels belonging to the federal subjects of Murmansk and Arkhangelsk Oblasts, the Republic of Karelia and Nenets Autonomous Okrug (Map 4.1). It is the second most important of the country's five fisheries basins, only inferior in terms of number of vessels and catch level to the large far eastern basin, which covers fishing activities in the Pacific Ocean. The primary fishery of Russia's northern basin takes place in the Barents Sea, where a bilateral Russian–Norwegian management regime has been in place since the mid-1970s. The Joint Russian–Norwegian Fisheries Commission sets the total allowable catch (TAC) of the Northeast Arctic cod, which is the most important fish stock in the area, and the TAC is subsequently shared 50–50 between the two coastal states. The second part of this chapter focuses on how regional authorities and federal agencies located in the region are involved in the process of quota allocation and other aspects of fisheries management.[4]

[4] For the sake of simplicity, the term regional level is here used to denote management both *inside* the individual federal subjects belonging to the northern basin and what strictly speaking should be referred to as the inter-regional level, that is processes taking place *between* these federal subjects.

2. FISHERIES MANAGEMENT AT THE FEDERAL LEVEL

2.1 Legislation

Post-Soviet Russian politics have to a large extent evolved in a legal vacuum. Although a new constitution was in place as early as in 1993, the elaboration of a complementary legal framework has been slow and fumbling, partly as a consequence of the continuous struggles between the presidential administration and the Federal Parliament. Centre–region tensions have also hampered the legislative process. The Parliament's Upper House, the Federation Council – consisting of the leaders of the executive and legislative authorities of the 89 federal subjects[5] – has often rejected bills after passing the necessary readings in the State Duma.

Since the early 1990s, the Federal Parliament has been drafting a law on Russian fisheries and the protection of maritime biological resources of the Russian Federation (including those fisheries within the EEZ). After having been rejected several times, the bill was finally approved by the State Duma on July 19, 2000. However, the Federation Council rejected it on July 26 because of strong disagreement among the leaders of the different regions. A conciliatory commission was established on September 20, 2000, to review the most 'burning' issues of the draft. When the Federal Parliament finally passed the bill in the spring of 2001, the President refused to sign it citing inconsistencies with other federal legislation. The bill was returned to the Federal Parliament for further clarification. A second conciliatory commission was established on June 7, 2001. On December 24, 2002, the State Duma rejected the revised draft.

The centre–region tensions were apparently one of the main hindrances to reaching agreement on the Fisheries Act in the Federal Parliament until the late 1990s. The draft Fisheries Act promotes the continuation of federal control over fisheries management, including over the economically important quota allocation. It reduces the power of the regional level (see note 4) when compared to the possibilities for regional control spelled out by the Constitution. For while the Constitution allows regional influence in the management of natural resources in the internal and territorial waters of the Russian Federation, the draft Fisheries Act defines fish resources in these waters as federal property, and hence the prerogative of federal authorities to regulate. What also provoked fear among regional actors was the suggestion to introduce levies for quota shares, increase the amount of quotas sold to foreign shipowners, and apply stricter controls by more federal agencies than are already involved in the enforcement of fisheries regulations. After a system for quota auctions was introduced in 2001 (see next section), this has also been the most burning issue in discussions about the draft Fisheries Act.

The fact that a federal fisheries act has not yet been adopted does not imply that Russian fisheries management takes place in a total legal vacuum. The Law on the Russian Exclusive Economic Zone was adopted in 1998 (Russian Federation, 1998), replacing the 1984 Edict of the Presidium of the Supreme Soviet of the USSR on the

[5] As of 2002, the regional leaders do not themselves occupy a seat on the Federation Council; instead, they appoint their representatives.

economic zone of the Soviet Union (both 200 nautical miles). The main material rules of the law relate to the use of biological resources, scientific investigations and protection of the marine environment. Further, a Maritime Doctrine for the Russian Federation up to the year 2020 was adopted in 2001, specifying objectives for the state's maritime fisheries (Russian Federation, 2001). More importantly, a range of fisheries management issues are regulated by Presidential Decree, Governmental Resolution and management decisions at lower levels of the legal hierarchy. A large amount of such provisions are issued – in the fisheries sector as well as other sectors of Russian politics and economy – but they are often not enforced. There is abundant anecdotal evidence of decrees and resolutions concerning fisheries management for which not even the slightest attempt has been made to enforce them; hence, they can at best be interpreted as symbolic expressions of political will. In sum, the development of a Russian fisheries law seems to be characterized by inertia at the higher levels of the legal hierarchy and a flood of legal documents at its lower levels. The problem is not so much the inability to produce legal documents but the opposite, especially at the lower levels of government.

2.2 Objectives and Principles

During the 1990s, the precautionary principle became the leading device in international law on the management of the environment and natural resources.[6] Originating in more general environmental international law towards the end of the 1980s – in particular related to industrial pollution – the principle was incorporated into international law on fisheries in a more flexible form that has come to be known as the precautionary *approach* in the mid-1990s.[7] The precautionary approach was incorporated into the most important global fisheries agreements of the decade, the UN Agreement on Straddling and Highly Migratory Fish Stocks (United Nations, 1995), the FAO Code of Conduct for Responsible Fisheries (Food and Agriculture Organization, 1996), and a number of regional fishery agreements and regimes, including the Russian–Norwegian regime in the Barents Sea (Ministry of Fisheries, 1999). In short, the precautionary principle demands that states take regulatory action to conserve resources even in the absence of incontrovertible scientific evidence of environmental degradation. Related to fisheries management, the precautionary approach encourages coastal states not to wait to introduce protective measures until it has been scientifically proven that a failure to do so will cause serious harm to the fish stocks.

As mentioned in the preceding section, Russia has no federal law on fisheries as yet, and it has not been possible to find references to the precautionary approach in normative documents issued at lower levels of the legal hierarchy in the area of fisheries. Nor is the precautionary approach mentioned in the Law on the Exclusive Economic Zone of the Russian Federation (Russian Federation, 1998) or the Maritime Doctrine of the Russian Federation (Russian Federation, 2001). The Law on the

[6] See, e.g., Hey (1992), O'Riordan and Cameron (1994), Hohmann (1994) and McDonald (1995).

[7] In discussions regarding the application of the precautionary principle in fisheries management, it was particularly important to FAO to emphasize that fishing is an activity fundamentally different from more damaging practices such as toxic waste dumping, and that the precautionary principle should not be used to introduce a ban on fisheries (hence the more flexible variant labeled the precautionary *approach*). See, e.g., Garcia (1995), Lauck et al. (1998), Kaye (2001) and Ellis (2001) for a further discussion.

Exclusive Economic Zone instead speaks of principles such as 'rational use of marine bio-resources' (Russian Federation, 1998, Chapter 2) and 'protection of the marine environment' (ibid., Chapter 5) as separate entities. Likewise, the Maritime Doctrine emphasizes the development aspect of fisheries management, for instance the need for securing 'preservation and expansion of the raw materials base of the Russian Federation and ensuring its economic and food independence' (Russian Federation, 2001, Chapter 3). Also in statements to the public, Russian fishery authorities tend to emphasize the exploitation of the country's fish resources as a more important objective than their protection. In particular, a main goal seems to be to direct more deliveries of catches from Russian vessels to Russian ports in order to secure employment at Russian fish-processing plants, tax revenues to the Russian state budget and food supplies to the Russian population.

During the Soviet era (and, in fact, well into the post-Soviet era), the basic principle for quota allocation was the potential for production, that is the catch capacity of the fleet. Quotas were distributed among the various fleets (i.e. 'enterprises' or 'shipowners') according to the expected catches, with each fleet using the vessels at its disposal. Shipping companies had to prove that they had vessels at their disposal of sufficient capacity, and that last year's quota was fished before they could apply for a new quota. From 1995 to 2000, the allocation of quotas was regulated by a preliminary provision of 22 March 1995 from the State Committee for Fisheries (State Committee for Fisheries, 1995). In addition to the criteria of proven catch capacity (ibid. Art. 11.3, Art. 12), and fished quotas of previous years (ibid., Art. 11.6, Art. 14), several circumstances are listed that may affect quota allocation. These include: the rights of indigenous peoples (ibid., Art. 11.1), the interests of fishery-dependent communities (ibid., Art. 11.2), contributions to research funding, rescue service, supervision and reproduction of fish stocks (ibid., Art. 11.4), and compliance with fishing regulations (ibid., Art. 11.6, Art. 13).

In late December 2000, a new provision for quota allocation emerged, in the form of a Governmental Resolution (Russian Federation, 2000a). To a large extent, the new provision confirmed the objectives and principles expressed in both the preliminary provision of 1995 and the attempts at strengthening the provisions of this order in 1997 and 1999.[8] In particular, parts of the quotas at the regional level should, according to the Governmental Resolution, be allotted to fishing companies that contribute to the development of Russia's land-based fish-processing industry and that build new fishing vessels at Russian shipyards (Russian Federation, 2000b, Art. 3 g [3 d) if the Latin alphabet is used]).[9] The 'traditional' criterion of catch capacity was maintained, as were the criteria of the fishing companies' record related to catch of previous years' quotas, tax payments and compliance with fishery regulations (ibid., Art. 6). A major change as compared to the previous situation was, however, the introduction of quota auctions (Russian Federation, 2000a, Art. 2 v) [2 c) if the Latin alphabet is used], Art. 4). The main architect behind the new provision was the Ministry of Economic Development and Trade, which wanted greater transparency in the quota allocation process and, not least, increased revenues from the fishery sector to the state budget.

[8] For details on these attempted reorganizations, see Hønneland (2004: 56–57).

[9] The share of a federal subject's total quota to be directed to such goals should be at least 20 %(Russian Federation, 2000b, Art. 7).

As of autumn 2003, more sweeping changes to the Russian quota allocation system seem imminent, following changes in the Russian tax code. The Russian Government in November 2003 decided to abolish the system of quota auctions and instead introduce a resource rent (a fee on quota shares) (Russian Federation, 2003). Allegedly, the Ministry of Economic Development and Trade has agreed to the changes provided total federal revenues from the fisheries sector do not fall below current levels. As a result, there will be a charge on all species while only some species (largely the most important ones commercially) are auctioned under the present system. Further, quotas will be allotted for five years ahead, based on the individual shipowner's proven catch capacity the last three years. Hence, the new system is supposed to make future quotas more predictable for the shipowners.

2.3 The Institutional Set-up

There are currently two major federal bodies responsible for fisheries management and enforcement in the Russian Federation, the State Committee for Fisheries and the Federal Border Service. The former is the direct successor to the Soviet Ministry of Fisheries. The status of the federal body responsible for fisheries was reduced from a ministry to a state committee in connection with the break-up of the Soviet Union and the establishment of the Russian Federation in December 1991. Ministries and state committees are different types of 'independent' administrative bodies at the federal level; the ministries are placed higher in the political hierarchy since their leaders are members of the federal government, but the state committees are not subordinate to any ministry. Hence, the federal body for fisheries management was 'degraded' in connection with the dissolution of the Soviet Union, but kept its status as a separate administrative body. A 'service' (*sluzhba*) is also an independent federal agency immediately below ministry level. Although often referred to as a 'military' agency, the Federal Border Service is not subordinate to the Ministry of Defence. In spring 2003, however, the Federal Border Service was incorporated into the Federal Security Service (FSB).

The State Committee for Fisheries is the federal body responsible for all aspects of fisheries management in the Russian Federation other than enforcement at sea, which, since 1997–98, has been the responsibility of the Federal Border Service (Russian Federation, 1997). Research institutes under the Committee collect and analyze data on fish stocks in waters under Russian jurisdiction. The Committee is responsible for regulatory action with a view to preservation of these fish stocks. It decides major regulatory principles and has an important role in advisory or decision-making bodies where several agencies from both the regional and the federal level are represented. It has the last word in all management decisions where other agencies are responsible for the practical work leading up to these decisions. For example, the Russian shares of the Barents Sea quotas are distributed among the federal subjects in the northern fishery basin by the so-called Scientific Catch Council and further distributed among shipowners in Fisheries Councils within each federal subject (see more about this in the next section). However, the decisions of both the Scientific Catch Council and the Fisheries Councils have to be approved by the State Committee for Fisheries. Finally, although responsibility for inspections at sea has been transferred to

the Federal Border Service, the State Committee for Fisheries' Department of Protection and Reproduction of Fish Stocks and Regulation of Fisheries (Glavrybvod) and its regional inspection bodies (30 as per 2001) are still heavily involved in activities typically understood to be enforcement actions. It is the regional inspection bodies, not the Federal Border Service, that license fishing vessels, keep track of how much of the fishing companies' (and foreign states') quotas have been taken at any moment and administer the system of closing and opening of fishing grounds. For instance, the regional fishery inspection body in Murmansk, Murmanrybvod, administers a fine-meshed system for the closing and opening of fishing grounds in cases where excessive numbers of undersized fish are detected in the catches. In addition, the regional inspection bodies still carry out physical inspections in port.

The most conspicuous issue related to the status, responsibilities and performance of the State Committee for Fisheries in recent years is its fight to defend itself against interference from other federal agencies, in particular the Ministry of Economic Development and Trade, the Ministry of Agriculture, the Ministry of Natural Resources and various 'power agencies'. First, an attempt was made to 'dissolve' the State Committee for Fisheries by temporarily depriving it of its status as a state committee and incorporating it into the Ministry of Agriculture as a department for fisheries in April 1997. Its status as a state committee was restored in September 1998 in connection with a general reorganization of the Russian federal bureaucracy. However, responsibility for the collective fishing fleet and fish farming remained under the Ministry of Agriculture, and the Minister of Agriculture is at the same time Deputy Prime Minister responsible for the fisheries sector, that is the person in the Government set to oversee the working of the State Committee for Fisheries. Second, responsibility for enforcement at sea was, as mentioned, transferred from the State Committee for Fisheries and Glavrybvod to the Federal Border Service in August 1997. The decision to strip the Committee of responsibility for enforcement was followed by a media campaign – obviously arranged by the 'power agencies' and, many believe, the presidential administration – depicting it as corrupt and hence unfit for this type of task. However, the decision met with fierce resistance throughout the fishing industry and was implemented a year later, July 1, 1998. Third, the recent introduction of a system for the satellite tracking of fishing vessels in the Russian EEZ by Glavrybvod and the Federal Border Service was hampered by the Ministry of Natural Resources,[10] and this Ministry has increasingly attempted to get involved in fisheries management more widely since the late 1990s. Fourth, officials on the State Committee for Fisheries accuse a range of other federal agencies, among them the ones they are supposed to cooperate most tightly with in enforcement issues, of sabotaging the attempts of the Committee to redirect the deliveries of Russian-caught fish to Russian ports.[11] Fifth, the

[10] Without the signature of the Minister of Natural Resources, the fishery authorities, that is Glavrybvod and the Federal Border Service, cannot take action with fishing vessels on the basis of data from the system for satellite tracking. The Ministry of Natural Resources in May 2000 'co-opted' the (then) State Committee for Environmental Protection, which in turn had had its status reduced from that of a ministry in 1996. For an account of these events, see Hønneland and Jørgensen (2003).

[11] The argument is that Russian vessels choose to deliver their catches abroad not primarily due to variations in price levels, but because the regional offices of many Russian federal authorities have intensified their inspections of fishing vessels since the early 1990s as they have come to rely more on the results of their own work (e.g. fines) and less on transfers of federal funds. The newspaper *Rossiyskaya Gazeta* (August 14, 2002)

old tradition of appointing leaders of the Committee from within the fishery complex is no longer followed. During the final years of the 1990s, leaders of the Committee were changed frequently and primarily selected from among candidates with a professional background in 'power agencies'. In February 2001, the contentious ex-Governor of Primore Kray, Yevgeniy Nazdratenko, was appointed head of the State Committee for Fisheries.[12] Finally, the Ministry of Economic Development and Trade orchestrated the introduction of a system for the sale of fishing quotas by auction (see above), a procedure that the State Committee for Fisheries was very opposed to.

3. FISHERIES MANAGEMENT AT THE REGIONAL LEVEL: LESSONS FROM THE NORTHERN BASIN

Management of natural resources in the EEZ of the Russian Federation is a strictly federal responsibility, as set out in Article 71 of the 1993 Constitution (Russian Federation, 1993). As Article 72 of the Constitution sets out, resources in the state's territorial waters are the joint responsibility of federal and regional (i.e. of a federal subject) authorities (ibid.). In its Article 76, Paragraph 5, the Constitution grants federal legislation precedence over regional legislation in areas of joint jurisdiction (ibid.). However, the scope of regional legislation is not limited by the areas covered by federal legislation. Article 73 of the Constitution states that, except for the areas of jurisdiction mentioned in Articles 71 and 72, federal subjects 'exercise the entire spectrum of state power' (ibid.). On the basis of this, one would expect federal authorities to control the management of the Russian fisheries within the country's EEZ, and federal and regional authorities to have agreed on some form of joint responsibility for regulating fisheries in the territorial waters. However, as the role of regional authorities, especially of the executive branch of government (the governors and their regional administrations), has grown during the 1990s,[13] one might be tempted to ask if the regional administrations in north-western Russia have done anything to expand their sphere of influence to include fisheries management also in the EEZ. One might also ask what stance federal agencies located in the region (here: regional representations of the State Committee for Fisheries and the Federal Border Service) have taken on issues concerning the delineation of responsibilities between federal and regional authorities. Do they primarily represent the interests of their superiors in Moscow, or have they 'gone native', identifying more with the interests of the regional 'fisheries complex'?

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lists 25 federal agencies that inspect Russian fishing vessels when they arrive in a Russian port. The author's interviews with Russian fishermen confirm this impression. Whereas a delivery procedure in a Norwegian port takes a few hours, a similar procedure in Murmansk would take several days since the skippers have to physically show up at the premises of the agencies in question, 'knocking on every door'.

[12] It is commonly believed that Nazdratenko was offered the post of head of the State Committee for Fisheries by the state's leaders to prevent him from entering the race for governor in his home region once more. See, e.g., *Vedomosti*, February 26, 2001.

[13] See Blakkisrud (2001) for an overview of this development.

3.1 The Role of the Regional Administrations

Regional authorities, in Soviet times totally subservient first to federal authorities and then the Communist Party, have traditionally had no role in the management of northwest Russian fisheries. After the break-up of the Soviet Union, this situation changed. A major attempt by the northwest Russian federal subjects to gain influence in fisheries management was made in the early 1990s. Murmansk, Arkhangelsk and Karelia established fisheries departments under their regional administrations in 1993–94 and demanded a voice in the quota distribution, then dominated by Sevryba, the association of fishing companies (see more on this organization below), which, in reality, functioned as a regional representative of the State Committee for Fisheries. In late 1993, the Governor of Murmansk Oblast claimed he had reached an agreement with the Committee that the regional administration was to take over Sevryba's management responsibilities. This conclusion appeared to be premature, but the regional administrations were from then on represented on the bodies which distributed fishing quotas.

The northern fishery basin quotas have in recent years been distributed in two stages. The first stage is managed by the inter-regional Scientific Catch Council, the second by regional fishery councils inside each federal subject. The Scientific Catch Council was also in operation in Soviet times, but the regional catch councils emerged in the mid-1990s, after preliminary provision No. 49 was issued by the State Committee for Fisheries (State Committee for Fisheries, 1995). The practice was confirmed by the 2000 Governmental Resolution No. 1010 (Russian Federation, 2000). The Scientific Catch Council divides the catch between the federal subjects and decides how much of it is to be allocated for 'basin purposes', that is to finance essential operations such as research and monitoring. Throughout the 1990s, the Council was lead by Grigoriy Tishkov, long-standing managing director of Sevryba. Since 2001, its head has been the director of the State Committee for Fisheries' Department of Biological Resources and Organization of Fisheries. The regional fisheries councils are led by the heads of the fisheries divisions of the regional administrations (i.e. representing the governors/republican presidents). All decisions made by the Scientific Catch Council and the regional fisheries councils must be approved by the State Committee for Fisheries.

In early 2002, the Murmansk regional administration adopted a preliminary provision on the distribution of fish quotas (Murmansk Oblast, 2002). Article 1.2 of the provision dictates the order for distributing Murmansk Oblast's quotas of catch of individual species of marine living resources in the Russian Federation's inner marine waters, territorial waters and EEZ, as well as outside these areas, among legal entities and individual enterprises, registered on the territory of Murmansk Oblast. Most importantly, the provision establishes the Murmansk regional administration's control over the regional fishery council that allocates quota shares among shipowners within the federal subject, and criteria for the distribution of the region's fish quotas among shipowners. Further, Article 1.11 states that quota shares are allotted to individual enterprises on the basis of their catch capacity, economic effectiveness and record of tax payment, catch of previous years' quotas and compliance with fishery regulations. According to Article 1.12, at least 20% of the quota allotted to Murmansk Oblast by the Scientific Catch Council shall be given to support institutions of particular economic significance to the region, the region's land-based fish-processing industry, and shipowners that build

fishing vessels at Russian shipyards or reconstruct their vessels at the shipyards of Murmansk Oblast.

In conclusion, the regional authorities of north-western Russia have persevered to become involved in fisheries management. They have clearly succeeded in enhancing their role significantly compared to Soviet times. They have established their own fisheries departments, which have achieved some influence over the most important practical management measures: the distribution of quotas. Notably, they have – at least formally – a significant influence on the distribution of quota shares within the federal subject; their ability to influence the distribution of quotas among federal subjects is more limited. Until 2001, the head of the Scientific Catch Council was the general director of Sevryba. Since then, it has been led by a senior official on the federal State Committee for Fisheries. Further, the regional fisheries departments are not involved in the elaboration of regulatory measures other than quota distribution, nor in the enforcement of fishery regulations. Apart from their participation in the regional fisheries councils that distribute the quotas among shipowners in the region, they seem to perceive their role as being largely that of an advocate of the fishing industry of the region, articulating its needs in relation to federal authorities. The introduction of quota auctions in 2000–01 deprived the regional authorities of some of their powers, just as it enhanced the powers of the Ministry of Economic Development and Trade as compared to those of the State Committee for Fisheries. The auctions are overseen by this Ministry and take place in Moscow. An increasing share of the Barents Sea cod quota has been sold on auction during the period 2000–03.[14] The system for quota allocation proposed to be implemented from 2004 is expected to reduce the role of regional authorities even further since it will be administered at the federal level.[15]

3.2 The Role of Federal Agencies in the Region

Federal agencies located in the region have traditionally played a very important role in the fisheries management of the Soviet/Russian northern basin. Sevryba was originally created as the northern basin's General Directorate under the Soviet Ministry of Fisheries. Although its name was changed several times, it retained its role as both an association of all fishing industry actors and the main fisheries management body of the region throughout the Soviet period. Sevryba was the 'extended arm' of the Ministry of Fisheries in the region. It 'governed' the entire fishing industry of the region down to the specifics of deciding where each particular vessel was to fish at any given time. It controlled the distribution of quotas among the shipowners (or 'fishing organizations', as they were designated in the Soviet period) of the region and issued other regulatory measures on behalf of the Ministry of Fisheries.

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[14] For 2002, 60,000 tons of cod were sold on auction, 20,000 tons reserved as research quota, and 101,000 tons distributed according to the old procedure. For 2003, the figures were 106,500, 20,000 and 56,500 tons, respectively.

[15] The State Committee for Fisheries has been assigned the task of setting up an inter-ministerial group to oversee the quota distribution of cod. Regional authorities are expected to be represented on this group, but lack the power to oppose solutions proposed by federal authorities. The new system is expected to cover only species for which quotas are established in partnership with foreign states, in the northern basin: cod, haddock and capelin. The remaining fish stocks (which are largely of limited value and therefore not put up for auction, either) will be allocated according to the present procedure.

The privatization of Sevryba in 1992 initiated a process that, within a few years, had obscured its status and competence both as an industry actor and an administrator. An immediate consequence of privatization was loss of control over the enterprises that formed Sevryba. From having employed more than 500 people in clerical and administrative jobs in the 'good old Soviet times', Sevryba saw its numbers reduced to a few dozen within less than five years; most financial and 'industrial' tasks were now taken care of at the company level. Hence, in the first years after privatization it was important for Sevryba to maintain its role in the management process (since most of its former tasks had been lost to its founding companies). When the regional administrations of north-western Russia in 1993–94 attempted to move in on the management process (see previous section), Sevryba retaliated vigorously, arguing that the fish stocks in the EEZ were a federal concern and that practical regulatory experience in the region lay within Sevryba, not the governors' offices. As the previous section showed, regional authorities were partly successful in their work and acquired some influence over the distribution of quotas. However, Sevryba retained considerable power in this area along with continued responsibility for most other regulatory issues.

In the mid-1990s, Sevryba acquired its first vessel, purchased on a bare-boat charter basis, the 'Sevryba–1'. The administration was then in a position to secure favourable quota conditions for its own vessel, which was registered in Cyprus, and suddenly it emerged as a small, but lucrative one-boat fishing company. At the same time, the management tasks were increasingly handed over to the regional administration (see previous section) and Murmanrybvod (see below). The institutional identity of Sevryba was again changing. With the new possibilities represented by the acquisition of 'Sevryba 1', and several sister ships already under way, Sevryba seemed increasingly ready to let go of management responsibilities. After the turn of the century, Sevryba's fate was less auspicious. It is now split into several smaller ship-owning segments and has been plagued by internal disagreement and lawsuits over undelivered trawlers.

Another important federal agency located in the region is the enforcement body Murmanrybvod. It is subordinate to Glavrybvod, the department of the State Committee for Fisheries responsible for enforcement (see above). Murmanrybvod has traditionally been in charge of the enforcement of fishery regulations in the rivers and lakes of Murmansk Oblast, in the Barents Sea and in international convention areas where the north-west Russian fishing fleet is active.[16] As follows from the discussion above, responsibility for fisheries enforcement at sea in the Russian Federation was transferred from Glavrybvod to the Federal Border Service in August 1997, a decision made effective as of July 1998. In the northern fishery basin, the Murmansk State Inspection of the Arctic Regional Command of the Federal Border Service was established to take care of fisheries enforcement. The main argument put forward by supporters of the reorganization in the northern fishery basin was that the Border Service had far more and far faster vessels than Murmanrybvod's two old rebuilt fishing vessels. As in the rest of Russia, the decision to strip the traditional enforcement body of its responsibility for enforcement at sea met with fierce resistance also in the north-western region. Both the fishing industry and the rest of the fishery management apparatus supported

[16] Similar bodies are found in Arkhangelsk Oblast and the Republic of Karelia, Sevrybvod and Karelrybvod, but these are responsible for enforcing fishery regulations in rivers and lakes only. Responsibility for the north-west Russian fishing fleet's ocean fisheries is wholly under Murmanrybvod.

Murmanrybvod in its battle with the 'intruders' from the 'power agency' of the Border Service. As in Sevryba's battle with the regional administrations, Murmanrybvod's main argument was that the necessary expertise and experience were to be found in the 'traditional' body. Murmanrybvod turned out to be less successful than Sevryba – the Federal Border Service was obviously a stronger opponent than the regional administrations – and was forced to relinquish responsibility for enforcement at sea. However, it is only its authority to carry out physical inspections at sea that has been transferred to the Border Guard. Murmanrybvod is still in charge of keeping track of quota fulfillment by the individual shipowners at any one time. It has also retained powers to close fishing grounds in areas with excessive intermingling of undersized fish, a very important regulatory measure in both the Russian and Norwegian part of the Barents Sea. Finally, Murmanrybvod is still responsible for enforcement in international convention areas.

In sum, federal agencies located in the region have traditionally been important participants in Russian public authorities' efforts to manage the north-west Russian fishing fleet. Their main offices in Moscow are only involved to a limited extent in the day-to-day management process, and regional authorities have not proven 'strong' enough to wield influence beyond the distribution of the regional quotas among shipowners. The old general directorate, Sevryba, retained much of its influence well into the 1990s notwithstanding its ever more dubious formal status in the regulatory process. Murmanrybvod has been stripped of its enforcement tasks at sea, but is still an important actor in the regulation and enforcement of north-west Russian fisheries. A new federal agency was established in the region in connection with the enforcement reorganization of 1997–98: the Murmansk State Inspection of the Arctic Regional Command of the Federal Border Service. Hence, the most practical 'regulatory activities' aimed at the fishing industry in the north-west Russian fisheries take place in Murmansk – originating from the regional administration, Sevryba, Murmanrybvod and the Border Service's Murmansk State Inspection – although steps have to be approved by federal authorities. Again, reorganizations in the quota distribution system in 2000–01 and 2003–04 have increased the role of Moscow-based stakeholders.

4. CONCLUSIONS

The Russian Federation has a centralized system for fisheries management with the State Committee for Fisheries responsible for research and regulation and the Federal Border Service in charge of enforcement at sea. The State Committee for Fisheries of the Russian Federation is the successor of the Soviet Ministry of Fisheries and reflects an attempt to continue the Soviet-type 'industry-complex approach' to fisheries management, in which one federal body is responsible for all aspects of the fisheries sector. However, it has repeatedly had to defend itself in recent years from attacks aimed at reducing its traditional all-embracing influence over fisheries management. In striking back, it has been partly successful. But while it has succeeded in maintaining its independence as a separate administrative body, it has been deprived of important tasks and had to bow to interference from other federal agencies in areas it has traditionally managed alone. While there have been no deliberate attempts by the country's highest

political leadership to relax the strictly compartmentalized Russian spheres of governance, for example by coordinating fisheries and environmental protection, a certain rapprochement has taken place as a result of various bodies' ambitions to extend their spheres of influence. The State Committee for Fisheries has been 'forced' to collaborate with the Federal Border Service and the Ministry of Economic Development and Trade, but these partnerships are so far not of a very friendly nature.

Much regulatory action has traditionally taken place at the regional level in the Soviet/Russian northern fishery basin, notably by Sevryba functioning as an extension of the federal fishery authorities in the region. As the regional administrations – the bureaucratic apparatus of the oblast governors and republican presidents – gained increased political powers throughout the 1990s, their influence over fisheries management in the northern basin also grew. This took place primarily at the expense of the old industry conglomerate, Sevryba, which, by the end of the decade, had lost control both over its constituent companies and over the management process. The regional administrations oversee the distribution of the regional quota among shipowners registered in the region, although their decisions have had to be sanctioned by the State Committee for Fisheries. The influence of the regions has dwindled as far as the inter-regional quota distribution among federal subjects is concerned since the Scientific Catch Council, long under the dominance of Sevryba, is now chaired by a representative of the State Committee for Fisheries. Enforcement and practical regulation of the fishery are the remit of federal agencies located in the region. The federal subjects lost some of their powers to determine quota allocations with the introduction of the quota auctions in 2001, and are expected to lose more with the new system supposed to replace the auctions in 2004. To conclude, the most distinct trend in Russian fisheries management at the moment is centralization. So far, there have been no attempts to coordinate fisheries management and the protection of the marine environment, although both have their legal foundation in the 1998 law on the Russian EEZ.

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Chapter 5

Integrated Oceans Management and the Institutional Performance of Exclusive Economic Zones

The Australian Case

Russell E. Reichelt[1] and Geoffrey C. Wescott[2]
[1]*CRC Reef Research Centre, PO Box 772, Townsville, Qld 4810 Australia (r.reichelt@bigpond.com)*; [2] *School of Ecology and Environment, Deakin University, Melbourne Campus, 221 Burwood Highway, Burwood, Victoria, Australia 3125 (wescott@deakin.edu.au)*

1. INTRODUCTION

This paper addresses key issues in relation to the performance of exclusive economic zones (EEZs) as institutions, with particular reference to Australia's Oceans Policy. Specifically: 1) What national institutions has Australia created within the framework provided by the EEZs, 2) What is the interplay between global agreements such as the 1982 UN Convention on the Law of the Sea (LOSC), the Australian Oceans Policy and regional management plans?

These questions are considered in the case of Australia's Oceans Policy with some comparison to other countries' institutional arrangements. In the past five years Australia, Canada, the US, New Zealand, Pacific Islands, Korea, China, Thailand and other coastal states have either published or initiated work on a national policy for integrated oceans management. The institutional arrangements in each case vary considerably but, notwithstanding the cultural and economic differences among countries implementing oceans policies, there are emerging similarities such as the application of integrated management, ecosystem-based management, sustainable development and precautionary approaches.

In 1998, the Australian government released its Oceans Policy (Australian Government, 1998) with a broad agenda of sustainable, multiple-use management of marine resources and the aim of combining both conservation and economic development in an integrated framework. A significant part of the policy included the goal of implementing Regional Marine Plans to ensure natural resources are managed for sustainable use.

Specific challenges for implementing integrated oceans management in Australia include (a) integration of fisheries resource management in an ecosystem-based way across all gear types and regions where species are harvested; (b) integration of the designation and management of Marine Protected Areas with fisheries resource management to ensure that both conservation and industrial development goals are achieved; (c) development of adequate knowledge bases to support resource management of ocean ecosystems.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 64–77.

The issues of institutional fit, interplay and scale provide a useful framework to assess the performance of EEZs (Young et al, 1999). The emerging issues in policy development outlined for the Australian case show that the large scale of ecosystems within EEZs call for the adjustment of institutional arrangements to fit biophysical systems and industrial structures. This seems to be happening through national cooperation in the Australian case, however the interplay between sectors below the level of the over-arching Oceans Policy are problematic and politically difficult to implement. It is likely to take decades before the success of integrated ocean management within EEZs can be properly evaluated.

2. AUSTRALIA'S OCEANS POLICY – INSTITUTIONAL ARRANGEMENTS

Australia's Oceans Policy was developed in the period 1996 to 1998 and released by the Australian Government in December 1998 at the end of the International Year of the Ocean (Wescott, 2000). The main drivers of this policy were the 1982 UN Convention, which came into force in November 1994, the Earth Summit, Agenda 21 and, within Australia, the development of the National Strategy for Ecologically Sustainable Development (ESD), which was developed in 1992 (Australian Government, 1992). The Australian ESD strategy, similar to many countries' sustainable development policies, borrowed heavily from Brundtland's 'Our Common Future'[1], and made reference to promoting economic development without compromising options open to future generations (that is, equity between generations), the conservation of biodiversity and maintenance of ecosystem integrity.

The Australian EEZ is relatively large at 11 million km^2 and with the territorial claims on seabed extensions and Antarctic territories it grows even larger. It includes shallow tropical coral reef systems, cool temperate and Antarctic ecosystems. The shallow coral reefs are near the global maximum for marine biodiversity, which is found only a thousand miles north in Indonesia. The EEZ supports a US$2 billion fishing industry based on low volume, high value products such as lobster, shrimp, abalone, pearls and southern bluefin tuna (Australian Government, 2003a).

During the 1990s there was an increasing level of recognition by the Australian Government that Australia's marine jurisdiction is relatively large by world standards (third largest after the US and France), and poorly understood. Although Australia lacks the mega-tonne fisheries of the North Pacific and North Atlantic, the Australian 200-mile zone is nevertheless very important in terms of the economic value of its offshore oil and gas, fisheries, shipping, and tourism.

The Australian Oceans Policy is not from a single portfolio (i.e., government department) but is for all departments, that is, 'whole of government'. However, in 1998, its drafting was driven by the government officials responsible for marine resources, especially offshore petroleum and fisheries, and marine conservation (the environment department) with strong input from a few non-governmental organizations

[1] 'Our Common Future', published in 1987 was widely known as 'The Brundtland Report'. This landmark report helped trigger a wide range of actions, including the UN 'Earth Summits' in 1992 and 2002, the International Climate Change Convention, and worldwide 'Agenda 21' programmes.

(NGOs)[2]. The interest from the military and foreign affairs portfolio has not been strong, while other groups such as ports and shipping have adopted a 'watching brief'. Key issues for shipping are safe navigation and protocols for ballast water movements.

While the 1982 LOSC and ESD have had a significant influence on government policy development, the dramatic collapse of some of the world's major fisheries, in particular the north Atlantic cod fishery based in Newfoundland, were also influential. More recently, the collapse of some major terrestrial systems in Australia, such as the Murray-Darling River basin, which has been severely impacted by salinity problems, has given impetus to ocean conservation.

In the 1980s Australia had a National Marine Science and Technology Council, but the impetus for an Oceans Policy did not emerge until around 1995-1996, and came to prominence first in the Prime Minister's Science and Engineering Council (Commonwealth of Australia, 1995). The Policy also had support from both the major political parties. As part of the process, the government also developed a national Marine Science and Technology Plan (Reichelt and McEwen, 1999) however this has not been adopted as comprehensively as the Oceans Policy.

Another notable feature of the Australian Oceans Policy is that it has not led (yet – see Conclusion) to a separate legislative base. This is in contrast to Canada, which passed into law an Oceans Act in 1997 as an enabling act prior to developing the strategy for its implementation (Government of Canada, 2002).

The Australian Government established a separate National Oceans Office to implement the Oceans Policy, but there is no 'Oceans Act'. Instead, the National Oceans Office works by influence and through the agreements among members of the National Ministerial Oceans Board (five Commonwealth Ministers: Environment, Fisheries, Tourism, Transport, and Resources; See Figure 5.1). The National Oceans Office operates as a small semi-independent agency, based in Hobart, Tasmania, and reports directly to the Chairman of the National Ministerial Oceans Board (which is the Minister for the Environment). The National Ministerial Oceans Board also seeks advice from the National Oceans Advisory Group, which is made up primarily of non-governmental stakeholder interests such as marine-based industries, conservation and scientific research. The government's institutional arrangements are complex but directed to reaching agreement across a number of normally independent portfolios.

Because the Ocean Policy includes all government departments, the goals of the Oceans Policy are very broad. They are: to exercise and protect Australia's rights and jurisdiction over offshore areas, including offshore resources; to meet Australia's international obligations under the 1982 LOSC and other international treaties; to understand and protect Australia's marine biological diversity, the ocean environment and its resources, and ensure ocean uses are ecologically sustainable; to promote ecologically sustainable economic development and job creation; to establish integrated oceans planning and management arrangements; to accommodate community needs and aspirations; to improve our expertise and capabilities in ocean-related management, science, technology and engineering; to identify and protect our natural and cultural marine heritage; and to promote public awareness and understanding.

[2] For example, the Marine and Coastal Community Network, World Wide Fund for Nature.

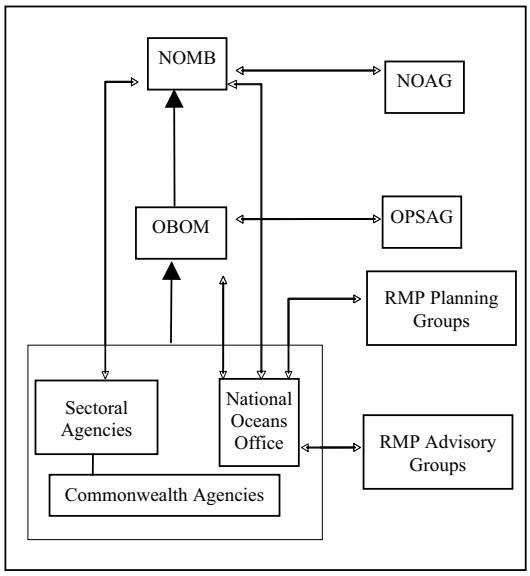

Fig. 5.1. Organisations involved in delivering the Australian Oceans Policy

An organizational chart of Australian Oceans Policy groups. More details available at www.oceans.gov.au. NOMB: National Oceans Ministerial Board; NOAG: National Oceans Advisory Group; OBOM: Oceans Board of Management; OPSAG: Oceans Policy Scientific Advisory Group; RMP: Regional Marine Planning. Sectoral Agencies are government management bodies such as the Australian Fisheries Management Authority. Commonwealth Agencies are government departments such as Environment & Heritage; Agriculture, Fisheries Forestry, Industry, Tourism & Resources, and others.

Jurisdiction of the ocean territory in Australia falls to the Commonwealth Government from 3nm to 200nm offshore from the baseline and to the State and Territory Governments inside 3nm from the baseline. In the case of fisheries and petroleum resources, management responsibilities have been passed to the states and territories by an agreement called the Offshore Constitutional Settlement (Brazil, 2001).

Although the Australian Oceans Policy has no specific legislation, it relies on legislation from the three tiers of government (national, state, local) to achieve its goals. Therefore the implementation of the policy relies on the engagement of state governments in the process and the level of this engagement is likely to be an important indicator of the success of the Oceans Policy.

2.1 Comparisons with Other Countries

Given the broad scope of the 1982 LOSC one might expect the implementation to vary widely among different coastal states, given the cultural diversity of those states.

Canada's Oceans Strategy (Government of Canada, 2002) is designed to implement Canada's 1996 Oceans Act and has very similar goals to the Australian Oceans Policy. They are: integrating science and traditional ecological knowledge to increase

our understanding of marine ecosystems; reducing marine pollution; developing a strategy for a national network of Marine Protected Areas; using Integrated Management Commonwealth Agencies to resolve conflicts and manage human activities in ocean areas where multiple interests are involved; promoting stewardship and public awareness; and promoting international collaboration to protect globally shared fisheries and ocean resources.

Other countries such as Thailand, Indonesia, New Zealand, Korea, China, the US, and regional groups, such as the Pacific Island countries, are working on Oceans Policies.

In the case of the US, the purpose of the US Oceans Act (Government of the United States of America, 2000) is to: protect life and property; promote responsible stewardship of ocean and coastal resources, including fisheries; protect the marine environment and prevent marine pollution; enhance marine-related commerce and transportation and reduce conflicts among users; and increase our knowledge and understanding of ocean and coastal processes and their role in climate variation.

In the Interim Report of the US Oceans Commission, there were additional goals clearly aimed at more domestic issues: close cooperation among government agencies, and preservation of US leadership in ocean and coastal activities. Canada has similar aspirations to maintain international leadership and collaboration.

There are some common themes running through the goals of different countries: notably, sustainable development, integrated management of uses of the ocean and a precautionary approach to that management. In a number of national policy documents, there is an emphasis on using inclusive or participatory approaches to develop resource management strategies. This is a predictable consequence of implementing a policy that runs across many portfolios and sectoral interests, including the general public interest – which for most administrations means that a high degree of cooperation will be required to implement the policy. The combination of sustainability, management integration and precautionary management is finding expression in the process called ecosystem management.

2.2 Challenges Faced in Implementing the Australian Ocean Policy

Australia developed its Ocean Policy in a mere two and one half years. However, as Wescott (2000) has stated there are a number of significant challenges facing its implementation: (1) how to implement integrated planning and management consistent with the commitment in the policy to ecosystem-based management, and (2) properly implementing Regional Marine Plans (RMP), which are designed to deliver conservation, community and industry outcomes through ecosystem-based management.

The degree of difficulty in confronting these two issues is evidenced by the fact that it has taken twice as long to produce the first RMP for the southeast region (the SERMP) than it took to produce the Ocean Policy itself. Below we examine why this has been the case and draw lessons for other coastal states.

2.3 Sustainable Use and Ecosystem-based Management

In Australia's Ocean Policy, the twin goals of conservation and economic development are stated as jointly necessary for balanced policy making. The concept of conserving natural capital is gaining ground in many countries. In the recently established nation of East Timor (Timor-Leste), sustainable development is written into the new Constitution. Maintaining the natural capital (Costanza et al., 1997) of any country makes sense in the long run from both cultural and economic perspectives.

The reality is that implementing an Oceans Policy is a difficult task given the number of industrial and community uses of the ocean. In addition the dynamics of the resource base are complex – geologically, biologically and oceanographically. Further, the 'user' community is a complex mixture of public and private interests, and marine resources (such as fish and petroleum) may cross the boundaries of EEZs. The past failures to manage the multiple uses of the marine resource uses have led to spectacular collapses and the loss of economic returns to regional communities, particularly for fisheries.

Australian fisheries do not include the high volume fisheries that occur elsewhere, but even so, Australia has experienced fisheries management failures – miniature versions of the Atlantic Cod collapse, for example, the total recruitment failure of a species called gemfish (*Rexea solandri,* similar to a hake), and major declines in parent stock of Orange Roughy (*Hoplostethus atlanticus*) and southern bluefin tuna (*Thunnus maccoyii*).

Fisheries experts have recognised for some time that managing fisheries for maximum sustainable yield is an unrealistic goal in most cases. Scientific forecasts of production are normally not sufficiently precise and accurate, and the cost of collecting data on the fish stocks is very high so new methods of risk management are coming into use. More conservative estimates of yield are being adopted and the precautions of area or time closures are being used to lower risk of overfishing, in other words, as insurance against the uncertainty of stock assessments and the difficulty of controlling rising fishing effort[3].

Apart from regulating fishing effort to avoid overfishing, closing some areas to fishing is also important when the fishing gear is affecting other parts of the ecosystem – for example in bottom-trawling for demersal shrimp or fish there is the possibility of removal of benthic (bottom-dwelling) organisms and the accidental capture of turtles. Concerns about unwanted impacts on non-target species ('bycatch') began with marine mammal deaths in fishing nets, such as the death of dolphins in tuna seine nets in the eastern Pacific[4]. However, the concerns have become generalised to include any impacts on biodiversity in the past ten years.

Fisheries management concerns over gear impacts marked the beginning of the ecosystem-based management approach. This approach builds on the awareness of the

[3] Effective fishing effort may increase owing to improvement in gear technology even when the number of vessels is static or decreasing.

[4] The capture of dolphins in purse seine nets in the tropical Pacific tuna fisheries led to action by the US and other members of the Inter-American Tropical Tuna Commission. A chronology of the actions taken is available at www.nmfs.noaa.gov/prot_res/readingrm/tunadolphin/timeline.pdf.

importance of recognising and managing Large Marine Ecosystems[5]. In Australia the concept of ecologically sustainable development was written into the Commonwealth Fisheries Act in 1989 and specific issues such as benthos damage by trawl nets and the need for turtle-excluder devices in trawl nets emerged sporadically over the decade following this Act. Since 2001, the Australian Seafood Industry Council and the Fisheries Research and Development Corporation have actively promoted the adoption of Environmental Management Systems and a standard for seafood quality and safety (www.seafoodservices.com.au/).

Managers of wild-capture fisheries aim not only for sustainable harvesting, but also to maintain the integrity of the ecosystem that supports those fisheries. There is a challenge now for environmental scientists to detect significant changes in ecosystems before they become irreversible.

In 2000, the Australian Environment Minister (Robert Hill) decided that all fish taken in Australian waters are deemed to be wildlife under the definition of the Australian legislation relating to export of harvested wildlife (Australian Government, 1999). This law requires all exported wildlife to be subjected to a test of sustainability. The law was initially established to protect charismatic and valuable species such as koalas, birds and reptiles that are traded internationally. The decision to include fish in the interpretation of the Act gave a major impetus towards establishing ecologically sustainable development in fisheries. In addition, a certification process that includes a detailed examination of the sustainability of a fishery, leading to a certificate required for export, is now being implemented for all species of fish that are exported from Australia (Australian Government, 2004).

It is clear that the attitude to conservation and use of ocean resources is changing and so are the current concepts of management. Although the Oceans Policy includes specific reference to areas of heightened protection – 'marine protected areas' – the overall concept built into the Australian Oceans Policy is one of 'marine managed areas'. The challenge now is to integrate minerals and fisheries resource management and biodiversity conservation strategies so that, for example, the effects of area closures for conservation are incorporated into resource assessments, and the effects of resource use are built into conservation strategies for the ecosystems that support those resources.

Ecosystem-based management (EBM) has been used now in public policy documents from a number of countries. A recent review (EPAP, 1998) went beyond the principles of maintaining ecosystem functioning and acknowledged the importance of recognising the uncertainty of forecasting ecosystem behaviour. It articulated policies such as learning from management experiences, applying a precautionary approach and the building of safeguards against unforeseen impacts.

The US government has established a process to take ecosystem-based fisheries management from 'theory to application', and an appointed task force[6] has identified the following topics for further work: human ecological dimensions of EBM (fisheries) approaches; ecosystem elements and ecosystem function; ocean zoning (ocean management areas) and EBM of fisheries; applying the precautionary approach; interagency cooperation.

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[5] See the overview at www.edc.uri.edu/lme/default.htm.

[6] The activities of the task force are described at: www.vcu.edu/mafac/TFCover.htm.

In Australia, the National Oceans Office is currently working with a panel of industry, government and scientific experts to define the practical meaning of EBM and to articulate how it might be incorporated into policy development and implementation. This enlarges the scope from fisheries management to include all uses of the ocean.

The 2003 EBM Workshop reviewed the origins of EBM approaches to management, mentioning the Convention for the Conservation of Antarctic Living Marine Resources, the Earth Summit in Rio in 1992 and the Convention on Biological Diversity. This workshop also incorporated 'cross-sectoral and cross-jurisdictional integration into the concept of an ecosystem-based approach to ocean management'. (Australian Government, 2003b, p2)

The US and Australian processes to advance EBM are yet to deliver widespread changes in management practices, however the principles incorporated in the ecosystem-based approach are appearing in ocean policy decisions already. For example, the efforts to reduce unwanted bycatch of turtles and marine mammals represent an effort to manage the effects of fishing on the ecosystem. The use of ecosystem-scale models to create marine-managed areas on the Great Barrier Reef is another example.

The difficulties in implementing ecosystem-based management lies more in achieving 'whole of government' cooperation among regulators, and political consensus among potentially conflicting user groups, than it does in our generally weak understanding of how marine ecosystems function. In the parlance of institutional analysts: it is the management of sectoral interplay that is the key driver in achieving (or failing to achieve) an ecosystem-based approach.

3. ADDRESSING THE ISSUE OF SECTORAL INTERPLAY: REGIONAL MARINE PLANS

Many of the recommendations in the Australian Oceans Policy are to be delivered through Regional Marine Plans (RMPs). An extract from the National Oceans Office website explains in summary form the intent and scope of RMPs.

> The primary mechanism for implementing the commitment to an ecosystem-based approach in Australia's Oceans Policy is to be through the development of Regional Marine Plans, for areas based on large marine ecosystems. Regional Marine Plans will integrate across economic, environmental and social and cultural objectives. The Plans will provide a focus for coordination between existing and developing ocean uses and the range of sectoral and administrative agencies with responsibilities for marine systems. (www.oceans.gov.au)

The steps in the regional marine planning process are aimed at transparency for the stakeholders through consultation with those affected by the plan. The steps in Regional Marine Planning are (1) provide initial notice, (2) develop scoping paper, (3) conduct regional assessment of resources and uses, (4) develop objectives and options, (5) negotiate options, (6) draft plan, and (7) release of final plan.

In May 2004, the National Oceans Office released its first RMP (the Southeast Region) and work has already begun on a RMP for the Northern part of Australia's EEZ, taking in parts of the Arafura Sea, the Gulf of Carpentaria and Torres Strait.

There is no expectation that a single template will fit all RMPs. The northern planning area is different from the Southeast because a significant area is jointly managed with Papua New Guinea under the Torres Strait Treaty and traditional owners have made native title claims of both land and sea in the Torres Strait. Some important lessons have been learned in the process of developing the Southeast RMP, which is described below.

3.1 First Regional Marine Plan: Southeast

The Southeast Region of Australia's EEZ covers about two million km^2 and is used intensively for shipping, offshore petroleum and fishing. Bass Strait is a busy sea-lane with traffic similar to the Cape of Good Hope.

The assessment of the Southeast Region has been completed, and published by the National Oceans Office. The process of simply describing the system through synthesis of available information and some targeted studies, including swath mapping some of the deep ocean regions, has added significantly to our knowledge of this large area. Assessment reports are available on the National Oceans Office website and include detailed studies of the Ocean-Land interface (the coastal zone), Petroleum, Shipping, Aquaculture, and Introduced Marine Pests.

The risk of environmental damage by industrial or recreational use of the sea is well known in some industries, and in some cases, such as offshore petroleum, the environmental risks have been significantly reduced by adopting an adaptive, risk-based approach to managing impacts.

In other cases, much less is known about the risks and appropriate responses. Introduced marine pests are emerging as a major problem for Australia's coasts and oceans. For example, the large, north-Pacific seastar (*Asterias amurensis*) has been introduced to Tasmanian waters and has now crossed the Bass Strait to Victorian waters. This pest has the potential to disrupt shellfish farming, and is threatening other vulnerable native species in southern Australia.

The management response at the national level has been to promote standards for minimising risk of exotic species introductions occurring through ballast water, and at the state level to develop baseline information through port surveys in order to improve the likelihood of early detection.

The International Maritime Organisation has recently reached agreement on a standard for ballast water treatment[7]. However, the problem of hull-fouling transmission of exotic species has yet to be addressed and could become significantly worse after the banning of tri-butyl tin-based anti-fouling paint on commercial vessels.

These types of issues are of concern to ports, shipping, fishing and petroleum industries: that is, they run across sectors and a coordinated response is required. This cross-sectoral coordination is one of the primary roles for the RMP process. Nevertheless the Australian experience has highlighted several key issues during the RMP process, which have resulted in slowing the progress of the development of the first plan.

[7] http://globallast.imo.org

The first issue is the low level of participation of the state (i.e., regional) governments to the Southeast Regional Marine Plan (SERMP) prior to its commencement. The result has been that in the SERMP, inshore waters owned by the state governments are not covered by the plan. As a result, integrated planning and management has not occurred as there is a legal, but not ecological, boundary at the border between state government and Commonwealth waters which is three nautical miles offshore. This weakness may be rectified in the second RMP if the state and territorial governments agree to a higher level of participation in the process in advance.

Secondly, there is the issue of detailing the scope and depth of the RMP before commencing the preparation of the RMP. Participants in the process would like to know 'what might they see happening at the end of the process'. That is, the process did not articulate at an early stage what the plan would look like when it was finished, and where the key decision areas would lie. For example, would resource allocation be included? The stakeholders have had highly varying expectations on the outcomes of the plan. For example it appears that the conservation groups were expecting the final plan to include a comprehensive and representative suite of 'no-take' Marine Protected Areas (MPAs, see below) whilst some industry sectors did not assume that this would be an outcome.

Thirdly, there is a need to address potential resource use conflict issues during the RMP process identified above. The Oceans Policy talks about maintaining a balance between conservation and sustainable development. This tension highlighted very early in the process that the implementation phase required a clear method of resolving conflict between interest groups (Alder and Ward, 1999).

Three issues have been selected to illustrate the interplay between institutions: they are integrated fisheries management, marine protected areas as part of a strategy for marine managed areas, and building the knowledge base to support resource management. They are also areas where institutional arrangements remain incomplete or under-developed, and where future regional planning processes could be enhanced.

These issues revolve around how institutional arrangements respond to the problem of blending goals for marine conservation goals and sustainable use, while at the same time taking into account multi-sectoral uses of the marine systems of the EEZ. The issues also illustrate how management and research institutions are adjusting to the large geographical scale of the marine systems within the EEZ.

3.2 Integrated Fisheries Management

The problem of regulating the commercial fishing sector that uses particular gear types or that targets particular species is well understood, although perhaps less frequently implemented successfully. However, an integrated fisheries management approach takes into account all sectors and gear types, and all impacts of fishing on the ecosystem. For example, managers should take traditional fishing harvests, along with recreational and commercial catches into account when setting quotas. The Western Australia Fisheries Department has recently announced its intention to implement an integrated management approach (Western Australia Department of Fisheries, 2002). In New Zealand this approach was adopted in the mid-1990s through a system of quota allocation based on assessments of Total Allowable Catch by all sectors.

As marine fisheries resources and their management become better understood, and possibly more predictable, there may be opportunities to implement co-management arrangements and even third-party audit, self-management by industry where monitoring and compliance performance can be independently verified. However, that is far from being the present situation in most areas.

3.3 Marine Protected Areas as Part of a Strategy for Marine Managed Areas

Declarations of Marine Protected Areas (MPAs) are a positive conservation step where particular uses (current or future) threaten to alter the natural system. In very remote areas MPA declaration has little effect on other human uses in that region. For example, the MPA in the Southern Ocean at Heard and McDonald Islands was declared in 2003 and although very large (16 million hectares or 160,000 km sq) this area has relatively few visitors.

However, in most parts of the EEZ, MPAs will be overlapping with other uses of the ocean. Declarations of MPAs could be linked to strategies for other marine managed areas so that the overall approach is one of complementary policies assisting not only biodiversity conservation but also enhancing management of fish stocks and the development of risk assessments for other users such as shipping and offshore petroleum production.

It is this cross-sectoral approach that characterises integrated oceans management and requires close cooperation between government departments, traditional owner and stakeholder groups to get the best economic returns while protecting the marine resources. Achieving such cooperation is one of the most difficult hurdles, especially when different stakeholders enter the process with different expectations (see above).

Australian governments are working towards implementing a national network of MPAs, which complements the Oceans Policy and is led by a partnership between the states and Commonwealth government with cross-sectoral consultation, particularly with fisheries, petroleum and shipping industries. But progress outside Commonwealth waters has been relatively slow to date.

3.4 Building the Knowledge Base to Support Resource Management

A key part of the Australian Oceans Policy is the need to build a scientific knowledge base in order for all stakeholders to understand the marine resources of the EEZ. Basic resource information is very scarce for many geographic regions. One of the challenges for the scientific community, sometimes in the face of static or declining financial, logistical and/or human resources, is to gain a sufficient understanding of the marine systems to make confident statements about the likely outcomes of specific human activities.

The challenge is partly to do with the cost of gathering information. But another challenge is to overcome the clash of cultures, or perhaps philosophies, between scientists and business leaders and government regulators. There is a tension between

the pursuit of basic understanding of marine systems and the need for regulators to have precise information that must withstand legal scrutiny if the matter goes to court.

Scientific institutions operate via a peer review and reward system. Scientific peers search for reasons why a particular conclusion may not be true and the biophysical sciences operate mostly in the realm of reductionist hypothesis testing. Natural systems are complex and developing predictive analysis for most of these systems is very difficult if not impossible. Nevertheless, policy makers usually make judgements based on an expert assessment of the evidence in order to resolve complicated resource allocation disputes and to prevent over-exploitation and the loss of biodiversity. Making decisions based on 'best judgement' conclusions is outside the comfort zone for many scientists. The development and promulgation of scientific tools to better understand and incorporate risk and uncertainty would help scientists to redress this situation.

The interplay of the scientific institutions with those of resource managers and the industry has been problematic in the past, but is steadily improving through an acceptance (a) that scientific predictions have proven relatively weak unless there is a risk assessment (probability of error) included; and (b) that a precautionary approach has demonstrated its effectiveness and is gaining acceptance. A good example in Australian fisheries is the restrictions on western rock lobster harvests that were put in place by Western Australian Fisheries in the 1960s. These were thought by some to be very draconian, but by 1990 it was clear that even further restriction was needed. It is now a sustainable fishery and the first to be certified under the Marine Stewardship Council[8].

This clash of cultures can be avoided by adopting analytical techniques that incorporate uncertainty about system function, and include the best available knowledge through consultation with all major stakeholders. This approach may not remove the resource allocation conflict; however it improves the likelihood of effective ocean governance by incorporating the values and knowledge of both regulators and users of the resource. A 'work in progress' project adopting this approach is underway now in the North West Shelf region of Australia through a cooperative program by the Commonwealth Scientific Industrial Research Organisation (CSIRO)[9] and the Western Australia government.

On the separate, practical issue of data management, at the scale of the whole EEZ, Australia is not well advanced towards making its national information repositories readily accessible to policy makers. There have been some advances in fisheries harvest data owing to cooperative programs between governments, and the biophysical information is rapidly improving through efforts by Geoscience Australia, Bureau of Meteorology, CSIRO and the National Oceans Office. Although there is a National Marine Data Group, it has no statutory or even administrative base and Australia cannot yet say that the bulk of the scientific information already collected on its EEZ is well documented in meta-databases or can be easily cross-referenced.

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[8] The Marine Stewardship Council is an international consortium that certifies the environmental status of fisheries. Refer the MSC website; www.msc.org/

[9] CSIRO is largest of Australia's government funded science agencies.

4. CONCLUSION

The three case studies of integrated fisheries management, protected area management and scientific knowledge building, were chosen to illustrate the point that implementing an Oceans Policy over a large EEZ is easier in theory (i.e., the preparation of the Oceans Policy itself) than in practice. Australia is currently adjusting to the approaches of Oceans Policy with varying degrees of success and is operating in its large EEZ more effectively at the national scale than it was prior to production of the Oceans Policy, and is certainly more effective now than prior to the EEZ declaration in October 1994.

The scale of the whole EEZ became more important for all the users of the ocean when the Oceans Policy was established in 1998. A key plank of the policy is its commitment to integrated planning and management through ecosystem-based management, and this began in practice in 2000 when the National Oceans Office was established.

The implementation of Australia's Oceans Policy illustrates that the large scale of ecosystems within EEZs call for adjustments of institutional arrangements from pre-existing biophysical and sectoral (particularly industrial) systems. The current mechanism employed in Australia is through national cooperation between the various sectors. Where it occurs, the coordination between sectors is achieved in government spheres through joint Ministerial Councils at national and state levels, for example, the Natural Resource Management Council. At the highest level, the Council of Australian Governments brings the state and national leaders together on major issues.

However the interplay between sectors below the level of the overarching Oceans Policy is proving difficult to implement politically, particularly when the interaction involves one or more industrial sectors and the conservation sector. The issue of establishing mechanisms for conflict resolution, particularly over resource (re-) allocation, continues to be problematic with the conservation sector (Australian Conservation Foundation et al., 2004) calling for a National Oceans Act and a National Oceans Authority to provide significantly stronger institutional arrangements than the present approach. The industrial (use) sectors favour a continuing system based in some cases on the pre-Oceans Policy approaches, and in other cases on an approach based on adaptive management and risk assessment rather than moving to large 'no go' zones. Consequently it is likely to be decades before the success of integrated ocean management within Australia's EEZ can be properly evaluated. The complexity of this problem is multiplied when more than one EEZ is involved – that is, in the transboundary case.

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Chapter 6

The Impact of the EEZ on Pacific Salmon Management

An Examination of Institutional Innovation and Interplay in the US Pacific Northwest

Syma A. Ebbin
51 Jupiter Point Road, Groton, CT 06340 USA (*syma.ebbin@aya.yale.edu*)

1. PROLOGUE

In May 2000, a United States Coast Guard airplane spotted the F/V Arctic Wind fishing the waters of the North Pacific Ocean, over 600 miles south of the Aleutian Island of Adak. A Coast Guard cutter intercepted the fishing boat, retrieving nine miles of cast-off driftnet containing 700 salmon, in addition to a number of other fish, bird and marine mammal species. A ton of processed salmon was found on the ship, which was seized for fishing in violation of the United Nation's moratorium on high seas driftnet fishing as well as the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean (Associated Press, 2000a; Associated Press, 2000b; Loy, 2000).

Owned by a South Korean company, the vessel was registered in Honduras and manned by a crew of 24 Russians. The US National Marine Fisheries Service determined the origins of the salmon found aboard the seized vessel. Of the chum, 63% were estimated to have originated in Russia, 14% in Japan, 11% in western Alaska, 6% in Kodiak and the Alaska Peninsula, 4% in Prince William Sound and Southeast Alaska, and 1% in British Columbia. Twenty-four percent of the sockeye were estimated to have originated in Russia, 75% in Alaska and northern British Columbia, and 2% in southern British Columbia and Washington. Forty-four percent of the chinook originated in Russia, 23% in western Alaska, 6% in southcentral Alaska, and 27% in California, Oregon and Washington (National Marine Fisheries Service, 2000).

2. INTRODUCTION

This case is illustrative because it demonstrates the very international nature of the salmon, salmon fisheries and their management. But it also serves to remind us of the very localised character of the salmon as well. Salmon migrate to marine waters thousands of miles away from the freshwater streams where they are born. There North American salmon mingle with Asian salmon. These salmon are harvested by fishermen hailing from different countries, shipped around the world, and are bought and sold in an international market. But salmon also return to spawn in the river or stream where they were born. Salmon populations are distinguished genetically, morphologically, and

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The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 78–99.

in the adaptive features of their life histories that have melded to fit the constraints of the specific watersheds in which they dwell. The primary units of salmon species (from an evolutionary and management point of view) are localised stocks or populations of salmon that arise from reproductive isolation associated with geographical and temporal differences in spawning activities.

In order to address the cosmopolitan nature of salmon, a number of multilateral and bilateral treaties and conventions aimed at the management of salmon in international waters have been negotiated and implemented. However, as Young has noted, international regimes are constrained in their ability to alter behaviour within societies because they are top-down arrangements (Young, 1999: 17). The effectiveness of these regimes is determined, at least in part, by the extent to which they complement bottom-up arrangements. Salmon producing countries have established a range of institutions that tackle the management of salmon. In the US, the federal government's role as salmon manager expanded dramatically with the passage of the Fisheries Conservation and Management Act (FCMA) in 1976. Under the FCMA, the US declared management jurisdiction over a 200 nautical mile Fishery Conservation Zone (FCZ) and established eight regional councils to manage the fisheries in this region. The US exclusive economic zone (EEZ), which overlays the FCZ, was established by Presidential Proclamation, effective March 10, 1983.[1]

International and national institutions were not the first to tackle the problem of salmon management. In the preceding decades, a state-based system of management evolved at the same time that intensive commercial salmon fisheries developed. Further, predating these commercial fisheries and state management institutions by hundreds and thousands of years, Native Americans harvested salmon in the rivers and coastal areas of the Pacific Northwest for subsistence, commercial and ceremonial purposes and had established elaborate means for managing these harvests (McEvoy, 1986). These indigenous fisheries and management institutions persisted and continue today. However, despite this rich institutional landscape, I propose to demonstrate in this chapter that the EEZ institution and the federal role in implementing it were pivotal in providing an environment in which regional, state and local level arrangements could function more effectively. The federal presence provided an essential link in the hierarchical regime structure, facilitating the connection of bottom-up and top-down processes.

In this paper I examine the governance impacts of the implementation of the 200-mile EEZ with respect to the management of the anadromous Pacific salmon (Oncorhynchus spp.) in the Northwest Pacific region of the United States. Specifically, I explore the vertical linkages and interactions between national and local level fisheries management institutions with particular focus on the implications of the EEZ on the uses and management of salmon by indigenous peoples. The overarching question asked is: what has been the effect of the implementation of the EEZ on the development and nature of domestic governance institutions engaged in salmon management in the US? This question cannot be answered fully without addressing the distributive implications of the management regimes that preceded and followed the implementation of the 200-mile EEZ. The paper proceeds with an examination of several case studies: the Klamath River, Columbia River, Puget Sound and Washington coast areas.

[1] The FCZ is focused on fisheries resources, while the EEZ focus encompasses a broader suite of resources and economic interests.

3. PACIFIC SALMON FISHERIES AND MANAGEMENT: AN HISTORICAL OVERVIEW

3.1 Fishing for Salmon

From the archaeological record it appears that humans have lived in the Pacific Northwest for approximately 10,000 years (Goble and Hirt, 1999). Prior to European contact, the Natives of the Pacific Northwest were dependent on hunting, fishing and gathering of wild foodstuffs as well as small-scale plant cultivation for their subsistence (Deur, 1999). Among these subsistence foods perhaps none was as important as the Pacific salmon, which was easily procured, and when dried or smoked, had superlative keeping characteristics making it a good winter provision.

Euro-American settlers moved to the Pacific Northwest in increasing numbers in the 1800s. Most of these settlers were farmers but some engaged in fishing. The non-Native fishermen more easily acquired land titles and licenses and obtained the capital necessary to purchase bigger and more efficient fishing gear. They thus gained preferential access to fishing sites and were able to out-compete indigenous fishermen. As a result, the non-Native fleet grew in size and fishing power while Indian fishermen were generally restricted to in-river and near-shore areas.

The 1850s saw a great increase in the worldwide salmon market due to innovations in the canning industry. The US Civil War and the California Gold Rush increased domestic demand for salmon. By the 1900s, the US market, primarily on the east coast, was absorbing most of the domestic canned salmon production. During World War I, salmon processing peaked at a maximum of 300 canneries.

3.2 Institutional and Legal Landscape

Although many of the rivers of the Northwest region had very productive salmon runs, the availability of the returning adult salmon in a given area was often restricted only to several days or weeks of the year. Additionally, salmon rivers were not homogenously distributed throughout the region. Thus, there was temporal and spatial compression and patchiness of resources. This heterogeneity in the environment led to an emphasis on property rights as a means of managing access to resources. Northwest Indians managed the salmon fishery by controlling access, establishing property rights to harvest areas and use rights to the fish within these areas (Cohen, 1989).

With the influx of increasing numbers of Euro-American settlers in the 1800s, conflicts between them and the indigenous population increased. To remedy this, a series of treaties were signed between Northwest Indian tribes and the territorial authorities in the 1850s. Treaties assigned property rights, setting aside specific areas for the use of tribal peoples and effectively making most of the region available for non-Indian use and settlement. In exchange for ceding much of their territory, the Northwest tribes reserved specific sections of land for their use, received a payment of money and in Article 3 of the Treaty of Medicine Creek stipulated that:

> the right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians, in common with all citizens of the Territory, and of

> erecting temporary houses for the purpose of curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses on open and unclaimed lands: *Provided, however*, that they shall not take shellfish from any beds staked or cultivated by citizens, and that they shall alter all stallions not intended for breeding-horses, and shall keep up and confine the latter. (Kappler, 1904)

After the US territories in the Pacific Northwest achieved statehood in the last decades of the nineteenth century, salmon fisheries were under the *de jure* control of the state legislatures. The legislatures, generally without technical assistance and with little knowledge of salmon biology, managed the fisheries. Eventually they formed fisheries management commissions and an organisational infrastructure to support them. In 1870, the State Board of Fish Commissioners was established in California and in 1909 the California Department of Fish and Game was formed. In Oregon, the first Fish Commissioner for the Columbia River was appointed in 1878, replaced in 1887 by the state legislature when they formed the three-member Fish Commission. This commission went through many changes before eventually becoming the present Oregon Fish and Wildlife Commission, which is part of the Oregon Department of Fish and Wildlife. Similarly, in 1921 the Washington Department of Fisheries was formed and the Washington State Fisheries Board took over the task of regulating the salmon fishery. The Department of Fisheries has now been reorganised as the Department of Fish and Wildlife, managing in conjunction with the Washington Fish and Wildlife Commission. In 1918, the states of Washington and Oregon formed the Columbia River Compact to coordinate the management of fisheries in the Columbia River.

3.3 Development of the Ocean Salmon Fishery

The technique of trolling[2] for salmon was first developed by California sport fishermen in the 1890s. At the end of that decade gasoline engines were promoted to replace the use of sails on Columbia River gillnet boats. The technology was quickly adopted and nine years later one half of the boats operating out of Astoria, Oregon were equipped with gasoline engines (Lichatowich, 1999). Gas engines allowed fishermen to travel more quickly and farther from shore, to cross the notorious Columbia River bar more safely, and to stay at sea for many days, thus expanding the geographical range of fishing. The advent of cold storage and the growth of the 'mild-cure' market for US salmon in northern Europe created year-round demand, in both open and closed seasons (Smith, 1979). This led fishermen to fish outside state waters where they effectively avoided state regulations such as closed seasons.

World War I interrupted the 'mild-cure' trade with Europe in addition to trade in other commodities, such as the supply of flax, which was used by gillnetters to fashion their nets. As the cost of making gillnets increased, many switched to the relatively less expensive method of trolling (Lichatowich, 1999). The troll fishery grew and by 1920, approximately 2,000 trollers are estimated to have entered the fishery off the Columbia. In addition, a series of restrictive fishing regulations in rivers and coastal areas on

[2] Trolling involves dragging lines, usually two to six, strung with multiple 'spreads' which consist of a leader, flasher and lure or baited hook. The lines are held in place with a large weighted 'cannon ball'. Troll gear is an effective way to harvest feeding chinook and coho salmon.

various commercial gears, such as fish traps, fish wheels, purse seines, and gillnets, pushed the commercial fishery farther offshore outside the state's jurisdiction and gave more fishermen incentive to switch to troll gear, effectively increasing troll catches at the expense of other gear types (Taylor III, 1999).

The states of Oregon and Washington banned ocean fishing in state waters within three miles of their coasts but they could not regulate fishing outside of three miles in federal and international waters, nor could they regulate their fishermen who fished in other states or countries such as Canada (Lichatowich, 1999: 110). In 1928, sports fishermen in California asked the US Bureau of Fisheries to regulate the oceans but 'federal managers were powerless' (Taylor III, 1999: 201). Oregon eventually repealed its ban on trolling in state waters under pressure from the large ranks of trollers and began to focus management efforts at the point of sale instead (Smith, 1979). In 1927 canners[3] tried to convince states to prohibit the sale of salmon caught outside state waters, however, because the troll fishery took place outside of state waters it was not possible for states to regulate it (Taylor III, 1999: 201).

After World War II, the troll fishery expanded, becoming one of the predominant fishing gears along the entire Pacific coast, from Alaska to California. The offshore troll fleet was unregulated, operating without restriction until the year following the formation of the Pacific Marine Fisheries Commission. The Pacific Marine Fisheries Commission was formed in 1947 as the result of a tri-state compact among the states of Oregon, Washington and California.[4] At their annual meeting in 1948, the Commission recommended a November 1 through March 14 closure for the troll fishery, which went into effect in 1949 (Salmon Technical Team, 1993). The Pacific Marine Fisheries Commission had no regulatory authority over salmon on its own, instead serving to coordinate the regulations enacted by the three states. The open season of the ocean troll fishery extended from March through the end of October.[5] The fishery continued to grow with no catch quotas or checks on participation, constrained only by a size limit on fish landed and season closures. By 1971 it is estimated that 5,600 trollers off the Pacific coast were taking about 4,536 tons of salmon each year or about one quarter of the total Washington commercial catch (Netboy, 1974). These catches came at the expense of spawning escapements or other fisheries located in 'inside' waters, within rivers and other freshwater areas as well as nearshore areas such as Puget Sound.

Growth in the offshore troll fishery stimulated fisheries scientists to expand their efforts to understand the salmon's life history and migratory nature. Canadian tagging experiments in the 1920s and '30s showed that many salmon off the Canadian coast of Vancouver Island were actually of Columbia River origin, thus corroborating the idea that salmon undertake long migrations and are found offshore in runs composed of many discrete populations. This kind of information coupled with the ever-increasing fleet size and catches in the troll fishery meant that 'gear wars' were elevated 'from

[3] The canning industry disliked the troll fishery as they did not consider troll-caught salmon to be good for canning and the fresh fish and mild-cure markets competed with their own products.

[4] The Pacific Marine Fisheries Commission was renamed the Pacific States Marine Fisheries Commission and now includes the states of Idaho and Alaska in addition to Oregon, California and Washington.

[5] From 1950 to 1955, the open period for all salmon species except coho extended from March 15 to June 14 when the fishery was opened to all species, closing on October 31. From 1956 to 1975, the fishery for all species, except coho, opened on April 15 (Salmon Technical Team, 1993).

fights between fishermen using different kinds of gear within a river to battles between fishermen from different states and countries' (Lichatowich, 1999: 110).

To jointly manage fisheries targeting Fraser River sockeye stocks, the US and Canada ratified a treaty establishing the International Pacific Salmon Fisheries Commission in 1937.[6] The treaty laid out sharing arrangements aimed primarily at Fraser River stocks of sockeye salmon. Gillnet fishing in the ocean was banned by an agreement between the US and Canada in the late 1950s (US General Accounting Office, 1978).

On the high seas outside of the territorial waters of coastal states, Japanese gillnet boats began fishing for salmon in 1932, and until the late 1980s they were the only country with directed high seas salmon fisheries (Burke, 1994). They fished in the Bering Sea, intercepting salmon bound for Canadian, Russian and US waters. The fishery was discontinued during World War II and then resumed in 1952 (Wilkinson, 1983). In response to this perceived threat to salmon stocks and the recognition that a coordinated response was necessary, the US, Canada and Japan negotiated the International North Pacific Fisheries Convention in 1952. In negotiating this agreement, the US sought to control the Japanese interceptions of North American origin salmon. The agreement established the International North Pacific Fisheries Commission.

The International North Pacific Fisheries Convention embodied the 'abstention principle' championed by the US. This principle arose from the Truman Proclamation (No. 2668, 3 CFR 68 (1943-8)), which specifically targeted Japanese salmon fisheries that harvested US stocks (Burke, 1994). With respect to salmon, this principle gave the country in which salmon stocks originate the authority to manage them wherever they are found, even allowing the country of origin to prohibit high seas fisheries on these stocks by other countries. The abstention principle led to the drawing of an 'abstention line' at 175° West longitude, to the east of which Japanese salmon fishing was prohibited. A 1956 agreement between the Soviet Union and Japan established the Japan-Soviet Northwest Fisheries Commission and led to additional restrictions on Japan's high seas salmon fishery (National Research Council, 1995).

4. THE EEZ AND THE US EXPERIENCE

In 1945, the US claimed jurisdiction over all resources on the continental shelf adjoining the coast of the US. This was followed the next year by Argentina and soon after Peru and Chile extended their control over the 200-mile coastal zones adjacent to their mainlands. Ecuador and several other countries made similar proclamations in 1950. Conflicts and concerns over fisheries, minerals, oil and gas resources and other marine resources led Arvid Pardo, Malta's Ambassador to the United Nations (UN), to request that diplomatic efforts focus on the state of the oceans and in 1973 the third UN Law of the Sea Conference (UNCLOS) got underway with the goal of developing a treaty for the oceans (Division for Ocean Affairs and the Law of the Sea, 2003). The UN Convention on the Law of the Sea (LOSC) that resulted from UNCLOS III was

[6] The International Pacific Salmon Fisheries Commission was transformed into the Pacific Salmon Commission under the Pacific Salmon Treaty, ratified in 1985 and renegotiated and ratified again in 1999.

completed in 1982 and entered into force in 1994. The LOSC contains a section focusing on anadromous fishery resources. Article 66 of the LOSC stipulates that:

> 1. States in whose rivers anadromous stocks originate shall have the primary interest in and responsibility for such stocks.
>
> 2. The State of origin of anadromous stocks shall ensure their conservation by the establishment of appropriate regulatory measures for fishing in all waters landward of the outer limits of its exclusive economic zone and for fishing provided for in paragraph 3(b). The State of origin may, after consultations with the other States referred to in paragraphs 3 and 4 fishing these stocks, establish total allowable catches for stocks originating in its rivers.
>
> 3. (a) Fisheries for anadromous stocks shall be conducted only in waters landward of the outer limits of exclusive economic zones, except in cases where this provision would result in economic dislocation for a State other than the State of origin. With respect to such fishing beyond the outer limits of the exclusive economic zone, States concerned shall maintain consultations with a view to achieving agreement on terms and conditions of such fishing giving due regard to the conservation requirements and the needs of the State of origin in respect of these stocks.
> (b) The State of origin shall cooperate in minimising economic dislocation in such other States fishing these stocks, taking into account the normal catch and the mode of operations of such States, and all the areas in which such fishing has occurred.
> (c) States referred to in subparagraph (b), participating by agreement with the State of origin in measures to renew anadromous stocks, particularly by expenditures for that purpose, shall be given special consideration by the State of origin in the harvesting of stocks originating in its rivers.
> (d) Enforcement of regulations regarding anadromous stocks beyond the exclusive economic zone shall be by agreement between the State of origin and the other States concerned.
>
> 4. In cases where anadromous stocks migrate into or through the waters landward of the outer limits of the exclusive economic zone of a State other than the State of origin, such State shall cooperate with the State of origin with regard to the conservation and management of such stocks.
>
> 5. The State of origin of anadromous stocks and other States fishing these stocks shall make arrangements for the implementation of the provisions of this article, where appropriate, through regional organizations.

Although the US has not ratified the LOSC due to disagreements by the Reagan administration over the provisions on deep seabed mining (Wilkinson, 1983), it has by presidential proclamation endorsed the fishery provisions of the LOSC and ratified the 1995 Fish Stocks Agreement, which entered into force in 2001. Moreover, in 1976, prior to the completion of the LOSC negotiations, the US Congress passed the FCMA (Public Law 94-265). In addition to establishing a 200 nautical mile FCZ, the FCMA set a schedule to phase-out of foreign fishing in this zone thereby 'Americanising' the fisheries off the coasts of the US.[7]

[7] The FCMA was reauthorized and significantly altered in 1996.

In Title 1, Section 101 of the FCMA, the US claims rights within the EEZ as follows, '…sovereign rights and exclusive fishery management authority over all fish, and all Continental Shelf fishery resources, within the exclusive economic zone…' The Act goes further and claims rights beyond the EEZ in three specific instances that encompass, '(1) All anadromous species throughout the migratory range of each such species beyond the exclusive economic zone; except that that management authority does not extend to any such species during the time they are found within any waters of a foreign nation. (2) All Continental Shelf fishery resources beyond the exclusive economic zone...'.

The FCMA also established eight regional fishery management councils to manage fisheries in federal waters (3-200 nautical miles offshore). The regional councils are charged with developing Fishery Management Plans for the various fisheries under their jurisdiction. To facilitate the development of these Fishery Management Plans and the management of fisheries, the councils established a series of advisory committees and development teams. The Pacific Fishery Management Council (PFMC) and the North Pacific Fishery Management Council (NPFMC) are the two councils with jurisdiction over fisheries targeting Pacific Salmon. The salmon Fishery Management Plan developed by the PFMC is a framework plan requiring the development of specific fishing levels for specific ocean fisheries on a yearly basis. For the most part, salmon fisheries in Alaska occur in state waters and therefore do not come under the jurisdiction of the NPFMC.[8] Because of this, I focus primarily on the role of the PFMC in managing salmon in the Pacific Northwest.

The implementation of the US EEZ did not greatly alter the legal or jurisdictional nature of salmon management in international waters. Efforts to reign in high seas salmon fisheries pre-dated the expansion of the EEZ to 200 nautical miles. In 1976, Pacific salmon were already protected from directed high seas harvests under the 1952 trilateral salmon treaty. However the FCMA made this treaty obsolete and it was renegotiated in 1978. The provisions for salmon were essentially the same. However, as a result of research conducted on behalf of the International North Pacific Fishery Commission, which confirmed the presence of US salmon stocks in waters west of the abstention line and because of the newly expanded US EEZ, which contained an area 200 miles around the Aleutian Island chain, the abstention line was moved west by 10° of longitude (Wilkinson, 1983). The International North Pacific Fisheries Commission was ultimately dissolved when the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean went into force in 1993. This convention included the Russian federation in addition to Japan, Canada and the US and created the North Pacific Anadromous Fish Commission. The convention further gave 'primary interest in and responsibility' to the states in whose waters the salmon originate. In addition, by stipulating that salmon fisheries occur only within the 200-mile EEZs of these countries, it effectively outlawed high seas salmon fisheries.

[8] The salmon troll fishery is the primary exception, occurring in federal waters off the coast of southeast Alaska. This fishery has been managed 'without regard to the [Fishery Conservation Zone]-State jurisdictional boundary line' (NPFMC, 1978: 38). West of Cape Suckling, the False Pass, Copper River and Cook Inlet net fisheries occur in federal waters but are managed by the State of Alaska as inside fisheries. For the most part, the NPFMC does not address salmon management except as it pertains to salmon bycatch in groundfish fisheries (Oliver, 2001).

The implementation of the EEZ gave the US more leverage in controlling high seas salmon catches and permitted the eventual restriction of fisheries with large salmon bycatches, such as the Japanese squid fishery. Although some foreign fleets continued to fish within the US EEZ in the decade following passage of the FCMA, salmon were classified as a 'prohibited species' and as such no salmon fishing by these fleets was permitted and the retention of incidentally caught salmon in fisheries targeting other species was also prohibited.

With respect to salmon, however more significant ramifications were felt in domestic fisheries. The establishment of the 200-mile EEZ gave the federal government a greater role in the management of Pacific salmon, especially the ocean troll fishery. In the mid 1970s when the FCMA came into being, the offshore commercial troll fisheries had been unregulated for decades and Pacific salmon fisheries were in a state of 'chaos' according to a 1978 report by the US General Accounting Office.

The landmark decision by Justice Boldt in the *US v. Washington* case[9], affirming tribal management authority and their right to harvest up to 50% of the harvestable salmon run, had only recently been handed down and was still being appealed by various user groups and the State of Washington. Indian fisheries in Washington state harvested approximately 15% of the harvestable run (Cohen, 1986). The FCMA mandates consistency with 'other applicable law' and requires a description of 'the nature and extent of…Indian treaty fishing rights, if any' (Section 303 (a)). In 1977, President Carter established a Federal Task Force on Washington State Fisheries Problems to gain an understanding of the implications of the Boldt decision for the federal management regime and to propose recommendations for resolving outstanding conflicts. The PFMC made fulfilling Indian treaty obligations one of its interim objectives in 1977 and 1978. This was achieved, in part, through a PFMC mandated reduction in the non-Indian troll fishery 'to provide greater ocean escapement of salmon to inside waters, affording Indian fishermen increased harvest opportunities' (US General Accounting Office, 1978: iii).

Federal management of ocean fisheries facilitated a significant redistribution of salmon away from the non-Indian commercial troll fishery to the treaty Indian troll fishery as well as other fisheries in freshwater and coastal areas. In 1977, the PFMC closed the troll fishery for several weeks in June to increase the ocean escapement of chinook and additionally increased the chinook size limit from 26 inches to 28 inches in waters north of Tillamook Head to the Canadian border.[10] The PFMC also implemented a requirement for the use of barbless hooks by the commercial troll fishery and perhaps most importantly, the PFMC declared its intent to limit entry to the commercial troll and charterboat fisheries by means of a moratorium on new entrants to the fisheries if the states of California, Oregon and Washington did not implement their own.

Figures 6.1 and 6.2 show the growth in the ocean troll fishery catches of chinook and coho salmon from the 1950s to 1977 when the PFMC began regulating the fishery.

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[9] The *US v. Washington* ruling or Boldt decision, as it is often called, is discussed in greater detail in the following section.

[10] The southern boundary for the 28 inch size limit regulation was changed by the PFMC in 1978 from Tillamook Head to Cape Falcon, 11 nautical miles to the south. This was a controversial change, strongly opposed by trollers who claimed they would be prohibited from trolling on large concentrations of chinook and coho in the area between Tillamook Head and Cape Falcon as a result (US General Accounting Office, 1978).

Figures 6.3 and 6.4 depict chinook and coho catches by the Washington state recreational, non-Indian and treaty Indian commercial troll salmon fisheries. In all four cases, the average troll catch before the advent of the FCMA was higher than that in the years following. In recent years, some of the decreased harvest is attributable to very low returns of salmon runs. Nevertheless the figures do demonstrate that the PFMC effected a significant redistribution of salmon harvest away from the offshore non-Indian troll fishery.

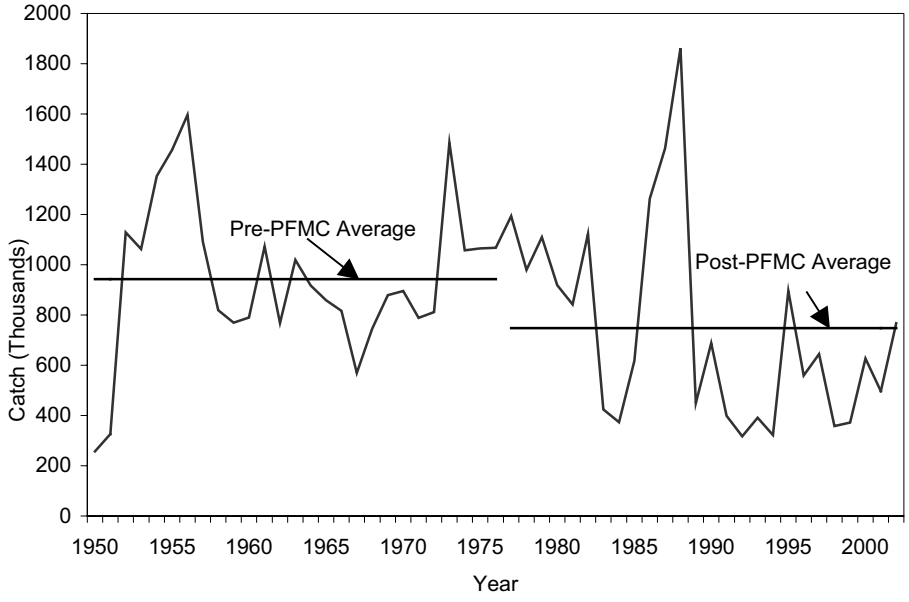

Fig. 6.1. Chinook harvests in the Pacific coast non-Indian commercial troll fishery from 1950 to 2002. The data includes catches by trollers licensed in California, Oregon and Washington states. Data derived from the PFMC (Salmon Technical Team, 1993; PFMC, 2003).

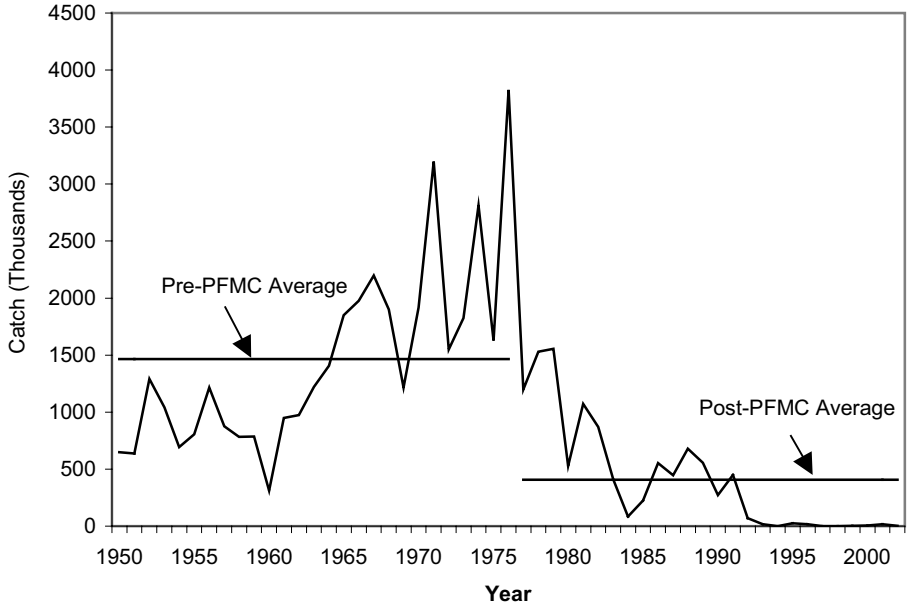

Fig. 6.2. Coho harvests in the Pacific coast non-Indian commercial troll fishery from 1950 to 2002. The data includes catches by trollers licensed in California, Oregon and Washington states. Data derived from the PFMC (Salmon Technical Team, 1993; PFMC, 2003).

5. THE EEZ AND INSTITUTIONAL INNOVATION

The FCMA and EEZ also stimulated a major transformation of the institutional landscape in the Pacific Northwest. Because of the technical challenges and extensive knowledge requirements inherent in coordinating multiple geographically and temporally dispersed fisheries on mixed stocks of salmon, salmon management must occur at different scales of social and political organisation. The regional councils established under the FCMA needed to be connected to local area management regimes. As a result of years of litigation by Indian tribes in the Pacific Northwest, state-tribal co-management regimes were established in western Washington and the Columbia River areas.[11] In order to create an interface between the regional councils and these locally based co-management regimes several new institutions were created. These institutions are nested below the PFMC and facilitate the transfer of information and the negotiation of complex allocation agreements among stakeholders.

[11] Co-management regimes are institutional hybrids, combining aspects of state and local or traditional management. Much has been written in recent years about these types of institutions. For a broad overview of fisheries co-management regimes in different settings see Jentoft and McCay (1995) and Pinkerton (1994).

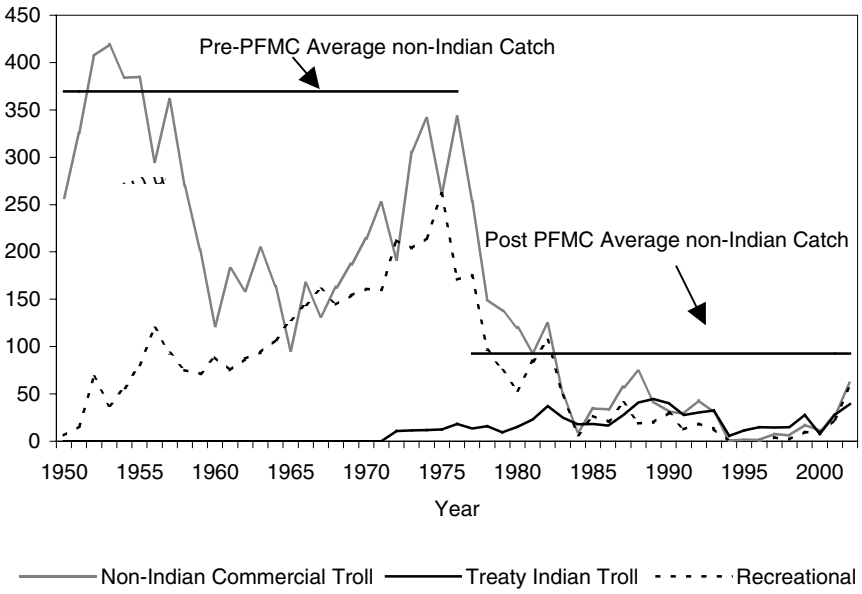

Fig. 6.3. Chinook harvests in the Washington state ocean recreational, non-Indian commercial troll fishery and treaty Indian troll fisheries from 1950 to 2002. Data derived from the PFMC (Salmon Technical Team, 1993; PFMC, 2003).

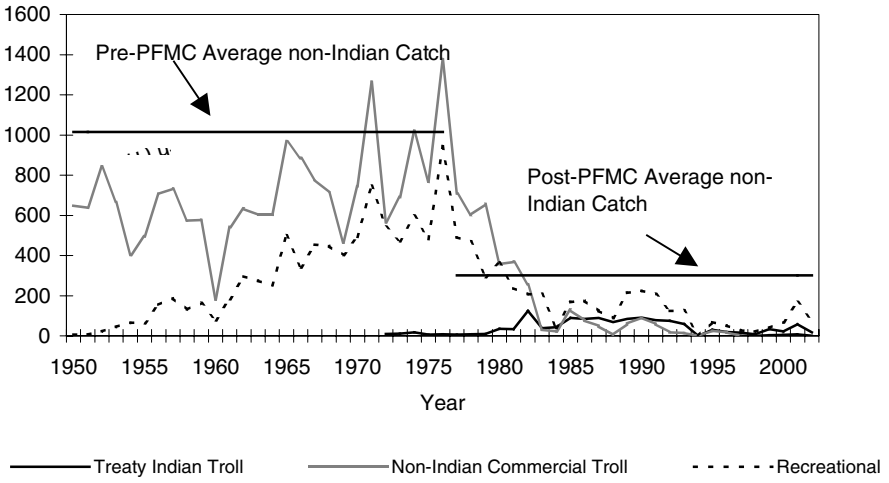

Fig. 6.4. Coho harvests in the Washington state ocean recreational, non-Indian commercial troll fishery and treaty Indian troll fisheries from 1950 to 2002. Data derived from the PFMC (Salmon Technical Team, 1993; PFMC, 2003).

Since the PFMC's management actions influence ocean escapement, which in turn determines, at least in part, the magnitude of the salmon harvest in 'inside' fisheries, an institutional mechanism was needed to link inshore (Indian and non-Indian) and offshore (non-Indian) fisheries. The convergence of court affirmed tribal rights to use and manage salmon, the state's interest and authority over resources found within its waters, and the federal mandate to conserve and manage fisheries in the US EEZ, has produced a complex institutional environment in which new institutions were needed to mediate the nexus of overlapping authorities and to coordinate the management of salmon along the Pacific coast. What follows are brief historical sketches of events leading up to the development of new management institutions in four areas: the Klamath River, Columbia River, Puget Sound and Washington Coast.

5.1 Puget Sound

The Lummi Tribe was first to bring the issue of tribal fishing rights to court in 1897 in *United States et al. v. Alaska Packer's Association*. Prior to this, non-Indian salmon traps had encroached on Lummi reef nets in the San Juan Islands. In 1894 the Lummi tribe petitioned the Commissioner of Indian Affairs writing,

> ...Several years ago white men began to encroach on our ground. We were willing to have them share with us the right to fish but not satisfied with equal rights they have yearly made additional obstructions to prevent our catching fish, by setting traps, and placing piling around the grounds. They have driven us from our old camping ground on the beach and have so treated us that we feel we must now appeal to you for assistance... (from Lummi Tribal Archives 1894, cited in Boxberger, 1989: 50)

The subsequent ruling did not favour the Lummis and the US Supreme Court chose not to hear the case. Much litigation ensued over the following years, increasing in frequency in the 1960s.

In 1970, the Puget Sound tribes filed a complaint against the state of Washington seeking a judgment concerning off-reservation fishing rights and enforcement of those rights as determined. They additionally sought relief for environmental destruction that had impaired their treaty fishing rights (384 F.Supp. 312, 327 1974). The Supreme Court subsequently affirmed the landmark decision rendered by Judge Boldt of the Western District Court in 1974. Phase I, as the first portion of the decision has been labelled, addressed treaty fishing rights and established an Indian allocation of salmon. Phase II addressed the environmental aspects of the complaint as well as whether hatchery fish are to be counted in the allocation. Some of the environmental questions raised in Phase II are still before the courts.

The court found that the state may not interfere with treaty protected rights to fish on or off-reservation in usual and accustomed fishing areas, for religious, ceremonial or subsistence purposes. The tribal allocation was determined to be an equal share of the salmon, or 50% of the harvestable run.

The Supreme Court affirmed Boldt's decision in *US v. Washington*, leaving intact his determination that the tribes could exercise their governmental powers by self-regulating their on and off-reservation tribal fisheries without any state regulation provided that the tribe met several qualifications which included, among others, the

presence of competent leadership, an organised government, fisheries enforcement, and trained fishery scientists and managers. The tribes were required to give the state copies of their fishing regulations, permit monitoring of off-reservation fisheries by state management officials, and provide harvest reports. As in prior decisions, the state was permitted to regulate tribal fisheries to the extent reasonable and necessary for conservation purposes.

This decision effectively conferred management authority over tribal fisheries to the tribes themselves and set up a framework for the cooperative management of salmon between the state and tribes of western Washington. It was not until the early 1980s that a truly cooperative relationship between the tribes and state began to develop (Ebbin, 1998).

The North of Falcon institution (NOF) was created in the mid-1980s to provide a connection between the federal management process and the emerging state-tribal co-management regimes in Washington and Oregon. NOF encompasses fisheries that occur north of Cape Falcon on the coast of Oregon, and provides a forum for representatives of state and tribal management agencies, various industry and environmental organisations, fishermen and other interested stakeholders from Washington and Oregon to meet face to face to design inshore fisheries in conjunction with ocean salmon fishing levels set by the PFMC. Participants discuss the constraints and opportunities involved in the management and allocation of salmon, in relation to estimates of stock status and the desires and needs of stakeholders. In this way, managers are provided with an institutional arena in which fishing plans for ocean and terminal fisheries in waters north of Cape Falcon, including the Columbia River, Puget Sound, and the Washington coast are developed and coordinated.

In the past decade, the NOF has become more formalised, rules of engagement are distributed at meetings. Additionally, the scope of the meetings has broadened and there is an expanded effort to work out the regulatory details of a greater number of fisheries. NOF meetings encompass a series of smaller break-out caucuses involving sub-sets of the stakeholders present such as Washington state and tribal fisheries managers and stakeholders from Puget Sound. State and tribal technical and policy representatives meet both individually and collectively, separating from the larger group of NOF participants to meet on a manager-to-manager basis. At these smaller meetings state and tribal representatives establish interim escapement goals for weak stocks, develop stock specific fishing plans and court-reviewed Memoranda of Understandings for critical salmon stocks and discuss other management concerns.

5.2 Washington Coast

The tribes of the Washington coast were party to much of the litigation described in the previous section. In addition, one seminal case, the *Hoh v. Baldrige* decision bears relating. Even after the Boldt decision was handed down, large, non-Indian fisheries continued to harvest salmon runs comprised of mixed stocks in areas off the coast of Washington. This caused some stocks of salmon to return at or below their escapement goals, thereby forcing the closure of in-river tribal fisheries for conservation reasons. Especially vulnerable were the coastal rivers of Washington where three coastal tribes, the Hoh, Quileute and Quinault lived and fished. These tribes sued to stop this practice.

The 1981 decision in *Hoh v. Baldrige* mandated a management policy termed 'weak stock management'. Prior to this ruling, the 50% allocation shares had been calculated on the basis of stock aggregates within a species. The Court ruled that tribe's have a right 'to take approximately fifty percent of each run of salmon, managed on a river-system by river-system, run-by-run basis' (522 F. Supp. 683, 690). The Court directed the state and tribes to develop mutually agreed upon 'practical and flexible rules' for the management and allocation of salmon. The Court indicated that flexibility in setting escapement goals was needed so that the burden of overly optimistic run-size estimates would not be borne entirely by tribal and other inside fisheries (522 F. Supp. 683, 688).

Although aimed primarily at coastal stocks, the management precepts outlined in the case have transformed the way in which other Washington state fisheries are managed. Wild stocks that are deemed to be at risk of not achieving escapement goals, that have 'conservation problems', are considered 'driver' stocks. These stocks constrain the harvest levels of the fisheries that catch them. In Washington there are often several driver stocks that place constraints upon fisheries. Fisheries may be 'shaped' to avoid impacts on these driver stocks, which refers to some combination of time, area and gear restrictions. In addition, because of the numbers of different salmon stocks and the complexity of their migratory routes, 'shaping' a fishery to avoid impacts on one stock may shift them onto other stocks of concern. Escapement objectives for driver stocks are jointly negotiated by the state and tribal management agencies on a yearly basis in an attempt to balance legal and allocative requirements with the biological needs of the resource. Tribal representatives from Washington coastal tribes and state managers meet as part of the NOF. They also meet separately and with other Washington coastal stakeholders to address fisheries of specific concern to Washington coast salmon stocks. These meetings and the agreements that emerge from them constitute an important institutional mechanism in gaining consensus agreements that are then passed on to the NOF process and PFMC.

5.3 Columbia River

In the Columbia River, a series of lawsuits initiated by the tribes also proceeded over the last century. The pivotal case in the development of cooperative management in this area is what has been come to be known as either the Sohappy case, Belloni decision or *US v. Oregon* (*Sohappy v. Smith*, 302 F.Supp. 899 (D.Or. 1969)). David Sohappy was arrested for fishing in the Columbia River in violation of the state of Oregon's fishery regulations. Fourteen individual members of the Yakima Tribe filed against the Oregon Fish Commission to determine the tribal right to fish as well as the manner and extent to which the state could regulate tribal fishing activities. Eventually the four Columbia River tribes, Yakima, Umatilla, Nez Perce and Warm Springs intervened in the case. This case has determined the nature of salmon fisheries management in the Columbia River and set the stage for the more far-reaching Boldt decision.

The Federal district court upheld the defendant's position citing the three criteria defined in Puyallup I (that the regulation must be necessary for conservation of fish, must not discriminate against Indians, and must meet appropriate standards) as requisite for the state to assert management authority over Indian fishing. The court ordered that the protection of treaty fishing rights must be a priority of state regulations co-equal with

conservation of the runs for other users. The court further found that the tribes have an 'absolute right to that fishery', and 'are entitled to a fair share of the fish produced by the Columbia River system'. The court continued its jurisdiction in the case since it couldn't prescribe in advance all regulations that might be appropriate. It suggested that the state consult the tribes with respect to regulations affecting them and should 'yield to tribal preference'. Finally, the court encouraged the tribes and state to pursue 'a cooperative approach' to fisheries management. Although the Belloni decision fell short of granting the Columbia River tribes full management authority over their off-reservation fisheries as the Boldt decision did, it did give the tribes and the Columbia River Intertribal Fish Commission a strong role in Columbia River fisheries management. Tribal and state managers from the Columbia River region, including the states of both Oregon and Washington, meet as part of the NOF process. They also meet separately and with other Columbia River stakeholders to address fisheries of specific concern to Columbia River salmon stocks. The agreements that emerge from these meetings are then passed on to the NOF process and PFMC and are important in moving towards consensus positions.

5.4 Klamath River

Although treaties were made with the California tribes on the Klamath River in 1851, the US Senate refused to ratify them because of opposition from the California delegation (Heizer, 1978). The Hoopa Reservation was established without a treaty but rather by authority of an act of Congress in 1864. Legally, no California tribe ever entered into relations with the US government based on a treaty (Heizer, 1978). The character of the fisheries of the Yurok, Hoopa Valley (or Hupa) and Karok Tribes on the Klamath, and the emerging co-management institution has a different history and character as a result of this legal history.

In 1933, the state of California closed the commercial fishery on the Klamath River, in which tribal fishermen had participated (Pierce, 1991). In September 1969, a California Game Warden seized five gillnets that had been stored near the river and were owned by Raymond Mattz who used them for subsistence fishing. Mattz claimed he was an enrolled member of the Yurok Tribe, that the nets had been seized within Indian country and that state statutes outlawing the use of gillnets were not applicable (412 US 481; 93 S. Ct. 2245; 1973 US Lexis 57; 37 L. Ed. 2d 92). The case was decided against Mattz in state court but eventually was heard by the US Supreme Court, which overturned the state court decision in *Mattz v. Arnett*. The US Supreme Court reversed the decision of the lower court, finding that the region of the Klamath River where the nets were seized was still reservation land. The case was remanded for a determination of 'the existence of Mattz' fishing rights and to the applicability of California law notwithstanding reservation status' (412 U.S. at p. 485 [37 L.Ed.2d at p. 95]). In 1975 the Supreme Court declined to hear the appeal, *Arnett v. Five Gill Nets et al.,* thereby affirming the lower court's decision, which acknowledged the rights of Indians to fish on tribal reservations free of state intervention (48 Cal. App. 3d. 454; 1975 Cal. App. Lexis 1127; 121 Cal. Rptr. 906).

After these decisions, the Bureau of Indian Affairs developed the first set of regulations guiding on-reservation fishing by Klamath River tribes (Pierce, 1991). However, local anger from sport fishing and business groups over the Indian fishery led

to a closure of the fishery in 1978 until an environmental impact statement could be conducted. In the meantime, large ocean fisheries also took their toll on Klamath River salmon stocks and they declined. These declines led the PFMC in 1985 to bring together a group of Klamath River stakeholders, including tribal representatives, to discuss and develop a long-range agreement to manage Klamath River salmon stocks (Klamath River Salmon Management Group, 1986). From these discussions, the Klamath River Salmon Management Group (KRSMG) was formed under the aegis of the PFMC. The group continues to meet several times a year to cooperatively negotiate mutually acceptable management and allocation strategies (Jordan, 1989). The agreements that emerge from this institution are passed on to the PFMC for incorporation into the yearly quota- and regulation-setting process for salmon.

6. AN ECOLOGICAL APPROACH TO UNDERSTANDING INSTITUTIONAL INTERPLAY

An explicitly organic approach to understanding institutions as opposed to a mechanistic approach emerged in the 1950s and 60s as a means of examining the structure and function of organisations. Different fields, including the biological sciences, contributed insights to this perspective, which elaborates on the idea that organisations are similar to organisms in many ways and emphasises the importance of the organisational 'environment' (Aldrich, 1979; Lawrence and Lorsch, 1986; Perrow, 1986). Organisations, in this way of thinking, are open to their environments, which include the organisation's direct task environment, its interactions with other organisations as well as the broader societal context. Organisations must fit within their environment if they are to survive, either adapting to it or reconfiguring the environment to suit their needs (Perrow, 1986).[12] Similarly, institutions, like organisations, can be portrayed as open to their environments, matching or moulding them to enhance survival. Here, institutions refer not to material entities such as organisations, although some organisations may indeed be institutions in their own right, but rather to the rules and codes of conduct that define social practices, decision-making procedures, assign roles to participants, and guide social interactions (Young, et al., 1999).

In the case of natural resource management institutions, the environment includes social and institutional as well as biophysical dimensions. The social dimension refers to the broader societal context. The institutional dimension is defined by the institution's relationship to other institutions with which it interacts, overlaps, competes or co-exists. The biophysical dimension is delineated by the institution's jurisdiction, its intersection with the natural system. There are linkages between these dimensions, as Trist has noted, 'The denser the organizational population in the social habitat (and the more this itself is limited by the increasing constraints emanating from

[12] Perrow (1986) provides an example of a warlike Indian tribe that expands its territory through violent conflict. In time, other tribes must become warlike or be conquered. A functionalist would explain that the tribe encounters a hostile environment and military force is needed to defend against aggressive tribes. 'The society, like the organization has adapted. But what has happened, of course, is that those with power made sure that their skills would be the primary requisites for the community. They have shaped the environment, not the other way around' (1986: 174).

the physical environment – whose resources are no longer perceived as boundless), the more frequently do the many causal strands become enmeshed with each other' (Trist, 1983: 272).

Following this line of thought, we can conceive of an ecology of human institutions, in which the spatial, temporal, and functional dimensions of these systems are considered. Institutions may be more or less well adapted to the particular characteristics of the natural systems they seek to interact with. This congruence between institutional structures and biophysical systems has been termed 'fit' and the interactions among different institutions in these various spaces have been referred to as 'interplay' (Young, et al., 1999). Vertical interplay refers to those situations where interactions cross different levels of social organisation. Institutional activities may be influenced or redirected and outcomes may be altered, enhanced or impeded due to these interactions.

With respect to US salmon management, the PFMC has facilitated the development of several co-management regimes along the Pacific coast: the NOF, the KRSMG, the Columbia River and the Washington coastal caucuses. One might be tempted to portray the PFMC as the 'top' of a hierarchically nested domestic salmon management regime. However, in each of these four sub-regional regimes discussed, the PFMC acts more as a mediating forum, allowing each subsystem to negotiate local and regional agreements within its overarching structure. These agreements are subject to discussion and approval by the PFMC. However, if a consensus among stakeholders emerges from the discussions, even though tenuous, PFMC members are more likely than not to incorporate these agreements into their annual fishing plans. The PFMC has facilitated the business of co-management by providing an institutional structure that has allowed and encouraged stakeholders from different geographic regions to meet together and develop local-level allocation and management agreements, which are then incorporated into PFMC actions.

The relationship between the PFMC and the nested co-management institutions can be characterised as mutualistic and symbiotic. Similar in structure to a lichen[13], the PFMC infrastructure represents the fungal organism, providing structured space and time, protection from the external environment, and access to limited physical resources. The NOF, KRSMG, and smaller breakout caucuses for Puget Sound, Washington Coast and Columbia River stakeholders play the role of algal organisms, utilising the PFMC structure to bring together disparate components such as technical resources, information, and relevant stakeholders to negotiate and produce locally based allocation and management agreements. The PFMC provides connections among the different regional associations through which technical and policy information flow, both vertically and horizontally. The PFMC then integrates these local agreements into coastwide fishing plans, developing comprehensive and coordinated regulatory packages for outside and inside fisheries along the Pacific coast (which includes the fisheries in the 3-200 mile EEZ as well as those in state waters).

Work in organisational ecology has focused on the relationship between the action of elements in the environment and organisational structures and outcomes

[13] A lichen is comprised of an algal organism and fungus living in close association in which both organisms benefit. The fungus provides structure and protection, allowing the algae to survive in environments where it otherwise would not be able to, and the algae in turn provides the fungus with food (Wright and Nebel, 2002).

(Thompson, 1967). Organisations operating in turbulent and uncertain environments[14] need a relatively high degree of internal differentiation and also an appropriate degree of integration (Lawrence and Lorsch, 1986). They require flexibility to promote a good fit and facilitate positive forms of interplay within a changeable environment. Collaborative relationships between institutions are a way of managing this turbulence and enhancing institutional resilience.[15]

Turbulent describes the environment of the Pacific coast salmon management regime. Salmon management takes place in the context of an uncertain and rapidly changing information base on which management decisions are based, and a highly diverse group of stakeholders with competing interests. In addition, there exist numerous cross-cutting cleavages amongst these stakeholders which complicates management and creates the potential for various forms of political interplay, as well as a large field of overlapping institutions whose activities negatively impact the production of Pacific salmon and concomitantly the interests of the various stakeholders. Further, the four local co-management institutions allow stakeholders, encompassing individual fishermen (Native, non-Native, commercial and recreational), industry, environmental and Native organisations and tribal governments to have some control over the regulatory environment in which they operate. They also allow the PFMC to coordinate the way in which stakeholders (part of the PFMC's external environment) provide input for management decisions. These co-management institutions facilitate and formalise the transfer and sharing of information as well as the crafting of consensus positions on complex allocation questions. Ultimately, they create an institutional space in which shared understandings of common problems and innovative solutions to these problems are developed and elaborated upon by stakeholders.

7. CONCLUDING THOUGHTS ON PACIFIC SALMON MANAGEMENT AND THE 200 MILE EEZ

The primary impact of the imposition of the 200 nautical mile EEZ in the US with respect to Pacific salmon has been the elimination of foreign interceptions of Pacific salmon as incidental bycatch within the EEZ. More importantly, the expansion of the EEZ was accompanied by the creation of eight regional management councils, such as the PFMC, which resulted in a much greater federal presence in fisheries management. Notably, the PFMC has worked to stabilise and reduce domestic interceptions of Pacific salmon. In conjunction with the emerging case law regarding treaty fishing rights, this

[14] Trist (1983: 273) describes turbulence in the institutional environment as a kind of 'contextual commotion' where 'large, competing organizations all acting independently, in many diverse directions, produce unanticipated and dissonant consequences in the overall environment which they share. These dissonances mount as the field becomes more densely occupied'.

[15] Trist (1983) elaborates on the concept of 'referent organizations', associations of competing or interdependent organizations whose goal is to internalize what were once external relations. These organizations are involved in regulation: setting ground rules of engagement, conflict resolution and sanctioning as well as promoting common values from which goals are derived. They engage in resource and information sharing. Finally, they are also implicated in tracking emergent issues and facilitating interactive planning and the development of shared images of a common and desirable future (Trist, 1983: 275-276).

has led to a significant redistribution of socio-economic benefits from the offshore troll fishery to the treaty troll and inside fisheries notably other tribal fisheries.

Through international treaties, the federal government has also worked to eliminate the harvest of salmon in international waters. The EEZ proclamation in the US strengthened the US's authority over US origin salmon even in international waters, thereby strengthening existing treaties. These actions have enhanced customary and traditional uses of Pacific salmon by increasing ocean escapements of salmon to near-shore and riverine fisheries and spawning areas. Additionally, the federal government has worked to ensure that customary and traditional uses are given management priority in state waters (within three miles of the coast).

Along the Pacific coast, the federal government has facilitated the emergence of cooperative management regimes between state governments and indigenous groups. It has also been the catalyst for some very creative institutional innovation. The NOF, the Columbia River, Puget Sound and Washington coastal breakout groups as well as the KRSMG are examples of this. Thus through interplay between the PFMC and these nested co-management regimes it is possible to coordinate geographically and temporally dispersed salmon fisheries and develop integrated knowledge derived from different scales of analysis (Ebbin, 2002). The locally based co-management regimes provide the regional council with a better 'fit' with both the biophysical and institutional dimensions of its environment, creating a finer scale at which different types of information such as scientific, traditional and experiential knowledge, stakeholder interests and preferences, are generated for use in management and allocation decisions. In these respects, federal oversight of the EEZs has enhanced equitable access, use and management of salmon resources by indigenous fishermen.

The collision of cultures that occurred in the Pacific Northwest led ultimately to conflicts over the use and management of the region's natural resources, particularly the economically, spiritually and culturally valued Pacific salmon. These conflicts have been addressed in various ways, through treaties, congressional authorisations, and litigation and more recently through negotiation. The US EEZ regime converged with these various initiatives facilitating a redistribution of resources and the formation of co-management regimes. In this region of the world where great tribal cultures flourished, built substantially on and around the bounty of the salmon, these co-management institutions have worked to link different cultures, different watersheds, different ways of managing, to provide a connection between the diverse scales of human and natural systems.

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Chapter 7

Regulating Access and the Use of Marine Genetic Resources within the Exclusive Economic Zone

Lawrence Kalinoe
School of Law, The University of Papua New Guinea, PO Box 317, University Post Office, National Capital District, Papua New Guinea (*kalinoel@upng.ac.pg*)

1. INTRODUCTION

Although there are differences in their respective backgrounds in time, physical matter and the physical environment of concern, between the 1982 United Nations Convention on the Law of the Sea (LOSC) and the 1992 United Nations Convention on Biological Diversity (CBD), there are more similarities in their core concerns. These are found particularly in their core purposes of promoting the practice, between nation states, of conservation and the equitable and efficient utilization of resources in either marine or terrestrial systems. There is compatibility, rather than incompatibility between these two UN Conventions, despite their apparent differences. This is particularly the case for Parts V and XII of the LOSC and the CBD.

The current regime as provided under Parts V and XII of the LOSC and the CBD, represents a reference point but also a starting point when considering issues of access and use rights of genetic resources, and the conservation of marine biodiversity within the Exclusive Economic Zones (EEZs) of coastal states.

This chapter examines the consequences of the introduction of the EEZ on the aquatic ecosystems and on the use of living (marine) resources within the EEZ of Papua New Guinea. The primary concern of the EEZ is the exploitation and management of fisheries resources However, when Parts V and XII of the LOSC are considered together, the purpose becomes much broader, so as to include concerns regarding access rights to, and the conservation and utilization of marine genetic resources occurring within the EEZ. The recent *Seoul Oceans Declaration*, coming out of the 1st Asia-Pacific Economic Cooperation (APEC) Ocean-Related Ministerial Meeting, from April 22–26, 2002 lends support to this trend in thinking and action. The APEC Ocean (Fisheries) Ministers, representing 21 economies bordering the world's largest oceans, resolved as part of a regional action plan, to encourage cooperation 'with economies and relevant regional institutions to develop marine scientific research capacity with respect to a range of issues including bio-prospecting and non-living marine resources' (APEC, 2002: Para. 17)

The application of the EEZ regime under the LOSC, and the CDB, however, have limitations in their ability to respond to and deal with issues of proprietary rights

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The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 100–114.

over marine genetic resources, and benefit sharing arrangements.[1] Neither is intellectual property law able to adequately respond to the challenges presented by these concerns, as we have now come to realize in indigenous knowledge and cultural property rights and related issues. We must therefore look in the direction of a *sui generis* approach to addressing the issues of proprietary rights over and benefit sharing arrangements for marine genetic resources.

To assess the consequences of the introduction of the EEZ on the marine ecosystem and on the use of the living resources in this zone, one has to begin first by looking at the territorial and archipelagic waters, the sea areas that constitute national seas, preceding the EEZ. In other words, we must first understand the relationship of the EEZ to the other regimes of the sea, particularly, the territorial seas, the contiguous zone and the archipelagic waters. This is significant from the point of view of the practical accessibility by indigenous peoples to these various areas of the seas and for the assessment of traditional usage rights over those areas of the sea.

Hence, the pertinent questions to ask must be: do indigenous people have access to these various areas of the seas and if so, have they developed traditional or customary practices and techniques to access marine resources in these areas? Do they have any traditional or customary connections to specific marine resources in these areas? Only if we get a positive response to these questions can we competently assess the impact of the introduction of the EEZ regions on the marine ecosystems, but more particularly, on rights over ownership issues or claims to marine genetic resources by indigenous people. To address these issues, a case study of the Trobriand Islanders of Papua New Guinea is presented to illustrate the impact of the LOSC on traditional, indigenous practices of marine tenure.

2. CLAIMS OVER THE SEAS

Under Article 3 of the LOSC that came into effect on November 16, 1994 all coastal states have rights to a 12 nautical miles territorial sea zone and under Article 33, a contiguous zone to the territorial sea of up to 24 nautical miles. Commenting on the relationship between the contiguous zone and the EEZ, David Attard explains that the contiguous zone 'is a protective buffer zone which allows the coastal states the control necessary to prevent and punish infringements of its customs, fiscal immigration, or sanitary regulation up to 24 nautical miles', whereas the EEZ is one that is geared towards securing economic rights and responsibilities to the natural resources found in this zone, to the coastal state concerned up to 200, nautical miles (Attard, 1987: 129).

Apart from the 12 nautical miles of territorial sea and the 24 nautical miles of the contiguous zone, the other area of the sea of relevance for our purposes, is the archipelagic sea. Under Article 49 of the LOSC, a coastal state is entitled to proclaim an archipelagic sea area and claim exclusive rights to the marine resources in this area. LOSC goes further to require an archipelagic state to 'recognize traditional fishing rights and other legitimate activities of the immediately adjacent neighbouring states in certain areas falling within archipelagic waters' (Article 51(1)).

[1] For efforts under the CBD on the issues of access to genetic resources and benefit-sharing, see www.biodiv.org/programmes/socio-eco/benefit/

An example may be provided by the archipelagic waters of the Torres Strait group of Islands, between the Western Province of Papua New Guinea and the Torres Strait area of Far North Queensland, Australia. Here there are indigenous peoples of the Melanesian race living on the border between the States of Papua New Guinea and Australia. The two countries have agreed within the terms of the *1978 Torres Strait Treaty* to preserve the traditional fishing rights of these indigenous peoples of these islands on both sides (Torres Strait Treaty, Article 5). The Treaty thereby regulates the various use and access rights in this area based on the traditional fishing rights outlined by LOSC Article 49.

3. ACCESS BY INDIGENOUS PEOPLES TO MARINE RESOURCES IN PAPUA NEW GUINEA

In the particular case of Papua New Guinea, Section 2 (1) of the *Constitution* declares the geographical composition of the country to include 'all the internal waters and the territorial sea and underlying islands'. For purposes of national sovereignty, the *National Seas Act* Chapter 361[2] declares 12 nautical miles of territorial seas, archipelagic waters and further 200 nautical miles of internal waters, which subsumes the contiguous zone as understood in the Law of the Sea context. In fact, Schedule 2, Part 1 of the *National Seas Act* stipulates that the archapelagic waters are contained in the three main archipelagos. The 'Principal Archipelago' begins at the northern most tip of the land boundary with the Indonesian half of the Island of New Guinea (West Papua) around Wutung. The second archipelago follows specific geodesic lines which successively link the outer most low water points of islands in the northeast and east of the mainland. The third archipelago follows the south coast to a point on the northern border of the Torres Strait Treaty Area. Part of the lines of the archipelago connect the outermost low water points of Kadai Island to Bomatu point on the north of Kiriwina, then onto Iwa Island on the South East.

The 12 nautical miles of territorial sea claimed under the *National Seas Act* functions is applied in the following manner. Each island and any low water elevation forms a separate and continuous baseline, meaning that each island generates its own 12 miles territorial sea. Hence, for purposes of national sovereignty, it is the 12 nautical miles and the archipelagic waters that constitute the territorial seas. Strictly speaking therefore, customary marine tenure rights can only be claimed and utilized within these zones of the sea.

It must be mentioned and hence appreciated that the *National Seas Act,* which now defines the areas of the sea that Papua New Guinea has sovereignty over, was enacted in 1977, well before UNCLOS III ended in 1982 and the LOSC was adopted. Hence this has resulted in some degree of inconsistency with the 24 nautical mile delimitation of the contiguous zone and, following from that the further 200 miles EEZ. This apparent inconsistency notwithstanding, it is important to note and appreciate that:

> When international law gives coastal states the right to exercise sovereignty in their internal waters, archipelagic waters and territorial sea, it gives them the

[2] Revised Laws of Papua New Guinea, www.paclii.org/pg/legis/consol_act/.

> fullest rights known to law and allows for the maximum implications that may be drawn from the concept of sovereignty. Many countries in the world recognize the jurisdiction and proprietary rights of states over coastal waters, etc. However this depends on the provision of municipal laws of the states. It is possible for states to recognize private claims over areas of its coastal waters as long as these are consistent with internationally protected uses of the state. (Tom'tavala, 2000: 95)

In Papua New Guinea, since the colonial administration, national legislation in natural resources and particularly land administration, has consistently recognized and preserved the rights of indigenous people to access and exploit resources, based on their customary (traditional) rights, over the generations. For example, all fisheries legislation enacted in the country has consistently recognized 'any traditional rights over or in relation to any area of fisheries waters' by indigenous peoples (1994 Fisheries Act: Section 37(e)). The legislation defines traditional fishing rights to comprise

> fishing by indigenous inhabitants **in waters where they are entitled by custom** to fish, where:
> a) the fish are taken in a manner that, as regards the boat, the equipment and the method used, it is substantially in accordance with their customary traditions; and
> b) the fish are taken for domestic consumption or customary social or ceremonial purposes.[3] (1994 Fisheries Act: Section 2) [Emphasis added].

The emphasized words are of significance for our purposes. The rights of coastal indigenous people to access marine resources, including marine genetic resources, is most likely limited by national laws, to 'waters where they are entitled by custom'. Beyond those waters, the state does not preserve and protect indigenous peoples' rights.

4. CUSTOMARY MARINE TENURE

In Papua New Guinea up to 98% of the land is held by indigenous Papua New Guineans under customary land tenure. The state only holds a mere two percent. National legislation since colonial administration in the 1800s has ensured this. The concept of customary marine tenure is a corollary of the situation with customary land. Coastal indigenous people, likewise have been accorded similar protection by the state with their customary rights to the resources of the sea, fisheries and all other resources for which they have since time immemorial, down the generations, depended on for their sustenance.

The legal basis of customary marine tenure in Papua New Guinea, however is the *Customs Recognition Act* that dictates that when making claims, in civil matters, say over natural resources, the customs of the indigenous people concerned may be taken into account by the courts, in matters concerning, *inter alia*:

> (b) The ownership by custom of rights in, over, or in connection with the sea or a reef or in or on the bed of the sea or rights of fishing; or
> (c) The ownership by custom of water, or of rights in, over or to water.
> (Customs Recognition Act: Chapter 19 Section 8).

[3] Section 2, ibid.

The scope and application of this legislative prescription is this: That when indigenous Papua New Guineans claim ownership rights or use and access rights over areas of sea, reef, or marine flora and fauna, and when these rights are proved to the satisfaction of the relevant court, they are entitled by law to exercise proprietary rights over resources found within such areas of the sea under the concept of customary marine tenure. A useful conception of customary marine tenure is that proposed by Yoli Tom'tavala (1995: 122):

> Customary marine tenure encompass most of the customary fishing grounds, including fringing reefs and deep waters where fisherman sank lines and hooks. In these nearshore waters, indigenous coastal communities developed rules, practices, and usages in regard to the waters and the resources thereof, according to the peculiar requirements of their respective societies. Based on traditional law or custom, these customary marine tenure systems, or traditional fishing rights, existed as a matter of course in such societies.

In a nutshell therefore, customary marine tenure, are rights of usage or even ownership at the appropriate social unit level, which existed and continue to exist in traditional coastal communities where based on customary law, they continue to enjoy access to marine resources, including marine genetic resources. Rights under customary marine tenure are not restricted to traditional fishing rights, but extend to usage and sometimes, in appropriate cases ownership rights, over marine resources, including non-living marine resources such as sand and coral, reefs, and the rights to attach spiritual values to certain areas of the seas, including reefs. Customary marine tenure rights, have been associated with nearshore waters and the resources therein, rather than out in the deep seas where access has been and continues to be difficult.

The following case study demonstrates the dynamics of customary marine tenure claims in a well known coastal society, the Trobriand Islands of the Milne Bay Province. Practices of customary marine tenure are more well developed in this society than anywhere else in Papua New Guinea and are well documented – going back to as early as 1918 when the anthropologist Malinowski (1918) observed that fishing was very well developed, and after gardening, was the most important economic pursuit. Malinowski then recorded three types of fishing: lagoon fishing, reef fishing and open sea fishing. Hence, it is safe to deduce from this that traditional, customary fishing has occurred in these areas since time immemorial and that customary marine tenure rights would now naturally apply in these areas.

5. CASE STUDY OF CUSTOMARY MARINE TENURE PRACTICES AMONGST THE TROBRIAND ISLANDERS OF PAPUA NEW GUINEA[4]

The Trobriand Islanders classify the marine environments surrounding the islands into two categories: *luma* and *dom*.

[4] The empirical material is adopted and cited from Tom'tavala (2000).

5.1 Luma

Luma, is characterised by narrow, near-shore reef margins or cliffs that taper off into deep blue seas. This maritime environment can be found around part of Kitava and the eastern coast of Kiriwina stretching from Kaibola in the north down to Gilibwa on the southern tip. The main fishery species in these waters are reef fishes,[5] sharks, certain semi-pelagic species, crayfish and shellfish. In the near shore and around the reefs, the people fish with spears, nets and hand-lines. Beyond that, in the open seas, the islanders use canoes to troll or sink hooks and lines. It is only possible to fish in the open seas during periods of relative calm, which fall between October to December and February to April. Fishing in these waters does not yield as much as the lagoon and is mainly done for subsistence purposes.

5.2 Dom

The other type of coastal marine environment is the lagoon, called *dom*, which consists of an inner lagoon and an extensive formation of reef margin and flats. The inner lagoon covers an area of some 490 square kilometers and runs along the western coast of Kiriwina down to Vakuta island. Its extent on the western side is delimited by a navigable passage. The waters of the lagoon are greenish in colour and cover extensive seaweed-covered mudflats, inter-tidal areas and mangroves. The mudflats yield crabs, crocodiles, molluscs, beche-de-mer (sea cucumber) and clams while the surrounding waters abound with fish. Most of the lagoon villagers mainly use set and drive-in seine nets to catch mullet, mackerel and a host of other schooling lagoon fishes. Except for severely adverse periods during the time of the southeast trade winds (June-September), fishing in the lagoon is open all the year round.

The reefs of the lagoon and fringing areas are claimed and worked only by the villagers of Kevataria who use poisonous roots to stun reef fish and drive them into nets or spear them. This type of fishing, called *loluwa*, is undertaken all year round. The productivity of the reef patch is so significant to the Kavataria villagers that they commonly refer to their reefs as their 'yam houses'. The analogy is obvious: well-tended reef patches are productive and a constant source of food and wealth for their owners.

5.3 Cultural Significance of Fishing

For the lagoon villagers of Kiriwina, fishing is a serious and important activity.[6] Since fish is the principal source of animal proteins on the islands, tradition has long dictated that the lagoon villagers trade part of their catch to the inland villagers who are unable to fish. Thus, for up to four days every week when the fishermen return from fishing, they would be met on the shores by inland villages who pay cash, called *kokwava*, or exchange garden produce or betel nuts, called *vava*, for fish. At other times the inland

[5] The commonly fished reef species are snappers, groupers, rock cod, surgeon fish, parrot fish, goat fish, wrasses, trevally, etc.

[6] The recognised fishing villages on Kiriwina are Kavataria, Oliveyova, Teyava, Tukuwaukwa, Obulalaku and Sinaketa which all lie on the shores of the lagoon.

villagers would bring to the fishermen yams and other garden produce in advance. Then the fishermen would set out to fish with the specific intent to pay back what had been given. This ceremonial exchange, called *wasi*, does not only have economic significance but is an important aspect of Trobriand culture.

Fishing is also an important activity for the islanders of Vakuta, Munuwata, Kuyawa and Kaileuna. These islands lie close to extensive formations of reef margins and flats and, hence, depend on reef fishes. The main fishing methods are spear fishing and the use of drive-in nets, hooks and lines. Unlike the coastal villages of Kiriwina, these islanders fish mainly for subsistence purposes and for sale at Losuia. For a couple of days each week they would sail to Losuia to sell fish to Kiriwians or otherwise exchange fish for garden vegetables. The sale and exchange of fish for vegetables is especially important to these islanders because of the relative insufficiency of food gardens in their islands.

Despite the relative abundance of fish in the coastal waters of the Trobriand Islands, commercial production for export has not taken root amongst the islanders. In the late 1800s, European traders encouraged the lagoon villagers to dive for pearls and beche-de-mer, which were exported by the traders. This reportedly brought some prosperity to the lagoon villagers and made the islands an important industrial fisheries base but the industry had largely disappeared by the 1930s.[7]

5.4 Traditional Marine Tenure and Claims to Marine Species and Resources

Apart from fishing, the seas have other functional and metaphysical connotations to the islanders. Hence, based upon their customs, practices and traditions (customary laws), Trobriand Island coastal villagers claim or assert notions of rights of varying degrees to beach areas, mangroves, inlets of the sea, reefs, inshore or near shore coastal waters and the resources thereof. Compared with common law and statutory property regimes, customary conceptions of rights appear uncertain but individuals are generally vehement in their assertions of their rights to whatever resources. To the Trobriand Islander, the answer to the question 'to whom belong the beaches, coastal waters and resources of the waters?' would elicit the response: *ma vavagisi* ('our something'). On the face of it, that would appear uncertain but upon further study, that determiner *ma* (our) would reveal a plethora of rights of interests.

The uses and claims or rights which the Trobriand Islanders assert to marine spaces and resources can be conveniently discussed under the following themes: land and beaches, coastal waters and reefs, and marine resources.

5.5 Land

Land in the Trobriands is as a general rule vested in particular matrilineages, called *tolipwepwaya* (landowners). Control of lands of a matrilineage is normally vested in its

[7] As a measure of the significance of fishing on the islands, the colonial administration passed a series of proclamations in 1903 and 1910 to regulate the harvest of pearl shells and beche-der-mer in the Kiriwina lagoon and waters of surrounding islands. The proclamations were issued under the Pearl Shell and Beche-de-mer Fishery Ordinance of 1894.

elder, called *Tokarewaga*, who exerts considerable influence over others. However, individuals can also own land and dispose of it in any manner that they see fit. Generally speaking, traditional landowners require payment (*pokala*) for use of their land by others who are not sufficiently related to them. Particular claims are easily determined because all garden lands in the islands have been defined by set boundaries and given specific names.

5.5.1 Beaches

As a general rule, all beaches are owned. This is because the lineages, which own land with frontages to the foreshore also, claim the beaches. The beach owners are called *Tolikwadewa*. The claims of a particular matrilineage to beaches parallel its land boundaries. At the same time, all the beaches that are owned by the matrilineages based in particular coastal villages are cumulatively regarded as the 'village beaches' or *kwadewa*. The village beaches are regarded as common grounds and open for use by all villagers for bathing, picnicking, construction of canoe shelters, collecting sea water for cooking, cleaning kitchen utensils and removing sand or gravel or whatever items which are washed ashore.

Outsiders (i.e., people who do not belong to the village) are also given certain concessions. For instance, visitors from other islands can beach their canoes on the village beaches and to ply the coastal waters and to gather coconuts or whatever else they find for sustenance and inland villagers (who have no beaches) are allowed to use the beaches for bathing purposes. Trobriand Islanders believe that bathing in seawater is more invigorating and therapeutic.

However, in certain circumstances, traditional beach owners assert their proprietary rights and demand payment for uses of beaches by outsiders. The most common example is the demand for payment for removal of sand and gravel for construction purposes. A common observation is that whilst the concessions granted to outsiders are entrenched in customs, these are now subject to greater scrutiny by local beach owners. This is generally as a result of increasing suspicion by the beach owners that outsiders sometimes use their beaches for commercial purposes or other gains. For example, a village elder at Wawela village complained that a company involved in beche-de-mer harvesting and marketing built a drier on the beach at Wawela in 1987 to smoke beche-de-mer. As this was a commercial or non-traditional use of the beach, the villagers were aggrieved that they were not compensated. Because of these increasing suspicions, many villagers are threatening to keep outsiders off their village beaches. This response is a novel one prompted by recent events rather than a traditional position.

5.5.2 Mangroves

Called *pasa*, these are extensive on the western shore of Kiriwina and on the islands in the lagoon. Mangroves support limited fisheries like collecting shellfish and catching mudcrabs. Because of their strength, mangrove woods are also used for building as yam sticks. On Kiriwina, the lagoon villages claim the mangrove patches whose lands adjoin the mangroves. However, ownership of these is vested in the village as a whole rather than to particular lineage or individuals. The mangroves on the islands of Kiriwina lagoon are open for use by several adjacent lagoon villages but the ownership of these islands is still not settled.

5.6 Ocean

Trobriand islanders unanimously agree that they have special rights or claims to the inshore and nearshore areas of the coastal waters and the reefs thereof. On the other hand, oceans are by nature free, open and incapable of being possessed. Hence, as is universally the case, claims to marine spaces or waters are contingent upon functional uses. In the Trobriands, they assert *ma bolitasi* ('our seas') over waters wherein they traditionally fished. The claims or rights appear to vest in the villages as a whole rather than to individuals or matrilineages.

The outer limits of these claims differ according to where the people traditionally fished. For example, the villagers on the northern coast of Kiriwina where shark fishing is predominant indicated that they owned the waters as far as the eye can see from the top of the tree on the beach. This is because their pursuit takes them so far out that it is only possible to see them from the treetops. Most of the other village's claims extend beyond the fringing reefs to where they traditionally fished by sinking hooks and lines or the reef patches they fished from.

For the northwestern villages of Kiriwina that stretch from Lobuwa to Mwatawa, their claims do not stretch beyond two nautical miles from their shores. The claims of the northern shark-fishing villages of Kaibola to Mutawa extend up to three nautical miles from their shores since their pursuit takes them further out to sea than is normally done for other deep-sea fishing activities. They engage in eastern seaboard fishing and claim the waters that extend up to two nautical miles from the shores. The only bay on the eastern seaboard is Mweuya, which is claimed by the villagers of Okaiboma. Even these do not lie more than ten nautical miles from the nearest coast of Kiriwina.

The Islanders do not generally enforce their ocean claims by practising territorial exclusivity. For example, outsiders are generally allowed to navigate, bathe and fish these waters. There are various reasons for this. The main reason is that navigation is a common traditional use of the seas. The imposition of restrictions would hinder it and affect inter-island travel. Furthermore, by allowing others to navigate, bathe and fish in one's waters, one can expect the same consideration when one visits other villagers. The principle of reciprocity is a compelling one in Trobriand society

However in certain circumstances, the enforcement of territorial exclusivity is allowed. A well-known example of long historical origin is when the Labai villagers fish for *Kalala* (mullet). Labai, a village on the northwest coast of Kiriwina, is commonly regarded by islanders as a source of their heritage and as such, has a special position for the keeping of traditions and magic. This village is renowned for the fishing of *kalala* (mullet). Every few months during calm seasons and full moon, schools of this fish seeking estuaries to spawn, enter the shallow waters between the fringing reef and beach of Labai. During the time when the villagers are ready to fish the mullet, they forbid outsiders to enter their village or beaches. This exercise is undertaken in accordance with the dictates of the magic for the *Kalala fishing*.[8]

5.6.1 Reefs

Coastal villages also assert claims to reefs. In most villages the claims appear to vest in the villages as a whole. The reefs in question here are the drying reefs which fringe the

[8] For a historical anthropological account of this tradition see, Malinowski (1918).

coast of eastern seaboard of Kiriwina and most of the other islands. These claims are contingent on the fact that the reefs are natural extensions of the village lands.

However private ownership of reefs by individuals or matrilineages is also recognised. This applies to Kevetariya villagers who assert ownership rights to reefs in the lagoon and on the fringes of the lagoon too. Kevatariya is a large fishing village that lies on the shores of the lagoon, on the northwest coast of Kiriwina. These villagers own the coral patches in the lagoon and the extensive fringing reefs of the lagoon. These reefs extend up to 15 nautical miles from the village and ten nautical miles offshore. Each claim is clearly delimited by the villagers, recognised, and forms part of the family inheritance. Because the reefs afford especially good fishing opportunities all the year round, they are regarded as much as gardens on land and are sometimes referred to as 'yam houses'.[9] Trespass to the reefs of others is considered theft, a serious transgression in custom, but other villagers are permitted to rent and fish in the patches of others. The claims of the Kevatariya villagers are widely recognised by other lagoon villagers.

5.6.2 Marine Resources

Marine waters contain all types of flora and fauna. These regenerate naturally and most are free ranging and incapable of possession unless caught or harvested. To the question 'to whom belong the flora and fauna in the waters you claim?', the Trobriand Islander answers '*ma vava*gisi' ('our something'), '*ma yenasi*', '*ma vigodasi*' (our fish, our shell fish, etc). The justification they give is that the reefs or the waters belong to them so all flora and fauna found in these also belong to them. The claims appear to vest in the village as a whole, with the exception of private reefs of Kevataria villages. Concessions are allowed to outsiders or non-villagers depending on whether the resource in question is edible or has commercial or other value.

5.6.3 Edible Resources

Edible marine resources include most nekton species, crustaceans, shellfish and some seaweed. With regard to some marine animals like stingray and the bony silver fish (*ketakeluva*), the consumption taboos are partial in that some islanders are permitted to eat them whilst others are not. Islanders assert the right to exploit edible marine resources of their village waters. So a villager is allowed to fish in the waters claimed by the village at any time and for whatever reason, without any restrictions on the type of gear used or the size of catch.

However, for outsiders or non-villagers, the position differs. In the primarily agricultural coastal villages, especially on Kiriwina, the villagers acknowledged that despite their ownership claims to coastal waters and fisheries resources, outsiders are permitted to fish in these waters. No size, gear or other restrictions are imposed as long as the fishing is for subsistence needs. These villagers expressed the view that outsiders would not be allowed to conduct artisanal or commercial fisheries in their waters.

In the primarily fishing coastal villages, especially on Sim'simla and south and western Kiriwina, the respondents indicated that outsiders would not be free to fish in

[9] In the Trobriand Islands, the yam house is a storeage for yams that is not only used for food but also considered a symbol of wealth. Hence, reef patches do not only yield food but also are a source of wealth to the owners.

their waters. In some villages the position is taken that access for outsiders is only permissible upon the payment of some monetary compensation.

5.6.4 Non-edible Resources

Non-edible resources can be classified three-fold: species with potential for economic development, those with no present uses and *non-living* resources.

The first category includes those marine resources that, although sometimes eaten, are not commonly used as food although they are significant commercial fisheries. Examples of such species are beche-de-mer, pearl oysters, green snails and trochus shells. Of these, the islanders also assert rights over the resources found in their waters, especially if they are to be exploited commercially. Outsiders may harvest only for food. In some villages, outsiders would be permitted to exploit these resources only upon payment of a fee.

The second category of non-edible marine resources includes those that could be called 'pests' at the present time. These include many species of rays, starfish and numerous marine life which have no direct uses to man or do not have economic significance. The islanders also assert ownership claims to these. The general feeling is that outsiders are free to utilise these resources although the villagers would demand compensation if the resources were commercially exploited.

The third category of non-edible resources is non-living resources or non-edible components of living resources. The gathering of non-living resources from the sea has a long history in the Trobriand Islands. Before the introduction of granulated salt, the islanders used seawater to cook their food with. Of greater social significance were seashells. Some, like cowrie, were regarded as traditional valuables whilst others were made into shell necklaces and arm-shells which are the two principal commodities used in the *kula* trade. Furthermore, all the villages surveyed reported the gathering of sand and gravel for various domestic purposes. Perhaps the most significant of the various non-living resources is coral, which is gathered and burnt to produce lime. This lime is used as an ingredient in the chewing of betelnut, a major pastime on the islands. The villagers expressed that the gathering of these various non-living resources was exclusive to them. Outsiders would be forbidden to gather these resources unless the villagers permit them.

6. LESSONS FROM THE CASE STUDY

The above case study extracted from Tom'tavala's work, first is consistent with what Malinowski recorded in 1918, that the Trobriand Islanders have well-developed traditional fishing practices and have also treated the sea as their 'yam house' (Tom'tavala, 2000). They have since time immemorial, been engaged in fishing in the lagoons, reefs and some open sea areas as well. For purposes of fishing and access to sea, the Trobriand Islanders classify their zones of fishing into two main categories: *luma* and *dom*: *luma,* being reef and near shore fishing areas and *dom*, being lagoon areas comprising the inner lagoon and an extensive formation of reef margins and flats. Tom'tavala (2000) also records that villages in the northwestern parts of Kiriwina, do however claim up to two nautical miles of their seas for their customary usages. These claims to the sea by the people from Kiriwina do not exceed ten nautical miles.

Tom'tavala demonstrates that,[10] at the most, the indigenous peoples claims to and usage of the sea is limited to their reef areas (*luma*) and the lagoons (*dom*) with the exception of people on Kiriwina (a Trobriand Island itself) who engage in open sea fishing, and therefore claim up to two nautical miles but not exceeding 10 nautical mile of the seas. This then limits the areas of the sea within which customary marine tenure rights can be exercised to these areas only.

As noted earlier, the indigenous peoples right to engage in fishing, is also limited under the Fisheries Act of 1994 to 'waters where they are entitled to by custom' (Section 37(e)). The preceding case study demonstrates that Trobriand Islanders have always conducted customary fishing, in and around the reef areas, and lagoons and occasionally up to two nautical miles of the open sea. Hence, for the Trobriand Islander, he or she is entitled to fish in these areas under customary marine tenure.

The preceding case study also shows that, the Trobriand Islanders access their sea and coastal waters for all types of marine resources constituting the marine flora and fauna and they generally claim rights over these resources. Whether such resources are edible or non-edible, they assert claims over them. There are therefore corresponding restrictions against outsiders from accessing these resources. Now in terms of the requirements of the CBD, in particular the regulation of access and use of marine genetic resources (Article 8(j)), it is important that access and use rights are negotiated with these islanders.

The other point that comes out from this case study is that access and use rights to the islander's marine resources, appears to depend on the purpose for accessing and extracting the resource. If the purpose is for economic gain rather than subsistence, then there are stronger restrictions or prohibitions, and a demand for compensation. If the end purpose is for purely subsistence basis, then there are near to nil restrictions. Clearly the chance of profit and the influence of money, does impact on the peoples decision to grant or refuse access and use rights. This is of course consistent with the spirit of the principles of the CBD.

7. COURT JUDGMENTS ON CUSTOMARY MARINE TENURE IN PAPUA NEW GUINEA

There have been three superior court decisions handed down in Papua New Guinea of direct relevance to the issue of customary marine tenure. These decisions give judicial recognition and acceptance to this evolving area of the law. First, in *Tolain, Tapalau, Tomaret, Michael Towarunga and Other Villagers of Latlat Village v. The Administration of the Territory of Papua New Guinea, In Re Vulcan Island* (Papua New Guinea, 1965-66), the Supreme Court expressly recognized the indigenous peoples rights to utilize the reef area based on their customs.

Papua New Guinea attained independence from Australia in September 1975, and the subsequent decisions are post-independence decisions. Hence, the second case is *Ene Land Group Inc., v. Fonsen Logging (PNG) Ltd and Another* (Papua New Guinea

[10] Tom'tavala is himself a local Trobriand Islander.

1998a). The plaintiff in this case was a customary land group incorporated under the *Land Groups Incorporated Act*, and it represented owners of customary land along the south coast of West New Britian Province. They claimed that by custom, and as a corollary to their ownership of customary land, they also owned the sea and the land underwater between the mouth of the Alimbit and Au rivers in the Kandrian area of the province. They further claimed that since they 'owned' the particular area of the sea, they were entitled to be paid rental fees by the logging company for passage of their shipping through this area. Justice Woods, first, observed that:

> There can be no doubt that coastal peoples have exercised and asserted some form of marine tenure over reefs and coastal waters for purposes of fishing and their livelihood. (Papua New Guinea, 1998a: 3)

The Justice then reasoned that the court on this basis must recognize and accord rights based on custom pertaining to fishing or access rights to reef without the requirement for any documentary title. The Court however decided that, since the claim in this case was a claim for a right to control passage of ships and a further claim to a toll for the passage of ships, the claim must fail on the basis that the claimants do not have absolute ownership of the sea area concerned but only have customary use rights derived from their customs. Absolute ownership remains with the state as claimed under the *National Seas Act* that asserts the state's rights of administration and sovereignty over an area of offshore sea for the purpose of international law. It is also clear from this decision that customary marine tenure rights can only be claimed within the offshore and reef areas but not to the open sea.

The views expressed in the *Ene Land Group case* have been repeated in *Vincent Ulelio and Others v. Nelulu Land Group and Others* (Papua New Guinea, 1998b). This case concerned a challenge to the validity of a freehold title obtained by the defendant land group under the *Land (Tenure Conversion) Act* over a passage of sea known as Aliwo Passage, near Kandrian, West New Britain Province. Justice Woods again decided that since the open sea is a public highway it is a common domain and where the open sea is within territorial waters, then the domain is held by the State of Papua New Guinea. Whilst Papua New Guinea law has recognized the principles that there may be customary rights to reefs and marine resources, there has never been any recognition of absolute ownership to the sea for all purposes. In other words, customary rights under customary marine tenure do not include the acquisition of exclusive possessory title to the sea but may include ownership of reefs etc. for customary purposes.

These court decisions reinforce the position that for indigenous Papua New Guineans to exercise their traditional rights based on their customary rights to the various marine resources under the concept of customary marine tenure (as is the case with customary land tenure!), those rights may be exercised in those areas of the sea, such as reefs and lagoons, which they have traditionally had access to. However, rights based on customary marine tenure cannot be extended to include 'absolute ownership' of the open sea. The material presented above in the case study from Tom'tavala (2000) also indicates that the Trobriand Islander's claims are within the peoples' traditional waters – that is reef areas (*lume*) and lagoons (*dom*). Hence this is consistent with the above stated judicial pronouncements.

8. CONCLUSION

Thinking in terms of the various coastal zones that the LOSC distinguishes between, it is safe to assume that the rights under customary marine tenure, are available to indigenous Papua New Guineans within the territorial seas only, and perhaps to a very limited extent to the contiguous zone. These are areas of the sea to which indigenous Papua New Guineans, such as the Trobriand Islanders must have access. The 200 nautical miles EEZ is really an area of the ocean that is inaccessible to indigenous Papua New Guineans. They do not access this area of the sea. Since they do not have access to this area of the sea, it follows that rights under customary marine tenure cannot be claimed and exercised. Hence it will be clearly untenable to say that indigenous Papua New Guineans have any traditional or customary connections to the seas beyond the 12 nautical miles, let alone the 200 nautical miles of the EEZ.

Speaking from the point of view of indigenous Papua New Guineans, it is safe to conclude that the introduction of the 200 nautical miles EEZ is of no consequence to the rights of indigenous people because that area of the ocean is one that is not accessible. Rights available under customary marine tenure are usually exercised in the near shore areas, particularly the territorial waters and the archipelagic waters. However, the codification and standardization of the territorial waters and archipelagic waters regimes have secured and bolstered indigenous peoples rights, as seen in the case of the indigenous peoples of the Torres Strait area under the 1978 *Torres Strait Treaty* and generally under Article 49 of the LOSC where coastal states are required to preserve indigenous peoples rights in the archipelagic waters.

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Section III

Regional Strategies for Coordinating the EEZ Regime

Chapter 8

Regional Fisheries Organisations and International Fisheries Governance

Are K. Sydnes
Department of Political Science, University of Tromsø, N-9037 Tromsø, Norway (*ares@sv.uit.no*)

1. INTRODUCTION

In this chapter, I discuss the establishment of exclusive economic zones (EEZs) and the changing role of regional fishery organisations in an historical perspective. Considering that there are more than 30 regional fisheries agreements in force, in addition to a number of dead letter agreements, I ask why is there so little regional fisheries management? Substantial ocean areas, predominantly high seas, are not managed by regional fisheries organisations. In the face of the problem of illegal, unreported, and unregulated (IUU) fishing and the unsustainable status of world fisheries in general, why is this so? It is now almost a decade since the adoption of the 1995 UN Fish Stocks Agreement (hereafter 1995 Agreement) and there is reason to ask, what has been achieved in terms of regional fisheries management. The chapter addresses the steps that regional fisheries management organisations that are managing straddling and highly migratory fish stocks have taken to implement the provisions of the 1995 Agreement. A particular focus of this chapter is on the duty to cooperate through regional fisheries organisations and other regional arrangements in the management of fisheries.

2. INSTITUTIONS OF FISHERIES GOVERNANCE

The term international institution encompasses established practices, issue-specific regimes, and formal organisations.[1] By global institutions of fisheries governance I mean the international fisheries law and agreements, organisations and practices, which are global in scope and form part of what constitutes the order of international fisheries governance. Examples of such institutions are the United Nations Convention on the Law of the Sea of 1982 (LOSC) and customary law such as the 'freedom of fishing on the high seas'.[2] The global institutions may be perceived of as a meta-regime that

[1] Here defined as 'sets of rules of the game or codes of conduct that serve to define social practices, assign roles to participants in these practices, and guide the interactions among the occupants of these roles' (Young, 1994: 3).
[2] The freedom of fishing was later codified by the 1958 Convention on Fishing and Conservation of the Living Marine Resources of the High Seas and reiterated by the LOSC (Part VII).

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 117–135.

constitutes the institutions and interactions at regional and domestic levels of fisheries governance (Young 2002).

2.1 Regional Fishery Organisations

Regional fishery organisations are international institutions established by states that identify common gains in cooperating to overcome collective-action problems related to regional fisheries (Sydnes, 2002a: 373).[3]

One of the inherent problems of understanding and explaining regional fisheries cooperation is that there is a multitude of terms to define what qualifies under international fisheries law as a regional mechanism. Article 8(1) of the 1995 Agreement, states that coastal states and distant water fishing nations (DWFNs) shall pursue cooperation either directly, or through appropriate subregional or regional fisheries management organisations, or arrangements. There is an unresolved question of what distinguishes direct cooperation, an arrangement, and subregional or regional cooperation.

Regional fisheries cooperation may be established as formal organisations with personnel, infrastructure, budgets, and legal personality by a constituting agreement between the parties. Most of the cases discussed in this chapter are regional fishery organisations in this sense. However, regional fisheries cooperation may also be based on other arrangements without an independent organisational apparatus, but with similar functions199. The concepts used in international fisheries law, regional and subregional organisations, direct cooperation and other arrangements, to a large extent leaves the institutional design of regional fisheries cooperation up to the specific context of the fisheries and the discretion of the states involved.[4] At a global scale there are more than 20 operative regional fishery organisations (Marashi, 1996; Sydnes, 2001a) and a number of other regional arrangements.[5]

Regional fishery organisations should be differentiated according to their roles as cooperative mechanisms.[6] In that respect it has proved fruitful to distinguish between 1) scientific *research* organisations, 2) regional coordination and *development* organisations, and 3) regional fisheries *management* organisations. Accordingly, regional fisheries organisations may be established to promote marine scientific research, such as the International Council for the Exploration of the Sea (ICES) and the North Pacific Marine Science Organization (PICES). Other regional fisheries organisations are set up to harmonise national fisheries politics and promote development – examples include the South Pacific Forum Fisheries Agency and the Latin American Organization for the Development of Fisheries. Finally, regional fisheries organisations may be established to manage fisheries in the traditional sense, by collecting and assessing scientific data, setting regulatory measures and establishing enforcement and control mechanisms. Among this category of organisations, one finds the Pacific Salmon Commission, the Northwest Atlantic Fisheries Organization, and the Indian Ocean Tuna Commission.

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[3] Efforts to discuss the functions and roles of regional fishery organisations include Koers (1973), Heck (1975), Marashi (1996) and Sydnes (2001a).

[4] There are differences in the discretion of states in LOSC articles 63(2)-67 and 118 on specific regimes. The 1995 Agreement (Article 8(1)) leaves the form of cooperation to the discretion of state parties.

[5] For examples see Stokke (2001).

[6] For a discussion on the use of typologies on regional fisheries organisations, see Sydnes (2002b: Chapter 8).

3. THE HIGH SEAS REGIME AND THE ROLE OF REGIONAL FISHERIES ORGANISATIONS

In 1609, Hugo Grotius formulated the *mare liberum* doctrine, which became customary law, justifying that the oceans and it resources were free for all to use. The only limitations to these freedoms were the territorial seas, usually set to three nautical miles, within which the coastal states could claim sovereignty. From the 1950s onwards the fisheries off the coasts of several developed nations had become more economically marginal (Friedheim, 1991: 212). The fleets of developed fishing nations then moved their fishing operations to other ocean regions. Consequently the pressure on world fisheries increased, in certain cases leading to the collapse of fish stocks.

The sustainability of the old high seas regime rested on the ability of states to cooperate on the management of fisheries beyond the territorial seas. In several cases regional fishery organisations were established, such as in the North East Atlantic, Northwest Atlantic, Indo-Pacific and Mediterranean oceans.[7] Regional fishery organisations established during this period were established to manage regional fisheries. However, their roles, in particular those established in developing regions, were broad in scope, geographically, functionally and in terms of membership (Sydnes, 2002a). Several of the organisations were established on the initiative of the Food and Agriculture Organization of the United Nations (FAO),[8] mandated to gathering data, promoting economic development and policy coordination, and fisheries management.

While regional fishery organisations in developed regions were functionally more limited to management, many of them (for example the International Commission for the Northwest Atlantic Fisheries and the International Commission for the Conservation of Atlantic Tunas) also had broad scopes in terms of geographical mandate area, stock coverage and membership provisions (Sydnes, 2001a).[9]

The regional fisheries organisations established during the old high seas regime proved largely inefficient (Burke, 1994: 95). The freedom of the seas doctrine did not differentiate between the rights and duties of states to high seas fisheries resources. It also did not establish any sanctions for fishing nations that did not cooperate or abide by measures established under regional fishery organisations. As a consequence there were also limited incentives for member-countries of regional fisheries organisations to limit the efforts of their own fleets. As a result, member countries were often unable to agree upon or would not implement common regulations. There were commonly no enforcement schemes to ensure that regulations were complied with. Moreover, there

[7] For overviews of these organisations see Koers (1973), Marashi (1996), Sydnes (2001a).

[8] The Asia-Pacific Fisheries Commission (1948), General Fisheries Commission for the Mediterranean (1949), Regional Fishery Advisory Commission for the Southwest Atlantic (1962), Committee for the Eastern Atlantic Fisheries (1967), Indian Ocean Fishery Commission (1967) and the Western Central Atlantic Fisheries Commission (1973), were all established under the auspices of the FAO. In addition International Commission for the Conservation of Atlantic Tunas and International Commission for the Southeast Atlantic Fisheries were FAO initiatives, but established as independent organisations (Marashi 1996).

[9] Notable exceptions being the International Pacific Halibut Commission, the tuna organisations, the International Commission for the Conservation of Atlantic Tunas and the Inter-American Tropical Tuna Commission, and the Permanent Commission for the South Pacific, the latter established to underline the coastal states claims to national jurisdiction.

was also the 'free-rider' problem of unregulated fishing by non-members – what is now known as IUU fishing – (Koers, 1973; Churchill and Lowe, 1988).

From the end of World War II onwards, a growing number of states came to regard the high seas regime as both inequitable and inefficient. A response of some coastal states was to make unilateral claims to jurisdiction over the waters beyond their territorial seas and the living marine resources there (Juda, 1996). These unilateral actions challenged the freedom of the seas doctrine and paved the way for the first United Nations Conference on the Law of the Sea (UNCLOS I) in 1958. At UNCLOS I several coastal states made claims to special interests to the fisheries off their shores (the claims ranging from 12 to 200 nautical miles). However, most developed fishing nations supported the continuation of the high seas regime. The 1958 'Convention on Fishing and Conservation of the Living Marine Resources of the High Seas', reiterated the customary laws regarding the freedom of the high seas and the territorial seas (notably, without defining the extent of the territorial seas). However, duties were introduced on states to cooperate (Article 4(1)) and to adopt measures to regulate high seas fisheries (Articles 1(2) and 2). As these provisions collided both with the interests of coastal states and DWFNs, they proved to be dead letter. UNCLOS II was convened in 1960 to resolve the issue of the outer limits of the territorial seas. It failed to accomplish this task by one vote (Juda, 1996: 161). The failures of the UNCLOS I and II to address the pressing issues of international fisheries, spurred further unilateral claims among countries in Latin America and Africa.[10] The proliferation of such claims in turn put the issue of coastal state jurisdiction onto the agenda of UNCLOS III, which was convened in 1973.

4. UNCLOS III, THE EEZ AND THE REGIMES FOR TRANSBOUNDARY FISH STOCKS

UNCLOS III lasted from 1973-1982 and culminated in the adoption of the LOSC on 10 December 1982. Agreement on the introduction of EEZs was reached at an early stage,[11] and was widely acknowledged by the second half of the seventies (Churchill and Lowe, 1988). The expectation was that the EEZ would provide coastal states with the authority and incentives to conserve and manage the living marine resources in a sustainable manner (Hey, 1999). The continued freedom of the high seas – including fishing – was considered a counter-point to the introduction of EEZs (LOSC, Article 87). Article 116 states that all states have the rights to fish on the high seas, subject to their treaty obligations, the rights, duties and interests of coastal states according to article 63(2)-67, and Part VII of the LOSC. As the overwhelming proportion of world fisheries at the

[10] The process was initiated by the Truman Proclamation in 1945, followed by Chile, Ecuador and Peru in 1952, the Montevideo Declaration (1970), Lima Declaration (1970), Santa Domingo Declaration (1972) and the African States Regional Seminar (1972) (Juda, 1996: 193-94).

[11] The EEZ concept was based on a Kenyan proposal in 1972, fleshed out by the UN Seabed Committee. It was a compromise between certain Latin American and African claims to 200 nautical mile territorial seas, and states who opposed extended national sovereignty (for example Japan, US and USSR). Granting the coastal states sovereign rights to the living marine resources, in contrast to sovereignty over these ocean areas, was a concession made by the maritime powers to ensure their security interests in the freedom of movement (Churchill and Lowe, 1988: 133).

time were within waters now covered by EEZs, this was considered a minor issue.[12] Regional cooperation in the management of fisheries at the high seas is provided for by Article 118, stating 'States shall cooperate with each other in the conservation and management of living marine resources in the areas of the high seas'. States exploiting the same fish stocks, or stocks in the same area, shall enter into negotiations with a view to establishing common measures, as appropriate, through subregional or regional fisheries organisations.

In the management of straddling fish stocks, coastal states and DWFNs shall seek, either directly or through established organisations, to agree upon management measures on the high seas (Article 63(2)). In the case of highly migratory fish stocks (listed in LOSC, Annex I), states shall cooperate directly or through established organisations, with a view to ensure the management of such stocks, both within and beyond EEZs. Where no appropriate management organisation exists for highly migratory species, states shall cooperate to establish such an organisation (Article 64). It is important to note that the LOSC provides a legal framework, rather than substantive provisions on how such cooperation is to be achieved and implemented (Hey, 1996). For an extended discussion on the LOSC see Edeson (Chapter 2).

The introduction of EEZs by implication directed the focus of politicians and managers to the exploitation of the living marine resources within their national jurisdictions. Management and development plans were introduced, often followed by investment schemes to increase the fishing capacity of coastal states and promote economic development. It was generally believed that the EEZ regime would provide coastal states with the means and incentives to ensure the sustainable management and development of the fisheries within their jurisdiction. The management of transboundary fish stocks was, due to established fishing patterns, considered to be a relatively minor issue.

5. POST-LOSC DEVELOPMENTS AND REGIONAL COOPERATION

In many cases the introduction of EEZs led to closer bi-and multilateral cooperation to manage shared fish stocks. Many fish stocks now fell exclusively within the jurisdiction of coastal states and could be managed by coastal states exclusively or by agreements between coastal states.[13] Most established regional fisheries organisations and other arrangements were thereby circumscribed by the introduction of EEZs that covered most of the world catch at the time.[14] There was also a political logic to abandoning regional fishery management organisations. In the view of many coastal states, 'marine regionalism' based on the freedom of fishing was the order they had sought to abolish by making claims to extended national jurisdiction. In the post-EEZ period it is possible to distinguish two patterns of development. First, the role of regional fisheries manage-

[12] The exception being the high-value highly migratory fish stocks (i.e., tuna).
[13] For example, the Joint Norwegian-Russian Fisheries Commission was established in 1976 to manage the shared fish stocks in the Barents Sea. See Hoel, Chapter 3.
[14] FAO estimated that high seas fisheries during the 1990s represented 10% of world catch (FAO, 1994: 3). It is reasonable to believe that this figure was lower during the 1970s due to established fishing patterns.

ment organisations was circumscribed by coastal states' claims to EEZs. Second, the EEZ provided a number of developing coastal states with incentives to cooperate to promote economic development.

A consequence of the introduction of the EEZs was that the statutes of regional fishery organisations had to be revised. For example, the International Commission for the Northwest Atlantic Fisheries (later Northwest Atlantic Fisheries Organization), North East Atlantic Fisheries Commission and International Pacific Salmon Fisheries Commission (later Pacific Salmon Commission) were re-established by new constituting agreements taking into account the claims of coastal states to EEZs. Some regional fisheries organisations became dormant (e.g. the 'new' North East Atlantic Fisheries Commission), while others were abolished (e.g. Regional Fishery Advisory Commission for the Southwest Atlantic). In general, regional fishery organisations had the role of filling the void created by the lack of institutional fit between the EEZs under national jurisdiction and the migratory patterns of fish stocks, as in the case of straddling and highly migratory fish stocks. They were established and maintained only in cases where the value of the fisheries in the region induced the need for cooperation (Sydnes, 2002a).

For many developing coastal states, the introduction of EEZs altered the incentives for regional cooperation, by strengthening interests in cooperating regionally for development purposes.[15] For example, the Western Central Atlantic Fisheries Commission, the Committee for the Eastern Atlantic Fisheries, the Asia-Pacific Fisheries Commission, adapted to the introduction of EEZs by focusing more on their coordination and development roles in the region (Sydnes, 2002a). This was reinforced by their roles in the implementation of the FAO EEZ-programme (Loftas, 1981).[16]

The introduction of EEZs led to the displacement of many DWFNs. These fleets had established fisheries operations in waters that were now in the EEZs of coastal states. In a number of cases DWFNs negotiated bi- and multilateral fisheries agreements with developing coastal states to gain access to their fisheries, as for example in the South Pacific tuna fishery (Veitayaki, Chapter 10). However, as many coastal states sought to develop their national fisheries sectors this was a limited option. The fleets of many DWFNs therefore sought new fishing grounds on the high seas beyond national EEZs. In such cases economically valuable straddling and highly migratory fish stocks, where there often was an established market for the catches, became natural target species (Meltzer, 1994).

During the 1980s and 1990s regional fisheries cooperation re-emerged as a major issue on the international agenda. Several regional conflicts arose regarding the management of straddling and highly migratory fish stocks (Meltzer 1994). In some areas, coastal states were experiencing that their efforts to manage stocks sustainably within their EEZs were being undermined by destructive fishing practices on the high seas. There was also a general concern regarding the sustainability of established fishing practices both within the EEZs and on the high seas (Hey 1999). The Agenda 21

[15] A prominent example is the South Pacific Forum Fisheries Agency, which was established as a direct response to the introduction of EEZs in 1979 for the EEZ management of tuna fisheries of the western and central Pacific Ocean (Veitayaki, Chapter 10; Sydnes, 2001b).

[16] The FAO EEZ Programme was established to aid coastal States in implementing their EEZs.

adopted by the UNCED in 1992 recommended that the UN convene a conference on the international management of straddling and highly migratory fish stocks.

6. THE 1995 AGREEMENT AND THE 1995 FAO CODE OF CONDUCT

The UN Fish Stocks Conference was convened 1993-1995. The 1995 Agreement was adopted on the 4th of December 1995. The formal title of the agreement is Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Its Article 4 states: 'Nothing in this Agreement shall prejudice the rights, jurisdiction and duties of States under the Convention. This Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention'. The Agreement entered into force on the 11th of December 2001. It seeks to complement the legal framework of the LOSC by way of detailed provisions on the substance and scope of regional fisheries organisations.[17]

The 1995 Agreement elaborates on articles 63(2) and 64 of the LOSC on the conservation and management of straddling fish stocks and highly migratory fish stocks. It builds on LOSC (Articles 116-119) on the duty to cooperate on the high seas. Only members of regional fisheries management organisations, or states which agree to apply their measures, shall have access to the fisheries where the measures apply. This duty to cooperate is balanced in that all states with 'real interests' in the fisheries can become members of such organisations or arrangements (Article 8 (3-4)). In cases where regional fisheries organisations or arrangements do not already exist, states shall cooperate to establish one (Article 8(5)). In sum, these provisions, and Part III in general, represent a limitation of the traditional freedom of fishing on the high seas and a strengthening of the duty to cooperate in international fisheries law. However, the 1995 Agreement is only binding on parties to the agreement. Several non-parties to the agreement, in particular DWFNs whose vessels fish under flag of convenience, are not legally bound by it.

Articles 9 and 10 outline the scope and functions of regional fisheries organisations. States are to agree upon the stocks and areas covered by the regional fisheries organisation (Article 9(a)-(b)). The management functions of collecting and assessing scientific information, and establishing and enforcing regulatory measures are out lined in general terms by Article 10.[18]

The 1995 Agreement breaks new ground regarding compliance and enforcement measures, providing for strengthened flag-state duties (Article 18), procedures for non-flag state enforcement (Articles 21-22), and port state measures (Article 23). According to Article 18, states are only to authorise vessels flying its flag to fish on the high seas when it effectively can exercise its duty to control the activities of such vessels. This includes establishing licensing schemes, ensuring the reporting of catches, the capacity to conduct monitoring, control and surveillance, and more generally the compliance

[17] For further discussion on the 1995 Agreement see Balton (1996) and Henriksen (2001).
[18] These functions are dealt with in more specific terms by other provisions of the 1995 Agreement.

with measures set by regional fisheries organisations (Article 18).[19] The 1995 Agreement also establishes that authorised inspectors from parties to the agreement under special circumstances may board and inspect vessels flying the flag of another party to the agreement on the high seas, irrespective of the latter being a party to the regional fishery organisation within the area of which fishing operations are being conducted (Article 21(1)).[20] The procedures for boarding and inspection are outlined in Articles 21-22.

The 1995 Agreement puts heavy demands on science (Hoel, 1998). The agreement reflects the development of environmental principles in international cooperation,[21] in that states are to apply a precautionary approach and protect biodiversity when adopting regulatory measures (Articles 5-6). The management of fisheries is to be based on the best scientific evidence available, and parties are to collect and share fisheries data.[22] Enhanced scientific cooperation is a condition for effective regional fisheries management.

The 1995 Agreement introduces new obligations also in waters under national jurisdiction (Article 3(1)). First, a precautionary approach is to be applied on the high seas and in the EEZ when managing fisheries for straddling fish stocks and highly migratory fish stocks (Article 6). In practice, states appear to employ this principle also for shared fish stocks and exclusive fish stocks. Second, measures adopted for the high seas and in the EEZs are to be compatible, in terms of ensuring that measures adopted for fisheries at the high seas not undermine the effectiveness of conservation measures within EEZs, taking account of measures established for the high seas, and the biological characteristics of stocks, among other things (Article 7).

There is some practice emerging on the implementation of Article 7. In the cooperation among coastal states on the management of Norwegian Spring Spawning Herring, for instance, factors as historic harvest levels and geographical distribution of the stock were employed. In this case as well as others the important issue in this regard is however that it is the coastal states that determine the configuration of the actual management regime.[23] It can however be a politically contentious issue whether EEZ management concerns is to be given prevalence when ensuring the compatibility of measures for fisheries at the same stocks at the high seas.[24] In practice, political power and the will to exercise it is likely to be decisive for the actual distribution of fishing rights at the high seas.

The 1995 Agreement has built on the provisions of LOSC to provide a substantive international framework for the management of straddling and highly migratory fish stocks. Of particular importance are the provisions elaborating on the duty to cooperate, the emphasis on environmental principles as a basis for fisheries manage-

[19] A problem in this regard is that several states with fishing fleets involved in IUU fishing are not parties to the 1995 Agreement.
[20] For an elaboration, see Hayashi (1996).
[21] There has been considerable horizontal interplay between environmental and traditional international institutions of fisheries governance.
[22] The requirements for the collection and sharing of data are outlined in Annex I of the agreement.
[23] Other cases involve the Bering Sea Agreement on pollock fisheries and the practices of the Northeast Atlantic Fisheries Commission.
[24] For an example of the treatment of the compatibility in a regional context, see Sydnes (2001b).

ment, and the strengthening of states' duties in the control and enforcement of regionally established measures.

6.1 The FAO Code of Conduct: International Plan of Action on IUU Fishing

Based on the 1992 Declaration of Cancun,[25] the FAO established a Code of Conduct for Responsible Fisheries (FAO Code of Conduct). The process largely ran parallel to the negotiation of the 1995 Agreement with a considerable overlap of issues and individual representatives. The FAO Code of Conduct was adopted by the FAO Council in 1995. The agreement is not legally binding (Article 1(1)). It has a global scope establishing principles and standards applying to all levels of organisation and all aspects of fisheries (Articles 1-2). Notably, the FAO Compliance Agreement of 1993 – which *is* legally binding – forms an integral part of it. The FAO Code of Conduct reiterates the duty of states to cooperate through regional fishery organisations (Article 6(12)). Regional fishery organisations are integrated generally in all provisions pertaining to fisheries management (Article 7), fishing operations and the duties of states (Article 8) and fisheries research (Article 12), among others. The FAO holds bi-annual meetings for regional fishery organisations (both FAO and non-FAO organisations), for discussions on trends and challenges in their operations, including the implementation of international agreement.[26]

The FAO's Committee of Fisheries has adopted four international plans of action and initiated a wide range of activities to support the implementation of the FAO Code of Conduct (Garcia and Doulman, Chapter 11). Regional fishery organisations, especially those established under the auspices of the FAO, have been important mechanisms for diffusing and implementing the FAO Code of Conduct and the international plans of action. Regional fisheries management organisations are considered as important mechanisms in combating IUU fishing.[27] The international plan of action on IUU fishing 1) urges the members of regional fisheries management organisations to establish and enforce measures to prevent IUU fishing (Paragraph 78), 2) reiterates the duty to cooperate under international fisheries law, and thereby comply with such measures established by regional fisheries management organisations (Paragraph 79), 3) outlines a wide range of measures to be taken to combat IUU fishing (Paragraph 80), 4) encourages parties to gather information about the extent of such activities and disseminate such information to other regional fisheries management organisations and the FAO (Para. 81), 5) encourages non-parties to join regional fisheries management organisations or abide by established measures (Para. 83), 6) that members of regional fisheries organisations should inform flag states of the activities of vessels flying their flag and, if this does not trigger a response, consider adopting appropriate measures (Para. 84). In a study on IUU fishing, regional fishery organisations and other arrangements are given a pivotal role:

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[25] Adopted by the International Conference on Responsible Fishing, Cancun, Mexico, 6-8- May 1992.
[26] The results of discussions are presented for the FAO Committee on Fisheries.
[27] For an extended discussion, see Swan (2004). FAO has published substantial information on IUU fishing. See, www.fao.org/figis/servlet/static?dom=org&xml=ipoa_IUU.xml&xp_banner=fi

> RFBs [regional fishery organisations and other arrangements] serve as a gateway between international and national levels. They are well placed to contribute to global efforts to combat IUU fishing, both in relation to their own convention or regulatory area – which in many cases includes high seas – and in collaboration with NFAs [national fisheries administrations], other RFBs and international bodies. To do this effectively, the institutional and policy aspects of RFBs must be attuned to the task (Swan, 2000:2).

There are evident overlaps and substantial potential for synergies between the provisions of the 1995 Agreement on participation and enforcement measures in regional fisheries management organisations, and the FAO international plan of action on IUU fishing.[28] The question then, is how this potential has been capitalised on in practice.

7. TRENDS AND CHALLENGES IN THE REGIONAL MANAGEMENT OF STRADDLING AND HIGHLY MIGRATORY FISH STOCKS

7.1 Emerging Management Practices

With the entry into force of the 1995 Agreement and the adoption of the FAO Code of Conduct, in particular the international plan of action on IUU fishing, a new institutional framework for the regional management of fisheries has been established. Although not all members of regional fishery organisations are parties to these agreements, there is substantial pressure on non-parties to comply with them in practice (UN, 2003).[29] A more fundamental problem are in this regard are states that are neither party to the 1995 Agreement, nor members of regional organisations. Such states are often host to vessels flying their flag, but do not exercise the control functions a flag state is required to under the 1995 Agreement or LOSC. Fishing under flag of convenience is therefore a problem that is not easily tackled on the basis of existing treaties, and a number of countries are now arguing for a stricter enforcement of the real economic link requirement flag states are to abide by.

The 1995 Agreement has had the most direct impact on regional fishery organisations managing straddling and highly migratory fish stocks. The 1995 Agreement has established new principles and rules that the members of these organisations have to take into consideration. It has set the agenda for processes of institutional change taking place in the regional fishery organisations, in particular as regards enforcement. This has been supplemented by the efforts by the FAO, and in the regional fisheries manage-

[28] See Garcia and Doulman (Chapter 11) on FAO efforts regarding the implementation of the FAO Code of Conduct and the international plans of action.

[29] FAO Code of Conduct is a legally non-binding agreement adopted by the FAO Council. As of 16 January, 2004 there were 51 ratifications, accessions and successions by states to the 1995 Agreement. For a continuous update see www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement, for the implementation of the provisions of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks.

ment organisations, to formulate policies and implement measures to combat IUU fishing.

7.1.1 The Duty to Cooperate, IUU Fishing, Control and Enforcement

Regional fisheries management organisations or arrangements are to provide the institutional mechanisms for the management of fish stocks on the high seas, whether straddling, highly migratory, discrete[30] high sea or otherwise. This role is provided for by LOSC (Articles 116-119) and the 1995 Agreement (Part III).

The duty to cooperate, by becoming members or complying with measures, as elaborated by the 1995 Agreement, has been gaining foothold among several regional fisheries management organisations. Several of the organisations have adopted measures to deter activities by non-members. For example, the Inter-American Tropical Tuna Commission, the South Pacific Forum Fisheries Agency, the Indian Ocean Tuna Commission, and the Commission for the Conservation of Antarctic Marine Living Resources have registers of authorised fishing vessels, while the International Commission for the Conservation of Atlantic Tunas and the Commission for the Conservation of Antarctic Marine Living Resources (in addition) have such registers in addition to catch documentation schemes. Such schemes are frequently combined with port state measures to prohibit landings and transshipments of vessels considered to undermine the efforts of regional fisheries management organisations, as provided for by the 1995 Agreement (Article 23(3)). The measures adopted by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) in this regard provide an example:

> The CCSBT will publish a list of vessels over 24 metres which are authorised to fish for SBT on 1 July 2004. The list will include vessels from members and cooperating non-members and be updated as new vessels are notified. Members and non-members will not import SBT, which has been caught by a large scale fishing vessel not on the CCSBT approved list.[31]

The International Commission for the Conservation of Atlantic Tunas, Commission for the Conservation of Southern Bluefin Tuna, Inter-American Tropical Tuna Commission, Indian Ocean Tuna Commission, Northwest Atlantic Fisheries Organization, North Atlantic Salmon Conservation Organization, North Pacific Anadromous Fish Commission and the General Fisheries Council for the Mediterranean have also established schemes for cooperating with non-members (FAO, 2002: 57), acting upon the 1995 Agreement Article 8(3) stating that non-members are to apply the conservation and management measures established by regional fishery organisations or other arrangements.

Regional measures have also been established regarding registers and information relating to IUU fishing, inspection and enforcement, the use of vessel monitoring systems, controls of landings, port inspections transshipment, and trade measures (as noted above) (FAO, 2002: 57).

The majority of those regional fisheries management organisations that have adopted measures for cooperation on control and enforcement, manage straddling and highly migratory fish stocks. However, in some cases regarding highly migratory

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[30] Fish stocks that are found only at the high seas, but do not appear on the LOSC appendix of highly migratory species.

[31] www.ccsbt.org/docs/news.html.

species regional fishery organisations have established such measures for the EEZs of member countries, such as the case of the South Pacific Forum Fisheries Agency (Veitayaki, Chapter 10). This illustrates that there is a political process at the international level, through the UN and FAO, which provide substantial synergies in addressing challenges pertaining to regional fisheries management. However the operations of several of these regional fisheries management organisations continue to be hampered by IUU fishing by vessels flying flags of convenience.[32]

7.1.2 Establishing and Reforming Regional Fisheries Management Organisations

The 1995 Agreement has led to regional initiatives to establish new regional fisheries management organisations to manage straddling and highly migratory fish stocks. Both in the southeast Atlantic Ocean and the western and central Pacific Ocean, this agreement spurred the initiation of negotiations to establish new regional fishery organisations: the South East Atlantic Fisheries Organisation (Sydnes, 2001c) and the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Sydnes, 2001b). A similar process has been initiated in the Southwest Indian Ocean.[33] The institutional changes in the global regime created by the 1995 Agreement and the FAO Code of Conduct have provided a 'window of opportunity' for states to establish new regional fishery organisations. The agreement also led to the revitalisation of established organisations. The North East Atlantic Fisheries Commission had largely been dormant following the introduction of EEZs by member countries. However, during the 1990s, the organisation established a secretariat and members agreed on established regulatory measures for Norwegian spring-spawning herring and redfish on the high seas.[34] Currently, the regulation also of blue whiting fisheries at the high seas is negotiated. Also, the enforcement regime for fishing at the high seas in the Northeast Atlantic is strengthened through the introduction of a vessel monitoring system mandatory for all member state vessels fishing in the area. Moreover, the member countries of the Inter-American Tropical Tuna Commission agreed to negotiate a new constituting agreement as a response to the global institutional changes during the 1990s.[35] As these examples illustrate there is a clear link between developments at the global arena of fisheries politics and the cooperation of states at the regional level.

7.2 If Regional Management Woks, Why Isn't Everyone Doing It?

In the latest report of the secretary-general of the UN on the implementation of the 1995 Agreement it was reported that there were three operative regional fisheries organisations managing straddling fish stocks, and four managing highly migratory fish stocks (tuna). Since then the convention establishing the Southeast Atlantic Fisheries Organisation (2003) and the Commission for the Conservation and Management of

[32] In short, the operations of fishing vessels that fly the flags of states that do not enforce their flag state duties, and commonly are non-parties to the 1995 Agreement.
[33] See also Sydnes (2002a).
[34] For further information see www.neafc.org/about/about_history.htm.
[35] For further information refer to www.iattc.org/. For links to the regional fishery organisations websites see Sydnes (2001a: Appendix) or www.fao.org/fi/body/rfb/index.htm.

Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (2004) have entered into force, taking the initial steps to establish a secretariat and holding the first meetings of their decision-making bodies.

On the basis of Table 6.1, the UN report states that there is a reasonably good coverage of regional fisheries management organisations at a global scale (UN, 2003: 30). In addition there are several other arrangements for the management of straddling fish stocks, for example in the Bering Sea, the Sea of Okhotsk, and a Joint Norwegian-Russian Fisheries Commission for the Barents Sea fisheries (Stokke, 2001; Hoel, Chapter 3), that need to be mentioned to provide a fuller picture of the situation. Finally there are ongoing negotiations to establish a South-West Indian Ocean Fisheries Commission.[36]

Table 8.1. Regional fisheries management organisations for straddling and highly migratory fish stocks[37]

	Competent regional fisheries management organisations	
Region	*Straddling stocks*	*Highly migratory stocks*
Atlantic	North-East Atlantic Fisheries Commission North-West Atlantic Fisheries Organization South-East Atlantic Fisheries Organization	International Commission for the Conservation of Atlantic Tunas
Pacific Ocean		Inter-American Tropical Tuna Commission Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean
Indian Ocean		Indian Ocean Tuna Commission
Trans-ocean	Commission for the Conservation of Antarctic Marine Living Resources	Commission for the Conservation of Southern Bluefin Tuna

Source: UN (2003).

Despite the organisations and arrangements presented above, there seem to be significant gaps in the coverage of the world oceans in terms of competent regional fisheries management organisations. There are no regional fishery organisations managing straddling and discrete fish stocks at the high seas in the central Atlantic Ocean. Moreover, there are significant gaps adjacent to the Commission for the Conservation of Antarctic Marine Living Resources both in the Atlantic Ocean and Pacific Ocean.

One of the main problems of managing straddling fish stocks, is that there is limited knowledge regarding a number of existing fisheries, including to what extent are they straddling, and the extent of unregulated fisheries. IUU fishing contributes to

[36] For developments in this process, see www.fao.org/fi/body/rfb/SWIOFC/swiofc_home.htm.

[37] Updated following entry into force of the agreements constituting the South-East Atlantic Fisheries Organization and the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

uncertainties regarding the status of world fisheries in this respect. One considerable contribution to better understand this issue would be to map current fishing activities and the spatial distribution of fish stocks. This would, however, require a substantial international effort.[38]

Why aren't there more operative regional fisheries management organisations at a global scale? In light of the known problems of IUU fishing and the FAO efforts to address this issue through its international plan of action, why are states not willing to make better use of the platform provided by international fisheries law to take effective measures against unsustainable fishing practices? The contractual environment at the global level never has been stronger in facilitating and enhancing regional fisheries management. The answers to the deficiencies in fisheries management have to be sought for in the institutional scope and design of the regional fisheries organisations, and among states in not acting upon their rights and duties under the prevailing institutional order. In practice, these two dimensions are interrelated. Regional fishery organisations rely on member countries to agree upon, implement, and enforce regulatory measures. On the other hand, established regional fishery organisations do structure the cooperation among member countries (Sydnes, 2002b), in the sense that they provide common rules for the use of resources. However, can we explain the deficit of management mainly by the established roles and functions of regional fishery organisations, and their inability to transform into effective management organisations? Or is the answer also to be found in a lack of human, technical and economic capacity or political will to implement international agreements in the member countries to regional fishery organisations?

The FAO has played a central role in promoting regional fisheries cooperation as a means to enhance regional economic development of the fishing industry, the exchange of scientific knowledge and the management of fisheries.[39] Most of the regional fishery organisations established under the auspices of the FAO, were established before LOSC.[40] Following the adoption of the 1995 Agreement and the FAO Code of Conduct, the regional fishery organisations established under the auspices of the FAO, have all undergone a review process, with a view to reform them into full-fledged regional fisheries management organisations with decision-making authority and autonomous budgets (FAO, 1997). This has posed a challenge for organisations that have the role of coordination and development (i.e., Asia-Pacific Fisheries Commission, Committee for the Eastern Atlantic Fisheries, Western Central Atlantic Fisheries Commission). As noted, these organisation's orientation towards development and policy harmonisation became cemented following the introduction of EEZs and through the FAO EEZ Programme. The organisations mainly achieve their ends through (often donor funded) development programs and capacity building projects. The primary objectives of these organisations have not been conservation and management of the fisheries, but rather the development of the fishing sector within their respective EEZs.[41] Though these organisations in principle have adopted or endorsed the environmental

[38] A Global Marine Assessment has been suggested as a possible vehicle for for such an endeavour.
[39] For further discussion see Garcia and Doulman (Chapter 11).
[40] The only exception is the Indian Ocean Tuna Commission (1993).
[41] This should be understood within a context in which cooperating states are also primarily developing nations with limited technical and economic capacities.

principles codified by the FAO Code of Conduct and the 1995 Agreement, the member-countries, by and large, resist changes in their operational practices and maintain their established roles as development-oriented organisations (Sydnes, 2002a). There are a number of regional fishery organisations with mandate areas covering both areas of EEZs and high seas that do not manage fisheries. Attempts at reforming the functions of these organisations have largely been unsuccessful. As a consequence there are substantial gaps in the oceans without competent regional fisheries management organisations.

For regional fishery organisations with mandate areas limited to the EEZs of member-countries, the 1995 Agreement has had less direct impact (Sydnes, 2002a: 378). For developing countries, the coastal fisheries have a higher priority than offshore or high seas fisheries. In light of that, many, or even most, countries are struggling to implement an effective management system within their EEZ, and less effort has been put into regional efforts. Moreover, often there is little knowledge and awareness of the extent of straddling fish stocks because of a fundamental lack of scientific research. Rather than establishing formal organisations, states have often chosen to establish direct bi- or trilateral cooperation between coastal states, or cooperation through access agreements between coastal states and DWFNs. Though providing mutual benefits for the parties to such agreement, they are often more limited in content, as regards fisheries management, than is envisioned by the 1995 Agreement.

There are certain management functions, such as monitoring, control, surveillance, enforcement, and the conduct of marine research, where there are substantial benefits in pooling limited resources. In particular, the development of compliance and enforcement schemes is one function that may provide the basis for further regional cooperation among coastal states. Veitayaki (Chapter 10) has analysed how member countries of the South Pacific Forum Fisheries Agency have established regional schemes for vessel monitoring systems, a regional register for licensing DWFNs, and other mechanisms to control to enforce regulations in the EEZs of regional coastal states. Such coastal state cooperation has been identified as one potential prerequisite for the establishment of efficient regional fisheries management organisations (UN, 2003). Again, in the case of the South Pacific Forum Fisheries Agency, coastal state cooperation provided an institutional basis on which to enter negotiation with DWFNs operative in the region to establish the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Veitayaki, Chapter 10).

In a consideration of the activities and constraints for developing countries in implementing the 1995 Agreement the Secretary-General of the UN concluded that:

> Few, if any, major programmes of bilateral or multilateral assistance established or operating since the adoption of the Agreement specifically focus on its implementation (UN, 2003: Para. 77).

However, the establishment of a voluntary trust fund to support developing states (Article 26(1)) have been the subject of the two meetings of the states parties to the 1995 Agreement. Moreover, many donor-funded bi- and multilateral capacity-building projects targeting fisheries, form integral parts of access agreements between coastal states and DWFNs. There is increasing awareness that for international fisheries governance, and in particular the management of fisheries on the high seas, to move forward, substantial efforts have to be made to increase the capacity of developing

coastal states, enabling them to implement the provisions of LOSC, 1995 Agreement, FAO Code of Conduct, and other agreements pertaining to fisheries management.

Beyond the challenges outlined above, there is the problem of non-parties to regional fisheries management organisations, the LOSC and the 1995 Agreement. 'Free-riders' have been a problem hampering international fisheries management since the pre-LOSC high seas regime. As international treaties are binding only on the parties to them, the problem of IUU fishing by vessels flying flags of convenience continues to hamper regional and national efforts to conserve and manage fisheries. The FAO, regional fisheries management organisations and port states are tasking steps to curb IUU fishing. It remains to be seen whether the political and economic costs being imposed will be sufficient to make flag states and relevant fishing vessels put an end to such destructive fishing practices.

8. CONCLUSION

The role of regional fishery organisations has evolved following changes in the global institutions of fisheries governance. Under the old high seas regime, based on the freedom of fishing on the high seas, management through regional cooperation was the *modus operandi* of international fisheries governance. The widespread adoption of EEZs during the 1970s, limited the role of regional fishery management organisations to cases where there was an institutional misfit between the EEZs of coastal states and the distribution and migratory patterns of fish stocks. The provisions of the LOSC (Articles 63(2)-67) provided a legal framework to the management of such fisheries, which proved to be inadequate in the face of a rapidly growing fishing fleet and expansion of fisheries at the high seas. As a result the international community negotiated a series of international agreements during the 1990's, which emphasized the role of regional fishery organisations in managing transboundary fisheries.

The 1995 Agreement, the FAO Code of Conduct, and in particular the international plan of action on IUU fishing, have provided a new institutional framework for regional fisheries management, adding substance to the duty to cooperate on the high seas (LOSC, Article 118) and promoting regional cooperation regarding straddling and highly migratory fish stocks. Regional fishery organisations are critical in enhancing the institutional fit among the EEZ regimes and the temporal and spatial distribution of fish stocks.

The 1995 Agreement and the FAO Code of Conduct are international agreements that (although differing in legal status) enable states to take significant measures to ensure the sustainable conservation and management of fisheries. However, as is the case of any institution or agreement, their implementation relies on the extent to which states have the capacity and political will to act upon those enabling provisions. There is a clear distinction in international fisheries governance between, on the one hand, regional fishery organisations with a high degree of involvement from developed countries, and which are actively implementing the provisions of the 1995 Agreement and the international plan of action on IUU fishing and, on the other hand, those in developing regions that do not focus on management, but rather on development and capacity building among member countries. Cases of the first type include the various

tuna organisations: the International Commission for the Conservation of Atlantic Tunas, Inter-American Tropical Tuna Commission, Indian Ocean Tuna Commission and Commission for the Conservation of Southern Bluefin Tuna. Also included among this first type but focused on straddling fish stocks are the North East Atlantic Fisheries Commission, the Northwest Atlantic Fisheries Organization, and the Commission for the Conservation of Antarctic Marine Living Resources.

The General-Secretary of the UN acknowledges that coastal state cooperation and capacity building frequently are a pre-requisite for effective regional fisheries management both in EEZs and on the high seas (UN, 2003). However, such developments depend on substantial efforts among the coastal states and the international community to provide the means for capacity building for the management of fisheries. The efforts of the FAO through the FishCode programme may play an important role in providing assistance from the international community (Garcia and Doulman, Chapter 11). However, the willingness of the donor community to support the efforts of the FAO has varied. Moreover, the role of the FAO is limited to advising and assisting. The challenge remains with states to design and implement fisheries management institutions that are both politically viable and able to deliver biologically sustainable policies within the context of domestic and regional opportunities and constraints.

There is a substantial variation in the nature of institutions established to manage fisheries at the regional level. This is acknowledged by the 1995 Agreement (Article 8(1)), in granting states discretion in whether they cooperate directly, through regional or subregional organisations, or other arrangements. Though this may obscure what qualifies under which concepts, it also reflects the fact that no single format of regional management can fit all geopolitical and biophysical conditions. In lack of formal criteria this will be given content through state practice.

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Chapter 9

Exclusive Economic Zones and the Management of Fisheries in the South China Sea

Ma. Carmen A. Ablan and Len R. Garces
WorldFish Center, Jalan Batu Maung Batu Maung Bayan Lepas Penang, Malaysia 11960
(*m.ablan@cgiar.org and l.garces@cgiar.org*)

1. INTRODUCTION

The 1982 United Nations Convention on the Law of the Sea (LOSC), with the provisions for defining an Exclusive Economic Zone (EEZ), is the international agreement that has had the greatest influence on the structure of fisheries policies in national and international arenas. It had the profound effect of increasing the contribution of fisheries to the national gross domestic product or GDP. It brought about a redistribution of benefits from fishing from distant water fishing fleets to the coastal states. Investments flowed in to the fisheries sector. Countries that had fisheries resources but limited capacity to exploit them established joint ventures with states that owned fishing fleets (ADB, 1997). The end result was a substantial increase in the contribution of fisheries to the national GDP especially in developing countries and the overall shift in total capture fisheries production from the developed to the developing world (Delgado et al., 2003).

The LOSC and the EEZ are strongly associated with ownership and the implication that fisheries will be better managed within some property rights regime. These concepts were modified by coastal states to apply to fisheries management policies at the scale of local governments and even communities. Shortly after the Third United Nation's Conference on the Law of the Sea ended in 1982, community-based initiatives to define fishing rights and effectively manage fisheries proliferated. There was a stronger effort to move national policy toward devolution of fisheries management to local government units and encourage co-management and stakeholder participation in the management of coastal resources. There were several efforts to develop Integrated Coastal Zone Management (ICZM) Plans and establish Community Based Coastal Resource Management (CBCRM) strategies in the Philippines first, and later in Indonesia, Thailand, Malaysia and Vietnam.

In this paper, we present case studies where there is a poor institutional fit between the EEZs of coastal states and the natural structure of fisheries resources. This has led to the formulation of inadequate fisheries policies, difficulties in monitoring and controlling the overexploitation of fish stocks, and a massive degradation of fish habi-

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tats vital to the survival and sustainability of stocks. In the first two decades of the LOSC, states have focused on implementing Articles 55-56 and 61-62, which detailed their jurisdiction and right to exploit resources optimally. In this next decade of implementing the LOSC, states will need to consider the provisions for transboundary cooperation detailed in Articles 63 to 67 of Part V of the LOSC. We highlight the importance of knowledge of institutional interplay in fisheries management at the local, sub-national, national and regional scales, and how this relates to the structure of fish stocks and national jurisdiction. We also suggest some research priorities and institutional adjustments required to increase the chances of devising a successful fisheries policy, embody a broader regional perspective of the needs and aspirations of fisheries, as well as national goals. The case studies presented are derived from the experiences of coastal states that border the South China Sea.

2. GEOGRAPHICAL CONTEXT

The South China Sea and its extensions, the Gulf of Thailand and the Gulf of Tonkin, cover an area of 3.8×10^6 km^2. Over 270 million people, or about 5% of the total world population, live in the coastal sub-regions of the South China Sea. The South China Sea extends northwards from the equator to about 22^{o}N and is bounded by the coastline of Taiwan and China to the north, Thailand, Vietnam and Cambodia to the west, Malaysia, Singapore, Indonesia and Brunei Darussalam to the south and the Philippines to the east. These countries are among the most densely populated in the world and, until recently, their economies have been the fastest growing worldwide (Talaue-McManus, 1999). Table 9.1 provides some basic information pertaining to these countries.

The South China Sea embraces a wide variety of habitats such as mangroves, sea grasses, soft bottom shelves and coral reefs. It has the highest species diversity in the world. The natural diversity of flora and fauna probably accounts for the high natural rates of production in the area (Morton and Blackmore, 2001). However, over 120 rivers that carry with them nutrients and pollutants from the land drain into this sea.

In 1995, close to 10% of the world's total landed catch from capture fisheries was estimated to have come from the South China Sea. In 1996, the total fisheries production was 10.4 million metric tons valued at US$6.1 million (SEAFDEC, 1999). Five of the eight top shrimp producers in the world border the South China Sea – Indonesia is first, Vietnam is second, China is fourth, Thailand is sixth, and the Philippines is eighth. The countries of the region produce 23% of the world catch of tuna, including three-quarters of the world's production of canned tuna (Talaue-McManus, 1999).

The oceanic conditions in the South China Sea are dominated by alternating monsoons. The Northwest monsoon from November to March brings with it strong dry winds that create an anti-clockwise circulation pattern in the major basin. In May to September, the Southeast monsoon season is characterised by rain-bearing winds that create clockwise currents, flowing from the south in the Java Sea northward towards Taiwan. During the period of the Southeast monsoon, low-pressure cells frequently build up and eventually manifest as typhoons moving through the Philippines toward Taiwan and Japan to the north or westward towards Vietnam and the southern provinces

of China (Morton and Blackmore, 2001). The changing wind and surface current patterns are one of the dominant factors that influence the distribution and abundance of flora and fauna in the sea and the patterns of exploitation of its fisheries (Talaue-McManus, 1999).

Table 9.1. Selected statistics on countries at the border of the South China Sea

Country	Population	Per Capita GDP	Land Area	Exclusive Economic Zone	Continental Shelf Area (0-200 m depth)	
	(x 10^3)	(US$,2002)	(x $10^3 km^2$)	(x $10^3 km^2$)	(x10^3 km^2)	As % of EEZ
Brunei Darussalam	358	18,600	5.8	38.6	9	22
Cambodia	13,124	1,600	181.0	55.6	15	27
China	1,286,975	4,700	9596.9	n.a.	n.a.	n.a.
Indonesia	234,893	3,100	1919.4	5,408.6	2777	51
Malaysia	23,092	8,800	329.8	475.6	374	79
Philippines	84,620	4,600	300.0	1786	178	10
Taiwan	22,603	18,000	35.9	n.a.	n.a.	n.a
Thailand	64,265	7,000	514.0	257.6	86	33
Vietnam	81,624	2,300	329.5	722.1	328	45

Sources: CIA FactBook (www.cia.gov/cia/publications/factbook/); Nationmaster.com (www.nationmaster.com); Silvestre and Pauly (1997)

This short description of the South China Sea would not be complete without mention of the Spratly and Paracel islands found in the main basin of the sea. These island groups are rich fishing grounds and are also believed to contain oil and gas deposits. The Spratly Islands consist of more than 100 small islands and reefs. They are claimed in their entirety by China, Taiwan and Vietnam, whereas portions are claimed by Malaysia, Brunei and the Philippines (CIA FactBook, 2003). The Paracel Islands to the north of the Spratly Islands are claimed by Taiwan and Vietnam. A suggestion to declare this group of islands as an international marine park was made because of their possible strategic value as a source of fish recruits to coastal states on the boarder of the South China Sea based on ecological considerations such as the duration of pelagic larvae, surface circulation patterns, seasonality in abundance of adults and larvae, and reproductive strategies, among others (McManus, 1994; McManus and Menez, 1998). The proposal was later followed up by a list of ecological considerations on the boundaries that further of the South China Sea (McManus and Menez, 1998). The idea for the international marine park has been on the agenda of international discussions but has not yet elicited any action.

3. SUMMARY OF FISHERIES MANAGEMENT ISSUES AND THE IMPLICATIONS OF THE EEZ

Many problems plague the management of fisheries in the South China Sea – see Silvestre et al., 2003 for an in-depth discussion of the coastal fisheries management

issues most relevant to developing countries within the region. Five of the most pervasive problems that are inadequately addressed or aggravated by the implementation of EEZs in the South China Sea are discussed below.

3.1 Overexploitation and Overcapacity of Coastal Fisheries

The establishment of EEZs since the mid-1970s has contributed to overexploitation of fisheries in developing countries. Fisheries have become part of national development agendas, and a major contributor to national GDP. Governments have encouraged development of national fishing capacity and the use of advanced fishing technology to promote development. Governments have provided subsidies to fisheries for social, economic and cultural reasons. They have also encouraged fishing offshore and fishing agreements with other countries, which in several cases has created excess capacity. All these factors have increased, and continue to increase, fishing effort on fish stocks.

As a result, employment in the fisheries sector increased dramatically. It tripled globally from 1970-1990, a growth rate higher than either the population growth rate or employment in the agriculture sector (Garcia and Willman, 1999). After building overcapacity, the fishing sector has had difficulty restricting access and containing expansion due to social, economic, political and cultural pressures.

Overfishing in coral reefs is widespread among countries in Southeast Asia (McManus, 1997). Maximum sustainable yield (MSY) has already been exceeded for demersal (Silvestre et al., 2003), pelagic (Dalzelle and Ganaden, 1987; Trinidad et al., 1993) and reef fisheries (McManus, 1992) in the Philippines. Similar cases occur elsewhere in the region, such as in Vietnam (Long, 2003) and eastern Malaysia (Abu Talib et al., 2003) where growing populations have turned to fishing for livelihoods. In some areas, the current level of effort is 150-300% greater than the required for MSY (Silvestre et al, 1987) and fish biomass is down to 5-30% of levels prior to the expansion of fishing (Silvestre et al., 2003).

Aside from being unsustainable, overfishing in the region has implications for species diversity and the abundance of both pelagic (Pauly et al., 1998) and reef fisheries (McManus et al., 1997). In heavily exploited areas, the large, high-value predatory species have become uncommon and there is a tendency to fish for lower-valued species (Pauly et al., 1998). By 2000, the abundance of fish from the higher trophic levels in the South China Sea had declined to less than half the levels found in 1960 and high concentrations of fish occurring within protected areas around the South China Sea had disappeared by 2000 with the exception of the waters off Brunei where fisheries are relatively unexploited (Christensen et al., 2003). Losses of biodiversity were also evident in local-scale extinctions of reef-associated species, such as the sea urchin (*Tripneustes gratilla)* (Talaue-McManus and Kesner, 1995) and the giant clams (Menez et al., 1997).

3.2 Fisheries Policy Implemented at Inappropriate Scales

The implementation of the EEZ may result in conflicts and inconsistencies in fisheries policy. This is especially true in the case of overlapping jurisdictions and shared resources. National governments will have different perspectives on the value of fisher-

ies and different approaches to the development of their coastal resources. Inevitably there will be differences in national fisheries policies. There is also a wide variability in the biophysical, social, cultural and economic dimensions of multi-gear and multi-species fisheries within each coastal state further creating inconsistencies in the policies.

Consider as an example the definition of fishing zones for small-scale and commercial fishing vessels. Small-scale fishers in all countries complain that commercial trawlers compete with them for their catch. These larger boats also cause damage to the fishing gear of the small-scale fleet. To avoid confrontations, separate fishing zones for small-scale and commercial fishing have been defined by several central governments to be implemented nationwide. These definitions vary considerably in the region, (Table 9.2) rendering them ineffective if the fisheries resources are shared among two or more coastal states. Difficulty in implementation also arises when fishing grounds are at the boundary of two or more countries.

National policies in large countries such as China, Indonesia and the Philippines can potentially result in inefficiencies because a single policy is implemented nationwide when the biophysical conditions or socio-economic dependence on the fishery may vary greatly among places. Take the same example of defining fishing zones for small-scale and commercial vessels. In the Philippines, the boundary of 15 km from shore used to separate these sectors is based on the general change in the composition of fish communities with distance from the shore. Recent studies, however, indicate that depth rather than distance from the shore has a greater influence on the species composition on the eastern side of the country (Campos, 2003).

China has been implementing no-fishing seasons for two months in summer, starting in 1998, to reduce pressure on the fisheries of Bohai, Huanghai and East China Sea (Morton, 2003). The decision to implement a similar fishing ban for the summer in the South China Sea is a more complicated management strategy. It will require additional social, economic and institutional support because of the larger number and capacity of fishing vessels in this area, the existence of a regulation that already bans year-round trawling on spawning sites within the Chinese territorial waters in the South China Sea and the possibility of competition with fishers from other countries (Morton, 2000).

3.3 Monitoring, Surveillance and Control of Illegal Fishing

The EEZ comprises the area that a state is responsible for monitoring and managing. It was believed that the ability to delineate state jurisdiction would yield better management of fisheries in comparison to the previous open access arrangements. Most countries on the margins of the South China Sea, however, have very limited resources to effectively monitor and control the area bounded by their EEZs, particularly from illegal, unreported and unregulated (IUU) fishing.

Table 9.2. Fisheries management zones in some coastal states of the South China Sea based on existing legislation

Country	Fishing Zone I	Fishing Zone II	Fishing Zone III	Fishing Zone IV
Brunei – Darussalam	Shore to 3 nm.	3 to 20 nm	20 to 45 nm	45 nm to EEZ limit
	Small-scale/ artisanal	Industrial: trawlers <350 HP[1] engine and purse seiners <20 m LOA[2]	Industrial: trawlers with 350-550 HP engine and purse seiners with 20-30 m over-all length	Industrial: purse seiners >30 m LOA
Cambodia	Shore to 20m depth	20 m to EEZ limit		
	Coastal small-scale with/without engine (5 HP to 50 HP engine)	Commercial: >50 HP		
Indonesia	Shore to 3 nm	3 to 7 nm	7 to 12 nm	>12 nm
	Small-scale: vessels <5 GT[3]/10 HP engine	Small-scale: vessels <25 GT/50 HP engine	Industrial: vessels <100 GT/200HP engine	Industrial: vessels >100GT/200HP engine
Malaysia	5 nm	5 nm to 12 nm	12 nm to 30 nm	30 nm to EEZ
	Traditional: artisanal, owner-operated vessels	Commercial: owner-operated trawlers and purse seines of <40 GT	Commercial: trawlers and purse seines of >40 GT, wholly owned and operated by Malaysian fishers	Commercial: deep sea fishing vessels >70 GT
Myanmar	Northern area: shore to 5 nm,	Outer limit of Zone I to EEZ		
	Southern area; shore to 10 nm	Industrial: vessels >30 feet or engine >12 HP		
	Coastal: vessels < 30 feet or engine <12 HP			
Philippines	Shore to 15 km	15km to EEZ limit		
	Municipal: vessels <3 GT or fishing not requiring the use of fishing vessels	Commercial: Small-scale - passive or active gear and vessels 3.1 GT to 20 GT		
		Medium-scale – active gear and vessels 20.1GT to 150 GT		
		Large-scale –active gear and vessels of > 150 GT		
Thailand	Shore to 12 nm	12 nm to EEZ limit		
	Small-scale: vessels <5 GT operating	Large-scale: vessels >5 GT		

[1] HP – horse power
[2] LOA – over-all length
[3] GT – gross tonnage

Country	Fishing Zone I	Fishing Zone II	Fishing Zone III	Fishing Zone IV
Vietnam	Northern and Southern areas: shore line to 30 m depth in, Central area: shore to 50 m depth Small-scale:, vessels with no engine or <40 HP engine	Limit of Zone I to EEZ limit Large-scale: engine >40 HP		

Source: Silvestre et al., 2003

The incidence of IUU fishing is as pervasive, if not more pervasive, in this part of the world than in others (Morton, 2003). It is difficult to estimate the extent of IUU fishing, and only a minority of the IUU fishing activities is checked. The state boundaries are difficult to patrol when they include undeveloped areas or islands of considerable distance from the mainland and city centres. It is not uncommon to have trespassing vessels make a U-turn and continue their illegal fishing activities after being chased off by national coast guards.

Surveillance, monitoring and control of fishing activities become even more complicated for distant and disputed fishing grounds at the centre of the South China Sea basin. Unfortunately, these areas are also reported to have a high biological productivity and diversity. The excess fishing effort and ensuing habitat destruction of the Spratly and Paracel Islands are a function of both the number of fishers that consider these areas part of their national boundaries, and the struggle of the coastal states to implement effective management of fishing activities.

The Dong Sha Atoll in the Paracel Islands provides an example. Morton (2002) reports that 2014 of the 7976 boats fishing around the 600 km^2 Dong Sha Atoll were unidentified. The difficulty to monitor and control fishing effort and destructive fishing practices has severely devastated the coral reef areas.

IUU fishing is no longer exclusive to trawlers and offshore fishing vessels. The more agile small-scale fishing boats have joined the ranks of IUU fishers with the availability of high-powered motorized crafts and active fishing gear. These fishers often employ destructive fishing methods such as the use of dynamite or cyanide to catch fish. Dynamite fishing is non-selective. It wipes out fish, regardless of species or size, and destroys the reef area within a few meters of the blast. Cyanide fishing is associated with the harvest of colourful fish for aquariums or for the live fish trade. Cyanide released from squirt bottles stuns the fish and kills the corals in which they take refuge (Halim, 2002).

Clearly, states by themselves with their limited monitoring, control and surveillance capabilities are unable to control IUU fishing particularly in distant and disputed areas. There is a need for international cooperation and pooling of resources to prevent further destruction, and to ensure sustainable harvesting.

3.4 Competition Over Straddling Stocks, Migratory Species, and Other Species with Complicated Life Cycles

The implementation of the EEZ may have intensified fishing pressure on fisheries, especially for stocks that occur both within the EEZs and on the remaining high seas. Highly migratory species and straddling stocks of tuna are most affected. The new entrants from coastal state fishing fleets do not necessarily displace distant water fishing vessels in the high seas, but actually add to the fishing effort. Aside from these commercial vessels, highly migratory fish stocks are also harvested by small-scale, near-shore, hook and line fishers, further aggravating the pressure on the resource.

Tunas and tuna-like fish are among the most valued and traded species group caught by commercial vessels in the South China Sea. Taiwan, Indonesia, Philippines and Thailand are among the top 20 tuna producing countries globally (Talaue-McManus, 1999). National policies to manage these species tend to encourage rather than control fishing effort, and have resulted in plans to increase the number of fishing vessels that operate in the high seas (Silvestre et al., 2003).

The management of straddling stocks and migratory species is focused on the control of the fishing activities of commercial vessels. Policy makers seem to ignore the fact that some of these straddling stocks and migratory species are actually caught by small-scale hook and line fishers, and that the numbers of these fishers are growing. Small-scale fishers are also now more capable of travelling to distant and disputed fishing grounds with their high-powered motorized boats. Their contribution to fishing effort for straddling stocks and migratory species has not been assessed thoroughly.

Species that have complex lifecycles may also be managed ineffectively because of the poor institutional fit between natural fish boundaries and EEZs. Species such as the groupers, croakers and hinds, as well as the commercial invertebrates are closely associated with benthic habitats and are more sedentary as adults, but at some point during their early lifecycle many of these habitat-associated species are in the water column for substantial periods (Brothers and Thresher, 1985). Also, many of them grow into juveniles after settling in nursery habitats such as mangroves and sea grasses before they migrate into new areas.

For some species, the adults remain sedentary for most of their lifetime. Intermittently, however, they will travel long distances to aggregate and spawn. They release their eggs and sperm into the water column and the larvae may be dispersed passively thousands of kilometres from their origin (Roberts, 2000) or retained (Cowen et al., 2000) through active swimming and local current patterns. This reproductive strategy increases the vulnerability of populations to fishing pressure and increases the possibility of local extinctions when the aggregation is heavily fished. Sustainability of the stocks is dependent on both the survival of a substantial percentage of the adult spawning aggregation and the larvae, as well as the availability of habitats for all stages of their lifecycle.

3.5 Degradation of the Environment, Connectivity and the Spatially Explicit Nature of Fisheries Management

The area and scale at which the biological and ecological processes that maintain fish stocks take place may be transboundary in nature, crossing the lines drawn by a country's EEZ.

An area that is highly dependent on another area for stock recruitment has to be managed differently from one that is primarily self-recruiting (Tuck and Possingham, 2000). When resources are interdependent or common between two states, several different local or national fishing fleets harvest from the same pool. Thus, management regimes in one area may be ineffective because of competing uses of the resource elsewhere. Such connectivity also has implications for the vulnerability of sink areas[4] when these areas that supply recruits experience massive damage either from anthropogenic or natural causes (Ablan et al., 2002). There are very few fisheries (Silvestre et al., 2003), and fisheries habitats (Burke et al., 2000), that are well managed, pristine, or only moderately threatened in the South China Sea. Where they remain, these areas should receive priority consideration, especially if they are important for more than one country.

Within a single large country, national policies based on experiences from one fishing area may be inappropriate for other areas some distance away. Discrepancies between natural resource boundaries and administrative boundaries demand an approach where management interventions and assessment activities are considered at nested scales.

It is of interest to note that the follow-up guidelines such as the UN Fish Stocks Agreement, the FAO Code of Conduct and other international agreements place greater emphasis on managing the harvest of fish and protecting the adult phase, and less on protecting the physical structures that provide essential habitats for other life stages of the fish to ensure long-term sustainability of these stocks.

For some fish species, survival before they finally recruit into a harvestable population, is dependent on the availability of suitable habitats and water quality. With the implementation of the EEZ, the protection of habitats and the rehabilitation of degraded areas has become the responsibility of coastal states.

Coastal development, land conversion, pollution, sedimentation and destructive fishing practices threaten most coastal habitats. The incentives and plans for development are determined at both the local and national scale. Enforcement and monitoring are commonly the responsibility of local governments or communities. It is, however, very difficult to establish the extent of the effects of habitat degradation. There is reason to believe that the consequences are not restricted to national EEZs, as in cases where a specific coral reef is the site for a spawning aggregation of fish, or where nutrients from large-scale aquaculture are transported to the waters of adjacent coastal states.

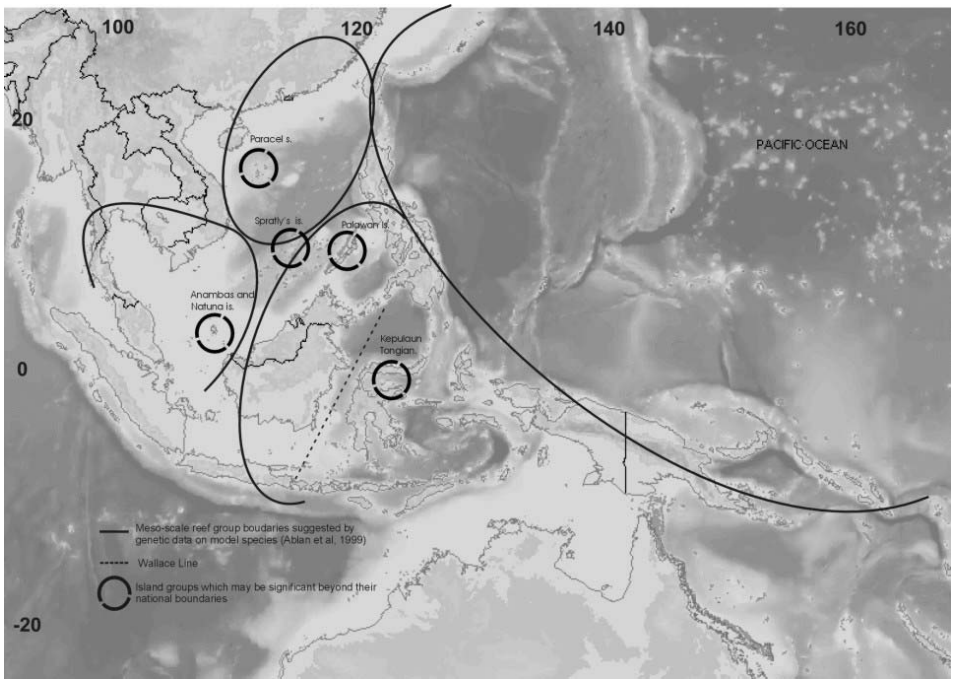
Oil spills are another issue to contend with. Cargo ships and oil tankers regularly ply the route across the South China Sea. Accidents can happen as these ships cross the

[4] Sink areas refer to the environment where juveniles eventually settle and mature and recruit into the fisheries.

shallow reefs and shoals in the centre of the basin[5]. Over 100,000 oil tankers and container and cargo vessels transit the Straits of Malacca and Singapore each year. These tankers carry over three million barrels of crude oil through the straits each day (Tookey, 1997). The South China Sea has also been reported to be an illegal dumping ground for ship sludge[6] (The Straits Times, 1995).

4. MESO-SCALE TRANSBOUNDARY UNITS FOR MANAGING FISHERIES IN THE SOUTH CHINA SEA

An initial effort by the WorldFish Center to define transboundary fisheries management units in the South China Sea identified four major sub-regions. The structure is based on evidence from genetic profiles of habitat-associated fish in five countries: Malaysia, the Philippines, Indonesia, Vietnam, and Taiwan (Map 9.1). Double gyres are formed within the South China Sea basin during the northeast monsoon (Morton and Blackmore, 2001).



Map 9.1. Suggested meso-scale transboundary units for managing habitat associated fisheries in Southeast Asia and reefs which may be significant beyond national boundaries (Source: Ablan et al., 2002)

[5] An example would be the oil-spill that occurred on 21 October 1994 when the tanker Thanassis A ran aground 700 km off the coast of Hong Kong spilling 10.9 million gallons of oil (Source: www.scu.edu.au/schools/edu/student_pages/1999/tryfell/OIL%20WEB/Largest%20Spills/Table%202.htm).
[6] Sludge refers to the waste left over after the holds of ships and oil tankers are cleaned.

This pattern coincides with the structure determined by genetic data suggesting that the pattern is persistent over ecological timeframes. These results are preliminary and work is on-going to further test the temporal and spatial stability of these patterns. Models and methods are being developed at the WorldFish Center in collaboration with fisheries agencies and research partners in the region to estimate the connectivity among fish populations and habitats using numerous data sets ranging from molecular markers and environment-sensitive shape analyses, to local and traditional knowledge of fish migrations.

'Resource Maps', like the one presented in Map 9.1, will become increasingly available and used in developing both regional and sub-national fisheries management strategies, which attempt to meet regional, rather than just national or local, needs and aspirations. Map 9.1 shows that, aside from Thailand, every coastal state in the region is represented in two or three sub-regions, and each sub-region is within the jurisdiction of at least two coastal states. A cluster of distant reef areas, which may be crucial to the maintenance of some fish populations, exists in the centre of the semi-enclosed basin. These reefs may play a valuable role in the lifecycle of fish populations or in providing recruits to more polluted areas closer to the mainland. These reefs are likely to be significant beyond their national boundaries, especially if they remain pristine and healthy. The Spratly Islands are located at the intersection of three sub-regions.

These types of maps allow managers and decision-makers to establish the appropriate scales for the implementation and formulation of policies relevant to fisheries based on biologically and ecologically defined management units. Managers can identify areas of critical ecological importance, including areas that may extend beyond national boundaries, and prioritise them for conservation and protection.

When layers of other spatially explicit information are added to this map, (e.g. information on marine protected areas, surface circulation patterns, incidence of oil spills, locations of spawning aggregations or nursery habitats, pollution plumes, vulnerability to erosion, coastal development, exploitation patterns, etc.), the resulting map can help improve the 'fit' of management institutions and bio-physical systems and facilitate effective regional resource management strategies that integrate fisheries with other activities within the EEZ. These maps can be used to identify enforcement 'hot spots', allowing a network of monitoring, control and surveillance teams from different states to act more effectively under the constraints of limited capabilities to enforce regulations. They may also assist in setting national fisheries research priorities.

Efforts to implement transboundary management institutions for fisheries may prove to be less effective if the issues and sites where cooperation is needed are not specific. Without knowledge of these meso-scale units for management in the South China Sea, it is very difficult to identify which states should cooperate, and the specific sites where cooperation is required.

Incentives for states to cooperate to manage fisheries jointly will also need to ensure that some objectives on their national agendas are achieved. To raise the profile of fisheries concerns in multi-lateral discussions, we must be able to articulate how development and management of fisheries could be rationalised *vis à vis* the requirements and interests of other sectors. This is more practical for bilateral or trilateral discussions on specific geographical areas. Finally, we will also need to find 'champions' who can effectively structure the political and institutional mechanisms to

accomplish what needs to be done, with due consideration of the best available scientific information recommended by Article 61(2) of Part V of the LOSC.

5. CONCLUSION

The current implementation of the LOSC and the EEZ by the coastal states in the South China Sea has focused primarily on fisheries management within national boundaries and less on transboundary cooperation. The efforts to restore and manage fisheries, however, will require strategies at nested scales (i.e. local, sub-national, sub-regional and regional) because (1) fish stocks and the ecological/biological processes that support them are transboundary in nature; (2) habitats that are crucial in the lifecycle of some fish species, or essential to the recovery of decimated fisheries, may exist beyond national boundaries; and (3) no single country has the capacity (human and financial resources) to monitor, control and survey their entire EEZ, particularly if they include distant and disputed islands.

The LOSC acknowledges the occurrence of shared resources and has made provisions for joint cooperation. For example, Article 61 highlights the need to adopt measures for interdependent and associated species, to foster scientific cooperation and data exchange, and the use of the best available scientific evidence to ensure proper conservation and management measures. Articles 63 to 67 emphasise cooperation for the conservation, exploration and exploitation, protection, and preservation of shared stocks. Several sections highlight the role of dialogue through national channels or international (i.e. sub-regional, regional or global) organisations to facilitate cooperation or to settle disputes. The duty to cooperate with respect to straddling and highly migratory fish stocks (Articles 63(2) and 64) has been given further substance by the 1995 UN Fish Stocks Agreement.

Intense and sustained effort and political will is required to address the challenges posed by the poor institutional fit between the boundaries defined by the EEZ and the natural distribution and migratory patterns of the fish. This can be achieved if provisions for joint cooperation in the LOSC are given due consideration, including the identification or establishment of an appropriate regional organisation to oversee the necessary arrangements.

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Chapter 10

Staking Their Claims: The Management of Marine Resources in the Exclusive Economic Zones of the Pacific Islands

Joeli Veitayaki
Marine Affairs Programme, University of the South Pacific, Suva, FIJI (*veitayaki_j@usp.ac.fj*)

1. INTRODUCTION

The 1982 UN Convention on the Law of the Sea (LOSC) was tailor-made for Pacific Island. These islands consist of 22 self-governing nations on about 500,000 square kilometers of land scattered across about thirty million square kilometers of the Pacific Ocean. The Pacific Island countries have declared their Exclusive Economic Zones (EEZs) and Extended Fisheries Zones (EFZs)[1] and are cooperating with each other to stake their claims. The countries are sharing limited expertise, experience, facilities, infrastructure, resources and markets but are achieving admirable success in effectively acting upon their rights within their EEZ and EFZ and are setting the pace in influencing international events and practice.

Pacific Island countries have formulated international management arrangements that safeguard the EEZ and EFZ and the marine resources within. The countries are using the EEZ and EFZ provisions to effectively stake their claims and are providing a good model for regional cooperation and collaboration based on the equitable pursuit of common economic goals, the peaceful use of ocean resources and the effective management of the marine environment. In addition, the Pacific Island states are working with distant water fishing nations (DWFNs) to establish management regimes covering the EEZs and EFZs and the high seas as promoted by the 1995 UN Fish Stocks Agreement.

The 1982 LOSC has gained widespread acceptance among the Pacific Islands. The small island developing states in the Pacific saw in the LOSC the opportunity to formalize a system for the use and management of the region's most important resource base, fisheries. The Pacific Islands countries were united in their support. In 1982, one of its members, Fiji became the first country in the world to sign and ratify the LOSC. By 2002, all of the 13 Pacific Island member-countries of the South Pacific Forum Fisheries Agency (FFA), the regional fishery organization for the coastal states of the western and central Pacific Ocean, had ratified the LOSC. In addition, these countries have formulated institutions and a collaborative system of management within the

[1] While EEZs establish sovereign rights of multiple uses of the oceans (see Chapters 1 and 2, this volume), EFZs are functionally limited to fisheries (Tsamenyi and Mfodwo, 1995: 126-129).

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 150–166.

framework of the 1979 FFA Convention that has been set up to protect their interests as coastal states. These cooperative management initiatives have taken into consideration the transboundary nature of the fisheries resource, and the peculiar position of Pacific Islands in terms of their limited financial resources, technology and capacity compared to their DWFN partners.[2] These reasons make it critical that regional institutional arrangements, such as those forged within the FFA framework, are promoted and additional initiatives developed.

The Pacific Island countries comprise 22 self-governing nations scattered over 30 million square kilometers of ocean. The land-mass of most nations are small (with the exception of Papua New Guinea, Solomon Islands and Fiji), with land making up just over 500,000 square kilometers of the total area, 83% of which belongs to Papua New Guinea. The EEZs and EFZs of the nations are enormous in comparison with the land area (Food and Agriculture Organization of the United Nations, 1984). Consequently, the responsibilities placed on these small island states to explore, exploit, conserve and manage their EEZs and EFZs have overwhelmed some of the countries. The Pacific Island countries also have to deal with DWFNs, straddling fish stocks and highly migratory species that constitute the main features of the region's fishery (Thistlewait and Votaw, 1992). A summary of Pacific Island countries is provided in Table 10.1.

Pacific Island countries can be grouped into four categories based on their natural resources, which in turn largely determine their capacity for long-term growth (Fairbairn, 1994). The first category includes the relatively large countries (Papua New Guinea, Fiji, the Solomon Islands, New Caledonia and Vanuatu), which account for 84% of the region's population, possess extensive areas for agriculture, and control large EEZs and EFZs. These countries have achieved a relatively high degree of economic diversification (forestry, agriculture, fisheries, tourism and minerals) and growth (Fairbairn, 1994). Several of these countries such as Papua New Guinea, the Solomon Islands and Fiji have been plagued by political strife in recent times. The second category can be termed the middle level countries, such as Samoa and Tonga, which have modest resource bases, limited agriculture, no exploitable minerals and limited tourism potential. The third group consists of countries that are remote and poor such as Kiribati, Tuvalu, Niue, Tokelau, Nauru and the Cook Islands which lack land-based resources and do not have the capacity to exploit their comparatively large EEZs and EFZs. The last category of countries includes those with special relations with the United States, Britain and France, which compensates for their otherwise poor economic prospects. Included in this category are Palau, Guam, the Commonwealth of the Northern Mariana Islands, American Samoa, French Polynesia and Wallis and Futuna. These countries have achieved living standards that are amongst the highest in the region due to the subsidies they are given by their developed country partners.

The Pacific Island countries are separated from each other by vast expanses of the Pacific Ocean. Their small economies and the varying institutional capabilities make economic development daunting (Veitayaki, 1996). The LOSC therefore was welcomed in the region because of the huge potential for economic development it provided to the countries. The LOSC formalized the Pacific Island countries jurisdiction over the resources in their vast EEZs and EFZs (Tarte, 2000). Seabed minerals, fisheries, ocean

[2] The main DWFNs in the region are the United States, Japan, Korea and Taiwan.

space, scientific research and critical ecological habitats are also pertinent to the sustainable development of the Pacific Islands.

Table 10.1. Information on Pacific Island countries

Country	***Status***	***Population (annual growth %)***	***Land (km^2)***	***EEZ/EFZ Area (km^2)***	***Member-ship***[3]
American Samoa	Unincorporated US territory	50,923 (3.7)	197	390,000	2,3,5
Cook Islands	Self-governing free association with NZ	17,400 (1.2)	240	1,830,000	1,2,3,4,5,6
Federated States of Micronesia	Self-governing free association with the US	100,520 (3.6)	702	2,980,000	1,2,3,4,5
Fiji	Independent republic	746,326 (2.0)	18,736	1,260,000	1,2,3,4,5,6
French Polynesia	Overseas territory of France	201,400 (2.5)	3,521	5,030,000	2,3,5
Guam	Unincorporated US territory	133,152 (2.3)	549	218,000	2,3,5
Kiribati	Independent republic	72,298 (2.2)	726	3,600,000	1,2,3,4,5,6
Marshall Islands	Self-governing free association with the US	49,969 (4.2)	720	2,131,000	1,2,3,4,5,6
Nauru	Independent republic	9,919 (2.2)	21.2	436,490	1,2,3,4,6
New Caledonia	Overseas territory of France	173,300 (2.0)	19,103	1,740,000	2,3,5
Niue	Self-governing free association with NZ	2,532 (-2.4)	258	390,000	2,3,4,5,6
Northern Mariana Islands	Commonwealth of the US	43,345 (9.5)	475		2,3,4
Palau	Independent republic	16,386 (2.2)	34.5	60,900	1,2,3,4
Papua New Guinea	Independent state	3,963,000 (2.3)	461,960	3,120,000	1,2,3,4,5
Pitcairn Islands	Dependency of Britain	65 (-0.6)	4.5	800,000	2,3
Samoa	Independent state	159,004 (0.3)	2,934	120,000	1,2,3,4,5,6
Solomon Islands	Independent state	350,550 (3.4)	29,785	1,630,000	1,2,3,4,5,6
Tokelau	Dependency of NZ	1,577 (-1.3)	12.1	290,000	2,3,6
Tonga	Independent monarchy	94,649 (0.5)	696.7	700,000	1,2,3,4,5,6
Tuvalu	Independent state	9,045 (1.7)	25.9	757,000	1,2,3,4,5,6
Vanuatu	Independent republic	150,864 (2.8)	12,189	680,000	1,2,3,4,5,6
Wallis and Futuna	Overseas territory of France	13,900 (1.3)	124	300,000	2,3

Sources: Douglas and Douglas (1994) and International Ocean Institute (1995).

[3] 1 – South Pacific Forum; 2 – Secretariat for the Pacific Community (SPC); 3 – South Pacific Regional Environment Programme (SPREP); 4 – Forum Fisheries Agency (FFA); 5 – South Pacific Applied Geoscience Commission (SOPAC); 6 – The University of the South Pacific (USP).

Pacific Island countries are favored by the LOSC. For example, under the provision for archipelagic states, these states are allowed to use archipelagic baselines, which are lines that join the outermost points of the outermost islands. The Pacific Islands were also convinced that the best way of handling their responsibilities under the LOSC was to work collaboratively with each other and to share their resources and capacity. This was considered the most appropriate way of safeguarding the region's interest and sovereignty while allowing the countries to meet their responsibilities under international law.

Many innovative international institutions and agreements have been formulated by Pacific Islands in an attempt to have effective control of the activities in their EEZs and EFZs. They work collaboratively to ensure the equitable sharing of the benefits derived from the exploitation of their EEZ and EFZ resources. Pacific Island countries are currently receiving licensing fees and new investment opportunities to develop their marine-based industries (Tarte, 2000). The countries are investing in their Monitoring Control and Surveillance (MCS) capacity. In addition, the countries are targeting a better share of the benefits associated with the use of their fisheries resources by formulating appropriate access conditions for DWFNs. In 1999, the Pacific Island countries earned about US$60 million dollars compared to US$15 million in 1982, a mere six percent of the US$2 billion tuna industry (Sydnes, 2001; Tarte, 2000). The countries are looking to use multilateral access agreements to improve this situation (FFA, 1994; 1999).

A multilateral approach has been used to address challenges such as transshipments, which are the transfer of catch between fishing vessels. Transshipments have been promoted to stimulate the growth of local industries and services in the countries but may not be the way to go to improve the situation. In other places, member countries have promoted joint ventures and the domestication of the industry. In other areas, the protection of marine biodiversity has resulted in the promotion of other economic activities such as ecotourism and bioprospecting.

2. MARINE RESOURCE MANAGEMENT INITIATIVES IN THE PACIFIC ISLANDS

Pacific Island countries have formed institutions and instruments to stake their EEZ and EFZ claims and to meet their responsibilities to explore, exploit, develop and manage all the resources within the region. The number of multilateral initiatives that have been formulated demonstrates the extent of the collaborative approach adopted in the region (FFA, 1994; 1999; Teiwaki, 1988). In addition to the regional initiatives there also are subregional agreements, which reflect subregional interests and peculiarities.

Among the international initiatives undertaken in the Pacific Islands are the 1979 FFA Convention, the 1987 Multilateral Treaty with the US, the 1989 Wellington Convention and the 1992 Niue Treaty (FFA, 1994; 1999). Some of these initiatives have been successful and have met with widespread acceptance while others have been less successful and less widely accepted. Analysis of the instruments and institutions that have been formulated by the Pacific Islands illustrate the different areas of focus. These

focus areas highlight the need to exert control, the need to improve the benefit ratio and the need to effectively manage the tuna stocks. In pursing these ideals, the Pacific Islands have decided to work collaboratively to ensure the equitable distribution of benefits and the effective engagement of their DWFN partners. By adopting a collaborative approach, the Pacific Island countries have effectively addressed their lack of capacity and resources.

2.1 The Forum Fisheries Agency Convention

The FFA Convention of 1979 established the FFA to spearhead the management and development of the region's fisheries resources, particularly the important tuna fisheries.[4] The Convention also established the Forum Fisheries Committee (FFC), the policymaking body, and a Secretariat, which is based in Honiara in the Solomon Islands. The FFA Convention provides the basis for the evolution of regional fisheries cooperation among the member countries. Article 5 of the FFA Convention outlines the main tasks to be addressed by the FFC:

> 2. In particular the Committee shall promote intra-regional co-ordination and cooperation in the following field:
> (a) harmonisation of policies with respect to fisheries management;
> (b) co-operation in respect of relations with distant water fishing countries;
> (c) co-operation in surveillance and enforcement;
> (d) co-operation in respect of onshore fish processing;
> (e) co-operation in marketing;
> (f) co-operation in respect of access to the 200 mile zones of other Parties.
> (FFA Convention, Article 5(2)).

All member countries are represented in the FFC, which meets annually to evaluate the FFA's performance and decide on its work plan. The FFA Convention was opened for signature in July 1979, six years after the commencement of UNCLOS III. It has been signed and ratified by all the FFA member countries listed in Table 10.1.

The FFA was negotiated and implemented so that Pacific tuna resources could be permanently managed for the sustained economic benefit of its members (FFA, 1999). The Pacific Island countries, including Australia and New Zealand, resisted pressure from DWFNs to give them membership in the agency (Sydnes, 2001: 792). According to the Pacific Island countries, it was important that they have their own agency that would assist them with advice and coordination in the volatile and competitive world of global tuna fisheries. Though contested by the DWFNs operating in the region, the FFA quickly gained the reputation of a competent tuna management organisation with high professional standards. These reputations have marked the many achievements of the FFA over the last two decades (FFA, 1994; 1999).

The FFA advises member countries on technical issues relating to fisheries management, negotiations of international instruments and multilateral treaties (Hoadley, 1994; FFA, 1999). The FFA now assists member countries with their domestic fisheries legislation, surveillance and enforcement operations, harmonisation of access licenses and resource management. In addition, the agency is spearheading the

[4] www.ffa.int/www/index.cfm

effort with the region to devise a management regime for the Western and Central Pacific region and surrounding high seas (Sydnes, 2001).

The membership of FFA is exclusively made up of representatives of Pacific Island countries, which allows for exclusive control of the organization. The FFA budget is funded largely by Australia. New Zealand, Canada, the European Union, China and the United Nations Development Programme provide additional funding. Some of the multilateral tuna resource management arrangements that have been negotiated within the framework of the FFA are reviewed below to illustrate the initiatives taken by the Pacific Island countries to protect and maintain their sovereign interests within their EEZs and EFZs (FFA, 1994; 1999).

2.2 The Regional Register

In May 1983, the Pacific Island countries established a Regional Register for Fishing Vessels, a cooperative form of exercising control over fishing operations in their waters.[5] Well aware of the importance of controlling DWFNs in their EEZs and EFZs, and of the physical and financial burden of regular surface and air surveillance, the FFA member countries agreed to this innovative control and enforcement alternative. The Regional Register for Fishing Vessels is inexpensive to operate, provides effective control of DWFNs, and transfers more of the responsibility for the management of fisheries resources to the users, who are provided with incentives for voluntary compliance with national laws and fisheries access agreements. Under the Regional Register agreement, the Pacific Island countries will not license foreign vessels unless the vessel is in good standing on the Register.[6]

All foreign fishing vessels in the Pacific Islands region are required to register. The boat operators or a member country, can submit properly completed application forms for registration to the Director of FFA, who enters the details of the vessel in the FFA's database. All vessels in the Register are given a registration number and are accorded good standing, which allows them to fish in the EEZ and EFZ of any member country provided they comply with the national fisheries laws and access agreements. Each participating state or fishing company must nominate a national correspondent with whom the FFA Director liaises.[7] Participating states provide the FFA with registration and licensing information and the FFA circulates updated registration information to member states.

Any participating member country may instigate the withdrawal of good standing for a vessel after it has fully investigated an alleged infringement, obtained an explanation from the vessel operator concerned, and found the vessel to be negligent. The FFA Director must notify the vessel operator when a withdrawal request for his vessel is being considered. Supporting documentation, including evidence of the alleged offense, response to the evidence by the vessel's operator, and a record by the relevant member country, is made available through the FFA.

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[5] See also the FAO website: www.ffa.int/

[6] Domestic fishing vessels do not need to be registered to qualify for a license according to Lodge (1998: 16, note 39).

[7] In the absence of such nomination, the Director shall use his normal channel of communication with the countries.

In 1990, a requirement for an annual renewal of registration was introduced to ensure that the Register include a more accurate count of the vessels fishing in the Pacific Islands region. In 1989 before the introduction of this procedure, some 2,260 vessels were listed in the Register, a number that included some vessels that were no longer fishing in the region. The addition of annual renewals has made the Register more streamlined and accurate.

Once a vessel's good standing has been withdrawn, the vessel retains that status even if it is sold, renamed or re-flagged. The withdrawal of a fishing vessel in good standing requires the acquiescence of at least ten of the member nations, and no dissenting responses. The Director of the FFA must notify all participating states accordingly and indicate when the withdrawal date is to become effective. The date of the withdrawal must be no earlier than 14 days after the notification date and stands unless an objection is received before that time by the Director of the FFA.

In early 1984, a member country requested the withdrawal of the good standing of a US purse seiner for allegedly fishing illegally, and the refusal of the ship's captain to submit to the legal process in the country where the incident took place. The fishing boat went to Hawaii where it was repainted and renamed in an attempt to circumvent the removal of the vessel's good standing. The FFA was apprised of these developments and continued to press for the withdrawal of the vessel's good standing. Realising that they were not going to successfully pass the vessel off as a new applicant, the owners decided to comply with the demands of the FFA. They went back to the country where the infringement took place and agreed to go to court to pay compensation for the vessel's illegal activities. The vessel owners paid a fine totaling more than US$1 million so that the vessel's good standing remained (Doulman and Terawasi, 1990). In another case in 1991, an unlicensed Taiwanese purse seine was photographed by an Australian surveillance plane inside Tuvalu's EEZ. The vessel owners paid US$75,000 to avoid the threat of blacklisting on the Register.

Reinstatement of good standing becomes effective upon the satisfaction of all outstanding requests. At this point, the country that first applied for the status change, requests the restoration of good standing. During this process, the FFA Director notifies all other FFA member countries. At this time, the FFA has withdrawn good standing for a vessel in only two instances, indicating the effectiveness of the Regional Register as a management and compliance measure. The prospect of a change in Register status has been sufficient to make vessel operators and owners comply with court orders or enter into settlement negotiations regarding the payment of compensation for infringements.

From September 1993 the DWFNs in the region, including the US, Japan, China, Taiwan and the Republic of Korea, were required to implement registration arrangements involving direct liaison with the FFA on matters relating to the Regional Register. All fleets have complied with the new arrangements, which include the payment of a US$100 annual registration fee. The Regional Register continues to be a highly effective enforcement mechanism. However, the challenge is to ensure that the Regional Register's listing of fishing vessels in the Pacific Island region is accurate. In 2003, approximately 1,200 vessels were listed in good standing on the Regional Register.

2.3 The Treaty on Fisheries between the Government of Certain Pacific Islands States and the United States of America

In 1987, the Pacific Island countries made history when they signed the Treaty on Fisheries between the Government of Certain Pacific Islands States and the United States of America commonly referred to as the Multilateral Tuna Fishing Treaty with the US. It was the most comprehensive fisheries access agreement in the world, and a unique achievement considering the US position on Article 64 of the LOSC on highly migratory fish.[8] Under the Treaty, the US recognized the coastal states' sovereign rights over fisheries resources within their EEZ and EFZ and accepted the responsibility to have US flagged fishing vessels pay for fishing licenses[9]. The Pacific Islands nations on the other hand, are exempted from the US Fishermen's Protective Act (FPA) and an export ban under the US Magnuson Act.[10]

The FPA provides the US Secretary of State with the power to compensate US tuna fishers whose vessels are seized for fishing without licenses in the EEZs and EFZs of foreign countries. The FPA also empowers the US Secretary of State to reimburse expenses using the assistance funding earmarked for that foreign state. The Magnuson Act, on the other hand, authorizes the imposition of an embargo on the import of fisheries products from any country that seizes a boat that is fishing for highly migratory species without the required fishing licenses (Sutherland and Tsamenyi, 1992:65). These two US domestic laws were central to international controversies in 1982 when the Solomon Islands confiscated the US purse seiner Jeanette Diana for illegal fishing within its waters (Kengalu, 1988).[11] After the bitter tuna-related disputes of this era, negotiating a multilateral fisheries treaty with the US Government was a major achievement for the Pacific Island countries.

The Multilateral Treaty marked the first time that the US acknowledged not only the right of coastal states over highly migratory species in their EEZs and EFZs, but also the need to pay for the right to fish for these highly migratory species. Provisions of the Multilateral Treaty include limited access to the EEZs and EFZs of Pacific Island nations subject to certain regulatory conditions and control. For example, US fishing vessels do not have access to all of the waters of the Pacific Island nations, but only to a limited area, which excludes internal waters, archipelagic waters and territorial seas.[12]

The conditions of access to the fisheries in the EEZs and EFZs of the Pacific Island countries include: the procurement of fishing license; permission to catch only tuna; use of only licensed purse seiners and adherence to the requirements of the Regional Register of Fishing Vessels.

The US Government pays the application and license fees for US flagged fishing vessels. The Multilateral Treaty imposes clear obligations on the US to ensure that US flagged fishing vessels comply with the terms of the Treaty. This measure is seen as an

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[8] Prior to this, the US position on the LOSC Article 64 did not recognize the rights of coastal states to highly migratory fish stocks within their EEZs and EFZs (Tsamenyi and Mfodwo, 1995: 144-146).

[9] Payments vary with catches. It is, however, notable that the US Government pays the major portion of the bill, according to Schurman (1998: 113), 14 of the US$18 million.

[10] See Tsamenyi and Mfodwo (1995).

[11] See footnote number 7.

[12] The internal waters, archipelagic waters and the territorial seas, according to the LOSC, are under the sovereignty of coastal states.

assurance for member nations that they will not be undermined in any way and that the US Government supports their management efforts. The Pacific Island member states are given the authority to enforce their own fisheries laws and regulations against any US fishing vessels that violate the terms of the Treaty. This condition is interesting because, the US, in committing not to impose an embargo, has nullified its domestic FPA and Magnuson Acts in its relation with the Pacific Island states (Sutherland and Tsamenyi, 1992).

Between 1988 and 1993, the US paid US$60 million for 60 purse seiners to fish for tuna in limited areas determined by the FFA. The access agreement has now been extended for two additional 10-year terms. With the first extension, the US paid FFA member countries US$18 million annually for 55 purse seine licenses, five of which were reserved for joint venture arrangements. The extension arrangement entered into force in June 1993. The number of licensed vessels in 1993/94 decreased to 40 from 44 in the previous year. The Treaty was again extended in 2002. All Pacific Island FFA member countries have adopted the amendments of the Extended Multilateral Treaty, which came into force in June 2003. The annual fee has increased to US$21 million per year for up to 45 purse seine vessels. As in the previous agreement, member governments share 15% of the revenues on an equal basis, while the remaining 85% is shared according to the distribution of catch within the EEZs and EFZs of member countries.

2.4 The Wellington Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific

The Wellington Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific (Wellington Convention) has its origin in the Tarawa Declaration of July 1989. Concerned about the vast increase in the number of Japanese, Taiwanese and Korean gillnet fishers in the Pacific Ocean in the 1980s, the FFA states signed the Tarawa Declaration banning driftnet fishing from the Pacific Island's EEZs, EFZs and surrounding High Seas. The Wellington Convention was the basis of the present UN Moratorium on Driftnet Fishing in the High Seas. The Wellington Convention was opened for signature in November 1989 and entered into force in May 1991. Protocols I and II were adopted and opened for signature in October 1990.

The Wellington Convention specifies the measures that should be taken with respect to driftnet fishing activities. The parties are urged to:

a) discourage the use of driftnets within the Convention Areas (within 10º North latitude and 50º South latitude and 100º East longitude and 120º West longitude), and
b) take measures consistent with international law to restrict driftnet fishing activities within the Convention area, including but not limited to:
    i) prohibiting the use of driftnets within areas under its fisheries jurisdiction
    ii) prohibiting the transshipment of driftnet catches within areas under its jurisdiction.

Each party may also take measures consistent with international law to

a) prohibit the landing of driftnet catches within its territory
b) prohibit the processing of driftnet catches in facilities under its jurisdiction
c) prohibit the importation of any fish or fish product, whether processed or not, caught using a driftnet
d) restrict port access and port servicing facilities for driftnet fishing vessels
e) prohibit the possession of driftnets on board any fishing vessel within areas under its fisheries jurisdiction (Wellington Convention, Article 3).

Nothing in the Convention shall prevent a party from taking measures against driftnet fishing activities, which are stricter than those required under the Convention.

Fourteen FFA member countries have signed the Convention. Nine member countries have ratified it but only eight of these countries have passed domestic legislation to implement the Convention at this time. The gillnet fishers, despite great initial resistance, are observing the ban. Driftnets are no longer used in the Pacific Islands because the countries were united in the effort to ban the use of this fishing method from their waters and surrounding pockets of high seas.

2.5 The Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region

The Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region was opened for signature in July 1992 and has been signed by most of the FFA member countries. The treaty entered into force in 1993 after receipt of the fourth ratification. The Niue Treaty formalizes the arrangement whereby the Pacific Island countries cooperate and rely on each other for the control and enforcement of their fisheries regulations within their EEZs and EFZs. Under the Treaty, those countries that have assisted in the development of surveillance capacity within the region, France, Australia and New Zealand, lead FFA member nations in their attempt to control fishing in their waters. French, Australian and New Zealand surveillance patrol flights are part of the region's management and conservation activities. The implementation of the Niue Treaty depends upon the establishment of subsidiary agreements on a bilateral, subregional or regional basis. The FFA provides assistance to member countries in the development of such subsidiary agreements.

The ban on transshipment (re-loading of catches) at sea was implemented in 1993 and has provided an additional source of revenue to Pacific Island states by directing such operations to the ports of coastal states. Shore-based transshipment has contributed significant income to FFA countries through registration, port transshipment fees and the provision of fuel, agency services, and travel expenses. In 1993, the ban on transshipment at sea provided approximately US$700,000 to FFA member countries while in-port expenses gave an additional economic boost to local economies. A purse seiner spends about US$10,000 per transshipment. In the second half of 1993, the 360 transshipment operations that took place brought in US$3.6 million. Improvements in supply and services at the local ports can easily earn US$10 million annually, which makes this practice quite valuable to Pacific Island nations.

The provision of Pacific class patrol boats by Australia in addition to the development of an automatic location communicator has greatly enhanced the capabili-

ties of Pacific Island countries to enforce their laws within their own EEZs and EFZs. In the near future, the system will provide for real-time display of locations and vessel activity providing a mechanism to monitor individual vessel and fleet operations within their areas. The capacity of the member states is expected to improve with the use of modern telecommunication facilities.

2.6 FFA Vessel Monitoring System Register

To improve monitoring and enforcement within the region, the Pacific Island countries agreed to establish the FFA's Vessel Monitoring System (VMS) Register during the 51st meeting of the FFC in 2001. The FFA VMS Register lists all vessels fishing in Pacific Island waters that carry an automatic location communicator. In 2002, a total of 798 vessels of all types were in the VMS Register. The FFA relies on the member countries and their DWFN partners to update the fishing agreement and licensing database to assist the member countries on their queries regarding fishing operations and fishing vessels access briefs in the region (FFA, 2003a).

The FFA continues to address the existing discrepancy in the number of vessels listed in the VMS and Regional Registers. This is the result of FFA's inability to persuade the member countries to maintain the fishing agreement and licensing database and their failure to force licensed fishing boats to have on board the FFA's VMS automatic location communicator. The FFA's VMS will only be fully effective if the member countries require all vessels licensed within their waters to carry the FFA's VMS equipment which should be switched on at all times while the vessel is within the region. Another pertinent issue that must be addressed relates to what member countries do when their flag vessels go outside their EEZ and EFZ (FFA, 2003a).

The Forum leaders in 2001 agreed that the FFA's VMS should be fully implemented by 2002.This was not achieved. However, some of the countries such as Vanuatu and Kiribati can now trace their vessels outside their EEZ. At the 53rd meeting of the FFC in 2003, the decision was made that automatic location communicators be carried on-board all the fishing vessels as a new requirement (minimum term and condition) of fisheries access to the EEZs and EFZ of member countries.

2.7 The Multilateral High Level Conference on Fisheries

In 1997, a seminal process began in Majuro, Marshall Islands with the first Multilateral High Level Conference on Fisheries (MHLC 1). During this event all the FFA member countries and nations whose fishing fleets operate in the waters of the Western and Central Pacific, agreed to develop and implement a mechanism for the conservation and management of highly migratory fish stocks in the region. The Majuro Declaration marked the first time that coastal states and DWFNs had come together to agree on a multilateral approach to manage the region's tuna resources throughout their migratory range. It was an unprecedented milestone, given the long history of conflict between the Pacific Island Forum Countries and DWFNs over the management of tuna stocks in the region. The initiative was also a significant contribution to the management of fisheries in the High Seas as well as adjoining EEZs and EFZs. By September 2000, at MHLC 7 (the seventh meeting), the FFA member countries and the DWFNs had adopted the

Convention for the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific Ocean (FFA, 2003b).

The 1995 UN Fish Stocks Agreement called for the better management of highly migratory and straddling fish stocks, and promoted principles such as the precautionary approach, protection of biodiversity and effective monitoring, control and surveillance. It prescribed that these provisions be developed through regional arrangements. At the meetings of the MHLC, the FFA member countries worked with the DWFNs to formulate management and conservation strategies for the tuna stocks of the Western and Central Pacific. There were some delicate moments and issues that threatened to derail the talks (Sydnes, 2001), but the Convention for the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific Ocean was a testament to the will of the parties to have a tuna fisheries management arrangement that promotes cooperation and coordination among all the stakeholders in the Pacific Islands.

The MHLC process provided a forum whereby Pacific Island delegations could voice their positions on resource management issues, and yet not be dominated by DWFNs. The FFA's position was that the overall total allowable catch (TAC) determined at the multilateral level should be divided among EEZs and EFZs and the High Seas. According to that system, coastal states have to negotiate among themselves how to divide the TAC among the EEZs and EFZs. Under this system, Pacific Island countries would be able to trade that portion of the TAC, which they could not utilize themselves with other fishing nations according to access arrangements. On the other hand, the Pacific Island countries expressed concern that their ownership rights be protected so as to provide leverage in negotiating access agreements. Other issues included the actual geographic scope and administration of the agreement. The Conference represents unprecedented cooperation among the Pacific Island states and their DWFNs partners.

2.8 The Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific

The Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific was adopted at the 7th MHLC in Honolulu in 2000. The primary objective of the Convention is the long-term conservation and sustainable development of the world's last remaining productive and valuable fisheries, which in 1999, provided approximately 1.7 million tons of tuna valued at $1.9 billion (Sydnes, 2001; Tarte, 2000). This Convention is the first international instrument successfully concluded since the adoption in 1995 of the UN Fish Stocks Agreement (Tarte, 2000). The regime promotes the compatible management of the resources within the EEZ, EFZ and High Seas. The principle that the right to fish should be accompanied by the responsibility to do so sustainably is incorporated into the Convention.

The Convention attempts to extend management over high seas fisheries. Before this, management had been restricted to the EEZs and EFZs of individual countries. Consequently, Pacific Island states that cooperated with DWFNs such as Japan, Korea, China, Taiwan and the US on the basis of bilateral and multilateral access agreements within their EEZs and EFZs, have now extended their cooperation to the management

of high seas fisheries. This is significant because all the management initiatives that have been undertaken up to this stage involved only the EEZs and EFZs of Pacific Island countries. On this occasion, it was clear that the Convention had to be formulated in accordance with Article 64 of the LOSC and the 1995 UN Fish Stocks Agreement, whereby the Pacific Island countries would cooperate with fishing nations in the management and conservation of highly migratory fish stocks within and beyond their EEZs and EFZs (Tarte, 2000).

The Convention also establishes a Commission, which establishes the management and conservation measures for the tuna fisheries in the Convention Area (Article 10). These measures include allocating the allowable catch and levels of fishing effort, adopting minimum standards for responsible fishing, and technological regulations. The major principles of the Convention include; the adoption of measures to ensure long-term sustainability of highly migratory fish stocks in the Convention Area, the promotion of optimum utilization, the emphasis on the use of best scientific evidence to maintain and restore stocks, the application of the precautionary approach, the assessment of the impacts of fishing and other environmental factors, the reduction of wastes, discards and the destruction of abandoned gear and the protection of the marine environment (Lodge, 2001). A Scientific Committee will be established to provide scientific advice and recommendations to the Commission and a Technical and Compliance Committee will be responsible for the implementation of and compliance with established measures (Articles 12-14). The Convention also includes enforcement measures such as boarding and inspection, port state responsibilities, vessel monitoring and an observer programme (Articles 25-28). These provisions are, to a large extent, based on practices established for the fisheries in the EEZs and EFZs of FFA member countries and the provisions of the 1995 UN Fish Stocks Agreement.[13]

The Convention was to enter into force 30 days after the deposit of the instruments of ratification by three states situated north of 20° N and seven states south of 20° N or after the 5th of September, 2003 if 13 instruments of ratification were received even if these ratifications are all from countries that are south of 20° N (Tarte, 2000; FFA, 2003b). The Convention formally entered into force on the 19th of June 2004.[14] A preparatory conference has been established between the negotiating parties to prepare for the establishment of the Commission.[15]

3. SUBREGIONAL TREATIES

The subregional treaties are nested in the framework of the FFA and are part of the attempt by these Pacific Island countries to better control common issues. These agreements administered by the FFA include the Nauru Agreement, the Palau Arrangement and the Federated States of Micronesia Arrangement for Regional Fisheries Access (FSM Arrangement).

[13] For a critical analysis of the agreement, see Aqorau (2001).
[14] www.ocean-affairs.com/
[15] On the work of the preparatory conference, see www.ocean-affairs.com/

3.1 The Nauru Agreement Concerning Co-operation in the Management of Fisheries of Common Interest

The Nauru Agreement Concerning Co-operation in the Management of Fisheries of Common Interest was concluded in November 1981 and entered into force in December 1982. The eight parties are the Federated States of Micronesia, Kiribati, Tuvalu, Marshall Islands, Nauru, Palau, Papua New Guinea and Solomon Islands. The objective of the Agreement is to establish a coordinated approach to the fishing of common stocks in the Fisheries Zones of the parties (Article 1).

To achieve this, the Parties to the Agreement established principles for granting priority to application by fishing vessels of the Parties, minimum, uniform terms and conditions of access by foreign fishing boats, standardized licensing procedures and co-operation in the fields of surveillance and enforcement. A significant feature of the Agreement is the direct linkage with the FFA Convention and the emergence of a regional custom relating to the laws governing fisheries enforcement.

The Nauru Agreement is a framework that promotes the implementation of subsidiary agreements. Two implementing arrangements have been concluded under the provisions of the Agreement. The first implementing agreement requires the parties to establish minimum licensing terms and conditions. The second implementing agreement provides for transshipment, reporting, maintenance of logbooks and the placement of observers on board fishing boats.

3.2 The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery

The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery (Palau Arrangement), entered into force in 1995. Article 6 prescribes the criteria for allocating fishing licenses. The Palau Arrangement is the only regional agreement in place that can control fishing pending a cap of 205 purse seine vessels allocated for domestic vessels of FFA member states. The Palau Arrangement imposes a cap on the number of purse seiners that may be licensed by the parties.

3.3 The Federated States of Micronesia Arrangement for Regional Fisheries Access

The FSM Arrangement, entered into force in September 1995. It established a mechanism whereby domestic fishing vessels of the parties are given preference to fish in each other's waters. The parties to the agreement are the Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea and Solomon Islands. The objectives of the Arrangement as stated in Article 2 are to:

a) cooperate to secure, for mutual benefit of the Parties, the maximum sustainable economic benefits from the exploitation of the tuna resources of the Western and the Central Pacific
b) promote greater participation by the nationals of the Parties in fisheries and assist in the development of national industries of the Parties

c) establish a licensing regime under which fishing vessels of the Parties may gain access to the waters within the Arrangement Areas on terms and conditions no less favourable than those granted by the Parties to foreign fishing vessels under the bilateral and multilateral access arrangements
d) establish and enforce agreed criteria to ensure that only those operations which are capable of providing genuine and quantifiable economic benefits to the Parties are eligible for licenses under this Arrangement
e) allow access to the exclusive economic and fisheries zones of the Parties by purse seine fishing vessels on terms and conditions which are consistent with the Palau Arrangement for the Management of the Western and Central Pacific Purse Seine Fishery and
f) further the objectives of the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest, 1982.

The FSM Arrangement is also an alternative pathway for securing a license for vessels that cannot be licensed under the Palau Arrangement. This is because once a vessel is in the Regional Register, it can apply for an FSM Arrangement license, which allows it to fish in any part of the waters of the parties.

4. THE OUTCOME OF RESOURCE MANAGEMENT INITIATIVES IN THE PACIFIC ISLANDS

Through the various regional and subregional initiatives, the countries of the Pacific Islands region are protecting and managing their marine fisheries resources. As custodians of one of the few regions in the world where tuna fisheries production is still increasing, the Pacific Island countries are not allowing their small size and limited capacities to hinder their control of their EEZs and EFZs and the fishery resources therein. Through innovative cooperative agreements, the countries have formulated management arrangements to safeguard the sustainability of the resources. In the process, the Pacific Island countries have earned the respect of DWFNs. The struggle has been long and demanding but member nations are beginning to see positive changes. For example, the moratorium on driftnet fishing is still in force. The FFA is well established and continues to explore new resource management arrangements. In addition, the preparatory conference for the new fisheries commission for the highly migratory fish stocks in the western and central Pacific Ocean (see above) is now negotiating with DWFNs such as Japan and Taiwan on multilateral arrangements similar to the one with the US and a Tuna Commission to spearhead the management of tuna fisheries within the region. In the meantime, research continues for an appropriate VMS system that can provide accurate position information for fishing vessels on a 'real time' basis.

The resource management initiatives in the Pacific Island countries are all aimed at protecting the integrity of the marine environment and the fisheries resources in the region (UNEP, 1987; Watling and Chape, 1992; SPREP, 1998; SPREP, UNEP and the European Union, 1998; Fiji Department of Environment, 1999). The cooperation in the

enforcement of regulations is illustrative of the commitment to protect the fisheries resources in the region. Fully aware of the importance of controlling DWFNs in their EEZs and EFZs, and the financial burden of regular surface and air surveillance, the member countries have formulated innovative control and enforcement alternatives. The agreement by the member countries that all fishing vessels within the region be listed in the Regional Register for Fishing Vessels is an attempt to exercise control over fishing operations in their waters. In addition, the decision to demand that all fishing vessels carry on board automatic location communicators and are listed in the FFA's VMS Register (see above), transfers more responsibility for the proper management of fisheries resources to the users, who are provided with incentives for voluntary compliance with national laws and fisheries access agreements.

The Pacific Islands countries are providing a good model for the effective control of their EEZs, EFZs and adjoining high seas based on regional cooperation and collaboration, economic needs, common goals, the peaceful use of ocean resources and the management of the marine environment. Among the consequences of this united stand has been recognition by the international community of their unique situation as well as assistance to these countries for their regional programs of action (UNEP, 1987; Watling and Chape, 1992; SPREP, 1998; SPREP, UNEP and the European Union, 1998; Fiji Department of Environment, 1999).

The cooperative work now adopted in the Pacific Islands is benefiting the national governments, some of which do not have the individual capacity to implement their obligations under international fisheries law. While the countries are cooperating in building and sharing capacity, there is also the need for effective action at the national level. Governments must demonstrate commitment by undertaking the tasks for which they are responsible (UNEP, 1987; Watling and Chape, 1992; SPREP, 1998; SPREP, UNEP and the European Union, 1998; Fiji Department of Environment, 1999). As more demands and higher expectations evolve, there will be problems unless the government agencies or ministries responsible for these activities are strengthened and given clear mandates. In addition, government departments must work with each other so that the international agreements to which their countries are party are properly followed through in their implementation.

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Section IV

A Changing Sea: New and Emerging Institutional Directions for the EEZ

Chapter 11

FAO'S Fisheries Programme and the Plan of Implementation of the World Summit on Sustainable Development[1]

Serge M. Garcia and David J. Doulman[2]
Fisheries Department, FAO, Rome Italy (*serge.garcia@fao.org and david.doulman@fao.org*)

1. INTRODUCTION

Fisheries have evolved and expanded rapidly over the past 50 years with fishers discovering and 'colonizing' the last of the world's oceans and seas. Confronted now with an almost universal situation of fleet overcapacity, overfishing, high levels of illegal, unreported and unregulated (IUU) fishing, low and declining catch rates, environmental impacts, poor economic returns, worsening public perceptions in the face of a growing world population and a mounting demand for food,[3] the fishery sector is searching for long-term sustainable solutions (Garcia and Newton, 1997).

To improve the state of marine capture fisheries and concurrently increase fish production, complementary actions on two fronts are required. This action requires the reduction of harvesting rates on wild resources through lower levels of fishing effort and an increase in low-impact aquaculture production. Moreover, supplementary measures are also needed to enhance and facilitate the recovery of marine fisheries. These measures should, as a minimum, include the protection of spawning and juvenile concentrations and critical habitats,[4] the development of alternative employment opportunities in coastal areas including in aquaculture, the reduction and suppression of fisheries subsidies, the eradication of IUU fishing, the strengthening of regional fishery bodies and the enhancement of fisheries monitoring, control and surveillance (MCS).

In this chapter we discuss the relation of the United Nations Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries (FAO Code of Conduct) to the World Summit on Sustainable Development (WSSD). We examine overlaps and synergies between the aims and strategies of the two instruments. Particularly, we focus on the role of the FAO in the implementation of the FAO Code of

[1] A first version of this paper was prepared for the Global Conference on Oceans, Coasts, and Islands, Paris, 12-14 November 2003.

[2] The views in this paper are those of the authors and do not necessarily reflect the views of FAO or any of its members. The authors are indebted to FAO colleagues including Kevern Cochrane, Dominique Greboval, Jacek Majkowski, Rebecca Metzner, Ross Shotton, Andrew Smith and Jeremy Turner for comments on the earlier version of this paper. However, the authors alone are responsible for any shortcomings in the paper.

[3] Total world demand for fish will reach 180 million tonnes by 2030 compared to the 130 million tonnes that is currently available (FAO, 2002a).

[4] For example, through designation of marine protected areas.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 169–193.

Conduct and the FAO international plans of action, and how this involvement of the FAO may help achieve the aims and timeframes set by the WSSD plan of implementation. As such, the chapter takes a global perspective on the political and institutional developments in international fisheries.

The 1982 UN Convention on the Law of the Sea (LOSC) underpins fisheries management both in the exclusive economic zone (EEZ) and on the high seas. The LOSC has been supplemented and extended by other robust international fisheries instruments in the post-United Nations Conference on Environment and Development (UNCED) period. These instruments have been adopted in a partially redundant process of international summits and meetings. The cross-cutting nature of the outcomes of some of these processes embody commitments that states are compelled politically to make but which they have difficulty implementing in practice because their national fishery administrations face human and institutional capacity constraints. This situation has created a growing and unprecedented burden for many countries, especially for developing countries.[5]

The 1995 FAO Code of Conduct[6] overarches activities in the fisheries sector in a comprehensive and integrated manner. The FAO Code of Conduct assembles, in a single instrument, the commitments and requirements of all major fishery instruments of relevance to fisheries. As a flagship instrument, FAO is committed to foster its full and effective implementation.

The 2002 Johannesburg Political Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development (WSSD plan of implementation) seeks to '…reinvigorate the global commitment to sustainable development…' (United Nations, 2003). It is broadly consistent with FAO's Strategic Framework for 2000-2015 (FAO Strategic Framework) (FAO, 1999a). Whereas FAO focuses primarily on hunger elimination, both the WSSD plan of implementation and the FAO Strategic Framework aim at alleviating and eliminating poverty, which the international community consider to be a major challenge facing humanity as it attempts to move towards sustainable development. Furthermore, both the WSSD plan of implementation and the FAO Strategic Framework recognize that integrated land and water resource management, and the sustainable use of fisheries resources can contribute substantially to poverty reduction and rural livelihoods.

FAO's main policy thrusts involve the development of sustainable agriculture, forestry and fisheries while addressing the linkages between poverty, hunger and environmental degradation. The 1996 and 2002 FAO World Food Summits and the 2000 UN Millennium Development Goals (United Nations, 2000) contemplate reducing hunger among the world's population by half by 2015. While sustainable agriculture is seen as the main instrument for achieving this objective, fisheries have a fundamental role to play.

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[5] These issues have been reviewed by Cochrane and Doulman (in press).

[6] The substantive articles of the FAO Code of Conduct address the general principles, fisheries management, fishing operations, aquaculture development, integration of fisheries into coastal area management, post-harvest practices and trade and fisheries research. The FAO Code of Conduct is a non-binding, voluntary instrument. It was purposely designed in that manner. Drafted in a legally-friendly format, the Code's provisions can be easily transformed into binding provisions and embedded into national legislation or regional agreements.

The WSSD plan of implementation has implications for the FAO programme of work in the various sub-sectors for which FAO has responsibility in the UN System. Many of the specific fisheries provisions within the WSSD plan of implementation reflect the commitments in the four FAO international plans of action (IPOAs) that were adopted within the framework of the FAO Code of Conduct prior to the WSSD (FAO 1999b; FAO, 2001). FAO's role in supporting national, regional and international efforts towards the implementation of the WSSD plan of implementation targets is an integral part of the organization's efforts to promote the implementation of the FAO Code of Conduct and, through it, other post-UNCED instruments.

2. FAO'S FISHERIES MANDATE

FAO implements its fisheries mandate through a range of different but interrelated activities that include: information, provision of neutral fora, policy advice, establishment of methodologies for development and adaptation, technology transfer, development and strengthening of human resources and institutions, and technical assistance.

FAO provides information that is continuous, comprehensive, neutral and as accurate as possible, to be used as the best scientific evidence to support policy development, decision-making, and fisheries performance analysis. This information is diverse; covering fisheries, fishing fleets, employment, production, trade, consumption, the nature and state of the resources, management systems, among other topics. In addition, *ad hoc* reviews, case studies and assessments are produced on issues such as fishing discards, IUU fishing, fishing fleet capacity, regional fishery bodies, subsidies and financial aspects of fisheries operations, small-scale fisheries management and user rights. The vehicles used for the dissemination of this information include special FAO publications, technical papers and circulars, CD-ROMs and web-based information systems. FAO also reports regularly to the United Nations on the implementation of the FAO Code of Conduct and other fisheries instruments and issues.[7]

FAO provides opportunities to fisheries, environment and development stakeholder groups to discuss principles, policies, and implementation issues, to develop more specific plans as required and to elaborate practical strategies to implement international instruments and commitments. These initiatives include conferences,[8] the biennial FAO Committee on Fisheries (COFI), the sessions, sub-committees and working groups of the ten FAO regional fishery bodies and the facilitation of a biennial coordination meeting of all regional fishery bodies[9] at the same time as the biennial session of COFI.

FAO mobilizes its multidisciplinary human resource capacity and competence to elaborate scientific advice in support of responsible fisheries. Policy advice is provided through normative work, for example, desk studies and reviews, case studies, and the

[7] For example, the UN Open-ended Consultative Process, the Commission on Sustainable Development and the United Nations General Assembly (UNGA).

[8] Such as the 2001 Conference on Responsible Fisheries in the Marine Ecosystem that was held in Reykjavik, Iceland.

[9] Regional fishery bodies include all fishery bodies, irrespective of whether they have fishery management functions. Regional fishery management organizations or arrangements are a narrower category referring to organizations that have fisheries management functions.

development of guidelines. FAO also provides advice directly to its members when requested. FAO elaborates and adapts approaches, manuals, software, tools and guidance useful for the implementation of the FAO Code of Conduct and other international fisheries instruments. Importantly, this work includes the elaboration of technical guidelines to support the implementation of the FAO Code of Conduct and the mounting of training courses. FAO works with its members in key areas to promote technologies that facilitate long-term sustainability in fisheries, improving fisher's livelihoods and safety at sea, as well as consumers' demand for diversified and safe food products.[10]

Human resource development and institutional strengthening in governments and regional fishery bodies to implement fishery instruments and sustainable policies and practices is a core task for the FAO. This is achieved through the development of information systems, training courses, promotion of fishing operations and practices that minimize undesirable impacts, improved post-harvest operations for safer products and the adaptation of regulatory and legislative instruments to cater to emerging needs. FAO collaborates with agencies in conducting national and international activities and provides technical and policy advice to members in relation to sustainable fisheries management.[11]

3. THE FAO CODE OF CONDUCT FOR RESPONSIBLE FISHERIES FRAMEWORK

The FAO Code of Conduct, together with its four IPOAs and the 2003 FAO Strategy for Improving Information on Status and Trends of Capture Fisheries (FAO Strategy), constitutes FAO's fisheries work programme. The FAO Code of Conduct seeks to facilitate structural adjustment within the fisheries sector as a means of putting it on a more sustainable footing. The IPOAs, reinforcing this process of adjustment, target particular problems that have been identified by the international community as requiring special attention. The IPOAs are implemented through national plans of action (NPOAs) that aim specifically to reduce the incidental catch of seabirds in longline fisheries (1999 IPOA-seabirds), improve the conservation and management of sharks (1999 IPOA-sharks), enhance the management of fishing capacity (1999 IPOA-capacity) and prevent, deter and eliminate IUU fishing (2001 IPOA-IUU). States are also urged to take steps to implement the FAO Strategies.

[10] Activities include the preparation of guidelines on fishery operations addressing ecosystem-related issues, the reduction of waste and the reduction of bycatch and discards, the assessment and dissemination of information and technical guidelines on MCS/vessel monitoring systems, the training of fishing vessel inspectors, the transfer of food processing skills and technology for better utilization of bycatch and low-value fish, value addition in fish processing and preservation, the promotion of fish nutritional attributes, and the improvement of fish quality and safety in conformity with the international standards and the promotion of international fish trade.

[11] Activities include the provision of assistance to sustainable shrimp aquaculture, technical guidelines on aquatic animal health management, assistance to safe transboundary movement of live aquatic animals, support to inland fisheries development and management, technical guidelines on good feed manufacturing practices, studies on integrated coastal zone management, and integrated agriculture-aquaculture development.

4. WSSD PLAN OF IMPLEMENTATION REQUIREMENTS

Fisheries issues are given a place of prominence in the WSSD plan of implementation. The plan recognizes the important institutional commitments and instruments developed as a response to the UNCED, the lack of progress with the improved use of resources, the socio-economic status of fisheries that lead to non-sustainability under present conditions and the need for more decisive implementation of fishery instruments within specified timeframes.

The WSSD plan of implementation framework of reference is the LOSC (Paragraphs 30a and 31b), UNCED (Paragraphs 1 and 30b), Convention on Biological Diversity (CBD) (Paragraphs 32 to 44) and the new instruments developed in the post-UNCED period (Paragraphs 31b) including the FAO Code of Conduct (Paragraph 31c).

The main objectives of the WSSD plan of implementation are the sustainable development of fisheries in a globalising world (Paragraphs 47 to 52), alleviating poverty in coastal and fishing communities (Paragraphs 7 to 13), improving marine safety (Paragraph 34) and halving the number of hungry people (Paragraph 38a). Achieving these objectives implies restoring stocks at least to their maximum sustainable yield (MSY) level (Paragraph 31a), the conservation of biodiversity for its sustainable use (Paragraphs 32 and 44), the maintenance of productivity and biodiversity of vulnerable areas within and beyond national jurisdiction (Paragraph 32a) and the elimination of destructive practices (Paragraph 32c).

The focus of the WSSD plan of implementation is not geographically defined in detail. Small island developing states (SIDS) are specified together with Africa, America and the Caribbean, Asia and the Pacific Islands, West Asia and Europe (Paragraphs 58 to 80).

The strategy of the WSSD plan of implementation is multi-pronged, involving the implementation of the FAO IPOAs (Paragraph 31d) and in particular the reduction of fishing capacity (Paragraph 31d), the elimination of IUU fishing (Paragraph 31d), increased research (Paragraph 36) particularly on harmful uses (Paragraph 36c), the precautionary approach (Paragraph 37), the ecosystem approach to fisheries (Paragraph 32c), the use of Marine Protected Areas (MPAs) networks (Paragraph 32c), the integrated management of water resources (Paragraphs 25 to 29) watersheds and coastal areas (Paragraph 32c), the reduction of land-based pollution (Paragraph 33), improved institutional frameworks (Paragraphs 140 to142) and participation (Paragraphs 168 to 170), the elimination of subsidies that contribute to IUU fishing and overcapacity (Paragraph 31f), human resource development and institutional capacity-building (Paragraph 31g), financial and technical assistance to developing countries (Paragraph 31g), strengthening of donor coordination and partnerships in order to improve developing countries' human resource and institutional capacity (Paragraph 31g) and the development of aquaculture, including small-scale aquaculture (Paragraph 31h).

The assessment of vulnerability and the reduction of risk are specified as special issues. This is accomplished, for example, through the application of the precautionary approach (Paragraph 37) including in relation to climate change (Paragraph 37e), global marine assessment (Paragraph 36b) and the special interests of coastal states (Paragraph 31e).

Specific timeframes are indicated for several activities and instruments. By 2004 two important results are foreseen. These are (1) the urgent development and implementation of national and, where appropriate, regional plans of action to give effect to the IPOA-IUU and the establishment of effective MCS of fishing vessels (Paragraph 31d) and, (2) the establishment of a regular UN process for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, to build on existing regional assessments (Paragraph 36b). By 2005 states are to develop and implement national and, where appropriate, regional plans of action, to put into effect the IPOA-capacity (Paragraph 31d). By 2010 there is to be a significant reduction in the current rate of loss of biological diversity (Paragraph 44). By 2012: A number of achievements are contemplated in an omnibus Paragraph (Paragraph 32c) including the development and application of the ecosystem approach to fisheries, the elimination of destructive fishing practices, the establishment of MPAs, including representative networks, the adoption of time/area closures for the protection of nursery grounds and periods, the adoption of proper coastal land use and watershed planning and the integration of sectors into marine and coastal areas management. By 2015 it is envisaged to halve the proportion of the world's people who suffer from hunger (Paragraph 38a), and to maintain or restore (fish) stocks to levels that can produce MSY (Paragraph 31a).

The WSSD plan of implementation's time-bound goals present the impression that the instrument is highly focused and action-oriented, in contrast to other post-UNCED international fishery instruments. However, a central problem is that the WSSD plan of implementation is exceedingly broad, touching on a wide range of fishery issues. Its text, resulting from a difficult international negotiation process, is somewhat chaotic with interconnected fishery-relevant provisions being diffused throughout.[12] It is difficult to locate in the WSSD plan of implementation aspects of fisheries not already addressed by the FAO Code of Conduct. The reverse is probably also true, even though the various issues are treated with unequal degrees of detail in the instruments. Consequently, the implementation of the WSSD plan of implementation is tantamount to the implementation of the FAO Code of Conduct.

5. IMPLEMENTING THE WSSD PLAN OF IMPLEMENTATION THROUGH THE FAO CODE OF CONDUCT

FAO plays a catalytic role in implementing the FAO Code of Conduct.[13] However, COFI has never indicated FAO Code of Conduct priorities for implementation. Conse-

[12] The WSSD plan of implementation addresses many aspects of responsible fisheries including international fishery instruments and mechanisms; high-level goals (reduction of hunger and the restoration of stocks); factors that lead directly to unsustainable fisheries (fishing capacity and IUU fishing) and associated factors (subsidies and poor gear selectivity); primary consequences of unsustainable resource use (overfishing); collateral effects (destructive practices, bycatch and discards, threats to biodiversity) and mitigating measures (MPAs and closed areas or seasons).

[13] The FAO Code of Conduct does not provide for the FAO to have a direct role in implementation. Rather, implementation should be undertaken by national fishery administrations.

quently, FAO is required to support the implementation of the FAO Code of Conduct, *in toto*, despite its limited resources.

5.1 Combating IUU Fishing: Implementing the IPOA-IUU by 2004

IUU fishing in EEZs and on the high seas jeopardizes national and regional fisheries management efforts, contributes to overfishing and impedes efforts to rebuild and restore depleted stocks. In recent years, the UNGA, FAO, agencies of the UN System and regional fishery bodies have expressed concern about the high and growing incidence of IUU fishing and the role of states that operate open registries for fishing vessels. This has led to greater efforts to secure concerted and effective action to eradicate IUU fishing.[14]

FAO was mandated by the 23rd session of COFI in 1999 to develop an IPOA to combat IUU fishing. Following its elaboration, the IPOA-IUU was endorsed by the 120th session of the FAO Council in June 2001.[15] The IPOA-IUU, a voluntary instrument, encourages action by states and regional fishery bodies against IUU fishing. It is innovative in a number of areas, particularly with respect to the use of internationally agreed market-related measures. Significantly, the IPOA-IUU calls on states to develop and implement national plans of action (NPOAs) to prevent, deter and eliminate IUU fishing not later than three years after its adoption (i.e., June 2004). In reflecting and reinforcing this commitment made at FAO, the WSSD plan of implementation specifies that NPOAs-IUU should be elaborated by the 2004 deadline.

At the COFI in February 2003 (25th Session) FAO members reported that IUU fishing is occurring in both marine and freshwater capture fisheries as well as in aquaculture. However, the extent, scope and impact of IUU fishing are not fully known. Members also reported on the type of IUU fishing being encountered: incursions into EEZs and inshore areas by foreign fishing vessels which impact small-scale fishers, unauthorized fishing in restricted areas, incomplete catch and effort reporting by industrial fleets, fishing by unauthorized vessels, lack of compliance by fishers with the terms of their authorization, under-reporting of catches, use of banned gears, fishing with explosives and poisons and the use of dams for the illegal netting of fish in inland fisheries.

COFI expressed concern about the continuing high and growing incidence of IUU fishing and the lack of effective implementation of the IPOA-IUU, reaffirmed the need for the global implementation of measures against IUU fishing, agreed that there is a linkage between fleet overcapacity and IUU fishing, endorsed a proposal by Japan that

[14] The UNGA has addressed the issue for more than a decade. Calls to combat IUU fishing have been made in international and regional fora since the early 1990s but the problem has been acknowledged to exist for a much longer period of time. Factors likely to contribute directly to IUU fishing include: the existence of excess fleet capacity, the payment of subsidies (where they maintain or increase capacity), strong market demand for particular products, and ineffective MCS.

[15] The FAO Council is the executive organ of the FAO Conference. Its functions are mainly related to the programme of work, budgets, and administrative and financial matters. The FAO Conference is the supreme governing body of the FAO, with 187 member-countries plus the European Community. The Conference determines the policies of the FAO, approves of the programme of work and budgets, and makes recommendations to member countries and international organisations. For further information, see www.fao.org/unfao/govbodies/

FAO should convene a technical consultation to review progress and promote the full implementation of the IPOA-IUU and the IPOA-capacity. It was agreed that this consultation should not lead to the re-negotiation of the IPOAs on capacity and IUU fishing. It was further agreed to convene a technical consultation to address substantive issues relating to the role of the port state to prevent, deter and eliminate IUU fishing.[16] Finally, it was recommended that IUU fishing be included in the agenda of the 32nd session of the FAO Conference with a view to calling attention of members to this issue.

The FAO Conference in December 2003 discussed IUU fishing in depth.[17] During the debate members reiterated that the continuing '…high and growing…' incidence of IUU fishing and that the lack of effective implementation of the IPOA-IUU had far reaching adverse consequences for the sustainable management of fishery resources and the livelihoods of small-scale fishers. This situation was aggravated by, *inter alia*, the use of vessels flying so-called 'flags of convenience' or 'flags of non-compliance', fishing overcapacity and lack of political will and/or resources for addressing IUU fishing problems effectively. It was noted that some states had shown a lack of commitment to meet their obligations under international law.

Regional fishery bodies and other international fora have addressed IUU fishing and its effects on their efforts to manage fish stocks sustainably.[18] Some of these organizations, independent of the FAO-led process to develop an IPOA-IUU, had already taken steps to combat IUU fishing. Regional measures to curb IUU fishing have focused on encouraging non-members to become parties to their organizations,[19]in addition to implementing new, and strengthening existing, policies, procedures and mandates, implementing lists of vessels with a view to gaining the greater cooperation of flag states and, finally, implementing market measures, primarily through catch documentation schemes that attempt to identify the origin of fish caught and influence its sale. The purpose of these market measures is to block or to make it more difficult to sell fish harvested by IUU fishers, and to encourage parties to strengthen their port measures so as to prevent the landing of IUU-caught fish. Such measures to combat IUU fishing have now been adopted by many regional fisheries management organizations. The number and distribution of organizations that have adopted anti-IUU fishing reflects the global nature of the problem.[20]

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[16] This Technical Consultation will build on the work of the FAO Expert Consultation to Review Port State Measures to Combat Illegal, Unreported and Unregulated Fishing that was held in Rome in November 2002 (FAO. 2002b).

[17] The FAO conference adopted Resolution 6/2003 concerning IUU fishing.

[18] A recent FAO study noted that IUU fishing was named by a number of regional fishery bodies as an important issue. There was concern about the level of unreported catches and the extent and impact of IUU fishing. One regional fishery body had attributed the non-reporting in its area of competence to the fact that the vessels concerned are flagged in open registry countries. However, under the threat of port state control measures and trade documentation schemes, some of these open registry countries are now cooperating and providing some data. It is apparent that in most cases, however, they would not apply management measures decided by the regional fishery body (Swan, 2003).

[19]The issue of regional fishery bodies accommodating new entrants should be substantively addressed as a means of minimizing the impact of IUU fishing by non-parties on their work.

[20] Regional fishery bodies that have taken measures against IUU fishing include the Commission for the Conservation of Antarctic Marine Living Resources, Commission for the Conservation of Southern Bluefin Tuna, Indian Ocean Tuna Commission, Inter-American Tropical Tuna Commission, International Convention for the Conservation of Atlantic Tunas, North Atlantic Salmon Conservation Organization, North East

In September 2003, an Expert Consultation on Fishing Vessels Operating under Open Registries and their Impact on Illegal, Unreported and Unregulated Fishing was convened by FAO in cooperation with the US (FAO, 2004a). The participating experts discussed the effects of IUU fishing on global fishery resources and lessons that might be learned from the experiences of flag states, including those operating open registries, which have implemented tighter control over the activities of their fishing vessels.

To support the implementation of the IPOA-IUU, FAO has also undertaken other *ad hoc* and routine activities that include awareness building about the deleterious effects of IUU fishing, provision of advice to individual countries on how to develop policies to combat IUU fisheries, human resource development and institutional strengthening in areas critical to combating IUU fishing, MCS, field projects with IUU fishing components, the provision of information about IUU fishing, the instigation of studies and assessments on IUU fishing, participation in international meetings dealing with IUU fishing and cooperation with regional fishery bodies.

Progress towards the implementation of the IPOA-IUU has generally been slow. At this time, according to information available to FAO it appears that only two countries[21] have developed NPOAs-IUU. Additionally, the European Community has adopted a policy on IUU fishing for the elaboration of NPOAs as part of its Common Fisheries Policy. However, in 2002 about 30 countries indicated to the FAO that they would elaborate NPOAs-IUU in the near future. Nonetheless, it is anticipated that few developing countries and only a limited number of developed countries will meet the June 2004 deadline for the development of NPOAs-IUU. FAO has scheduled a series of regional workshops to assist developing members countries to elaborate their NPOAs-IUU.[22]

Despite this slow progress in implementing NPOAs-IUU, some member countries reported to the 25th session of COFI that they have strengthened the actions they have taken against IUU fishing and are implementing the IPOA-IUU in an *ad hoc* manner. The actions that have been taken to reduce and eliminate IUU fishing include the ratification of international fisheries agreements, strengthening policies and laws to conform with the IPOA-IUU including tougher licensing/management arrangements and improved mechanisms to address flag state and port state responsibilities. In addition, some member countries have established controls over nationals working on vessels, taken measures to address 'flag of convenience vessels', imposed higher penalties and imprisonment for fishers who engage in IUU fishing, enhanced MCS and

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Atlantic Fisheries Commission, Northwest Atlantic Fisheries Organization, and Preparatory Commission for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. A summary of the resolutions adopted by these regional fishery bodies, which is impressive in terms of the number and scope, is presented in Doulman (2004).

[21] As of 30 January 2004, only Spain and the US had developed NPOAs-IUU.

[22] In November 2003, in Kariba, Zimbabwe, FAO held its first Regional Workshop Report on the Elaboration of National Plans of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing – Southern and East Africa Subregion. The purpose of the workshop was to assist countries in the southern and eastern African region to develop capacity so that they will be better placed to elaborate national plans of action to prevent, deter and eliminate IUU fishing (NPOAs–IUU). The Workshop addressed the IPOA–IUU in detail and the technical guidelines that had been developed to support the implementation of the IPOA–IUU. The workshop participants also examined two case studies, identified key issues relating to the NPOA–IUU, which is the vehicle through which the IPOA–IUU will be implemented by countries. Similar workshops for other regions are scheduled for 2004 and 2005 (FAO, 2004b).

the mandatory implementation of vessel monitoring systems, seizure and destruction of catch resulting and fishing gear being used for IUU fishing, tighter catch reporting, enhanced observers' programmes, stronger regional cooperation through regional fishery bodies, certification programs to trace the origin of fish, the prohibition of certain types of landings, and promotion of fishers' associations and awareness building among stakeholders about the effects of IUU fishing.

However, the outlook for the implementation of the IPOA-IUU is not overly optimistic. Many countries, irrespective of their level of development, are having difficulties in elaborating their NPOAs-IUU. Countries often lack the required expertise and resources to undertake the task. This situation will not change in the short term.

5.2 IMPROVING SHARK FISHERIES MANAGEMENT: IMPLEMENTING THE IPOA-SHARKS BY 2004

The issue of shark conservation and management was addressed at the 21st session of COFI in 1997. FAO members expressed the view that the conservation and effective management of sharks should be further examined. This action led to the convening of FAO consultations to develop the IPOA-sharks, which was adopted at the 23rd session of COFI in 1999 and endorsed by the FAO Council in June 1999. While this IPOA is not specifically mentioned in the WSSD plan of implementation, it is referred to implicitly in its generic request (Paragraph 31c) to implement the four IPOAs concluded within the FAO Code of Conduct framework. The IPOA-sharks is directly relevant to the WSSD plan of implementation recommendation to reduce impacts on biodiversity (Paragraph 32a).

As part of their efforts to implement the IPOA-sharks some countries have undertaken assessments of the status of shark stocks. These 'benchmark' studies are necessary for the elaboration of NPOAs-IUU. Nonetheless, in the course of discussions at the 25th session of COFI in 2003 some members advised that their efforts to develop NPOAs-sharks had not progressed. Several members indicated that a lack of technical assistance[23] had hindered progress with implementation while other members noted that they did not yet have enough data to complete their assessments.

Some regional fishery bodies have been assessing shark stocks in their respective areas. The Inter-American Tropical Tuna Commission has addressed the issue of shark catches in the tuna fisheries in a 1999 resolution on bycatch. The Northwest Atlantic Fisheries Organization and the International Commission for the Conservation of Atlantic Tunas have undertaken assessments of pelagic sharks. While most regional fishery bodies deal with fisheries that impact shark stocks, some of these organizations do not have a specific management mandate for these species.

FAO's activities in support of the implementation of the IPOA-sharks have mainly involved the preparation of publications designed to promote more responsible fisheries. Direct support to the field implementation of NPOAs-sharks has been limited by a lack of funds and technical capacity in countries. Assistance in the elaboration of

[23] Only two countries sought FAO assistance in 2003 to elaborate NPOAs-sharks.

NPOAs-sharks has been provided to several countries that permit targeted shark fisheries or where tropical longline fisheries are prominent.

The international community continues to be concerned about the lack of progress with the implementation of the IPOA-sharks and the outlook for shark stocks. Information available to FAO indicates that the status of many shark stocks continues to deteriorate. This situation can only be remedied by reducing the fishing mortality imposed on these species. Such a reduction requires countries to undertake management actions such as reducing fishing effort, closing fishing areas, introducing closed seasons, cancelling fishing licences and restricting bycatch.

5.3 Global Marine Assessment by 2004

Recognizing the need for objective, comprehensive and timely information on the state of the ocean environment, including its living resources, the WSSD plan of implementation requests a '…regular UN assessment of the marine environment including socio-economic aspects, both current and foreseeable, building on existing regional assessments…' (Paragraph 36b). The UN Division of Ocean Affairs and the Law of the Sea (DOALOS) is the lead UN agency for this activity, but other UN agencies dealing with ocean issues are involved. In late 2003 it was proposed that the terms of reference of the Oceans and Coastal Areas Network, be broadened to include the responsibility for the coordination of global marine assessments.[24]

FAO has participated actively in UN debates relating to global marine assessments. Together with other UN agencies, FAO has supported the proposal that the Joint Group of Experts on Scientific Aspects of Marine Environmental Protection[25] be charged with the peer review mechanism of the assessment.[26] FAO is committed to contribute its regular analysis on the state of world fisheries resources and aquaculture as well as information available in the Fisheries Global Information System to this global marine assessment process. The UN Atlas of the Oceans has also been mentioned as a potential element for global marine assessments.

[24]Since the abolition of UN Administrative Committee on Coordination-Subcommittee on Oceans and Coastal Areas by the UN Commission on Sustainable Development, inter-agency collaboration has been *ad hoc* and less effective than previously. FAO has actively collaborated, formally through the UN System Chief Executive Board for Coordination and informally through interactions with DOALOS and the International Oceanographic Commission, in the discussions on the establishment of the successor mechanism to the UN Administrative Committee on Coordination-Subcommittee on Oceans and Coastal Areas. FAO will participate in the Oceans and Coastal Areas Network.

[25] The Joint Group of Experts on Scientific Aspects of Marine Environmental Protection is an independent scientific institution established by the UNGA.

[26] In order to undertake the task, the Joint Group of Experts on Scientific Aspects of Marine Environmental Protection is being reorganized and strengthened and FAO has collaborated with other UN agencies in the development of a new memorandum of understanding among partner agencies, a Strategic Vision and Implementation Plan and technical advice in support of its advisory role in the envisaged Global Scientific Panel of the global marine assessments process.

5.4 Coming to Terms with Fishing Capacity: Implementing the IPOA-Capacity by 2005

The management of fishing capacity is central to sustainable fisheries development. The reduction of capacity and its maintenance at an optimum level would decrease overfishing and associated environmental impacts and improve the economic performance of fleets.

The 23rd session of COFI in 1999 adopted the IPOA-capacity. It was endorsed by the FAO Council in June 1999. The WSSD plan of implementation recognizes the need to urgently develop national and, where appropriate, regional plans of action to reduce fishing capacity and urges that the 2005 timeframe, as specified in the IPOA-capacity, be respected.

Central to the issue of overcapacity is the question of whether and how the subsidies that maintain fleet sizes should be reduced on the basis on resource and economic considerations.[27] Additional work is required to determine the effect of subsidies on fleet capacity as well as the linkage between subsidies, fleet capacity and IUU fishing. The WSSD plan of implementation calls for the elimination of subsidies that contribute to overcapacity and IUU fishing. FAO has been working on fisheries subsidies since 1999 and will widen its assessments in line with the needs stated in the WSSD plan of implementation. However, while generally recognized as contributing to fleet overcapacity and IUU fishing in industrial fisheries, subsidies remain a highly controversial issue.

Since its adoption, FAO has taken steps to implement the IPOA-capacity at national and regional levels. In addition, FAO has developed technical documentation on the measurement, assessment and policy aspects related to the management of fishing capacity. FAO has also been working with some regional fishery bodies to assess issues and develop policies for the management of fishing capacity.[28] In 2003 FAO also started a major initiative on the management of tuna fishing capacity. This three-year project is being implemented in collaboration with the regional fishery bodies responsible for tuna management.

In 2001, about 30 FAO members reported to COFI that they had begun preliminary assessments of their national fishing capacity. The analytical methods used included the measurement of fleet capacity, assessments of fishing permits and licenses, selected analyses of capacity utilization and the developments of indicators of excess capacity. In their effort to maintain or reduce capacity, members reported the use of the following management methods: the application of individual transferable quotas, the use of restrictive entry, vessel and permit buy-out, the prohibition of subsidies to increase fleet capacity, and the determination of fishing capacity requirements by the fishing industry itself in light of their quota holdings.[29]

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[27] FAO has undertaken considerable work on subsidies (FAO, 2000; FAO, 2003a).

[28] The IPOA-capacity is being addressed by the Inter-American Tropical Tuna Commission, General Fisheries Council for the Mediterranean, International Baltic Sea Fisheries Commission, International Commission for the Conservation of Atlantic Tunas, International Pacific Halibut Commission, Commission for the Conservation of Southern Bluefin Tuna, Southeast Asian Fisheries Development Center, and the Sub-regional Commission on Fisheries. It has also been endorsed by the North Atlantic Salmon Conservation Organization.

[29] Japan reported that it had scrapped the equivalent of 20% of its large-scale tuna longline fishing vessels in 1999 and had initiated resource rebuilding plans for individual species.

At the 25th session of COFI in 2003, participants discussed fishing capacity, including the IPOA-capacity. COFI agreed that trenuous efforts should be made to control fleet capacity, particularly that of large-scale fishing vessels, and, as appropriate, to implement measures to reduce overcapacity and prevent it from migrating to other fully exploited or overexploited fisheries. It further noted the need to monitor fleet capacity of large scale fishing vessels on a global basis and endorsed a proposal by Japan that FAO should convene a Technical Consultation in 2004 to review progress and promote the full implementation of the IPOA-IUU and the IPOA-capacity.

In promoting efforts to address capacity issues, FAO has developed methodologies dealing with the measurement and management of fishing capacity, conducted several case studies on the management of fishing capacity, conducted and participated in meetings and workshops in support of the implementation of the IPOA-capacity, undertaken a review of vessel buyback schemes, and provided technical assistance to several members and regional fishery bodies.

The outlook for the management of global fleet capacity is influenced by past investments in fleets and current policies to reduce capacity. The global fishing capacity boom developed in the 1950s and extended into the early 1990s. This process is now bottomed out, but due to the anticipated 30-year life cycle for larger fishing vessels (greater than 100 tonnes), the impact of the previous expansion is still being felt.

In 1991, the number of such fishing vessels peaked at 26,000 vessels worldwide. Since then it has decreased to about 22,000 vessels. The number of newly built large vessels has decreased from about 2,000 per year in the 1970s to about 300 per year at present.

The present average age of the world fishing fleet is currently about 24 years compared to an anticipated lifespan of 30 years. If the building rate of larger vessels does not increase significantly, it is expected that the world fleet size of these vessels will decrease substantially in the next two decades. However, excess vessels will remain mobile and greater movements from legal to IUU fishing can be anticipated until 2010. Despite the decrease in the numbers of larger vessels that are capable of fishing on the high seas or in the jurisdictions of other states, there has been a consequent offsetting increase in the number of smaller fishing vessels (less than 100 tonnes). These smaller vessels have targeted the resources within their own national EEZs. It appears that it is this sector of the fleet that is now contributing more intensively to global fishing fleet capacity.[30]

5.5 Reducing Biodiversity Loss by 2010

The greatest threat to biodiversity from fishing activities concerns the induced mortality of non-target species incidentally caught as bycatch, which may or may not be discarded, and which are not normally managed. The level of impact is particularly high for many endangered species. Efforts to reduce bycatch in all fisheries are encouraged. Bycatch can be reduced by limiting the total fish harvest and/or fishing capacity, improving gear selectivity[31] and by implementing practices such as temporary area closures and MPAs. Efforts should also be made to protect critical living habitats such

[30] Personal communication from Andrew Smith, Fisheries Department, FAO, Rome.
[31] For example, by using square mesh, bycatch excluding devices, etc.,

as coral reefs and sea-grass beds that support not only fishery resources but also a high biodiversity.

FAO has been working to reduce biodiversity losses in a number of ways. Initiatives have included support for the implementation of the IPOA-seabirds that is particularly relevant to temperate and cold region fisheries where the bycatch of seabirds is most problematic (Brothers et al., 1999), support for the implementation of the IPOA-sharks, implementation of a Global Environment Facility (GEF)-funded bycatch and discards project, and collaboration on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in relation to commercially exploited aquatic species.[32]

FAO's work concerning the IPOA-seabirds has demonstrated that collaboration between environmental non-governmental organizations, the fishing industry and national authorities is effective and could serve as a model for future efforts. In general, experience has shown that cases which involve the adoption of new technologies and where the bycatch has no commercial value, bycatch problems can be actively addressed and resolved with minimal delay. In contrast, experience with efforts to implement the IPOA-sharks has shown slow progress. This is because countries are constrained by a lack of human resources and institutional capacity, the technological solutions are not immediately evident, and the bycatch of sharks is commercially valuable.

5.6 Ecosystem Approach and Related Issues by 2010

The WSSD plan of implementation addressed the ecosystem approach in general and specific elements of it as well.

5.6.1 Ecosystem Approach to Fisheries

Ocean ecosystems, including coastal lagoons and estuaries, coastal shelves and open oceans cover a very large part of the Earth's surface and, in addition to goods, services and amenities, sustain the production of fisheries and aquaculture. These ecosystems yield some 100 million tonnes of fish per year (approximately 85 % from wild capture fisheries and 15 % from aquaculture production) and provide a livelihood for hundreds of millions of people. Marine ecosystems are unavoidably affected by fishing activities that selectively remove a portion of the natural productivity for human subsistence and development. Adding to this, overfishing and destructive fishing practices substantially impact these ecosystems, necessitating that corrective and sometimes urgent actions be taken.

Coastal and marine ecosystems are used for purposes other than fishing. These uses include conservation,[33] forestry,[34] and coastal human settlements. In addition, marine environments provide the ultimate terminal sink for marine and continental

[32] FAO members and CITES parties are discussing the development of a memorandum of understanding between the two organizations. However, substantial differences of opinion exist regarding the roles of the two organizations in relation to commercially exploited aquatic species, and this has so far hindered reaching an agreement on the memorandum.

[33] For example, coastal wetlands that have been designated as conservation areas.

[34] For example, mangroves.

pollution.[35] However, the sustainability of fisheries, the quality of seafood and the food security of many highly fish-dependent populations are at risk. This precarious situation for fisheries and natural resources was recognized by UNCED. Consequently, an ecosystem approach to management, as reflected in Agenda 21, has been a focal point of all major international fishery instruments concluded since 1992.

The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, jointly organized by Iceland and the FAO, sought to gather and review the best available knowledge on marine ecosystem issues, identify means by which ecosystem considerations can be included in capture fisheries management, and identify future challenges and strategies. The Conference adopted the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem that*, inter alia,* requested the FAO to develop guidelines for the implementation of the ecosystem approach to fisheries (EAF). The Declaration was endorsed by the FAO Council and Conference in 2001. The WSSD plan of implementation proposed a non-demanding request with respect to EAF, requesting the international community to '…encourage the application of the ecosystem approach by 2010…'

The EAF is a complex framework, embracing all of the principles of sustainable development and natural resource management. Importantly, the EAF addresses many of the fisheries issues that have been raised over the last 50 years including habitat degradation, natural variability impacts on production, climate change, overfishing, destructive fishing, discards, change in species composition, uncertainty and risk. Furthermore, the EAF proposes to implement comprehensively the instruments and approaches developed since the 1950s such as precaution, sustainability indicators, participation, decentralization, user rights, user pays principle, integrated management and protected areas (Garcia et al., 2003; Ward et al., 2002; FAO, 2003b).

It is difficult to report on initiatives taken at national or regional levels to implement the EAF. Ecosystem considerations are explicit in many national fisheries management frameworks.[36] Since the EAF, as agreed at the Reykjavik Conference, is an extension of conventional fisheries management and since the introduction and effective implementation of the considerations listed in the previous paragraph are likely to be progressive, there will always be degrees of implementation in practice. As a result, it will be difficult to list countries and fisheries in which the EAF has been implemented comprehensively. Most of the models used to elaborate scientific management advice are rooted in single-species approaches. Multi-species approaches have been used but these applications fall short of the EAF requirements. Nonetheless, the EAF has been adopted and steps are being taken to implement it. Scientists and managers have found themselves in a situation where a political commitment was made to the EAF well before its practical implications were understood.

The 25th session of COFI considered the implementation of the EAF to achieve responsible fisheries and to restore fish stocks and the marine environment. The COFI in its deliberations noted that many members were already addressing several aspects of the EAF and agreed that although the approach needed further clarification, many of its aspects could be introduced into current fisheries management practices. It was sug-

[35] Even deep ocean and polar seas are now affected by pollution and at-sea dumping practices, seriously questioning the sustainability of present practices.
[36] For example, in Australia, New Zealand and the US.

gested that FAO, through case studies on small-scale fisheries, develop and adopt an EAF 'toolbox' which would outline rapid appraisal techniques, participatory processes, conflict resolution techniques, integrated resource, assessment and management methods. The COFI also supported the role of the FAO in facilitating the process of adoption of the ecosystem approach as agreed during WSSD and suggested closer cooperation on the approach with regional fishery bodies.

FAO's activities in support of the implementation of the EAF are focused on the issues raised in the Reykjavik Declaration, taking note of the renewed emphasis arising from WSSD. These initiatives are designed to promote the strengthening of national administrations to more effectively address EAF issues, conceptual development including the development of technical guidelines under the FAO Code of Conduct, international collaboration with the UN and other agencies, participation in and coordination of EAF-based projects and the dissemination of information about the EAF.

FAO will continue to develop new initiatives designed to facilitate the implementation of the EAF. Some of these initiatives include the development of a 'toolbox' for the implementation of EAF (discussed previously), evaluation of the use of MPAs and reserves/no-take zones, execution of a project on the interactions between marine turtles and fisheries within an ecosystem context, execution of a global project for human resource development and institutional capacity-building for the EAF. Other FAO initiatives that further the EAF include the development and execution of a GEF-funded regional project for the Management of the Canary Current Large Marine Ecosystem, participation in the GEF-funded Benguela Current large marine ecosystem project, enhancing collaboration among governments, industry, fishers, civil societies and the scientific community to implement the EAF, further development and testing of a system of ecosystem indicators and reference points, and enhancing cooperation among regional fishery bodies.

In varying degrees countries are implementing the EAF through their efforts to manage fisheries on a sustainable basis. However, catalytic activities are needed to further promote the implementation of the EAF.

5.6.2 Eliminating Destructive Fishing Practices by 2012

Destructive fishing practices result from the use of otherwise acceptable gear on inappropriate habitats, leading to their long-term damage or destruction. Such practices also result from the use of destructive gear, explosives and poisons. These practices are very often banned under national legislation but continue to be used because enforcement is lacking or limited. The WSSD plan of implementation foresees the elimination of these practices by 2012.

As destructive fishing practices are often illegal, they tend to be opaque and poorly documented. The extent and trends over time of these fishing practices are generally unknown. FAO members have prohibited these practices in the FAO Code of Conduct. FAO has encouraged the systematic introduction of these provisions when reviews of national fisheries legislation are undertaken. However, the main problem is one of enforcement and FAO has no specific activities beyond assisting countries to improve their MCS capabilities. In the longer term, the disappearance of these practices will be dependent on progress with the eradication of poverty in coastal communities, the assurance of food security and greater community-based fisheries management.

5.6.3 Establishing Marine Protected Areas by 2012

The WSSD plan of implementation foresees the establishment of MPAs, including representative networks by 2012.[37] MPAs have a role in biodiversity conservation, and over the last decade they have been advocated by environmentalists as fisheries management tools.

An important issue concerning MPAs is that they are also an instrument for the re-allocation of ocean space and resources away from fishers to other uses such as conservation, science and tourism. Because of these allocative ramifications, this process should be undertaken in a transparent manner. An additional issue to be considered is that the impacts of land-based pollution on fisheries tends to be overlooked and MPAs do not represent any protection to fisheries in this respect.

COFI has not yet addressed the establishment of MPAs but the FAO Code of Conduct contemplates the protection of juveniles, and spawning concentrations or critical habitats. FAO has contributed to a short review on the role of MPAs for fisheries (Hilborn, forthcoming). As experimental and empirical information accumulates, it appears that MPAs could be useful for fisheries under certain conditions, but they are not a panacea for all the problems facing the sector. If properly placed, MPAs could play a role in fisheries management. The effectiveness of MPAs depends on a number of inter-linked considerations, including the context in which they are used, the species involved, the degree of fleet overcapacity, the fate of those excluded from the MPA and the MCS capabilities in the area. The establishment of MPAs should therefore take account of potential effects, including socio-economic impacts, and the need for a precautionary and adaptive management approach.

FAO has no ongoing activities to support MPAs but this approach is likely to be considered and tested in projects aimed at implementing the EAF. FAO's future activities with respect to MPAs will include the elaboration of a document/guideline containing a review of scientific information available on the potential role of MPAs for fisheries management. This document will include elements of specific legislation concerning protected areas as well as guidelines and indicators for the assessment of MPAs' performance, encouraging higher participation by the fisheries sector in the implementation of MPAs to foster their acceptance by stakeholders and to ensure that social, economic and operational aspects are taken into account.

The number and extent of MPAs are expected to increase in the near future. The WSSD plan of implementation goal with respect to MPAs is not quantitative and should be reached easily. This is because the goal has broad support from ministries of the environment, environmental non-governmental organisations and some ministries of fisheries. The support is premised on the assumption that the implementation of MPAs will reduce the need for national fisheries administrations to confront the politically difficult problems of overcapacity and resource allocation.

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[37] MPAs are designated areas in which economic activities are regulated for the purpose of biodiversity conservation. Marine reserves are MPAs in which all activities, except possibly some forms of tourism, are excluded. MPA networks are sets of MPAs, in which location, size and interconnections (through 'corridors') are delineated, at least in part, to ensure comprehensive protection for species with extensive movements through large dispersion areas.

5.6.4 Integrated Management of Watersheds and Coastal Areas by 2012

Fisheries and biodiversity conservation are two of the many uses of watersheds and coastal areas. The sustainable development of these 'ecosystems' requires coordination of the various uses within a clear and enforceable system of resource allocation. While the coordination aspect has usually been addressed, mainly in relation to minimizing environmental impact, the issue of resource allocation, a cornerstone for success and a central source of failure, has usually been excluded. The WSSD plan of implementation foresees the adoption of integrated watershed and coastal areas management by 2012. Considering that both have been considered for decades with little result, this timeframe appears optimistic.

FAO recognizes that integrated frameworks are essential for the sustainable management of watersheds and coastal areas, even though the promotion and implementation of the frameworks extend beyond the organization's institutional competence. Consequently, FAO's efforts have been related to the development of sectoral guidelines in its area of competence. The FAO Code of Conduct contains an article dedicated to the integration of fisheries into coastal area management and FAO has developed specific guidelines (FAO, 1996). Following a request to use this approach as a framework for sustainable development and environmental protection, FAO also developed integrated guidelines for the management of agriculture, forestry and fisheries (Scialabba, 1998).

5.6.5 Reducing Overfishing by 2015

The avoidance and elimination of overfishing are essential components of the LOSC. All fisheries management systems have had this goal, at least as a rhetorical objective. Despite this commitment, overfishing initially spread slowly for the first half of the 1900s and then more rapidly over the last 50 years, resisting the various 'cures' tried over the last 50 years. These 'cures', aiming initially at limiting fishing effort and mitigating overfishing effects, have more recently and forcefully addressed the root causes of overfishing: overcapacity, its various causes, including subsidies, and some of its worst effects such as IUU and destructive fishing practices.

While a date has not been specified, the elimination of overfishing is one of the core objectives of the FAO Code of Conduct. The WSSD plan of implementation contains the commitment to '…Maintain or restore stocks to levels that can produce the maximum sustainable yield … where possible not later than 2015…' (Paragraph 30a). Considering that the IPOA-capacity should be in place by 2005 the logic for this deadline might be that it will take a decade before stocks recover. Considering that international efforts to contain the spread of overfishing since the 1946 London Conference on Overfishing have failed, this goal, on the surface, appears to be highly optimistic. However, taking into account the improving international framework for fisheries governance over the last decade, the hitherto incomparable international commitment to address overfishing, the growing and unabated social pressure to achieve sustainable fisheries in addition to a number of technological changes and developments, it may be that the optimism expressed in the WSSD plan of implementation is well justified.

The FAO has a diverse but integrated programme of activities that seek to promote responsible fisheries management, a key element of which is the reduction of

overfishing. These activities involve the promotion of the analysis, control, and reduction of fishing capacity, user-rights systems and participatory approaches to management, the promotion of the EAF, the implementation of the precautionary approach and sustainability indicators, as well as strengthening regional fishery bodies. Moreover, FAO efforts have been directed at enhancing human resource development and institutional capacity-building, data collection and management, the elaboration of policy and technical advice, laws and regulations and MCS.

Considering the large range of ongoing efforts to enhance fisheries management, it appears possible that the WSSD plan of implementation timeframe for the reduction of overfishing might be achievable and that the proportion of stocks being overfished, now at a plateau of around 25 %, might well decrease by an appreciable amount by 2015.

5.6.6 Human Resource Development, Institutional Strengthening and International Collaboration

In developing countries, human resource development is a key element in achieving long-term sustainability in fisheries. Human resource development and institutional capacity building are stressed in all the work of FAO's fisheries programme. The FAO Code of Conduct and other international fisheries instruments recognize the need for enhancing human resource development and urge that action is taken to this end.

By its nature, human resource development is a slow and often frustrating process. Efforts to enhance capacity should be seen as an incremental process where faltering steps, rather than ambitious strides, are the measure of progress. In many countries, both developing and developed, human resources are being strained to limits as they seek to address new concepts and approaches in fisheries and to implement the many instruments that have been concluded in the post-UNCED period. This situation constrains the pace at which these instruments are being implemented, and the rate at which sustainable outcomes are achieved.

One of the main reasons for the present state of world fisheries is institutional failure. It is clear that a large part of the solution lies in institutional strengthening. As many fisheries are strongly international in character, international organizations and instruments play a key role in promoting more capable and responsive institutions. There are more than 30 regional fishery bodies operating worldwide, few of which are established under the FAO Constitution (FAO bodies).[38] The issues that regional fishery bodies address at their sessions vary by region and with the nature of the problems the bodies are seeking to address. But despite these differences, many regional fishery bodies in the past five years have focused on the full and effective implementation of post-UNCED international fisheries instruments, including the precautionary approach, exchange of information, collaboration between regional fishery bodies globally and on a geographic or species basis, mechanisms to promote the coordination of the activities of regional fishery bodies and among regional fishery and environmental institutions, IUU fishing, improving information on fisheries status and trends, and reducing overcapacity.

[38] There are many significant differences between FAO and non-FAO bodies, in their competencies, mandates, functions, structures and financial resources. Many of the FAO bodies focus on information and scientific coordination and do not have management responsibilities.

The FAO Code of Conduct and other post-UNCED international fishery instruments recognize the central role of regional fishery bodies in fostering international cooperation for enhanced fisheries management. Indeed, in FAO and elsewhere it has been recognized that regional fishery bodies are the only real mechanism for this task. The need for enhanced cooperation among regional fishery bodies is also an important consideration that the FAO has committed itself to.[39]

FAO's work in support of regional fishery bodies focuses principally on two main areas. These are technical and administrative support with a view to promoting and strengthening regional fishery bodies' roles and the promotion of collaboration among them on fisheries matters of common concern. FAO's activities are diverse and include the dissemination of information, collaboration on matters relating to fish trade, technical support for the establishment of new regional fishery bodies, encouraging collaboration between FAO and non-FAO regional fishery bodies, support for the implementation of the 1995 UN Fish Stocks Agreement, collaboration on issues relating to open registers and IUU fishing, the development of the UN Atlas of the Oceans, and the development of collaborative information systems**.**

Institutional building and collaboration among regional fishery bodies underlies efforts to manage fisheries at the national and international levels, especially in situations where stocks and fleets are shared. In such situations, countries, acting independently, are unable to put in place measures that will promote responsible management. However, such cooperation is only as good as the weakest link in the chain and countries that lack the political will to meet their commitments undermine the collective efforts of other countries.

6. FAO'S FIELD PROGRAMME

FAO has a programme of technical assistance called FishCode: Global Partnerships for Responsible Fisheries,[40] which is designed to augment the FAO Regular Programme in Fisheries, and to support the implementation of the FAO Code of Conduct, its IPOAs and the FAO Strategy. As originally designed the FishCode Programme is comprised of ten sub-programmes developed as stand-alone components of an integrated programme. The first donor support, secured in 1998, concerned upgrading capabilities in MCS and the provision of scientific advice for fisheries management.[41] A five-year project starting in 2004, funded by Japan, entitled, *Enhancement of Sustainable Fishery Development including the Implementation of the Results of the World Summit on Sustainable*

[39] As a result of an FAO initiative, regional fishery bodies now meet formally following each session of COFI. These meetings have proven to be extremely valuable in promoting cooperation among regional fishery bodies on matters of common concern.

[40] The overall development objective of the FishCode Programme is to raise the economic, social and nutritional benefits from fisheries and aquaculture through the adoption of responsible fisheries management and resource conservation practices, including improved institutional and legal arrangements. The Programme is multi-disciplinary and covers all aspects of the FAO Code of Conduct, focusing particularly on the needs to enhance developing countries' capacity to implement the code. Small-scale inland and marine fisheries are of special concern, since they are critical to poverty eradication and food security.

[41] The level of extra-budgetary support provided for the FishCode Programme and other related initiatives between 1998 and 2004 has been approximately US$ 60 million, provided mainly by Finland, Italy, Japan, Luxembourg, Norway, Spain, the United Kingdom and the US.

Development, is intended to stimulate progress in the implementation of the FAO Code of Conduct, particularly with respect to IUU fishing, the management of fishing capacity and subsidies as they relate to IUU fishing and fleet capacity.

Other field projects that FAO executes, or collaborates on with other agencies, include the GEF-funded large marine ecosystems projects in the Bay of Bengal, Canary current (North-West Africa) and Benguela Current (South-West Africa). FAO will also collaborate in the Forum for Sustainable Fisheries for South-Saharan African countries, a large-scale partnership initiative of the World Bank, co-funded by GEF, the World Bank, FAO, World Wide Fund for Nature and the recipient countries. This partnership aims at promoting improved fisheries management and conservation in South-Saharan African countries.

Within its limited regular programme resources, FAO has also provided direct assistance, on a request basis, through its Technical Cooperation Programme. This programme aims at providing emergency and catalytic support to countries. A wide range of assistance has been provided to countries in all regions in recent years.

7. CONCLUSION

Fisheries have expanded rapidly over the past 50 years, progressively 'colonizing' all oceans and seas. Fisheries produce annually some 100 million tonnes of fish and fishery products for food and about 30 million tonnes of fish for animal feed. The cost of this production impacts heavily on the resource base and on the ecosystem. The same society that is calling for a correction of current harvesting practices and volumes is also anticipating a production of 180 million tonnes by 2030.

Capture fisheries are in crisis. Governments, regional fishery bodies, industry, civil society and other stakeholders should take concerted action to reverse the current slide towards unsustainable harvesting. This will involve a significant reduction in fishing capacity to decrease harvest rates and rebuild stocks and a concomitant increase in low-impact aquaculture production to meet the growing global demand for fish. The first action entails large transitional costs and social disruption. The second action has potential unacceptable environmental impacts. Implementation and adjustment is further complicated by the need to implement both initiatives in a rapidly changing environment characterized by economic globalisation, weak and crumbling human and institutional capacity in some countries, economic concentration and domination, trade liberalization, increasing awareness of and demands on fisheries by society at large, widening gaps between poor and rich people and between rich and poor countries, uncertainty in many areas of the fisheries sector, environmental degradation and climate change.

It was against this backdrop that the WSSD plan of implementation goals were reached. The WSSD did not address in detail the conditions that may prevail during the implementation period up to 2015 nor the capacity of countries relative to the means required to implement the goals. The commitments stemming from these political negotiations and the international instruments that have been concluded in the post-UNCED period represent a staggering set of partly overlapping commitments that poorly equipped administrations are trying to implement under severe constraints.

Having given fisheries issues special attention, the WSSD plan of implementation specifies time-bound goals for a number of key issues and other more generic requirements in a framework that has the same international legal basis, principles, conceptual objectives and geographical scope as the FAO Code of Conduct. Both the WSSD plan of implementation and the FAO Code of Conduct rest on a similar multi-pronged strategy. They aim to reduce fleet capacity, rebuild fish stocks, combat IUU fishing and minimize the impact of fishing on biodiversity and the marine environment. The WSSD plan of implementation and the FAO Code of Conduct rely on broad stakeholder participation, transparency, institutional strengthening and the implementation of the precautionary and ecosystem approaches. Given the links between the WSSD plan of implementation and the FAO Code of Conduct, the implementation of the goals of the former instrument is implied through FAO's efforts to promote and assist countries in the implementation of the latter instrument.

Extensive work has been undertaken by the FAO during the last three years to implement the FAO Code of Conduct, and by implication, many of the WSSD plan of implementation commitments, both at the normative and field levels. While it is too early to draw final conclusions, the intermediate results are uneven. Substantial progress has been made in the area of IUU fishing where effective action is being taken both by countries and regional fishery bodies. Substantial work has also been carried out in the more complex area of fleet capacity management, developing measurements and indicators of sustainability, assessing overcapacity, analysing the impact of subsidies, and seeking solutions to and calculating the costs of transition. Capacity has been reduced in some fisheries and a number of capacity-reduction measures have been tested. The number of vessels over 100 tonnes as well as their construction rate has decreased significantly, signalling that the expansion phase of large-scale vessel construction has passed. However, capacity expansion has continued in the construction of smaller-coastal vessels operating within, or close to, EEZs.

Despite its importance on the international fisheries agenda, countries have registered considerably less progress with the improvements in the management of shark fisheries. Countries are encountering difficulties in elaborating and implementing their NPOAs-sharks, while regional fishery bodies have been slow in coming to terms with the issue.

The process for the establishment of global marine assessments is ongoing with the active collaboration of FAO. In this regard, the organisation prefers a central role for the Joint Group of Experts on Scientific Aspects of Marine Environmental Protection in leading the scientific peer review of the assessment. FAO has expressed concern about the capacity of the ocean and Coastal Areas Network to oversee and coordinate the work associated with global marine assessments given its lack of resources.

FAO focuses on the reduction of biodiversity loss through the EAF. Following the 2001 FAO Reykjavik Conference a number of activities commenced relating to, *inter alia,* the reduction of bycatch and discards, the protection of endangered species, and, in collaboration with CITES, improved assessment and reduction of the risk of extinction, the elimination of destructive fishing, and the protection of critical habitats. The IPOA-seabirds and IPOA-sharks contribute to FAO's implementation of the EAF. Collaboration between the FAO and CITES has been identified as a means of improving the listing criteria. A number of large-scale field projects have been initiated within the

GEF framework including the reduction of bycatch and discards in shrimp fisheries, integrated management and the study of the interactions between fisheries and turtles. The EAF is progressing slowly in a number of lead countries. Regional fishery bodies are also struggling to implement the EAF. Little progress has been achieved with the integrated management of coastal areas.

FAO has undertaken considerable work to stimulate and facilitate institutional strengthening and to promote international collaboration among regional fishery bodies. This work has entailed facilitating the exchange of information, co-developing concepts, jointly organizing technical meetings, and facilitating collaboration. Particular efforts have been made to foster improvements in the management of shared and transboundary stocks (FAO, 2002c).

In the process of implementing FAO's fisheries programme of work and the post-UNCED fisheries instruments, several constraints and gaps have been identified. While they differ between fisheries and regions, in general these constraints and gaps include inadequate human and institutional capacity in many countries, declining levels of development assistance for human resource development and institutional strengthening, poor MCS and enforcement, inadequate stock rebuilding, inequitable and inadequate access to information, public education programmes and the media, weak participatory management processes and incomplete representation of stakeholders, outdated legislative frameworks and limited prospects for alternative employment of fishers in overfished coastal and inland areas.

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Chapter 12

Governing the Bering Sea Region

Oran R. Young
Bren School of Environmental Science and Management, University of California, Santa Barbara, CA 93106-5131, USA (*young@bren.ucsb.edu*)

1. THE BERING SEA REGION

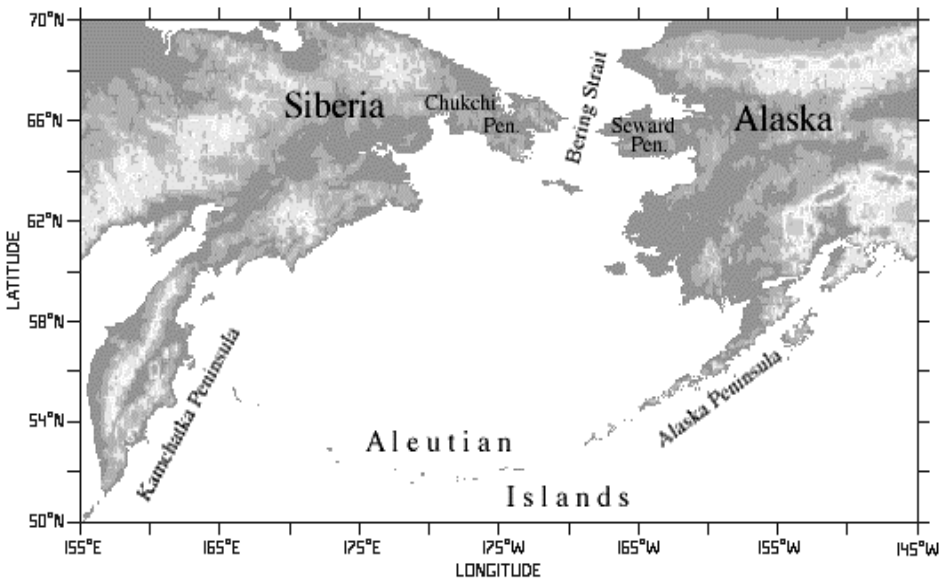
The Bering Sea Region (Map 12.1) – a large marine ecosystem or LME encompassing an area of almost 2.3 million square kilometres in the northernmost reaches of the Pacific Ocean (Sherman, 1992; Broadus and Vartanov, 1994, Ch. 3; National Research Council, 1996; WWF/The Nature Conservancy, 1999; National Research Council, 2003) – is famous both for its high levels of biological productivity and for the value of its natural resources to human users (Alexander, 1990). Although many residents of the mid-latitudes know next to nothing about this region, Beringia, as ecologists and archaeologists often call the Bering Sea Region,[1] has attracted the attention of a diverse group of human users during the period beginning with the voyages of Vitus Bering during the middle of the 18th century (Hodgson, 1992).

In 1991, a peak year, the fisheries of this LME accounted for '... approximately 10% of the world's fishery production' (White House Office of the Press Secretary, 1992). 'Walleye pollock landings alone exceeded 4.8 million metric tons and accounted for approximately 5% of the combined world landings of fish, shellfish and crustaceans' (BESIS Project Office, 1997: 18).[2] During average years, '[t]he Bering Sea supplies nearly 5% of the world's fishery products' (Interagency Arctic Research Policy Committee, 1997: 5). The region is also home to 'the largest marine mammal populations in the world', including whales, walrus, sea lions, sea otters, and seals as well as 'the largest bird populations per unit area' (Hunt, 1975: 339), including '43% of all breeding seabirds in the United States' (National Marine Fisheries Service, 1997: 2). Once prized mainly by consumptive users, these animals and birds now constitute a principal attraction of the Bering Sea Region as a destination for the growing number of people interested in ecotourism.

Yet this extraordinary ecosystem is also subject to stresses and fluctuations that have profound implications both for the viability of industries dependent on the use of Bering Sea resources and for the welfare of the region's permanent residents (National Marine Fisheries Service, 1997; WWF/Beringia Conservation Program, 2000, National

[1] The Swedish botanist Eric Hulten first used the term Beringia to refer to the area encompassed by the former Bering Land Bridge. Later authors have expanded the concept to take in sizable chunks of present day Alaska and the Russian Far East as well (Hopkins, 1996).
[2] These figures include landings in parts of the North Pacific outside the Bering Sea proper. But the bulk of the pollock landings come from the Bering Sea.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 194–209.



Map 12.1. The Bering Sea Region

Source: US Bering Sea Program – www.pmel.noaa.gov/Bering. Map produced by and used courtesy of the US National Oceanic and Atmospheric Administration (NOAA).

Research Council, 2003). The dominant place of pollock in the Bering Sea biomass, forinstance, is a recent phenomenon dating only from the 1950-1960s (National Research Council, 1996: 232). Strong evidence links this development to reductions in populations of other fish species and whales largely attributable to earlier human harvesting. Today, populations of some marine mammals (e.g. Stellar's sea lions) and certain species of waterfowl and sea birds (e.g. spectacled eiders and red-legged kittiwakes) are declining at an alarming rate in the region, a development that may be associated with the rise of the pollock fishery but that is probably a consequence of a number of differentiable factors operating simultaneously. Conversely, a number of the region's salmon stocks have grown in recent years (National Research Council, 2003), and the population of jellyfish has exploded – sometimes multiplying by a factor of ten – throughout the region. Nor is the abiotic environment of the region any more stable. Both the extent and the thickness of sea ice in Beringia, for example, have declined substantially in recent years (National Research Council, 2003).

In an effort to account for these non-linear processes, a comprehensive National Research Council study of *The Bering Sea Ecosystem* introduces the idea of 'cascades' or chain reactions involving a number of interactive drivers to characterise the dynamic character of this highly interdependent or coupled resource complex, where the actions of humans undoubtedly constitute an important driving force even though it is difficult to distinguish clearly between the impacts of anthropogenic drivers and biotic and abiotic drivers (National Research Council, 1996: Ch. 6; Vitousek et al., 1997). Others have turned to the concept of regime shifts to characterise the chaotic behaviour of this

LME. As a more recent National Research Council report puts it: '…ecosystems can shift between different states and…these shifts often involve gradual changes in a system until a threshold is reached and reorganization of the ecosystem occurs. Recent studies indicate that high-latitude…ecosystems may be particularly vulnerable to these regime shifts' (National Research Council, 2003: 32).

Looked at from another perspective, the Bering Sea Region constitutes a cultural mediterranean that has played a role of immense importance in the peopling of the New World and that remains a homeland for a group of closely related indigenous peoples. As recently as 10,000 years ago, a large part of the region was a great plain, forming (together with parts of what is now the Chukchi Sea) the Bering Land Bridge and covering an area up to a thousand miles wide and somewhat comparable in size to the Great Plains of the American West (Hopkins, 1976; Young, 1988; Young, 1989: 311-315). Most scholars agree that the original human inhabitants of North and South America crossed this Land Bridge on their way to destinations far to the South and East (Fitzhugh and Crowell, 1988). Today, Beringia is home to somewhat more than 200,000 permanent residents of whom about 50,000 are indigenous peoples belonging mainly to the Aleut, Chukchi, Koryak, and Yup'ik Eskimo cultures (Kraus, 1988; Arctic Monitoring and Assessment Programme, 1997).[3] As William Fitzhugh notes, moreover, '[t]hese societies still depend, largely, on local subsistence resources. They retain their native languages, and many still preserve ancient customs and religious beliefs' (Fitzhugh, 1996: 42).

Until well into the 20th century, the Bering Sea Region was a true crossroads in which Euro-American whalers, fishers, traders, missionaries, and adventurers interacted regularly and extensively with the indigenous inhabitants. Those active in the region paid little or no attention to the existence of jurisdictional boundaries or the dictates of distant political authorities (Hunt, 1975; Schweitzer, 1997). The onset of the cold war changed all this, artificially separating the two halves of Beringia and even cutting off contact among close relatives living in the region. The winding down of the cold war and the eventual collapse of the Soviet Union produced another dramatic change. In a few short years, the region has resumed its place as a crossroads for human activities, giving rise to renewed cultural contacts, burgeoning ecotourism, plans for an international park, joint-venture fisheries, and prospecting for hydrocarbons (Shakespeare, 1991; Richter, 1997). Some visionaries have even suggested damming the Bering Strait to control the exchange of water between the North Pacific and the Arctic Ocean or constructing a tunnel joining the two continents via a rail link running under the strait (Koyumal and Hynd, 1991).

Whether we approach the Bering Sea Region as an LME or as a cultural mediterranean, there is a need for comprehensive arrangements to manage human activities in this unusually rich but highly volatile system. In fact, there is no dearth of specific governance systems operative in the region today. These range from traditional harvesting systems that guide the actions of the region's indigenous peoples through state regulations covering inshore fisheries, federal management regimes applicable to the resources of Beringia's Exclusive Economic Zones (EEZs) and on to a number of inter-

[3] While the majority of the non-indigenous permanent residents of Beringia are located on the Russian side, the region's indigenous residents are more evenly divided between the two sides of the region (Kerttula, 2000; Krupnik, 1993).

national agreements pertaining to specific resources such as salmon and pollock. Some of the individual elements of this institutional complex have functioned well. The efforts of the North Pacific Fisheries Management Council, the US federal body responsible for managing the harvesting of groundfish stocks in the eastern Bering Sea, are particularly notable in this connection. But the existing arrangements – largely residues of the period of federal control in the United States and the Soviet period in Russia – leave much to be desired as a source of governance for the Bering Sea Region treated as a large and complex LME (Townsend, 1990).

For purposes of analysis, we can group the current challenges of governance in Beringia under three broad headings: ecological sustainability, efficiency, and equity. Existing arrangements have failed to prevent rapid changes, including dramatic swings and sharp declines, in targeted species (e.g. the collapse of the central Bering Sea pollock stocks during the late 1980s and early 1990s). They have done even less to ward off extraordinary declines in non-targeted species (e.g. the plummeting of stocks of sea lions in recent years) as well as more general perturbations in marine systems (e.g. the disruptive side effects of large-scale trawling operations on benthic communities) (National Research Council, 2002).

The arrangements now in place have addressed but not eliminated overcapitalisation in the fishing industry, a condition leading both to the closure of some important fisheries (e.g. the pollock fishery in the central Bering Sea) and to inefficiencies arising when powerful vessels compete with one another in fishery openings lasting only a few days or, in extreme cases, less than twenty-four hours. Current management practices do not make use of individual quotas, a fact that biases them in favour of large-scale, industrial fishers. Like their counterparts in other regions, they yield no economic returns to the general public treated as the owner or trustee of living resources, and they are poorly equipped to safeguard the interests of local fishers whose activities involve a shifting mix of subsistence and commercial fishing and whose lifestyles are heavily dependent upon the continuing availability of marine resources.

The news about governance in the Bering Sea Region is by no means all bad. Efforts to manage the targeted fisheries in the eastern Bering Sea are increasingly sophisticated; the establishment of community development quotas or CDQs is a significant innovation (National Research Council, 1999a; National Research Council, 1999b). Yet the governance arrangements currently in place not only fail to treat the region as a complex LME but also pay scant attention to interactions among a range of distinct human activities occurring in this large, human-dominated ecosystem. This should not be construed as an indictment of the efforts of those who are working hard on specific problems of governance in this region. Even so, it is fair to say that the Bering Sea Region today is a sea of troubles.

2. THE DEMAND FOR GOVERNANCE IN BERINGIA

How should we think about the demand for governance in the Bering Sea Region? Writing about human/environment relations more generally, Hilary French has observed that '[i]t is ... a paradox of our time that effective governance requires control being simultaneously passed down to local communities and up to international institutions'

(French, 1995: 179). To what extent is this paradox in evidence in the Bering Sea Region and how does it manifest itself? This is a matter of (1) building governance systems or regimes capable of addressing the entire Bering Sea Region as an integrated system involving shared natural resources and sustained interactions among humans, living resources, and the underlying biophysical systems that support them and (2) finding ways to ensure that key stakeholders (e.g. the permanent residents of the region) have an effective voice, even as efforts to govern human/environment relations in Beringia expand to treat the region as an integrated whole.

2.1 Beringia as a Resource Complex

What are the mechanisms that give rise to growing pressure to treat the Bering Sea Region as an integrated resource complex or, in other words, to approach this area as a bioregion? Perhaps the most obvious point of departure in responding to this question features human uses of living resources and, in the first instance, the world-class fisheries of the region (Burke, 1989; Canfield, 1993; National Research Council, 1999a; National Research Council, 2003). Consider the pollock fishery as a striking case in point. When American policymakers, taking advantage of the growing recognition of EEZs under international law and operating under the authority granted by the US Congress in the Fishery Conservation and Management Act of 1976 (PL 94-265), began to phase out foreign fishing in the eastern Bering Sea, Japanese, Korean, Taiwanese, and other fishers promptly redeployed their vessels to a sector of the central Bering Sea – known as the donut hole – located outside the reach of American and Russian jurisdiction. The result was an increase in the harvest of pollock in this area so dramatic that it led by the early 1990s to a collapse of pollock stocks in the donut hole. Bringing to bear the provisions of Article 63 of the 1982 United Nations Convention on the Law of the Sea and invoking the spirit of the ongoing negotiations on straddling stocks and highly migratory species, China, Japan, Korea, Poland, Russia, and the United States then negotiated and signed the 1994 Convention on the Conservation of Pollock Resources in the Central Bering Sea as a means of regulating future fishing in this area (Dunlap, 1995). The impacts – both intended and unintended – of this conservation initiative remain to be determined (Balton, 2001). But the case of the Bering Sea pollock fishery demonstrates that the major fisheries of this region are interdependent not only in biological terms but also in terms of the human harvesting practices that have grown up around them.

Adding to the complications relating to the fisheries are a range of interdependencies between fish, on the one hand, and various species of marine mammals and sea birds on the other. Because these animals and birds prey on marine organisms – including pollock in the cases of sea lions and fur seals – there are obvious possibilities for competition among fishers, marine mammals, and sea birds as users of the biological resources of the Bering Sea (National Research Council, 2003). Human actions can produce results that are beneficial to particular species under some circumstances. Sea lions and fur seals, for example, probably benefited along with human fishers from the dramatic rise of pollock stocks during the middle decades of the 20th century. In other cases, human actions appear to be implicated in dramatic fluctuations in marine mammal and sea bird populations. Although a number of factors are certainly at work,

substantial evidence points to a causal link underlying the correlation between the rise of the pollock fishery and sharp declines of fur seal and Stellar's sea lion stocks over the last several decades (National Research Council, 1996, National Research Council, 2003). The case of sea lions is particularly striking. Unlike fur seals, harvested commercially into the 1980s, there is no recent history of harvesting sea lions (Young, 1981; Young, 1987). Yet sea lion stocks have plummeted farther and faster than fur seal stocks during the recent past (National Research Council, 2003). Given the importance of marine mammals and sea birds to the attractions of ecotourism in the region, these trends are deeply distressing to those interested in tourism; they have triggered growing tension between the fishing industry and the tourism industry. Not surprisingly, environmental groups – most notably the Audubon Society and Greenpeace – have also entered the fray as critics of the fishing industry and the alleged impact of fishing on marine mammal and seabird populations.[4]

Concerns relating to living resources are not the only sources of pressure to treat the entire Bering Sea Region as a resource complex. Increases in navigation in the region, including both underwater transits on the part of submarines and surface transits on the part of vessels engaged in commercial pursuits and ecotourism, generate concerns pertaining to accidents or emergencies (e.g. oil spills) and intentional vessel-source pollution as well as pressure to ban or restrict competing activities – including fishing – in important shipping lanes. The prospect that melting sea ice will lead during the near future to substantial growth in commercial traffic using the Northern Sea Route underlines the importance of this concern. Environmentalists worry as well about the prospect of oil and gas development in the Bering Sea Region (National Research Council, 1993). Although some exploratory work, especially in the eastern Bering Sea, has already occurred, human activities in this area have not yet progressed beyond the exploratory stage. Initial surveys have failed to turn up particularly promising reserves, and the volatility of the world markets for oil and gas make it difficult to speculate on the commercial attractiveness of Bering Sea hydrocarbons in any case. Nonetheless, the Bering Sea remains on the list of frontier areas that could become centres of oil and gas development during the foreseeable future, and interest in the conduct of exploratory activities is re-emerging.[5] Some nongovernmental organisations have even claimed that growing cooperation between Russia and the United States in this region will increase the likelihood of hydrocarbon development by providing a secure investment environment for corporations considering the launching of large-scale and long-term energy projects in the area.

Underlying all these concerns are uncertainties regarding the nature and extent of interactions among social drivers, biological forces, and abiotic processes as determinants of the dynamics of this large marine ecosystem. The authors of *The Bering Sea Ecosystem*, for instance, freely admit that many forces are at work in this system. It is extremely difficult to separate out the effects of anthropogenic and biophysical drivers, and discontinuous but unpredictable changes are to be expected in this system from time

[4] In 1996, for example, Greenpeace launched a highly publicized campaign to ban the US fleet of 'factory trawlers' from operating in the Bering Sea.

[5] At this writing, relatively high world-market prices and concerns about dependence on Middle Eastern oil have rekindled interest in the exploration of frontier areas like the Bering Sea Region. But these circumstances are subject to rapid and often unpredictable changes.

to time. The report advances what it calls the 'cascade hypothesis' as one plausible way of thinking about these interactive relationships (National Research Council, 1996: Ch. 6). Although it is clearly a step forward, this is in some respects an unsatisfactory conclusion. This line of analysis does not yield clear cut inferences to aid those responsible for managing human activities in the Bering Sea Region. Yet one major point does emerge with considerable clarity from this account. Beringia is a tightly integrated resource complex where social drivers constitute a major force. Piecemeal approaches to management are sure to lead to results that are not only unforeseen and unintended but also, in many cases, undesirable for all parties concerned (National Research Council, 1996; National Research Council, 2003).

2.2 The Concerns of Key Stakeholders

If the case for treating the entire Bering Sea Region as an interdependent resource complex is persuasive, why do we need to pay special attention to the concerns of key stakeholders in the region and, more specifically, to consider according the region's permanent residents an increased role in formal decisionmaking processes? The answer to this question is somewhat different in character from the answer to the question about treating Beringia as a bioregion. But it is just as compelling in its own way. It is helpful, in this connection, to draw distinctions among three relevant sets of considerations: the ethical and legal claims of the region's permanent residents; the actual and potential contributions of permanent residents to the effective management of human/environment relations in the region, and the links between cultural diversity and the sustainable use of Beringia's resources.

A large fraction of the permanent residents of the Bering Sea Region, who are widely scattered in small, resource-dependent communities along the coasts of Alaska and the Russian Far East, are Natives who have legitimate claims to use the region's resources in securing their livelihood. Controversy exists regarding the precise status and content of indigenous rights to these resources, reflecting and leading to a wide range of interpretations both within individual countries and at the international level. Nonetheless, the voice of indigenous peoples is growing stronger in the world today;[6] the exercise of indigenous rights has increasingly significant consequences for the management of the Bering Sea Region (Huntington, 1992). Aboriginal subsistence whaling, for example, is exempt from the moratorium on the harvesting of great whales imposed under the terms of the International Convention on the Regulation of Whaling (Friedheim, 2001). Native peoples are permitted to harvest walrus and to use walrus ivory for traditional crafts under the provisions of the Marine Mammals Protection Act (PL 92-522) in the United States. The establishment of community development quotas (CDQs) in the coastal fisheries of Alaska is premised, in part at least, on the proposition that residents of Native villages have claims to the use of living resources that are different in kind from the claims of other users (Ginter, 1995; National Research Council, 1999b). As a result, the region's indigenous peoples have become players in this resource complex whose role cannot be ignored.

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[6] *Agenda 21: Earth's Action Plan,* one of the major products of the 1992 United Nations Conference on Environment and Development, contains a chapter entitled 'Recognizing and strengthening the role of indigenous people and their communities' (Robinson, 1993).

It is worth emphasising as well that the permanent residents – especially but not exclusively those who are indigenous to the region – of the communities located in the Bering Sea Region have interests in the fate of this resource complex that are more intense – perhaps even different in kind – than the interests of others. For them, what happens in this resource complex will determine the future of a way of life that has deep historical roots and that retains a strong hold on their vision of the future. In this regard, the contrast between the region's permanent residents and those located in distant urban centres, including decisionmakers (e.g. officials of the US Government's National Marine Fisheries Service or delegates to the International Whaling Commission), who are not dependent on the fate of the region for their livelihood and who are typically more concerned with events unfolding elsewhere, could hardly be more marked. The permanent residents of the region will experience the consequences of any management arrangements created to deal with Bering Sea issues first and most dramatically. Since their lives are rooted in a powerful sense of place, and since they have little desire or capacity to adopt the highly mobile lifestyles of mainstream society, their options are limited.

As a group, moreover, long-term residents are in a position to make important contributions to the success of resource regimes operative in the Bering Sea Region. Partly, this is a function of the occurrence of local variations in ecological conditions. The significance of these local conditions highlights the contribution that traditional ecological knowledge (TEK) can make to informed decisionmaking about the use of Beringia's resources (Hansen, 1994; Berkes, 1999). It is true, of course, that the knowledge of local users is typically informal in nature and based on observations covering a limited geographical area. But as awareness of the path dependence of large marine ecosystems has grown, we have come to understand the limitations of the simple ecological models of the past and to appreciate the value of the longitudinal knowledge of those who are keen observers of changes occurring in complex systems over long periods of time. In part, the role of local users stems from the impossibility of enforcing compliance with the regulatory provisions of resource regimes in a vast area where human users are widely scattered and generally capable of evading desultory surveillance efforts with relative ease. Compelling reasons therefore exist to design and operate management regimes in which local stakeholders feel a sense of participation and ownership (Osherenko, 1988). The resultant processes will not only yield decisions that are more sophisticated with regard to the dynamics of the ecosystems involved; they will also stand a greater chance of producing regulatory arrangements that actually guide the activities of users in their day-to-day encounters with the resources of Beringia.

Extending this argument, we can also anticipate the existence of a strong relationship between the well-being of the local cultures of Beringia and the viability of the major components of the Bering Sea ecosystem. As others – speaking in more generic terms – have put it, cultural diversity and biological diversity commonly go hand-in-hand in bioregions where humans have long been major players (Chaturvedi, 1996: Ch. 8). Local communities have evolved social practices over long periods of time through processes of trial-and-error that foster sustainable relations with the biophysical components of the overall ecosystems to which they belong (Ostrom, 1990). In addition, human users have strong incentives to protect and preserve the biophysical

components of the ecosystems upon which they depend. Nowhere is this more apparent than in the Bering Sea Region (Fienup-Riordan, 1986).

These observations do not imply that communities of human users engaged in traditional harvesting practices are morally superior beings who can be counted upon to act as 'original ecologists' (Fienup-Riordan, 1990: 167-191; Krech, 1999). Yet the disruption of local communities is almost always cause for concern about the fate of ecosystems. The incursions of outsiders – including Russian fur traders during the eighteenth century, American whalers during the nineteenth century, and Japanese and other industrial fishers during the twentieth century – have caused repeated disturbances in human/environment relations in the Bering Sea Region. Dislodged from their indigenous practices and driven to extremes, local users themselves can act in ways that are ecologically destructive. At the same time, viable local communities can make positive contributions to the well-being of overarching ecosystems in bioregions like Beringia (Griffiths and Young, 1989; Ostrom et al., 2002).

3. THE SUPPLY OF GOVERNANCE IN BERINGIA

What can we say about institutional options available to meet the demand for governance in the Bering Sea Region treated as a resource complex and the prospects for introducing them successfully under the conditions prevailing in the region today (Young, 1982; National Research Council, 1996)?[7] National and regional (i.e., state and oblast or autonomous region) institutions are not going to disappear from this realm during the foreseeable future. Nor should they disappear. In the eastern Bering Sea, for example, only the US federal government has both the necessary authority and the access to resources on the scale needed to make and implement informed decisions about many issues arising in the Bering Sea Region. Undoubtedly, the problems afflicting this region would be more severe in the absence of the North Pacific Fishery Management Council. Thus, the challenge of governing the Bering Sea Region as an LME is by no means a simple matter of wiping the slate clean and replacing existing arrangements with a comprehensive and more suitable alternative. What is needed, in the first instance, is a concerted effort to structure the interplay among local, regional, national, and international institutions in a manner that avoids both clashes among overlapping arrangements and serious gaps in the sense of important concerns not addressed by any of these institutional arrangements (Hoel et al., 2000). Given that existing arrangements involve social practices that have grown up over a long time in widely divergent political settings and that they reflect distinct management philosophies and approaches to knowledge, it is clear that coming to terms with the problem of institutional interplay in a setting like the Bering Sea Region constitutes a profound challenge. In one form or another, challenges of this sort confront us today all over the world (Stokke, 2001). Any advances we make in dealing with this challenge in Beringia will be of great interest to those struggling with similar problems elsewhere as well as of immediate utility to those responsible for human/environment relations in the Bering Sea Region itself (Young et al., 1999; Stokke, 2001).

[7] For an effort to respond to a similar question under conditions prevailing in the 1970s see Young (1977).

A successful governance system for the Bering Sea Region must also deal with the problem of fit between the relevant biophysical systems and the character of the resource regimes devised to guide human activities in the area (Fluharty, 2000; Young, 2002). Because this resource complex features high levels of interdependence among its components and because it is difficult to model interactions among social, biotic, and abiotic drivers in this system, governance must proceed in a setting where 'cascades' or 'regime shifts' are common but where forecasting the timing and character of these dynamic and often non-linear processes is difficult (Wilson et al., 1994). This puts a premium on the establishment of sophisticated monitoring and assessment procedures and on the development of decisionmaking processes capable of responding promptly to dramatic changes (e.g. sharp declines in populations of certain species of marine mammals or dramatic fluctuations in fish stocks). What is needed, in other words, is a system in which feedback processes are highly developed (Ludwig et al., 1993). Due to the prevalence of discontinuous change in this setting, moreover, these institutional devices must be capable of going beyond simple regulatory responses (e.g. the self-correcting functions of a thermostat) to foster social learning that can give rise to significant modifications or adjustments in key elements of governance systems themselves (Social Learning Group, 2001).

Influenced by experience with other bioregions, such as Antarctica, the Baltic Sea Region, the Great Lakes Basin (Botts and Muldoon, 1997; Roginko, 1998; Joyner, 1998), many of those who become interested in Beringia take it for granted that we should endeavour to create over time an integrated regime for the Bering Sea Region as a whole or, in other words, an arrangement encompassing the full range of issue areas and integrating the various levels of institutional arrangements described in the preceding section. But the creation of such a super regime for Beringia is neither feasible nor necessarily desirable, at least when carried to its logical conclusion. Beringia is linked to events occurring in other large ecosystems, not to mention changes occurring at the global scale (e.g. climate change). A comprehensive governance system that could deal with every issue in all these systems at once is unrealistic. Seeking to solve problems of institutional interplay – whether horizontal or vertical – through the development of a single, tightly integrated governance system also runs the risk of creating rigid arrangements that are slow to react to the dynamics of the Bering Sea ecosystem and that are unresponsive to the needs and concerns of human users engaged in a variety of activities. A further danger is that excessive integration will increase the likelihood of the whole management system coming unravelled as a result of the failure of one of its component parts.

What makes sense, under the circumstances, is a somewhat looser arrangement in which a number of distinct regimes dealing with Bering Sea issues are linked together into a family of institutional arrangements that are part of a larger system but that are also capable of operating on their own.[8] In effect, this would involve the establishment of a regime of regimes or a meta-regime whose goal would be to promote coordination among all its component parts in order to fill gaps and sort out overlaps, while leaving both the authority and the capacity to address specific human/environment interactions to its individual components.

[8] For a discussion of similar matters relating to the south polar region see Herr (1995).

A specific option suggested from time to time would involve nesting a regime for the Bering Sea Region into the Regional Seas Programme administered by the United Nations Environment Programme (UNEP) (Feder, 1976; Harders, 1987; VanderZwaag et al., 1988). Such an arrangement would join a family of regimes that currently includes nine separate arrangements, covering the Mediterranean, the Caribbean, and the South Pacific among other areas of interest. But the prospects of adding Beringia to this family of regional regimes are negligible, for several distinct reasons. Although regional seas arrangements can be tailored to the needs of specific areas, they typically focus on problems of marine pollution. As we have seen, the needs of the Bering Sea Region extend well beyond this issue area. Increasingly, the Regional Seas Programme has suffered from a lack of material resources as well as from perceptions of a serious decline in UNEP's organisational capacity. As a result, the incentives to join the Regional Seas family are weak. Above all, the Regional Seas Programme has never found much favour among the great powers, at least as an approach to governance problems arising in politically sensitive areas. No Regional Seas arrangements exist for the Barents Sea, the Northwest Atlantic, or the Sea of Japan; the regimes for the Baltic Sea and the North Sea are not members of the Regional Seas family. Although the end of the cold war and the collapse of the Soviet Union have reduced the strategic significance of the Bering Sea Region and opened the way for a variety of cooperative initiatives dealing with specific issues, it seems highly improbable that Japan, Russia, and the United States will agree to an arrangement for Beringia that creates an opportunity for the United Nations to play a role in an area they prefer to manage on their own. In the final analysis, involvement on the part of the United Nations or its subsidiary bodies is likely to be just as unpopular with the major players in the Bering Sea Region as it is in the case of Antarctica (Beck, 1986; Joyner, 1998).

Regardless of the auspices under which a meta-regime for the Bering Sea Region operates, a question arises concerning the need to express such arrangements in the form of legally binding conventions or treaties. Many observers simply assume that legally binding or hard-law arrangements are superior to more informal soft-law agreements and that the eventual goal should be a legally binding convention setting forth a comprehensive governance system for the Bering Sea Region.[9] In fact, hard-law agreements are already in place that deal with some Bering Sea issues. The 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific and the 1994 convention on Bering Sea pollock are both hard-law instruments. So also is the 1990 agreement between Russia (then the Soviet Union) and the United States dealing with the demarcation of maritime boundaries in the Bering Sea (Elferink, 1991; Saguirian, 1992).[10]

Yet it does not follow that we should be striving to negotiate a legally binding agreement setting forth the provisions of a comprehensive governance system for the Bering Sea Region (Lipson, 1991). Legally binding agreements take longer to negotiate

[9] See, for example, the Action Agenda for a 'Convention for Marine Species in the North Pacific and Bering Sea Ecosystem' developed by the Global Legislators Organization for a Balanced Environment (GLOBE) at its November 1990 meeting in Washington, D.C.

[10] It is important to note, however, that this agreement is not legally in force at this time due to the failure of the Russian Duma to ratify it.

in the first place, often contain less substantive content, and are more difficult to adapt to changing circumstances than soft-law arrangements whose legal status is more ambiguous. It is unclear how a hard-law agreement in this region could deal with all the issues of institutional interplay identified here. A comprehensive Bering Sea Convention might well get stuck in the United States Senate or the Russian Duma, a development that would lead to serious complications regarding the status of a variety of arrangements dealing with specific Bering Sea issues. Whatever the attractions of a Bering Sea Convention in terms of its expected impact on the behaviour of various stakeholders, therefore, it is likely that we will have to make do during the foreseeable future with a governance system for the Bering Sea Region that is composed of a number of interlocking pieces without a binding umbrella agreement that ties them all together. Apart from issues of neatness, this situation is not alarming. Those who are familiar with the development of common law arrangements in municipal settings will regard this as a perfectly normal state of affairs (Calabresi, 1982).

A key question remains concerning the need for new or restructured organisations to help in administering governance systems for the Bering Sea Region. Just as regimes are sets of rules of the game and decisionmaking procedures that create arenas for dealing with problems of governance, organisations are material entities established to administer the rules and operate the decisionmaking procedures (Young, 1994: Ch. 7; Scott, 1995). A number of specific organisations are already in place that have roles to play in governing the Bering Sea Region. The North Pacific Fishery Management Council is a key player in dealing with living resources under American jurisdiction. The bilateral Agreement on Mutual Fisheries Relations between Russia and the United States negotiated in 1988 and amended in 1993 creates an Intergovernmental Fisheries Committee. The 1992 convention on anadromous species set up a North Pacific Anadromous Fish Commission. The 1994 pollock convention establishes an Annual Conference of the Parties backed up by a Scientific and Technical Committee.

What more is needed in the way of organisations to promote effective governance in this region? Due to the highly dynamic character of this LME, it would probably be helpful to create a Beringia Monitoring and Assessment Program (BMAP) to track changes in a suite of indicators pertaining to the state of this LME and to provide early warning regarding major changes in the biotic and abiotic systems of the region. The North Pacific Marine Science Organization (PICES) may be able to play a role in this region similar to the role that the International Council for the Exploration of the Seas (ICES) plays in delivering science-based advice to those responsible for making management decisions regarding the fisheries of the Northeast Atlantic and the Barents Sea Region.[11] In addition, a high level but informal policy forum would be helpful, so that senior officials and representatives of various stakeholders concerned with Bering Sea issues could interact with each other on a regular basis. There is no need to create a more elaborate Bering Sea Council with formal responsibility to make collective decisions about a well-defined set of issues. But an informal forum – modelled perhaps on the International North Sea Conferences (Skjaerseth, 2000) – would provide an opportunity for all parties concerned to exchange ideas about

[11] The International Council for the Exploration of the Sea (ICES) has long played a role in supplying scientific advice relevant to managing fish stocks in the North Atlantic. ICES publishes a journal, *ICES Journal of Marine Science,* which is available electronically as well as in hard copy.

emerging issues and to set the agenda for negotiations regarding Bering Sea issues taking place in a variety of more formal forums.[12]

4. CONCLUSION

A number of more or less specialised governance systems are currently operative in the Bering Sea Region; it is neither feasible politically nor desirable in managerial terms to wipe the slate clean and start over in designing institutional arrangements for the region. Taken together, however, a series of specific limitations of the region's existing governance system are major sources of the problems of ecological sustainability, efficiency, and equity arising in this region today. What is needed, under the circumstances, is a reform effort aimed at adjusting existing arrangements to solve specific problems and to make the entire structure of governance for the Bering Sea Region more coherent. There is no compelling reason why the result should take the form of a tightly integrated and legally binding structure reminiscent of the Antarctic Treaty System or the regime for the Great Lakes of North America. But an overhaul of the existing collection of arrangements based on a careful consideration of the problems of institutional fit and interplay could contribute substantially to the effectiveness of efforts to govern the Bering Sea Region.

[12] Such a forum could provide a regional analog to the annual meetings of the G-8, which offer informal opportunities for leaders of the major industrialised countries to consult with each other on matters of common concern.

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Some useful websites:

National Marine Fisheries Service – www.nmfs.noaa.gov/

U.S. Bering Sea Program – www.pmel.noaa.gov/bering/

North Pacific Fisheries Management Council – www.fakr.noaa.gov/npfmc/

North Pacific Marine Science Organization – www.pices.ios.bc.ca/

Chapter 13

Changing Seas, Changing Institutions: Charting New Courses into the Future

Are K. Sydnes, Alf Håkon Hoel and Syma A. Ebbin[1]

1. INTRODUCTION

The establishment of the 200 nautical mile Exclusive Economic Zones (EEZs), extending coastal state jurisdiction to cover an increasingly large part of the world's oceans, constitutes a global sea change. Driven partly by state practice, partly by a series of law of the sea conferences under the auspices of the United Nations (UN), the culmination of this development was the establishment of EEZs from the 1970s onwards.

The goal of this book has been to analyse some of the institutional consequences emerging from the change from an ocean governance regime based on open access to one based on extended coastal state jurisdiction in the form of EEZs. In doing so, we have focused on the *governance effects* of EEZs, that is, the way the establishment of EEZs has enabled coastal states to develop domestic institutions to enhance the sustainable use of the oceans and their resources, and in addition develop international cooperation to facilitate these efforts.

The creation of the global EEZ regime would not have far-reaching consequences if the process had not been accompanied by changes in national and international institutions that capitalised on and gave effect to the rights and obligations established by the EEZs. We have presented case studies of EEZ-based regimes from a variety of geographical, ecological, socio-economic, and cultural settings to examine the dynamic relationship between EEZ-based regimes and fisheries regimes. In addition, this volume has considered the international framework that domestic ocean governance takes place within. In this final chapter we take stock of where we have been, where we are and where we are heading with respect to ocean management.

The research questions that we have sought to address in this volume are:

1. What is the nature of the institutions that coastal states have created within the framework provided by the EEZs?
2. How has the creation of the EEZs affected the vertical interplay among institutions at different levels of social organisation (i.e., international, national, traditional and co-management regimes) and the horizontal interplay among institutions focused on different functional arenas (i.e., trade, environment and fisheries)?

[1] Affiliations as in Chapter 1.

S.A. Ebbin et al. (eds.), A Sea Change:
The Exclusive Economic Zone and Governance Institutions for Living Marine Resources, 210–220.

3. How has the development of EEZ-based regimes affected the fit of marine resource management institutions with biophysical systems?

The first question is descriptive by nature, while the latter two address the analytical issues at the core of this volume.

The EEZ by itself is an enabling institution, in that it creates a contractual environment that facilitates the establishment of legislation and institutions to perform the operative tasks involved in the management of living marine resources. We have assessed the institutional performance of the EEZs on the basis of their ability to generate a suite of institutions capable of providing for the sustainable use of living marine resources. Because of this, we have focused primarily on the governance effects of EEZs.[2]

The case studies in this volume are not a comprehensive selection of the more than 100 countries that have instituted EEZ regimes and we do not claim that these cases constitute an exhaustive basis from which broad generalisations can be made regarding the nature of governance effects following the introduction of EEZs. But we do believe that the cases presented here have provided salient insights and lessons and have relevance that extends beyond the individual cases. In addition, we believe that these case studies have illuminated several trends in the evolution of governance systems.

2. WHAT IS THE NATURE OF THE INSTITUTIONS CREATED WITHIN THE FRAMEWORK PROVIDED BY THE EEZ REGIME?

The transformation of the institutional framework for ocean governance over the last century can be divided into three distinct phases: 1) the recognition that the open access system based on the principle of the freedom of the seas was untenable in the face of increasing pressures and uses of the oceans and its resources; 2) the negotiation of a global framework to provide coastal states with the legal basis to improve the situation; and 3) the supplementation of this legal framework with other international and regional binding and non-binding instruments and processes, domestic institutions and the realisation that the conservation of the ocean environment merits greater attention.

The elaboration of the EEZ by coastal states has been and continues to be a dynamic process. The EEZ regime has generated changes in various institutions as well as in state practice. These changes have often been precipitated by new knowledge or new concerns that have raised awareness about various unsustainable fishing practices. As this volume has demonstrated, the introduction of EEZs provided a basis for dynamic change and institutional evolution at different levels of social organisation, including international, regional and domestic levels.

Effective resource management depends upon the establishment of appropriate institutions, legislation, and policies. Since the geographical distribution of living

[2] Other effects of the introduction of the EEZs include biophysical, knowledge, and socio-economic effects (Hoel et al., 2000).

marine resources varies considerably, from small local stocks that largely remain in one place to huge stocks (several million tonnes) that migrate over vast distances and through numerous jurisdictional boundaries, the requisite institutions for effective management are located at different scales of organisation. Many countries have chosen to develop or reorganise their domestic fisheries management institutions at different scales, nesting them below various bi- and multi-lateral international institutions. As Ebbin (Chapter 6) has shown for Pacific salmon, international (North Pacific Anadromous Fish Commission), regional (Pacific Salmon Commission), national (Pacific Fishery Management Council), sub-national (North of Falcon process) and local (various state, tribal and co-management initiatives) institutional arenas, having both bottom-up and top-down communication flows are needed to produce sustainable and equitable management.

At the international level, a suite of ancillary international agreements and policies has developed since the establishment of EEZs in the 1970s. These have included the 1995 UN Fish Stocks Agreement, the voluntary FAO Code of Conduct for Responsible Fisheries, and the four international plans of action (IPOAs). In his assessment of the international EEZ regime, Edeson (Chapter 2) concludes that the EEZ regime has adapted successfully to changing circumstances and emerging issues. The changes in the institutional landscape generated in response to the 1982 UN Law of the Sea Convention (LOSC), although perhaps leaving much to be desired from the perspective of conservation, have led to the creation of a resilient and flexible institutional infrastructure that has survived remarkably well.

At the regional level, in devolving a significant portion of ocean space to coastal states, the EEZs created new problems of fit for fish stocks that straddle or migrate through the jurisdictions of more than one state or through international waters as well as one or more EEZs. Initially the role of many existing regional fisheries management organisations declined as states chose to flex their jurisdictional muscles in their new EEZs. However, since the implementation of the 1995 UN Fish Stocks Agreement, there has been a strengthening of regional management arrangements to coordinate the actions of the diverse national managers (Sydnes, Chapter 8). In addition, Sydnes elaborates on the manner in which the roles of the existing regional fishery regimes changed following the implementation of the EEZ. These new and re-conceived regional fishery regimes have met with partial success in addressing some of the problems of fit that they encountered. Veitayaki (Chapter 10) demonstrates how the EEZ regime provided a basis for increased regional cooperation among the coastal states of the South Pacific in the management of highly migratory tuna stocks. In this case the establishment of EEZs was necessary for the establishment of regional fisheries management. In addressing the challenge posed by acting upon the EEZ, regionally based cooperative efforts have proved to be an effective institutional scale. However, Ablan and Garces (Chapter 9) present a very different picture. In the case of the South China Sea, states have chosen to focus on their coastal states' rights under Articles 55-56 of the LOSC, and this has undermined efforts to develop regional coordination and management.

At the domestic level, most coastal states reconfigured existing ministries or established new ones, along with councils and technical agencies, to manage fisheries as well as their newly expanded EEZs. The ministries and councils tend to be essentially

political bodies, while the various management agencies (directorates, administrations, departments, etc.) are more technical in nature. Resource management requires a legal basis for government intervention. Most states appear to have established some basic legislation, supported by enabling legislation for fisheries management. The policies and practices of coastal states are diverse, but most have created formal decision-making processes and policies in the realm of fisheries. There are differences between developed and developing countries. The case studies from the North and from developed countries indicate the establishment of more elaborate domestic institutional arrangements among the former. Most coastal states have established national management systems with multiple scales or levels of organisation for implementing the EEZ. Russia has both a federal and a regional level in its management system (Hønneland, Chapter 4). In Australia, management authority is divided between states, territories and the Commonwealth. In the management of the North Pacific Salmon fishery, Ebbin (Chapter 6) illustrates the management system as a lichen, with management institutions and advisory bodies nested at multiple levels. Multilevel management is also evident in the Papua New Guinean fishery, with the delegation of fisheries rights to indigenous peoples (Kalinoe, Chapter 7). This is also pointed to in Young's (Chapter 12) broader discussion of the Bering Sea large marine ecosystem.

Local fisheries take place within a rich and diverse institutional environment. Most customary and traditional fisheries management institutions predate national and international efforts. On top of this landscape, the new institutional infrastructure of the EEZ was placed. The resulting interactions and impacts on local-level institutions are varied. Kalinoe (Chapter 7) demonstrates that because of the limited spatial characteristics of customary and traditional indigenous fisheries, there are very few interactions between the two systems. Ebbin (Chapter 6), on the other hand, shows how national efforts to implement the EEZ through regional councils led to the coordination of a nested management regime, based on local co-management efforts involving Native tribes, state governments as well as other stakeholder groups.

In sum, the observed governance effects of the introduction of EEZs are varied in nature, dynamic in their development over time, and can be found at all levels of governance.

3. THE EEZ AND INSTITUTIONAL INTERPLAY

There is broad agreement in the research community that institutions cannot be analysed in isolation, but must be seen within the context of their institutionalised environments to fully understand the role that they play in society (Young et al., 1999). Institutions are often related to each other in ways that affect their individual and collective performances (Young, 1996; Stokke, 2001). Institutional interplay refers to those situations in which the existence, operation, or output of one institution influences other institutions. Interplay may occur among institutions at the same level of social organisation (horizontal interplay) or among institutions at different levels of social organisation (vertical interplay) (Young, 2002). These interactions may enhance or impede a regimes' effectiveness and have distributive consequences. For that reason states seek to prevent, encourage or shape the interplay of institutions (Stokke, 2001).

The authors in this volume have taken as a primary focus the institutional interplay among the institutions of fisheries governance, in particular the interactions of the global EEZ regime with regional, domestic and local institutions. When analysing interplay one needs to address the factors that cause interplay, and determine whether it impedes or enhances regime effectiveness, in terms of sustainable fisheries management. In this respect, it is fruitful to distinguish between functional and political interplay (Young et al., 1999: 50). Functional interplay occurs when the operations of one regime has consequences for the functions of other regimes through a substantive connection among the activities involved. In this respect, some case studies in this volume explored the functional consequences of the introduction of EEZs on existing ocean and fisheries management institutions at global, regional and domestic scales. Political interplay refers to situations where the linkages between fisheries issues and other issue fields are subject to deliberate manipulation to gain leverage in bargaining or other such motivations (Young et al. 1999; Stokke, 2000). In this volume, some authors examined the interactions of coastal states' EEZ regimes with other institutional arenas, such as negotiations in environmental fora.

The implementation of the EEZ regime along with other global ocean governance institutions has had a major impact on the establishment and operation of regional, national and local institutions of fisheries governance through vertical interplay. Almost all authors address issues of vertical interplay in some fashion. Vertical interplay is related to the need for institutions at different levels of social organisation to be involved with the management of ocean resources at different spatial and temporal scales. In this sense, vertical interplay is an essential component of any nested, coordinated or integrated ocean management regime.

Instances of vertical interplay are not solely top-down events. The EEZ regime was not placed in an institutional void waiting to be filled. Rather, it arose out of an institutional landscape already filled with local, national, and regional institutions. These institutions had an impact upon the nature of the resulting EEZ regime in each country. These bottom-up processes gave form and substance to the international ocean regime. The EEZ regime in turn led to the reconfiguration of many of these lower-level institutions as well as the creation of new institutions, processes and mechanisms charged with carrying out the LOSC mandates. Thus, vertical interplay can be seen as an iterative process in which information and communications flow bi-directionally among the different levels.

Interplay can have both negative and positive effects. The case studies presented show a range of outcomes. Ebbin (Chapter 6) concludes that the vertical interplay of the EEZ regime has led to positive outcomes for the management of Pacific salmon. The EEZ regime allowed the US and Canada to close out foreign fishing vessels and establish regional and domestic measures for the management of the fishery. Moreover, these events led to the establishment of local institutions. Veitayaki (Chapter 10) sees the impact of the EEZs on the development of regional management agreements in the South Pacific in a generally positive light. However, Sydnes' (Chapter 8) overview of regional fishery organisations leads him to a more mixed conclusion. Reichelt and Wescott (Chapter 5), on the other hand, show that vertical interplay within the domestic oceans regime in Australia may have negative consequences for the implementation of integrated policies. In this case, there was a problem of mobilising support from the

states and territories to implement the Australian Oceans Policy of 1998, established by the Commonwealth.

Institutional interplay directs attention to how regimes and institutions affect each other's substantive content and operations (Levy, Young, Zurn, 1995). In oceans governance, instances of interplay occur within the global framework defined by the LOSC and the 1995 UN Fish Stocks Agreement, creating an institutional context in which actors are able to link rules and activities at various levels of governance. One example of this is the way in which such actors use the provisions of the 1995 UN Fish Stocks Agreement, which requires flag states to strengthen the control of vessels flying their flag. In this case, fisheries managers in Northeast Atlantic countries rely on the Vessel Monitoring System of the Northeast Atlantic Fisheries Commission – developed in response to the adoption of the 1995 UN Fish Stocks Agreement – to ensure the compliance of their vessels when fishing at the high seas of the Northeast Atlantic. In this way, a regional control mechanism is linked to domestic enforcement measures.

Institutions charged with the governance of living marine resources have been influenced by and in turn have influenced institutions within other issue areas, such as trade and environmental protection. The examination of these types of interactions, constituting horizontal interplay, is a relatively new and emerging field of study. Sectoral and disciplinary blinders have impeded the analysis of this class of interactions. However several authors explored this phenomenon within the context of their case studies. Hoel (Chapter 3) finds that the biggest domestic challenges to EEZ management are found in the horizontal interplay between living marine resource management, offshore petroleum development and environmental protection. The solution to these impacts of horizontal interplay is found in the development of integrated oceans policies that coordinate between different sectoral uses and users of ocean space and resources. However, as Reichelt and Wescott (Chapter 5) have shown, drafting such legislation may be far easier than its implementation. A recent tendency in many countries is the move towards greater coordination and integration among various sectors involved in the management of living marine resources. A number of countries are in the process of drafting and enacting comprehensive oceans policies. Young (Chapter 12) proposes the creation of a meta-regime, in which there exists some level of coordination among these different sectors and their management regimes. He suggests that this may be a better route to alleviating some of the problems caused by horizontal interplay.

4. THE FIT OF MARINE RESOURCE MANAGEMENT INSTITUTIONS WITH BIOPHYSICAL SYSTEMS

The issue of institutional fit addresses to what extent the functional, spatial, and social scopes of institutional arrangements for the conservation and management of natural resources are compatible with their biophysical environments (Young et al., 1999). For institutions of fisheries management to be effective, there must be a high degree of fit between the scope of an institution and the resources being managed. In practice, this means that scope is defined by 1) the rights to participate in and exploit fisheries, 2) knowledge of the extent, abundance, population dynamics and spawning thresholds of

fish stocks, and 3) the assignation of fisheries management authority to specific actors and institutions.

The EEZ provides the basis for rights and duties of coastal states to the living marine resources and enables them to establish regulatory measures for the fisheries within their EEZs. In this way, coastal states can design institutions with enhanced fit, both domestically and through international cooperation. The case studies presented have shown that the general trend emerging from the establishment of EEZs is one of improved fit over time.

With the establishment of EEZs, the majority of the world's fisheries came under the jurisdiction of coastal states. The 200 nautical miles EEZ was a political invention, a compromise, not established to accord with biophysical factors. With any size zone, whether 150, 200 or 250 nm, there would be cases where there is a poor fit between the institution and the natural environment. Mismatches occur when there is a disjuncture between the biophysical nature of the resource and the jurisdictional boundaries of regimes, such as when resources straddle multiple jurisdictions. Such mismatches impede the effectiveness of governance through institutional fragmentation and the creation of asymmetrical or upstream-downstream problems (Ebbin, 2003). Ablan and Garces (Chapter 9) show in their study of fisheries management in the South China Sea how conflicting claims to EEZs undermine the opportunity to establish a regional management institution for a highly integrated and vulnerable marine ecosystem. However, the EEZ regime has also provided an institutional framework in which regional cooperation and coordination can take place. The phenomena of shared fish stocks and straddling fish stocks necessitated the development of bilateral and regional cooperation among states to manage such stocks. This was, for example, the case when Norway and Russia established the Joint Norwegian-Russian Fisheries Commission in 1976, a bilateral regime managing the shared fish stock of the Barents Sea (Hoel, Chapter 3). The regional fishery organisations that manage transboundary fish stocks have also improved the institutional fit.

Enhanced fit can arise from positive instances of both vertical and horizontal interplay (Ebbin, 2002). In fact, better fit is, in many cases, a specifically desired outcome of institutional interplay. The EEZ stimulated a vast amount of interplay, in the creation of new institutions at multiple levels of social organisation, and the reconfiguration, alignment and coordination of existing ones. Since it is difficult, if not impossible, to alter abiotic aspects of the environment or the biotic nature of resources, improving fit is primarily a question of institutional design.[3]

The problem of fit can be resolved through the effective management of interplay. The management of living marine resources is a classic example of this, where the migratory range of fish stocks often extend beyond the jurisdiction of states and into the high seas. In such cases – several of which were presented in this volume – the global framework comprised of the LOSC and the 1995 UN Fish Stock Agreement, as well as soft-law agreements such as the 1995 FAO Code of Conduct for Responsible Fisheries, provides a platform for addressing problems of fit. Through the vertical

[3] Of course, this has not stopped some US salmon fishermen and managers from wondering if the Canadians are developing strains of Fraser River sockeye salmon with a genetic predisposition to migrate through the Canadian waters of Georgia Strait rather than the US waters of the Strait of Juan de Fuca and the San Juan Islands.

interplay of national and regional fisheries management institutions, the governance deficit, which existed for high seas fisheries, has to some extent, been ameliorated during the last decade. As pointed out by Sydnes (Chapter 8), regional fisheries management organisations have the potential to fill this void. Cases in point are the Northwest Atlantic Fisheries Organization and the Northeast Atlantic Fisheries Commission. The problem of illegal, unreported and unregulated (IUU) fishing is, however, not liable to be resolved within the current global framework. The existence of a large number of states willing to let vessels fly their flags without exercising the controls required by the LOSC, the 1995 UN Fish Stocks Agreement and the 1993 Compliance Agreement,[4] is the major obstacle to improved fit in this regard.

The case of Pacific Salmon (Ebbin, Chapter 6), illustrates how institutional fit has been ensured through a nested system of management institutions, ranging from international to local, tribal and state, institutions. This nested regime is able to coordinate most fisheries that target salmon stocks within their migratory range, from rivers to the high seas, while including all relevant participants (users and other stakeholders) in components of the management process. Authority over salmon fisheries within the EEZ is nevertheless vested in the coastal states according to LOSC Article 66.

In the case of Australia, which has an extensive EEZ covering multiple marine ecosystems, the EEZ does not provide an adequate scale on which to enforce management measures. As a response Australia is in the process of establishing regional management plans based on an ecosystem management approach (Reichelt and Wescott, Chapter 5). A similar process is underway for the Norwegian management of the Barents Sea (Hoel, Chapter 3). However, the effectiveness of this approach in the Barents Sea will to some extent depend on cooperation with Russia, the neighbouring coastal state.

5. CONCLUSIONS

The findings of this volume point to a diverse and varied experience as regards the governance effects of the establishment of EEZs. A few themes stands out as particularly significant, these include the importance of attending to implementation issues, the analytical themes of fit and interplay, the emergence of second generation ocean policies following the introduction of environmental principles in oceans management, and finally the dynamic nature and fluidity of the ocean governance political agenda.

By enclosing within national jurisdictions a large portion of the productive waters of the world, the EEZ regime has eliminated some of the institutional voids and fragmentation that existed previously. In this sense, the global governance system for living marine resources has been considerably improved over the last decades. However, based on the findings of this volume, there are a number of issues that remain unresolved, in particular, moving the provisions of the global regime from paper to practice. Fundamental to meeting the implementation challenge is the establishment of EEZs. While most countries have done so, there are still countries that haven't

[4] The full title is Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.

established extended jurisdictions, leaving the resources in the waters off their coasts open for all to exploit. The establishment of EEZs is a foundation from which to build. The sustainable use of the living marine resources also requires that coastal states adopt legislation that enables them to govern the use of natural resources. To have effect, institutions must have sufficient resources and authority to be able to implement the legislation they were intended to implement. In other words, effective political and administrative bodies must exist and are necessary to implement the legislative intent of the framers. In this regard, capacity building is the main challenge in developing countries (UN, 2003).

The analytical approach of this volume has been that of examining institutional fit and interplay. The problem of fit can be resolved through the effective management of interplay. The problem of fit stems from biophysical management problems that straddle jurisdictional boundaries, thereby fragmenting and diluting the effectiveness of governance efforts. The management of living marine resources is an example of this, where the migratory range of a fish stock often extends beyond the jurisdiction of states into the high seas. In such cases the global framework established by the LOSC and the 1995 UN Fish Stocks Agreement, as well as soft-law agreements as the 1995 FAO Code of Conduct for Responsible Fisheries, provide a platform for handling the problem of fit. However, problems arising from institutional fit do not only occur in international fisheries, but are also a major concern in the design of domestic management institutions.

Institutional interplay can be vertical, among institutions at various levels of governance within a given issue area, or horizontal, that is, between various issue areas at a given level of governance. Fisheries have for a large part been managed through vertically nested institutional structures, where the global framework has provided the basis for regional and national management efforts without much interference from sectors outside fisheries.

Many of the emerging challenges to fisheries management institutions come from instances of horizontal interplay. Numerous international agreements in issue areas outside fisheries now have an increasing impact on how marine living resources are managed. The environmental challenge to fisheries management in particular has led to recent initiatives towards greater cross-sectoral integration, the application of precautionary and ecosystem approaches in management. As a consequence, a number of countries have, or are now in the midst of, developing a second generation of ocean policies. This has, in several countries, led to the drafting of more integrated and multi-sectoral approaches to ocean governance. In this volume, the initiative being undertaken by Australia and Norway were examined. In addition the US and Canada as well as several Asian countries have invested considerable efforts in developing national policies to this end. A common feature of these efforts is the implementation of new, environmentally inspired principles for oceans management. In some instances, such as the case of Australia, policy development and coordination has been emphasized, over the development of new legislation. In the case of Norway, both the policies and the legislative base for the management of living marine resources are undergoing substantial change. It is envisioned that these developments will allow the EEZ regime to better meet the mandates of sustainable use and conservation.

Another finding of this volume is that issues that loomed large during the negotiation of the global treaties have not necessarily remained on the agenda during implementation at the regional and domestic levels. One example is the distribution to other fishing nations of surplus fish within the EEZ of a coastal state, which are unharvested by that state. In practice such a situation has not materialised, as coastal states can define both what constitutes surplus fish as well as sustainable harvest levels. Another example is the 'real interest' criterion of allowing states whose vessels fish on the high seas access to regional fisheries management organisations. While contentious during the negotiation of the treaty, this provision has proved to be uncontroversial in implementation. On the other hand, issues that were not clearly identified during the negotiation of the LOSC and the 1995 UN Fish Stocks Agreement have emerged as salient or contentious. IUU fishing is a case in point, where the existing legal framework is insufficient to resolve the problem. In this regard soft law approaches such as the IPOA on IUU fishing under the FAO Code of Conduct for Responsible Fisheries has greater potential for achieving a satisfactory resolution to this problem. Though there are several challenges to states' effectiveness in implementing their rights and duties based on the EEZ regime, the regime itself has become bolstered through the developments of international institutions nested within its framework and state practice.

These themes are all worthy of further research. How the global framework accounted for here is implemented at regional, national and local scales, is an issue that merits further consideration of the science community, as are the questions of how problems of fit and interplay are approached and resolved in practice. In addition, the development of new, integrated oceans policies should be subject to concerted research efforts and comparative analyses to distil precepts of successful institutional designs.

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