Chapter 2
Overview of Small-Scale Fisheries in Latin America and the Caribbean: Challenges and Prospects

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Abstract The importance of small-scale fisheries in Latin America and the Caribbean has been widely recognized in terms of income, livelihoods, and food security for more than two million people. The highly diverse ecosystems and multiple species found within this region determine the variety of fishing techniques, gears, and target species, as discussed in this chapter. These diverse and complex characteristics pose challenges to the region's governing systems, which may lack the technical and financial resources to cope with the numerous resulting management and governance challenges. These pressures are further exacerbated when fisheries assessment and monitoring are poorly conducted, adding uncertainty in relation to the status of the ecosystem and fish stocks. Small-scale fisheries activities thus have become vulnerable in the face of various challenges in Latin America and the Caribbean. Current efforts to enhance small-scale fisheries viability and sustainability in Latin America and the Caribbean include the adoption of innovative management approaches that focus on the entire ecosystems rather than on single species and that acknowledge the concerns of local stakeholders in decision-making through strategies such as collaboration with the government in co-management arrangements. Although many of these co-management arrangements

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in the region are still nascent, this chapter highlights that fishers and their organizations play a significant role in responsible resource governance through exercising ecosystem stewardship.

Keywords Latin America and the Caribbean · Small-scale fisheries · Governance · Viability · Sustainability · Environmental stewardship

2.1 Introduction

Small-scale fisheries in the Latin America and Caribbean region can be traced back to pre-colonization periods (i.e., before the fifteenth century) (Diegues 2008; Bray 2012; Rostworowski 2015). At the time, the inhabitants of the Americas relied heavily on fishing resources for subsistence. Historically, the development of fishing practices and knowledge about resources and fishing grounds were passed on from elders to younger generations by different strategies, some of which are still present in some communities (De Madariaga 1969). After colonization, the monetary value attributed to fish and its trade triggered the shift from a subsistence-based to commercial fishery. This change opened space for fishing enterprises that actively searched to expand their fishing effort in the region, particularly during the 1980s (Allsopp 1985; Tassara 1994; Salas et al. 2007). This expansion coincided with liberal political agendas combined with neoliberal practices such as financialization, deregulation, and privatization, among other drivers of change (Pinkerton 2017). In the same vein, nation states made a major push to develop industrial fisheries and increase fishing fleets, arguing that such development would generate jobs and help secure food availability for coastal communities (Chuenpagdee et al. 2011).

According to FAO (2016), almost 90% of all motorized fishing vessels in the Latin America and Caribbean region are considered small scale, or less than 12 m in length. Despite the recognition that there is no single agreed-upon definition of small-scale fisheries (FAO 2015), and that the criteria used in Latin America and the Caribbean to define small-scale fisheries vary remarkably across countries, small-scale fisheries are generally characterized by a small number of fishing crew (3–5 fishers), are largely community-based, operate in nearshore areas, use low levels of fishing technology, and have limited capital investment (Salas et al. 2007). Further, they typically target multiple species and use a large diversity of gears and fishing techniques that vary spatially and temporally as determined by the dynamics of resource availability (Salas et al. 2007). Small-scale fisheries in the region are deeply linked to the history and culture of local fishing communities and have a strong influence on the regional economy through the generation of employment, income, and livelihoods.

More than a third of total landings and almost half of the economic value of fish landed in Latin America and the Caribbean come from small-scale fisheries (Pauly and Zeller 2015). However, the contributions of the Latin American and Caribbean countries to overall small-scale fisheries catches vary significantly. For instance, the highest landings come from Latin American countries (i.e., Chile, Mexico, Peru, Brazil, and Argentina) (Pauly and Zeller 2015), whereas some Caribbean countries account for the highest landed value per tonne of fish produced (e.g., Anguilla, Bahamas, British Virgin Islands, US Virgin Islands, Turks and Caicos) (Salas et al. 2007; Pauly and Zeller 2015). This reflects different catch strategies, with the Caribbean fisheries targeting a relatively low volume of high value benthic resources (e.g., spiny lobster *Panulirus argus*, queen conch *Strombus gigas*, and different species of shrimp), which are mostly destined for export and tourism (Mahon 2008). The Latin American fisheries, on the other hand, in spite of their high diversity (Baldeo 2011; Herrera et al. 2011; Herrera-Ulloa et al. 2011; Valle et al. 2011), primarily target demersal fish species (i.e., Brazil and Argentina) or small pelagic species (i.e., Chile, Mexico, and Peru) in a comparatively high volume that generates high revenue despite a lower value per tonne (Salas et al. 2011).

The diversity and complexity of small-scale fisheries in Latin America and the Caribbean mean that management approaches and overall fisheries governance may differ according to the national context. While some regional cooperation and scaling up of the governing system are already happening in the region, other approaches may need to be considered to support the implementation of the *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*, further on referred to as the SSF Guidelines (FAO 2015). From that perspective, this chapter provides an overview of small-scale fisheries in the region, emphasizing key characteristics that include the diverse systems of fisheries governance. However, this overview is not exhaustive in light of several important differences that can be observed within the region. The description of small-scale fisheries in Latin America and the Caribbean is then followed by a discussion of the challenges they face in the region and conditions that are favorable for achieving the viability and sustainability of small-scale fisheries in pursuit of the implementation of the SSF Guidelines.

2.2 Data Sources

We relied on three main data sources for information about small-scale fisheries in Latin America and the Caribbean. First, we conducted a comprehensive literature review of peer-reviewed publications, books, and monographs on topics related to small-scale fisheries. Second, we used publicly available databases maintained by the Food and Agriculture Organization of the United Nations (FAO), such as the Country Fishery Profile and the FAO Global Statistics, the *Sea Around Us* Project

for large-scale and small-scale fisheries catches and values (Pauly and Zeller 2015), and the Information System on Small-Scale Fisheries (ISSF) (Chuenpagdee and Devillers 2015; Chuenpagdee et al. 2017). The latter was produced by the Too Big To Ignore Global Partnership for Small-Scale Fisheries Research (TBTI). ISSF data used in the analysis (downloaded in November 2016) include 44 small-scale fisheries profiles covering 15 countries in the region as well as 289 publications from 33 countries. The database also includes information on fisheries subsidies, which were revealed in a PhD thesis (Schuhbauer et al. 2017). Finally, we consulted various sources of government documents and gray literature available from government agencies in the region (e.g., Brazilian Ministry of Fisheries and Aquaculture, Chilean *Servicio Nacional de Pesca, Ministerio de Economia, Fomento y Turismo*) and from regional organizations, research institutions, civil society organizations, and fishery bodies like the *Organización del Sector Pesquero y Acuícola del Istmo Centroamericano* (OSPESCA), the Caribbean Regional Fisheries Mechanism (CRFM), and the Western Central Atlantic Fishery Commission (WECAFC), among others.

2.3 Characteristics of Small-Scale Fisheries in Latin America and the Caribbean

2.3.1 Diverse Ecosystems

The Latin America and Caribbean region is one of the world's richest regions in terms of biodiversity abundance and endemism rates (Olson and Dinerstein 1998; Olson et al. 2002). Brazil, Colombia, Ecuador, Mexico, and Peru are among the top ten most biodiverse countries in the world (Bovarnick et al. 2010), together accounting for 60–70% of all known life on Earth (UNEP 2016). With the Caribbean Sea in the northeast, the Atlantic Ocean to the east, and the Pacific Ocean to the west, the Latin America and Caribbean region includes FAO Major Fishing Areas 31 (Western Central Atlantic), 41 (Southwest Atlantic), 77 (Eastern Central Pacific), and 87 (Southeast Pacific) (FAO 2017). The area also encompasses ten Large Marine Ecosystems (LMEs), namely, the California Current, Gulf of California, Gulf of Mexico, Pacific Central-American, Caribbean Sea, Humboldt Current, Patagonian Shelf, South Brazil Shelf, East Brazil Shelf, and North Brazil Shelf (Brown 2017). This broad geography results in very diverse coastal, marine, and inland ecosystems, which include coral reefs, seagrass beds, mangroves, sandy beaches, tidal flats, lagoons, estuaries, salt marshes, large river basins, and wetlands (Seeliger and Kjerfve 2001; UNEP 2010, 2016). The diversity of ecosystems and species is reflected in the number of species caught by small-scale fisheries in each country, with Brazil leading the region at 251 species (Fig. 2.1).

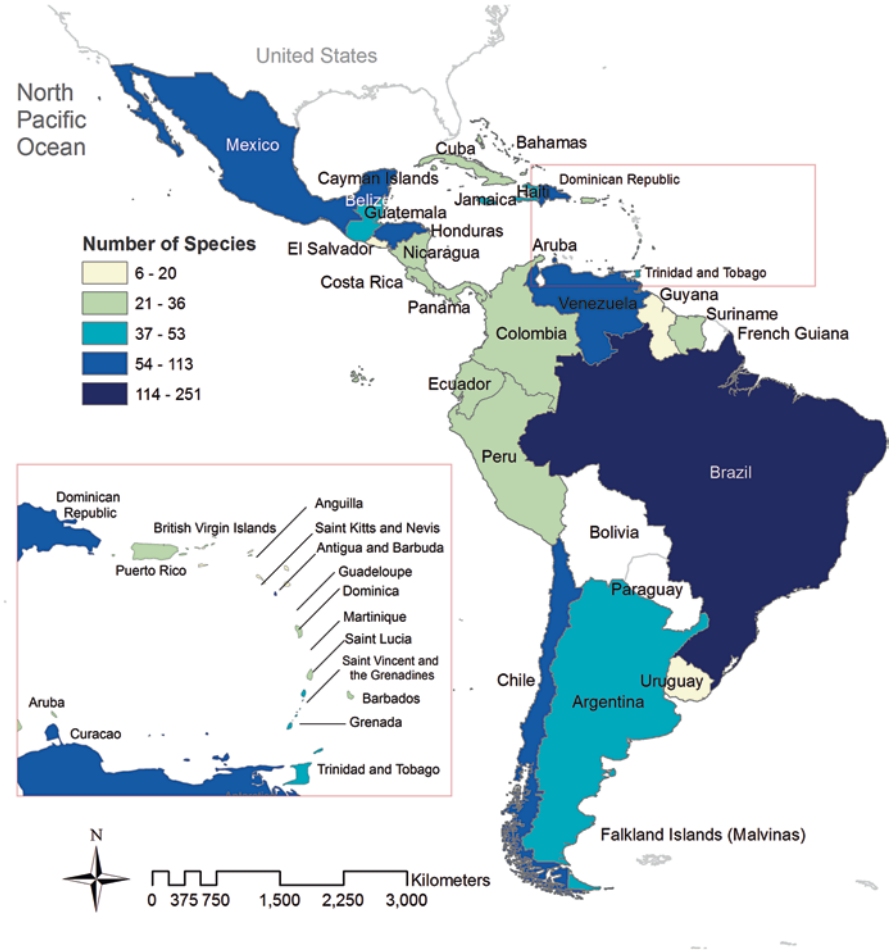

Fig. 2.1 Total number of species caught by small-scale fisheries in each country of the Latin America and Caribbean region (Source: *Sea Around Us* Project; Pauly and Zeller 2015)

2.3.2 *Diversity of Target Species and Gears*

With the diverse ecosystems in which small-scale fisheries in Latin America and the Caribbean take place, including both marine and freshwater habitats, the sector encompasses a wide spectrum of species and fishing practices (Macchi et al. 2014). A great variety of species is targeted in the region, including mollusks (e.g., bivalve, gastropod, cephalopods), crustaceans, echinoderms, and demersal and pelagic fishes. For instance, Elías et al. (2011) report 64 species caught in Argentina, Mohammed et al. (2011) report close to 40 species and groups of species for Trinidad and Tobago, and Fernández et al. (2011) found that more than 120 species

are caught on both the Pacific and Atlantic coasts of Mexico. Despite the diversity of species targeted in the region, some species or group of species support the main landings in different subregions, with fishing gears varying according to species targeted. The main species targeted by small-scale fisheries on the Caribbean coast in terms of economic value include benthic resources like the spiny lobster (*Panulirus argus*) and queen conch (*Strombus gigas*), which are caught mainly using traps and diving techniques. Another important group of species that is caught heavily at the local scale in the Caribbean are large pelagics such as tuna-like species, as well as dolphinfish, wahoo, and reef fish (Mahon 2008; Fanning et al. 2013). In the Guianas-Brazil region, different species of shrimp constitute the main target (*P. brasiliensis*, *Penaeus subtilis*, *P. notialis*, *P. schmitti*, and *Xiphopenaeus kroyeri*) (Phillips et al. 2011). In South America, the focus is on small pelagic species (e.g., anchovy, sardine) or demersal fish species (e.g., croaker, hake), which have been prominent for several decades (Salas et al. 2011; Pauly and Zeller 2015). Specifically, small pelagic fishes are the predominant target in Peru and Chile, where they are caught using purse seines, while demersal fishes are the main target in Uruguay and Brazil, where they are harvested using trawls (Baldeo 2011; Pauly and Zeller 2015). Diving is also a common fishing method, performed using hookah gear (Herrera et al. 2011). According to the ISSF database, the most common fishing gears reported for Latin America and the Caribbean are hooks and lines, gillnets, surrounding nets, and traps (Chuenpagdee et al. 2017).

2.3.3 Catches and Values of Marine Fisheries

The small-scale fisheries sector in Latin America and the Caribbean constitutes almost one third of the total marine catch in the region (FAO 2016). According to the *Sea Around Us* project, catches from marine waters are estimated at about 4.1 million tonnes in the region (Pauly and Zeller 2015). In some countries, small-scale fisheries represent the majority of the national fisheries catch. For instance, there are about 20 countries and island states in Latin America and the Caribbean where small-scale fisheries provide more than 90% of the total national catch.

Even though overall small-scale fisheries catches are smaller than industrial fisheries, especially considering the catch of one single species – the world's largest fishery, Peruvian anchoveta (*Engraulis ringens*), with an annual catch of over 95 million tonnes (Pauly and Zeller 2015; Majluf et al. 2017) – the landed value of small-scale fisheries catches is estimated to be about $8 billion USD, or 54% of the total landed value (Pauly and Zeller 2015). This implies that the value per tonne of small-scale fisheries is more than twice that of large-scale fisheries (about $3,131 per tonne vs. $1470) (Pauly and Zeller 2015). This figure highlights the importance of small-scale fisheries to the social and economic development in the region.

Latin America Chile, Mexico, Peru, Brazil, and Argentina are the top five countries in the Latin America subregion in terms of absolute marine catch and landed value (Fig. 2.2). However, small-scale fisheries are more dominant in French

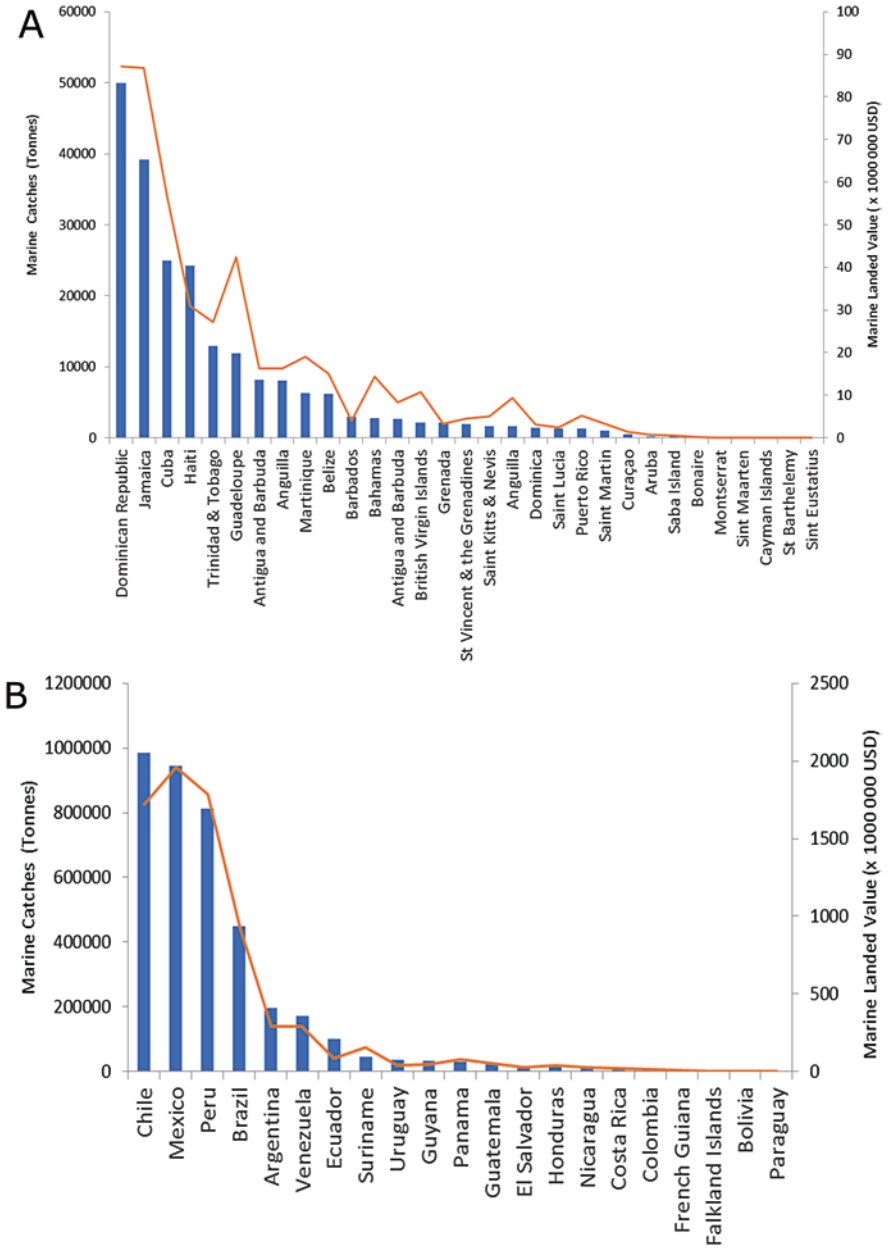

Fig. 2.2 Small-scale fisheries marine catch and landed value for the Caribbean (**a**) and for Latin America (**b**) (Source: *Sea Around Us* Project 2017, Pauly and Zeller 2015)

Guiana, Venezuela, Honduras, and Suriname, representing more than 75% of total catch and landed value, including industrial fisheries. Suriname, French Guiana, and Honduras represent the highest value per tonne in the subregion, with landings valued at more than $2,800 per tonne in these countries (Pauly and Zeller 2015; Sea Around Us database 2017).

The Caribbean includes many countries in which fisheries catches and landed value come almost entirely from small-scale fisheries. In three specific cases (Haiti, Montserrat, and Jamaica), all catches are small-scale (Pauly and Zeller 2015; Sea Around Us database 2017). The Dominican Republic and Jamaica lead the subregion with the largest marine catches and landed values, catching about 40,000 tonnes worth over $80 million USD. However, in terms of value per tonne, Anguilla, Bahamas, and the British Virgin Islands rank highest in the subregion, valued at over $5,000 USD per tonne (Pauly and Zeller 2015; Sea Around Us database 2017).

2.3.4 Inland Fisheries

Inland fisheries play a very strong role in Latin America and the Caribbean. These fisheries take place in the Usumacinta river system in Mexico; the large river systems of the Amazon, Orinoco, and La Plata; and important secondary river systems such as the Essequibo in Guyana, the São Francisco in Brazil, and the Magdalena in Colombia. Fishing also occurs in lakes such as Lake Nicaragua, the Andean lakes of Argentina and Chile, and Lake Titicaca, as well as several reservoirs in Brazil and Venezuela and the Pantanal wetlands of the upper Paraguay River (FAO 2011). However, information about this sector is currently insufficient for effective management (Béné and Neiland 2003; Miao et al. 2010; Cooke et al. 2014; Youn et al. 2014).

South America accounts for one of the largest rivers in the world in terms of volume of water discharge, the Amazon river. Brazil leads the region in terms of inland landings, with about 235,527 tonne/year, followed by Mexico (123,688 tonnes) and Venezuela (43,681 tonnes), as shown in Fig. 2.3 (FAO 2009). The importance of inland small-scale fisheries to local economies in the Brazilian and the Bolivian Amazon river basin is enormous. In Brazil, inland small-scale fisheries employ more than 200,000 people and serve as a revenue source worth about $200 million USD per year for riparian communities, with over 200 fish species being targeted for human consumption in the Brazilian Solimões-Amazon river basin (Fischer et al. 1992; Barthem and Fabré 2004). A high level of complexity and diversity in Brazilian inland small-scale fisheries activity is reflected in catch composition, type of fishing ground, and fishing gear used (Lopes et al. 2016).

In the Bolivian Amazon, indigenous fisheries targeting the "paiche" (*Arapaima gigas*) have become commercially significant, accounting for about 80% of the catch in that region (Macnaughton et al. 2015). In the Caribbean, only four countries report their inland catches, of which Cuba encompasses the largest share with 1,680 tonnes, followed by the Dominican Republic (842 tonnes), Haiti (600 tonnes), and

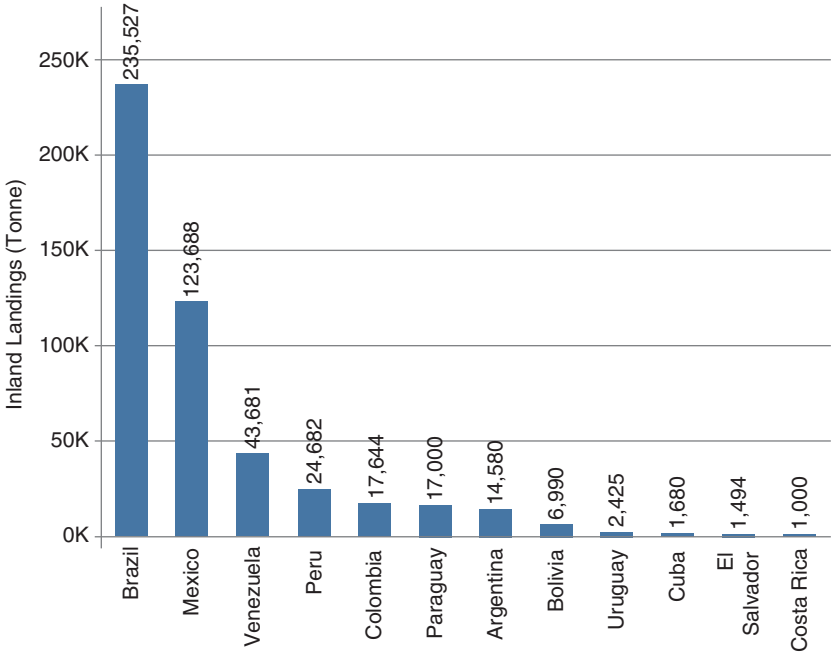

Fig. 2.3 Inland landings, in tonnes, for the top 12 countries in Latin America and the Caribbean (Source: FAOSTAT; FAO 2009)

Jamaica (400 tonnes) (FAO 2009). Inland production in Cuba, the Dominican Republic, and Jamaica is mainly driven by stocking schemes in reservoirs, with Cuba having had a much larger inland fisheries production in the 1990s (16,000 tonnes) when funding for stocking was abundant (FAO 2011). Inland fisheries are particularly important to landlocked countries, where they constitute an important source of animal protein and the only domestic source of fisheries products (FAO 2011). The two landlocked countries in the region, Paraguay and Bolivia, land 17,000 and 6,990 tonnes of fish, respectively (FAO 2009).

2.3.5 Social and Cultural Diversity, Employment, and Livelihoods

It is estimated that roughly 2 million people are either directly or indirectly linked to small-scale fisheries in Latin America and the Caribbean (Salas et al. 2011). This sector greatly contributes to the alleviation of poverty and malnutrition, as well as the food security of the region (Hanazaki et al. 2013). The region also encompasses an extensive social and cultural diversity, expressed by the myriad of languages, cultural identities, spiritual attributes, and historical features present in Latin

America and the Caribbean, which have shaped the tight relationship that exists between fishing people and aquatic environments (Diegues 2008). In fact, both past and current social and natural dimensions implicit in fishing practices are balancing the role that small-scale fishers play in enhancing the sense of care for the marine environment and the responsible use of shared fishing resources (Medeiros et al. 2014).

Given the diverse sociocultural context, a homogenous approach for addressing the poverty and social marginalization of fishers in the region is unlikely to be found (Gasalla and de Castro 2016). Such an approach would be further limited by the ethnic, cultural, religious, and spiritual differences in the fishing traditions that occur across Latin America and the Caribbean. These large subregional variations show the deeply embedded ancestral connections between fishers, their territories, and the seas surrounding them. The multiple meanings and stories that are intermingled within those rapports also form part of the self-identities of local coastal communities, both in indigenous communities and in areas with predominant European influence (Lafer 2014).

An additional transcendental dimension associated with small-scale fisheries in the Latin American and Caribbean context is the traditional knowledge that is associated with this activity. It has been said that the production and transmission of fishing knowledge have led to the diversification of fishing techniques, gears, and fishing grounds, as exhibited by the fishing communities at large (Galván-Tudela 1988, 1990; Pascual-Fernández 1991). These varied sources and forms of knowledge have enabled fishers in the region to adapt to seasonal fluctuations in conditions such as changing riverine water levels, coastal geomorphology dynamics, seasonal abundance, species composition, and distribution and even to dynamic cultural and spiritual practices associated with the act of fishing.

2.3.6 The Importance of Fish as Food

Fish has been highlighted as a food source of high nutritional value and an important source of protein and micronutrients (Béné et al. 2015, 2016). From the standpoint of fishing communities, the local availability of fish determines the patterns of animal protein consumption more so than direct economic dependency on fisheries (Bezerra da Costa et al. 2014). Thus, fish consumption within the Latin American and Caribbean context varies remarkably across the region, ranging from high fish consumption indices in Caribbean countries to relatively low figures for most of South America except a handful of countries like Chile (Villanueva-Benitez and Flores-Nava, Chap. 14, this volume). Per capita fish consumption has also been generally low in certain parts of Central America (FAO 2013). On average, fish and seafood consumption in Latin America and the Caribbean, based on food supply data, is 15 kg/capita/year (FAO 2013). This number shows that, despite the significant average of apparent fish and seafood consumption in this region, it still ranks rather low compared to the global average of apparent fish and seafood

consumption (19.7 kg/capita/year) and much lower than high-consuming countries in Asia, Oceania, and Europe. Maldives, Iceland, Kiribati, Hong Kong, and Malaysia, for instance, consume over 50 kg of fish and seafood per capita per year; in Latin America and the Caribbean, per capita fish and seafood consumption ranges from as low as 1.3 kg/capita/year in Guatemala to about 53 kg/capita/year in Antigua and Barbuda (FAO 2013).

A variety of factors affect fish and seafood consumption patterns, such as access, availability, and affordability of fish as food. In the case of Latin America and the Caribbean, lower apparent fish and seafood consumption in certain countries in Central America (e.g., Guatemala with 1.3 kg/capita/year, the lowest in the region, and Honduras, with about 4 kg/capita/year) and South America (e.g., Argentina and Uruguay with about 7 kg/capita/year each) can be partly explained by the high availability of other animal protein sources (FAO 2013). Cultural factors also play a role in influencing consumer preferences toward food. In some cases, food taboos or food prohibitions are observed in regions such as riverine communities in the Amazon and along the Atlantic Forest coast in Brazil (Begossi et al. 2004).

Overall, per capita usage of fish and seafood for human consumption at the global scale is likely to increase significantly in the next decade. Global per capita fish consumption reached a record high in 2014 of almost 20 kg/capita/year, with Latin America and the Caribbean playing an important role in this growth (e.g., Brazil, Peru, Chile, and Mexico). This increase was due to a wide array of factors occurring in developing countries such as rising living standards, population growth, rapid urbanization, the growing recognition of fish as healthy and nutritious food, and technological developments in food processing, packaging, and distribution (FAO 2016). However, this increasing trend in fish and seafood consumption may not be reflected at a local scale in some cases. In Puruba Beach, southeastern coast of Brazil, a small-scale fisheries community experienced a reduction in fish consumption and in the diversity of species eaten, followed by an increased reliance on external food sources, reflecting dietary changes over time (MacCord and Begossi 2006). Additionally, authors like Golden et al. (2017) have raised an issue about the availability, accessibility, and affordability of fish as food, and its resulting importance to food security, in fishing communities where aquaculture has been strongly promoted. It remains largely unclear to what extent aquaculture activities mitigate the food insecurity of fishing communities in Latin America and the Caribbean (Hellebrandt et al. 2014).

2.3.7 Distribution of Subsidies

Globally, the majority of subsidies (about 84%) go to support large-scale fisheries (Schuhbauer et al. 2017) and are mainly destined for subsidizing fuel costs and enhancing capacity (Sumaila et al. 2010). Schuhbauer et al. (2017) have analyzed fisheries subsidies in 81 countries which together represent 98% of global subsidies allocated to fisheries in 2009, or $35 billion USD. The share of subsidies allocated

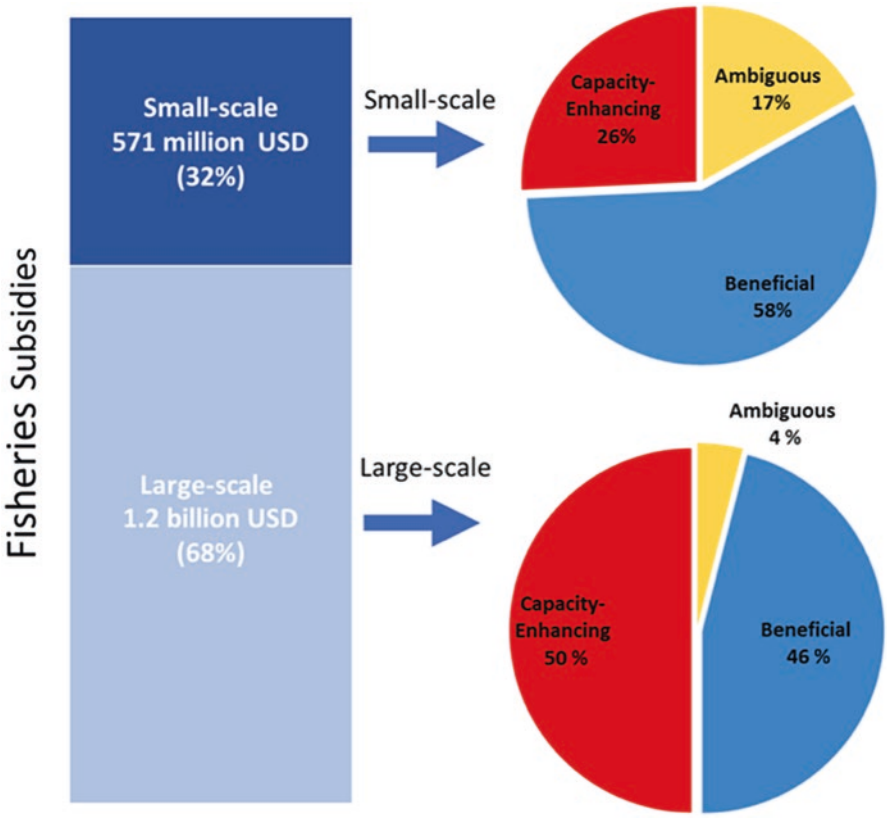

Fig. 2.4 Proportion of fisheries subsidies allocated to small-scale fisheries and large-scale fisheries in Latin America and the Caribbean and the share designated to capacity-enhancing, ambiguous, and beneficial subsidies for each (Source: Chuenpagdee and Devillers 2015; ISSF database 2016; Schuhbauer et al. 2017)

to small-scale fisheries in Latin America and the Caribbean is much higher than the global average, with about 32% allocated to small-scale fishers (Fig. 2.4; Schuhbauer et al. 2017; ISSF database 2017, Chuenpagdee and Devillers 2015). These small-scale fisheries subsidies are divided into three categories as follows: beneficial (57.7%), capacity-enhancing (25.7%), and ambiguous (16.6%) (Schuhbauer et al. 2017). Schuhbauer et al. (2017) define the fisheries subsidy categories as follows: (1) beneficial subsidies go to fund fisheries management, fisheries research and development, and marine protected areas; (2) capacity-enhancing subsidies support boat construction, renewal and modernization, development programs, port development, infrastructure for marketing and storage, tax exemptions, and fishing access agreements; and (3) ambiguous subsidies go to fisher assistance, vessel buyback, and rural fisheries community development programs.

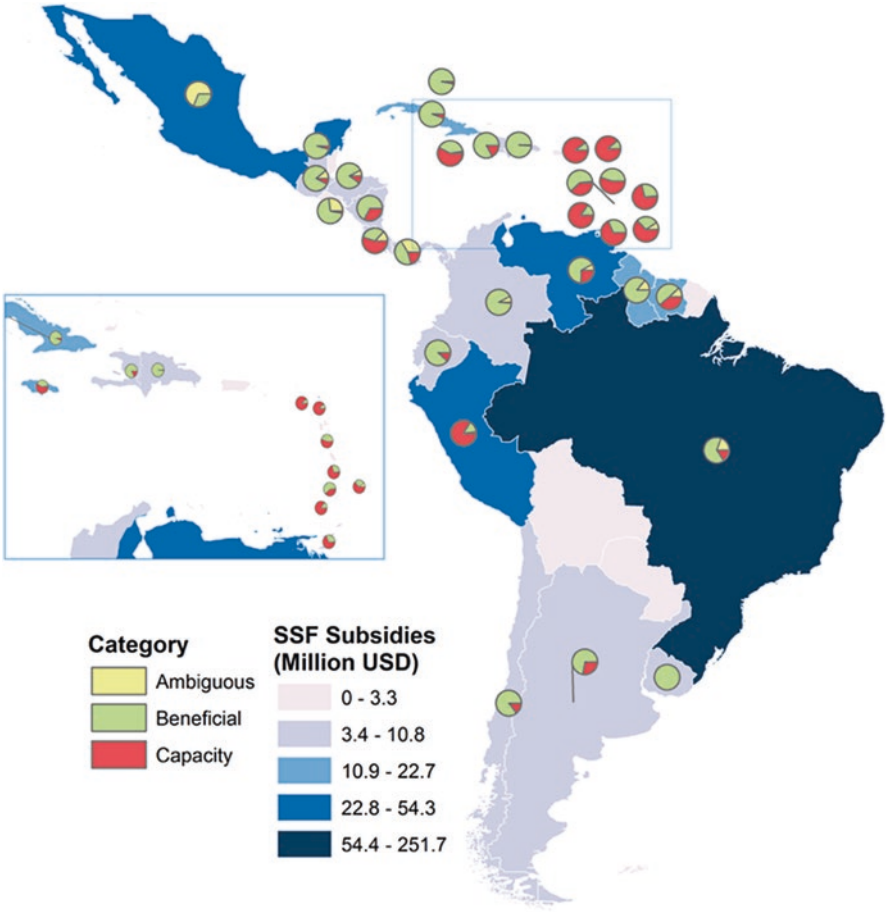

Fig. 2.5 Subsidies allocated to small-scale fisheries in the Latin America and Caribbean region in million USD and the share of capacity-enhancing, ambiguous, and beneficial subsidies per country (Data source: Schuhbauer et al. 2017; ISSF database 2016, Chuenpagdee and Devillers 2015)

There are remarkable differences in subsidy category allocations throughout the region. The capacity-enhancing subsidies are primarily concentrated in the Caribbean, whereas in Latin American countries, priority is given to the beneficial subsidies, followed by ambiguous subsidies (Fig. 2.5). The capacity-enhancing subsidies in the Caribbean are highest in St. Kitts and Nevis, where they are mostly allocated to fisheries development projects, followed by Antigua and Barbuda and Grenada, which mostly have similar subsidies (Schuhbauer et al. 2017). Historically, public policies on fisheries subsidies have aimed at increasing fish catches through capacity enhancement, especially between the 1960s and 1980s, until these measures led to overexploitation and declines in catches, as in the case of Brazil (Abdallah and Sumaila 2007). The ambiguous subsidies are mostly used in Mexico

(69%), Panama (33%), El Salvador (27%), and Brazil (19%), where a relatively large share of the total subsidies to small-scale fisheries are destined toward fisher assistance, vessel buyback, and rural fisher community development programs (Schuhbauer et al. 2017). According to Schuhbauer et al. (2017), beneficial subsidies represent more than 80% of the total subsidies allocated to small-scale fisheries in Guyana, Chile, Cuba, Ecuador, Guatemala, Haiti, and Honduras. They are especially significant in Colombia, where 90% of designated beneficial subsidies support marine protected areas and fisheries management, and in Uruguay, where almost all small-scale fisheries subsidies are also dedicated to this end.

2.4 Fisheries Governance Systems

While top-down governance modes still dominate in the region, according to the data in ISSF, co-management regimes are gaining ground in several Latin American and Caribbean countries in recent decades (Chuenpagdee and Devillers 2015; ISSF database 2016). Since the late 1980s, co-management regimes for small-scale fisheries in Latin America and the Caribbean have been informed by the commons theory (Ostrom 1990; Ostrom et al. 1999) and were proposed as part of the solution to resource conflicts and crises (Jentoft et al. 1998). This approach has been considered a hybrid system that combines centralized and decentralized formats, as well as community and state institutions (Singleton 2000), in a system of fisheries governance that requires active community participation (Noble 2000).

Devolution and sharing of government power with local stakeholders in fisheries resource management usually requires an enabling environment for collective action, with an important role in co-management activities played by small-scale fishers' associations and cooperatives. Fishers' cooperatives are of the utmost importance for the viability and sustainability of small-scale fisheries, not only in Latin America and the Caribbean but worldwide (Pomeroy 1995; Le Sann 1997). The capacity of small-scale fisheries communities to take collective action, in conjunction with government support, in particular has been demonstrated as fundamentally important to achieving fisheries sustainability in developing countries (Kosamu 2015). In Brazil, Kalikoski et al. (2009) state that small-scale fisheries cooperatives have been a strong ally in successful community-based initiatives, where co-management arrangements usually take place inside marine protected areas that allow for sustainable resource use, with fishers participating as part of the MPA council, or in fishing fora (McConney and Medeiros 2014). In the Baja California peninsula, social organizations for small-scale fisheries include more than 200 fishing cooperatives, which have contributed to reducing the transaction costs of fishing activities as well as increasing access to fishing permits and markets (Ramirez-Sanchez et al. 2011). This form of small-scale fisher self-organization has also been described as a means to bringing non-monetary benefits to fishers in some situations such as promoting empowerment and providing leadership as a unified effort to protect small-scale fisheries livelihoods in Latin America (Pollnac 1988).

In Mexico, the cases of the lobster (Méndez-Medina et al. 2015) and abalone fishery (Searcy-Bernal et al. 2010) illustrate a supportive dynamic between fishers' cooperatives and government. Another example of a highly effective small-scale fishing cooperative is from the Punta Allen fishery, located in the Sian Ka'an Biosphere Reserve in the state of Quintana Roo, Mexico (Sosa-Cordero et al. 2008; Cunningham 2013). According to Cunningham (2013), the partnership between the government and the fishers' cooperative has fostered greater community accountability and has enabled the fishing community to be an effective steward of the resource. This positive environment has brought economic and social prosperity to the fishing community from the 1960s to date. It has recently been reported that small-scale fishers in the Punta Allen lobster fishery perceive the co-management regulations to be highly effective, and the success of this co-management arrangement could be partly due to an equal distribution of fishing incomes and benefits among fishers (Villanueva-Poot et al. 2017).

In the Caribbean, local user organizations are few, and have not played an active role in resource governance or fostering co-management in practice due to cultural and historical barriers to social cohesion and collective action (Brown and Pomeroy 1999; Mahon 2008). However, some successful cases can be found in the Caribbean in terms of fishing cooperatives and support to co-management regimes, for example, in Belize and Barbados (Brown and Pomeroy 1999). In Belize, the organizational strength of fishing cooperatives has been a major factor in the success of the conch and lobster fisheries (Brown and Pomeroy 1999). For this reason, Belizean fishing cooperatives have often been identified as the most successful in the Caribbean (McConney and Medeiros 2014). In this case, territorial use rights are only allocated to "native" Belizeans, who share communal property of conch and lobster resources and receive government support. The fishing cooperatives are responsible for controlling the fish chain of the conch and lobster fishery, and adopted co-management elements such as collaborative patrolling and participatory decision-making (Brown and Pomeroy 1999). In Barbados, there has been a recent trend toward cooperatives and associations focused on empowerment and participation in decision-making, with about six fishers' organizations currently operating under the Barbados National Union of Fisherfolk Organizations (BARNUFO; McConney and Medeiros 2014). Today in the CARICOM region, the Caribbean Regional Fisheries Mechanism (CRFM) plays a fundamental role in fostering both the formal and informal organizations of fishers at the regional and national levels (McConney and Medeiros 2014). One of the main outputs has been the creation of the Caribbean Network of Fisherfolk Organizations (CNFO) at the regional level, which aims at strengthening and facilitating networks among fishers' organizations (McConney and Medeiros 2014).

Territorial Use Rights in Fisheries (TURFs) have proven to be a successful tool for small-scale fisheries management in Chile. In 1995, the Chilean TURFs were launched under the new Fishing Act of 1991 (Subpesca 1995). Through the TURF model, fishing rights are allocated to fisher associations (i.e., unions and cooperatives) that could be operationalized under the term "Management and Exploitation Areas of Benthic Resources" (MEABR). TURFs have shown to play an important

role, not only in providing social and economic benefits to coastal communities but also in marine resource conservation (Gelcich et al. 2012). However, challenges remain in terms of increased costs associated with surveillance and addressing poaching, which further compromises the already variable and uncertain financial returns (Gelcich et al. 2016). These challenges could be overcome through several strategies, including the development of restocking activities, support for enforcement, combining TURFs with MPAs, and marketing and commercialization (Gelcich et al. 2016). On a positive note, fishers perceive the main outcome of Chilean TURFs to be a contribution to territorial empowerment, as well as encouraging innovation and stewardship (Gelcich et al. 2016).

2.5 Challenges Facing Latin American and the Caribbean Small-Scale Fisheries

As in the rest of the world, small-scale fisheries in Latin America and the Caribbean face multiple challenges. These mostly stem from the high ecological and social diversity of these fisheries systems, which add to their complexity in terms of assessment and governance. These challenges increase when coupled with the limited financial and logistic capacity of management authorities and the lack of political will to properly assess and manage the fisheries. This situation generates high uncertainty for the future state of fisheries resources and threatens the ability of fishing communities to sustain their livelihoods. The ability of small-scale fishers to respond and adapt to changes is thus impaired by the limited effectiveness of governing institutions, as well as by unsolved conflicts between users of the coastal and marine environments (Orensanz et al. 2005; Defeo et al. 2013). The following are some of the key issues that require attention from key governing actors.

2.5.1 Limited Research Scope

Despite some major advancements in research and information availability, the Latin America and Caribbean region still has limited financial support to conduct research (Salas et al. 2011). According to Salas et al. (2007), the region lacks sufficient research efforts, resources and knowledge production intended to foster an integrative and comprehensive understanding of small-scale fisheries as part of complex ecological, sociocultural, and economic systems. As will be later discussed, however, some positive changes have occurred which can help strengthen the viability and sustainability of small-scale fisheries in the region.

As reported in the ISSF database (Chuenpagdee and Devillers 2015), a strong area of current research is governance, with an emphasis on participation and representation in decision-making. Some attention has also been given to addressing the effectiveness of different policies, tools, and instruments for resource management,

as well as the appropriateness of rules and regulations and associated enforcement and compliance (Chuenpagdee et al. 2017). Ecological research on topics such as fish biology and populations receives similar attention when compared to sociocultural research, which focuses largely on livelihood dependency, alternative employment, and job diversification (Chuenpagdee et al. 2017). Economic research, on the other hand, is far less emphasized in the region.

2.5.2 Weak Governance Structures and Interactions

The lack of sound data is exacerbated by poor capacity for the surveillance and enforcement of management regulations (Chuenpagdee et al. 2011). Some of the biggest governance challenges in Latin America and the Caribbean are the lack of sound governance structures coupled with inadequate inter-institutional coordination (Gerhardinger et al. 2011), a high level of corruption (Transparency International 2016), the absence of professional motivation from managers (Gerhardinger et al. 2011), and poor public participation (Salas et al. 2007). All these difficulties, intermingled within a pessimistic working environment (Gerhardinger et al. 2011), contribute to an uncertain future for small-scale fisheries in the region.

2.5.3 Competing Uses of Coastal Space

Challenges and threats toward small-scale fisheries do not only stem from a problematic institutional environment and weak governance structures. They also emerge from daily-life practices within coexisting conflictive scenarios that are prompted by the diversity of interactions taking place among the multiple users of the marine environments. According to Bennett et al. (2015), the term "ocean grabbing" – defined as the dispossession of coastal and ocean territories from the use, control, or access by small-scale fishers – is a representation of such power imbalances. Currently, it is being heavily promoted by a neoliberal policy agenda that privileges the maximization of profits in the short term. This is illustrated by the shrimp small-scale fishery case in the São Paulo coast, Southeast Brazil, where fishers have had access to their territories prohibited or limited by the implementation of a set of coastal zoning policies that favor port, oil and gas, and infrastructure projects (Gasalla and Gandini 2016).

The competing uses of coastal and ocean territories and the dispossession of these resources from small-scale fishers are fundamentally relevant to the rapid development pattern currently underway in Latin America and the Caribbean. These conflictive scenarios are illustrated by the permanent competing claims and interests between small-scale fisheries communities and coastal area developers such as tourism enterprises that take place in most of the Caribbean countries, as well as by oil extraction conflicts (e.g., Mexico, Venezuela, Brazil), salt mining

disputes (e.g., Mexico, Cuba, Martinique, Guadeloupe), and conflicts over other non-fuel minerals (e.g., Venezuela, Mexico, Guyana) (Herrera et al. 2011; Barragán-Paladines and Chuenpagdee 2015; Lopes et al. 2015). Conflicts can even occur between small-scale fishers and actors promoting conservation and coastal areas protection. In those cases, the exclusion and marginalization of fishers occur through measures that limit their access to coastal areas and fishing grounds and thus access to their livelihoods.

Under the same logic, the establishment of no-take areas without the involvement and participation of local stakeholders can also be perceived by community members as a means to restrain small-scale fishers from accessing the resources they depend on. Such practices have had significant implications and negative impacts on fishing communities' viability in Latin America and the Caribbean through increased marginalization and isolation (Lopes et al. 2015; Gasalla and de Castro 2016). Another critical source of stress to small-scale fisheries is the urbanization trend experienced along coastal regions. With more than 80% of the human population in the region living in urban areas (FAO 2016), an increasing tourism industry, and growing infrastructure development, it is likely that small-scale fisheries communities would be further impeded from sustaining their livelihoods and maintaining their connection with the marine environments. Conflicts over resource use are also common in the Caribbean, where fisheries and tourism coexist. A perception of tourism as having negative impacts on marine resources was found in the Bahamas, in which tourism is linked to the overharvesting of fisheries resources (i.e., queen conch, spiny lobster, Nassau grouper), despite recognition of neutral to positive effects of tourism on household's quality of life (Hayes et al. 2015).

2.5.4 Overfishing and Ecosystem Degradation

As a worldwide issue, overfishing and the associated degradation of the marine environment are of major concern in Latin America and the Caribbean. Of the 49 fish stocks in the region for which data were available through FAO (2005) and analyzed by Boyd (2010), about 30% of them are moderately to fully exploited, and thus close to their maximum sustainable limits, with a further 12% being considered fully exploited to overexploited (Boyd 2010). A decline in catches has been observed throughout the region, including by small-scale fishers in El Salvador, where major environmental degradation and reduced catches have led to impacts on their livelihoods (Campbell 2015). In the Caribbean, many fisheries are under stress from overfishing and ecosystem degradation, especially reef fish, coastal pelagic (e.g., ballyhoo, jacks, clupeids), and deep water demersal (e.g., snapper, grouper) species, on which small-scale fishers rely for their livelihoods, as well as the valuable export-oriented conch and lobster (Brown and Pomeroy 1999). Additionally, coral reef ecosystems in the Caribbean have been threatened by *Sargassum* outbreaks, which were first recorded in the early 1990s (Bouchon et al. 1992) and now represent a growing concern in the region (Johnson et al. 2013; Louime et al. 2017). The

occurrence of this macroalgae has largely increased in density, extent, and frequency in the region and has been mainly attributed to climate change, with resulting environmental, economic, and health impacts (Louime et al. 2017).

In order to illustrate the overfishing effect, Freire and Pauly (2010) have identified the "fishing down the marine food web" phenomena in the east Brazil Large Marine Ecosystem, which suffered one of the highest trophic level declines in the world. Additionally, it has been shown that a critical aspect of the total fish catch (such as discards and unreported, illegal fishing) remains largely unknown (Zeller et al. 2017). The global fisheries catch reconstruction by *Sea Around Us* has revealed that the decline in catches is more severe worldwide than previously thought, and that discards account for about 10% of total annual catches, with small-scale fisheries contributing to only 7% of that in comparison to industrial fisheries, which contribute to the remainder majority (Zeller et al. 2017). In Latin America and the Caribbean, catch reconstruction data show a similar trend, with catch estimates accounting for discards and previously unreported catches differing from official catch data in the region; these discrepancies seriously compromise the total catch values and thus the entire status of the fishing resource (Pauly and Zeller 2015).

2.5.5 Erosion of Social and Cultural Assets

Cultural, spiritual, and traditional practices in small-scale fisheries are fundamental to the development and structure that define fishing communities of the region. The loss or erosion of these institutions can contribute to the disappearance of social bonding and the dislocation of the impacted communities. Under the current trend of exclusion of fishers from traditional fishing grounds by conservation practices (e.g., protected areas), urban and industrial development, as well as by global phenomena (e.g., climate change effects on the marine resources availability), small-scale fishing communities in Latin America and the Caribbean are subjected to compounding vulnerability from these and other stressors (Defeo et al. 2013; Faraco et al. 2016). In the absence of sufficient capacity and assets to face those challenges properly, small-scale fishers' ability to respond to changes is impaired by these multiple factors, which in turn threaten their standard of living and the viability of coastal communities (Defeo et al. 2013).

2.6 Factors Supporting Viability and Sustainability

2.6.1 Environmental Stewardship

The intention by small-scale fishers to take care of natural resources out of a sense of responsibility may turn them into stewards of environmental conservation (McConney et al. 2014; Medeiros et al. 2014; Gasalla and de Castro 2016). This

requires a strong connection and interdependence between fishers and the natural environment, such as the cases observed in many traditional communities in Brazil, where resource users are well aware of the importance of the marine ecosystem they rely on for their livelihoods and are thus willing to protect it (Diegues 2008).The concept of ecosystem stewardship has been attributed to a "steward" who has the responsibility and accountability for taking care of common pool resources or public property as a custodian, while ensuring its proper and wise use for the continuance of the natural resource (Medeiros et al. 2014). The cases featured in the special issues on stewardship in Latin America and the Caribbean (McConney et al. 2014; Medeiros et al. 2014; Villasante and Österblom 2015; Gasalla and de Castro 2016) demonstrate that the development of a genuine interest in sustaining fisheries resources for generations to come is possible through responsible use and accountability for management. Several chapters in this volume present case studies addressing these issues.

Medeiros et al. (2014) state that the idea of environmental stewardship in small-scale fisheries would enhance not only the conservation of the marine realm but would also promote the well-being of fishing communities and the maintenance of fishing livelihoods. This concept also encompasses the need for stakeholder participation in managing, monitoring, and enforcing commonly agreed-upon rules and regulations for wise fisheries resource management. Thus, in order to be effective stewards of the environment, the main considerations are the acknowledgment of existing local/traditional practices, the devolution of power from governing bodies to resource users, and structural mechanisms in place to allow for effective participation of resource users in governance (Orensanz et al. 2005; Chuenpagdee et al. 2011; Medeiros et al. 2014; Fulton et al., Chap. 7, this volume). The need to enhance and strengthen stewardship has been widely endorsed in the Latin American and Caribbean context (Salas et al. 2007, 2011; Chuenpagdee et al. 2011; McConney et al. 2014; Medeiros et al. 2014; Gasalla and de Castro 2016). In fact, a high potential for collaboration and institutional innovation related to environmental stewardship in small-scale fisheries has been acknowledged and endorsed in this region (McConney et al. 2014; Medeiros et al. 2014; Villasante and Österblom 2015; Gasalla and de Castro 2016).

2.6.2 Cooperation and Partnership

It has been argued that the local fishers' associations and cooperatives, despite the challenges they face, could still play an important role in the Latin American and Caribbean small-scale fishing sector (Jentoft 1986). These organizations encourage cooperation among community members, inspire leadership, and contribute to strengthening small-scale fishers' voices at higher governance levels in cases across the world (Pinkerton 1989; Amarasinghe and Bavinck 2017). The region has many successful examples of alternative approaches to collaborative resource management that engage these critical stakeholder groups. Some illustrations of such cases

are the Vigia Chico spiny lobster cooperative in Quintana Roo, Mexico (Sosa-Cordero et al. 2008; Méndez-Medina et al. 2015), the TURFs and bottom-up approaches to marine conservation in Chile (Gelcich et al. 2015), and the co-management schemes for small-scale fisheries in Uruguay and Brazil (Trimble and Berkes 2015). The adoption of co-management approaches and their success in Latin America and the Caribbean are thought to result from trust, cooperation, leadership, and community cohesion (Gutiérrez et al. 2011; Villasante and Österblom 2015). All of these conditions are considered enabling factors that are presumably strengthened through fishers' associations and cooperatives. The sustainability of small-scale fisheries could presumably be achieved through increased cooperation within communities, along with government assistance and legitimization and support from partnerships with NGOs and other organizations at the local level.

2.6.3 Women in Small-Scale Fisheries

The role of women in small-scale fisheries in Latin America and the Caribbean is extensive, with female participation in fishing activities throughout the value chain. Illustrations of the highly valuable role of women in fisheries in this region include, for instance, the Piriápolis fishery in Uruguay (Trimble and Johnson 2013). In this region, fishers' wives and other women perform shore-based work mostly related to preharvest fishing activity, such as the preparation of long lines (known as *alistar*) and the baiting of the hooks, as well as postharvest activities such as the disentangling of the fish caught from gillnets upon the boats' arrival (Trimble and Johnson 2013).

In several countries in the region, women are active fishers, gathering shellfish species (like clam *Anomalocardia brasiliana*) in tropical estuaries of Northeast Brazil (e.g., Goiana River estuary and Canal de Santa Cruz estuary in Pernambuco State). These clam fisherwomen account for about 80% of all the people involved in this activity (Silva-Cavalcanti and Costa 2009). Additionally, in the Corumbau Marine Extractive Reserve, located in Bahia State, northeast Brazil, women's involvement in the activity is an important asset that adds significant economic value to fisheries products due to various postharvest activities such as fish and octopus cleaning and shrimp salting, as well as the production of handicrafts for additional income (Di Ciommo and Schiavetti 2012). In El Salvador, as in many of the countries in the region, women are commonly involved in postharvest activities such as cleaning, eviscerating, and processing the catch (Gammage 2004). In the Caribbean, women's role in small-scale fisheries has been poorly documented, despite their important contribution to small-scale fisheries (McConney et al. 2011; McConney and Medeiros 2014). Women's representation and leadership in fishers' organizations is lacking in the Caribbean region, with few exceptions such as the active "Women in Fishing Association" in Trinidad and Tobago (McConney and Medeiros 2014), and the recently created Gender in Fisheries Team (GIFT) that advocates for gender equality in CRFM member states. According to the examples

cited above, the inclusion of gender is needed throughout the region as a key component to understanding fishing communities and economies, given that women participate in and often dominate many aspects of the fisheries production chain (Kleiber et al. 2015).

2.6.4 Alternative Governance Models

Successful cases of alternative governance models in the region include, first, the group-based rights to fish awarded to small-scale fishers in Mexico (Méndez-Medina et al. 2015) and, second, the individual-based rights to fish that were given to small-scale fishers in Chile and Peru (FAO 2000; Castilla and Gelcich 2008). One of the reasons for this success is the pre-existing community-based and co-management governance systems which, interestingly, are also encountered in other countries of the region (Pomeroy et al. 2004; McCay et al. 2014). It has been found that leadership and a sense of empowerment among fishers, as well as transparency in decision-making processes, are key success factors at implementing fishery use rights and making co-management arrangements possible (Sosa-Cordero et al. 2008).

The co-management governance model that has emerged around the region has proven to be highly appropriate to building a supportive environment for the ecosystem approach to fisheries (EAF), which has been recognized globally as a strategic perspective that could enhance fisheries governance (Garcia et al. 2003). This approach goes beyond the single-species management focus including non-target species at the ecosystem level in dealing with fisheries management (Hall and Mainprize 2004). In the Latin American and Caribbean context, this would also mean that additional dimensions (e.g., historical, cultural, social, and economic) surrounding small-scale fisheries should be recognized and integrated in the policies and practices governing this sector (Garcia et al. 2003; Salas et al. 2007; Seijo et al. 2011; Jentoft and Chuenpagdee 2015).

The EAF also provides a comprehensive understanding of fisheries systems through a broad array of tools and strategies employed in fisheries assessment. It contributes to the advancement of the operational aspects of fisheries management, such as the establishment of monitoring programs, the engagement of fishers in data gathering, and the expansion of data collection areas (Salas et al. 2007). By increasing the involvement of fishers in the management process, conflicts between users could be better understood and successful and fair processes for the allocation of fishing rights (Barbados, Mexico, and Cuba) could be achieved (Salas et al. 2007). Moreover, the increased attention to a transdisciplinary approach in addressing small-scale fisheries issues (Salas et al. 2007; Chapman et al. 2008; Marín and Berkes 2010; Ratner and Allison 2012; Chuenpagdee and Jentoft 2015; McConney et al. 2015) has been seen as a real advancement in examining the complexities implicit within this sector. Although highly recognized and endorsed for fisheries management in the region, EAF has not yet been fully implemented (Fanning et al.

2011). However, there have been attempts at the regional level in the Caribbean, where EAF has been incorporated as part of the Caribbean Large Marine Ecosystem (CLME) project (Fanning et al. 2011) and, according to McConney and Medeiros (2014), has been endorsed through the Caribbean Regional Fisheries Mechanism (CRFM).

2.6.5 Small-Scale Fisheries Guidelines

Given the complexity of small-scale fisheries worldwide, and in particular in the Latin America and Caribbean region, the SSF Guidelines offer a substantial opportunity for achieving sustainable small-scale fisheries. This international policy instrument offers a comprehensive set of principles to guide sustainable and equitable fisheries governance, such as concerns for human rights in fisheries, responsible fisheries, a supportive implementation environment, and capacity development (FAO 2015). The greatest challenge concerns the implementation of the SSF Guidelines, given that it requires national and international joint initiatives and strong collaborative practices to hone communication and negotiation skills in order to first recognize the importance of small-scale fisheries and, second, to incorporate them into the priorities of public policies and practice. However, this is not an easy task, although some efforts have begun to lead in this direction. In many cases, substantial changes regarding power and social relations, institutional functioning, attitudes, and financial instruments are required in order to implement the SSF Guidelines. Successful implementation of the SSF Guidelines also asks for specific policy mechanisms at the national level (see Nisa 2017; Saavedra-Díaz and Jentoft 2017).

Some actions have been taken toward implementation, as in the case of Brazil, where some of the guiding principles of the SSF Guidelines are already part of public policies, such as participatory research and empowering women in alignment with the SSF Guidelines (Mattos et al. 2017). Nonetheless, the state-driven fisheries agency still needs to make several adjustments in order to facilitate implementation, such as changes in human resources, institutional capacities, information-sharing infrastructure, knowledge-based action, and surveillance mechanisms (Mattos et al. 2017). In cases like Belize, Mexico, and Nicaragua, where some resources are shared with other countries, finding synergies between the SSF Guidelines and other national or international normative instruments is of high relevance in order to uphold the rights of small-scale fishers, including indigenous people (González 2017). In the case of Costa Rica, the implementation of the SSF Guidelines may rest upon non-state actors, like small-scale fishing cooperatives (Sabau 2017). The implementation of the SSF Guidelines is fundamental to the enhancement and promotion of the contribution of small-scale fisheries to Latin America and the Caribbean in alignment with global efforts for fisheries sustainability and to secure the well-being of fishing communities (FAO 2015).

2.7 Concluding Remarks

The richness of ecosystems and species in Latin America and the Caribbean has enabled a high diversity of fishing practices and techniques passed down by generations, allowing small-scale fishers to thrive in this ever-changing environment. The ties between the social and natural environment and the long historical tradition of small-scale fisheries have also cemented the activity as an essential part of traditional livelihoods and a major source of income and food for coastal and riverine communities. In this context, the concept of environmental stewardship has been widely acknowledged in the Latin America and Caribbean region, with communities expressing a sense of ownership and responsibility toward the marine environment and fisheries resources. Strengthening the connectivity between people and nature can be seen as a means to achieve better fisheries governance, for example, through promoting a willingness to protect the ecosystem and increasing the participation of resource users in managing and monitoring the aquatic environment.

Cooperatives and fishers' organizations have long played a key role in increasing the participation and accountability of resource users in fisheries sustainability to a certain extent in the region. In line with the goal of devolving power from government to local stakeholders in the management of common pool resources, the top-down governance mode has given way to co-management for the most part in Latin America and the Caribbean. However, this process has been slow, taking many different forms and encompassing an array of levels of participation throughout the region, from pure consultation to delegated power and community control (Arnstein 1969). In the Caribbean, for instance, emerging co-management approaches are relatively new and still mostly consultative rather than collaborative, thus revealing a need to build capacity for more effective, legitimate, and transparent interactions between few local resource user organizations and government institutions (Mahon 2008). In addition, the holistic and integrative approaches to fisheries assessment and ecosystem understanding through initiatives such as the ecosystem approach to fisheries or ecosystem-based management have been heavily promoted (Fanning et al. 2011). The interactive governance framework has also been applied to examine interactions that take place between social, natural, and governing systems as a way to enhance the overall governability (Kooiman et al. 2005; Chuenpagdee and Jentoft 2009).

Despite positive advancements in management and governance in the Latin America and Caribbean region, challenges remain in terms of the lack of knowledge and understanding of small-scale fisheries and governance challenges due to poor institutional structure, limited capacity, and unclear interactions, among other barriers. Enhancing and advancing knowledge about small-scale fisheries require capacity building, not only among fishers at the local level but also at the levels at which researchers, policy makers, managers, practitioners, and administrators operate. It is therefore essential to recognize the importance of small-scale fisheries both in terms of numbers and the intangible contributions that they make to the well-being and sustainability of coastal communities in the region. We cannot discuss small-scale

fisheries only in terms of stocks, catches, and profitability but also in terms of culture, history, and ways of life. Efforts to enhance the visibility and viability of small-scale fisheries in Latin America and the Caribbean would likely lead to the sustainability of fisheries in the region.

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