

Small-scale Fisheries and the Global Economy: Understanding Common-pool Resource
Governance in the Context of Market Pressures, Neoliberal Policies, and Transnational
Institutions

by

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in Marine Science and Conservation in the Graduate School
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ABSTRACT

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Abstract

The purpose of this dissertation is to contribute to a better understanding of how global seafood trade interacts with the governance of small-scale fisheries (SSFs). As global seafood trade expands, SSFs have the potential to experience significant economic, social, and political benefits from participation in export markets. At the same time, market connections that place increasing pressures on resources pose risks to both the ecological and social integrity of SSFs. This dissertation seeks to explore the factors that mediate between the potential benefits and risks of global seafood markets for SSFs, with the goal of developing hypotheses regarding these relationships.

The empirical investigation consists of a series of case studies from the Yucatan Peninsula, Mexico. This is a particularly rich context in which to study global market connections with SSFs because the SSFs in this region engage in a variety of market-oriented harvests, most notably for octopus, groupers and snappers, lobster, and sea cucumber. Variation in market forms and the institutional diversity of local-level governance arrangements allows the dissertation to explore a number of examples.

The analysis is guided primarily by common-pool resource (CPR) theory because of the insights it provides regarding the conditions that facilitate collective action and the factors that promote long-lasting resource governance arrangements. Theory from institutional economics and political ecology contribute to the elaboration of a multi-

faceted conceptualization of markets for CPR theory, with the aim of facilitating the identification of mechanisms through which markets and CPR governance actually interact. This dissertation conceptualizes markets as *sets of institutions that structure the exchange of property rights over fisheries resources, affect the material incentives to harvest resources, and transmit ideas and values about fisheries resources and governance.*

The case studies explore four different mechanisms through which markets potentially influence resource governance: 1) Markets can contribute to costly resource governance activities by offsetting costs through profits, 2) markets can undermine resource governance by generating incentives for noncompliance and lead to overharvesting resources, 3) markets can increase the costs of resource governance, for example by augmenting monitoring and enforcement burdens, and 4) markets can alter values and norms underpinning resource governance by transmitting ideas between local resource users and a variety of market actors.

Data collected using participant observation, survey, informal and structured interviews contributed to the elaboration of the following hypotheses relevant to interactions between global seafood trade and SSFs governance. 1) Roll-back neoliberalization of fisheries policies has undermined cooperatives' ability to achieve financial success through engagement with markets and thus their potential role as key actors in resource governance (chapter two). 2) Different relations of production influence whether local governance institutions will erode or strengthen when faced

with market pressures. In particular, relations of production in which fishers own their own means of production and share the collective costs of governance are more likely to strengthen resource governance while relations of production in which a single entrepreneur controls capital and access to the fishery are more likely to contribute to the erosion of resource governance institutions in the face of market pressures (chapter three). 3) By serving as a new discursive framework within which to conceive of and talk about fisheries resources, markets can influence norms and values that shape and constitute governance arrangements.

In sum, the dissertation demonstrates that global seafood trade manifests in a diversity of local forms and effects. Whether SSFs moderate risks and take advantage of benefits depends on a variety of factors, and resource users themselves have the potential to influence the outcomes of seafood market connections through local forms of collective action.

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1. Introduction

1.1 *Research problem*

Our vision of small-scale fisheries (SSFs) often entails rural fishers harvesting a variety of products for subsistence and local trade. Increasingly, however, small-scale fishers harvest seafood products with potentially high economic value destined for international markets. This trend in SSFs is part of the expansion of global seafood trade, in general, which has set records in recent years for both the volume and value of trade (FAO 2014b).

Participation in global seafood trade poses distinct opportunities and challenges for SSFs. This dissertation is an investigation into aspects of resource governance arrangements relevant to the challenges and opportunities associated with market globalization of SSFs. In particular, the empirical investigation and analysis in this dissertation seek to identify forms and characteristics of resource governance arrangements that may intensify or moderate the risks and benefits that can arise when SSFs participate in the global seafood trade. Ultimately, the goal is to contribute to an understanding of the kinds of governance institutions that allow fishers to address challenges and take advantage of opportunities to improve livelihoods in the context of global seafood trade.

The global importance of SSFs means that the magnitude of potential livelihood opportunities associated with the involvement of SSFs in global seafood trade is substantial. SSFs account for more than 90 percent of the world's fishers and contribute around half of the global catch (FAO 2014a). To the extent that global markets stand to

offer higher remuneration to fishers, among other potential political and social benefits, market connections stands to make an important contribution to the livelihoods of multitudes of rural poor fishers.

At the same time, connections to global trade may exacerbate many of the governance challenges that SSFs already face, resulting in unsustainable resource use and fisheries decline. Many SSFs around the world lack a sufficient formal regulatory and scientific framework. When coupled with high external demand for resources, these governance limitations can allow overexploitation of stocks. As the globalization of seafood trade has become increasingly footloose and efficient, new pressures to harvest resources can manifest in local fishing communities so rapidly that governance institutions may not have time to adapt. Similarly, scientific assessments of the effects of new or augmented harvests on fisheries resources may be conducted too late or not at all, further undermining the development of appropriate governance responses to new market pressures.

In order for SSFs to continue making important contributions to food security, poverty alleviation, and sustainable livelihoods, governance arrangements must be capable of responding to increased pressure on resources from external and global markets while at the same time taking advantage of new opportunities in an equitable manner. In this dissertation, case study research explores different interactions between SSFs, seafood markets, and the governance arrangements that mediate between them in the Yucatán Peninsula, Mexico. The analysis of the empirical field research aims to generate some general hypotheses regarding institutional arrangements for governing

SSFs participating in global seafood trade, their origins, how they work, and their implications for small-scale fishers. To do so, the thesis integrates theoretical strands from institutional economics and political ecology with CPR theory, with the goal of deepening CPR theory's conceptual engagement with markets.

1.2 Theoretical framework

The theoretical framework of this dissertation seeks to elaborate CPR theory's conceptual approaches for studying interactions between CPR governance institutions and external markets. Why propose to develop conceptual tools for understanding SSFs governance in the context of global trade? CPR theory and theoretical approaches to studying markets are each conceptually well-elaborated. However, the theoretical approaches to study CPR governance, on the one hand, and markets, on the other, are not well-integrated, limiting investigation into the processes through which markets and CPR governance arrangements actually interact. This dissertation argues that, as a result, the processes through which markets influence institutional emergence and change at the local level and the implications for governance outcomes remain understudied and poorly understood. To address this, the dissertation's theoretical framework integrates approaches from institutional economics and political ecology (political economy and post-structuralism).

1.2.1 Common-pool resource theory

CPR theory provides a strong theoretical foundation from which to investigate the dynamics of local-level fisheries governance. The theory's contributions include: an elaborated set of enabling conditions expected to foster processes of collective action

underpinning resource self-governance (Agrawal, 2001; E. Ostrom, 1990); an understanding of the kinds and characteristics of institutions that lend robustness to governance systems and contribute to desirable social and ecological outcomes (Cox et al., 2010; E. Ostrom, 1990; E. Ostrom et al., 1994); detailed analytical tools for analyzing institutions and institutional change from institutionalism more broadly (Crawford & Ostrom, 1995; E. Ostrom, 2005; E. Ostrom & Basurto, 2011); extensive, multi- and interdisciplinary study on the factors and mechanisms that underpin collective action (Poteete et al., 2010); and a theoretical framework often utilized alongside CPR theory in order to facilitate an coherent accumulation of knowledge (E. Ostrom, 2009). Related concepts of adaptive capacity, resilience, and cross-scale and multi-level linkages suggest some general aspects of systems that may enable or constrain their ability to effectively respond to external shocks such as markets (Berkes, 2002; Berkes et al., 2008; Cash et al., 2006). However, CPR theory is fairly limited in terms of specific insight into the mechanisms through which markets influence resource governance institutions.

1.2.2 Common-pool resource theory and the study of markets

Although CPR theory is limited in its study of the role of markets in influencing resource governance, some initial contributions provide a foundation. Agrawal (2003) discusses the role of markets in his review of studies on the conditions under which resource users are likely to self-organize and sustainably govern their resources. He notes that the CPR studies he reviews pay little attention to the role of market forces. However, “increasing integration with markets usually has an adverse impact on the management of common pool resources,” (Agrawal, 2003, p. 250). Given this general

and important claim, there is a need to further elaborate the mechanisms through which these adverse impacts occur and, importantly, how they might be avoided.

Markets are represented in the social-ecological systems (SES) framework, which is often used to guide CPR scholarship (Figure 1). Two aspects of the SES framework are noteworthy. First, markets appear as one of the social, political, and economic settings, *market incentives*. Additionally, *economic value of the resource* is included as a variable within the SES subsystem, *Resource Units*. At least as far as explicit representation in the framework, markets are conceptualized as material incentives that come from outside the social-ecological system. This is not necessarily problematic. However, the SES framework offers no particular guidance as to how one might account for the interactions between markets and resource governance institutions other than by measuring market incentives or the economic value of the resource. While important, these variables neglect other characteristics of markets that may influence resource governance.

Social, economic, and political settings (S)

S1 Economic development. S2 Demographic trends. S3 Political stability.
S4 Government resource policies. S5 Market incentives. S6 Media organization.

<i>Resource systems (RS)</i>	<i>Governance systems (GS)</i>
RS1 Sector (e.g., water, forests, pasture, fish)	GS1 Government organizations
RS2 Clarity of system boundaries	GS2 Nongovernment organizations
RS3 Size of resource system*	GS3 Network structure
RS4 Human-constructed facilities	GS4 Property-rights systems
RS5 Productivity of system*	GS5 Operational rules
RS6 Equilibrium properties	GS6 Collective-choice rules*
RS7 Predictability of system dynamics*	GS7 Constitutional rules
RS8 Storage characteristics	GS8 Monitoring and sanctioning processes
RS9 Location	
<i>Resource units (RU)</i>	<i>Users (U)</i>
RU1 Resource unit mobility*	U1 Number of users*
RU2 Growth or replacement rate	U2 Socioeconomic attributes of users
RU3 Interaction among resource units	U3 History of use
RU4 Economic value	U4 Location
RU5 Number of units	U5 Leadership/entrepreneurship*
RU6 Distinctive markings	U6 Norms/social capital*
RU7 Spatial and temporal distribution	U7 Knowledge of SES/mental models*
	U8 Importance of resource*
	U9 Technology used
<i>Interactions (I) → outcomes (O)</i>	
I1 Harvesting levels of diverse users	O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)
I2 Information sharing among users	O2 Ecological performance measures (e.g., overharvested, resilience, bio-diversity, sustainability)
I3 Deliberation processes	O3 Externalities to other SESs
I4 Conflicts among users	
I5 Investment activities	
I6 Lobbying activities	
I7 Self-organizing activities	
I8 Networking activities	
<i>Related ecosystems (ECO)</i>	
ECO1 Climate patterns. ECO2 Pollution patterns. ECO3 Flows into and out of focal SES.	

*Subset of variables found to be associated with self-organization.

Figure 1 Variables in the social-ecological systems (SES) framework (E. Ostrom, 2009)

1.2.3 Proposing an expanded conceptual approach to study markets in common-pool resource theory

As discussed in the previous section, more research is needed within CPR theory in order to better understand the mechanisms through which markets interact with resource governance institutions. This dissertation draws on two sets of literatures in addition to CPR theory in order to develop the theoretical framework with which to investigate these issues. First, institutional economics provides a perspective on the institutional diversity of markets. Second, political ecology contributes a long tradition of theoretical insights into how external markets alter social and ecological relationships in local sites of production. The aim in incorporating these strands of scholarship with CPR theory is to guide an investigation of the processes through which markets actually create changes in how common-pool resources are governed in small-scale fisheries.

1.2.3.1 Insights from institutional economics

The main contribution of institutional economics to this dissertation's theoretical framework is its conceptualization of markets as sets of institutions. A variety of definitions of markets exist across disciplines. Failing to elaborate an explicit conceptualization of markets runs the risk of conflating markets and other forms of exchange and confounding the related ideas of market exchange, marketplaces, market systems, and theoretical models of markets (Feinman & Garraty, 2010).

Definitions of markets belong to different definitional categories. Definitions of markets can be *observational* when they provide guidance on how to empirically identify

a market. They are *functional*, when they distinguish markets according to what, theoretically, they are supposed to do. *Structural* definitions describe the form of markets. In neoclassical economics, for example, a functional definition predominates in which markets are taken to be “synonymous with (the intersection of) unobservable and merely hypothesized supply and demand (curves) and devoid of any institutional features,” (Rosenbaum, 2000, p. 459). Institutional economics definitions are generally of the structural persuasion, developed to open “the black box of the disembodied and de-institutionalized market of neoclassical theory,” (ibid 461). For example, Hodgson (1998) defines markets as a specific set of social institutions in which exchange of property rights occurs.

The institutional economics of J.R. Commons provides a useful example. For Commons, “it is not only principles of mechanism and scarcity conceived as working themselves out automatically and beneficently, through commodities, feelings, and individual selfishness, but also principles of collective control of transactions by associations and governments, placing limits on selfishness, that are more recently included in economic theory,” (Commons, 1924, p. 6). In his approach to studying markets:

The smallest unit of the institutional economist is a unit of activity – a transaction, with its participants. Transactions intervene between the labor of the classic economists and the pleasure of the hedonic economists, simply because it is society that controls access to the forces of nature, and transactions are not the ‘exchange of commodities,’ but the alienation and acquisition, between individuals, of the rights of property

and liberty created by society, which must first therefore be negotiated between the parties concerned before labor can produce, or consumers can consume, or commodities be physically exchanged (Commons, 1931, p. 652)

Commons utilized this conceptual method in his *Legal Foundations of Capitalism* to show that because markets are sets of human-devised institutions, negative social consequences of free-market capitalism might be tempered, depending on the particular way that society shapes the institutions making up market exchange (Commons, 1924).

Incorporating institutional economics facilitates this dissertation research in three aspects. First, by viewing markets and CPR governance as constituted by like components (institutions) allows us to imagine how markets may be embedded within resource governance, in addition to coming from outside. Second, conceptualizing markets as sets of institutions facilitates an empirical approach that examines markets as diverse in form. Third, just as CPR theory has shown that groups of resource users have the capacity to design resource governance institutions, institutional economics emphasizes the control that humans have in shaping how markets work because institutions are human-made artifacts. The approach is therefore useful for investigating the diversity of markets in small-scale fisheries and for identifying ways in which people can shape their social and ecological consequences.

1.2.3.2 Insights from political ecology

Literature from political ecology contributes two additional theoretical perspectives for understanding how markets influence resource governance: Political

economy and post-structuralism. This dissertation draws on political economy to consider how markets can influence CPR governance through the particular material incentives and power relations they create. The post-structuralist perspective helps to understand how markets can influence CPR governance through the ideas, values, and discourses they transmit.

Political ecology's engagement with Marxian political economy demonstrates how capitalist relations can lead to environmental degradation (Blaikie, 1985; Blaikie & Brookfield, 1987; Longo & Clark, 2012; Longo & Clausen, 2011). When resource systems become integrated into capitalist economic systems, control over natural resources and the means of production are often severed from the resource users, whose role may be reduced to labor. Scarcity and the accumulation of profit and capital outside of the hands of resource users themselves can drive resource overuse. Insofar as the global seafood trade is a capitalist enterprise, it is relevant to consider how political economy influences resource governance in SSFs.

There are two obvious ways in which the idea of political economy might be integrated with CPR theory. First, capitalist relations of production are made up of a specific set of property rights institutions that define who controls ownership and access to resources. CPR theory provides principles for how resources can be governed successfully when owned as common property. Political economy helps to consider the challenges the commons confront when capitalist relations conflict with communal

control over resources. Second, when capitalist markets facilitate circumstances in which certain individuals stand to generate substantial profits, they may use their power to reshape CPR governance institutions to their advantage.

Post-structuralist political ecology diverges to some extent from Marxist political ecology. Particularly relevant for this dissertation is how political ecology has put post-structuralism to use in emphasizing the contingency of ideas, norms and values that humans hold regarding their natural environment (Agrawal, 2005; Li, 2007). Integration with global seafood markets brings resource users into interaction with new actors and systems that may have distinctive ways of framing and valuing resources and resource use. The ways in which these ideas move about in exchanges and interactions with others and through livelihood activities may cause resource users to recalibrate their own ideas and values. To the extent that norms and ideas underlie all institutions (E. Ostrom, 2005), these processes have the potential to change resource governance institutions.

1.2.3.3 A multifaceted conceptualization of markets

A conceptualization that can be usefully combined with CPR theory integrates the theoretical strands from institutional economics, political economy, and post-structuralism just described. For this dissertation, seafood markets are conceptualized as *sets of institutions that structure the exchange of property rights over fisheries resources, affect*

the material incentives to harvest resources, and transmit ideas and values about fisheries resources and governance.

1.3 Markets in the study context

This dissertation presents a set of case studies from the Yucatan Peninsula, Mexico. The Yucatan Peninsula, in southern Mexico, is made up of three states, Campeche, Yucatán, and Quintana Roo (Figure 2). The border between Yucatan and Quintana Roo nearly aligns with the divide between the Gulf of Mexico and the Caribbean Sea. The coastal lagoons and mangroves that line the peninsula's coasts provide breeding grounds for juvenile fish species. Fishers utilize these coastal lagoons to harvest small fish and crustaceans for subsistence or to be used as bait for commercial fishing activities. Beyond small barrier islands, the rocky reefs, wide continental shelf, as well as the coral reefs of the Caribbean are home to a variety of commercially valuable marine species. SSFs in the Yucatan Peninsula take advantage of this coastal area, harvesting multiple species for household consumption, local restaurants and hotels, as well as for export.

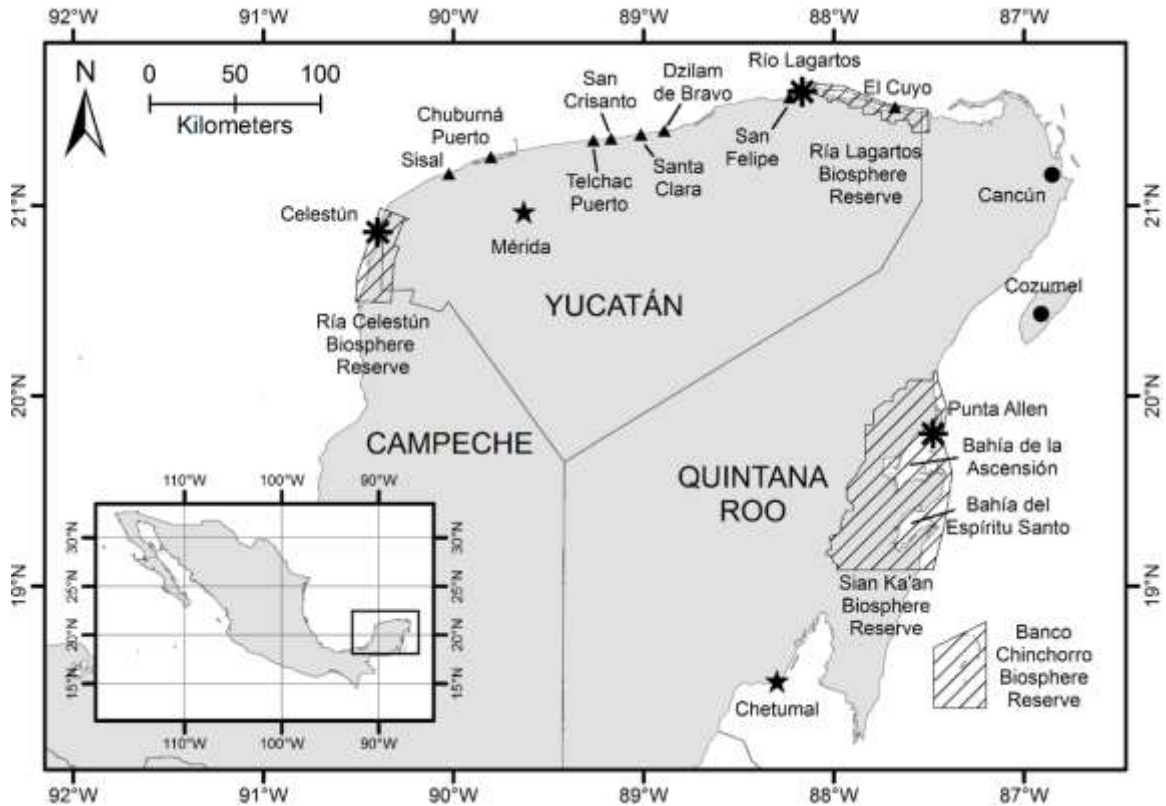


Figure 2 Map of dissertation study sites. Figure by author.

The Yucatan Peninsula, Mexico is a particularly rich context in which to study the interactions between SSFs governance and global seafood markets. Small-scale fishers in the Yucatan peninsula engage in a number of different export markets. The most important commercial species are octopus (*Octopus maya* and *Octopus vulgaris*), grouper (*Epinephelus morio*), snapper, (*Lutjanus synargrys* and *Ocyurus chrysurus*), lobster (*Panulius argus*) (Mexicano-Cíntora et al., 2007) and more recently, sea cucumber (*Isostichopus badconotus* and *Holothuria floirdana*). Octopus is often exported to Spain, Grouper to markets in the United States, and sea cucumber to China.

Lobster may be exported or sold to restaurants and hotels serving the booming tourism industry centered in Cancún, Quintana Roo.

The diversity of interactions between global seafood markets and local resource governance institutions stands out in the Yucatan Peninsula. On the one hand, within each fishing community, resource users respond differently to the different seafood markets that they are connected with. At the same time, the same market may manifest in divergent ways in different communities. This dissertation attempts to leverage this diversity to investigate the different ways that markets and CPR governance interact.

The institutional structure of markets in the Yucatan Peninsula resembles that of many SSFs around the world. At the lowest end of the supply chain, the institutions that structure the exchange of property rights prescribe more than simply an exchange of fish for cash. Rather, these local-level market institutions structure a complex set of exchanges, formal and informal, of fish, cash, labor, loans, inputs, and a suite of social provisions. Beyond the local-level, seafood markets that Yucatan Peninsula SSFs participate in consist of a variety of forms. For example, the market for sea cucumber is characterized by low levels of regulation, high levels of corruption, and monopsony at the state level. At the other extreme, evolving markets for lobster are constituted in part by transnational institutions, characterized by norms of sustainability and responsible consumption, and attempts to bypass powerful intermediaries.

Finally, one cannot talk about the variety of markets in Yucatán SSFs without considering different processes of neoliberalization that continuously shape and reshape

the role of markets in the study region and SSFs globally. Multiple waves of neoliberalism since the 1980s have influenced the diversity of SSFs' engagement with markets and the diversity of institutions, material incentives, and norms and values they entail.

1.4 Research questions

The rich context in which SSFs in the Yucatan Peninsula interact with external markets allows this dissertation to employ a case study approach to explore the different ways in which markets influence local resource governance arrangements. Chapter one describes the development of small-scale commercial fisheries institutions beginning in the first half of the 20th century. It examines how the neoliberalization of fisheries policies initiated in the 1980s have shaped the institutional structure of SSFs' engagement in external markets. Employing the theory of club goods, the chapter asks: *How have processes of neoliberalization affected the viability of fishing cooperatives?* Because cooperatives are sets of institutional arrangements that structure small-scale fishers' participation in external markets as well as potentially resource governance, the question has far-reaching implications for markets' effects on local SSF governance. Chapter three explores these implications, asking: *How do different relations of production (fishing cooperatives and patron-client relationships) influence governance responses to new market pressures.* Finally, chapter four presents a study of a small-scale fishery that recently entered into a transnational, market-based seafood certification program. The

chapter explores the question: *How does market-based seafood certification affect small-scale fisheries governance?*

1.5 An overview of research designs and methods

The dissertation employs a single or comparative case study research design for each chapter. This approach allows multiple data collection methods and kinds of data to inform an in-depth analysis of each case. Chapter two includes data from fishing cooperatives from across the state of Yucatán to explore some of the general implications of neoliberal fisheries policies. The study goes on to employ a comparative case study design, comparing two regions within the state, as well as representative communities within each region, in order to examine the geographically differentiated effects of neoliberalism. Chapter three presents a comparative case study of the same representative fishing communities (Río Lagartos and Celestún, Figure 2). Finally, Chapter three presents results of a single case study of a federation of fishing cooperatives in Quintana Roo that fish in Bahía de la Acensión, Bahía del Espiritu Santo, and Banco Chinchorro (Figure 2).

Exploratory research was conducted for one month during Summer 2010 and one month during Summer 2011. During this time, informal interviews and participant observation were conducted in various fishing communities in the state of Yucatán with the purpose of identifying an empirically grounded research topic. Fishing communities visited included Chuburná Puerto, Celestún, and Río Lagartos. Next, pre-dissertation

fieldwork was carried out over a two-month period during Summer 2012, for the purpose of further characterizing fishing communities in the Yucatan Peninsula (states of Yucatán and Quintana Roo). During this time, a structured survey of fishing cooperative presidents and informal interviews with community leaders from the communities of Celestún, Sisal, Chuburná, Telchac Puerto, Santa Clara, San Crisanto, Dzilam de Bravo, San Felipe, Río Lagartos, El Cuyo, Puerto Morelos, and Punta Allen was designed to facilitate better understanding of the organization of local fishing communities and to select study sites. Finally, between August 2013 and July 2014, extended dissertation fieldwork allowed for a variety of data collection activities: A structured survey sampling fishing cooperative members from six cooperatives in Quintana Roo and five cooperatives in Yucatán, semi-structured interviews with cooperative leaders, academics, NGOs, and government involved in Marine Stewardship Council (MSC) certification (chapter four), and participant observation in Punta Allen (Quintana Roo) and Río Lagartos and Celestún (Yucatán). The various methods of data collected during these periods all contribute to informing the analysis in the following chapters and are discussed in more detail therein.

2. The influence of neoliberal fisheries policy on the success and failure of fishing cooperatives in contemporary small-scale fishing communities: A case study from the Yucatan Peninsula, Mexico

2.1 Introduction

Over the past 70 years, narratives about the role of cooperatives in small-scale fisheries have permutated alongside the evolution of broader discourses on environment, development, and sustainable fisheries governance. Between the 1950s and early 1980s, cooperatives were seen as a primary tool for organizing small-scale fisheries development. Development organizations such as the Food and Agriculture Organization of the United Nations (FAO) and World Bank relied heavily on cooperatives as an instrument to reduce inequality in development projects and overcome logistical challenges associated with reaching large or dispersed rural populations (Pollnac, 1991). In 1971, FAO even published a *Manual on Fishermen's Cooperatives* (FAO, 1971). Much of this enthusiasm for cooperatives coincided with a time when development initiatives were propped up by interventionist and protectionist political and economic policies, which facilitated direct lines of support from governments to cooperatives. However, emerging discourses in the 1990s re-oriented the focus from top-down, state-led development to decentralization. Within this context, cooperatives figured prominently as agents of community-based resource management

and co-management (Jentoft et al., 1998; Lejano & Ocampo-Salvador, 2006; Pomeroy, 1995; Pomeroy et al., 1997).

Although many cooperatives that formed during early development projects failed (Pollnac & Carmo, 1980), more recent narratives about fishing cooperatives signify a renewed enthusiasm. In a summary report of the 2008 Conference on Small-scale Fisheries, the FAO indicated that “while for historical reasons the term ‘cooperatives’ can have a negative connotation, it is generally accepted that cooperatives could improve the resilience and stability of fishing communities,” (FAO, 2009, p. 14). The United Nations declared 2012 the National Year of Cooperatives (UNDESA, 2012). A special issues section of FAO’s *State of the World Fisheries Aquaculture* report highlighted the value of cooperatives, asserting that “[s]uccessful cooperatives are possible, feasible, and desirable and play an important role in community development” (FAO, 2012, p. 1). Finally, an FAO workshop specifically focused on strengthening the role of organizations such as cooperatives in the implementation of the International Guidelines for Securing Sustainable Small-scale Fisheries, has emphasized that “there is a need to revive cooperatives and organizations” (Kalikoski & Franz, 2014b, p. 9). Given this enthusiasm, a more rigorous specification of the expectations, opportunities, and constraints for fishing cooperatives in contemporary society is in order.

Narratives regarding how cooperatives fit into resource governance and economic development have evolved and related policy changes have affected the actual

political and economic environments in which cooperatives operate. In many parts of the world, these policy changes have constituted the advent and progression of neoliberalism in fisheries governance. Although used to describe a diverse set of practices and discourses, neoliberalism broadly refers to a political ideology favoring private property rights, open markets, free trade, and is marked by the increasing spread of market logics into social, economic, and political life. Within this framework, “roll-back” neoliberalisms have entailed processes of market deregulation and the withdrawal of state intervention in economies. More recent “roll-out” neoliberalisms have employed markets and market-like mechanisms in order to re-regulate various societal spaces (Peck & Tickell, 2002). In this paper, I focus in particular on roll-back neoliberalism in fisheries and its implications for the opportunities and constraints that fishing cooperatives currently face.

The implications for fishing cooperatives of the neoliberal roll-back of interventionist economic policies are likely significant, given the integral role that states have historically played in cooperatives’ development. Many cooperatives around the world have been initiated by States (Baticados, 2004; Cheong, 2004). The 1960s and 1970s saw active government-led promotion of fishing cooperatives. Subsidies, price controls on fish products, ties to state marketing firms, and technological modernization programs incentivized and even compelled the formation and participation of cooperatives in fisheries development (Begossi, 2010; Chauveau & Samba, 1989; Cheong,

2004; Hernandez & Kempton, 2003; Lee & Midani, 2015; Wielgus et al., 2014). Beginning in the 1980s, however, many developing countries faced massive debt servicing obligations and pressure from international lenders to reduce state involvement in fisheries development and promote open markets and free trade (Chauveau & Samba, 1989; Lejano & Ocampo-Salvador, 2006), downsizing government generally and fundamentally altering the political and economic context for fishing cooperatives.

If fishing cooperatives are to play a contemporary role in fisheries governance and development, then “there is a need to look deeper into the political, social, cultural and economic conditions in which the fishers’ organizations operate,” (Kalikoski & Franz, 2014b, p. 9). As a contribution to this imperative, this paper examines how roll-back neoliberal policy changes have affected the political and economic contexts for fishing cooperatives and implications for their potential role in sustainable fisheries management. The analysis uses the theory of club goods to better understand how neoliberalism has affected the ability of cooperatives to fulfill their essential function of providing collective benefits to members.

The paper highlights broad changes in the opportunities and constraints for fishing cooperatives in the state of Yucatan, Mexico. However, neoliberalization is not a monolithic process. Rather, its local manifestations are always embedded in particular historical and geographical contexts and operate through a diversity of actors, discourses and institutions (Martin, 2005; Peck & Tickell, 2002). In this vein, the analysis

draws on data from multiple small-scale fishing communities to explore the processes through which neoliberalism produces geographically differentiated local consequences for fishing cooperatives.

2.2 Theoretical framework

2.2.1 The theory of club goods

Examining how neoliberalization of fisheries policies affects fishing cooperatives requires an understanding of the fundamental operational challenges that all cooperatives face. Broadly defined, a cooperative is “an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise,” (ICA 2010). The success of fishing cooperatives therefore depends on their ability to meet common needs through providing collective benefits. Yet the voluntariness, joint ownership and democratic control that characterize cooperatives create unique challenges for the provision of collective benefits such as the provision of loans, fishing gear and social security, collective marketing, or lobbying activities.

Conceptualizing cooperatives’ functioning through the theory of club goods provides a unifying framework for considering the wide range of potential benefits that cooperatives generate and the factors that influence their ability to provide them. Most of the benefits that cooperatives provide to their members are characteristic of club goods, a type of impure public good (Buchanan, 1965). Like public goods, club goods are

non-rivalrous, meaning that once a club good is produced, one individual's use does not impinge on another's ability to use the same good. However, unlike pure public goods such as clean air, club goods are excludable. In the case of cooperatives, exclusion typically occurs on the basis of specific membership requirements. That is, for many of the benefits that cooperatives generate, only members have access.

Despite the potential for exclusion, the provision of club goods still entails solving collective action problems related to free-ridership and shirking (Prakash & Potoski, 2007). As cooperatives are jointly owned and democratically run, the goods they produce are generated from members' contributions, financial or otherwise. Each member of a cooperative faces incentives to shirk his duties and free-ride on the contributions of others because, in many cases, as long as the good is provided, he will enjoy the benefits regardless of his own level of contribution. Cooperative members are especially unlikely to contribute if they anticipate that levels of free-riding among their associates will be high enough to preclude the provision of any substantial benefits. Therefore, the provision of benefits rests on cooperatives' ability to define appropriate expectations for members' contributions and ensure that members meet those expectations. Furthermore, the design of an effective system of rules to guide members' conduct also requires ongoing collective action. This is not an insubstantial task given the often dynamic, uncertain, and spatially dispersed nature of fishing livelihoods (Pollnac, 1988).

Fishers around the world have used cooperatives as an organizational mechanism to provide themselves with a wide variety of club goods. Many of the benefits that cooperatives generate are economic in nature because cooperatives are often involved in marketing or providing production inputs. For example, cooperatives can generate benefits by undermining exploitative relationships with middlemen, organizing collective marketing activities such as auctions or selling in volume, providing access to loans and credit, increasing production efficiency, or maintaining the physical infrastructure of marketplaces (Alabsi & Komatsu, 2014; Barret & Okudaira, 1995; Baticados, 2004; Cheong, 2004; Deacon, 2012; Deacon et al., 2008). Benefits may also be political, such as accessing fishing gear, loans, credit, and subsidies through government programs, obtaining legal property rights, lobbying governments to influence fisheries regulations or representing fishers in the policy process (Baticados, 2004; Shusterich, 1984; Wagenaar & D'Haese, 2007). Socially-oriented benefits may include access to health care and social security (Alabsi & Komatsu, 2014; Wagenaar & D'Haese, 2007). Some cooperatives have even made significant contributions to resource governance and sustainability, generating positive externalities outside of the cooperative (Baticados, 2004; Begossi, 2010; Cheong, 2004; Deacon, 2012; Finkbeiner & Basurto, 2015; Lee & Midani, 2015; Ünal et al., 2009). Ultimately, a cooperative's success depends on its ability to provide members with some form of collective benefits in the form of club goods.

2.2 The success and failure of fishing cooperatives

Examining the proximate factors that previous research has associated with the success and failure of fishing cooperatives provides a starting point for linking the fundamental challenge of club goods provision to the broader effects of neoliberalization. Some such factors relate to internal characteristics of cooperatives or their members. Internal factors influence the extent to which members can engage in collective action within the cooperative and carry out goals outside of the cooperative. For example, inequity of resource allocation or leadership positions and lack of solidarity among members can create conflict (Barret & Okudaira, 1995; Ünal et al., 2009). Lack of expertise, advocacy, and lobbying skills can preclude cooperatives from successfully obtaining political benefits (Baticados et al., 1998). Additionally, the size of a cooperative influences its ability to successfully obtain economic benefits through engagement in marketing or raising internal capital (FAO, 2014). Internal factors are likely only indirectly influenced by broader processes of neoliberalization.

Changes in political economic context, for example through neoliberalization, can more directly alter external factors shaping cooperative success. Weak legislative support by the government, unfavorable tax systems, and complex bureaucratic environments often impede cooperative success (Ünal et al., 2009; Wagenaar & D'Haese, 2007). Governmental imposition of overly prescriptive structures and failure to account for existing organizations and traditional modes of cooperation may undermine the

development of cooperatives (Sabella, 1980). On the other hand, an enabling environment in the form of legal and political frameworks that favor democratic decision-making and formalized linkages with external policy actors are thought to facilitate cooperative success (FAO, 2014; Lejano & Ocampo-Salvador, 2006).

Pollnac (1988) has provided an extensive list of factors influencing the success and failure of fishing cooperatives in developing countries, identifying 18 salient factors based on an extensive review of studies from geographically diverse settings. Table 1 provides a brief explanation of each factor under the overarching themes: *origins and background, membership, administration, and socioeconomic factors*. Each success factor contributes to the ability of a cooperative to solve collective action problems and provide club goods to its members. For example, within cooperatives, a manageable group size, social cohesion among members, and a history of working together through collective investment fosters norms of trust and reciprocity, which can facilitate collective action. Similarly, appropriately skilled administrative personnel capable of managing organizational complexity coupled with active participation in cooperative meetings can ensure members' contributions are put to meaningful use. Additionally, external influences including competition with middlemen, the availability of capital, and formal legal frameworks define many of the opportunities and constraints that cooperatives face in providing benefits to their members.

Table 1 Summary of factors influencing success and failure of fishing cooperatives as described by Pollnac (1998)

Origins and background	Membership	Administration	Socioeconomic factors
<p><u>Local initiative</u> Bottom-up cooperatives are often more successful than externally imposed cooperatives</p> <p><u>Early investment</u> Early investment by fishers in time, money, or labor can improve chances of success</p> <p><u>Foundation in traditional organizations</u> Successful cooperatives are often based on existing community groups</p> <p><u>Past experiences</u> Negative past experiences can create an aversion to cooperatives</p> <p><u>Organization structure</u> Should be adaptable to local context rather than overly prescriptive</p> <p><u>Laws concerning fishers' organizations</u> Should acknowledge and allow for variation in local context</p> <p><u>Training needs</u> Fostering understanding and agreement regarding function(s) of the cooperative</p> <p><u>Legislative support</u> Exclusive or priority access to fishing licenses or property rights</p> <p><u>Vested interests</u> Middlemen with vested interests often undermine cooperative success</p>	<p><u>Group size</u> Too-large cooperatives can undermine group identity</p> <p><u>Membership</u> a) Members should be fishers or work in related activities b) Attention to local social dynamics</p> <p><u>Heterogeneity of membership</u> Heterogeneity may lead to conflict</p>	<p><u>Management</u> Finding qualified managers can be challenging</p> <p><u>Organizational complexity</u> Increases as cooperatives internalize multiple functions</p> <p><u>Meeting attendance</u> a) Uncertainty and variability of fishing livelihoods creates challenges for attendance b) Providing incentives and scheduling meetings during non-fishing times encourages participation</p> <p><u>Interagency cooperation</u> Multiplicity of government agencies managing fisheries and development can create confusion and bureaucratic challenges</p>	<p><u>Availability of capital</u> Raising capital challenging in many small-scale fisheries contexts</p> <p>Overreliance on government subsidies can lead to failure</p> <p><u>Evasion of rules</u> a) Administrative corruption b) Selling fish outside of the cooperative c) Defaulting on loans</p>

This study examines how neoliberalization of fisheries policies shapes the parameters of the factors influencing cooperative success and thus the ability of cooperatives to perform the fundamental function of providing club goods to members. First, interview data enumerate the particular club goods that fishing cooperatives in Yucatán, Mexico attempt to generate. Then, a review of the political and economic changes driven by neoliberalization of Mexican fisheries policies provides the basis for examining their influence on success factors such as legislative support, vested interests of middlemen, availability of capital, membership size, and participation. This approach demonstrates why the contemporary context in which Yucatán fishing cooperatives operate is characterized by greater challenges in the provision of those club goods.

2.3 Study sites

The results section below presents evidence from nine small-scale fishing communities in the state of Yucatán, Mexico (figure 1). In Yucatan, small-scale fisheries are multi-species, multi-gear, seasonal, mostly-commercial fisheries. The most important commercial species in the state are octopus (*Octopus maya* and *Octopus vulgaris*), grouper (*Epinephelus morio*), snapper (*Lutjanus synargrys* and *Ocyurus chrysurus*), lobster (*Panulius argus*) (Mexicano-Cíntora et al., 2007) and more recently, sea cucumber (*Isostichopus badconotus* and *Holothuria floirdana*). The vast majority of fishers in Yucatan are small-scale. Of the large-scale vessels, more than 90 percent are concentrated in the port of Progreso. Small-scale fishing vessels are up to 12 meter fiberglass boats with outboard

motors that generally make single-day fishing trips near shore, between five and 35 meters depth (Silvia Salas, Mexicano-Cíntora, & Cabrera, 2006).

Like many small-scale fisheries globally, commercial small-scale fishers in Yucatan participate in the fishery either as members of fishing cooperatives (the social sector) or by engaging in patron-client relationships with individual fish buyers or firms (the private sector). Unlike a cooperative in which capital is often collectively owned, in patron-client relationships an individual entrepreneur, also known as a patron, owns the means of production. Individual fishers engage in informal contracts with patrons in order to gain access to capital inputs for fishing such as boats, fishing gear, and cash loans (Merlijn 1989). In return, fishers must land all of their catch with the patron with whom they are contracted.

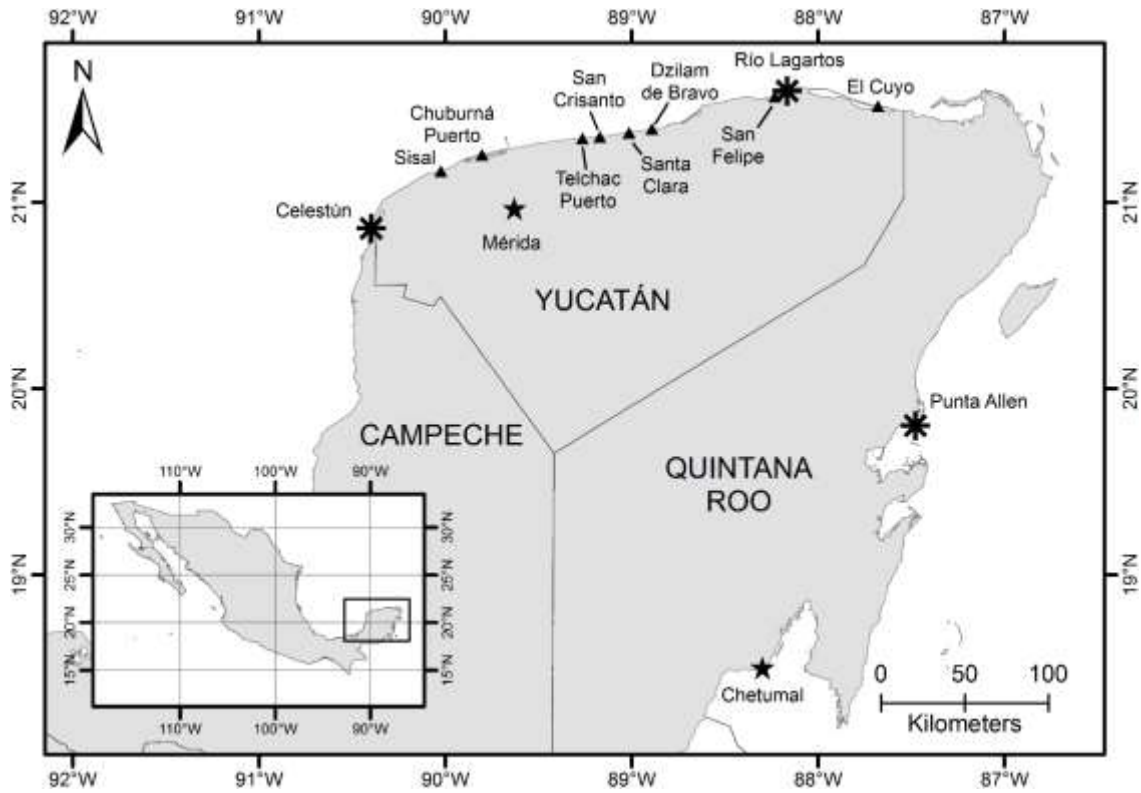


Figure 3 Map of chapter 2 study sites. Figure by author.

2.4 Research approach

The first phase of field research was conducted over two months in June and July of 2012. During this phase, structured interviews with presidents of 17 fishing cooperatives in nine communities were carried out. These interviews assessed the reasons behind forming fishing cooperatives as well as the advantages and disadvantages of belonging to a fishing cooperative. These interviews served to identify the club goods that fishing cooperatives in Yucatán attempt to provide to their members as well as the challenges involved in provision of those goods.

The second phase of field research was carried out between August 2013 and July 2014, during which two primary study sites were selected for extended fieldwork. Río Lagartos in eastern Yucatán and Celestún in western Yucatán were selected because they represent distinctive local contexts for the operation of cooperatives. In Celestún, the private sector predominates. Few, small cooperatives comprise about two percent of fishers from the community while 98 percent of fishers engage in patron-client relationships. In Río Lagartos, two large fishing cooperatives account for just over 50 percent of fishers from the community while the other 50 percent engage in patron-client relationships, indicating a balance between the social and private sectors. This site selection provides an opportunity to explore the geographically-specific effects of neoliberalization, the resulting variation in the opportunities and constraints that fishing cooperatives face, and the implications for cooperatives' ability to provide club goods to members. Semi-structured interviews with community members informed an understanding of changes over time in local political economic context. Additionally, ethnographic methods, including participant observation and informal interviews inform an understanding of how the context affects the potential for cooperatives to successfully generate club goods.

2.5 Results

The results are presented in the following order: 1) a summary of the club goods that cooperatives provide, 2) a review, based on the literature, of neoliberal policy

changes in the fishery sector that explores how they have made it more challenging for cooperatives to provide key club goods, and 3) a comparison between two study sites in different regions of the state showing how localized effects of neoliberalization are mediated through regional geographies, giving rise to different local political and economic contexts for cooperatives. The data indicate two key trends. First, cooperatives have been less successful in communities where the effects of neoliberalization have been more intense. Second, cooperatives that formed after neoliberalism have been less successful, regardless of geography. This indicates that both the general and geographically-specific effects of fisheries neoliberalization have led to a less enabling environment for fishing cooperatives in Yucatán.

2.5.1 Club goods generated by cooperatives in Yucatán, Mexico

Open-ended interview questions asked fishing cooperative presidents to list the main reasons for forming a fishing cooperative. Figure 4 indicates the frequency of responses in each category. Although responses were elicited from 17 fishing cooperative presidents from nine fishing communities, most presidents gave multiple responses. The total number of responses was 48.

Responses indicate the kinds of club goods that cooperatives are expected to provide their members. The most-cited reason for forming a cooperative was to obtain some form of government assistance, including assistance in obtaining motors, boats, fishing gear, credits, and air compressors for hookah diving. Obtaining fishing permits

or concessions was the second most-cited reason, followed by economic motivations related to obtaining better prices or competing with middlemen in the private sector. The first two most-cited reasons for forming fishing cooperatives relate directly to material, financial, or legal benefits obtained from the government. Members' financial contributions to the cooperative support paid administrative positions charged with engaging government agencies in order to obtain these benefits, as well as costs of travel between the fishing community and state capital. The third most-cited set of reasons relate to market competition. To the extent that processes of neoliberalization have altered the political and economic context of fishing cooperatives, they have affected the costs, opportunities and constraints of providing these key club goods.

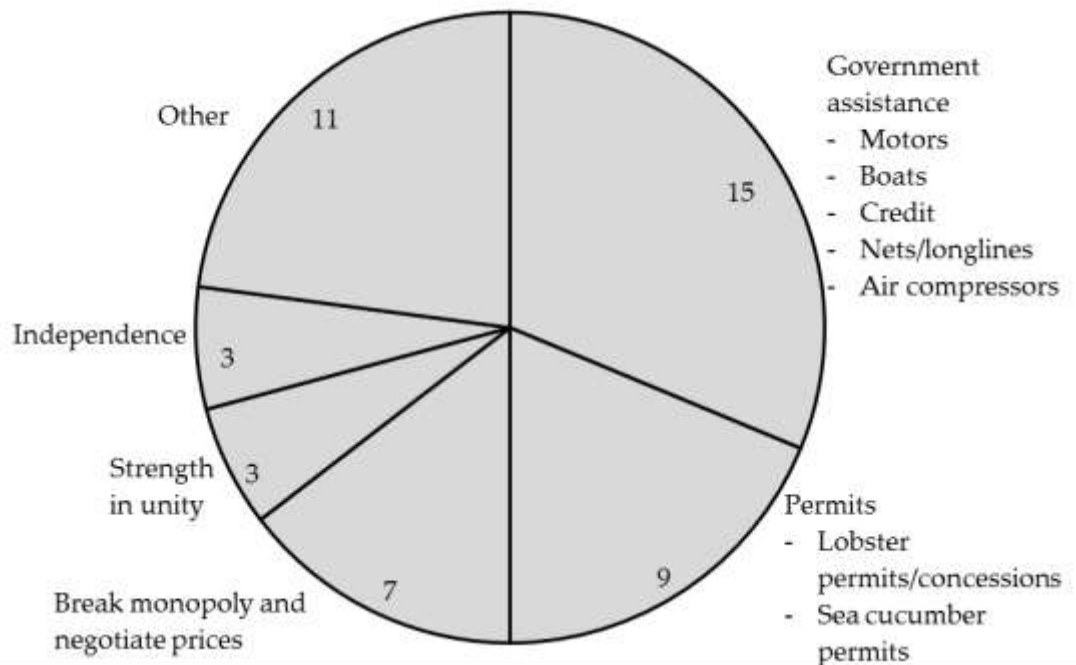


Figure 4 Reasons for forming fishing cooperatives

2.5.2 Roll-back neoliberalism in Mexican fisheries

Since the early 20th century, fisheries development in Mexico focused on the promotion of the social sector, which consisted primarily of cooperatives rather than private sector actors such as firms and individual permit holders (Soberanes Fernandez, 1994). A primary goal of enhancing the cooperative sector was the equitable distribution of resources (Espinoza-Tenorio et al., 2011). In part, this orientation was compelled in Article 27 of the 1917 Mexican Constitution, which established the State as the original owner of property rights to both land and inshore waters and oriented natural resource policies toward social interest (Ibarra Mendivil, 1996; Torres-Lara, 2000). Under the administration of Lazaro Cardenas, the 1933 General Law of Cooperative Societies along with the creation of the National Cooperative Development Bank in 1941 supported the promotion of cooperatives in a variety of sectors of Mexican society. In the fisheries sector, cooperatives enjoyed exclusive access to commercially valuable species such as shrimp, oyster, abalone, lobster, totoaba, mullet, snook, and octopus, granted by the Fisheries Law of 1947. The Law for Fisheries Development added sea turtle to this list in 1972 (Soberanes Fernandez, 1994). Significant subsidies, credits, investment in infrastructure, and direct involvement in marketing characterized the State's early involvement in promoting cooperatives. In addition, fishing cooperatives sold much of their production to parastatal export marketing firms, such as Ocean Garden Products (Hernandez & Kempton, 2003).

The neoliberalization of fisheries policies in Mexico was part of the broader transition toward neoliberalism in Mexico and Latin America that began in the early 1980s. In Mexico, the 1982 debt crisis marked the beginning of a move away from state interventionism in production sectors (Mumme, 2007). The IMF, World Bank, and international banks holding Mexico's foreign debt encouraged economic policies of austerity and privatization (Baños Ramírez, 2010). The trend toward decentralization and financial deregulation continued with Salinas' administration in the late 1980s to 1990s (Ibarra et al., 2000a). Fundamental alterations to the role of the state in social and economic life had lasting implications for the fishing cooperative sector, whose evolution until this point was integrally intertwined with the activities of interventionist state-led economic development.

In the 1980s and 1990s, roll-back neoliberalism decreased support to fishing cooperatives as policies shifted to promote the growth of the private sector. The State reduced subsidies to fishing cooperatives and opened markets with the sale of the State marketing firm, Ocean Garden, to the private sector and the liquidation of the bankrupt State Fisheries Development Bank, BANPESCA (Hernandez & Kempton, 2003). 1992 Amendments to Article 27 of the constitution facilitated a transition from socially-oriented property rights over inshore resources toward the granting of private fishing permits through processes of competitive bidding (Torres-Lara, 2000). The new Federal Fisheries Law issued in 1994 eliminated cooperatives' exclusive access to valuable

species. In addition, the fundamental structure of cooperatives was altered when the General Law of Cooperative Societies (DOF, 1994) reduced the minimum size of cooperatives to just five members. NAFTA, signed in 1993, went into effect in 1994, with further requirements that the State withdraw its interventionist approach in the economy (Espinoza-Tenorio et al., 2011). Along with reducing support to fishing cooperatives, the injection of private capital and expansion of export markets into Mexico's fisheries has exacerbated overexploitation of fisheries resources and overcapitalization of fishing fleets (Ibarra et al., 2000b; Young, 2001).

2.5.3 Neoliberal geographies

Broadly, neoliberalization in the 80s and 90s diminished legal and financial support for fishing cooperatives and increased competition from the private sector. Yet these changes filtered through pre-existing geographies, giving rise to a diversity of localized neoliberalisms. In some communities, cooperatives formed prior to the 1980s failed, newer cooperatives struggle to get up and running, and the private sector has overrun fisheries production activities. In other communities, older cooperatives have continued to thrive alongside private sector actors. In Yucatán, these trajectories were set in motion as broad processes of neoliberalization interacted with demographic processes specific to economic sub-regions within the state.

The implications of roll-back neoliberalism for fishing cooperatives in Yucatán were in part correlated with economic activities in inland areas of the state. Prior to the

1980s, western Yucatán was devoted to the production of an important agricultural export crop, henequén, used to make fiber. During the first half of the 20th Century, henequén exports made Yucatan one of the wealthiest states in Mexico and employed many campesinos working on haciendas (Brannon & Baklanoff, 1987). Just as neoliberalization of fisheries policy began in the 1980s, the state was also withdrawing its role in propping up the henequén industry, with consequences for fishing communities associated with the region. Fishing communities located within the henequén region include the ports from San Crisanto westward to Celestún. Fishing communities in eastern Yucatán, including ports of San Felipe, Río Lagartos, and El Cuyo are instead associated primarily with inland ranching and some corn production

Figure 3. The following results refer to fishing communities as belonging to either the henequén or ranching regions of the state.

By the 1980s, most henequén fields had ceased to operate, spurring a mass-migration of newly unemployed agricultural workers to coastal towns, especially Celestún and Sisal (Baños Ramírez, 2010; Fraga Berdugo, 1993). This demographic shift was formalized through specific government policies laid out in the *1984 Program for Reorganizing Henequén and Integral Development of Yucatan* and the *Regional Development Program for the Henequén Zone of Yucatan (1992-1994)*, which encouraged the conversion of inland agricultural workers into coastal fishermen. Initially, an effort was made to organize migrant labor into social sector organizations called Unidades de Producción

Pesquera Ejidales (Domínguez Quezada, 1995). However, at an historical moment in which the state was withdrawing its support of the social sector, the vast majority of incoming labor to coastal communities in the henequén region ended up in the private sector. Private sector growth has primarily taken the form of patron-client relationships between individual patrons and the fishers they employ.

Figure 5 shows the difference in demographic change for two fishing communities in Yucatán, one community located within the henequén region (Celestún) and one community located in the ranching region (Río Lagartos). Municipal population growth is based on data from the Mexican census. The proliferation of fish buyers in each town is also shown in the figure over the same time period. This data is based on self-reports by existing fish buyers of the number of years since their operation was established. Thus, the data likely underestimate the quantity of fish buyers in historical time frames. Nonetheless, the figure shows an important difference between the two study sites in the rate of proliferation of fish buyers.

Although both fishing communities had similar populations and population growth rates from 1940 to 1980, population growth for Celestún has outpaced that of Río Lagartos since 1980 and by 2010 the population of the former was nearly double that of the latter. Concomitantly, the number of private sector fish buyers (patrons) in Celestún grew to greater than seven-fold the number of patrons in Río Lagartos. Thus, although neoliberal changes in fisheries policies encouraged private investment in general,

expansion of the private sector was augmented in some fishing communities by economic pressures from the interior of the state, which were also the result of similar neoliberalization trends in agriculture.

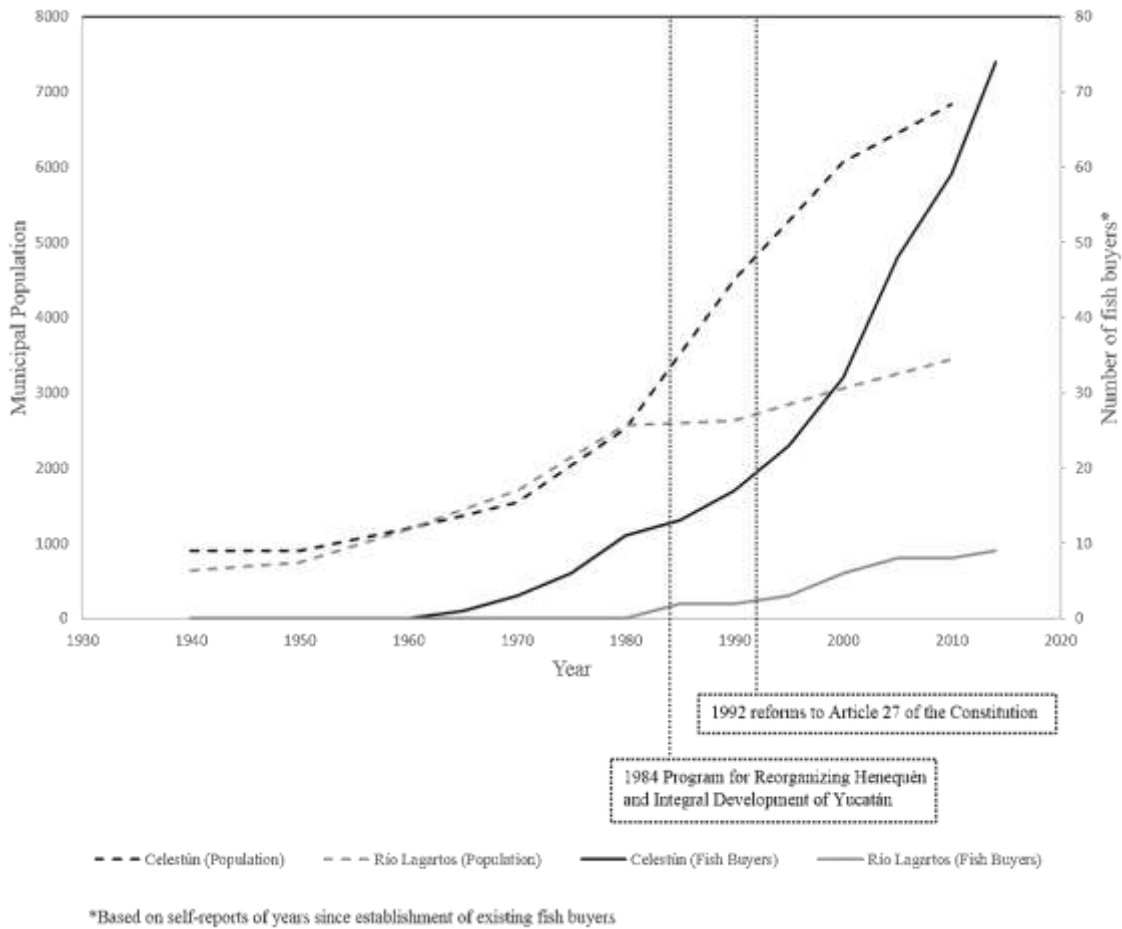


Figure 5 Demographic change and fish buyer proliferation in Río Lagartos and Celestún. Municipal population data from Mexican National Census Data, Instituto Nacional Estadística y Geografía (INEGI) (<http://www.inegi.org.mx/default.aspx>). Fish buyer data based on censuses conducted during 2014 fieldwork.

2.5.4 Provision of club goods in the neoliberal era

There are two particular ways in which neoliberalization has affected the ability of fishing cooperatives to provide key club goods to members. First, cooperatives

located in the henequén region, where the effects of neoliberalization on private sector expansion have been more significant, are generally less successful. Cooperatives from this region are generally smaller and exhibited a decrease in membership since the year of formation (Table 2).

Smaller and decreasing membership indicates less success in providing club goods to members in two senses. First, because the provision of club goods depends on members' contributions, fewer members simply means fewer resources with which to fund administrative staff, offer members' loans, purchase equipment, or travel to the state capital to maintain permits or lobby government. Second, a decrease in membership suggests that individuals have not found that the benefits to their participation in the cooperative to outweigh the costs.

Table 2 Characteristics of fishing cooperatives in Yucatán. *Pescadores Legítimos de San Felipe was formed from members who left Pescadores Unidos de San Felipe in 2005.

<i>Cooperative Name</i> Fishing community	Zone	Year of formation	Initial membership	Current membership	Change in membership
<i>El Cuyo</i> El Cuyo	Ranching	1974	70	108	54%
<i>Heroes Marinos</i> Las Coloradas	Ranching	2002	22	14	- 36%
<i>Pescadores Unidos de Las Coloradas</i> Las Coloradas	Ranching	1990	50	15	- 72%
<i>Manuel Cepeda Peraza</i> Rio Lagartos	Ranching	1972	70	182	160%
<i>Pescadores de Rio Lagartos</i> Rio Lagartos	Ranching	1970	40	121	200%
<i>Pescadores Unidos de San Felipe</i> San Felipe	Ranching	1970	"Few"	118	--
<i>Pescadores Legítimos de San Felipe</i> San Felipe	Ranching	2005*	81	86	6%
<i>Ribereños de Sisal</i> Sisal	Henequén	2011	16	15	- 6%
<i>Xlaabarco</i> Sisal	Henequén	2007	20	9	- 55%
<i>Punta Baas</i> Sisal	Henequén	2000	7	7	0%
<i>Reserva de Celestún</i> Sisal	Henequén	2000	5	5	0%
<i>Nohoch Cuch</i> Celestún	Henequén	1992	21	8	- 160%
<i>Ensenada Celestún</i> Celestún	Henequén	1989	40	18	- 122%
<i>Cayo Arenas</i> Celestún	Henequén	2002	5	5	0%

Cooperative presidents' characterization of the advantages and disadvantages of fishing cooperatives suggests how the presence of a large private sector constituted by

many patrons, such as in the henequén region, undermines cooperatives' ability to maintain a contributing membership (Table 3). While primary advantages include government assistance, access to permits, assistance in case of illness, and access to a savings fund, disadvantages include conflict within the cooperative, more responsibilities, an obligation to sell fish to the cooperative, and lower prices. When cooperative presidents speak of comparatively lower prices and greater obligations, the alternative, working for a patron, is the point of reference. For example, because the cooperative subtracts a fee from the price paid to fishers in order to provide collective goods, patrons are often positioned to offer higher prices. Thus, when cooperatives are small and fail to provide substantial benefits, competition from a large private sector is likely to attract fishers away from cooperatives.

Table 3 Advantages and disadvantages of cooperative membership identified by cooperatives' presidents

Advantages of cooperative membership		Disadvantages of cooperative membership	
Legal/Political	24	Legal/Political	2
Government assistance	10	More regulations	2
Permits	6		
Health insurance	5		
Political power	2		
Fish legally	1		
Social	7	Social	4
Assistance in case of illness/weather	6	Conflict – internal	3
Benefits are shared	1	Conflict – external/community	1
Commercial/financial	15	Commercial/financial	9
Savings fund/personal loans	5	Lower prices	7
End-of-year bonus	3	Must sell to cooperative	2
Fishing inputs (gas, equipment)	2		
Capital and infrastructure	2		
Tax benefits	1		
Better quality product	1		
Price of fish	1		
Organizational	2	Organizational	4
Participation and unity	2	More responsibilities	2
		Less incentive to work	1
		Administrative problems	1

Besides increased competition with the private sector in some communities, the reduced political, legislative, and financial support to fishing cooperatives, more broadly, seems to correlate with less successful cooperatives. Cooperatives that were founded after neoliberal policy changes are smaller and generally exhibit a decrease in membership since the year of formation (Table 2), regardless of whether they are located in the henequén or ranching region. This suggests that it is not just significant

competition with the private sector, but also reduced support to fishing cooperatives more generally that has weakened the sector. Table 2 reports data on existing cooperatives. However, in Celestún, a large, powerful cooperative initiated before fisheries neoliberalization has since gone bankrupt. The ruins of the cooperative facilities can be seen on the roadside approaching the town's marina (Figure 6).



Figure 6 The ruins of a once-powerful cooperative in the henequén region. Photograph by author.

2.6 Discussion

Viewing cooperative functions through the lens of club goods provides a unifying theoretical tool for assessing cooperative success and failure as well as the influence of external political economic context. A club goods perspective draws

attention to the fact that running a fishing cooperative requires costly participation by members. Therefore, fishers are unlikely to find belonging to a cooperative worthwhile unless there is some benefit worth the costs, financial or otherwise, of participation. Historically, close linkages between fishing cooperatives and government incentives created benefits that were either exclusively available to cooperatives or available at lower costs. In many cases, neoliberalization has reduced these benefits. Furthermore, increased competition with the private sector, especially in the form of patron-client relationships, provides alternative ways for fishers to access resources outside of fishing cooperatives.

The club goods perspectives helps to ground current expectations about roles for fishing cooperatives in contemporary contexts. Researchers and practitioners have a wide range of expectations for the potential of fishing cooperatives. Cooperatives are seen as potentially playing key roles in resource governance, co-management, enhancing institutional adaptation to climate change, and enforcing formal fisheries regulations (Deacon, 2012; FAO, 2012; Pittman et al., 2015). Yet these activities are costly for cooperative members, whose time is generally spent focused on the demanding day-to-day livelihood activities associated with fishing. Monitoring and enforcement of formal regulations can even be physically dangerous in the case of high-value resources. The club goods perspective underscores that the benefits of participation in resource governance, for example through co-management, are often not exclusive to cooperative

members and therefore more characteristic of public goods than of club goods. Thus, unless cooperatives enjoy exclusive access to fisheries resources or political benefits in exchange for governance activities and therefore experience some club benefits as a result of their contributions to resource governance, participation in co-management or other resource governance activities will be challenging to incentivize.

In Mexico, there are numerous examples of fishing cooperatives that are immensely active in promoting sustainable resource governance, for example, the Caribbean cooperatives in the state of Quintana Roo, the Vizcaino region cooperatives in Baja California Sur, and the wealthy and well-organized cooperatives in Mexico's northern Pacific (Finkbeiner & Basurto, 2015; McCay et al., 2014a; Méndez-Medina et al., 2015). Yet all of these successful cooperatives benefit from various forms of territorial exclusivity, either in the form of concessions to valuable species such as lobster and abalone or as the only legal harvesters permitted inside marine protected areas. These cooperatives were formed prior to the neoliberalization of Mexican fisheries policies. New cooperatives find it much more difficult to obtain similarly exclusive access to resources in the contemporary political economic climate. Exclusive fishing rights provide a competitive advantage for cooperatives, allowing them to attract and maintain contributing participation by providing members with valuable club goods (access to valuable resources) that their private sector counterparts are unable to offer.

Furthermore, they are likely to reap the benefits of sustainable governance with a greater degree of exclusivity.

Cooperatives' role in economic development in small-scale fisheries is likely easier to incentivize than resource governance participation because these activities more directly generate club goods for members. For example, the FAO (2012) report suggests that cooperatives have the potential to increase price-negotiating power with intermediaries, help stabilize markets, improve post-harvest practices and facilities, provide marketing logistics and information, facilitate investment in shared structures such as ice plants and fish processing facilities, increase market competition by setting up auctioning systems, use their greater negotiating power to make cost-saving bulk purchases of fishing gear, engines, equipment and fuel and to advocate with government, and facilitate microcredit schemes for fishers to reduce their dependency on intermediaries and give them greater freedom in selecting buyers (FAO 2012). These processes, too, may be affected by neoliberalization, especially where competition from the private sector has grown significantly. In many cases, economic benefits may be a necessary condition for the continued existence of fishing cooperatives, yet they are not sufficient to enable broader resource governance activities (Berkes, 1986).

More clearly defining a vision of an enabling environment is a key step forward in promoting the success of fishing cooperatives in small-scale fisheries. A post-neoliberalization enabling environment is necessarily distinct from the historical context

in which many cooperatives were initiated. The FAO, for example, envisions an enabling environment that consists, in part, of “supportive institutions, such as decentralized fisheries governance systems that empower communities to become stewards of their resources,” and goes on to emphasize that “the right degree of public intervention is important, as excessive interference can harm organizational development as much as too little public support (FAO, 2014, p. 102). In this hands-off approach, it is unclear what type of support, if any, can facilitate cooperatives’ provision of significant club goods to their members.

Some pathways toward contemporary support to fishing cooperatives have emerged. Neoliberalism is often characterized in part by the increasing role of civil society in taking up support functions previously filled by states. In Mexico, NGOs play an increasingly important role in initiating cooperatives and enhancing the role of fishing cooperatives in governance. (Espinoza-Tenorio et al., 2011). New, roll-out forms of neoliberal governance may also favor cooperatives. For example, as rights-based management has risen in popularity, some have seen cooperatives, rather than individuals, as appropriate recipients of property rights and quotas (Griffith, 2008). Market-based sustainable seafood certification, such as the Marine Stewardship Council’s program, have worked with small-scale fishing cooperatives in an attempt to link new market incentives and sustainable governance (Pérez-Ramírez et al., 2012). Ironically, however, the cooperatives that have received market-based certification are

not new but are those formed prior to roll-back neoliberalization in Mexican fisheries. Finally, in some countries, specific government policies have spurred the expansion of the cooperative sector. For example, in Turkey, exclusive rights to operate fishing port facilities has been in part responsible for the recent expansion of the number of fishing cooperatives (Ünal et al., 2009). In Cuba, new legislation has prioritized the formation of cooperatives and “[f]or the first time since the Cuban Revolution, the new regulations will make it possible for experimental cooperatives to emerge in Cuba’s industrial and small-scale private fisheries (Wielgus et al., 2014, 130).

2.7 Conclusion

Regarding fishing cooperatives in Yucatán, two relevant trends are apparent from the results. First, data on fishing communities from throughout the state show that cooperatives formed after neoliberalization are less successful than cooperatives formed prior to neoliberalization, regardless of where in the state they are located. This suggests that across the board, neoliberal fisheries policies have reduced support to fishing cooperatives. This assertion is supported by the fact that interview data from cooperative presidents shows that the most important club goods fishing cooperatives attempt to provide to members derive directly from government policies. Thus, as neoliberalization reduced government support of fishing cooperatives in a multiplicity of ways, the provision of the most important club goods has become more challenging.

Second, comparative analysis from two regions within Yucatán reveals that where the localized effects of neoliberalization have been most extreme, cooperatives are also less successful. Cooperatives have been less successful in the henequén region, where neoliberalization in fisheries coincided with additional demographic processes leading to the proliferation of private sector patron-client relationships. Data on the advantages and disadvantages of being in a cooperative offer an explanation for why cooperatives may lose members to patrons in the presence of a large private sector. Namely, patrons are able to offer higher prices and lower levels of obligation than fishing cooperatives.

Many changes have taken place globally since initial interest in the role of cooperatives in fisheries development. In particular, neoliberal changes have re-worked the political-economic environment in which cooperatives operate and a contemporary vision of how to promote the success of fishing cooperatives is less clear. This paper has offered the theoretical contribution of looking at cooperatives through the theory of club goods in order to provide a framework that can help elaborate a vision of enabling environments. In essence, characteristics of enabling environments can be evaluated according to a general criterion: whether or not they reduce the cost to cooperatives of providing collective benefits or allow cooperatives to provide benefits that private sector actors such as patrons, intermediaries, and middlemen do not have access to. Otherwise,

fishers are likely to forgo costly, time consuming collective action and seek out other ways to engage in fishing livelihoods.

3. Local institutional responses to global market pressures: The sea cucumber trade in Mexico

3.1 Introduction

The changing relationship of small-scale and developing country fisheries to export markets forefronts concerns with balancing the risks and benefits of global seafood trade for fishing livelihoods. The global seafood trade has expanded in recent years, with a record estimated \$132.2 billion in exports in 2013 (FAO, 2014b). In this context, concerns that the small-scale sector will be left behind has incited calls to “provide small-scale fishers with access to finance, insurance and market information, invest in infrastructure, strengthen small-scale producer and trader organizations, and ensure that national policies do not overlook or weaken the small-scale sector,” (ibid.). Many small-scale fisheries are located in developing countries, which account for 53% and 60% of total fish exports by value and volume, respectively (FAO, 2014). As the global seafood trade continues to grow, the claim that regional and export markets have the potential to contribute to livelihoods, poverty reduction, and food security in the context of developing country small-scale fisheries (SSFs) is subject to debate (Béné et al., 2010).

Although seafood trade may offer potential livelihood benefits for local communities, new market connections contribute to risks of resource degradation. New markets can reach local fisheries so suddenly that existing governance institutions are unable respond to high demand for resources in time to prevent overexploitation or

fisheries collapse (Berkes et al., 2006). Markets have been shown to correlate with higher fishing pressure (Brewer et al., 2012) and degraded health of reef fisheries and ecosystems (Cinner et al., 2013; Cinner & McClanahan, 2006). The potential livelihood benefits of markets, therefore, must be reconciled with the environmental risks posed by increased pressure on resources.

Local institutions play a potentially important role in moderating resource degradation driven by market pressures (Agrawal & Yadama, 1997; Chhatre & Agrawal, 2008) and examples of successful local self-governance in the fisheries sector abound (Townsend et al., 2008). In developing country SSFs, local self-governing institutions can be particularly important in the context of market pressures if management capacity by the state is weak (Smith et al., 2010).

Understanding how local resource governance institutions respond to new global market pressures is therefore of paramount importance. In addressing this issue, this research integrates theoretical approaches from political ecology and common-pool resource (CPR) theory. CPR studies have offered extensive insight into understanding how groups engage in collective action to create and maintain robust and resilient resource governance institutions (Cox et al., 2010; E. Ostrom, 1990). In contrast to the qualitatively rich lens that CPR theory casts on resource governance institutions, the variables and frameworks utilized in the field to study markets focus on quantitative measures of demand for products, distance to markets, or economic value of the

resource (Agrawal, 2001; E. Ostrom, 2009). The conceptual reduction of markets to operational variables of price, distance, or demand, while useful, has the potential effect of de-politicizing and disembedding the concept of the market from the social relations that shape resource governance. As a result, research driven by CPR theory has given less attention to the dynamic processes through which markets actually interact with local institutions.

In contrast to CPR theory's apolitical characterization of the market, political ecologists have engaged extensively with capitalism, in particular, as the predominant market form in contemporary society. Early political ecologists invoked neo-Marxian critiques, arguing that capitalist relations of production, patterns of accumulation, and processes of commodification drive natural resource degradation in local sites of production (Blaikie, 1985; Blaikie & Brookfield, 1987; Walker, 2006). Although it has shed some of its structuralist and historical materialist commitments, political ecology continues to emphasize that resource degradation can be explained by attending to questions of who controls ownership and access to resources and capital and who profits from their use (Robbins, 2004). Since the post-structural turn in the field, scholars have pushed for an acknowledgement of economic diversity and a politics of possibility that provide alternatives to the inevitability of capitalist-led environmental degradation (Gibson-Graham, 2006; Roelvink et al., 2015). This study approaches markets informed by a political ecology that acknowledges that the relations of production that structure

ownership of the means of production and patterns of accumulation matter, but that these social relations are more diverse than a neo-Marxian perspective allows, with practical implications for the potential of local institutions to moderate the effects of market pressures. By approaching the market as not only capitalist but also diverse and socially constituted within sites of production, the study offers insight into the factors that shape local institutional responses to market pressures.

The sea cucumber fishery in Yucatán, México provides an excellent case with which to investigate the interactions between social relations of production and local resource governance under market pressures. Expanding outward over time from the primary source of demand in Asia, sea cucumber markets have reached almost every region of the world (Toral-Granda et al., 2008), exhibiting typical boom and bust cycles that have accelerated since the 1960s into recent decades (Anderson et al., 2011) (Figure 7). In 2010, Yucatan, Mexico small-scale fisheries experienced one of the most recent waves of the global sea cucumber trade as Chinese buyers arrived to coastal communities in search of the product. Throughout the state of Yucatán and into Campeche, the fishery has affected every coastal community. All along the coast, increased crime, drug-use and prostitution, violent encounters with poachers, kidnappings, protests, a rising death toll from diving related injuries, and depleted sea cucumber stocks characterize the new fishery. Regional newspapers reported on the “war of the sea cucumber fishers” caused by the worm-like bottom-dwelling

invertebrate, also known in the region as “*oro negro*” or “*black gold*.” These grim events, however, obscure the different strategies with which local resource governance has responded to, and in some instances even resisted, the negative social and ecological consequences of the global demand for sea cucumber.

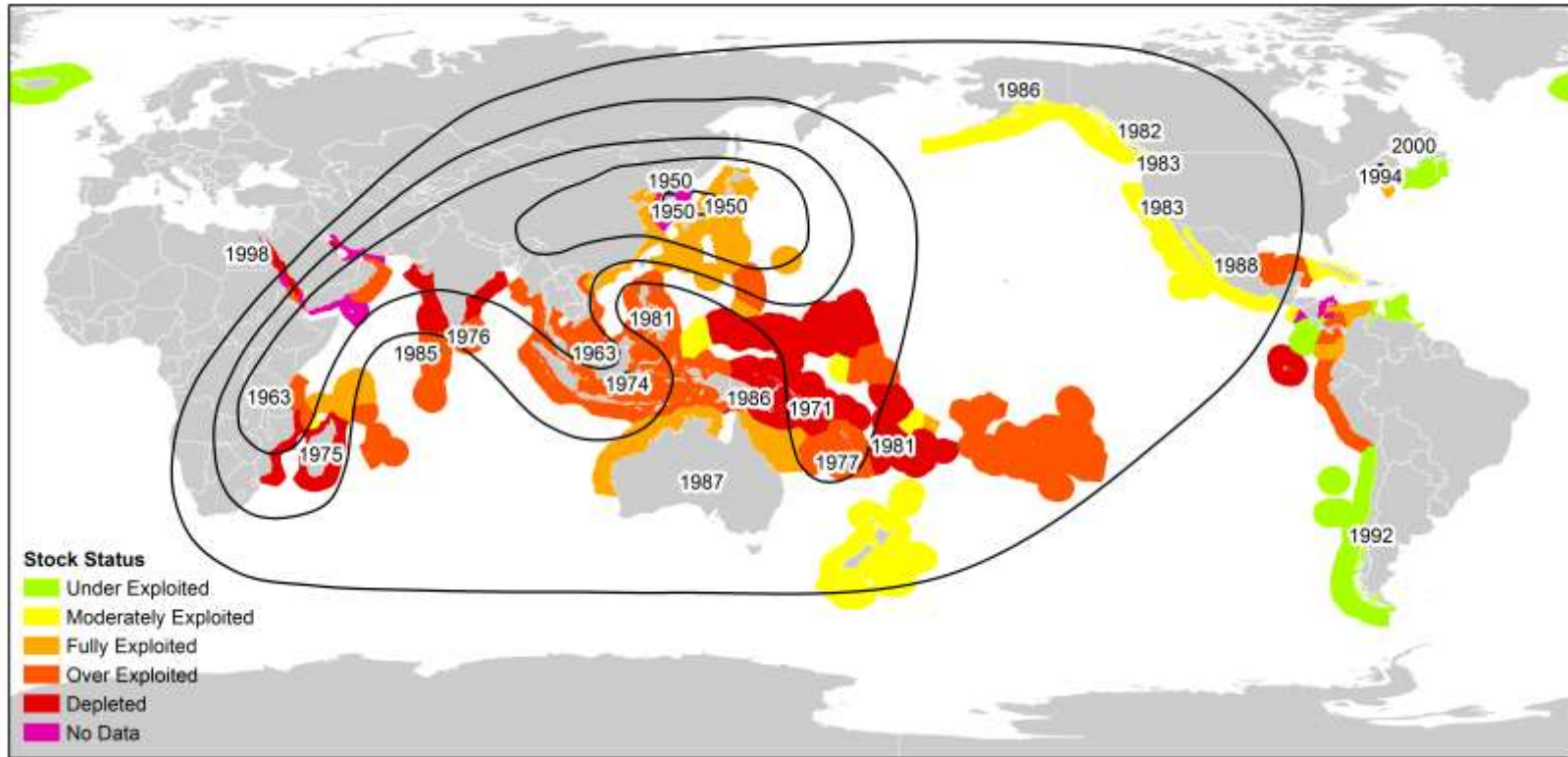


Figure 7 Global expansion of the sea cucumber trade: Stock status and year of fishery establishment. Sea cucumber stock status is reported by Purcell et al. (2013). Years of establishment of sea cucumber fisheries is reported in Anderson et al. (2011). The country and Exclusive Economic Zone map elements are based on GIS datasets available in the public domain, accessible through FAO GeoNetwork and marineregions.org. Figure by author and Xavier Basurto.

Using an in-depth comparative case study of two communities within the region, we investigated the processes through which the social relations of production shape local institutional responses to market pressures. In one community, local relations of production facilitated the development of an open access sea cucumber fishery. In a second community, local institutions were strengthened to prevent resource over-exploitation by local actors. However, both communities eventually experienced widespread poaching by non-local fishers.

Different relations of production help to explain the divergent pathways of institutional response. By shaping individual material incentives as well as distributional concerns, the particular form that relations of production takes influences local actors' interests in promulgating different kinds of resource governance institutions, as well as their power to enact those institutions. In particular, relations of production characterized by collective action and mutual ownership of the means of production facilitate institutional responses aimed at moderating negative ecological effects of market pressures.

3.2 Local institutional responses to market pressures

Although local institutions can play a key role in moderating resource degradation, the factors that influence the success and failure of local institutions to moderate market pressures are not thoroughly understood. On the one hand local institutions may erode in response to market pressures. For example, some research has

found that communities with exclusive marine tenure governance regimes were located farther from markets and that the erosion of traditional marine tenure regimes took place nearer market centers (Cinner, 2005; Cinner et al., 2007). On the other hand, common property institutions can persist or gain strength through integration with external market pressures (e.g. Aswani, 1999, 2002; Johannes, 2002). These divergent findings suggest there are other factors intervening between market pressures and local governance that influence outcomes. This study investigates the role of relations of production as intervening factors shaping institutional responses to market pressures.

Conceptually, we hypothesize that institutional responses to market pressures are in part driven by specific relations of production. We follow a definition of market pressures as the existence of a connection with external market demand for particular resources, based on previous work on the subject (e.g. Agrawal & Yadama, 1997). We define local resource governance institutions as the shared rules, norms, and strategies that structure repeated interactions between individuals and groups in CPR settings. We take relations of production to refer to the institutionalized social relations that structure ownership of capital and the means of production, patterns of profit and accumulation, and the relationships between labor and capital in commercial fishing contexts.

Figure 8 depicts the relationship between market pressures, local resource governance institutions and social-ecological outcomes that has been investigated in previous work (Agrawal & Yadama, 1997; Chhatre & Agrawal, 2008). Specifically, local

institutions intervene between market pressures and local CPRs to moderate negative social and ecological outcomes. This study goes further and inserts relations of production as mediating the link between market pressure and local governance institutions. It is within this relationship that broadly conceived of market pressures open up into socially embedded relations, which we hypothesize as proximate drivers of local institutional responses.

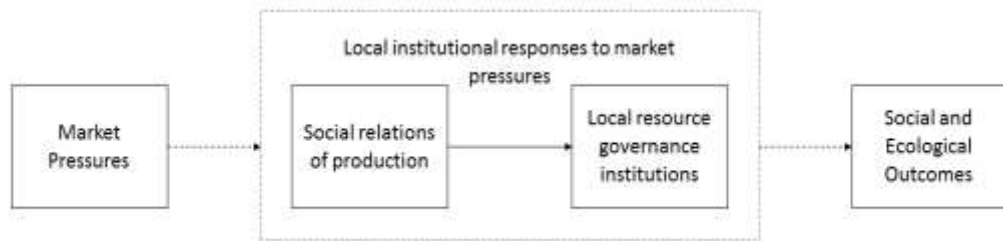


Figure 8 Conceptual model: Relations of production as proximate drivers of institutional responses to market pressures

3.2.1 Local resource governance institutions

Market pressures can reshape many aspects of local CPR governance arrangements. One primary pathway of institutional change occurs when an increase in price and demand for the resources drives a proliferation of the number of individuals

targeting the resource, whether through community members switching livelihood strategies or outsiders attracted to valuable fishing grounds. In this study we focus on those institutions that are most directly related to addressing these exploitation pressures. These institutions are not only essential to maintaining sustainable levels of resource exploitation, but are also those most likely to change in response to market pressures, by either facilitating or restricting exploitation, with important social and ecological consequences.

Institutions that prescribe who may and may not access and harvest resources, called boundary rules, are particularly important under market pressures. Boundary rules “define (1) who is eligible to enter a position, (2) the process that determines which eligible participants may enter (or must enter) positions, and (3) how an individual may leave (or must leave) a position,” (E. Ostrom, 2005, p. 194). For example, In CPRs such as forests and fisheries, a common boundary rule requires that individuals must be members of the local community in order to access and harvest resources (E. Ostrom et al., 1994). If many additional individuals attempt to gain access to a resource under market pressures, responses in boundary rules can affect whether or not a resource is exploited sustainably.

A second category of institutions, those monitoring and enforcing rules regarding resource use, are essential to sustainable governance (E. Ostrom, 1990) but are challenging to maintain under market pressures. Local groups managing CPRs have

devised a variety of innovative strategies for provisioning costly monitoring and enforcement institutions, for example mutual monitoring by one another (McKean, 1986), paying guards according to performance (Agrawal, 1994), or incentivizing third party guards by allowing them to keep fines (Wade, 1988). Some monitoring and enforcement institutions may be appropriate to small community settings but less effective when market pressures attract outsiders. The presence of outside poachers may pose insurmountable challenges for existing monitoring and enforcement institutions (Cudney-Bueno & Basurto, 2009). As the number of individuals who must be monitored increases, the cost of monitoring also rises in a curvilinear fashion (Agrawal & Goyal, 2001). Thus, while monitoring and enforcement institutions help to prevent resource degradation under market pressures, understanding whether and how communities adapt them to new pressures is key.

3.2.2 Relations of production

Although SSFs are characterized by low capital inputs in comparison to industrial fisheries, the cost of the means of production, including boats, motors, and equipment, most often exceeds the financial means of individual small-scale fishers in commercially-oriented SSFs (Basurto, 2015; Basurto et al., 2013). Beginning in the second half of the 20th century, state-led fisheries development in Mexico ramped-up capacitation and modernization of the small-scale fishing fleet with the goal of drastically increasing production (Hernandez & Kempton, 2003). In Yucatan, Mexico,

this development intensified the role of capital in SSFs and spurred the proliferation of different relations of production that shape how fishers obtain capital inputs for their livelihoods (Quezada Domínguez, 1995). Fishing cooperatives and patron-client relationships are the two most common sets of institutional arrangements structuring relations of production in commercially oriented SSFs (Basurto, 2015; Basurto et al., 2013) as is the case in Yucatan, Mexico. Cooperatives and patron-client relationships constitute relations of production because they structure the ownership of the means of production, flows of profit and patterns of accumulation, and the relationship between labor and capital in fisheries production.

Cooperatives are usually defined as an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise. They require collective action to coordinate the joint sharing of the transaction costs associated with the extraction and/or commercialization of their catch (Jentoft, 1986). Usually, property rights to fisheries resources are possessed in common by the cooperative and collective action is needed to ensure individuals do not shirk duties or otherwise undermine the groups' efforts. Fishing cooperatives are ubiquitous in SSFs around the world. In Turkey, one of every four fishers belongs to a cooperative (Ünal et al., 2009), in Mexico officials estimate the existence of more than 3,200 cooperatives (Juárez-Torres et al., 2007), and more than 620 fisher syndicates are reported in Chile (Marín et al., 2012).

In contrast, under patron-client relationships, an individual entrepreneur, also known as a patron, owns the means of production. Individual fishers engage in informal agreements with patrons (Merlijn, 1989). Johnson (2010, p. 265) describes patron-client relationships as “common economic arrangements... that link powerful individuals with numerous subordinates. In exchange for favors, including loans, protection, or intermediation, patrons receive labor, goods, political support or other benefits.” In patron-client relationships fishers gain access to capital and avoid the transaction costs of commercialization. Fishers are also easily engaged in illegal fishing practices when patrons assure them they will buy their products even if formal regulations are not met (Pedroza, 2013). Exploitative relations are common in places with little competition or monopsony (Barrett & Apostle, 1989), although non-exploitative relations have also been reported (Ruddle, 2011). In sum, the persistence of patron-client relations relies not so much on collective action, but rather on the entrepreneurship and economic power of the patron and his or her ability to enforce informal contractual agreements with fishers.

3.3 Research design and methods

To select two representative study sites for an in-depth comparative case study, we conducted semi-structured interviews in 11 fishing communities in the state of Yucatán with fishing cooperative leaders and local fish-buying patrons in each town. This preliminary research showed that communities throughout the state have a varying distribution of fishers organized through patron-client and cooperative relationships.

Celestún and Río Lagartos (Figure 9) were selected because they represented extremes in the distribution of these two forms of institutional arrangements with patron-client relationships predominating in Celestún and just over half of fishers belonging to two fishing cooperatives in Río Lagartos.



Figure 9 Map of chapter three study sites

From August 2013 to July 2014, I conducted fieldwork in Río Lagartos and Celestún employing multiple data collection methods. A census of patrons and fishing cooperatives in both sites characterized the relations of production in each study site. Participant observation recorded in field notes, semi-structured interviews recorded on a digital voice recorder, and a survey of fishing cooperative members documented local

institutional responses to market pressures and the influence of relations of production on those responses. Specific participant observation activities included observation of daily production and commercialization activities at fishing cooperatives' and patrons' reception centers, accompanying fishing cooperative leaders to sell product out of town, working on fishing boats during sea cucumber season, fishing sea cucumber and helping with onboard pre-processing, and attending cooperatives' assemblies and meetings. In addition, participation in daily social life and residing with fishers' families allowed time for numerous informal conversations, development of an understanding of the social context, and the observation of unanticipated events as they unfolded.

3.4 Results

The results are presented in two sections that compare institutional responses to market pressures in the two illustrative study sites. The first section briefly quantifies differences between the sites in terms of relations of production (patron-client relationships and fishing cooperatives) in the sea cucumber fishery. The second section and subsections presents evidence comparing the responses of local resource governance institutions to market pressures, in particular boundary rules and local monitoring and enforcement. The evidence illustrates how institutional responses are shaped by relations of production.

3.4.1 Relations of production

In Celestun, relations of production are predominated by patron-client relationships, with 2013 total fishers employed by 81 patrons. Although there are three active cooperatives in Celestun, their membership totals only 31 fishers. In contrast, in Rio Lagartos, just over half of fishers belong to one of two large fishing cooperatives and the rest work for one of nine local patrons (Figure 10).

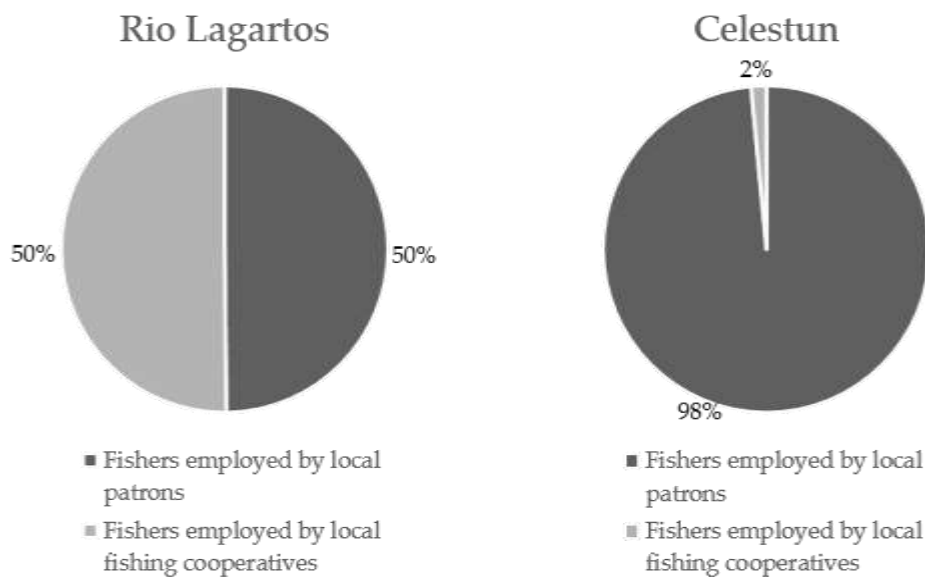


Figure 10 Distribution of fishers among different relations of production in Río Lagartos and Celestún

The activities of patrons and fishing cooperatives populate the real physical and social spaces in which market pressures collide and interact with local resource governance institutions, as fishers make their way from the offshore areas where they harvest resources to the reception centers of patrons or cooperatives along the seawall where they receive cash for the day's catch. These institutionalized relations shape the

mechanisms through which market pressures interact with local resource governance. Even superficial observation of these spaces in each of the study sites hints at how distinctly global demand manifests in local contexts, filtered through divergent structures and incentives.

Walking along the working waterfront during sea cucumber season, the magnitude of the bustling market is immediately apparent in Celestún, where most fishers work with local patrons and few, small cooperatives operate. To an unfamiliar observer, the activity of people, vehicles, boats, and dogs seems wild and disorganized despite an invisible underlying organization. During the afternoons, the ~six meter fiberglass fishing boats make their way into the crowded marina. On them are visible one or two sea cucumber divers and one or two additional crew members, a diving air compressor connected to a modified beer keg, and a giant ice chest. Although the marina is large, it looks to be bursting at the seams in the busier areas, where boats do not always find space to tie up along the seawall. The boats pull up to sell their catch at one of more than 80 bodegas, or reception centers. A few of the reception centers are giant cement buildings lined by high walls and metal gates but most are small, a combination of cement block, laminate or tarp roofs, and wooden poles. Some reception centers have signs that read "I buy sea cucumber, 70 pesos per kilo." The sandy unpaved road that lines the marina is busy with a constant flow of pickup trucks and small freezer trucks

stopping along the way to purchase raw or partially processed sea cucumber. The harvests never stop, even after the legal season has ended.

In Río Lagartos, fishers sell sea cucumber at one of just 11 reception centers in town that accommodate nine local patrons and two large fishing cooperatives. The reception centers seem tamer than in Celestún, squeezed in along the boardwalk amongst houses, stores, hotels, and restaurants. One afternoon, as Mariano¹ motors the boat from the open Gulf of Mexico toward the cooperative to sell the sea cucumber, two orderly rows of more than 10 boats waiting in line can be seen from a distance. The cooperative has halted the reception of sea cucumber, and it will be at least an hour before the huge coolers full of ice water and giant boiling vats of salt water behind the cooperative can accommodate more product. The slimy, watery animals begin to go bad quickly, so in the meantime they will have to remain on ice in the boats. The elected secretary and treasurer of the cooperative, who have set up make-shift desks at the seawall to receive and record catch in exchange for hand-written payment vouchers, are opening a carton of beer and passing bottles down the line of boats. The cooperatives have decided that no one in town will be allowed to go fishing the following day, so it is time to relax. Like the others that have already arrived, Mariano ties the boat to the next one in line, turns on the radio, opens beers for everyone on the boat, and waits. The next day, in the middle of the short sea cucumber season, not a single boat, regardless of

¹ Real name has been changed.

whether it belongs to a patron or a cooperative, leaves town. Production comes to a halt so fishers can rest and the cooperatives can catch up. Only a few days remain in this sea cucumber season, after which fishers will dedicate themselves once again to harvesting lobster, octopus, and a variety of fish species.

3.4.2 Local resource governance institutions

While federal regulations provide a basic institutional framework for the management of the sea cucumber fishery in Yucatán, limited State capacity means that local actors are almost entirely responsible for monitoring and enforcing formal regulations. Limited access permits, quotas associated with each permit, and closed seasons comprise the set of State regulatory tools in place for the fishery. In addition, the ability to legally sell sea cucumber is restricted to individuals with fishing permits. However, as Chinese buyers arrived directly to local fishing communities, later establishing links through Mexican intermediaries, the limited presence of State authorities in fishing communities has meant that local fishing institutions are the primary moderating force of market pressures.

Beginning in 2010, The National Fisheries Commission, CONAPESCA, issued permits allowing brief seasonal harvests of two species of sea cucumber, *Isostichopus badconotus* and *Holothuria floridana*. To organize the fishery and fishing stocks, fishing communities in Yucatán were separated into four zones. Celestún, located in Zone 1, was among those communities that in 2010 received the first non-commercial

development permits, which were intended to allow fishers provisional legal access to the resource and enable State biologists to assess density of sea cucumber stocks and the effects of the fishing effort (CONAPESCA, 2004). By 2012, at the time of preliminary fieldwork, interview respondents in Celestún were already complaining about the negative social, ecological, and economic impacts of the sea cucumber fishery in their town. Meanwhile, cooperatives in Río Lagartos were only beginning to apply for their first permits. By the time 2013-2014 fieldwork began in August 2013, cooperatives as well as individual patrons in Río Lagartos had received commercial permits for two seasons in 2013 and one in 2014. Despite receiving non-commercial development permits authorizing short seasonal harvests in 2010, 2011 and 2012, the State did not issue commercial permits for harvests in Celestún except for a single season in 2014 (Figure 11).

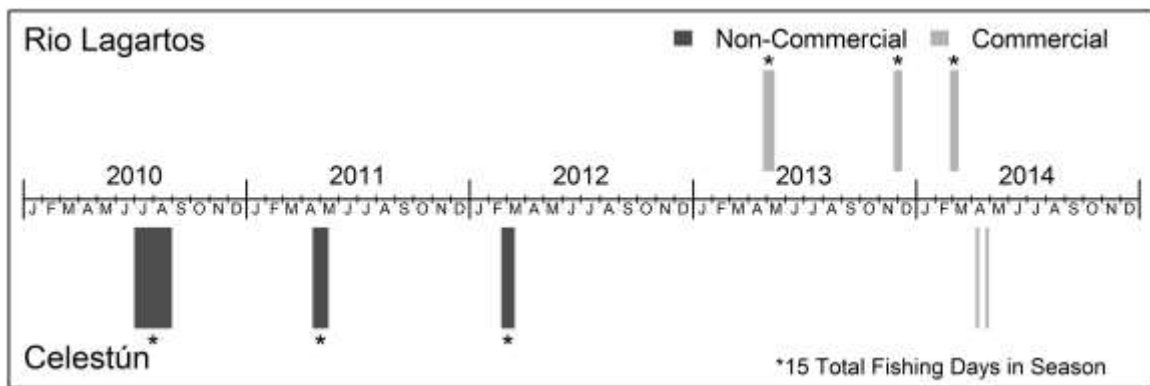


Figure 11 Official sea cucumber seasons in Río Lagartos and Celestún

In theory, formal regulations, which are based on studies produced by the government’s fisheries research institute, Instituto Nacional de Pesca (INAPESCA),

should prevent unsustainable harvesting rates in three ways. Permits limit the number of individuals who can harvest resources, quotas limit the quantity of resource that individuals can harvest, and closed seasons limit the number of days individuals can engage in resource harvests. In the absence of State enforcement, however, local actors in Celestún and Río Lagartos implemented a variety of *de facto* institutional arrangements, or rules-in-use.

In Celestun, where the vast majority of fishers work for local patrons, *de facto* institutions created an open access fishery. Boundary rules became lax and initial volunteer monitoring institutions failed. In Río Lagartos, where two strong cooperatives play an important role in the fishery, boundary rules became more stringent and monitoring and enforcement institutions intensified (Table 4).

Table 4 Local resource governance institutions in Río Lagartos and Celestún

Study site	Río Lagartos	Celestun
Boundary rules	Limited access	Open access
Monitoring and enforcement	Strong	Weak/failed

3.4.2.1 Local institutional responses to market pressures: Boundary rules

As relations of production that structure ownership of the means of production, distribution of profits, and patterns of wealth and capital accumulation, patron-client relationships and fishing cooperatives create different sets of incentives for shaping boundary rules in response to market pressures. As the owners and managers of multiple boats, local patrons occupy their reception centers beginning early in the

morning when fishers receive daily cash loans, supplies, and gasoline. They are present again by early afternoon as fishing boats begin to return, supervising the weight and quality of each boat's production. They ensure that fishers do not sell catch to another patron, make payments to fishers, and record financial transactions. Patrons also dedicate time to negotiate with buyers, sell or store the days' production, and, if they have fishing permits, travel out of town to attend to paperwork and bureaucratic requirements. There is no time to fish, although some patrons started out as fishers.

Patrons' success in generating income relies on their ability to contract sufficient labor to work their boats. Over time, patrons accumulate enough earnings to invest in more boats and employ a growing number of fishers. The patron, alone, profits from increasing his labor force.

Before sea cucumber season, many patrons make significant investments in new equipment. They also make loans to hire divers traveling from other communities within and outside the state. In the days leading up to sea cucumber season, throughout the marina of Celestún, patrons posted signs on their reception centers that read "I am hiring divers" followed by their phone numbers. As one patron from Celestún explained, the demand for experienced divers often seemed to exceed the supply:

They tell me that they know how to dive... 'yeah, I am a sea cucumber diver,' ... so that I will hire them. One guy told me he was a diver, but when he came back from fishing, the other guys told me he got scared, he didn't want to dive that far out.

Indeed, many patrons hire young, inexperienced individuals desperate to become “pepineros,” or sea cucumber divers. With little or no knowledge about hookah diving, which supplies divers with air from the surface using a simple air compressor connected to a plastic tube and scuba mouthpiece, divers risk diving related injuries and death from decompression illness. Regional newspapers published reports on diving-related mortalities and over-burdened hyperbaric chambers throughout every sea cucumber season.

Nonetheless, patrons satisfy local labor shortages by hiring non-local divers. In the evenings during sea cucumber season, divers and crew string their hammocks between the walls of patrons’ reception centers, which double as temporary housing for migrant labor. According to the census of local patrons in Celestún they hired an average of 23% non-local fishers. In Río Lagartos 49% of patrons’ fishing labor was non-local. Non-local fishers initially seeking temporary work sometimes establish permanent residency in the fishing communities.

In contrast to fishers working in patron-client relationships, cooperative members are local fishers who own their means of production, including boats, motors, and fishing gear. Members are subject to cooperative by-laws that require they actively harvest resources throughout the year. As owner-operators of their fishing boats, incentives for cooperative members to hire outside labor are limited to the hire of one to two additional crew members to operate the motor and air compressor, dive (not all

cooperative members are divers and some choose to dive in pairs), or assist in on-board pre-processing of sea cucumber. The daily requirements of fishing activities do not permit cooperative members the time to manage additional fishing vessels and crews and thus limit the extent to which they would invest earnings in accumulating additional capital.

A cooperative, as a commercial enterprise, would stand to benefit financially from expanding the size of their productive membership. However, such decisions require members' approval through a democratic voting process. Any profits resulting from increasing the fishing fleet would be distributed evenly among members. Thus, the potential benefit to each member from augmenting the cooperative's fleet, at the margin, is but a fraction of what a patron would earn as sole proprietor.

Furthermore, cooperative members are cognizant of the challenges of collective action involved in operating and managing a democratically-run, self-organized enterprise. They are wary of the potential for increasing group size to exacerbate those challenges. Cooperatives thus design and enforce specific institutions prescribing who is eligible to become a cooperative member as well as the process through which new members may enter the cooperative (boundary rules). Specific rules vary by cooperative. In Río Lagartos, individuals must work for a time as aspirants to demonstrate they will contribute to the productivity and governance activities of the cooperative. Only then do they have the opportunity to be admitted as full members through a majority vote held

during a general assembly. As the president of one fishing cooperative in Río Lagartos explained, cooperatives depend on the trustworthiness and responsibility of their membership. The five cooperatives from Río Lagartos and nearby towns that make up the regional cooperative federation have a variety of rules to limit membership. For example, one cooperative in nearby San Felipe adheres to a membership cap of 120. In Río Lagartos, another cooperative only admits individuals who have a family member already in the cooperative.

Unlike patrons, who can compete to purchase fishers' production by offering higher prices, cooperatives subtract fees and dues from the per-kilo prices paid to members. While these fees and dues provide collective goods to members such as social security, loans for boats and motors, the maintenance of permits, among many other benefits, they also create monetary incentives for individuals to sell product outside of the cooperative and to those patrons offering the best prices. Thus trust and participation among members is key.

While patrons operated according to a set of open-access boundary rules, hiring as many outsiders as they could, cooperatives in Río Lagartos created more restrictive boundary rules, limiting hiring of non-member fishers and laborers. In June, 2014, one of the fishing cooperative secretaries hand-wrote with marker on a large sheet of paper and posted it to the front door of the cooperative. The sign stated that cooperative members were no longer permitted to hire non-members, also called free fishers, to work on their

boats during sea cucumber season (Figure 12). Free fishers are those fishers that a cooperative member may hire to work as an additional diver, helmsmen, or assistant on his boat.



Figure 12 Sign posted on a cooperative door announcing a new rule: “Important Notice: You are being informed that according to agreements taken in the Federation, divers or helmsmen that have been expelled from cooperatives belonging to the Eastern Federation will NOT be able to go out fishing. In the case of free fishers, only those that have worked consistently for 3 consecutive years can fish [for the cooperative]. Members who do not comply with these agreements will be expelled. Sincerely: The administration, The federation.”

During an interview, the president of the cooperative explained the reasoning behind the new rule:

Bennett: Why did the federation pass this agreement that members can only hire people who have been working with the cooperative for three years?

Cooperative President: For the problems with sea cucumber.

Bennett: What problems?

Cooperative President: Well, you saw how many people come down from other places when it's sea cucumber [season]. People from Loche, Tizimin, Chiquila, Holbox... It's to avoid all these people coming. So that when it's sea cucumber season and there aren't enough divers in town, it's to avoid members from looking for people from outside.

In sum, the two different relations of production, patron-client relationships and cooperatives, give rise to a set of fundamentally different set of incentives that influence how actors respond to high demand for resources through the creation of distinct boundary rules-in-use. While patrons responded to sea cucumber demand by opening boundary rules to capitalize and supplement the labor force, cooperatives tightened boundary rules, restricting the ability of non-members to take part in local fishing activities.

3.4.2.2 Local institutional responses to market pressures: Monitoring and enforcement

The different boundary rules that patrons and cooperatives practice in response to market pressures contradict each other, one opening and one restricting access to the fishery. In both study sites, this incompatibility gave rise to conflict as patrons and cooperatives each attempted to assert their preferred boundary rules as community-wide governance institutions applicable to all actors. The transition from patron- and

cooperative-level boundary rules to the establishment of community-level institutions applying to all actors occurred by means of local institutional responses in the form of monitoring and enforcement. In Río Lagartos, cooperatives were able to monitor and enforce restrictive boundary rules throughout the community. In Celestun, cooperatives' efforts to do so failed.

Although State-issued permits dictate the number of boats formally permitted to take part in the capture of sea cucumber, a lack of formal enforcement left space for patrons and cooperatives to contest the actual size of the fishing fleet. In Celestún, 23 patrons self-reported possessing a total of 40 sea cucumber permits, however 62 reported selling sea cucumber. Furthermore, patrons worked more boats during sea cucumber season than legally permitted. In Río Lagartos, seven out of nine patrons possessed permits and participated in sea cucumber harvests. Cooperatives in both towns possessed permits. Cooperatives in Celestún and Río Lagartos each made attempts to limit patrons' participation in illegal fishing and augmentation of fishing fleets, but only Río Lagartos was successful. The events described below exemplify the strategies that local cooperative members use to control the expansion of local fishing fleets.

The power of the large cooperatives in Río Lagartos allowed them to enforce institutions that limit hiring of outside fishers not only within the cooperatives but also at the community level. For example, in late April 2013, just before the opening day of

the first sea cucumber season in Río Lagartos, two full-sized busses and a handful of vans arrived carrying more than 200 individuals that a single patron had contracted to harvest sea cucumber. Noting the arrival of the outsiders just next door to the cooperative's reception centers, cooperative members quickly united against the patron. More than 300-strong, and with the support of local authorities, the cooperatives forced the workers to immediately make the journey back to their home state of Campeche, more than 300 kilometers away, without ever having fished a single day. By the initiation of the second season, the federation of fishing cooperatives called local patrons to a meeting in order to establish an agreement to maintain control over the size of the local fishing fleet.

The second season, in November and December 2013, passed without major conflict, but the day before the February 2014 season, outsiders claiming to have been contracted by local patrons again began to arrive, this time by boat. The boats arrived intermittently at first, but by late afternoon as the non-local boats and fishers amassed, cooperative members took notice with increasing alarm. By dark, members from both of the fishing cooperatives in town took to their boats and headed toward the narrow channel that provided passage from the open Gulf of Mexico to the estuarine inter-coastal waterways. More than 50 boats aligned side by side, as the cooperative members tied each to the other in a blockade that spanned the entire channel.

As the boats still streaming in from communities to the west and east of Río Lagartos approached the blockade, the arriving crews faced a choice. They could either pass the blockade, proceed to Río Lagartos and face whatever decision would be made by the community, or they could turn back. The cooperative members did not allow any boat to return to open waters unless the crew dumped their entire supply of ice overboard. Without ice, harvesting sea cucumber would be futile.

The boat blockade continued through the night as the elected cooperative leaders shuttled sandwiches and sodas to the members in the channel. The arriving fishing crews claimed that local patrons had invited them to work. However, by the next day, the cooperatives had called in authorities from the National Commission of Fisheries and expelled hundreds of disappointed and angry outsiders from Río Lagartos. A sense of calm quickly returned. This enforcement event was not costless, as cooperatives had cancelled the first day of the short season for all fishers in town and local food stands and stores lost valuable business from hundreds of potential customers.

The strategic use of boat blockades is not endemic to Río Lagartos. During the second season of harvests permitted under development permits, Cooperatives in Celestún attempted a blockade of the marina. The goal of the Celestún cooperatives' marina blockade was to prevent local unpermitted boats from leaving the port to harvest sea cucumber. The president of a cooperative in Celestún explained, "we did the studies, we paid for the studies [of sea cucumber stocks], the idea was to take care of the

resource.” Indeed, three cooperatives in Celestún contracted biologists and paid the research costs required by the development permits. “The first season, they gave us 36 permits, with the agreement that they are for the fishers,” he went on. A common refrain among cooperative leaders and members in the region is that the government often favors cooperatives when issuing permits because they bring benefits directly to producers rather than to middlemen, buyers, and patrons. “Look,” he said, sitting behind a desk in a near empty office in the second floor of the cooperative’s reception center. From the top drawer, he pulled out what appeared to be the only piece of paper inside. It was a copy of the cooperative’s sea cucumber permits from the second season, indicating that the government had issued 22 permits to the cooperative. “Now we have four,” he finished. Even as cooperatives in Celestún attempted to prevent the growth of the fishing fleet, their formal control over access to resources was diminishing.

A City Hall community liaison described the massive changes that the arrival of sea cucumber markets had precipitated in Celestún:

Here in Celestún...the fishing effort tripled because, including people from San Felipe, Río Lagartos, from El Cuyo, from Santa Clara, have come to fish sea cucumber and have stayed. There was control here, there was a fleet of about 50 local divers, approximately. There were other people who went out diving, but [about 50] who were dedicated [primarily] to diving. There weren’t many people because diving wasn’t very profitable. The diver goes out, grabs whatever there is, to be able to take out enough for his household. Of course, when sea cucumber [fishing] appeared, more divers shot out. Now we have – only locals – 500 or 600 divers, I believe even more. Including divers from the migrant fishers, we have a fleet of about almost 1000 divers. Now they are basically using up the marine species at a very rapid rate.

The cooperatives had formed their blockade during the second season to prevent non-permitted boats from harvesting sea cucumber. Later, however, the president recounted that “the illegal fishers turned against us, they made a blockade to say ‘if we don’t all go out fishing, no one goes.’” The small size of the cooperatives limited their power to engage in monitoring and enforcement against the many patrons and their proliferating labor force.

In Celestún it is common knowledge that a large group of patrons, although not all, send crews to harvest sea cucumber illegally throughout the year, even during the closed seasons. While cooperatives do not actively engage in monitoring and enforcement of other fishers, a group of women, mostly made up of the wives of cooperative members, took up the task for a time. Instead of monitoring by boat, the women would go on foot to clandestine sea cucumber processing camps on the shore just out of town. Upon discovering the camps, they would alert CONAPESCA authorities. However by May 2014, some of the women in the group had accepted bribes from local patrons to inform the illegal fishers of the days and times for which they planned their operatives. Without knowing exactly who had accepted the bribes, the group lost the strategic element of surprise and had no way to catch illegal processors in the act.

3.4.3.3 From local monitoring and enforcement to controlling outside poaching Río Lagartos

Although the labor force of local patrons remained under control in Río Lagartos, outside poachers with no ties to local patrons presented a distinct challenge. Poaching boats utilize powerful motors to travel from elsewhere along the coast, many from Celestún where resources have become more scarce, setting up transient camps in the unpopulated coastal areas just outside the towns of Río Lagartos and nearby San Felipe. The costs of monitoring and enforcement rose as poachers arrived in greater and greater numbers, increasingly prepared to engage in violent confrontations with local monitors. The absence and ineffectiveness of State fisheries authorities magnified monitoring and enforcement costs for local actors.

Initially, cooperatives were successful in combatting outside poachers. When local cooperative members went out fishing, they observed poachers in action and informed cooperative administrators. Administrators would borrow boats from cooperative members, seek willing volunteers from among the cooperatives' membership, and provide fuel for the monitoring operatives. In a typical operative, between six and 15 cooperative boats would set their headings to the locations where fishers last observed poachers. Upon locating the poachers, the cooperative vigilantes, frequently outnumbering poachers, commandeered the illegal fishing vessels and turned the poachers and their boats over to CONAPESCA authorities. Initially, operatives were successful in restricting poaching to a minimum and costs to the

cooperatives did not rise beyond the (not insignificant) price of fuel and the opportunity costs related to time spent monitoring.

As the frequency and intensity of poaching grew, however, cooperatives undertook lobbying activities to involve authorities in the monitoring and enforcement of State fishing regulations. Representatives from the cooperatives and from the regional federation of cooperatives travelled to the offices of the Secretariat of Fisheries and CONAPESCA in the State capital of Mérida on multiple occasions in order to implore authorities to comply with their official responsibility to combat illegal fishing. These efforts yielded no substantive results.

After one particularly frightening operative in which armed poachers fired guns at unarmed cooperative vigilante monitors, cooperative and federation directors traveled to Mexico City for a meeting with the president of the fisheries committee of the Mexican Senate. Among other outcomes of that meeting, a CB90 military interceptor boat, the model typically used to combat drug trafficking, was to be stationed offshore between Río Lagartos and San Felipe to enforce sea cucumber regulations. However, fishers continued to observe poachers on the water and the interceptor boat appeared to be inactive or unable to distinguish poachers from legal fishers. Some fishers in town thought that the boat had been “paid off” in bribes, and that poachers from throughout the region could enter the harvesting zone for a fee. For a time, cooperative members

continued carrying out their own operatives while the government interceptor boat sat idle.

On the morning of June 8, 2014, 14 cooperative boats from cooperatives in Río Lagartos and the neighboring town of San Felipe gathered for a monitoring operative. Fishers had observed a number of poachers just off shore. After commandeering two poaching boats and bringing the crew to be held in San Felipe, the boats regrouped to return and search for two more poaching boats that had been seen. When they arrived, as many recounted that day and the days following, more than 40 poaching boats had arranged themselves into a line. Midway down the line was a larger boat with a powerful motor. Cooperative members immediately turned around and fled toward town, but two of their boats were overtaken by the large poaching vessel. The crew of the vessel was armed. They forced the cooperative members on board, poured gasoline on the vacated boats, set them aflame in the water. The rest of the cooperative boats made it back to San Felipe and Río Lagartos, where word of the attack spread rapidly. "It was like the movie *Troy!*" a local business owner who had accompanied one of the cooperative boats explained after returning to town, still shaken.

With two cooperative members kidnapped to an unknown location, Río Lagartos and San Felipe communities responded by creating a road blockade, not allowing anyone, including tourists, teachers, and community members, to leave or enter. The

blockade was placed at a strategic intersection of the highway, the only entrance to Río Lagartos and the valuable salt mines of nearby Las Coloradas.

In Río Lagartos, announcements blared over the town's loudspeakers for all local fishers, cooperative members and those working for patrons, to make their way to the blockade. The cooperatives' large trucks blocked the road. As hundreds gathered, cooperative directors drove back and forth continuously from town to the blockade, shuttling mosquito repellent and torches. The fishers, now protestors, hung giant signs over the cooperatives' refrigerated trucks, denouncing the authorities and demanding they take responsibility for the safety of the regions fishers. Even fellow federation members from the town of El Cuyo, 90 kilometers away, came to support the blockade. By nightfall, tens of semi-truck trailers en route to pick up giant loads of salt lined the sides of the road just beyond the blockade, unable to pass.

By the next day, state government authorities had arranged a meeting with cooperative and federation leaders, town mayors and even local patrons at the Secretary of Public Security in Mérida, the state capital. Together, they assembled a mixed security force, including police, cooperative leaders, and fishing authorities. The military were to be close at hand if needed. The government replaced the burned cooperative boats and motors, dedicated a boat specifically for monitoring, as well as a small plane to perform daily flyovers to monitor Río Lagartos' and San Felipe's offshore waters. Cooperative

leaders were to accompany authorities to ensure effective monitoring. The kidnapped cooperative members were returned, but hospitalized for their injuries.

By the end of fieldwork in mid-July 2014, no more poachers had been sighted near Río Lagartos, suggesting that the communities' attempts to limit incursion of outside poachers had been successful. However, in a follow-up interview in October, 2014, a cooperative director explained that the State authorities' enforcement efforts had eventually subsided. The fishers of Río Lagartos and San Felipe had given up local monitoring of outside poachers because it was too dangerous. According to fishers' recent reports, hundreds of poachers can sometimes be seen, moving unimpeded in the offshore waters.

In both Celestun and Río Lagartos, cooperatives attempted to enforce limited-access boundary rules at the community-level by monitoring and enforcing them against patrons who attempted to open access to the fishery and bring outside labor into the community. In Celestun, where cooperatives were small compared to proliferative patron-client relationships, monitoring and enforcement attempts failed. In contrast, cooperatives in Río Lagartos, which accounted for more than half of the fishing fleet, forced patrons to limit the extent to which they increased the number of fishers harvesting sea cucumber in the community. Furthermore, cooperatives in Río Lagartos attempted, although they ultimately failed, to combat poaching by outsiders that arrived in the fishing zone on their own accord, unassociated with any local patron. Although

cooperatives made costly investments and engaged in collective action, escalating violence and the ineffectiveness of State authorities quelled those efforts. In Celestun, where even local recruitment of outsiders was undeterred, outside poachers, unassociated with a local patron were rare.

3.5 Discussion

The results illustrate that local institutional responses to market pressures are shaped, in part, by the incentives and local power dynamics created by particular relations of production. When profit accumulates in the hands of individual owners of the means of production, for example under patron-client relationships, powerful members of the community stand to gain substantial profits from lax boundary rules that allow increases in the size of the fishing force. On the other hand, when the means of production are jointly owned, for example in fishing cooperatives, individual members' profits from increasing the size of the cooperative's fishing force are negligible. Instead, cooperatives attempted to create more stringent boundary rules. Limiting resource access to community members guarantees a larger harvest for cooperative members.

Relations of production also determine the opportunities and constraints for particular institutional responses. Fishing cooperatives with regulations obliging members to contribute jointly to the material, administrative and bureaucratic costs of procuring the means of production can more easily adapt to the costs of new

institutions. This arrangement allowed the larger cooperatives of Rio Lagartos to respond to the increased costs of monitoring and enforcement as greater numbers of individuals attempted to access and harvest the valuable resource. When enforcement became too dangerous, the cooperative funded extensive efforts to lobby for government enforcement of fishing regulations and experience with collective action facilitated the organization of protests.

These results demonstrate that relations of production can operate as strong drivers of institutional change under market pressure by shaping individual incentives and community-level power dynamics. Incorporating theories of institutional emergence and change that center on distributional concerns (Acheson & Knight, 2000; Knight, 1992) offers a promising way to take into account political ecologists' concerns with power dynamics under expanding global capitalist systems while maintaining cohesion with the institutionalist approaches of CPR theory.

Yet incorporating theory from political ecology that attends to how relations of production shape patterns of resource use should not lead to a conclusion that the spread of global capitalism pushes communities inescapably toward environmental degradation. Indeed, identifying the ingredients of collective action and human ingenuity amid seeming inevitability has long been a pillar stone of CPR theory (Aligica & Boettke, 2011; E. Ostrom, 1990). The institutionalist theory that underlies CPR studies distinguishes institutions as those things that actors can directly alter and use to alter

other more sticky facets of society (V. Ostrom, 1976). This study demonstrates that resistance, collective action, and institutional innovation are conceivable even under extreme market pressures.

Designing research to be open to not only the degradative power of global markets but also the potential for local actors to resist those forces involves expanding upon how markets are operationalized in research. Many studies equate market pressures with levels of demand and price and operationalize them by measuring the distance to the nearest market or the distance to the nearest road. Cinner (2005) found that communities with exclusive marine tenure governance regimes were likely to be located farther from markets and the erosion of traditional marine tenure regimes near market centers (Cinner, 2005; Cinner et al., 2007) suggesting that markets negatively influence the efficacy of local institutions. These measures allow researchers to demonstrate that market pressures do have an (often degradative) effect on local institutions. But they do not shed light on the mechanisms through which market pressures cause institutions to erode. Nor can they explain cases in which local institutions gain strength in response to market pressures (e.g. Aswani, 1999, 2002; Johannes, 2002).

A qualitative, rather than quantitative, conceptualization of market pressures can begin to describe mechanisms and account for divergent outcomes. Institutional economics approaches define markets as a specific set of social institutions in which

exchange of property rights occurs (Hodgson, 1998). Under this perspective, markets can be conceived of as institutionally diverse. Fishers may sell their harvests in open and competitive market or at an auction. They may sell their harvests through patron-client relationships or cooperative marketing enterprises, in which exchanges of products for cash are inextricably linked with complex sets of property rights, loans, and labor contracts. Examining the institutional diversity of markets, especially those institutions shaping ownership of capital and the means of production and patterns of profit and accumulation, identifies the unique sets of incentives that different institutional arrangements create.

3.6 Conclusion

For SSFs, patron-client relationships and cooperatives are the most common institutionalized sets of social relations linking external markets and local communities. Previous studies have examined the role of each. Fishing cooperatives play important roles in economic development (Pollnac, 1985; Pollnac & Carmo, 1980), resource governance (Ovando et al., 2013) and adoption of local rules to changing external conditions and resource scarcity (Baticados, 2004; Cheong, 2004). Patron-client relationships can also contribute to livelihoods (Crona et al., 2010; Ferse et al., 2012). As global seafood trade connects with small-scale and developing country fisheries, it is key to understand how they differentially shape governance responses to market pressures.

Furthermore, SSFs research should go beyond studying the role of patron-client relationships and fishing cooperatives as independent to examine the interactions between them. Accordingly, it is key to understand the factors that influence the proliferation of one or another type of relations of productions, such as levels of trust among community members, and seasonal variability and uncertainty (Lindkvist et al., in prep) or the neoliberalization of State fisheries policies (Chapter 2). In addition, given renewed enthusiasm for the role of fishing cooperatives in governance and livelihoods (Kalikoski & Franz, 2014a) and as key actors in regional and export markets (FAO 2014b) it is essential to understand how community-level power dynamics shape cooperatives' ability to form effective institutional responses to external forces such as market pressures or climate change.

4. From material exchange to the discursive market: Accounting for the missing market in market-based seafood certification of a Mexican small-scale fishery

4.1 Introduction

In theory, market-based certification relies on the power of the market to incentivize producers to comply with particular product or production standards. However, in some cases, including the case presented in this study, producers do not obtain price premiums or access niche markets as a result of certification. Nonetheless they sustain voluntary participation, citing alternative social and political benefits outside of the sphere of the market. To better understand the processes through which market-based certification manifests alternative benefits in non-market spaces, we differentiate between the material market and the discursive market.

We term the material market that which encompasses real financial transactions and the exchange of goods. Price premiums and earnings in niche markets constitute the material market benefits typically associated with market-based certification. The concept of a discursive market, on the other hand, proposes that the market is also a framework that enables disparate things and processes to exist on a common plane, on which measurement, comparison, valuation, and ultimately material exchange is possible. Through analysis of our case study, we disentangle the work of the material and discursive market in certification, arguing that the discursive market not only

frames material market exchange, but has the power to construct value and benefits in non-market spaces.

As non-state market-driven (NSMD) governance systems proliferate, a growing body of research explores the positive and negative outcomes of programs such as fair trade, certified organic, environmental certification and ecolabels. Many studies have documented positive ecological and livelihood outcomes (Bacon, 2005; Bolwig et al., 2009; Gulbrandsen, 2005; Ruben & Fort, 2012). However, critical work has raised concerns that these market-based certification programs marginalize small-scale producers in the global South and sometimes fail to generate sufficient benefits to offset the additional costs and burdens for producers (Blackman & Rivera, 2011; Lyngbaek & Muschler, 2001; Oosterveer et al., 2014; Ponte, 2012; Rametsteiner & Simula, 2003). This has been shown in both forest and fisheries sectors (Butterfield et al., 2005), and is particularly relevant as certification schemes such as the Forest Stewardship Council's and Marine Stewardship Council's programs, historically directed at industrial-scale producers in the North, respond to pressures to improve accessibility to small-scale and developing country producers¹.

In this paper, we explore the Marine Steward Council's certification of a small-scale fishery (SSF) in Mexico. MSC is the largest and best known sustainable seafood certification program. In a summary report showcasing benefits from the first decade of

¹ The MSC, in particular, utilizes the term 'developing country fisheries'.

its work (MSC 2009), MSC-certified industrial-scale fisheries from developed countries reported material market benefits, having retained existing buyers, accessed new markets, or obtained price premiums. For small-scale and developing country fisheries, however, social and political benefits appear more prominently (ibid). For the South African hake fishery, the first developing country industrial-scale fishery to enter MSC's program, the report credits certification with fishers' ability to influence State policies to their favor. For the Baja California, Mexico red rock lobster fishery, the first developing country SSF to become certified, material market conditions have not changed. However, fishers have leveraged the positive attention from certification to lobby the Mexican government for improved infrastructure in fishing communities (ibid.).

The emergence of NSMD governance systems and results suggesting their monetary benefits are not being realized in some developing country contexts raises novel questions related to how governing authority can be forged in the absence of a coercive State or market incentives. Analyses have emphasized market authority based on costs and benefits: price premiums for producers, ethical activist pressure threatening financial earnings of conspicuous retailers and brands, and willingness to pay by consumers (Bernstein & Cashore, 2007; Cashore, 2002; Mayer & Gereffi, 2010). Yet the lack of material market benefits and the centrality of alternative, non-market benefits defy explanation by an analytic that presupposes NSMD governance is driven by market exchange. How can we account for and analyze the processes through which

alternative benefits are imagined, generated, and become sufficient justification for costly participation in NSMD governance institutions such as certification schemes? In other words, how might we approach the study of power and authority in NSMD governance in cases where that which is most often the center of analysis – material market exchange – plays a secondary role?

In this paper we present a case study of the second Mexican small-scale fishery to enter the MSC's sustainable seafood certification program, the Sian Ka'an and Banco Chinchorro Biosphere Reserves spiny lobster fishery, certified in July 2012. To date, market benefits from certification have not materialized for the fishery, allowing an opportunity to better understand the processes through which market-based certification enacts power and authority in non-market spaces. Our goal is to contribute more generally to an understanding of the processes that enable NSMD governance systems to establish new institutions and institutional change in small-scale sites of production in the South and implications for how we problematize market-based certification as a form neoliberal environmental governance. Our analysis highlights that in addition to its being a system through which financial transactions facilitate the exchange of goods and services, "the market" operates as a discourse. This discursive market may act independently of the actual exchange of products and currency. The case study suggests that the discursive market, even absent material market benefits, has the power to effect real governance changes in sites of production by providing the basis

through which to imagine “alternative” or “non-market” payoffs, such as political, social, or ideological benefits.

4.2 Conceptualizing power in NSMD governance

In undertaking an analysis of power and authority in certification, it is useful to differentiate between two primary approaches taken by scholars of NSMD governance. In one approach, NSMD governance systems have been scrutinized through the lens of a materialist political economy, a reasonable perspective considering the ostensive goal of programs like certification to create and reshape linkages between natural resources, relations and processes of production, and global capitalist markets. Research in this vein has pointed out that where market-based governance is concerned, highly capitalized firms in the supply chain enjoy governance power, reap market premiums, or demand larger product volumes, potentially marginalizing small-scale producers (Dolan, 2010; Hatanaka et al., 2005; Klooster, 2005, 2006; Taylor, 2005). By reshaping or further entrenching differential access to and control over land and resources, market-based certification has in some cases exacerbated existing political economic inequalities among producers (Gómez Tovar et al., 2005; Ponte, 2008), or has driven more intensive land-use practices through the creation of additional land rents (Guthman, 2004). These insights derived from a focus on structural market conditions are key for understanding how and why NSMD governance systems’ may not pay off for small-scale and developing country producers. However, this perspective is less adept at explaining the

continued voluntary participation of some small-scale developing country producers in spite of such structural disadvantages.

Post-structuralism is a second, less-explored approach to understand power and authority in NSMD governance. A post-structuralist approach permits the analyst to suspend assumptions about the essentiality of material market structures to the operation of NSMD governance. Rather, the perspective asserts that:

analysis...should not concern itself with the regulated and legitimate forms of power in their central locations, with the general mechanisms through which they operate, and the continual effects of these. On the contrary, it should be concerned with power at the extremities, in its ultimate destination, with those points where it becomes capillary, that is, in its more regional and local forms and institutions. (Foucault, 1980, pp. 96-97).

Accordingly, post-structural analysis may forgo assuming that power in NSMD governance emanates from market exchange and its material consequences with the potential to either push back against the ills of global capitalism or reinstitute recalcitrant North-South structural inequalities. We take a post-structuralist approach in this study to explore localized manifestations of power, potentially decoupled and distant from the material aspects of the market.

To guide a post-structuralist analysis of the case study, we engage Foucault's work on governmentality². Three aspects of governmentality provide initial insight

² See Gibbon and Ponte (2008) and Loconto (2010) for previous justification of using a governmentality approach to study power in global value chains.

regarding how to operationalize diffuse and localized forms of power. First, governmentality locates power amidst the proliferation of governing actors to whom governing authority is increasingly delegated (Gordon, 1991). Thus, we attend to the interactions of a variety of actors such as third-party auditors, members of government and NGOs, researchers, and producers as they relate to certification processes may reveal relevant micro-power relations. Second, governmentality seeks to understand power in part through the 'characteristic forms of visibility' of governance. The power to govern depends upon the ability to make visible particular kinds of subjects and observe their activities and spaces of action (Dean, 2010; Foucault, 1977). Hughes (2001) and Vos and Boelens (2014) have conceptualized certification standards as specific techniques of visibilization. Thus, we examine how the application and verification of standards enables transnationally-scaled governance by making sites of production visible and communicable to distant actors³. Finally, governmentality concerns the 'conduct of conduct', in which subjects' discursive and material environments are crafted such that compliance with governance objectives appears the rational, wise, or appropriate response (Dean, 2010, p. 17; Gordon, 1991, p. 2). Thus, we pay close attention in our analysis to the ways in which certification shapes the range of possible actions and outcomes for producers in the context of fisheries governance.

³ With regard to standards and visibility, Vos and Boelens (2014) borrow heavily from concepts related more closely to the Foucault's characterization of disciplinary power (Foucault, 1977), referring, for example, to "'panoptic-like' instruments" (p 214).

Discourse analysis serves as a methodological approach to applying a governmentality analytical framework. Discourse is “an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices,” (Hajer & Versteeg, 2005, p. 175). Analysis also attends to rules and norms that determine who has the power to shape a discourse (Foucault, 1971). Furthermore, discourse is embedded in particular historical, political and economic contexts and accompanying epistemic logics that permit the emergence of certain concepts, categories and subjects and not others (Foucault, 1991a). Ultimately, the goal of discourse analysis is to analyze *how* governance happens, in order to arrive at an understanding of *what* is being governed and *why* (Foucault, 1991b). In the case study presented here, we analyze the certification discourse in order to address the question of how market-based certification establishes governance power in the absence of a functioning market mechanism, how the notion of alternative benefits arises, and how producers’ justify participation in a new transnational non-state governance institution. In doing so, we examine the processes through which the material market – in the form of monetary costs and benefits of certification – is de-emphasized through the particular practices and discursive strategies of certification. At the same time, we look to certifications’ techniques of visibilization, the relations of actors involved in certification practices, and the rationalities to understand the discourse stands in the place of a straight forward logic of

market exchange. Finally, we examine how producers themselves construct particular kinds of value for certification in the absence of material market benefits.

4.3 Market-based certification in the small-scale fisheries context

Before turning to the specific case study and results, we characterize small-scale and developing country fisheries in relation to the tendencies of market-based seafood certification, in particular MSC's program. This brief discussion contextualizes the case in the broader political context of sustainable seafood certification and the growing awareness of the importance of small-scale fisheries (SSFs) to food security, biodiversity conservation, and rural livelihoods of the poor (Bené et. al. 2007; FAO 2010). Further, this section highlights some points of incompatibility between characteristics that typify many developing country SSFs and the contemporary exigencies of MSC certification. The discrepancies between MSC's need for standardization, rigor, and transparency and the dynamism of developing country SSFs represent the likely issues around which power is negotiated.

Recently, as each year sets new records in the value of global seafood trade, concerns that SSFs will struggle to enter regional and export markets have incited calls for countries to "provide small-scale fishers with access to finance, insurance and market information, invest in infrastructure, strengthen small-scale producer and trader organizations and ensure that national policies do not overlook or weaken the small-scale sector," ((FAO), 2014b). Private governance initiatives such as ecolabeling and

third-party certification are promoted as potential tools for maintaining or enhancing fisheries sustainability in the context of expanding seafood markets, but their relevance for small-scale and developing country fisheries is uncertain. The Marine Stewardship Council (MSC), the world's forefront fisheries certification program, has grown exponentially since its creation in 1997, with 15 fisheries in its program in 2006 and 224 certified fisheries by 2013, a purported 10% of global wild-caught tonnage (MSC, 2013c). Despite the proliferation of MSC-certified fisheries, the program has marginalized Southern producers, especially in lower income countries (Ponte, 2012) and SSFs (Pérez-Ramírez et al., 2012). For example, although SSFs account for 90% of the world's fishers and around half of global fish catch (FAO, 2010) and developing countries contribute 60% of seafood exports by volume ((FAO), 2014a), as of 2013 only 7% (16 fisheries) in MSC's program are from developing countries (MSC, 2013c) and just five of those are SSFs.

For MSC, which evaluates fisheries based on the sustainability of fish populations, the effects of the fishery on the ecosystem, and the quality of the management regime (MSC, 2012a), SSFs in developing countries are pegged as “data-poor”, lacking the scientific assessments MSC traditionally relies upon to evaluate fisheries' sustainability (Pauly 2011) and disadvantaged by insufficient scientific and regulatory frameworks (Jacquet & Pauly, 2008; Perez-Ramirez et al., 2012). SSFs seasonally target multiple species using multiple gear types (Silvia Salas, Mexicano-

Cíntora, & A. Cabrera, 2006), which may challenge certification's focus on specific species using specific gear types. Furthermore, the scaling-up effect of MSC's whole-stock assessment process often disadvantages SSFs where the scale of operation is likely less extensive than an entire biological stock (Fetherston, 2005; Foley et al., 2014).

In addition to challenges in obtaining certification, realizing market benefits from certification may also be more difficult for SSFs in developing countries than for their Northern, industrial counterparts. To begin, the costs of certification may be prohibitive (Pérez-Ramírez et al., 2012). Informal modes of commercialization, multiple and dispersed landing sites, typically high dependence on market intermediaries, and relatively high transaction costs involved in transporting catch to market (Pedroza, 2013; S. Salas et al., 2007) likely impede fisheries from meeting MSC's Chain of Custody standard that ensures traceability along the entire supply chain. Furthermore, the transaction costs and economies of scale related to bypassing existing market intermediaries and accessing wholesalers and retailers interested in paying price premiums for certified products may be too high.

In response to activist pressure, the MSC has developed a wide array of programs, policies, and tools specifically designed to improve access for small-scale and developing country fisheries. For example, the Risk-Based Framework provides an alternative set of procedures that evaluators can use to assess fisheries with insufficient quantitative data. The Fishery Improvement Action Plan tool helps fisheries that do not

yet meet MSC standards develop timeframes, milestones, resources, responsibilities, and budget. The MSC has also worked to reduce the costs and increase efficiency of certification, encourages funding partnerships between fisheries, NGOs, and governments, and seeks to include consideration of small-scale and data-deficient fisheries in policy development (MSC, 2013a).

4.4 Case study and methods

The Sian Ka'an and Banco Chinchorro Biosphere Reserves spiny lobster fishery (herein the SKBC fishery) obtained MSC certification in July 2012 after nearly four years of assessment and deliberation. The fishery has been recognized for over thirty years by researchers and conservation NGOs for its unique and sustainable governance arrangements (Castilla & Defeo, 2001; Cunningham, 2013; Miller, 1982, 1989; Ponce-Taylor et al., 2006; Sosa-Cordero et al., 2008). A federation of six fishing cooperatives target lobster and finfish in two bays and one coral reef atoll in the Mexican Caribbean off the coast of Quintana Roo south to the Belizian border (Figure 13). Each cooperative possesses a 20-year, exclusive spatial concession to harvest lobster. The fishery's governance arrangements are often characterized as self-governance (Ponce-Taylor et al., 2006; Sosa-Cordero et al., 2008) because the cooperatives have developed extensive internal rules to manage the lobster fishery within the concession and cooperative member fishers engage in extensive monitoring and enforcement of internal and governmental regulations. However, co-management is a more appropriate label for the

governance of the SKBC lobster fishery, because the federal government provides concessions, the basic legal framework for the organization and operation of cooperatives (DOF, 2009), and specific lobster regulations such as seasonal closures, permitted fishing gear, and minimum legal size of lobster (DOF, 1993).

Much of the lobster is harvested live, with fishers free diving using handnets (*jamos*) and gaff (*gancho*). Fishers have devised methods for maintaining lobster live, for example in *viveros*, enclosures built in the water with sticks and wire, until they can be transported to market. Lobsters are mostly sold whole, although sometimes the head is removed and just the tail is sold. Most lobsters are destined for tourist-driven retail within the state.

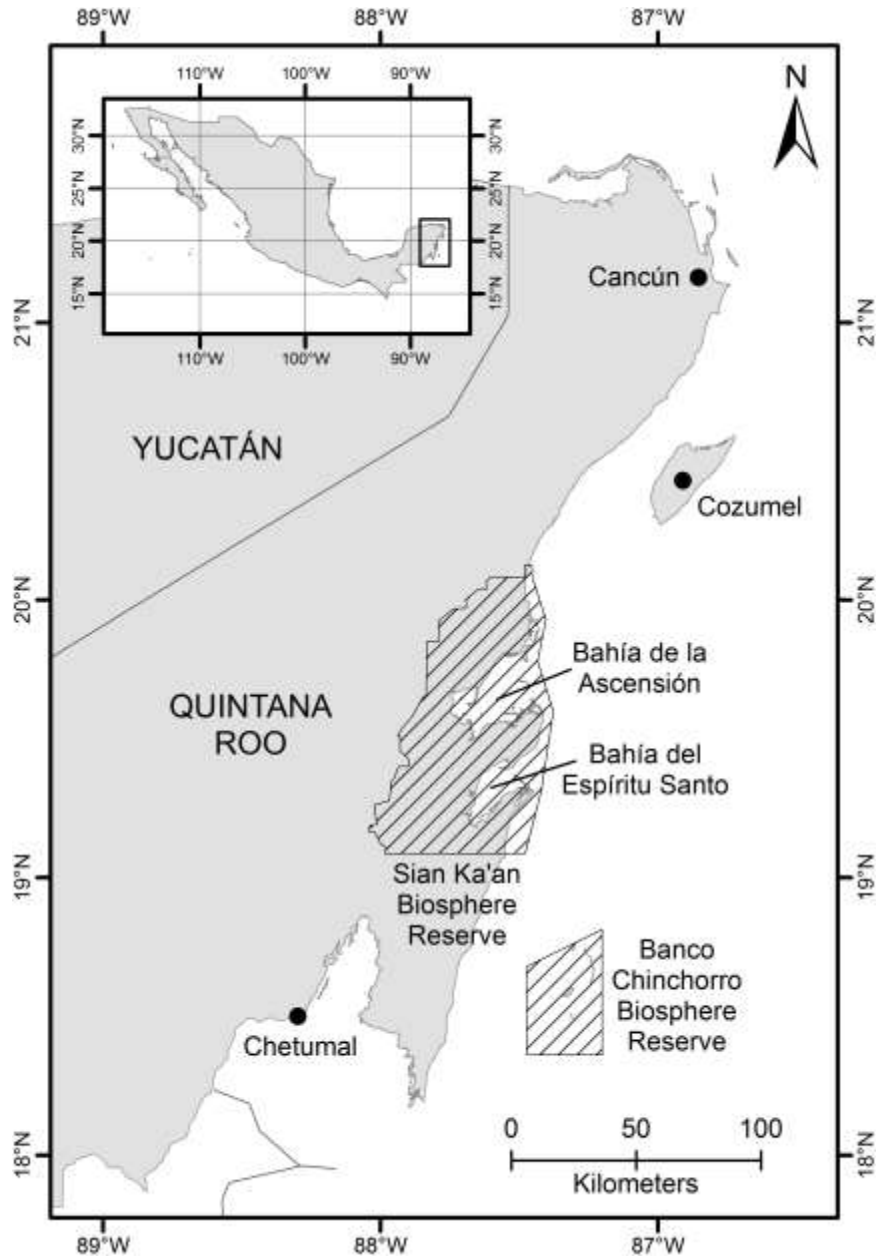


Figure 13 Map of chapter 4 study sites

Despite the relative autonomy of fishers with respect to many aspects of governance and the physical isolation of fishing communities and camps, some accessible by rocky, unpaved road and some accessible only by boat, the SKBC fishery

has a long history of connection to external processes and actors. Fishing activities take place within two UNESCO Man and the Biosphere program reserves, the Sian Ka'an Biosphere Reserve designated in 1986 (UNESCO, 2007) and the Banco Chinchorro Biosphere Reserve designated in 2003 (UNESCO, 2011). By the time the Sian Ka'an Biosphere reserve was designated, the region's booming tourism industry with its epicenter in Cancún was already established and expanding south toward the reserves. Ecotourism has been an integral part of development of sustainable livelihood activities within the buffer zones of the Sian Ka'an reserve (Hay-Edie et al., 2011), including in fishing communities. Punta Allen, a small fishing community within the SKBC fishery, is home to four tourism cooperatives and hosts tens of thousands of international tourists annually for snorkeling, recreational fishing, and bird-watching (Solares-Leal & Alvarez-Gil, 2003; Sosa-Cordero et al., 2008). Furthermore, many fishers reside primarily outside of actual sites of fishing, for example in the state capital of Chetumal and tourist centers of Tulum and Cozumel.

Fishing cooperatives' relationships with NGOs, academic institutions, and government are multi-faceted. NGOs, researchers, and fishers have worked together to locate and design no-take fishing refuges that were later made official by governmental decree (Fulton, 2013). Students and researchers travel to fishing locations to interview fishers and monitor lobster landings once a month during the season (E. Sosa Cordero, personal communication). The government plays a continuing active role in developing

new conservation regulations (Hoffman, 2014). And, protected area authorities regularly attend fishing cooperatives' assemblies.

Thus, MSC certification intersects with a fishery whose governance system is shaped simultaneously by the endogenous evolution of self-governance on the one hand and a thick and multi-faceted connection with external forces on the other hand. Our analysis is carried out with attention to the interplay between this socially and politically thick context and the new governance ideas brought to the fishery through MSC certification, attending to the way in which this NSMD governance regime is processed through existing power relations.

Data collection for this study began with preliminary fieldwork during 2012, just as the fishery received initial certification, and continued throughout one year of fieldwork from August 2013 to July 2014. The timing of the study allowed an in-depth investigation of the emergence and initial implementation of certification. Data collection was approached using multiple methods. First, a document review of certification evaluations and proceedings as well as informal conversations with an NGO playing a leading organizational role in certification provided background on the extensive evaluation and assessment process, including major obstacles and outcomes. This process identified the key actors involved in certification, who included six cooperative leaders, a government fisheries researcher, an academic fisheries researcher, and a third-party evaluator carrying out the assessments. In-depth, semi-structured

interviews were conducted with each of these actors addressing their perceptions of the certification process, the potential for material market benefits to result from certification, and opinions on the value of certification. In addition, participant observation of fishing activities, lobster marketing, and cooperative assemblies, produced a rich understanding of the setting for certification, offering particular insight into points of conflict between certification standards and the realities of SKBC fishery livelihoods. Observation of the first annual surveillance audit for certification allowed a first-hand account of the spaces in which multiple actors participate in certification practices and the produce certification discourse. Finally, a structured survey of member fishers (n = 97) from all six fishing cooperatives assessed fishers' knowledge of MSC's program and their participation in it.

4.5 Results

Since certification in 2012, neither a price premium nor access to new markets has materialized for the SKBC fishery. Most interview respondents conceive of market benefits as a vague possibility in the distant future, at most. Yet, the SKBC fishery continues to proceed with the governance changes and activities required by certification. Subsections 5.1 and 5.2 analyze the certification discourse that proceeds independently of material market benefits. Then, section 5.3 returns to the issue of the market in order to understand its role in the discourse surrounding and constituting the certification process.

4.5.1 Defining the fishery: Emergence of a new subject

Determining governance subjects in NSMD is a creative, rather than purely technical, process. For MSC, the Unit of Certification (UoC) becomes the subject to be assessed and certified. The UoC is defined as the “[t]arget stock(s) combined with the fishing method/gear and practice (including vessel type/s) pursuing that stock, and any fleets, or groups of vessels, or individual fishing operators that are covered by an MSC fishery certificate” (MSC, 2014). The UoC is a technical concept whose definition is continually contested. For example, recent consultation regarding MSC standards identified the need to clarify aspects of the UoC, such as how the UoC should be assessed when multiple species or stocks are included, how to include or exclude non-target species in the UoC, what to do with multiple or varying gear types, who among the ‘fleets,’ ‘groups,’ ‘vessels,’ ‘clients,’ ‘client groups,’ and ‘other eligible fishers,’ will end up with the privilege to use certification, and how those terms of access may be affected by tradable and saleable permits or quotas that throw the group of eligible fishers into flux (MSC, 2013b, p. 1). The evolution and refinement of the UoC definition also occurs through practice, as the UoC encounters disjunctive scalar overlays of dynamic fluid biological fish stocks, mobile fishing fleets, and fisheries management jurisdictions. For each case of certification, the MSC attempts to negotiate the definition of individual UoCs within spatial realities in such a way that maintains scientific and management rigor. These case-specific negotiations feed back into general guidelines

(Bear & Eden, 2008; Eden & Bear, 2010). Thus, the identification of the UoC, rather than the simple mapping of reality, is a creative process through which emerges a new, multi-faceted subject that serves as the target of assessment and governance interventions.

For the SKBC fishery, the challenge of defining the UoC protracted the initial certification process. Spiny lobsters travel long distances as pelagic larvae, making it difficult to determine the sources and patterns of recruitment for the adult and subadult stocks that fishers eventually harvest. A panel of international experts was convened during the assessment of the fishery in order to address this uncertainty. According to the panel, the south-central stock of spiny lobster, the stock defined in the unit of certification that stretches from 20° 12' N to the Mexican-Belize Border, is most likely “part of a regional population that spans across Belize, Honduras, and possibly Nicaragua,” (MSC 2012, p. 5). This being the case, a management system capable of ensuring sustainable levels of larval recruitment would require international-scale governance arrangements and a UoC encompassing local and Mexican governance institutions would not pass assessment.

However, concerns with equity, accessibility and inclusiveness reconciled the scalar mismatch. A fisheries researcher who participated in the certification process explained:

The researchers, as well as the fishermen, we were very stubborn in posing the situation. The question is, by means of this certification, you want to give an incentive to a community in a region that is working well, that has good practices. It is sad that because of the biology of the

resource, these people that are working well don't have this incentive. They don't have any control over the very complicated biology of the lobster. But they are working with good practices, they are controlling their effort in a self-limiting manner, they are putting a lot of effort into maintaining good practices. And I say "well, what is the philosophy of MSC? It is, isn't it, precisely to incentivize these communities and not to say, 'listen, because of the biology of this species that is so difficult, they don't qualify, although they are working with good practices?'" (Academic fisheries researcher).

In the end, the evaluators carrying out the SKBC fishery's MSC assessment made a determination in favor of progressing with the assessment process. Rather than evaluate the management of lobster populations at the meta-population level, which would require regional-scale management by multiple countries, the UoC included only lobsters that had already entered into cooperatives' fishing areas. Therefore, only the confluence of management institutions at that local level would need to be evaluated.

The UoC of the SKBC fishery was thus shaped by a heterogeneous amalgam of adult and sub-adult lobsters, fishers, boats, specific gear, as well as both scientific and ethical claims. In this sense it can be seen as a locally specific rendering of the global challenges facing MSC, namely the need to maintain rigor while increasing accessibility to SSFs. This initial stage of certification created a novel governance subject with natural, scientific, and ethical facets. Producers do not participate in certification simply as fishers with particular harvesting practices. They become ethical subjects who, by virtue of their goodness, are deserving of certification.

Once defined, the UoC acquires a self-reinforcing stability that can be put to use in governance. It restores deviant things and behaviors to their proper location inside or outside of the certified fishery. During the first annual audit meeting of the SKBC fishery certification, a cooperative leader mentioned that unseasonably high wind and rains clouding the water had necessitated the use of gillnets to catch lobster as they migrated along the coast, shocking the evaluators. In response, one evaluator clarified, “the lobster that is certified is not caught using gillnets,” it is only caught by free diving using hand nets (*jamos*) and gaff (*gancho*). Surprised by the delinquent characterization of the gillnet practices, which have long served as an occasional lobster harvesting method, a cooperative leader joked, “the nets they are talking about are for playing volleyball!” The Evaluators did not laugh. Evaluators were also surprised to find that fishers target lobster in fishing zones outside of the certified space, and added it to their notes.

The audit visit report published five months later presented the discovery of the use of nets as new information warranting a review of the original assessment scoring, stating that it “is essential to be able to demonstrate that lobsters taken using these nets are not being identified as part of the unit of certification or mixed with the certified product,” (MRAG Americas, 2014, p. 5). Each invocation of the UoC in certification discourse, whether in spoken dialogue or written reports, further congeals its existence. The UoC provides a basis for characterizing the fishers’ specific behaviors, as they are an integral part of its definition.

4.5.2 Evaluating an improving the fishery: Making the subject visible

During subsequent stages of evaluation and improvement, certification reinforces producers' ethical role in the UoC by parsing, quantifying, and imagining their practices on a global-scale comparative plane. The MSC's fisheries standards and scoring system constitute the mechanics by which the sustainability of an individual fishery is made visible within a globally coherent field. Once translated through the scoring system, anyone could presumably understand a fishery as sustainable or unsustainable without specific knowledge of the fishery's management, practices, or ecology.

The scoring system also identifies the UoC's sustainability shortcomings and defines the path toward improvement. The scoring process translates particular aspects of the fishery into a standardized system that allows comparison against not only a diverse and disparate set of actually existing fisheries from around the world, but also an entire continuum along which an infinite set of hypothetical fisheries could fall, including the hypothetical-ideal fishery with a perfect score. The system defines the governance modifications required of the fishery and simultaneously provides a framework for their justification.

Three main principles—related to the sustainability of the target fish stocks, the health of the ecosystem, and fishery governance—organize the scoring system. (MSC, 2010, pp. 5-6). Each principle is divided into between two and five components that are

further subdivided into between two and five indicators. A total of nine components and 30 indicators are used. During the assessment, the fishery receives a score for each indicator and weighted scores are aggregated at the component and principle level. The weighted average scores for each principle must be above 80 to achieve certification. On a given indicator, a score below 60 triggers an automatic failure to pass assessment. A score between 60 and 80 triggers a 'condition'. Continued certification is contingent upon specific, regimented improvements in each condition triggered during assessment. The SKBC scored below 80 on four of the indicators, triggering four conditions (Figure 2). Within Principle One, under the Management component, the fishery received a score of 75 on the Performance Indicator (PI) *Harvest control rules and tools*. According to the assessment, the fishery lacks a well-defined harvest control rule that would limit harvests if production or stock size decreases. Within Principle two, under the Habitats and Ecosystem components, the fishery received two scores of 75 due to a lack of information regarding the effects of the fishery on the broader ecosystem and habitat. Finally, within Principle three, under the component Fishery specific management system, the fishery received a score of 70 for PI *Fishery Specific Objectives*. The fishery is required to develop predefined objectives, for example to preserve the ecosystem, maintain harvest catch levels, or maximize economic efficiency. Each year, during a surveillance audit, the SKBC fishery must demonstrate progress toward meeting each of the conditions triggered by the deficient scores (MSC, 2012b).

The first annual surveillance audit was held in Chetumal, México, during two full days in November 2013. It was attended by fishing cooperative leaders, academic researchers, students, protected area managers, members of two Mexican NGOs, as well as the two third-party evaluators there to assess the fishery's progress toward improvements. The evaluators were from the United States and spoke Spanish.

As the meeting commenced, a member of an NGO, who had actively facilitated initial certification, stood up at the front of the room to ask who knew what MSC certification was. Only a few people in the room raised their hands. None the fishing cooperative representatives, the certification clients, raised their hands. The NGO member explained certification and the purpose of the audit meeting to the group. "It is like an exam you take in school," he explained, "you take the exam once and then later you have to go back and take the exam again to see if you improve your score." Indeed, the process through which fisheries are certified, audited, and recertified with a five-year period is much like an exam. Failing to demonstrate improvement after five years risks losing certification.

As the meeting progressed, cooperative leaders and other meeting participants struggled to understand in concrete terms the types of improvements that would satisfy the conditions. In response to growing frustration, one of the evaluators explained that the MSC is not very prescriptive, that it is in fact up to the fishery to decide precisely how to meet the conditions. Another NGO member offered a new metaphor:

“The MSC is like a doctor who tells you what is wrong but not what medicine to take.”

The evaluator agreed and elaborated: “Yes. You have to lose weight but how you are going to do it [is up to you].”

Then the NGO member reconnected the metaphor to the discussion underway: “These three conditions are what is hurting the fishery.”

However, it became clear that not all the meeting participants were in agreement

regarding what was indeed hurting the fishery nor the best way to address the issue. At times, scientific-technical and local understandings of sustainability clashed.

The first condition for improvement—that the fishery develop and implement a harvest control rule—provides an example. The first step in developing the harvest control rule is to determine a quantitative benchmark of lobster stock or production below which producers must reduce fishing effort. Like many Mexican fisheries (Hernandez & Kempton, 2003) and small-scale fisheries with elements of local self-governance (E. Ostrom et al., 1994), the SKBC fishery does not employ quota rules or quantitative measures in governance. Such measures require highly technical biological fish stock models.

One cooperative member asserted that non-quantitative controls are sufficient:

I don't know if there is a way to know if we are overfishing because we have never worked for amounts. Maybe a way to exploit or overfish that would not make for sustainable fishing would be to not respect the size restrictions or fish outside of the season. But as long as we fish during the eight months of the season and respect the sizes and lobsters with eggs, we are fishing well.

Another fisher doubted the type of knowledge on which such a rule could be based, explaining,

This year we are at ten percent less production than last year. We're fishing ten percent less than last year so I think we could be fishing more. There is no way for us to know if the lobster is being overfished. They did a study about that but we never heard results.

Attempting to translate between scientists and fishers, one fisheries researcher suggested that developing the harvest control rule was similar to planning an escape route in case of fire. He explained "these conditions are mostly technical, for researchers...the only thing that the fishers from the cooperatives need to do is agree, before the house is burning, how we are going to get out." Evaluators disagreed reiterating that the participation of fishers throughout the improvement process was key to success.

A fishing cooperative leader characterized the harvest control rule with his own metaphor. He likened the rule to putting a speed bump on a road that is already filled with rocks. Rocks were the multiple factors that naturally restrict fishing effort, for example rains and storms that limit fishing. Indeed, his cooperative's fishing grounds are located at the end of an unpaved road full of rocks and often impassable after severe or consecutive rains. In spite of cooperative leaders' differing perspective, scientists presented a variety of lobster stock models based on decades of production data. The key, the evaluators explained, would be to come to an agreement on which models and data to use in the development of the harvest control rule.

Despite initial confusion and some frustration, the audit gained momentum. Cooperative leaders talked about the types of data they generated and sustainable fishing practices. Protected areas managers presented about the reserves' management and significance, and scientists addressed a range of issues such as lobster health and illness. The meeting ended on a positive note. Participants ended enthusiastic to collaborate toward the coming year's audit requirements. As an NGO member put it, they would "not be caught with their pants down" again next year. The audit report concluded that certification should continue for another year. The fishery was on schedule for three of the four improvement conditions and behind schedule for one, the *harvest control rules & tools* (MRAG Americas, 2014, p. 5).

4.5.3 From material exchange to a discursive market

As MSC drives changes in the governance of the SKBC fishery, what role does the market play? In theory, market-based certification incentivizes costly certification and governance changes through market benefits to be gained as a result of certification. The results presented in this section interrogate the market mechanism from two angles. The first examines the process through which the costs of certification become disconnected from producers. The second explores the role of the market, both materially and discursively, in shaping producers' valuation of MSC certification.

4.5.3.1 Certification costs

For most industrial fisheries, private firms initiate certification, lead the organizational process, and pay certification costs. However, in the case of the SKBC fishery, the public certification report lists the client as “Federación Regional de la Sociedades Cooperatives de la Industria Pesquera del Estado de Quintana Roo, S.C. de R.L (the Regional Federation of Fishing Cooperatives) and WWF-US (World Wildlife Fund, US),” (MSC 2010, p. 1). According to MSC’s announcement of the SKBC fishery’s certification, “WWF provided funding and technical assistance for the assessment, and the NGO, Comunidad y Biodiversidad (COBI) coordinated the assessment locally, working closely with the fisher and local stakeholders.” To date, the fishing cooperatives have not paid any of the costs of certification.

Fishing cooperative leaders are unsure who has paid the costs. One cooperative leader said that donors and the federal government are paying the costs of certification.

Another responded that local NGOs are in charge:

Interviewer: How much do the cooperatives or the federation [of fishing cooperatives] pay for certification, for example for audit meetings, the evaluation, travel, research? What is paid for and who pays it, for the certification and everything else?

Cooperative leader: From what I understand, we haven’t been charged one peso, not even one peso. In fact, COBI is in charge of this type of thing, the people from Razonatura [a Mexican NGO], and they haven’t taken anything from us. I don’t know, what I understand is that, for example, now the audits that they are going to do are going to cost around 15 thousand [U.S.] dollars. But, in fact, the state government gave 10 thousand pesos and I don’t know where the remainder will come from, but they haven’t charged anything to the cooperatives.

Uncertainty about costs is not typical of other cases of MSC certification. One of the evaluators explained that certification of the SKBC fishery differed from the industry-led cases to which she was accustomed in which producers initiate certification in order to actively seek market benefits. She attributed producers' limited knowledge of the certification process to the lack of cost incentives. In the absence of financial costs for producers, concern with financial benefits can be diminished.

Lack of financial costs also limits information flow from cooperative leaders to general membership. Although the MSC certificate hangs, framed, in the office of each fishing cooperative, many fishers are unaware of the certification. According to a survey of the members of the six certified cooperatives (n = 97) carried out during fieldwork, only 20.6% knew Marine Stewardship Council certification by name and 30.0% were not aware that the fishery carried any form of certification. Typically, one or two fishing cooperative representatives attend certification meetings. Regular, bi-annual cooperative assemblies are the main fora in which leaders communicate with the general membership. In assemblies of each cooperative, which can exceed five hours, the treasurer reports on all costs and earnings of the cooperative. New expenditures require approval by the general membership. However, because the cooperatives do not currently pay for certification and audits, the issue receives no more than a brief, if any, mention during assemblies. The diversion of costs from producers to civil society organizations thus reduces potential barriers to acceptance of certification by producers.

4.5.3.2 Valuing certification

None of the interview respondents, including fishing cooperative leaders, academic researchers, and government officials, thought that a monetary benefit from certification would materialize in the near or medium-term. Any expectation of future benefits was seen as a vague and contingent potentiality. Producers understand that the fishery, in its current form, is both too large and too small to benefit from demand for certified products. Demand for sustainably certified lobster in the fishery's current market, nearby tourist destinations such as Cancun, is too limited for the sale of certified product to make economic sense. Responding to whether he thought certification would bring economic benefits, a cooperative leader mentioned, "in Cancun there were two or three hotels that wanted us to sell them two or three kilograms [of certified product] in a week. We produce 1,500 kilograms in a week, so that's not a business." Volume demanded from current local markets is insufficient.

Export markets could potentially provide access to non-local demand for certified product, but the low production volume and transaction costs of transporting the live lobster on unpaved roads currently impedes cooperatives from attempting to access such markets. Mexican NGOs are currently working with cooperatives to create an integrated marketing system in which all six certified cooperatives would increase volume through joint sale, using MSC's label. However, some cooperatives are doubtful of the connection between efforts to increase sales volume the use of MSC's label:

So they intend to sell the brand, to sell this certification. Things that don't result. In the market, the current market, there is no demand for certified product. There isn't. At a congress [an international lobster conference held in Cancún], a researcher was saying, although [NGO leaders] say that it is not true, that there are problems at a worldwide level with the certification because it is not obtaining the hoped-for economic benefits... There is not an economic demand and it *does* cost you to use the label. In few words, it's failing... I'm telling you that our production is small and the people that buy from us, what least interests them is the certification... Supposedly [another cooperative leader] stuck out his neck and said that they are going to buy the certification and the brand. And later the [buyer] said 'if you want to sell to me with the brand I'll buy it, with certification I'll buy it. I need 200 tons of lobster and I don't care how it is, if it is certified or not. This is what concerns me the least.' No. The man was looking for *lobster*, he wasn't looking for a brand or certification.

That certification currently obtains no market benefit is clear to producers, but a number of interview respondents talked about alternative benefits and the possibility of future benefits. A researcher described certification as a preventative measure:

It is a type of shield. It is a shield against the possibility, let's say, of bad practices. That is to say, if you are not very mindful of something, very soon, little by little, your environment can break down. And the fact that each year they have a meeting. The fact that you are already certified, well, you have it because of those small details. Because you took care of this, because you were concerned for that. And this makes you more attentive. You are more conscious that your good practices count. They don't go unnoticed. The problem, if that doesn't exist, you can quickly stray from the path, little by little. This is the problem. For me, the certification is an additional shield. I like that.

One cooperative leader also found value in certification's ability to improve practices, as well as to distinguish the fishery as sustainable in a way that instills a sense of pride and warrants recognition and political power.

There is a benefit, not economic, but you have the possibility that the Mexican government and international [organizations] help you with projects, to get motors for example... There are not any market benefits but in the sense that you deserve a gift because you behave well... We believe that how things are going in the future that possibly foreign markets will demand it. What we want to happen is that there is a difference in price, even if it is only one peso more... It is just that we have pride because as of now, in the world, I don't know how many are certified, but I don't think there are very many. According to worldwide statistics, we are in the top 100 in the world. That is due to the management, the environmental protection, and all that... Independently of the search for profit, I believe that the value that [certification] really has is that the resource is conserved, it makes you work in a better way than we have before in order to try to conserve it. In the end, I feel that this is a goal that it should have because money isn't everything.

Certification of the SKBC fishery is still in the early stages and it remains to be seen what kinds of market changes may result or the kinds of value producers will eventually attribute to certification. Currently, there is significant uncertainty and skepticism regarding the potential for market benefits. However, an emerging narrative of better practices, political recognition, and global esteem takes shape as a substitute, closely resembling the reports of non-market benefits by other small-scale and developing country producers highlighted in the introduction.

4.6 Discussion and conclusion

For the SKBC fishery, like many other small-scale and developing country producers, material market benefits such as price premiums and access to niche markets do not drive participation in MSC's sustainable seafood certification program. Rather, producers' acceptance of certification relates to a discourse that enables a suite of

alternative benefits. Respondents described material benefits such as political favor in projects and motor subsidies, social benefits such as prestige, and the intangible benefit of feeling the fishery would continue to be conducted sustainably.

Foucault's governmentality helps explain the construction of a discourse that imagines such benefits. Certification's techniques of visibilization provide a framework for conceiving of a fishery that is performing well and deserving of benefits. The process of evaluating and scoring the fishery according to a set of universal standards lets producers know they are observed and provides a value-giving framework within which to observe themselves. The proliferation of governing actors who attend meetings as well as fund the certification itself intensifies visibility. Interactive assessments and audit meetings do not just involve independent evaluators, but also NGOs, government, and researchers all with politically significant relationships to producers. The overall result is the development of a 'conduct of conduct' in which embracing certification and its requirements makes rational sense. Metaphors of school exams and doctor appointments reinforce the idea that it is up to producers to improve their fishery for their own benefit. Together, the techniques, frameworks, actors, and practices of certification make up a powerful discourse that positions the SKBC fishery within new quantified, standardized, and global-scale mode of comparative valuation.

Although the market does not play a material role in this and similar cases, it is essential to the discourse. Indeed, transnational certification programs are founded on

the existence of global markets. An image of global-scale seafood trade allows geographically disparate fisheries to coexist on a common plane where situating them into a single comparative framework becomes conceivable. Furthermore, the fundamental function of markets to standardize and convert provides a mechanism of comparison (c.f. Callon, 1998; Loconto & Busch, 2010). Only in the context of the market, in which all qualitatively distinct things must be converted to a common denominator, does evaluating a fishery comparatively according to a quantitative set of indicators and scores make sense.

In this case, a purely discursive market is powerful enough, without its material counterpart, for producers to embrace the costs of certification. Although to date NGOs have born the financial costs of certification, cooperative leaders must accept new forms of knowledge and actors that intervene in the governance of the fishery. New rules and standards run contrary to fishers' ideas about sustainable fishing practices. Once the fishery has been certified, the prospects of losing certification may have consequences, especially if producers are concerned with losing political favor gained through certification. Finally, there are potential real monetary costs to maintaining certification, as the continued costs of audits and recertification will likely be handed down from the NGOs to producers, as has occurred in Mexico's first certified small-scale fishery.

A discursive market also has implications for how we problematize and intervene in the proliferation of certification schemes in small-scale and developing

country sites of production. A primary concern with neoliberalization of environmental governance through certification and other NSMD institutions is the possibility for further entrenchment of uneven power dynamics between the North and South, large retailers and small producers. Yet, if price premiums and niche markets are not driving participation in this and other similar cases, then how can precisely can power be attributed to large retailers or wealthy consumers?

Even in cases where certification provides significant market benefits to producers, large retailers are as much subject as producers to the discourses that shape how value is constructed and construed. For example, after the Alaskan salmon industry ended its participation in MSC's program as a cost-saving measure, Walmart announced that it would source its salmon from other MSC-certified fishers instead of Alaska (Jolly, 2013), suggesting the retail giant has at least some power to support the current form of MSC standards. However, the Alaskan salmon industry eventually convinced Walmart and other buyers to reverse their decision. They inserted their own narratives, underscoring the sufficient stringency of the United States government fisheries regulations and protesting with signs that read, "Buy American? Start with Alaska salmon," (ibid.). Thus, power relations between actors in supply chains are not strictly driven by relations of material exchange on the market. Rather, they rely on the many contingencies that shape the contours of how a discursive market ascribes value.

Acknowledging this contingency in NSMD governance institutions allows a wider opening for exploring how power shapes standards, practices, and outcomes. For example, Cashore (2002) turns a sociological eye on the process through which rule-making legitimacy arises. Eden (2009) explores how the construction of legitimacy relates to the heterogeneity of networks backing labels. And Klooster (2010) asserts that legitimacy competes with acceptability and rigor to shape the political process of standards design and revision. These perspectives interrogate the contingent processes through which certification discourse takes shape.

As long as power in NSMD governance is freed from the material market, resistance can locate points of entry. That MSC has adapted its standards to include fisheries such as the SKBC fishery should be encouraging. The fishery may not be immediately evaluable according to quantitative measures more applicable to industrial fisheries in the north. However, many small-scale fisheries in Mexico are sustainably managed due to complex co-management arrangements that integrate federal regulations, local forms of collective action, and the evolving and innovative role of NGOs and civil society (Espinosa-Romero et al., 2014; Finkbeiner & Basurto, 2015; McCay et al., 2014b). A new subject of governance, in which ethical concerns with inclusiveness and scientific concerns of rigor can be negotiated according to a common denominator, their relevance to a global comparative value on a discursive market. Such processes represent a potential inroad toward a type of environmental governance that

self-consciously undertakes a critical interrogation of assumptions regarding the distinction between values and scientific facts (e.g. Latour 2004). Further consideration of the opportunities and constraints this form of NSMD governance allows is especially important as environmental certification schemes such as MSC's and FSC's program expand their inclusion to small-scale sites of production in the south, and as the scope of governing authority likely exceeds the ability of the market to provide producers with price premiums and material benefits.

5. Conclusion

This dissertation explored some of the ways in which global seafood markets and local small-scale fisheries (SSFs) governance interact. The goal was to develop general hypotheses regarding the ability of governance institutions to mediate between the potential risks and benefits facing SSFs connected to global markets. As seafood remains one of the most-traded food commodities in the world, whether trade will yield significant benefits for small-scale and developing country fishers is an open question (Béné et al., 2010). Therefore, developing theoretical and empirical knowledge of these connections will become increasingly important for the small-scale sector.

In pursuit of that goal, this dissertation first described a conceptual approach to studying markets such that a contribution could be made to common-pool resource (CPR) scholarship. Combining insights from institutional economics and political ecology, the dissertation proposed to conceptualize markets as *sets of institutions that structure the exchange of property rights over fisheries resources, affect the material incentives to harvest resources, and transmit ideas and values about fisheries resources and governance*. Each of the empirical studies presented in this dissertation engages with a different facet of this conceptualization of markets in order to explain specific processes through which global seafood markets leave their mark in SSFs as well as the potential for small-scale fishers to play a role in shaping their effects.

5.1 Summary of findings

5.1.1 Chapter two findings

Chapter two casts an historical lens on commercial fisheries in Yucatán, tracing the development of small-scale fishers' orientation toward external markets. By attending to the institutional substance of markets, chapter two demonstrates the extent to which markets and resource governance arrangements are embedded within one another. Fishing cooperatives exemplify this embeddedness. On the one hand, cooperatives make up some of the institutional structure of markets. They prescribe how fishers sell their harvests, the cash and additional benefits that they receive in exchange and, in turn, how harvests are sold to buyers farther up the supply chain. On the other hand, cooperatives can and do structure local-level resource governance. The theory of club goods highlights how these dual roles are inextricably related, as financial success in markets enables cooperatives to survive and persist, a prerequisite for participation in resource governance activities.

Although chapter two does not investigate any single global seafood market in particular, it suggests a specific mechanism of interaction between markets and local-level resource governance. First, markets can facilitate local resource governance because governance is costly. Participation in collective action, following rules limiting resource use, and monitoring and enforcement are all costly activities. If, indeed, cooperatives are to play significant roles in resource governance, financial success in

seafood markets may be prerequisite. With this in mind, the chapter hypothesizes that roll-back neoliberalization of fisheries policies has undermined cooperatives' ability to achieve financial success and thus their potential role as key actors in resource governance.

5.1.2 Chapter three findings

Chapter two traced the evolution of two different sets of institutions, fishing cooperatives and patron-client relationships, which bridge seafood markets and resource governance. The study sought to explain how communities within the same region can come to have vastly different institutional landscapes. Chapter three picks up this historical strand in the present day, asking what bearing these differences have for how governance arrangements respond to new pressures from Chinese demand for sea cucumber. Chapter three, through the lens of political economy, focuses on the material incentives to harvest and govern resources that markets create and the influence that different relations of production have on these incentives. Fishing cooperatives and patron-client relationships, in addition to being sets of institutions that structure markets, also constitute particular relations of production.

While chapter two showed that markets can make important contributions to resource governance, for example by sustaining key actors, such as cooperatives, chapter three deals with a more problematic side of markets. In doing so, chapter three elucidates two more mechanisms through which markets and resource governance

interact. First, markets generate incentives to undermine governance institutions and overharvest resources. Second, markets increase the costs of resource governance. A key finding is that despite these risks and challenges markets present for SSFs, the erosion of local governance arrangements is not inevitable. Instead, the chapter proposes the hypothesis that different relations of production influence whether local governance institutions will erode or gain strength when faced with market pressures. In particular, relations of production in which fishers own their own means of production and share the collective costs of governance are more likely to strengthen resource governance while relations of production in which a single entrepreneur controls capital and access to the fishery are more likely to contribute to the erosion of resource governance institutions in the face of market pressures.

5.1.3 Chapter four findings

While chapter three studied the effects of markets by attending to the material incentives they generate for resource use and governance, chapter four examines the ways in which markets transmit ideas, values, and norms related to resource use and governance. The example in chapter four demonstrates that by creating new institutionalized relationships between resource users, consumers and activists, NGOs and government, different ways of thinking and valuing resources can be transmitted between geographically disparate actors. The chapter hypothesizes that by serving as a new discursive framework within which to conceive of and talk about fisheries

resources, markets can influence governance arrangements. Of course, this does not mean that resource users necessarily adopt new sets of norms and values, nor that there are no material incentives at play. Rather, particular norms come to frame their engagements with other actors such as government and NGOs and potentially shape the political economic relationships between them.

5.2 Conclusion

Conceptualizing markets as sets of institutions that shape incentives and frame ways of thinking about resource use has allowed this dissertation to attend to a diversity of forms that comprise markets. Beyond highlighting diversity in market forms, an institutional conceptualization also highlights the malleability, rather than inevitability, of markets. The fundamental contribution of CPR theory to scholarship and resource management has been to assert that groups of resource users will not inevitably overuse the commons. This assertion has been made by demonstrating, empirically, that resource users do indeed purposively design, change, and maintain institutions. For markets, the same kind of human intervention is conceivable. CPR theory consists in the study of resource governance institutions that lead to sustainable resource use and the conditions under which those institutions may arise. In an era of rapidly increasing economic globalization, CPR theory should also attend to the kinds of market institutions that are desirable and the conditions they may arise. This dissertation was an initial effort toward this end.

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Biography

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