THESIS

ACCEPTABILITY, CONFLICT, AND SUPPORT FOR COASTAL RESOURCE MANAGEMENT POLICIES AND INITIATIVES IN CEBU, PHILIPPINES

Submitted by

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ABSTRACT

ACCEPTABILITY, CONFLICT, AND SUPPORT FOR COASTAL RESOURCE MANAGEMENT POLICIES AND INITIATIVES IN CEBU, PHILIPPINES

Efforts to address the decline of coastal and habitat resources by Coastal Resource Management (CRM) initiatives are done via application of frameworks such as Integrated Coastal Management (ICM) and Ecosystem Based Management (EBM). Recent literature stresses the necessity to complement biological monitoring with social science monitoring of coastal areas by applying social science concepts in CRM. Linkages between social science concepts such as a conflict, acceptance, and public support for CRM with research themes of governance, communities, and socioeconomics are crucial for advancing our understanding of the social success of CRM initiatives. In light of the scholarly and applied need, this thesis focuses on analyzing stakeholder perceptions, conflict, and public support for CRM policies and initiatives in Southern Cebu, Philippines. In particular, this thesis examines stakeholder attitudes and normative beliefs of CRM scenarios, and links these perceptions with public support of CRM policies and initiatives implemented at the levels of the community, municipality, and the Marine Protected Area (MPA) Network.

This thesis presents two manuscripts applying qualitative and quantitative social science methods for understanding stakeholder perceptions of conflict, acceptance, and public support for CRM policies. The first manuscript applies the Potential for Conflict

Index (PCI_2), a statistic that graphically displays the amount of consensus and the potential for conflict to occur in a CRM scenario. Specifically, the PCI_2 displays fishers' normative beliefs concerning their consensus and acceptability of CRM policies and initiatives. Face-to-face interviews with fishers serve as data for calculating the PCI_2. This manuscript compares fishers' normative beliefs concerning their evaluations of CRM policies among the municipalities of Oslob, Santander, and Samboan in Southern Cebu. Overall, fishers' differing evaluations reflects the way CRM is implemented and enforced in each of these municipalities. Fishers' evaluations allow local governments to understand acceptability of CRM policies as well as make better management decisions concerning policy compliance, consensus for policies, and conflict within a municipality.

The second manuscript of this thesis applies qualitative conflict mapping methods to the investigation of institutional conflict and accountability within a coastal municipality in Southern Cebu. Using in-depth interviews, conflict mapping methods enables the analysis of stakeholder attitudes of institutional conflict and accountability for CRM. This manuscript investigates institutional relationships among stakeholders accountable for CRM. Lastly, this manuscript examines how institutional relationships and stakeholder perceptions affect CRM at the community, municipality, and the MPA Network. The interpretive analysis reveals that conflicts concerning institutional accountability for CRM are often at the root of problems for implementing and enforcing coastal management initiatives and policies within the different communities of the municipality.

Theoretical implications of this thesis include the application of normative theories and qualitative conflict analysis frameworks for understanding stakeholder perceptions of

conflict and public support for CRM initiatives. Managerial applications of this thesis include the use of quantitative (PCI_2) and qualitative (conflict mapping) social science monitoring methods applicable for understanding social science concepts such as stakeholder perceptions, conflict, and public support for CRM policies and initiatives. Future studies could include the combined use of PCI_2 and conflict mapping as complementary research methods for investigating collaborative local government decision making processes crucial for the social success of CRM initiatives.

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CHAPTER ONE

INTRODUCTION

More than half of the world's population lives along the coast that accounts for only 10% of the world's land, creating intense pressure on habitat and resources (Murawski et al., 2008). The sustainable use of coastal resources and the decline of marine ecosystems is a global concern. Habitat degradation, pollutant runoff, overfishing, and climate change impacts contribute to food security issues and ecosystem collapse in major coastal and ocean regions of the world (The Nature Conservancy [TNC] et al., 2008).

With over 20,000 km^2 of coastal ecosystems, the Philippines contain the greatest number of fish species within the world's most marine diverse area, the Indo-Malay Philippines archipelago (Carpenter & Springer, 2004). Despite this fact, the coastal situation in the Philippines reflects global trends where unsustainable use of coastal resources results in mass habitat destruction, pollution, and declining fisheries. Locals whose livelihoods depend on the degraded and diminishing coastal resources are significantly affected. Consequently, food security has become a significant issue for many Filipinos.

World efforts address these coastal issues through

Coastal Resource Management (CRM) applying the frameworks of Integrated Coastal Management (ICM) and Ecosystem Based Management (EBM). Both ICM and EBM frameworks address these coastal issues by preserving and restoring ecosystem

functions as well as encouraging the sustainable use of coastal resources (Murawski et al, 2008). ICM, the precursor for EBM, entails activities that sustainably manage economically and ecologically valuable marine resources with the integration of community-based approaches and the understanding of

human interaction toward managing shared resources (Christie et al., 2005). Meanwhile, EBM is defined as:

> An approach that considers the entire ecosystem, including humans. The goals of EBM are to maintain an ecosystem in a healthy, productive, and resilient condition so that it can provide the services humans want and need. (Macleod, Lubchenco, Palumbi, and Rosenberg, 2005, p. 1)

The frameworks of ICM and EBM share common goals and objectives that intend to achieve the overall outcome of sustaining coastal ecosystem function by integrating community-based approaches, governance, and the socioeconomics of CRM.

Common CRM tools are Marine Protected Areas (MPAs) used for fisheries management, biodiversity conservation, and habitat restoration (Christie & White, 2007). In the Philippines, MPAs are in the form of a sanctuary commonly called *sanktuaryo* that is strictly off-limits for extractive utilization**.** Christie and White (2007) state the importance of the recognition that an MPA is only one important strategy within the framework of CRM. CRM regimes need to extend beyond the MPA borders, particularly for developing countries such as the Philippines where MPAs are small and managed at the local level (Balgos, 2005; Christie &White, 2007; McClanahan et al., 2005; Salm & Clark, 2000; White, Christie, d'Agnes, Lowry, & Milne, 2005; World Bank, 2006). Currently, CRM extends beyond MPA borders through the implementation of policies

and initiatives not only applicable to the MPA, but to the entire jurisdictional waters of a municipality. Some of these policies and initiatives primarily involve fish gear and method regulations, fishing permits, and restricted access to commercial fishing within municipal waters. The scaling up of these initiatives and policies from the MPAs at the community level to the municipal level sets the pace for the implementation of EBM across coastal waters of several municipalities. Moreover, the formation of MPA Networks, an ecological network of MPAs and a social network of local governments representing different municipalities, allows collaborative governance and management crossing jurisdictional coastal boundaries (Figure 1). Overall, MPA Network initiatives result in biological impacts to the coastal resources and social impacts to the different communities across a network of municipalities.

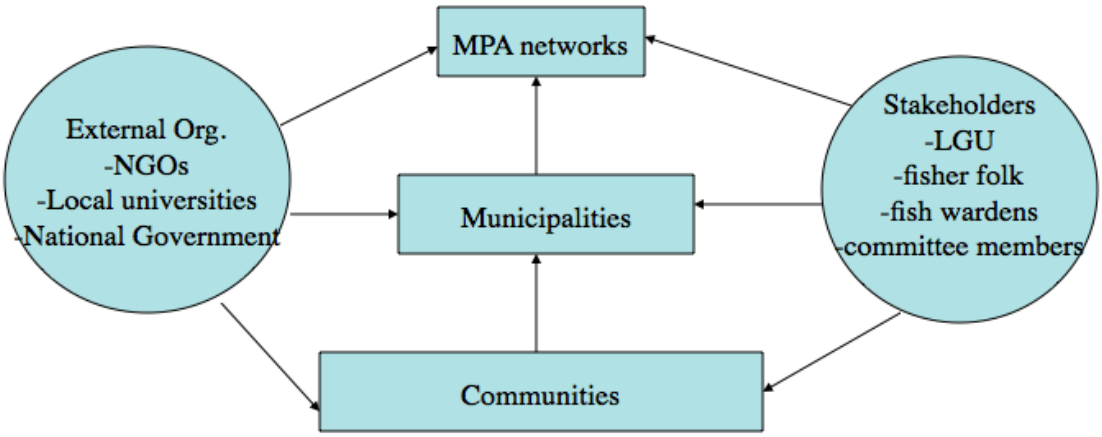

Figure 1. Scales of coastal management and governance representing stakeholders from the community, municipality, and MPA Network

The success of MPAs and CRM outcomes are often determined by biological monitoring efforts. As a result, the success of these management outcomes have been primarily measured and evaluated on specific biological indicators such as species

diversity and richness. However, applied experience and the literature have emphasized the significance of social indicators, such as public support, stakeholder attitudes, and conflict management, in driving the long-term success of CRM initiatives (Charles & Wilson 2009; Christie et al., 2003; Pomeroy et al., 2006; Walmsely & White, 2003). According to Christie (2003), the lack of public support leads to low compliance rates for CRM rules resulting in costly long-term conservation goals.

Public support for CRM outcomes and MPAs are influenced by stakeholder perceptions of the CRM initiatives and policies intended to reap ecological and social benefits. However, understanding stakeholder perceptions of CRM involves an in-depth analysis of stakeholder attitudes and normative beliefs of the acceptability for specific CRM initiatives and policies. As an attempt to understand public support for CRM, the purpose of this study is to understand stakeholder perceptions regarding the acceptability of CRM policies and initiatives. Stakeholder perceptions include attitudes and normative beliefs serving as factors for conflict and acceptability of regulations that may influence public support for CRM. The conceptual framework shows linkages of stakeholder perspectives with conflict, acceptability, and public support for CRM (Figure 2).

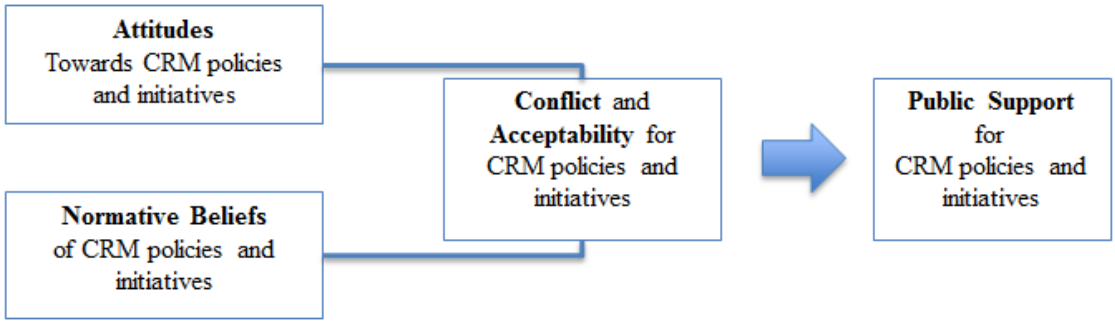

Figure 2. Conceptual framework showing linkages of stakeholder perceptions with public support for CRM.

Throughout the literature, there has been substantial emphasis on the need for public support, participatory and community-based approaches, conflict management, local governance, and the understanding of socioeconomics in approaching CRM. However, there is also the lack of integrating social psychology concepts of stakeholder perceptions with well-published themes of governance, communities, and socioeconomics in CRM. Integrating these social science concepts in CRM requires social science monitoring, an academic and managerial process often left out in evaluating MPAs and coastal areas (Christie, Buhat, Garces, & White 2003). As an attempt to bridge these social science concepts in coastal management, the motive behind this study is to apply social science monitoring methods into CRM by using quantitative and qualitative social science methods. These methods would link stakeholder perceptions, including normative beliefs and attitudes, with the in-depth investigation of conflict, consensus, acceptability, and public support for CRM policies and initiatives. The research themes of governance, socioeconomics, and community-based approaches in coastal management are linked with stakeholder perceptions and public support for CRM policies and initiatives.

Thesis Organization

In light of the scholarly and applied need to link social science concepts in CRM, this study focuses on analyzing stakeholder perceptions, conflict, and public support for CRM policies and initiatives. Included in this thesis is a literature review focused on the social aspects or the human dimension research themes of CRM, including the study of communities and community-based approaches, governance, socioeconomics, and stakeholder perceptions. Moreover, the literature review links stakeholder perceptions,

including the role of attitudes, normative beliefs, conflict, and public support with overarching research themes such as governance, CRM community-based approaches, and socioeconomics.

The organization of this thesis includes a two-manuscript format each focusing on quantitative and qualitative social science methods and analyses applicable to CRM. Both manuscripts investigate concepts concerning stakeholder perceptions (normative beliefs and attitudes), conflict, consensus, and public support for coastal management policies and initiatives (Figure 2). The first manuscript focuses on normative beliefs of fishers concerning the acceptability of coastal management policies and initiatives. Research questions in the first manuscript include: 1) What are fishers' norms concerning the acceptability of CRM policies? 2) How do fishers' norms of CRM policies differ among coastal municipalities? 3) How much local consensus is present concerning the acceptability of CRM policies among the municipalities? 4) How does consensus for CRM policies differ among municipalities? The second manuscript focuses on the stakeholder perceptions and attitudes of institutional conflict and accountability concerning CRM. Research questions in the second manuscript include: (1) What are the stakeholder perceptions, including attitudes of institutional accountability and conflict regarding CRM? 2) What are CRM institutional relationships among stakeholders who are accountable for CRM? 3) How do these stakeholder perceptions and relationships impact CRM, including the co-management approach at the community, municipality, and the MPA Network scales? Qualitative social science methods are primarily applied in the second manuscript of this thesis.

In addition to the two manuscripts, a management report for Coastal Conservation

Education Foundation (CCEF) is included (Appendix A). For managerial applications of this thesis, the report summarizes survey results and management implications obtained from Manuscript I of this thesis.

The conclusion chapter bridges both qualitative and quantitative research questions addressing stakeholder perceptions of CRM policies, conflict, and management implications affecting the scales of the community, municipality, and MPA Network. Moreover, the conclusion chapter applies thesis results to managerial implications linked with governance, community-based approaches, and socioeconomics of CRM.

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CHAPTER TWO

LITERATURE REVIEW

The success of Coastal Resource Management (CRM) is dependent on the integration of social factors into coastal management plans. Failure to sufficiently address social factors or the human dimension of CRM and MPAs is the greatest single barrier in marine conservation today (National Oceanic and Atmospheric Administration Coastal Services Center [NOAA CSC], 2005). Human dimension factors, such as stakeholder support and acceptability of coastal policies are crucial for the success of CRM programs intended to reap biological and social benefits (Walmsely & White, 2005). Ecosystem based Management (EBM) and Integrated Coastal Management (ICM), serving as frameworks for CRM, enables the in-depth analysis of human dimension research themes of governance, communities, stakeholder perceptions of policies, and socioeconomics. Figure 3 shows how these themes fit within the larger framework of coastal management.

This literature review explores the human dimension themes of CRM and investigates the gaps and linkages that these themes have with stakeholder support for CRM policies and initiatives. Furthermore, this review probes into the less explored social psychology theme of stakeholder perceptions, including attitudes and normative beliefs, and links stakeholder perceptions with public support and acceptability for CRM initiatives and policies. Lastly, this review links human dimension research themes of coastal management applying ICM and EBM.

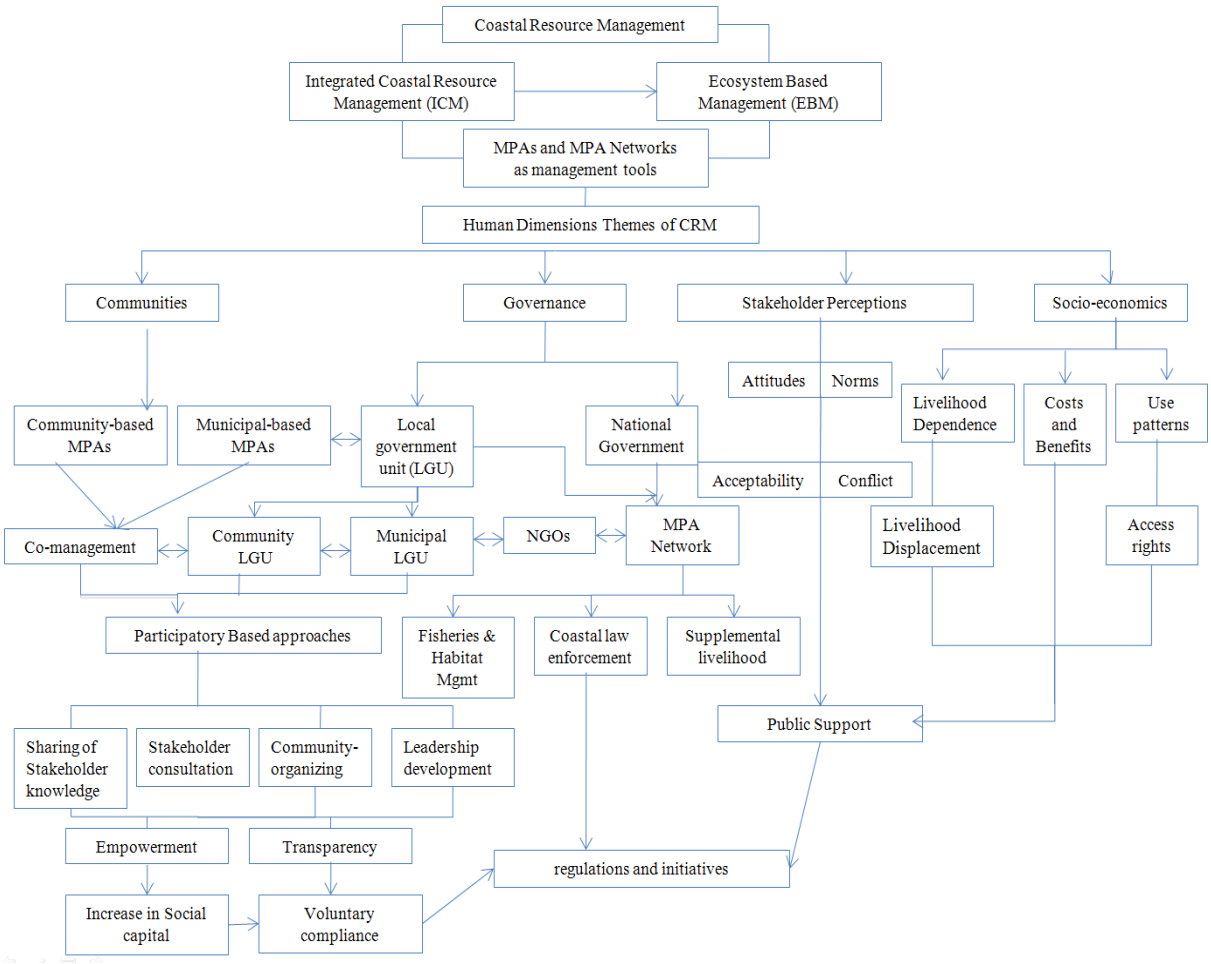

Figure 3. Literature map showing human dimension research themes of CRM

Ecosystem Based Management (EBM) and Integrated Coastal Management (ICM)

EBM and ICM, serving as frameworks for coastal management, have common goals of sustaining coastal ecosystem function by achieving the balance of environmental and socioeconomic goals (Christie et al., 2009). ICM, the precursor for EBM, entails "those activities that achieve sustainable use and management of economically and ecologically valuable resources in coastal areas that consider interaction among and within resource systems as well as interaction between humans and their environment" (Christie et al., 2005, p. 469). Furthermore, ICM involves the equal integration of ecological and

social methods that incorporate efforts to sustain coastal resources through stakeholder involvement and participation.

EBM evaluates the entire ecosystem while attempting to regulate and manage the health of the system, as well as balancing the environmental and economic concerns (Christie et al., 2009). EBM moves beyond the management of a single species approach and considers cumulative impacts and interdependence of different sectors, including ecological, social, economic, and institutional perspectives. Actions consistent with EBM include the initiation of ecosystem level planning, the establishment of cross-jurisdictional management goals, co-management, adaptive management strategies, and the establishment of Marine Protected Areas (MPAs) and MPA Networks (McLeod, Lubchenco, Palumbi, & Rosenberg, 2005).

MPAs and MPA Networks are one of the common coastal management tools used for fisheries management, biodiversity conservation, habitat restoration, and fisheries management (Christie & White, 2007). A commonly cited definition of MPAs is described below:

> An area of intertidal or subtidal terrain together its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protected part or all of the enclosed environment (Resolution 17.38 of the IUCN general assembly [1988] reaffirmed in Resolution 19:46 [1994]).

Because many MPAs are small (approximately 20 hectares or less) in the Philippines, many of these are no-take MPAs where extraction of any resource is prohibited. Therefore, zoning for these small MPAs is not practical as it is for zoning municipal

waters. Zoning and enforcing regulations on municipal waters become a greater challenge for municipal local governments. Furthermore, managing MPAs that are neighboring different municipalities requires collaboration with different municipal local governments. The formation of MPA Networks has addressed some of these management challenges. MPA Networks are defined as the following:

> A collection of individual marine protected areas operating cooperatively and synergistically, at various spatial scales, and with a range of protection levels, in order to fulfill ecological aims more effectively and comprehensively than individual sites could alone. The network will also display social and economic benefits, though the latter may only become fully developed over long time frames as ecosystems recover. (World Commission on Protected Areas and World Conservation Union [WCPA/IUCN], 2007, p. 3)

MPA Networks have resulted out of the need for CRM regimes to extend beyond MPA borders. Moreover, MPA Networks allow local governments to attain support from neighboring municipalities and NGOs to address management issues common to member municipalities of the MPA Network. Currently, MPA Networks in the Philippines serve as a social network of municipal local governments that collaboratively govern and manage coastal issues crossing jurisdictional coastal boundaries. In this case, MPA Networks in the Philippines represent socioecological MPA networks that are defined in the following manner:

> A collection of individual marine protected areas, management institutions and constituencies operating cooperatively and synergistically, at various

> spatial scales, and with a range of protection levels, in order to fulfill ecological, social, economic, and governance aims more effectively and comprehensively than individual sites could alone. (Christie et al., 2009, p. 351)

MPA Networks are used as crucial tools for enabling local governments to manage and enforce coastal policies applicable to several MPAs and municipal waters. The scaling up of these initiatives and policies from the MPAs at the community level to the municipal level sets the pace for implementing EBM across several municipal waters. Overall, MPA Network initiatives result in biological impacts to the coastal resources and social impacts to the different communities across a network of municipalities governing and managing their coastal waters.

Despite the substantial literature on MPAs and the burgeoning use of MPA Networks, much of the literature in EBM is heavily grounded in ecological principles with the overall goal of increasing coastal resource yield. Christie et al. (2009) has expressed this view:

> It is clear from a review of the literature and the aforementioned definitions that MPA networks are primarily designed and assessed with ecological principles in mind and intended to attain ecological goals that may eventually result in social and ecological benefits. (p. 351)

Municipal and community local governments do not necessarily manage MPAs and MPA Networks with purely ecological principles and goals in mind. In practice, MPA Networks serve as social networks and information diffusion networks for local governments to effectively manage their MPA and surrounding municipal waters (Pietri,

Christie, Pollnac, Diaz, & Sabonsolin, 2009). The incongruence between the literature on MPA Networks, MPAs, and EBM with actual practices and management scenarios calls for further investigation on the human dimensions of CRM initiatives.

Addressing the gaps and needs for Human Dimensions Research in CRM

Although the Philippines has one of the richest experiences in the establishment of MPAs and CRM programs, there is still the profound need to expand research efforts at understanding the human dimensions of coastal management (White, Courtney, & Salamanca, 2002). Moreover, there is the need for the expansion of social goals such as community empowerment in achieving long-term success of MPAs and MPA Networks (Christie, Buhat, Garces, & White, 2003). Several studies show there are limitations and adverse consequences to evaluating MPAs solely on a biological basis. Christie (2004) has conducted studies on MPAs that are considered to be biologically successful and yet "social failures" because of the lack of incorporating social goals in the management plan (p.155). Biological successful MPAs meet biological goals by increasing biodiversity and population of key coastal resources. On the other hand, social goals could include empowerment of local communities, community-based participation and decision-making as well as consistent social science monitoring displaying the basis of opinions, perspectives, and values of stakeholders (Christie et al., 2003). The contradiction between biological and social goals, as well as the controversy and conflict dynamics influence the almost 90% MPA failure rate in some countries (Christie et al., 2003a; White et al., 2002). MPAs that do not include or fail to meet social goals result in social harm, conflict, economic issues, and social dislocation or displacement for poverty stricken communities in the Philippines (Christie, 2004; Mowforth & Munt, 2006). Consequently, community

support and local enforcement for MPAs decrease when management is no longer community-based (Christie, 2004, Sanderson & Koester, 2000; Trist, 1999).

The understanding of community dynamics and its link with the management of coastal resources craves for social science research methods that are underemployed in many CRM strategies. The focus on only biological goals and the lack of social science research as part of the MPA agenda results in the omission of human responses to MPAs and MPA Networks in the scientific literature (Christie, 2004; Mascia et al., 2003). As a result, stakeholder conflict associated with different forms of resource utilization within MPAs is often underrepresented from MPA literature (Christie, 2004).

The incorporation of human dimensions research into CRM enables stakeholders to meet social goals and perhaps biological goals in MPA management initiatives. The NOAA Coastal Services and National Protected Area Center (2005) provides a structure for incorporating social science themes or human dimensions research into coastal management. Social science themes include the analysis of communities, governance, socioeconomics, use patterns, submerged cultural resources, and attitudes as it pertains to MPAs and coastal management. To analyze social science or human dimension research themes of CRM and MPAs, I focus on communities, governance, socioeconomics, and stakeholder perceptions, including attitudes and normative beliefs of MPAs and CRM.

Communities

Past lessons from the establishment of MPAs and CRM initiatives in the Philippines include the importance of community participation; hence the establishment of community-based MPAs. The community or *barangay* local government along with fishers or People's Organizations (POs) collectively manages community-based MPAs in

the Philippines. Community-based coastal resource management incorporates a transparent and iterative process that includes problem identification, community organizing, education, stakeholder participation, and leadership development as a mechanism for facing economic and political issues localized within a community (Alcala, 1998; Christie, White, & Deguit, 2002; Ferrer, Polotan, & Domingo, 1996; Wells & White, 1995; White, Hale, Renard, & Cortesi, 1994). The establishment of small community-controlled MPAs is initially intended to protect coastal resources and consequently improve socio-economic opportunities such as increased fish yield and additional forms of livelihood such as tourism (Christie et al., 2002).

Municipality-based MPAs are those that are controlled by the municipality's local government with assistance from POs representing different communities. While many of the MPAs started as community-based MPAs, the majority of MPAs in the Philippines have shifted from being community-based to municipality-based. This shift in power and management is partly attributed to the legal mandate and capacity of the municipal local government to formulate local coastal ordinances affecting the management of their jurisdictional municipal waters. Another reason for this shift in management is due to the greater availability of funds that the municipal local government provides to the different communities. Some of these funds come from NGO grants, diver user fees, national government grants, and beach resort business taxes.

Despite the shift from community-controlled MPAs to municipality-controlled MPAs, participatory approaches in CRM are applied in varying degrees. Some of these participatory approaches include sharing of stakeholder knowledge and community organizing by NGO sponsored facilitators. These participatory approaches are intended to

reap transparency of management processes, community empowerment, voluntary compliance, and social capital among the different communities residing or neighboring the municipality-based MPA.

Pollnac, Crawford, and Gorscope (2001) determined six factors for overall social success of community and municipality-based MPAs in the Philippines. Some of these included a relatively high level of community participation in decision-making as well as ongoing support, input, and advice from institutions (e.g. NGOs) and the local government (NOAA CSC, 2005). Pretty's (1995) typology of participation describes different levels of participation with passive participation at the initial level and self-mobilization and connectedness at the desired level (Mowforth & Munt, 2003). Passive participation entails people participating by being told what has been decided upon. Self-mobilization and connectedness involves people participating by taking initiatives independent of external institutions to change systems. Contracts with external institutions are developed but retain control over resource use. Self-mobilization and connectedness is the outcome desired by managers, NGOs, and local communities in implementing MPA initiatives and CRM policies.

Timing is critical in incorporating community participation and collaboration during the establishment of MPAs and CRM programs. Without the initial community collaboration in MPA and CRM program establishment, long-term community support for enforcing coastal management initiatives are lost. A classic case study is Apo Island, a 78-hectare volcanic island surrounded by 1.6 km^2 of fringing coral reef located five kilometers southeast of the mainland Negros, Philippines (Russ & Alcala, 1999). Apo Island has approximately 800 residents and is governed by the municipality of Dauin, a

small town off the coast of Negros. Qualitative data from residents and local scientists depict decreased fish catches and deterioration of coral reefs during the early 1970s. In 1976, Siliman University located on the mainland of Negros, initiated a marine conservation and education program at Apo Island. The concept of a no-take marine reserve was introduced to the residents of Apo. It was in 1982 that an informal agreement between Siliman University and the municipality of Dauin was established to protect a 0.45 km long section of a no-take marine sanctuary in addition to the zoning of a 500 m offshore marine reserve. The agreement was legally formalized in 1985 by the Dauin Municipal Ordinance. In addition, the marine management committee fully consisting of Apo residents was given the responsibility to manage and maintain the reserve. Siliman University had been providing scientific information and advice for the management of the reserve. Although the concept of establishing an MPA was initially introduced by Siliman University located in the mainland, the facilitation and long-term management of the MPA originally started with local community participation in 1982 (Russ & Alcala, 1999). Currently, Apo Island residents gain from MPA user-fee system and tourist revenue to support community development activities such as the partial high school accommodating freshmen and sophomores (Marten, 2008; Apo island resident, personal communication, June 2008).

The Apo Island case study displays the importance of initial and long-term community collaboration in managing MPAs. Moreover, Apo Island displays social mobilization of communities and the gain of long-term community support for MPA initiatives. It appears that initial community support at Apo was facilitated by Siliman University's efforts in community organizing, incorporating Apo residents in decision

making, and the organizing of field trips to neighboring islands that displayed successful and failed MPAs. Long-term community support is achieved by the recognition and utilization of MPA benefits resulting in increased livelihood options.

The study of communities and community-based CRM approaches significantly contribute to human dimensions research in Philippine coastal management. Communities are the keys to understanding other social frameworks such as governments and institutions as well as attitudes and beliefs about MPA initiatives. Without incorporating community collaboration, long-term biological and social success will not be achieved.

Governance, Institutions, and Networks

Governance is described by Juda (1999) below:

> The formal and informal arrangements, institutions, and mores which determine how resources or an environment are utilized; how problems and opportunities are evaluated and analyzed, what behavior is deemed acceptable or forbidden, and what rules and sanctions are applied to affect a pattern of resource and environmental use (p. 91).

Juda's definition of governance does not only include institutions, but links the role of stakeholder norms to behavioral use patterns for the resource as well as stakeholder support for regulations. In the context of CRM, our understanding of governance can help explain the role of community and municipality-based local governance, the formulation of coastal policies and initiatives, and governance models for implementing CRM. Various governance models, including community-based, co-management, and collaborative MPA Network management are utilized to manage MPAs and MPA Networks in the Philippines (Christie & White, 2007). These governance models represent

stakeholders from the community and municipal local government as well as the national government.

As mentioned in the previous section of this literature review, community-based management would involve communities in the decision-making of MPA management initiatives. Furthermore, community-based management would involve a bottom-up approach wherein communities themselves would shape the direction of MPA management initiatives. As a result, local enforcement of MPA initiatives is more effective because of local community decision-making in MPA management. Bottom-up strategies are more responsive to local conditions well known by local and direct resource users (Christie & White, 2007).

Co-management government initiatives are often the result of community-based management (Christie & White, 2007). Co-management involves the equal integration and influence of direct resource users and policy makers in joint decision-making (Christie & White, 2007; Christie and White, 1997; Nielson, Degnbol, Viswanathan, Ahmed, & Abdullah, 2004; Pomeroy & Riviera-Guieb, 2006; White et al., 1994). Moreover, the re-assertion of community's authority on coastal resources that they are subsistent upon is part of the co-management framework (White & Christie, 2007). In the Philippines, this framework can include partnerships between the community and municipal local government as well as the national government agencies and the MPA Network.

MPA Network management involves collaboration among community and municipality local governments spanning a region of several municipalities and MPAs. Moreover, national government agencies, such as the Bureau of Fisheries and Aquatic

Resources (BFAR), collaborate with the MPA Network. According to Christie and White (2007), it has become clear the small isolated MPAs will not be effective in achieving biological and social goals unless these MPAs are part of a larger management network that address common MPA issues such as the effective enforcement of coastal management policies. An example of establishment of a socioecological MPA network in the Philippines is the Southeastern Cebu Coastal Resource Management Council (SCCRMC). According to White, Alino, and Menenses (2006), greater research and policy support are needed to bolster MPA networks because they are formulated from the perspectives of direct resource users and local government. Current practices of MPA Networks include coastal law enforcement, fisheries and habitat management, and the provision of sustainable livelihoods to member municipalities of the MPA network. These practices are enacted in common ordinances and initiatives supported by municipalities and MPA Networks.

Limitations of coastal management governance models depend on the context and scale of management. For example, community-based management lacks outside financial and political support from municipal local government to sustain and collectively enforce MPAs. Other limitations of community-based management involve accounts of corruption among community local governments and fisher organizations, resulting in the turnover of management to the municipal local government (Fish warden chair, personal communication, June 2009). On the other hand, co-management and MPA Network governance models involve limitations of scaling up management and maintaining representative stakeholder concerns of different communities comprising several member municipalities of the MPA Network (Christie et al., 2009). Additionally, there is the

potential for top down management wherein the municipal local government takes complete control of managing the MPA(s) that neighbor several communities within the municipality. Additional limitations with the co-management framework is the possibility for the national government to implement the management objectives instead of the community residents who would normally undergo a democratic decision making process among the local management committee (Christie & White, 2007). The focus on the implementation and enforcement of MPA initiatives by the national government without the equal integration of community interests results in declining community support, mistrust, and weak enforcement of the MPAs. Furthermore, the imbalance of power between the national government and the municipal local government potentially results in the unequal distribution of monetary funds generated from MPA user fee systems. These funds are consequently distributed to the national government instead of the communities that bear the direct responsibility of managing MPAs. Our previous example of Apo Island faced management challenges when the national government noticed the increased local and international attention on Apo's coral reef recovery. The national government primarily situated in the Philippine capital of Manila, was also aware of the increased dive tourism revenues that the Apo community gained by establishing their community-based MPA. The national government declared Apo as a protected seascape under the National Integration Protected Areas System (NIPAS) that resulted in the control of a national body, the Department of Environment and Natural Resources (DENR). The control of the national government resulted in the allocation of MPA user fees to sustain national government departments such as the DENR. The small community of Apo no longer had complete control of managing their MPA as they once did.

Solutions to this issue resulted in the creation of the Protected Area Management Board (PAMB) composed of representatives from national and local government and other community stakeholders. The PAMB is representative of a co-management approach wherein local and national stakeholders somewhat play an equal role in managing Apo's MPA.

The evolution of co-management and community-based approaches is highly influenced by the presence or absence of functional common property regimes (White & Christie, 2007). Common property regimes are property rights under which the common pool resources are held (Feeny, Polotan, & Domingo, 1990). Common pool resources are those that exhibit subtractability (use that subtracts from what is left for other users) and difficulty of excludability (physical nature of the resource poses difficulties in excluding and demarcating access) (Tucker, 1999). This fundamental difference between common pool resources and common property regimes sheds light on the types of property regimes, including private property, common, and state governance directly influencing the use of common pool resources. Functional common property regimes can directly affect access and resource use. In the case of the Philippines, past colonial times have replaced traditional or native decentralized governance systems that efficiently governed the extraction of natural resources (Christie & White, 1997). MPAs in the Philippines serve as another tool to revive common property regimes that have been broken over time during colonial times (White & Christie, 2007). The management of MPAs is somewhat modeled after Ostrom's (1990) design principles for sustaining common pool resource institutions. These principles are outlined below with a description as it pertains to CRM and MPA management (Table 1).

Table 1: Ostrom's (1990) design principles for sustaining CPR institutions.

Design Principle	Description
1. Clearly defined boundaries	Depicts the boundaries of the CPR (e.g. MPA, municipal waters) and who has rights to withdraw resources
2. Congruence between appropriation and provision of rules and local conditions	The appropriation and provision of rules involves restricting quantity and type of resource units (e.g. fish catch), technology (e.g. type of gear), time (e.g. seasonal fishing), and money (e.g. funding for management). These rules must match the local conditions and scale of the area to attain functionality and legitimacy.
3. Collective-choice arrangements.	Stakeholders can participate in modifying the coastal management rules of their municipal waters and MPA.
4. Monitoring	Monitors, who have a stake in managing the resources, are accountable for other stakeholder's actions as well as their own. Fish wardens or *Bantay Dagat* officials are designated by the community and/or municipal local government to monitor and enforce the regulations
5. Graduated sanctions	Sanctions are clearly specified in local and national ordinances, particularly for commercial fishers that illegally fish within municipal waters.
6. Conflict-resolution mechanisms	Opportunities, such weekly meetings, are available to officials and stakeholders to manage conflicts, specifically between violators and fish warden officials
7. Minimal recognition of rights to organize	The rights of community residents to form their own institutions, such as fisher organizations, are not challenged by external government authorities.
8. Nested enterprises	Decision making, monitoring, enforcement, and governance activities are organized and nested within the levels of the community, municipality, and the MPA Network.

Ostrom's principles, particularly conflict-resolution and management mechanisms are to be ideally exercised in small scale community-based and municipality-based MPAs in the Philippines. Research depicts that the dismantling of conflict resolutions and collective action mechanisms results in the ineffectiveness of MPAs and declining public support for CRM initiatives (Christie & White, 2007; Christie et al., 2003a; Christie, 2004; Crawford, & Goroscope, 2001; Mcay & Jentoft, 1996; Trist, 1999; Pollnac; Walley, 2004). The legal framework for operating on functional property regimes significantly contributes to the success of MPAs in the Philippines.

Philippine fishery laws in the 1990s provided a mechanism for decentralizing government and re-establishing common functional property regimes for the communities and the local government (Christie & White, 2007). These laws include the 1991 Local Government Code and the 1998 Fisheries Code that allow municipal local governments units to manage their municipal waters to 7 km and 15 km offshore respectively (Russ & Alcala, 1999). This allowed municipalities to set up MPAs without the direct approval or assistance from the national government units such as the BFAR (Russ & Alcala, 1999). Moreover, these fisheries laws allowed municipalities to be responsible for implementing local ordinances and national administrative orders such as the 1980 BFAR Fisheries Administrative Order that declared national protection of sanctuaries. These decentralized laws have been effective in local enforcement and participatory decision making of MPA policies and initiatives, particularly for the Philippine situation of having more than 7,150 islands (White & Christie, 2007).

According to White and Christie (2007), the decentralized government structure encoded in the Philippines Constitution, the 1991 Local government code, and the 1998

Fisheries Code strongly suggest the adoption of community-based and co-management institutional framework. Furthermore, the decentralized government structure provides the opportunities for NGOs to collaborate with the community and municipal local governments as well as national governments in facilitating CRM initiatives among the scales of the community, municipality, and MPA Network.

The role of non-governmental organizations (NGOs) as institutions has been essential in building MPA networks and capacity within municipal local governments. NGOs such as Coastal Conservation Education Foundation (CCEF) and World Wildlife Fund (WWF) have been facilitating and strengthening the MPA networks throughout the country. Local and international educational institutions such as University of the Philippines and Siliman University have also been instrumental in providing ecological and social science information needed for decision making among municipal local governments representing an MPA Network. NGOs and educational institutions strengthen MPA Networks by funding and facilitating capacity-building workshops that enable the necessary communication among municipal local governments. This communication includes the sharing of concerns and issues occurring in the scales of the communities and municipalities. In a way, the dialogue and deliberation that occurs in these facilitated workshops serves as a communication bridge for stakeholders representing the community and municipality. Moreover, the communication in these facilitated workshops serves as a portal for conflict management crucial for effective governance of MPAs and municipal waters.

Effective governance of MPAs and conflict management strategies cannot occur without the integration of stakeholder perceptions of coastal management policies and

initiatives. Stakeholder perceptions reflect societal values, attitudes and normative beliefs of coastal management. Consequently, these perceptions influence the acceptability and public support for policies enforced by the municipal local government. The next section reviews the research themes of stakeholder perceptions as it pertains to CRM.

Stakeholder perceptions reflecting societal values, attitudes, and normative beliefs

Stakeholder perceptions about MPAs and CRM are invariably linked to communities, governments, and institutions that play key roles in determining the social and ecological outcomes of MPA establishment in the Philippines. Despite this strong link to well-published themes of coastal resource management such as local governance, there are few studies that focus on the influence of stakeholder perceptions, particularly the effect of attitudes and normative beliefs in driving public support and social outcomes of MPA establishment and coastal management policies. The paucity of studies on stakeholder perceptions could be due the lack of applying social science methods that investigate, monitor, and measure social outcomes and stakeholder emotions and perceptions of MPAs and CRM policies (Christie, 2004).

Oracion, Miller, and Christie (2005) believe that social outcomes of MPA establishment are related to the notion that MPAs are human impositions on nature and society. Furthermore, MPA purposes and objectives are driven by environmental ethics that essentially involves decisions that humans make regarding values that accumulate to people and fall along a spectrum (Oracion, Miller, & Christie, 2005; Hargrove, 1989). This spectrum includes environmental values that are classified as "instrumental" and "intrinsic." Instrumental values focus on enhancements in the well-being of people at the expense of nature (e.g. the value of fish for food security in Philippine communities).

Intrinsic values include those that benefit humanity but with minimized impacts to nature (e.g. value of snorkeling). These differing individual environmental values held by diverse resource users reflect societal values and norms influencing stakeholder perceptions and support for CRM.

Weinstein et al. (2007) believe that societal values drive the successful implementation of MPA and CRM initiatives. There is the need for a better understanding of social influences of environmental change and the mechanism of synchronizing human behavior with environmental and social priorities (Weinstein et al. 2007). Studies have shown that while political, economic and social systems comprise the human dimensions of coastal management, natural resource values originate only in the social system (Weinstein et al. 2007). In the Philippines, these natural resource values are manifested in fishing practices, local government ordinances, local support for MPA implementation, and behavioral responses to changing power regimes within communities. These natural resource values cannot be analyzed in isolation, but with integration of context scales that allows the analysis of differing outcomes desired by diverse resource users.

The case study of the Twin Rocks MPA occurring within the municipality of Mabini, Philippines displays stakeholder conflict and stakeholder perceptions about perceived social and ecological outcomes resulting from MPA management (Oracion et al., 2005). Some of the current stakeholders were the fisher folk, boatmen transporting tourists, NGOs, and dive resort operators. The Municipality of Mabini established the community-based Twin Rocks MPA in the early 1990s (Christie, 2003). It is important to note that the emerging dive tourism industry lobbied for protection of Twin rocks prior to the establishment of the MPA. The dive tourism industry's main motivation for the

protection of Twin rocks appeared to be the potential increase of fish and coral recovery essential for increasing dive tourism and incorporating aesthetic and intrinsic appreciation of marine resources sought by international and local divers (Oracion et al., 2005). Initial local support and participation for the Twin Rocks MPA initiatives were high since the inception of the community-based MPAs (Christie, 2003). However, the subsequent coercive enforcement of resort owners and dive shop operators generated mistrust among locals (Christie, 2003). Several studies displayed the dissatisfaction of fisher folk with the Twin Rock's MPA management because of the lack of community control and ownership that fisher folk once had on managing their designated community-based MPA (Christie, 2003; Oracion et al., 2005). Perceptions from the dive tourism industry showed concerns that the MPA would not be effectively managed without proper enforcement. These differing perspectives led to stakeholder conflict and behaviors that influenced the social failure of the Twin Rocks MPA. Fisher folk plotted to stop diving in the MPA while dive resort operators resorted to bribery that allowed diving or stopped illegal fishing in the sanctuary. According to Nazarea, Rhodes, Bontoyan & Flora (1998), the inter-stakeholder conflict is grounded in economic class distinctions that influences local negative and positive perceptions of environmental management observed in other Philippine contexts. Influential dive resort operators had the connections and monetary capacity to enforce their perspectives on how an MPA should be managed. This conflict between the community of fisher folk and dive resort operators appears to stem from negative local perceptions about changing power regimes associated with managing community based MPAs. Consequently, local perceptions affect support for MPA initiatives.

Local perceptions also reveal local knowledge on the evolution of the social and ecological systems of a coastal area throughout a time period. Local knowledge has been particularly useful in filling in the gaps of social and ecological baseline data on MPAs. Webb, Maliao, and Siar (2004) used local user perceptions to evaluate the condition of fisheries and coral reefs prior to the establishment of the Sagay Marine Reserve (SMR), Philippines. Additionally, local user perceptions were used to evaluate perceived outcomes and benefits of the SMR in the recent past as well as expectations for the future. The study revealed that positive perceptions about MPA management were correlated with resource users from the mainland while negative perceptions were correlated with resource users from geographically isolated island villages within the marine reserve. Resource users from the mainland had other forms of livelihood and were not as reliant on fisheries as resource users from the island villages. This study displays that local perceptions also have the capacity to reveal geographical scales (e.g. distance to mainland) influencing public support for MPA and coastal management policies and initiatives.

Understanding public support for natural resource management policies can be explained by various socio-psychological theories. As illustrated by the Theory of Reasoned Action (TRA) and the cognitive hierarchy, attitudes and normative beliefs serve as the closest predictors to behavioral intention and public support for management actions (Ajzen & Fishbein, 1980, Vaske & Donnelly, 1999). In the context of CRM, public support for MPAs is highly influenced by stakeholder attitudes and normative beliefs toward the policies and initiatives intended to sustain coastal resources. Attitudes reflect stakeholders' evaluation of a certain policy or outcomes of a management scenario

while normative beliefs reveal personal and social standards/norms for behaving and reacting to coastal policies in a given manner. Personal norms are an individual's standards and expectations that are modified through interaction (Schwartz, 1977); while social norms are standards shared by members of a social group or those societal standards that influence an individual's behavior in a given situation (Vaske, Fedler, & Graefe, 1986). The TRA and the cognitive hierarchy allow us to understand public support for coastal management scenarios and outcomes through the in depth analysis of stakeholder norms and attitudes. Despite the utility of these social psychology theories, there are sparse accounts of applying these theories to CRM scenarios, particularly in the developing countries such as the Philippines. Ishizaki's (2007) study utilized attitude-behavior theories for analyzing predictors of public support for sea turtle conservation management strategies in the Ogasawara islands in Japan. As predicted by theory and past research, Ishizaki's results revealed that attitudes and specific beliefs about management scenarios were predictors of public support for sea turtle conservation.

While social psychology theories provide us a framework for understanding factors that predict and influence public support, other disciplines such as socioeconomics provide us with other drivers that influence public support and acceptability for CRM policies. The next section explores the socioeconomic dimensions of MPAs and CRM.

Socioeconomic dimensions of MPAs and CRM

Livelihood dependence and displacement, use patterns and access rights, and the distribution of costs and benefits associated with MPAs are socioeconomic factors that affect public support and compliance for CRM policies and initiatives. Livelihood dependence on coastal resources, particularly on fisheries, reflects a significant portion of

the socioeconomic scenario in the Philippines. Green, White, Flores, Carreon, & Sia (2003) state that fisheries provide a direct income to a total of 1.3 million small fishers and their families. The implementation of MPAs as no-take fishing areas potentially results in the displacement of fishers to fish in other areas, consequently affecting use patterns. Fishers may resort to fish in further areas that could affect access into fishing areas that is likely managed and used by other fishing communities.

The quality and amount of coastal resources present in areas outside MPAs may have socioeconomic cost and benefit implications. While MPAs may provide the benefits of long term "spillover" effects of fisheries to surrounding fishing areas, short term costs for fishing communities are inevitably present. For example, fishers have to face the travel costs to fish in further areas outside the MPA that may not have the same quantity and quality of coastal resources present inside the MPA. Opportunity costs associated with lost catches as a consequence to MPA restrictions may also be faced by fishing communities (Charles & Wilson, 2009). Management and direct operating costs of MPAs are also incurred by local government and community management committees, particularly for community-based MPAs where funds primarily come from the community local government unit and NGOs. Some direct operating and management costs include the funding of fish wardens that regulate destructive and commercial fishing within the MPA and the surrounding municipal waters. As a whole, these management scenarios represent social and political costs to the coastal community and its corresponding local government.

The distribution of these costs and benefits associated with MPAs is another important socioeconomic dimension of CRM. Different stakeholders within the

community often experience different costs and benefits. For example, tourism operators generally benefit from the presence of the MPA by acquiring recreational diver and tourist revenues. Fishing communities also benefit from MPA presence by the increased fish yield to potentially surrounding fishing areas. As mentioned previously, fishers face various costs of not being able to harvest the increased fisheries within their MPA. The question that lies is which stakeholder(s) bears the direct costs and incurs the most benefits of MPA establishment. The imbalance of costs and benefits can often lead to conflict occurring within a community.

The aforementioned socioeconomic dimensions, including conflict, often influence a community's perceptions and potentially a community's public support toward MPAs and CRM initiatives and regulations. Previous studies show that public support and acceptance are necessary for MPAs to be successful in restoring, conserving, and sustainably managing coastal ecosystem functions, services, and goods (Christie, 2005; Charles & Wilson, 2009; Cinner et al., 2009; Walmsley & White, 2003). The overall purpose for analyzing linkages between socioeconomic factors and public support is to understand factors that lead to achievement of long-term success of MPAs and coastal management initiatives.

Tying it all in: communities, governance, stakeholder perceptions, and socioeconomics

Coastal Resource Management (CRM) applies the framework of integrated coastal management and ecosystem based management to achieve biological and social goals in coastal areas. Common CRM tools include MPAs and more recently MPA Networks to empower communities and municipal local governments to sustainably regulate the use of coastal resources. In the Philippines, the majority of the MPAs are co-managed by community or fisher organizations and the municipal local government,

thereby representing stakeholders from different communities and the local government in the decision making of MPA and CRM initiatives.

The study of communities and community-based approaches significantly contribute to the human dimension research themes of CRM. Community-based approaches include participatory strategies such as sharing of stakeholder knowledge and leadership development resulting in the empowerment and increase in social capital among community residents. In turn, these community residents enforce and voluntarily comply with CRM policies and initiatives. Many of these participatory or community-based approaches are spearheaded by NGOs that serve as facilitators and mediators between the community and municipality.

The empowerment of communities and local governments has led to the co-management approach between community organizations and municipal local governments to manage MPAs and municipal waters. Effective governance of municipal waters and MPAs requires support and collaboration from neighboring municipalities through the MPA Network. The MPA Network is a social network of local governments that collaboratively manage a network of MPAs spanning several municipal waters. Common CRM initiatives and goals of MPA Networks include fisheries and habitat management, coastal law enforcement, and supplemental livelihood for displaced fishers. These CRM goals lead to the formulation of a common set of policies enforced among several municipal waters.

Public support and acceptability for CRM policies are influenced by stakeholder perceptions, including attitudes and normative beliefs of MPAs and CRM. Moreover, the lack of acceptability for CRM policies potentially leads to inter-stakeholder conflict. We

must not forget the role of socioeconomic factors, such as livelihood displacement and incurred cost and benefits of MPAs, which in turn influence stakeholder conflict and public support for CRM initiatives and policies. Overall, socioeconomic indicators, stakeholder perceptions, local government institutions, and community-based approaches can influence stakeholder conflict in CRM scenarios and consequently the enforcement, voluntary compliance, and public support, for coastal policies and initiatives.

Potential strategies and solutions to address CRM conflicts associated with communities, local government, socioeconomics, and stakeholder perspectives of coastal management policies include conflict management mechanisms enacted through mediating institutions such as MPA Networks and NGOs. Other strategies include the provision of opportunities, such as community-based MPAs, that restore functional common property and power/management regimes within a specific community. Research themes in the human dimensions of natural resources offers tools such as social science monitoring that enable local governments and coastal managers to understand conflict and underlying stakeholder perceptions about CRM policies. These stakeholder perceptions, including attitudes and norms, co-evolve with changing power regimes associated with the management of MPAs and municipal waters. In addition to understanding stakeholder perceptions, social science monitoring allows managers and local governments to understand linkages between the socioeconomic and ecological drivers that influence the success and benefits of MPAs and CRM to communities. The paucity of publications incorporating stakeholder perceptions, specifically normative beliefs and attitudes, in social science monitoring depict the profound need for future studies in this topic. Without incorporating normative beliefs and attitudes as part of social science monitoring,

our understanding of community dynamics, local governance, and socio-economic dimensions will be incomplete. Consequently, social goals and potentially ecological goals of MPA management will not be effectively met, resulting in short term management and enforcement of MPAs and CRM policies.

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CHAPTER THREE

MANUSCRIPT I. NORMS, CONFLICT, AND ACCEPTABILITY OF COASTAL RESOURCE MANAGEMENT POLICIES IN CEBU, PHILIPPINES

Abstract

This manuscript examines the role of norms, sanctions, consensus, and conflict among fishers' evaluations on the acceptability of Coastal Resource Management (CRM) policies in the municipalities of Oslob, Santander, and Samboan in Cebu, Philippines. Research questions include the following: (a) What are fishers' norms concerning the acceptability of CRM policies? (b) How do fishers' norms of CRM policies differ among coastal municipalities? (c) How much local consensus is present concerning the acceptability of CRM policies? (d) How does consensus for CRM policies differ among municipalities? CRM policies include regulations on Marine Protected Areas (MPAs), fish gear and methods, fisher registration, commercial fishing, enforcement, and sanctions for fishing violations. The manuscript applies the Potential for Conflict Index (PCI_2) to explore the level of consensus for CRM policies. Onsite interviews (n = 505) in the three municipalities reveal norms showing greater acceptability for MPA policies and less acceptability for fish gear registration and fishing permits to non-residents. Statistical differences among fishers' evaluations ($F \geq 4.86$, $p < .02$, $eta < .427$, in all cases) expose differing perceptions of the way CRM is implemented and enforced in each of the municipalities. In general, Oslob fishers had the most acceptance and consensus for CRM and sanctions for fishing violations while Samboan had the least acceptance and consensus. Fishers' evaluations allow local governments to understand norms, consensus, support, and compliance for CRM policies.

Introduction

Coastal Resource Management (CRM) has used a variety of frameworks, including Ecosystem Based Management (EBM), to manage coastal ecosystems. The goal of EBM is to maintain an ecosystem in a healthy and resilient condition so that it can provide the services humans want and need (Mcleod, Lubchenco, Palumbi, & Rosenberg, 2005). Common coastal management tools include Marine Protected Areas (MPAs) or no-take marine reserves where fishing access is restricted. MPAs are tools utilized under specific coastal management concentrations such as fisheries and habitat management, coastal law enforcement, and foreshore management (Eisma-Osorio, Amolo, Maypa, White, & Christie, 2009).

In the last several years, academic literature has highlighted the importance of the human dimensions of MPAs and CRM (Christie, 2004; Pollnac et al., 2010; Pietri, Christie, Pollnac, Diaz, & Sabonsolin, 2009; NOAA, 2008; Pomeroy & Riviera-Guieb, R., 2006). This literature has stressed conflict, enforcement, and compliance as integral factors that influence the social success of MPAs and CRM (Fisheries and Agriculture Organization [FAO], 2007; Christie, 2004; Oracion, Miller, & Christie, 2005). Despite the emphasis on the human dimensions of CRM, there is the lack of literature emphasizing the role of norms, acceptability and consensus for CRM policies. The latter are essential components of CRM affecting conflict, compliance, and public support for coastal management policies. The success of MPAs and coastal management programs are highly influenced by community support for policies, norms,

enforcement, and conflict resolution or management (Christie, Pollnac, Oracion, Sabonsolin, Diaz, & Pietri, 2009; Pollnac et al., 2010; FAO, 2007).

The objective of this manuscript is to examine the role of norms, sanctions, consensus, and conflict among fishers' evaluations of the acceptability of CRM scenarios and policies in the municipalities of Oslob, Santander, and Samboan in Southern Cebu, Philippines. Moreover, this manuscript investigates municipality differences in stakeholder norms and consensus for CRM policies. Municipality differences could reflect the unique CRM norms and management styles implemented by each municipality.

Norms and Acceptability for CRM

Norms are standards that individuals use for evaluating behavior, activities, environments, or management proposals as good or bad, better or worse (Vaske & Whittaker, 2004). In coastal management, norms can be standards used by resource users, including fishers, to evaluate CRM policies and initiatives. Understanding norms can help coastal managers and local governments comprehend public acceptability, support, and compliance for coastal policies and management proposals.

Norms can also help explain individual standards and behavior (personal norms) as well as collective behavior (social norms) toward coastal management policies and proposals. *Social norms* are defined as standards shared by the members of a social group and *personal norms* are defined as an individual's own expectations, learned from experience, and modified through interaction (Blake & Davis, 1964). Understanding the concept of personal and social norms can help explain individual and public acceptance and support for specific coastal management rules and initiatives. The concept of social

norms can also clarify how social groups (e.g., fishing cooperatives) can influence individual decisions and behavior to comply with CRM policies.

Norms are also intimately tied to the concept of sanctions – punishment for people who break norms or rewards for compliance with norms. Norms that are widely shared by most members of society often become legal mandates complete with formal sanctions (e.g., fines) for noncompliance. Such norms are also likely to be internalized; viewed as being right, legitimate, and hence obligatory. In coastal management, factors that improve rule compliance include severity of sanctions, legitimacy of regulations, peer pressure, and participatory co-management processes (FAO, 2007; Honneland, 2000; Kaplan, 1998 Kuperan & Suitenen, 1998).

Norms are said to be emerging when there is less agreement about specific coastal management scenarios. Informal sanctions may be used to encourage acceptable behavior for emerging norms (Heywood, 1996). For example, sanctioning non-resident fishers for fishing within another municipality's jurisdiction is an emerging norm because of the lack of local ordinances implicitly stating the latter as a violation. As a result, informal sanctions (i.e., verbal warnings) from fish wardens are used to discourage non-resident fishers from fishing in off-limit municipal waters. Understanding consensus for emerging norms and coastal management policies can help clarify resource-use conflicts in CRM scenarios.

Consensus and the Potential for Conflict Index (PCI_2)

Although norms help to elucidate fishers' evaluations of coastal management policies, they do not illustrate consensus for these evaluations in a manner that can be easily comprehended by managers and local governments. Standard deviations may show

consensus of normative beliefs for a given situation. However, communicating standard deviations and illustrating consensus to managers with little to no statistical training can be challenging. The Potential for Conflict Index (PCI_2) is a new statistic that displays consensus among stakeholders' normative beliefs concerning certain management actions (Vaske, Beaman, Barreto, & Shelby, 2010). The PCI was developed to aid the understanding of human dimensions findings to natural resource management concerns (Manfredo, Vaske, & Teel, 2003; Vaske, Needham, Newman, Manfredo, & Petchenick, 2006). The second generation of this statistic (PCI_2) ranges from 0 to 1. A PCI_2 of 1 corresponds to a scenario with the least amount of consensus and the greatest potential for conflict. This occurs when responses are equally divided between the two extreme values on a response scale. A PCI_2 of 0 illustrates a distribution with 100% at any one point on the response scale, suggesting complete consensus and no potential for conflict (Vaske et al., 2010).

PCI_2 results are displayed as bubble graphs reflecting the amount of consensus for a given management scenario. The size of the bubble depicts the magnitude of PCI_2 and indicates the extent of potential conflict (or consensus) regarding the acceptability of a particular topic (i.e., degree of dispersion). A small bubble represents little potential for conflict (i.e., high consensus) and a larger bubble represents greater potential for conflict (i.e., less consensus). The center of the bubble represents the mean rating as plotted on the *y*–axis (i.e., central tendency).

This manuscript applies the second generation of the Potential for Conflict Index (PCI_2) (Vaske et al., 2010) to display consensus among fishers' norms for coastal management policies. By using the PCI_2, in combination with the concept of norms and

the CRM, this manuscript examines the role of norms, sanctions, consensus, and conflict among fishers' evaluations of the acceptability of CRM scenarios and policies in three coastal municipalities (Oslob, Santander, and Samboan) of Southern Cebu, Philippines. The following research questions are posed: a) What are fishers' norms concerning the acceptability of CRM policies and initiatives, including MPAs? b) How do fishers' norms of CRM policies differ among coastal municipalities? c) How much local consensus is present concerning the acceptability of CRM policies? d) How does consensus for CRM policies differ among municipalities?

Philippine Coastal Management Context

Philippine fishery laws in the 1990s enable municipal Local Government Units (LGUs) to manage their 15-km municipal waters (Pomeroy, Pido, & Garces, 2009). The Local Government Code of 1991 provides municipalities the opportunity to co-manage their municipal waters with people's organizations (POs) that represent fishers and the different *barangays* or coastal communities within the municipality. The institutional structure provided by Philippine Fishery laws lays out the groundwork for understanding the devolution of responsibilities within the LGUs.

Although municipal LGUs enforce the same set of national coastal policies (e.g., Fisheries Code of 1998), the LGUs use different management styles to fit and adapt to the ecological, geographical, political and financial limitations and context of their municipality. For example, some municipalities cannot afford to provide full salaries for their fish wardens, resulting in limited coastal law enforcement operations. The differences in management styles consequently result in differences in what fishers perceive as acceptable behavior (i.e., norm) and policies concerning CRM. Moreover,

these differences could reflect compliance issues and conflicts attributed to norms and management styles occurring in each municipality.

Research Site Descriptions

The municipalities of Oslob, Santander, and Samboan are located on the southern tip of the province of Cebu, Philippines (Figure 4). Oslob has the greatest number of villages or *barangays*, MPAs, and registered fishers. This municipality also has the largest area of municipal waters and houses in the Sumilon Island Sanctuary, one of the earliest MPAs established in 1973. Santander borders the southernmost barangay of Oslob and is within close distance (approximately 3 km) to Sumilon, providing Santander residents with easy access to Oslob's coastal waters. Santander and Samboan each have one MPA and neighbor the coastal waters of several municipalities within the larger island of Negros. Samboan's municipal waters are part of the Tañon Strait, protected under the National Integrated Protected Areas System (NIPAS) Act. The NIPAS Act, however, may slightly contradict local ordinances and other national fishery laws (e.g., Local Government Code of 1991) that promote the decentralized government infrastructure in the Philippines (Christie, 2005). For example, the NIPAS act requires the Department of Environment and Natural Resources (DENR) to manage protected seascapes such as the Tañon straight, potentially creating conflict between local government decisions and national government decisions about coastal management issues. The legitimacy and contradiction in these laws may influence the CRM norms and conflict in Samboan.

Similarities among the three municipalities include a common membership with the Southeast Cebu Coastal Management Council (SCCRMC), a social network of eight

municipalities that collaborate on managing their MPAs and municipal waters. The SCCRMC can be referred to as an MPA Network council due to the collaborative management of a network of MPAs spanning the Cebu Straight fisheries ecosystem. Some examples of SCCRMC membership benefits involve a joint fish warden commission that patrols all the waters of member municipalities. SCCRMC membership benefits and collaboration have the potential to influence CRM norms, local government institutions, and management styles of member municipalities.

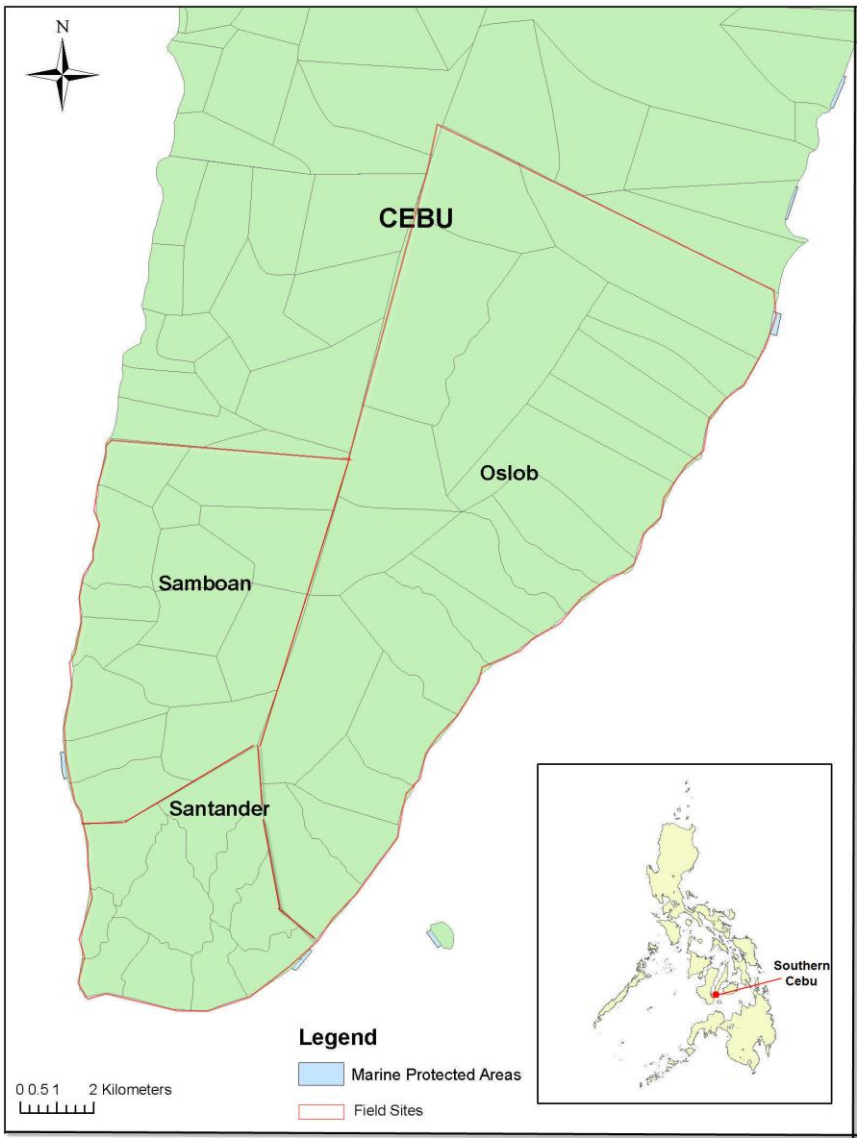

Figure 4. Research Sites in Southern Cebu, Philippines

Methods

Sampling Design

Onsite surveys were administered to fishers through face-to-face interviews[1] conducted from June to August 2009 (response rate ≈ 95%). The total sample was 505, representing southern Cebu municipalities of Oslob (*n* = 279), Santander (*n* = 139), and Samboan (*n* = 87). An official list of registered fishers was obtained from the municipalities of Oslob (N = 1012) and Santander (N = 376). There was no official list for the municipality of Samboan.

Surveys

Surveys were translated from English to the local dialect of *Cebuano* (Appendix B). These surveys were pre-tested with locals and revised in Cebuano. Survey visuals were used to facilitate a respondent understanding of survey questions (Appendix C, Finchum, 2002). This included the use of thumbs up and thumbs down signs to indicate the acceptability[2] of a given CRM scenario. The visuals were associated with a 5-point scale of very acceptable, acceptable, unsure, unacceptable, and very unacceptable.

Survey questions included respondents' evaluations of national coastal policies and scenarios adopted by municipalities. Many of these policies included fish gear regulation, MPA fishing restrictions, and the prohibition of commercial fishers in jurisdictional municipal waters. CRM scenarios also included fish warden enforcement of

[1] The author and community members who had previous survey experience conducted the interviews. Majority of these community members were wives of fishermen, thereby reducing the possibility of social desirability where respondents provide answers that are perceived to be responses desired by the researcher. Several survey training workshops were administered to interviewers. To increase research validity, weekly participatory workshops about the survey process were conducted with interviewees.

[2] In this CRM context, acceptability, agreement and support for a given situation are synonyms in the Cebuano dialect.

coastal policies, personal understanding of CRM policies, fish gear registration, trust for local government institutions, and increase of fish catch since MPA establishment. These scenarios represented context-specific issues of CRM related to concerns such as enforcement of coastal policies affecting coastal management success (Christie et al., 2009).

Variables Description

Municipality (i.e., Oslob, Santander, Samboan) served as the independent variable. Dependent variables included CRM scenarios and policies such as: a) MPA regulations (e.g. restrictions on fishing) b) fish gear and method regulations c) fisher registration d) consideration of community in coastal management e) prohibition of commercial fishers in jurisdictional municipal waters f) fish warden enforcement of coastal policies g) personal understanding of CRM policies h) fisher registration i) trust for local government institutions j) increase of fish catch since MPA establishment and k) communication between fisher organizations and the municipal local government regarding MPA management. Other dependent variables included sanctions for CRM policy violations such as the practice of dynamite and cyanide fishing. All dependent variables are summarized in Tables 2 and 3.

Analysis Strategy

One-way Analysis of Variance and Tamhanes post hoc tests were used to compare the mean normative evaluations among fishers from the three municipalities. Eta (η) served as the effect size measure and was interpreted as .1 (minimal), .3 (typical), and .5 (substantial) relationship (Vaske, 2008). The PCI_2 was used to compare the amount of consensus for CRM scenarios and sanctions for fishing violations among the three

municipalities. Statistical differences between the observed PCI_2 values were calculated using the software available from

http://welcome.warnercnr.colostate.edu/~jerryv.

Results

Norms and Acceptability of CRM policies and scenarios

Fishers' evaluations of CRM policies and scenarios highlighted the study's first research question investigating fishers' norms about the acceptability of CRM policies. In general, fishers' mean evaluation scores ($M \geq .32$) indicated acceptability of CRM, including MPA management and fishery policies[3] (Table 2). Fishers approved of CRM concerning the prohibition of fishing within their MPA (M =. 95). Fishers were least acceptable of fish gear registration (M = .15) and the allocation of fishing permits to non-residents (M = .16).

Fishers were most accepting of sanctions applied to dynamite fishing (M = 1.43), cyanide fishing (M = 1.40), and commercial fishing within jurisdictional municipal waters (M = 1.32) (Table 3). Sanctions applied to fish pot use (M = - 0.174) and unregistered fishers (M = 0.41) were the least acceptable to fishers.

Municipality Differences

The study's second research question concerned municipality differences among fishers' norms of CRM policies. Normative beliefs concerning the acceptability of CRM policies significantly differed among municipalities ($F \geq 4.86$, $p < .002$, $\eta < .427$, in all cases, Table 4). In general, fishers from Oslob were more accepting of CRM

[3] Evaluations were measured on a response scale of 2 to -2, with 2 as very acceptable, 1 as acceptable, 0 as unsure, -1 as unacceptable, and -2 as very unacceptable.

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Table 2. Normative beliefs about the acceptability of coastal resource management (CRM) scenarios

CRM scenario	$\bar{x}$ *
Necessity of buoys to mark MPA	0.93
Prohibition of fishing in MPA	0.95
Zoning of fish pots	0.83
Municipal government regulating MPAs	0.67
Fisher organizations managing MPAs	0.50
Allocating diver user fee revenues to community that manage MPAs	0.84
Lack of communication between Fisher organizations and municipal government	0.35
Community's opinion considered in MPA management	0.71
Allotment of fish warden stipends regardless of whether violators are caught	0.56
Allotting violator fee revenues to fish wardens	0.40
Trust for police in supporting fish wardens	0.45
Preparedness of police for supporting fish wardens	0.62
Fish gear regulations	0.48
Fishing permits for non-residents	0.16
Fish gear registration	0.15
Municipal benefits for fisher registration	0.44
Increase of fish since MPA establishment	0.32

[1]Means refer to a respondent's evaluation based on a response scale of 2 "highly acceptable" to -2 "highly unacceptable".

Table 3. Normative beliefs about the acceptability of sanctions associated with coastal resource management (CRM)

CRM scenario	$\bar{x}$ *
Unregistered boats	0.89
Non-residents fishing in municipal waters	0.98
Cyanide Fishing	1.40
Unregistered fishers	0.41
Commercial fishing in municipal waters	1.32
Residents fishing in MPA no-take zone	1.01
Larger fines for non-residents fishing in MPA no-take zone	1.22
Use of fine mesh nets	0.56
Compressor fishing	1.29
Taking giant clams	0.61
Off-season fishing for rabbit fish	0.64
Use of surface gill net	0.76
Dynamite fishing	1.43
Muro ami fishing[2]	1.14
Lack of building permits for foreshore structures (e.g. sea walls)	1.04
Fishing with *super lights*	1.22
Cutting of Mangroves	1.10
Fish Pot Use	-0.17

[1]Means refer to a respondent's evaluation based on a response scale of 2 "highly acceptable" to -2 "highly unacceptable".

[2]*Muro ami* fishing refers to the use of a drive in gill net and a scare line. Rocks attached to the scare line are used to pound coral and drive fish into the gill net.

Table 4. Municipality differences about the agreement and/or the acceptability of CRM scenarios

CRM scenarios	Municipality[1]			*F*	*p* - value	η
	Oslob	Santander	Samboan			
Necessity of buoys to mark MPA	1.19 [a]	0.81 [b]	0.27 [c]	21.62	<.001	.284
Prohibition of fishing in MPA	0.94 [a]	1.30 [b]	0.42 [c]	14.37	<.001	.238
Zoning of fish pots	0.93 [a]	0.86 [a]	0.49 [c]	4.86	<.001	.143
Municipal government regulating MPAs	0.73 [a]	0.94 [a]	0.05 [c]	19.83	<.001	.274
Fisher organizations managing MPAs	0.72 [a]	0.53 [a]	-0.21 [c]	29.40	<.001	.332
Allocating diver user fee revenues to the community that manages MPAs	1.05 [a]	0.91 [a]	0.09 [c]	29.40	<.001	.329
Lack of communication between Fisher organizations and municipal government	0.60 [a]	0.46 [a]	-0.58 [b]	52.34	<.001	.427
Community's opinion considered in MPA management	0.88 [a]	0.66 [a]	0.25 [b]	11.99	<.001	.218
Allocation of fish warden stipends regardless of whether violators are caught.	0.79 [a]	0.40 [b]	0.11 [b]	12.40	<.001	.221
Allocating violator fee revenues to fish wardens	0.607 [a]	0.403 [a]	-0.233 [b]	14.97	<.001	.240
Trust for police in supporting fish wardens	0.66 [a]	0.49 [a]	-0.21 [b]	19.89	<.001	.282
Preparedness of police for supporting fish wardens	0.74 [a]	0.66 [a]	0.21 [c]	7.15	<.001	.170
Fish gear regulations	0.48 [a]	0.71 [b]	0.08 [a]	6.44	.002	.165
Fishing permits for non-residents	0.26 [a]	0.41 [a]	-0.57 [b]	13.90	<.001	.232
Fish gear registration	0.17 [a]	0.34 [b]	-0.21 [a]	4.30	<.001	.133
Municipal benefits for fisher registration	0.48 [a]	0.60 [a]	0.05 [b]	6.47	.002	.162
Increase of fish since MPA establishment	0.43 [a]	0.42 [a]	-0.20 [b]	11.14	<.001	.209

[1]Means with different superscripts (e.g., 0.739 [a] vs. 0.212[b]) are significantly different from each other at the $p<.05$ level based on the Tamhanes post hoc analysis.

($p < .001$, $\eta <. 427$). Santander fishers were most accepting of MPA restrictions on fishing and fish gear registration ($M \leq 1.31$, $F \geq 4.30$, $p < .001$, $\eta < .338$). Samboan significantly differed from the rest of the municipalities because it had the least acceptance for CRM policies and scenarios. This was evident in Samboan's norms concerning the allocation of fishing permits to non-residents and the lack of communication between fisher organizations and the municipal government ($M > -.58$, $F \geq 4.86$, $p < .001$, $\eta < .427$).

The patterns observed for CRM norms were similar for beliefs concerning the acceptance of sanctions applied to CRM policy violations and scenarios (Table 5). Samboan was the least accepting of sanctions ($M \geq -.45$) while Oslob generally had the most acceptance for sanctions applied to CRM policy violations ($M \leq 1.5$). For sanctions applied to resident fishing in no-take MPAs, Santander had the greatest acceptance ($M = 1.2$), and significantly differed from the other two municipalities ($F = 7.40$, $p = .001$, $\eta = .172$). Most of the differences among municipalities were minimal ($\eta < .221$) with the exception of differences concerning sanctions applied to non-residents fishing in municipal waters ($\eta = .340$) and MPA no-take zones ($\eta = .309$).

Consensus for CRM scenarios, policies and sanctions

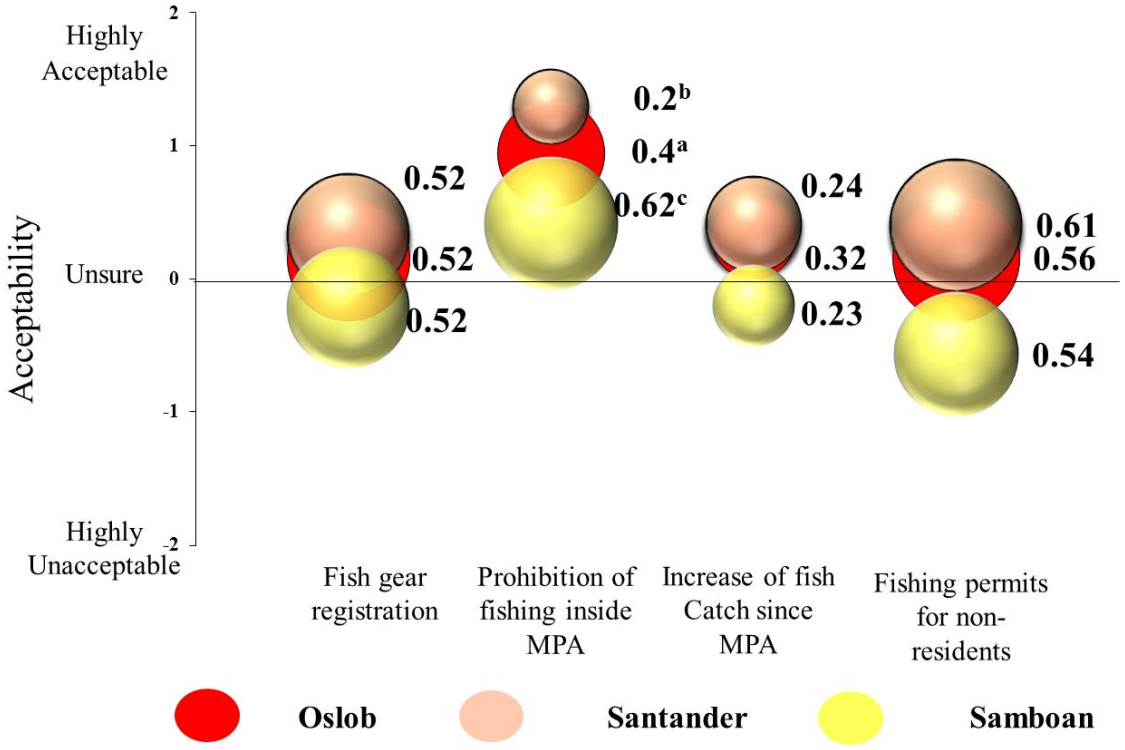
The PCI_2 statistic illustrates our third research question investigating the amount of local consensus concerning the acceptability of CRM policies among the municipalities (Figure 5). In most cases, Oslob had the most consensus ($PCI_2 \leq .56$) and Samboan had the least consensus for CRM policies and scenarios ($PCI_2 \leq .70$) (Table 6). A comparison of CRM scenarios within each municipality revealed Oslob having the least amount of consensus for allocating fishing permits to non-residents ($PCI_2 = .56$).

Table 5. Municipality differences about the acceptability of sanctions for CRM scenarios

	Municipality[1]					
	Oslob	Santander	Samboan	*F*	*p*-value	η
Unregistered boats	1.06 [a]	0.88[a]	0.37[b]	11.15	<.001	0.211
Non-residents fishing in municipal waters	1.31[a]	0.85[b]	0.17[c]	31.72	<.001	0.340
Cyanide Fishing	1.50[a]	1.50[a]	0.94[b]	12.27	<.001	0.221
Unregistered fishers	0.46[a]	0.50[a]	0.07[a]	3.10	.046	0.112
Commercial fishing in municipal waters	1.40[a]	1.42[a]	0.91[b]	9.30	<.001	0.193
Residents fishing in MPA no-take zone	1.02[a]	1.24[a]	0.60[b]	7.40	.001	0.172
Larger fines for non-residents fishing in MPA no-take zone	1.46[a]	1.18[b]	0.54[c]	25.21	<.001	0.309
Use of fine mesh nets	0.63	0.59	0.31	2.05	.130	0.092
Compressor fishing	1.45 [a]	1.26 [a]	0.87[ab]	11.31	.001	0.215
Taking giant clams	0.66	0.63	0.44	1.05	.350	0.065
Off-season fishing for rabbit fish	0.84[a]	0.50[ab]	0.20[b]	8.41	<.001	0.184
Use of surface gill net	0.85[a]	0.75[b]	0.48[b]	2.70	.070	0.104
Dynamite fishing	1.51[a]	1.50[a]	1.04[b]	8.36	<.001	0.184
Muro ami fishing[2]	1.12	1.27	1.00	1.55	.210	0.079
Lack of building permits for foreshore structures	1.07	1.12	0.83	1.99	.140	0.091
Fishing with *super lights*	1.34[a]	1.16[ab]	0.97[b]	4.280	.014	0.132
Cutting of Mangroves	1.13	1.12	0.99	0.63	.530	0.052
Fish Pot Use	-0.14	-0.07	-0.45	2.25	.110	0.096

[1]Means with different superscripts (e.g., 1.29 [a] vs. 0.65[b]) are significantly different at the $p<.05$ level based on the Tamhanes post hoc analysis.

[2] *Muro ami* fishing refers to the use of a drive in gill net and a scare line. Rocks attached to the scare line are used to pound coral and drive fish into the gill net.



** PCI_2 values with different superscripts are significantly different at the $p < .05$ level*

Figure 5. Acceptability and consensus for CRM scenarios

Table 6. Potential for Conflict Indices (PCI_2) displaying the amount of consensus for CRM scenarios.

CRM scenarios	Municipality[1]		
	Oslob	Santander	Samboan
Necessity of buoys to mark MPA	0.24 [a]	0.31 [a]	0.70 [b]
Prohibition of fishing in MPA	0.40 [a]	0.20 [b]	0.62 [c]
Zoning of fish pots	0.27 [a]	0.24 [a]	0.51 [b]
Municipal government regulating MPAs	0.18 [a]	0.14 [a]	0.42 [b]
Fisher organizations managing MPAs	0.09 [a]	0.11 [a]	0.32 [b]
Allocating diver user fee revenues to the community that manages MPAs	0.10 [a]	0.16 [a]	0.44 [b]
Lack of communication between fisher organizations and municipal government	0.08 [a]	0.06 [a]	0.23 [b]
Community's opinion considered in MPA management	0.12 [a]	0.22 [b]	0.36 [b]
Allocation of fish warden stipends regardless of whether violators are caught.	0.25 [a]	0.41 [b]	0.41 [b]
Allocating violator fee revenues to fish wardens	0.33 [a]	0.38 [a]	0.39 [a]
Trust for police in supporting fish wardens	0.17 [a]	0.24 [a]	0.39 [b]
Preparedness of police for supporting fish wardens	0.21[a]	0.26[ab]	0.41 [b]
Fish gear regulations	0.38 [a]	0.42[ab]	0.53 [b]
Fishing permits for non-residents	0.56 [a]	0.61 [a]	0.54 [a]
Fish gear registration	0.52 [a]	0.52 [a]	0.52 [a]
Municipal benefits for fisher registration	0.21 [a]	0.35 [b]	0.44 [b]
Increase of fish since MPA establishment	0.24 [a]	0.32 [a]	0.23 [a]

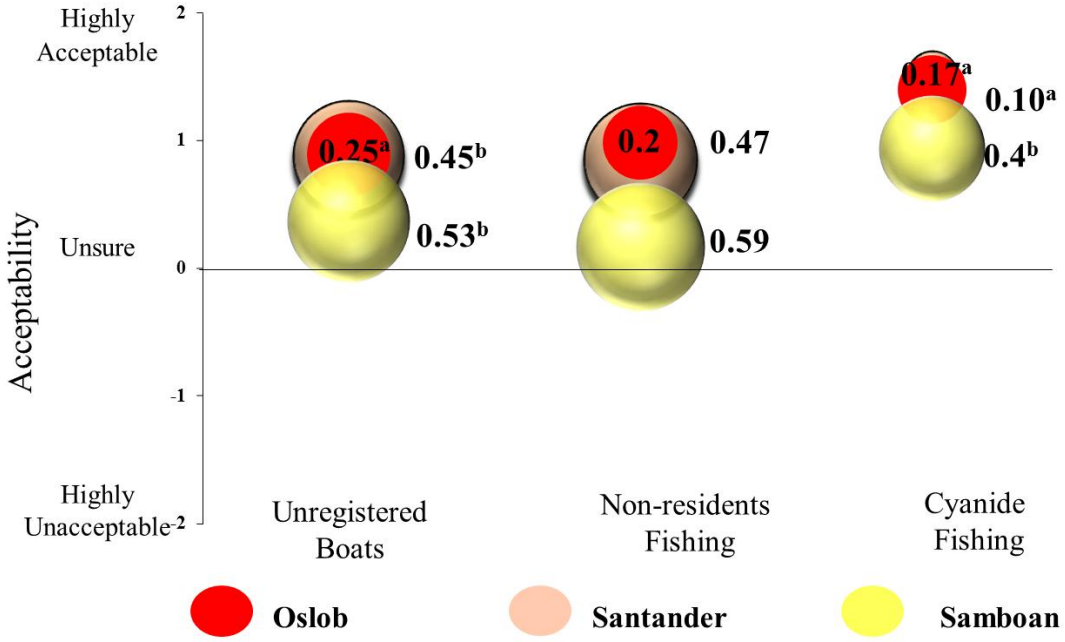
[1]PCI_2 with different superscripts (e.g., 0.11[a] vs. 0.32[b]) are significantly different from each other at the $p < .05$ level based on the PCI_2 Difference test.

Oslob had the most consensus for the belief that communication was lacking between the municipal local government and fisher organizations (PCI_2 = .08). Similarly, Santander and Samboan had the most consensus for the latter scenario (PCI_2 = .06; PCI_2 = .23). Santander had the least consensus for allocating fishing permits to non-residents (PCI_2 = .61). Lastly, Samboan had the least amount of consensus for the necessity of buoys to mark their MPA (PCI_2 = .71).

The PCI_2 difference test reflected municipality differences on the amount of consensus for CRM policies and scenarios, clarifying the study's fourth research question (Table 6, Figure 5). In general, Samboan's consensus for CRM was significantly less than the rest of the municipalities ($PCI_2 \leq .70$). Cases where the three municipalities did not significantly differ included the allocation of violator fee revenues for supporting fish wardens ($PCI_2 \leq .39$), the provision of fishing permits to non-residents ($PCI_2 \leq .61$), and the increase of fish catch since MPA establishment ($PCI_2 \leq .32$). All municipalities had the same amount of consensus for fish gear registration (PCI_2 = 0.52). Santander had the most consensus for the prohibition of fishing within the MPA no-take zone ($PCI_2 \leq .20$). Oslob had the most consensus for the consideration of the community's opinion in MPA management (PCI_2 = 0.12) as well the acquisition of municipal benefits for fisher registration (PCI_2 = 0.21).

Similar to previous results, Samboan had the least amount of consensus for sanctions applied to all CRM scenarios ($PCI_2 \leq .36$) (Figure 6, Table 7). In particular, Samboan had the least amount of consensus for sanctioning non-resident fishing in municipal waters (PCI_2 = .59) and the use of fine mesh nets (PCI_2 = .63). Among the three municipalities, Santander had the least amount of consensus for sanctioning

unregistered fishers (PCI_2 = 0.59), followed by Samboan (PCI_2 = .56) and Oslob (PCI_2 = .47) (Figure 6). Oslob and Samboan had the least consensus for sanctioning fish pot use (PCI_2 = .52) and were significantly different from Santander (PCI_2 = 0.41). Cases where municipalities did not significantly differ was the consensus on sanctioning non-resident fishing in municipal waters ($PCI_2 \leq .20$), *muro-ami*[4] fishing ($PCI_2 \leq .22$), and the cutting of mangroves ($PCI_2 \leq .41$).



** PCI_2 values with different superscripts are significantly different at the $p < .05$ level*

Figure 6. Acceptability and consensus for sanctions applied to CRM policies

[4] *Muro ami* fishing refers to the use of a drive in gill net and a scare line. Rocks attached to the scare line are used to pound coral and drive fish into the gill net. *Muro ami* is prohibited by the Philippine Fisheries Law (R.A. 8550).

Table 7. Potential for Conflict Indices (PCI_2) displaying the amount of consensus for the sanctions applied to CRM scenarios.

CRM scenarios	Municipality[1]		
	Oslob	Santander	Samboan
Unregistered boats	0.25 [a]	0.45 [b]	0.53 [b]
Non-residents fishing in municipal waters	0.20 [a]	0.47 [a]	0.59 [a]
Cyanide fishing	0.17 [a]	0.10 [a]	0.400 [b]
Unregistered fishers	0.47 [a]	0.59 [ba]	0.56 [a]
Commercial fishing in municipal waters	0.16 [a]	0.23 [a]	0.43 [b]
Residents fishing in MPA no-take zone	0.37 [a]	0.28 [a]	0.59 [b]
Larger fines for non-residents fishing in MPA no-take zone	0.10 [a]	0.30 [a]	0.55 [b]
Use of fine mesh nets	0.38 [a]	0.41 [a]	0.63 [b]
Compressor fishing	0.11 [a]	0.22 [a]	0.44 [b]
Taking giant clams	0.39 [a]	0.37 [a]	0.60 [b]
Off-season fishing for rabbit fish	0.37 [a]	0.47 [a]	0.65 [b]
Use of surface gill net	0.44 [a]	0.35 [ab]	0.54 [a]
Dynamite fishing	0.18 [a]	0.18 [ab]	0.37 [a]
Muro ami fishing	0.31 [a]	0.22 [a]	0.39 [a]
Lack of building permits for foreshore structures	0.19 [a]	0.22 [ab]	0.40 [b]
Fishing with *superlights*	0.17 [a]	0.24 [a]	0.38 [b]
Cutting of Mangroves	0.19 [a]	0.17 [a]	0.36 [a]
Fish Pot Use	0.52 [a]	0.41 [ba]	0.51 [a]

[1]PCI_2 with different superscripts (e.g., 0.11^a vs. 0.32^b) are significantly different from each other at the $p < .05$ level based on the PCI_2 Difference test.

Discussion

Fishers' evaluations reflected acceptability of MPA policies. There was less acceptance and consensus for policies that involved regulating municipal waters outside of MPA borders. Some of these policies included fish gear registration and the provision of fishing permits to non-residents. These results have implications regarding norms and the acceptability of regulating fishing access outside MPAs. First, MPA policies are somewhat acceptable and supported by fishers from these municipalities, reflecting well-enforced and established norms of small no-take MPAs. These results are comparable with Christie et al.'s (2009) research showing significant correlations between community support for MPAs and improved enforcement of MPA policies in Southern Cebu, Philippines. Second, regulating fishing effort (e.g., regulating fish gear and restricting access to non-resident fishers) beyond MPA boundaries are emerging norms that potentially create conflict among resource users and local government. This situation is reflected in the low acceptability and consensus for fish gear registration and fishing permits to non-residents. Implications for these results indicate early institutional attempts to implement Ecosystem Based Management (EBM), where fisheries management spans beyond MPAs and includes regulating a network of jurisdictional waters of a region (Eisma-Osorio et al., 2009; Christie et al., 2009). These management attempts help establish norms concerning fishing effort and access within municipal waters.

The legitimacy of norms and sanctions are crucial for sustaining acceptability and compliance for coastal management policies (Christie et al., 2009). Sanctions for destructive fishing practices, such as dynamite and cyanide fishing, were the most

acceptable for fishers. These results imply that sanctioning destructive fishing practices is a well-enforced and established norm for these municipalities. The results are contrary to situations in Cebu (e.g., Olango Island) where dynamite fishing occurs due to weak law enforcement (Armada et al., 2009; Green et al., 2004).

Enforcing sanctions for potentially destructive fishing practices such as fish pot[5] use were the least acceptable among fishers. Oslob had low acceptability and consensus for sanctioning fish pot use because of the large number of fishers that use fish pots. Implications for sanctioning fish pot use will likely create conflict among fishers due to low acceptability, consensus, and national legislation (e.g., Fisheries Code of 1998) currently legalizing its use. Municipality differences on fishers' acceptability and consensus for CRM policies imply various management styles and localized norms for enforcing national fishery laws. These management styles along with CRM government institutions may affect fishers' perception, acceptability, and consensus for CRM policies. For example, Samboan permits some commercial fishing to occur within their jurisdiction, despite that it is illegal for neighboring municipalities. This situation reflects Samboan's low acceptability and consensus for providing fishing permits to non-residents (often commercial fishers) from nearby municipalities and islands. On the other hand, Oslob had the most acceptability and consensus for CRM likely due to well-established and consistently enforced policies by government staff and fish wardens.

All municipalities did not differ in their amount of consensus (PCI_2 values) for their belief that fish catch had increased since MPA establishment. However, the average

[5] Fish pots can be destructive when they are dragged along the reef bottom and destruct coral reef habitat. The current can lose fish pots that serve as "ghost nets", trapping unconsumed fish. Despite its destructive potential, it is difficult to regulate fish pot use due to its legal designation as passive fish gear permitted within municipal waters

level of agreement (i.e., mean evaluation scores) did significantly differ among municipalities. Santander and Oslob were unsure whether their fish catch had increased while Samboan fishers felt that their fish catch had not increased since the establishment of their MPA. These perceptions and normative beliefs are crucial for influencing compliance and community support for MPAs and CRM policies. Previous studies done within the municipalities showed that fishers' perceptions of increased fish catch since MPA establishment are significantly correlated to community support for MPAs (Christie et al., 2009) and coastal management success (Lowry et al., 2009).

Understanding norms and consensus for CRM scenarios enables managers and local government institutions to better manage conflict and garner public support and compliance for coastal policies. Conflict is not only influenced by consensus for such policies, but norms concerning the legitimacy, enforcement, and sanctions associated with CRM policies. Context-specific CRM scenarios reflect norms that guide managers to focus on policies and proposals salient to fishers. The identification of these salient policies is crucial for attaining public support and compliance. For example, identifying salient proposals such as regulating fishing effort and access outside MPAs for non-resident artisanal fishers would be the first step for managers to understand public support and compliance. Once salient proposals are identified, a focus on context-specific scenarios can guide managers to further understand public support and compliance for such policies. Context-specific scenarios could include fishers' low support for regulating fishing access due to ecological processes such as ocean current dispersing neighboring non-resident fishers to off-limit municipal waters, and consequently getting sanctioned by fish wardens. Management recommendations could include permitting non-resident

fishers from *barangays*/villages bordering a municipality to fish within the municipality's jurisdiction. This management action would be feasible through boat registration identifying fishers residing from specific villages of a municipality. The SCCRMC has discussed the proposal of permitting fishers from all member municipalities to fish within jurisdictional waters of the SCCRMC encompassing the Cebu Strait fisheries ecosystem (Eisma-Osorio et. al, 2009). However, this proposal has not been undertaken due to lack of consensus for some municipalities.

Theoretical Implications: Norm Influence on Stakeholder Consensus and Behavior in CRM

Consensus and acceptability for coastal management proposals and policies is linked with the concept of norms concerning management styles and socio-political contexts of a municipality. Furthermore, understanding the concept of norms and how it has been used by social psychologists can advance our understanding on the influence of norms on consensus and behavior toward management proposals and policies (see Vaske & Whittaker 2004 for a review). Some social psychologists concentrate on the variables that serve to focus or activate a norm, while others address how social pressure can influence behavior or aid in the diffusion of ideas (e.g., coastal educational programs diffused through social groups) (Pietri et al, 2009). Norm theories also differ in how they measure the concept of norms. Norm focus / activation theories measure norms at the individual level (i.e., personal norms) and then aggregate the data to derive social norms. The theory of reasoned action (Fishbein & Ajzen, 1975), in contrast, focuses primarily on perceived social norms (i.e., subjective norms). Under this paradigm, subjective norms refer to what you think others would want you to do. The concept of subjective norms

can clarify the influence of social groups on conflict and acceptance for specific coastal management proposals. Further studies on the influence of subjective norms and social norms on stakeholder behavior for CRM policies and initiatives can also increase our understanding of conflict, consensus, and public support for coastal management proposals and initiatives.

Future Research and Limitations

Future research can include investigating emerging norms, such as the regulation of fishing effort and access in municipalities in Cebu, Philippines. The focus on a few salient policies (e.g., regulating the number of fishers that can enter municipal waters) enables local governments and managers to understand and narrow down specific factors affecting policy compliance. An avenue for future research could include investigating the relationship of regulating fishing effort with consensus and community support for EBM proposals. These studies could benefit collaborative local government groups such as the SCCRMC, which are moving toward EBM policies and initiatives in Southeastern Cebu (Eisma-Osorio et al, 2009)

Limitations of this study involve a sample representing fishers, one of the main stakeholders affected by CRM implementation at the different communities. While much of the literature has focused on stakeholders representing local governments (i.e., *barangay* or village captains), more studies are needed to represent different stakeholders from the communities (e.g., artisanal fishers, tourist operators and fish vendors) that do not participate in managing municipal waters, but are mandated to comply with CRM policies. Perspectives of stakeholders from the municipality and the communities enable a better representation of norms, conflicts, and support for CRM policies.

Further studies could also include investigating factors, such as political will, institutional strength, and legitimacy of policies that influence public support, consensus and conflict about a given CRM scenario. Studies are also needed on the influence of sanctions and incentives for compliance and support for coastal management policies. These studies could enable local governments and managers to better evaluate CRM policies and educational programs that utilize incentives (e.g., search and rescue benefits for registered fishers) intended to influence fisher behavior and compliance for such policies.

The applicability and use of the PCI_2 to influence local government decisions in coastal management should be further investigated. This paper presented PCI_2 findings to SCCRMC and the municipal local governments of Oslob, Santander, and Samboan. In general, local government officials understood PCI_2, predicted some of the PCI_2 results for their municipality, and were receptive to discussing implications of PCI_2 values to municipal coastal management programs. Future studies could entail management actions taken to address conflicts displayed by PCI_2. A mixed methods study incorporating quantitative and qualitative methods (e.g., in depth interviews), would be more appropriate to investigate local government responses and management actions based on PCI_2 values of specific municipalities. These future studies could help governmental and non-governmental institutions make well informed management decisions that support stakeholders and manage coastal resources.

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CHAPTER FOUR

MANUSCRIPT II. DIVING UNDER THE SURFACE: INVESTIGATING INSTITUTIONAL ACCOUNTABILITY AND CONFLICT IN COASTAL RESOURCE MANAGEMENT

Abstract

Coastal issues in the Philippines reflect global trends where mass habitat destruction compromise livelihoods and food security. A major piece of managing such issues requires understanding the role of institutional accountability in coastal resource management (CRM) at the local government. This investigation explores institutional conflict and accountability within a coastal municipality in Cebu, Philippines.

Specifically, using in-depth interviews, I explore stakeholder perceptions of common CRM issues, including institutional accountability for CRM. Second, I investigate the institutional relationships among stakeholders who are accountable for CRM. Lastly, I examine how these institutional relationships and stakeholder perceptions affect the overall outcome of CRM at the community, municipality, and the MPA Network scales. My interpretive analysis reveals that conflicts concerning institutional accountability for CRM are often at the root of problems of implementing and enforcing coastal management initiatives and policies within the different communities of the municipality.

Introduction

The coastal situation in the Philippines reflects global trends where unsustainable use of coastal resources results in mass habitat destruction, pollution, and significant threats to food security. Coastal Resource Management (CRM) addresses these coastal issues with a variety of tools and evolving frameworks including Marine Protected Areas (MPAs), Integrated Coastal Management (ICM), and more recently Ecosystem Based Management (EBM) (Pomeroy et al., 2009). These frameworks have common goals of sustaining coastal ecosystem function by achieving the balance of environmental and socioeconomic goals (Christie et al., 2009). As a result of integrating CRM frameworks, fishery laws in the 1990s enable the Department of Agriculture - Bureau of Fisheries and Aquatic Resources (DA-BFAR) and the municipal Local Government Units (LGUs) to manage coastal waters (Pomeroy et al., 2009). The Local Government Code of 1991 provides LGUs the opportunity to co-manage the municipal waters with people's organizations (POs) that represent the communities within the municipality. The Fisheries Code of 1998 mandates the creation of Fisheries and Aquatic Management Councils (FARMC) at the community, municipal, and national level. The FARMC at the municipal level is composed of the Municipal Agricultural Officer (MAO), Municipal Planning and Development Council Officer (MPDC), a representative of Department of Agriculture (DA), Fish Warden Organization, chairperson of the Fishery committee of the Municipal Council, fisher folk representatives, and NGOs (DA-BFAR, 1998). The FARMC at the community level consists of community leaders, fish folk association

and community residents.

The institutional structure provided by Philippine Fishery laws lays out the groundwork for understanding the devolution of responsibilities and duties of committees within the LGU. In general, it is the Municipal Council (SB) that enacts local ordinances, the fish wardens who enforce those ordinances and the MFARMC and the MAO that head CRM and coastal law enforcement (CLE). As a consequence of this institutional structure, conflicts attributed to coastal resource management are supposedly collaboratively addressed among responsible committees and officers such as the municipal FARMC (MFARMC), Fish Warden Commission (FWC), and the MAO. These parties along with the municipal mayor form and enact a CRM plan that is intended to be co-managed with the different communities of the municipality.

The CRM committees within the LGU attain support from the Marine Protected Area (MPA) Network, a social network consisting of representatives from seven LGUs that share common goals of collaboratively managing the region's municipal waters, including 21 MPAs sites. Some of these management goals include coastal law enforcement, foreshore management and fisheries and habitat management. Current efforts to achieve these goals include adopting a common policy framework, monthly collaborative meetings and training workshops supported by local NGOs.

Despite the support that local governments receive from the MPA Network and the legal mandate for the institutional structure for CRM, it is unclear exactly how CRM issues are addressed by the accountable CRM committee members within the municipality. The seemingly obscure enactment of CRM issues leads to three main research questions: 1) What are stakeholder perceptions of institutional accountability for

CRM? 2) What are the institutional relationships among stakeholders who are accountable for CRM? 3) How do these thee stakeholder perceptions impact CRM at the community, municipality, and the MPA Network scales? To address these questions, I present an in-depth case study of a coastal municipality in Cebu, Philippines. I conducted 23 in-depth interviews revealing several perspectives of institutional accountability and interpersonal conflict among the various CRM stakeholder groups. In this context, institutional accountability involves answerability, wherein public officials are obligated to explain and understand their roles in CRM, as well as enforcement in which institutions enforce appropriate sanctions to CRM violators (Shedler, 1999). The analysis of institutional accountability through in-depth interviews provides a deeper understanding of underlying challenges in implementing and enforcing CRM initiatives within the municipality. Furthermore, the analysis of institutional conflicts provides a more transparent picture of the cascade of consequences experienced by the community members who are directly affected by the enforced coastal resource management regulations and initiatives.

Case Study Context

This coastal municipality consists of six coastal communities and four mountainous communities with a growing population of more than 15,000 residents with over 10,000 residents living on the coast (Municipal CRM Plan, 2005). The municipality is less than 10 km from neighboring islands, which lends itself to unique socio-ecological implications that affect adjacent municipalities. This location includes an abundance of fisheries that attract recreational divers and dive resort operators as well as commercial fishers who illegally fish within municipal waters. The LGU and fish wardens have the

challenge of managing and controlling municipal waters that abut the neighboring jurisdictional waters of three additional municipalities.

In order for the municipal local government to tackle their coastal challenges, the active involvement and collaboration of MFARMC members, including the MPDC, fish wardens, and most importantly the MAO as a representative to the DA is crucial. Typical CRM plans in the region state that the MAO oversees the entire operations of the CRM team for implementing CRM activities (Samboan CRM Plan, 2002). In fact, the municipality's CRM plan specifically states that the MAO "ensures assistance and access to resources in the production, processing and marketing of marine products to fishers and entrepreneurs; conducts continuing studies, research, and training programs for stakeholders' capability strengthening" (Municipal CRM plan, 2002, p. 47). Other regions in the Philippines state that the MAO is responsible for the implementation of fishery projects in the municipality (Campos, 2009). Based on the mandate provided by the Philippines Fishery Law of 1998, the MAO is a key player in the MFARMC team to address CRM issues within the municipality. Figure 7, taken from the Municipality's CRM plan, show the MAO's position along with other members of the LGU. While there are many players within the LGU for CRM, the visual connection of the MAO to the communities (as shown by the dotted lines in Figure 7) represent the duty of the MAO to facilitate the co-management approach between the communities and the LGU. In fact, all of the local CRM ordinances in this community include the MAO as the one of the key people who "takes the lead for implementing the ordinance" (Municipal Office of the Sanggunian Bayan (SB) Ordinance No. 090, Article 5, Sec. 3, 2008).

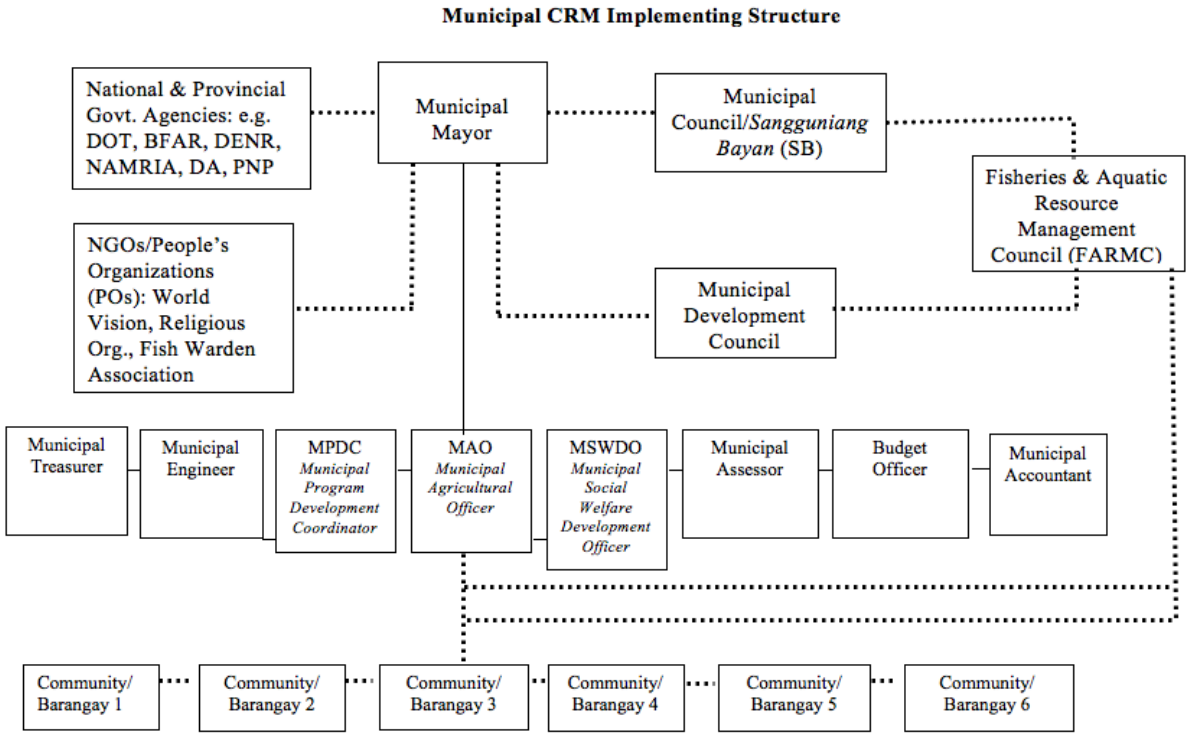

Figure 7. Institutional Structure for Coastal Resource Management at the Municipality

Where do the fish wardens fit into the institutional structure? Fish wardens are certainly not part of the LGU, but they work closely with the LGU and NGOs as enforcers of CRM ordinances. Furthermore, fish wardens serve as community consultants to the mayor as well as the MFARMC. Like many community or people's organizations (PO) in the Philippines, the Fish Warden Commission (FWC) started as a volunteer organization to patrol municipal waters and MPAs for illegal fishers, including commercial fishers. The FWC has been strengthened over the last several years by the local NGO that provides technical training on apprehension of illegal fishers. The implementation of a dive user fee has provided the municipality with funds to support six fish wardens with a monthly honorarium of about US $30. The small honorarium is for the 24–hour patrol of municipal waters, the apprehension of illegal fishers, dive user fee collection, court appearances, and the writing of police reports for the Philippine National

Police (PNP). In an interview, an NGO representative confirmed that fish wardens often risk their lives and bear the burden of responsibility when they patrol municipal waters in their small outrigger boats and apprehend commercial fishers.

Methods

This research is part of a larger study focused on analyzing stakeholder perspectives of coastal resource management (CRM) policies at the levels of the community, municipality, and the MPA Network. The larger study included structured survey interviews at the community level, participant observation of workshops at the municipal level, and semi-structured interviews at the community, municipal, and MPA network level. Structured surveys and semi-structured interviews focused on specific CRM policies and initiatives pertaining to a priori categories of fish gear and method regulations, zoning within MPAs, allocation of funds, sanctions for fishing violations, community-based management, education awareness programs, and livelihood programs.

The preliminary analysis of tape-recorded semi-structured interviews occurred when I clarified and expanded on the main points of interviews documented in my field notes, a process called note expansion (Mahoney, 1997). As I further analyzed my interviews, patterns and themes of institutional conflict and accountability emerged, specifically for the municipality of this case study. Thus, this study is a focused exploration of these themes through in-depth interviews and participant observation of meetings with key informants of the municipality.

Confidentiality and Anonymity

I obtained permission from my interviewees to display results for research purposes. To ensure the anonymity of interviewees, no names were used. Some

pseudonyms, such as the Fish Warden Commission (FWC) and the MPA Network were used in this manuscript. Furthermore, the municipality is not mentioned, making it difficult for Cebuano residents and Philippine coastal managers to determine the municipality and the exact local government identities in Cebu. The identity of the NGO in this municipality was also kept anonymous. There are other NGOs in this municipality, making it challenging to determine which NGO was directly involved with issues presented in this manuscript.

Data Collection

I conducted a total of 23 in-depth and semi-structured interviews, with eleven community members, seven municipality representatives, two MPA Network members, and three NGO representatives. I conducted these interviews to gain a better understanding of the perspectives of stakeholders representing the community, municipality, and the MPA Network (Table 8). Stakeholders from the community primarily involved the fish warden leader, fish warden members, artisanal and commercial fishers, *barangay* or village captains, and women of the community. Interviewees from the municipality encompassed the Mayor, Vice-Mayor, fish warden consultant/mediator, director of the Philippine National Police (PNP) headquarters at the municipality, and members of the MFARMC (Municipal Fisheries and Aquatic Resources Management Council). MFARMC members included the Municipal Agricultural Officer (MAO), fishery technician and the Municipal Provincial Development Coordinator (MPDC). Key informants from the MPA Network included the president of the CRM council as well as the MPA Network's secretariat representing the

said municipality. Lastly, interviewees at the NGO level included community organizers, facilitators, and the manager of the local governance project of the NGO.

Table 8. Key informants interviewed at different level/scales

Level	Key Informants/Stakeholders
Community	Fish Warden Leader Fish Wardens Artisanal Fishers Commercial Fishers Barangay/ Community Captains Community Residents (including women)
Municipality	Mayor Vice-Mayor Municipal Agricultural Officer (MAO) fishery technician Municipal Planning and Development Council Officer (MPDC)
MPA Network	Chairman of the Coastal Resource Management Council Secretariat at the said municipality
NGO	NGO representative living at the said municipality Community organizers Facilitators Project Manager

I observed five meetings and workshops held among MPA Network members. The length of time for both in-depth and semi-structured interviews ranged from 20 minutes to a maximum of two and a half hours. Meetings and workshops held at the MPA Network and municipality from one-day meetings to three-day workshops. To get a more in-depth understanding of the context of the municipality, I also obtained meeting/workshop minutes, coastal resource management planning documents such as

the municipal five-year CRM plan, and public records on coastal law enforcement issues within the municipality.

I interviewed stakeholders in their native language of Cebuano. The interview transcription process first involved transcribing interviews in Visayan and afterward translating the transcripts to English. I transcribed over 54 hours of interviews resulting in approximately 274 pages of transcripts. Furthermore, I used a research journal and note expansion to supplement the transcription process, particularly for those interviews that occurred with key informants such as the fish warden leader and the MAO.

Analysis

I used the Interpretive Phenomenological Analysis (IPA) process to analyze content of the interviews, public documents, and workshops. IPA is concerned with lived experiences, how that person perceives the experience, and the researchers' interpretation of the person's lived experience (Smith & Osborn, 2000). I applied the IPA process by living in one of the small communities within the municipality, specifically in the fish warden leaders' home for approximately three months from mid-May to early August of 2009. This personal experience enabled me to have access to create connections with the community and the local government of the municipality. Furthermore, this experience enabled me to observe typical events of CRM and coastal law enforcement (CLE) within the community (e.g. listening to fish wardens talk about their day of patrolling municipal waters). Previous experience with the CCE and MPA Network members since 2004 also provided the crucial relations of trust for stakeholders to share their lived experiences and perception of CRM and CLE with the researchers.

As mentioned previously, I used specific a priori categories of interview questions that were part of larger study aimed at understanding stakeholder perceptions of CRM and CLE policies and initiatives. Initially, I did not intend to focus on and understand institutional conflict and accountability within the municipality. However, through the process of note expansion and the coding of transcribed interviews, the themes of institutional conflict and accountability emerged through all of the interviews within one municipality. After themes of institutional conflict and accountability emerged through verbatim statements of interviewees, I verified these themes with key informants, specifically with key informants such as the fish warden leader, the MAO, and NGO representative who had been living and collaborating in the community for several years.

Methods for analyzing interviews, public documents, and workshops involved conflict mapping or situation mapping (Fisher et al., 2005; Daniels & Walker, 2001). Daniels and Walker (2001) define conflict mapping as the process of visually representing a situation in order to create a systemic understanding of the relationships among stakeholders. Based on the insights of each individual stakeholder, I symbolized weak, strong, and conflicting relationships of stakeholders with one another through different arrows. This process was repeated for each stakeholder mentioned in other interviews to get a more representative picture of the participants' perceptions and lived experiences of institutional conflict and accountability. Through the conflict mapping process, I analyzed the relationships or lack thereof among stakeholders within the community, municipality, and the MPA network levels. I also used the conflict mapping process to further understand and link stakeholder relationships with the overall issue of

institutional accountability, organization, and processes affecting different stakeholder groups.

Participatory processes and the verification of conflict maps

Upon completion of the conflict maps, I personally presented and verified these maps with key informants, including the fish warden leader and MPDC in June, 2010. I asked the key informants for any changes that they would like to see displayed in the conflict maps. In general, the key informants agreed with my interpretations of these maps and requested a few changes to the strength of arrows among fish wardens and the municipal council displayed in the maps. I incorporated these changes to the conflict maps based upon the requests of the key informants.

Results and Discussion

I will discuss stakeholder perceptions of institutional accountability and conflict regarding coastal management issues at three scales: the community, municipality, and MPA Network scale. I use a progression of conflict maps to reveal stakeholder relationships and associated perceptions of CRM within and across multiple scales (Figures 8, 9, 10, & 11). The increasing complexity of the conflict maps illustrates my research questions: 1) What are stakeholder perceptions of institutional accountability for CRM? 2) What are the institutional relationships among stakeholders who are accountable for CRM? 3) How do these stakeholder perceptions and relationships impact CRM at the community, municipality, and the MPA Network scales?

Stakeholder Perceptions

Key members of the MFARMC team, including the MAO, MPDC, and the fishery technician, report conflicting perceptions of institutional accountability of CRM within

the municipality. The DA-BFAR has been the lead organization, responsible for implementing the Fisheries Code of 1998 and provides the institutional structure to the local government through the creation of the MFARMC with the MAO and fishery technician as key players and collaborators of DA. Despite this institutional structure, the MAO does not believe that she should be held accountable for CRM initiatives within the municipality:

> Look what my job title says, Municipal Agricultural Officer, there is no fisheries included in my job title, nothing about fisheries… they [DA-BFAR] just added on the responsibility for the MAO to take care of fisheries…. That's why I have assigned a fishery technician

The fishery technician, working directly for the MAO, consequently does not consider CRM and CLE as her top priority. The fishery technician explained: "It's not like I only have to take care of CRM and CLE activities. I have to deal with all the agricultural issues as required by my boss [MAO]."

The MPDC, who is an active member of the MPA Network, has openly acknowledged the issue of institutional organization and accountability for implementing CRM in the municipality:

> There is a lack of organizational structure in CRM. It is only the organizational structure that we lack [in our municipality]. With regards to coastal management, it is the DA who should be appropriated for the job. We do not have someone in charge to deal with CRM. The MAO is in charge, and this is a problem. The technical knowhow [of the DA and MAO] is also problem, especially with the procurement of equipment [for CRM

> initiatives]… there is also a problem with finding a main person to give first hand decisions to the fish warden commission. Our problem is our municipality's DA. Sometimes, when the NGO gives technical workshops for the local government on coastal resource management, the DA [MAO] does not attend. Usually, it's me that is brought to attend these workshops… that's the problem and it's actually their [MAO and fishery technician] responsibility to attend.

The NGO that has mobilized local governments to sustain CRM programs in the municipality for the past decade also recognized the issue of institutional accountability. The NGO representative of the municipality acknowledged the lack of the MAO's leadership and cooperation necessary for directing CRM programs in the municipality.

Sentiments regarding issues of institutional accountability within the MFARMC team are felt strongly by the Fisher Warden Association (FWA), particularly with the fish warden's interactions with the MAO and fishery technician. The leader of the fish wardens explained that both the MAO and the fishery technician have told him: "Hey, you should be grateful that I am helping you do your job with CRM programs!" Similar to the sentiments of the MPDC and the NGO, the fish wardens feel that the MAO's and fishery technician's denial of their CRM duties has led to institutional disorganization and the uneven burden of CMR responsibilities. These sentiments are evident by the fish warden leader statements:

> I should be grateful? …. and what is the title with my position within the local government?... a laborer!… what do I get paid?… a monthly salary of US $40 for leading the fish warden commission…. and I have to be the

> frontline on all the court cases? [Cases related to apprehension of CRM ordinance violators] But who has to take the risk? Is it them? The number of cases will drive you crazy... when someone is to be apprehended, I have to go out of my way with my motorcycle to town and to the police office to write a report. Is the MAO there? Is the fishery technician there? … I face all the apprehension issues, cases, attend the meetings that the MAO doesn't attend, give the MAO handouts and my notes for the workshops that she was supposed to attend, face court issues, and give dive user fee reports. I have to tell you my story, the [CRM and CLE] problems of the municipality are added upon my fish wardens…and I have to face all the blame [as a fish warden leader]**…**And she [MAO] says we should be grateful?!!!...She, herself violated the local CRM ordinance by building her deck over the ocean and blocking public beach access!

The attitude and behavior of the MAO and fishery technician toward coastal management initiatives lead to the question of the legitimacy of the CRM leadership within the municipality. The fish wardens who network with other fish wardens from neighboring municipalities communicate and compare the direction and leadership that they obtain from their MAO. The active participation of the MAO in the neighboring municipalities as well as the 1998 Fishery Law that clearly states the importance of the MAO in CRM provides grounds for the fish wardens, the MPDC, NGOs, and the rest of the local government to question the legitimacy of the MAO and fishery technician. Interviews with the fish warden leader indicate that the only factor missing in the municipality is the leadership and accountability from the MAO and the fishery

technician. As mentioned earlier, the MPDC also emphasized the need for accountability and organization from the MAO as a representative of the DA.

Observations of a fish warden meeting led by the fishery technician on June 21, 2009, reflect the lack of trust and legitimacy for the CRM programs led by the MAO. The fishery technician was over an hour late and did not apologize to the fish wardens who were present nor did she set an agenda for the meeting. Several fish wardens had talked at the same time and appeared to mock some of the statements of the fishery technician. The fish warden leader who was frustrated with the situation, stepped out of the meeting after the fishery technician had honestly questioned a technical issue of using GPS coordinates when fish wardens apprehend illegal commercial fishers. When I asked the fish warden leader about his frustration, he mentioned that he was mainly offended because he has genuinely offered to provide information to the fishery technician and the MAO numerous times for the past couple of years. Despite his numerous attempts, the MAO and fishery technician have not only disregarded his offers, but have shown no interest to learn further about CRM and CLE. An underlying issue with the situation is that the fish warden leader, not having the same institutional rank, power, and education status as the MAO and fishery technician, has put all of his effort to learn about CRM and CLE in the municipality. On the other hand, the MAO and the fishery technician openly disregard their CRM and CLE responsibilities because they believe that it is the fish wardens who are accountable for all aspects of CRM and CLE within the municipality.

Analysis: Making Sense of Institutional conflict and accountability

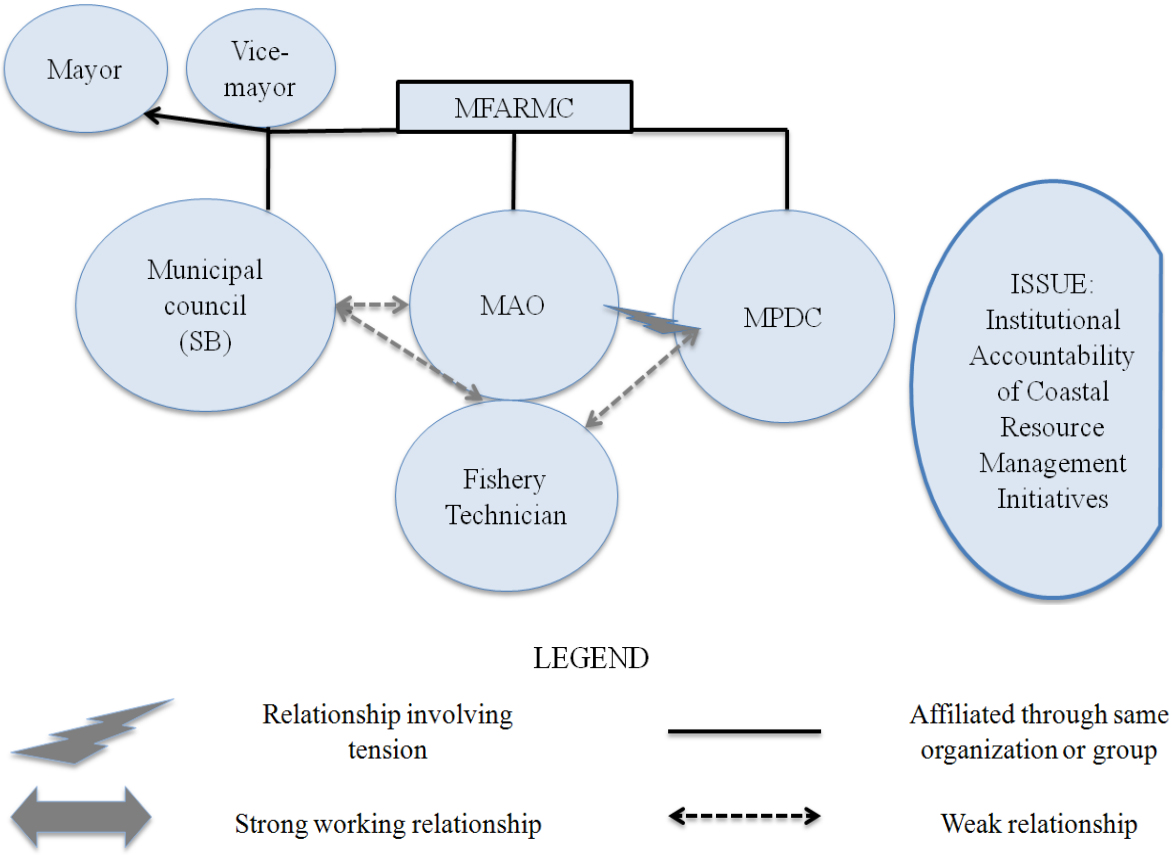

Figure 8. Relationships among MFARMC members at the municipal level

Figure 8 illustrates answers to my first and second research questions concerning stakeholder perceptions and relationships of institutional accountability for CRM. This figure shows members of the local government and MFARMC who are responsible for dealing with CRM issues. The Mayor potentially oversees all activities within the local government. With consultation from the MFARMC, the SB or municipal council enacts CRM ordinances. The weak relationships among the SB, MAO, and the fishery technician implies the inadequate communication among the parties (dotted arrows in Figure 8). Institutional conflict in the municipal level is shown by the thick jagged arrow between the MPDC and the MAO, particularly because of the contrasting stakeholder

perceptions of accountability for CRM and CLE initiatives within the municipality. Because the MAO and the fishery technician do not consider their responsibilities as key members of the MFARMC and as consultants to the SB, there is the uneven burden of costs and sharing of responsibilities for implementing CRM. This is exemplified by the MPDC's perception of having to do more multi-tasking to support CRM and the fish wardens. Interviews with the MPDC indicate that in addition to managing other community development projects in the municipality, the MPDC has to face more duties such as the provision of budget and technical equipment for fish wardens and CRM.

Institutional accountability issues results in the sparse communication among MFARMC members who have a profound influence on the direction of CRM programs within the municipality. Consequently, the weak communication and the uneven burden of CRM responsibilities compromise the local trust and legitimacy of the MFARMC as a collaborative institution to effectively implement CRM programs.

The issue of institutional accountability and conflict does not end at the municipal level. The fish wardens and the NGO representatives who serve as mediators between the community and municipality are also affected by the issue of institutional accountability for CRM (Figure 9). The fish wardens work directly with the MPDC, have secured the Mayor's trust and indirectly work with the municipal council that legislates local CRM ordinances. Despite the numerous relationships between the fish wardens and the local government, the lack of direction and leadership from the MAO appears to be a serious issue for the fish wardens (see jagged lines, Figure 9). The fish wardens believe that the MAO's denial and apathy in relation to her job are detrimental to the CRM and CLE activities that fish wardens actively participate in. Similar to the fish warden perceptions,

the NGO representative who has a strong working relationship with almost all key stakeholders believes that the MAO should do her CRM duties as mandated by local and national laws (Figure 9).

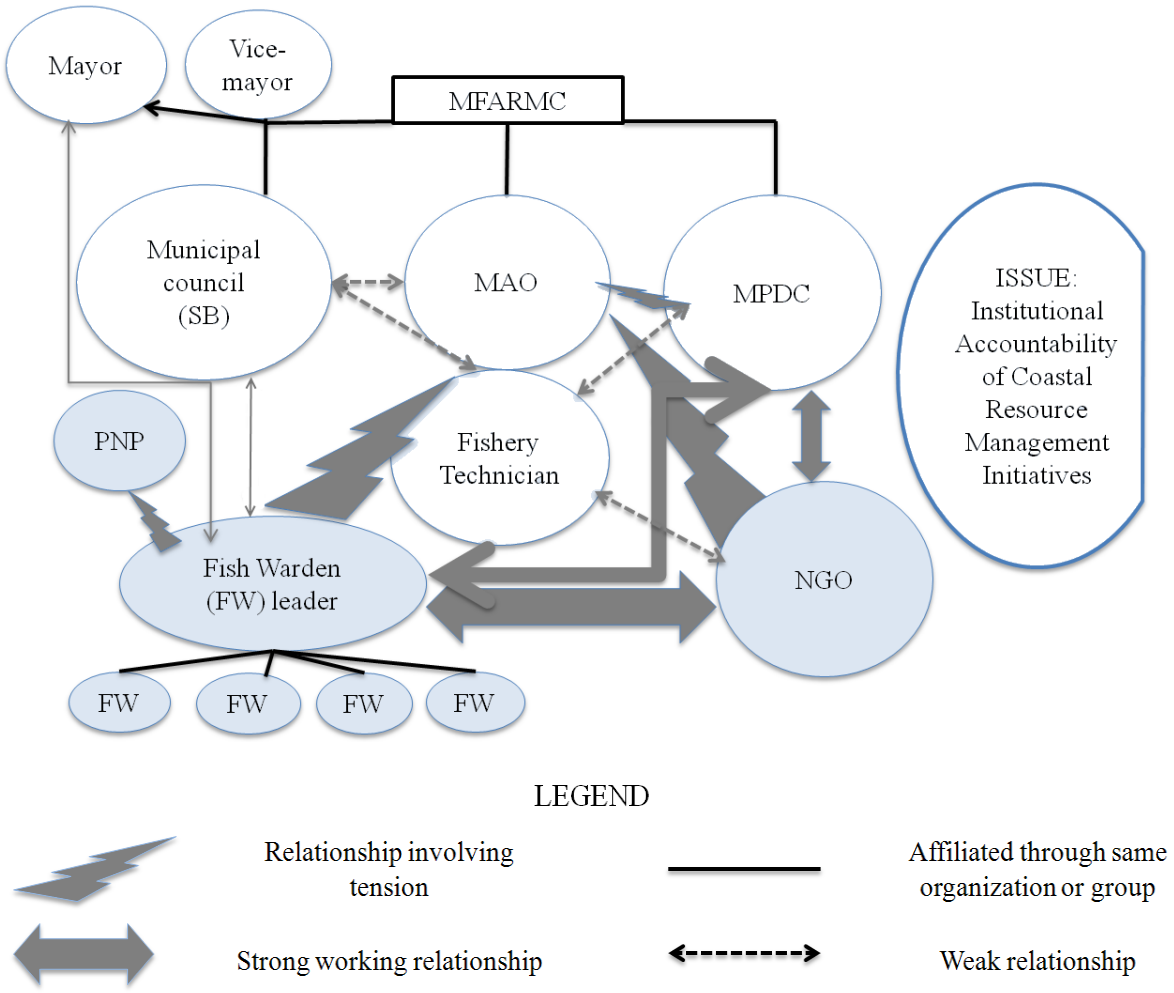

Figure 9. Relationships among MFARMC members, fish wardens, and the NGO.

The interviews revealed that all of the stakeholder perceptions clearly point to the inability of the MAO and the fishery technician to face the legally mandated duty of overseeing CRM in the municipality. These perceptions are portrayed by the jagged lines arising from the eight fish wardens, MPDC, and NGO representatives and directly point to the MAO and fishery technician (Figure 9). While I was unable to interview members

of the municipal council, we had the opportunity to interview the mayor. When I asked the mayor about CRM initiatives in the municipality, the very first thing he mentioned was "You need to talk to the fish warden leader." According to the fish warden leader, the mayor appears to "stand back from CRM issues" and occasionally converses with the fish warden leader about coastal law enforcement issues (see relationship arrow in Figure 9). Interestingly, when I interviewed the seven local government members, every single one of them directed us to talk to the fish warden leader about CRM issues.

The gaps of implementing CRM initiatives by key players of the local government and MFARMC team has led to the diversion of most, if not all, CRM and CLE responsibilities to the MPDC and the fish wardens. The fish wardens, who are not officially part of the local government, are left to face many of the CLE and CRM issues without having the capacity, sufficient financial support, and concerted action from the MFARMC and local government. An interesting result of the institutional disorganization and accountability issues is the absence of the FARMC at the community level for the past four years (see blank circle in Figure 10). The Philippine fishery laws of the 1990s mandate the local government, in particular the MAO, to form FARMCs at community or *barangay* level. The lack of the FARMC corresponds to the weakened or almost inexistent co-management relationship between the local government, the fish wardens Association, and consequently the community itself (see dotted arrows in Figure 10).

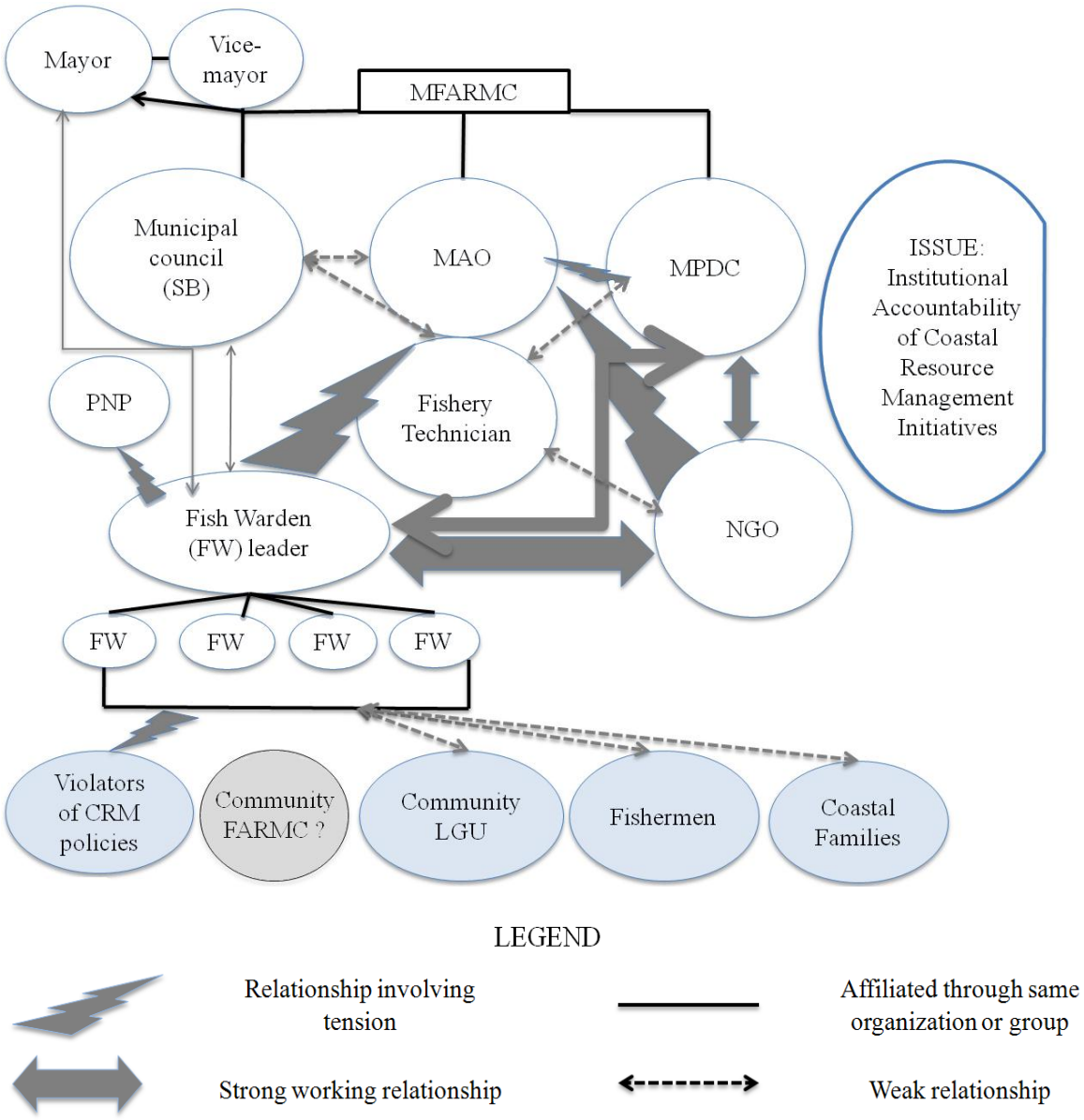

Figure 10. Conflict map showing stakeholder relationships within and across the municipality and community.

The diversion of CRM responsibilities to the fish wardens and the MPDC reflects the inadequate trickledown effect of ineffective communication and enforcement of CRM policies at the community level (Figure 10). Based on institutional accountability issues and the resulting inadequate communication of CRM policies, it makes sense to investigate which key people within the local government carry the responsibility of

supporting fish wardens and ensuring the co-management relationship between the local government and the community. The MPDC has openly recognized the need of further support and direction for the fish wardens. The municipal council and the rest of the local government appreciates and supports the CRM activities, especially the revenue generating activities such as the dive user fees collected by the fish wardens. Most importantly, the mayor has allotted a small honorarium for fish wardens to do a 24-hour patrol of the municipal waters, including the municipality's MPA.

Further interviews with the fish wardens reveal that they feel that they have support and the trust from the Mayor to perform their said duties. However, the leader of the fish wardens mentioned that there is only verbal support from the local government, but no sufficient leadership and action necessary to address CRM issues. Whenever court cases and appearances are filed, it is always the leader of the fish wardens who directly deals with lawyers and addresses apprehension issues. Several cases with Philippine National Police (PNP) showed the lack of concern of PNP officials in attending coastal law enforcement workshops and even apprehending illegal fishers. The jagged relationship arrow in Figure 10 illustrates this relationship between the fish wardens and the PNP. Upon researching all the 2008 police reports on CRM, it was the fish warden leader who wrote or blotted seven of the eight cases reported for violators of CRM policies.

Despite the varying channels of institutional support for the fish wardens, it appears as though the inability of the MAO and fishery technician to recognize their institutional roles as key players of the MFARMC have resulted in the disorganization of CRM programs and the burden of responsibilities to be faced by the fish wardens and the

MPDC. Oftentimes, fish wardens do not have the full capacity to organize and head CRM programs because it is the legal duty for local government members such as the MAO and the fishery technician. The honorariums of the fish wardens only allow them to do certain duties within their job description as mandated by local ordinances and national fishery laws.

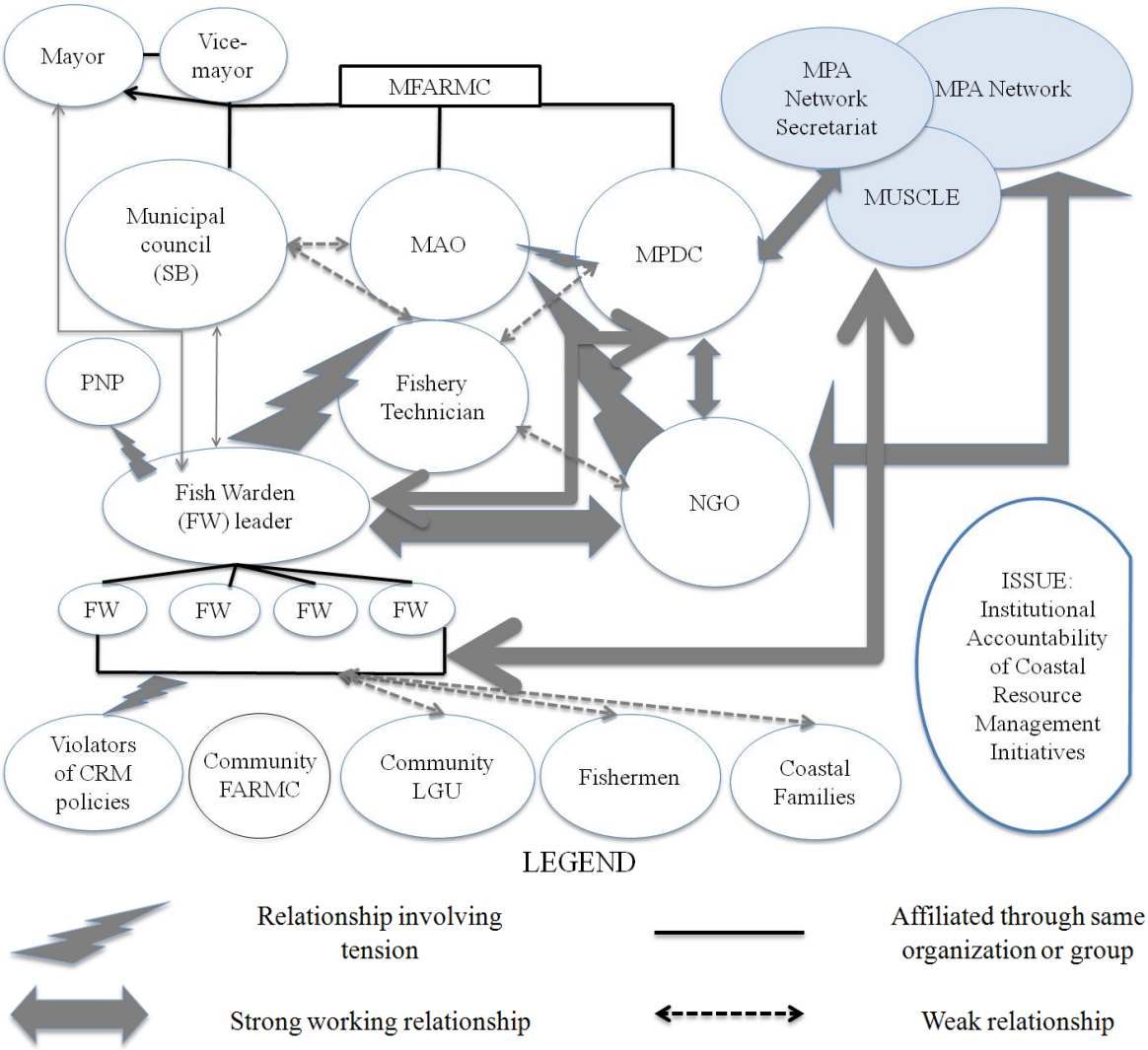

Figure 11. Stakeholder relationships among the MPA Network, municipality, and community.

The NGO and the MPA Network provide technical, financial, and even legal

support for the fish wardens and community organizations in the municipality (Figure 11). These two organizations appear to be the key players in filling the institutional gap for CRM programs. The NGO has provided information through education campaigns, technical training, and capacity building workshops for fish wardens and local governments since the early 2000s. The MPA Network is a social network of local governments that provide support for member municipality's CRM programs (see strong relationships arrows in Figure 11). This network provides opportunities for local governments to share CRM and CLE issues, and collaboratively come up with local ordinances and initiatives. One of the MPA Networks' initiatives is the formation of MUSCLE (Municipal Seaborne and Coastal Law Enforcers), a group of fish warden representatives from eight neighboring municipalities who occasionally patrol all municipal waters of the region. MUSCLE does not only support the fish warden patrol, but it also serves as an outlet for all municipalities to address common issues with CRM and CLE. Another example of the MPA Network's initiatives is the monthly meetings held at the different member municipalities. The municipality's MPA Network representative and secretariat often communicates the necessities of coastal law enforcement and CRM programs to the network. While many issues are prioritized within the MPA Network, the opportunity for the municipality's stakeholders to share their CRM issues serve as the starting point for the collaborative process of understanding the conflict of institutional accountability and its effects on their community. Questions pertaining to institutional and co-management issues of enacting and enforcing CRM ordinances are brought to the table and discussed among the MPA Network members. These collaborative meetings have the potential to reflect the interdependencies among

local governments of the region, as well as among municipal local governments and community members that co-manage the coastal resources. The acknowledgement of these interdependencies is crucial for managing the conflict of institutional accountability for CRM.

Conclusions and Implications

Institutional accountability for CRM initiatives is the crux of the conflict occurring in the municipality. Specifically, it is the negligence of key players within the local government, in particular the MAO and fishery technician, who contribute to the additional burden of responsibilities faced by the fish wardens and other members of the MFARMC team such as the MPDC. It is not that the MFARMC team, fish wardens, local government members, and NGOs are against the MAO and the fishery technician; the case is that fish wardens, the rest of the MFARMC team, and community members need the MAO and fishery technician's active participation, support, and accountability for CRM initiatives.

Common coastal law enforcement issues such as illegal commercial fishing within the municipal waters are directly affected by the MAO and the fishery technician's negligence of their CRM duties. If the fish wardens endure the entire burden of CRM, including coastal law enforcement, the fish wardens and other members of the MFARMC team such as the MPDC will perform those crucial duties with limited power and resources. Moreover, the different communities within the municipality are consequently affected by the negligence of CRM duties. The significance and enforcement of CRM ordinances is not effectively communicated to the public because of the lack of the MFARMC at the community level depicting the dysfunctionalities of the co-management approach among the different communities and the local government. The weak

communication of CRM initiatives and policies leads to an unclear understanding of coastal policies among stakeholders within the different communities. Moreover, these weakly communicated CRM initiatives leads to a lack of trust and legitimacy for the policies, LGU, MFARMC, and potentially the fish wardens promoting CRM. In short, institutional conflicts and neglect of responsibilities within the MFARMC team have a dynamic effect on the fish wardens who enforce the CRM policies as well as the community members who comply with and support such policies.

Facing institutional conflict and accountability for CRM has been not been directly or formally addressed by responsible stakeholder parties. There is common ground among stakeholders for accepting the existence of institutional conflict and accountability of the MAO to lead municipal CRM programs. The legal framework of Philippine fishery laws provides the institutional structure and capacity for the DA and the MAO and fishery technician as part of the local government and MFARMC team to head CRM programs. However, the main issue is not necessarily finding common ground that institutional conflict exists, but rather getting accountable parties, namely the MAO and fishery technician as part of the MFARMC team, to acknowledge assigned duties mandated by Philippine Fishery laws and the municipality's CRM plan. Furthermore, there is the necessity to acknowledge the issue of other MFARMC members, such as the fish wardens and the MPDC, that bear the burden of additional tasks denied or forgone by the MAO and the fishery technician. Institutional accountability is a serious problem, as specifically stated in separate interviews with the MPDC, fish wardens Leader, and CCE representatives. There is the crucial need for the LGU, and the MFARMC team to address questions that focus on the consequences that institutional accountability has for

the community and the ecological integrity of the coastal resources.

There have been many past conflict management strategies, such as collaborative meetings with the LGU and the MPA Network that have dealt with coastal management and coastal law enforcement issues in the municipality. Despite these conflict management strategies, the issue of institutional accountability has been side stepped by focusing on the more productive efforts of directly improving coastal law enforcement through the efforts of the fish wardens. For example, in the July 2009 monthly meeting of the MPA Network held in the municipality, the issue of institutional accountability and the MAO's responsibility for dealing with CRM issues was brought up in one of the statements of the LGU members of the municipality. Instead of delving further into this issue, the CRM council of the MPA Network focused on the usual broad topic of effectively enforcing coastal management laws for all municipalities. It was not productive for the MPA Network to focus only on the institutional conflicts of the municipality. The MPA Network represents LGU members of eight different municipalities, including the said municipality and can only recommend ordinances, but not make municipal decisions to member municipalities. While the MPA Network provides continual support for the municipality, the LGU and MFARMC of the municipality and not the MPA Network can only directly address institutional conflicts within the municipality.

Establishing common ground for institutional accountability in the municipality begs for a small, facilitated meeting where key stakeholders can get together in an informal manner and express their perspectives and experience on the issue. Because institutional accountability is a very personal and political issue, an informal and non-

public setting would allow stakeholders to openly converse and view other parties as rational people with personal needs instead of their government positions known by the public. The underlying issues of power and rank among MFARMC members and fish wardens could potentially be diffused in an informal non-public workshop where stakeholders can express sentiments influencing their positions of CRM issues. Moreover, a small workshop attended by the MAO, fishery technician, MPDC, and the fish warden members could potentially cultivate social learning opportunities necessary to discuss CRM and understand the importance of stakeholders' roles in managing coastal issues within the community.

Another aspect to institutional accountability is realizing the consequences of institutional conflicts affecting the public or community perceptions of the legitimacy CRM initiatives and policies. In this case, a public setting for a workshop that integrates communication with different community members (e.g. fishers, fish vendors, and dive resort owners) and the MFARMC team would be more appropriate. A public workshop would enable MFARMC members to link public perceptions of CRM with the consequent effects of institutional accountability and conflict within the MFARMC team.

A series of separate small and private stakeholder workshops among MFARMC members is recommended to achieve the greater understanding of perceived roles of MFARMC members in tackling coastal issues. These workshops would also enable MFARMC members to discuss how the MFARMC can function effectively as the lead CRM organization in the municipality. Moreover, these workshops serve as an attempt to manage the conflict of institutional accountability in CRM within the municipality. Conflict management strategies in these workshops could employ facilitation techniques

such as systemic questioning, appreciative inquiry, and a discussion of common futures necessary for understanding the relationships and interdependencies of the MFARMC team and the significance of institutional accountability in CRM.

The conflict management strategies recommended for this situation would not be effective without accommodating specific cultural traits that serve as potential barriers to effective communication. For example, one of these cultural traits is being timid or *hiya*, which may be dealt with by creating a secure environment for expressing emotions and motives in a manner where stakeholders will not lose face. Moreover, these cultural traits are linked with the role of power that influences fish wardens to effectively communicate their concerns to authority figures within the local government and the MFARMC. Skilled facilitators intimately aware of the linkages between cultural traits and power can effectively apply Western conflict management strategies to the conflict of institutional accountability for CRM. As a result, these conflict management strategies allow the very essence of communicating needs and ideas among MFARMC members and community members to constructively acknowledge and further understand the coastal issues affecting the entire municipality.

Understanding context specific coastal issues in the municipality and managing the conflict of institutional accountability for CRM requires an in depth analysis of stakeholder perceptions of the municipal, community, and MPA Network roles in tackling coastal issues. In particular, the analysis of institutional accountability involves understanding the relationships and interactions of the MFARMC team as the legitimate and legally designated governmental organization to manage coastal resource issues within the municipality. Conflict assessment tools such as conflict mapping help us to

understand and visualize the relationships and interactions among salient stakeholders, including the MAO, fishery technician, MPDC, fish wardens, and NGOs. Understanding the interactions among the fish wardens as representatives of the community and the MFARMC municipality representatives help clarify the dynamic effects of institutional accountability on the management of salient coastal issues potentially influencing public support and community perceptions concerning the legitimacy of CRM policies and initiatives. Lastly, the analysis of stakeholder relationships and interactions helps to increase our understanding of the capacities, limitations and institutional roles of existing organizations, such as the MPA Network and NGOs that provide support and opportunities for managing institutional conflict and accountability for CRM.

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CHAPTER FIVE

CONCLUSIONS

This thesis investigated stakeholder perceptions including attitudes and normative beliefs of CRM scenarios and policies. Specifically, both manuscripts addressed conflict, consensus, and acceptability for CRM using quantitative and qualitative social science research methods. Research findings were linked to public support and compliance for coastal management policies influencing the community, municipality, and the MPA Network.

Understanding Conflict and Consensus through Complimentary Research Methods

The first manuscript investigated normative beliefs of fishers and compared the amounts of consensus for normative beliefs of CRM scenarios and policies among the municipalities of Oslob, Santander, and Samboan in Southern Cebu, Philippines. The Potential for Conflict Index (PCI_2) statistic measured the amount of consensus concerning the acceptability of CRM policies (Vaske et al., 2010). Data for calculating the PCI_2 originated from structured face-to-face interviews with fishers concerning the acceptability and support for certain CRM policies and scenarios. The amount of consensus for a given CRM scenario or policy reflected the amount of potential conflict.

The PCI_2 is a tool for understanding consensus and conflict for CRM policies and initiatives. Moreover, the PCI_2 offers an intuitive graphical display of consensus easily comprehended by managers and local governments with little to no statistical training.

Lastly, the PCI_2 serves as a quantitative social science monitoring tool for local governments and coastal managers to understand and measure human dimension issues that significantly influence the success of CRM initiatives.

The second manuscript was a case study examining institutional conflict and accountability in one of the municipalities of Southern Cebu. The construction of conflict maps, a series of qualitative maps illustrating stakeholder attitudes and perceptions of institutional conflict and accountability in CRM, was the main method used to investigate conflict. The conflict mapping process and in-depth interviews revealed the relationships between stakeholders within the community, municipality, and the MPA network. Lastly, the conflict mapping process linked stakeholder relationships with the overall issue of institutional accountability, organization, and processes affecting different stakeholder groups.

The conflict mapping process can serve as a qualitative social science tool and method for managers to get an in-depth investigation of conflict in CRM concerning key stakeholders. The collaborative process of constructing conflict maps with stakeholders allowed the understanding different perspectives and attitudes of a given situation. As a result, conflict mapping can set the stage for recommended conflict management processes such systemic questioning and appreciative inquiry applied in a series of collaborative workshops.

Summary of Findings

Manuscript 1

Fishers' normative beliefs indicated general acceptability of CRM, including MPA management and fishery policies. There was less acceptance and consensus for policies

that involved regulating municipal waters outside of MPA borders, such as fish gear registration and the provision of fishing permits to non-residents. These results suggest that MPA policies are somewhat acceptable and supported by fishers from these municipalities, reflecting well-enforced and established norms of small no-take MPAs. Moreover, regulating fishing effort (e.g., regulating fish gear and restricting access to non-resident fishers) beyond MPA boundaries are emerging norms that potentially create conflict among resource users and local government. Implications for these results indicate early institutional attempts to implement Ecosystem-Based Management (EBM), where fisheries management spans beyond MPAs and includes regulating a network of jurisdictional waters of a region (Christie et al., 2009; Eisma-Osorio et al., 2009).

The legitimacy of norms and sanctions are crucial for sustaining acceptability and compliance for coastal management policies (Christie et al., 2009). Sanctions for dynamite and cyanide fishing were the most acceptable for fishers, implying a well-enforced and established norm for these municipalities. Enforcing sanctions for fish pot use were the least acceptable among fishers potentially due to low consensus and national legislation currently legalizing its use.

Normative beliefs concerning the acceptability of CRM policies significantly differed among municipalities. In general, Oslob fishers had the most acceptance and consensus for CRM and fishing violations sanctions while Samboan fishers had the least acceptance and consensus. Municipality differences imply various management styles and localized norms for enforcing national fishery laws. These management styles may affect fishers' perception, acceptability, and consensus for CRM policies.

Manuscript II

Conflicts concerning institutional accountability for CRM were often at the root of problems implementing and enforcing coastal management initiatives and policies within the different communities of the municipality. Specifically, it was the negligence of key players within the local government who contributed to the additional burden of responsibilities faced by fish wardens and other local government officials responsible for CRM. The analysis of institutional accountability involved understanding the relationships and interactions of the MFARMC team as the legitimate and legally designated governmental organization to manage coastal resource issues within the municipality.

Common coastal law enforcement issues, such as illegal commercial fishing, are also influenced by the negligence of local government representatives accountable for CRM. As a result, fish wardens and other MFARMC members, performed their duties with limited power and resources. Moreover, the different communities within the municipality were consequently affected by the negligence of CRM duties. The significance and enforcement of CRM policies was not effectively communicated to the public because of the lack of the MFARMC at the community level. This situation depicted the dysfunctionalities of the co-management approach among the different communities and the local government. The weak communication of CRM initiatives and policies lead to an unclear understanding of coastal policies among stakeholders within the different communities. Moreover, these weakly communicated CRM initiatives resulted in the lack of trust and legitimacy for the policies, LGU, MFARMC, and potentially the fish wardens promoting CRM. In short, institutional conflicts and neglect

of responsibilities within the MFARMC team had a dynamic effect on the fish wardens who enforce the CRM policies as well as the community members who comply with and support such policies.

Integration of Findings

Both manuscripts of this thesis investigated CRM scenarios and conflicts by examining attitudes and normative beliefs through quantitative and qualitative social science methods. The first manuscript examined the acceptability of CRM policies and the potential for conflict to occur in specific CRM scenarios, such as the regulation of fishing effort. Quantitative social science methods and analyses such as the structured interviews and the PCI_2 statistic were applied in the first manuscript. On the other hand, qualitative methods such as conflict mapping and in-depth interviews were applied in the second manuscript.

While both manuscripts applied different social science methods to analyze conflict in CRM, each manuscript focused on different issues concerning CRM scenarios. The first manuscript focused on the acceptability of certain CRM policies while the second manuscript focused on institutional accountability for CRM initiatives within a municipality. Despite the differences in both manuscripts, the concepts of public support and acceptance for CRM initiatives were common to both manuscripts. Moreover, the legitimacy of certain CRM policies appeared to be a common theme throughout both manuscripts. In the first manuscript, there was low acceptability and consensus for CRM policies concerning sanctions for potentially destructive fishing practices such as fish pot use that are legalized and legitimized by national Fishery laws. Likewise, the second manuscript highlights the effect of institutional conflict and accountability on community

perceptions concerning the legitimacy of CRM policies. Stakeholder perceptions, including attitudes and normative beliefs concerning the legitimacy of CRM policies consequently influence conflict, consensus, and community support for CRM proposals and initiatives (Kuperan & Suitenen, 1998).

Managerial Implications

Understanding norms and consensus for CRM scenarios enables managers and local government institutions to better manage conflict and garner public support and compliance for coastal policies. Conflict is not only influenced by consensus for such policies, but norms concerning the legitimacy, enforcement, and sanctions associated with CRM policies. Context-specific CRM scenarios reflect norms that guide managers to focus on policies and proposals salient to fishers. Moreover, the identification of these salient policies can direct managers to investigate specific issues directly affecting compliance and support for certain CRM policies and initiatives.

Investigating context specific coastal issues and managing the conflict of institutional accountability for CRM requires an in depth analysis of stakeholder perceptions of the municipal, community, and MPA Network roles in managing coastal issues. In particular, the analysis of institutional conflict and accountability involves understanding the relationships and interactions of institutions such as the MFARMC as the legitimate and legally designated governmental organization to manage coastal resource issues within the municipality.

Recommended conflict assessment tools such as conflict mapping in collaborative workshops help us to understand and visualize the relationships and interactions among key stakeholders. Understanding the interactions among the fish wardens as

representatives of the community and the MFARMC municipality representatives clarify the dynamic effects of institutional accountability on the management of salient coastal issues potentially influencing public support and community perceptions concerning the legitimacy of CRM policies and initiatives. Lastly, the conflict mapping analysis of stakeholder relationships and interactions increases our understanding of the capacities, limitations and institutional roles of existing organizations, such as the MPA Network and NGOs that provide support and opportunities for managing institutional conflict and accountability for CRM.

Theoretical Implications and Future Studies

Combining the use of quantitative and qualitative social science methods can help advance our theoretical understanding and analyses of the relationships between stakeholder perceptions, conflict, consensus, and public support for CRM policies and initiatives. Specifically, this thesis applied the PCI_2 statistic and qualitative conflict mapping methods to understand context-specific situations concerning the acceptability for CRM policies and scenarios. The PCI_2 applied normative theories, including the concept of personal and social norms in examining the acceptability and consensus of CRM policies and scenarios (Vaske et al., 2010). On the other hand, qualitative conflict mapping methods applied conflict analyses and management frameworks (Daniels & Walker, 1998) to an in-depth investigation of key stakeholder attitudes of specific institutional accountability conflicts occurring within a municipality.

The combined use of PCI_2 and conflict mapping in different coastal management settings can potentially enable local government officials and managers to get a clearer picture of social situations and conflicts directly affecting the success of CRM programs

and initiatives. Future studies could include the analysis of stakeholder evaluations of current and proposed CRM policies through the PCI_2 along with the collaborative discussion of PCI_2 values with local government officials and coastal managers. The discussion could occur in a workshop wherein key stakeholders apply the conflict mapping process to understand and discuss certain PCI_2 values. For example, the presentation of certain PCI_2 values regarding the regulation of fishing effort can catalyze further discussion and analyses among concerned managers and local government officials. Conflict mapping can be used to further analyze the conflict and understand stakeholder relationships and perceptions, as well external factors directly influencing the situation of regulating fishing effort. These quantitative and qualitative methods serve as social science monitoring tools enabling managers and local governments to monitor and understand issues concerning CRM initiatives. Moreover, these social science monitoring tools enable the in-depth analyses of the social success of CRM initiatives applying recent management frameworks such as EBM.

CRM utilizes frameworks such as Integrated Coastal Management (ICM) and EBM to manage social and ecological issues affecting the sustainable use of coastal resources. This thesis focused on stakeholder perceptions, including attitudes and normative beliefs, of common CRM scenarios and policies. Conflicts associated with stakeholder perceptions of CRM policies are invariably linked with human dimension research themes of governance, communities, stakeholder perceptions of policies, and socioeconomics. The first manuscript's examination of municipality differences among fishers' normative beliefs of CRM policies and scenarios reflected different local government management styles for managing their municipal waters. The second

manuscript's investigation of stakeholders' attitudes of institutional accountability in CRM initiatives displayed the effects of institutional conflicts, community-based management, and co-governance models among stakeholders representing the communities, municipality, and MPA Network. The strong linkages between stakeholders' attitudes and normative beliefs with CRM research themes of governance, communities, and socio-economics call for further studies on stakeholder perceptions of CRM policies and scenarios. Moreover, further research is needed on understanding the effects of public support and compliance for new and emerging EBM policies as indicators for social success of coastal management programs in small fishing-subsistent communities, such as the Philippines. Lastly, additional research is needed on the integration of social and biological success indicators of CRM initiatives. This research would be crucial for achieving the balance of managing coastal ecosystems that sustain communities at the local, national, and international levels.

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APPENDIX A

Management Report for Coastal Conservation Education Foundation (CCEF)

FISHER PERCEPTIONS OF COASTAL RESOURCE MANAGEMENT SURVEY

June-August 2009

A report for Coastal Conservation Education Foundation (CCE).

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Human Dimensions of Natural Resources
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May 11, 2010

Contents

INTRODUCTION

This report presents results of the 2009 Fisher Perceptions of Coastal Resource Management (CRM) survey. Specifically, survey results concern fishers' attitudes, normative beliefs, behavioral intentions and support for CRM regulations and initiatives. Survey results pertain to fishers residing the municipalities of Oslob, Samboan, and Santander in Southeastern Cebu, Philippines.

Arren Mendezona Allegretti conducted this survey as part of her graduate research at the Human Dimensions of Natural Resources Department of Colorado State University. This document is a special report for the Coastal Conservation Education (CCE) foundation summarizing stakeholder perceptions of CRM and demographic information as socioeconomic indicators for public support, compliance, and acceptability of coastal management.

Purpose

The purpose of study is to explore stakeholder perceptions, specifically fishers' attitudes, normative beliefs, and behavioral intentions for supporting CRM regulations and initiatives. The survey is categorized into four parts:

Section I. Attitudes
Section II. Normative Beliefs
Section III. Behavioral Intentions/Support
Section IV. Demographics

Similarly, this report is organized according the survey sections outlined above. The survey reflected fishers' perceptions and evaluations regarding the acceptability and awareness of specific CRM regulations, initiatives, and management scenarios. These included fishers' acceptability of fish gear and fish method policies, fisher registration, Marine Protected Area (MPA) policies, MPA community-based and co-management scenarios, fish warden or *Bantay Dagat* Operations, sanctions for violators of CRM policies, resident/non-resident fishing in municipal waters, and CRM educational workshops. These CRM policies and scenarios reflected the policies listed in the municipal ordinances of Oslob, Santander, and Samboan that were patterned after the Philippine Fisheries Code of 1998 (R.A. 8550).

METHODOLOGY

Fishers were purposefully sampled to represent the municipalities of Oslob, Santander, and Samboan. Onsite surveys were administered to fishers through face-to-face interviews. Survey response rates were approximately 95%. Interviews were conducted from June-August, 2009.

Sample

The total sample was 511, representing southern Cebu municipalities of Oslob (*n* = 279), Santander (*n* = 139) and Samboan (*n* = 87). An official list of registered fishers was obtained from the municipalities of Oslob and Santander. There was no official list for the municipality of Samboan. Table 1 shows the sample sizes, the number of registered fishers, and the percentages of the population of registered fishers. Table 2 shows the number of respondents representing the communities or *barangays* of each municipality.

Table 1. Study Sample Sizes

Municipality	Sample (*n*)	Population of Registered Fishers	% Population Represented
Oslob	279	1012	28%
Santander	139	376	37%
Samboan	87	-	-

Table 2. Samples sizes representing *barangays* of each Municipality

Barangays per Municipality	Sample (*n*)	%
Oslob		
Alo	18	7
Bangcogon	12	4
Bonbon	41	15
Calumpang	9	3
Daanlungsod	7	2
Gawi	18	6
Hagdan	11	4
Looc	20	7
Luka	16	6
Mainit	23	9
Nueve Caceres	32	11
Poblacion	16	6
Pungtod	15	5
Tan-awan	31	11
Tumalog	10	4
Total	279	100

Table 2 continued.

Barangays per Municipality	Sample (*n*)	%
Santander		
Bunlan	5	3
Cabutongan	1	1
Candamiang	23	16
Liloan	7	5
Liptong	1	1
Looc	8	6
Pasil	47	34
Poblacion	10	7
Canlumacad	24	17
Talisay	7	5
Tagaytay	1	1
Katali	1	1
Salay	3	2
Canlabag	1	1
Total	139	100
Samboan		
Basak	5	6
Cambigong	10	11
Canorong	16	18
Colase	44	51
Dalahikan	1	1
San Sebastian	6	7
Suba	5	6
Total	87	100

Upland (n = 65) and coastal barangays (n = 161) of Santander and Samboan were also sampled and compared with one another.

Statistical Analysis

Descriptive statistics including frequencies and measures of central tendency (mean, median, standard deviations) were used to show the attitudes, normative beliefs, behavioral intentions and support for CRM regulations and initiatives. These results pertain to survey sections I, II, and III respectively .The acceptability and consensus for these CRM regulations and initiatives are presented through Analysis of Variance (ANOVAs) and the Potential for Conflict Index (PCI_2).

RESULTS

Results are reported to show fishers' attitudes, normative beliefs, behavioral intentions and support for CRM regulations, initiatives, and management scenarios .The acceptability and amount of consensus for fishers' evaluations of CRM policies and scenarios are reported in sections II, III, and IV. Demographics of fishers, including educational attainment and household size are reported in Section IV.

Survey Section I. Fishers' Attitudes of CRM policies and initiatives

Table 3. Fishers' Attitudes of MPA policies and initiatives

	%					
CRM Scenario/Policy	**Strongly Approve**	**Approve**	**No Opinion**	**Disapprove**	**Strongly Disapprove**	**Mean[1]**
Approval of MPA location	26	44	5	13	12	2.40
Approval of the MPA within your community	21	49	8	11	11	2.42
Approval of MPA zones	23	56	10	9	2	2.12
Prohibition of all types of fishing in MPA	40	33	5	13	9	2.19
Prohibition of gleaning for sea life in MPA	37	35	5	13	10	2.24
Prohibition of taking corals in MPA	47	35	4	7	7	1.94
Prohibition of taking sand from MPA	44	34	5	9	8	2.04
Prohibition of taking rocks from MPA	44	34	6	8	8	2.02
Prohibition of building foreshore structures in MPA	37	30	11	13	9	2.28
Prohibition of paddle boats in MPA during low tide	31	36	7	15	11	2.38
Prohibition of Anchoring within MPA	41	32	5	13	9	2.17
Prohibition of motorized vessels within MPA	38	28	8	16	10	2.31
Overall Approval of MPA regulations	10	2	40	20	8	2.94

[1]Means correspond to five point scale of strongly agree (1), agree (2), strongly disagree (3), disagree (4), strongly disagree (5). For example, a mean of 2 depicts that respondents approve to the CRM scenario/policy.

Table 3 highlights:

- 70% of respondents approve of their MPA locations, while 25% disapprove
- 40% of respondents are unsure about their overall approval of MPA regulations and 12% of other respondents approve their MPA regulations
- 26% of respondents disapprove of prohibiting motorized vessels within MPA.

Fishers' evaluations from upland and coastal barangays/communities

Figure 1. Evaluations on MPA purpose

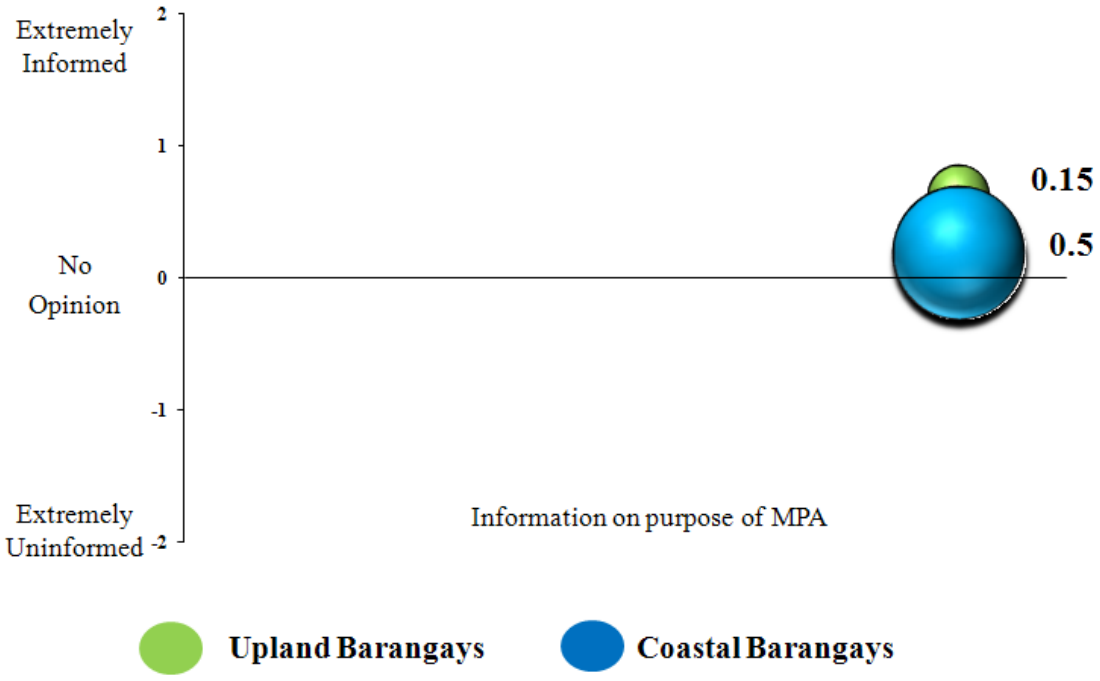


Figure 2. Evaluations on MPA benefits to livelihood

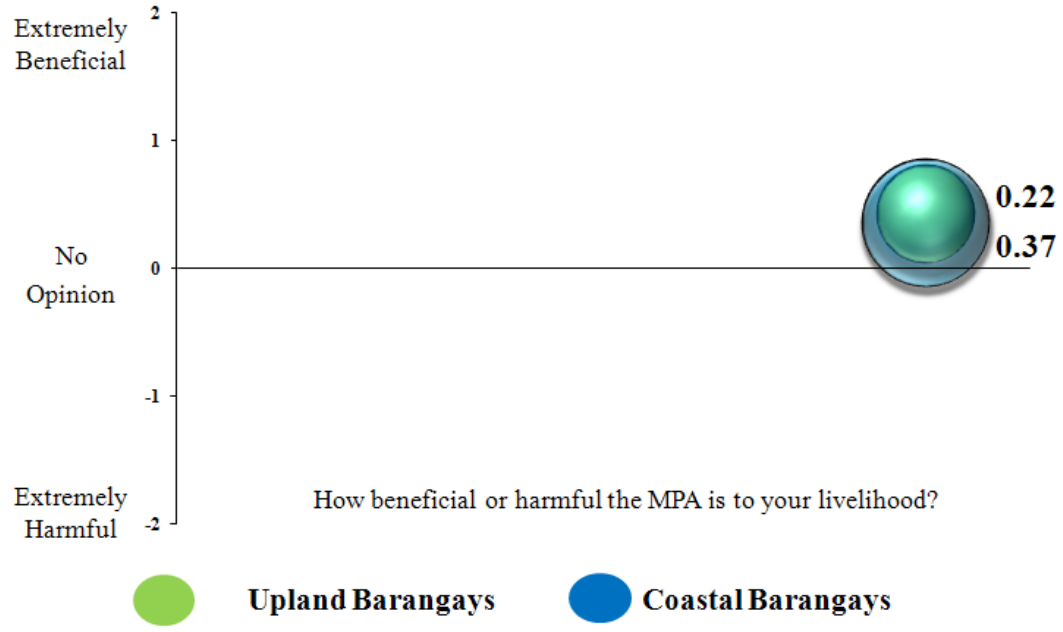


Figure 1 and 2 highlights:

- Residents from upland barangays evaluated themselves as being more informed on the purpose of their MPA. Coastal barangays evaluated themselves as less informed on their MPA purpose. The level of consensus (PCI2 = .5) for coastal barangays was significantly less than upland barangays, indicating a greater potential for conflict.
- Both upland and coastal barangays felt that the MPA was slightly beneficial to their livelihood.

Figure 3. Overall Approval of MPA

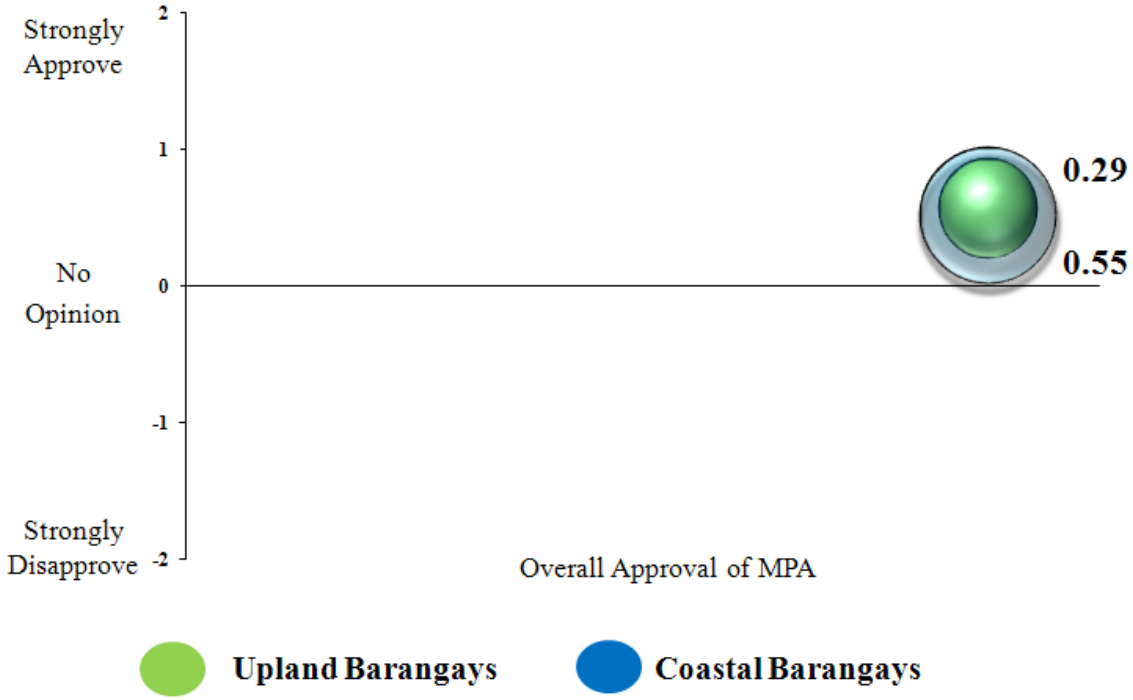


Figure 3 highlights:

- Both upland and coastal barangays somewhat approve of their MPA. However, coastal barangays had more disagreement and less consensus (PCI_2= .55) for their MPA as compared to upland barangays (PCI_2= .29).

Survey Section II. Fishers' Normative Beliefs of CRM policies and initiatives

Table 4. Fishers' normative beliefs of CRM policies

	%					
CRM Scenario/Policy*	**Strongly Agree**	**Agree**	**No Opinion**	**Disagree**	**Strongly Disagree**	**Mean[1]**
1a.Necessity of buoys to mark MPA	40	36	7	11	6	2.1
1b.Prohibition of fishing in MPA	41	38	4	10	7	2.1
1c.Hook and line fishing in MPA buffer zone	39	40	8	5	7	2.0
1d.Zoning of fish pots	29	46	11	7	7	2.2
1e. Municipal government regulating MPAs	22	42	23	6	7	2.3
If. People organizations managing MPAs	16	36	36	5	6	2.5
1g. Allotting diver user revenues to community	30	40	19	6	5	2.2
1h.Lack of communication between people's organizations and municipal government	15	25	46	8	6	2.7
1i.Community's opinion considered in MPA management	24	39	25	6	6	2.4
1j. Allotment of fish warden stipends regardless of whether violators are caught.	23	39	18	9	10	2.4
1k. Allotting violator fee revenues to fish wardens	21	34	21	13	11	2.6
1l.Difficulty of taking municipal general funds for fish warden	9	20	52	11	8	2.9
1m.Necessity of fish warden trust fund	18	35	36	5	6	2.5
1n.Trust for police in supporting fish wardens	17	36	29	10	8	2.5
1o.Preparedness of police for supporting fish wardens	23	39	23	8	7	2.4
1p. Fish gear regulations	22	39	14	14	11	2.5
1q.Fishing permits for non-residents	22	30	8	21	19	2.8
1r. Fish gear registration	19	31	12	22	16	2.8
1s.Municipal benefits for fisher registration	19	34	27	12	8	2.6
1t. Fish sold within municipality	30	37	12	14	30	2.3
1w.Increase of fish since MPA establishment	17	28	32	16	7	2.7

[1]Means correspond to five point scale of strongly agree (1), agree (2), strongly disagree (3), disagree (4), strongly disagree (5). For example, a mean of 2 depicts that respondents agreed to the CRM scenario/policy.

*The numbers and letters associated with the CRM scenario/policy correspond to section II of the survey. For example, "1a Necessity of buoys to mark" MPA corresponds to the question 1a of section II in the survey.

Table 4 highlights

- Generally, fishers were acceptable ($M \leq 2.8$) of the CRM policies/scenarios outlined above.
- 76% of fishers agreed that more buoys were needed to mark the location of their MPA or sanctuary.
- More than half of fishers (52%) were unsure about the difficulty of taking municipal general funds for fish wardens. Additionally, 36% were also unsure about People Organizations (POs) managing their MPA and allotting a trust fund for fish wardens. These results could be attributed to the CRM scenario being unknown and not salient to fishers' experience. For example, fishers are unaware of fish warden needs, therefore not having sufficient information to evaluate the CRM scenario of allotting a trust fund for fish wardens. Furthermore, not all fishers are aware that a PO exists in their community, resulting in the lack of information for fishers to evaluate their PO.
- Almost half of the fishers (44%) disagreed with statement that resident's fish catch should be sold within the municipality.
- 40% of fishers disagreed with the statement that fishing permits should be given to non-resident fishers.
- 38% of the fishers disagreed with the statement that fish gear must be registered within the municipality.

Table 5. Fishers' Normative Beliefs about the acceptability of sanctions for CRM scenarios

	%					
CRM Scenario/Policy*	**Strongly Agree**	**Agree**	**No Opinion**	**Disagree**	**Strongly Disagree**	**Mean[1]**
2a.Boats not registered	35	44	5	9	8	2.1
2b Non-residents fishing in municipal waters	45	32	6	10	7	2.0
2c.Cyanide Fishing	60	30	1	5	3	1.6
2d.Fishers not registered	27	31	10	20	12	2.6
2e.Commercial fishing in municipal waters	56	33	3	6	3	1.7
2f.Residents fishing in MPA no-take zone	45	35	4	10	7	2.0
2g.Larger fines for non-residents fishing in MPA no-take zone	53	31	6	5	5	1.8
2h.Use of fine mesh nets	28	33	14	17	8	2.4
2i.Compressor fishing	54	32	5	5	3	1.7
2j.Taking giant clams	29	35	13	14	9	2.4
2k. Off-season fishing for rabbit fish	34	31	11	15	10	2.4
2l. Use of surface gill net	36	33	9	15	7	2.2
2m.Dynamite fishing	63	28	1	4	4	1.6
2n.Baby *muro ami* fishing	50	32	6	8	5	1.9
2o. Lack of building permits for foreshore structures	42	36	12	5	5	2.0
2p. Fishing with *superlights*	53	30	8	5	4	1.8
2q. Cutting of Mangroves	43	37	10	5	4	1.9
2r. Fish Pot Use	13	24	16	28	20	3.2

[1]Means correspond to five point scale of strongly agree (1), agree (2), strongly disagree (3), disagree (4), strongly disagree (5). For example, a mean of 2 depicts that respondents agreed to the CRM scenario

*The numbers and letters associated with the CRM scenario/policy correspond to section II of the survey. For example, the CRM scenario of "2a Boats not registered to mark MPA" corresponds to the question 2a of section II in the survey.

Table 5 highlights:

- Generally, fishers were acceptable ($M \leq 2.4$) of sanctions applied to the CRM policies/scenarios outlined above.
- 90% of fishers agreed that sanctions should be applied to dynamite and cyanide fishing.
- Fishers were least accepting of sanctions applied to the use of fish pots or *bubo.*

Table 6. Municipality Differences on Fishers' normative beliefs about the acceptability of coastal resource management regulatory (CRM) scenarios

CRM scenarios	Municipality[1]			*F*	*p*-value	η
	Oslob	Santander	Samboan			
1a.Necessity of buoys to mark MPA	1.193[a]	0.813[b]	.267 [c]	21.621	<.001	.284
1b.Prohibition of fishing in MPA	.938[a]	1.299 [b]	.419 [c]	14.365	<.001	.238
1c.Hook and line fishing in MPA buffer zone	1.102 [a]	1.307 [a]	.179 [c]	31.147	<.001	.338
1d.Zoning of fish pots	.931 [a]	0.855 [a]	.488 [c]	4.858	<.001	.143
1e. Municipal government regulating MPAs	.726 [a]	0.935 [a]	.047 [c]	19.829	<.001	.274
If. People organizations managing MPAs	.722 [a]	0.525 [a]	-.214 [c]	29.401	<.001	.332
1g. Allotting diver user revenues to community	1.05 [a]	0.913 [a]	.094 [c]	29.401	<.001	.329
1h.Lack of communication between people's organizations and municipal government	.601 [a]	0.456 [a]	-.583 [b]	52.339	<.001	.427
1i.Community's opinion considered in MPA management	.882 [a]	0.659 [a]	.247 [b]	11.996	<.001	.218
1j. Allotment of fish warden stipends regardless of whether violators are caught.	.793 [a]	0.399 [b]	.105 [b]	12.402	<.001	.221
1k. Allotting violator fee revenues to fish wardens	.607 [a]	0.403 [a]	-.233 [b]	14.968	<.001	.240
1l.Difficulty of taking municipal general funds for fish warden	.310 [a]	0.123 [a]	-.494 [b]	23.463	<.001	.299
1m.Necessity of fish warden trust fund	.805 [a]	0.436 [b]	-.083 [c]	22.024	<.001	.322
1n.Trust for police in supporting fish wardens	.655 [a]	0.489 [a]	-.207 [b]	19.887	<.001	.282
1o.Preparedness of police for supporting fish wardens	.739 [a]	0.657 [a]	.212 [c]	7.151	<.001	.170
1p. Fish gear regulations	.482 [a]	0.715 [b]	.084 [a]	6.441	.002	.165
1q.Fishing permits for non-residents	.263 [a]	0.410 [a]	-.565 [b]	13.897	<.001	.232
1r. Fish gear registration	.170 [a]	0.338 [b]	-.212 [a]	4.297	<.001	.133
1s.Municipal benefits for fisher registration	.483 [a]	0.604 [a]	.047 [b]	6.472	.002	.162

Table 6 continued.

1t. Fish sold within municipality	.709 [a]	1.000 [b]	.107 [c]	14.851	<.001	.241
1w.Increase of fish since MPA establishment	.430 [a]	0.417 [a]	-.200 [b]	11.136	<.001	.209
1x. Persuasion of MPA educational workshops	.633 [a]	0.420 [a]	-.141 [b]	20.175	<.001	.280
1w.Personal understanding of MPA regulations	.042 [a]	-0.241 [ab]	-.341 [b]	4.570	.011	.137

[1]Means with different superscripts (e.g. 1.289 [a] vs. 0.646[b]) are significantly different at the p <.05 level based on the Tamhanes post hoc analysis.

Table 6 highlights:

- Fishers' normative beliefs regarding the acceptability of CRM policies significantly differed among the municipalities of Oslob, Samboan, and Santander. Statistical differences were typical to substantial ($\eta \leq .338$). Some of these included fishers' trust for the police in support fish warden operations. These differences could be attributed to the differences in the way each municipality manages their coastal waters, including MPAs.

- There is a substantial difference (η =. 427) among fishers' normative beliefs regarding the lack of communication between People's Organizations (POs) and municipal local governments in managing their municipal waters

Table 7. Municipality differences on normative beliefs about the acceptability of sanctions for coastal resource management scenarios.

CRM scenarios*	Municipality[1]			*F*	*p*-value	η
	Oslob	Santander	Samboan			
2a.Boats not registered	1.062 [a]	0.883 [a]	0.369 [b]	11.151	<.001	0.211
2b Non-residents fishing in municipal waters	1.312 [a]	0.849 [b]	0.167 [c]	31.719	<.001	0.340
2c.Cyanide Fishing	1.500 [a]	1.500 [a]	0.941 [b]	12.269	<.001	0.221
2d.Fishers not registered	0.461 [a]	0.504 [a]	0.071 [a]	3.097	.046	0.112
2e.Commercial fishing in municipal waters	1.401 [a]	1.424 [a]	0.906 [b]	9.303	<.001	0.193
2f.Residents fishing in MPA no-take zone	1.019 [a]	1.237 [a]	0.600 [b]	7.403	0.001	0.172
2g.Larger fines for non-residents fishing in MPA no-take zone	1.461 [a]	1.181 [b]	0.541 [c]	25.207	<.001	0.309
2h.Use of fine mesh nets	0.627	0.585	0.306	2.054	0.129	0.092
2i.Compressor fishing	1.452 [a]	1.259 [a]	0.869 [ab]	11.312	.001	0.215
2j.Taking giant clams	0.664	0.626	0.435	1.048	0.351	0.065
2k. Off-season fishing for rabbit fish	0.843 [a]	0.504 [ab]	0.202 [b]	8.410	<.001	0.184
2l. Use of surface gill net	0.851 [a]	0.748 [b]	0.482 [b]	2.701	0.068	0.104
2m.Dynamite fishing	1.517 [a]	1.504 [a]	1.036 [b]	8.357	<.001	0.184
2n.Baby *muro ami* fishing	1.127	1.266	1.000	1.552	0.213	0.079
2o. Lack of building permits for foreshore structures	1.066	1.123	0.833	1.989	0.138	0.091
2p. Fishing with *superlights*	1.336 [a]	1.158 [ab]	0.965 [b]	4.280	0.014	0.132
2q. Cutting of Mangroves	1.133	1.117	0.988	0.634	0.531	0.052
2r. Fish Pot Use	-0.140	-0.072	-0.447	2.249	0.107	0.096

[1]Means with different superscripts (e.g. 1.289 [a] vs. 0.646[b]) are significantly different at the p <.05 level based on the Tamhanes post hoc analysis.

*The numbers and letters associated with the CRM scenario/policy correspond to section II of the survey. For example, "2a Boats not registered to mark MPA" corresponds to the question 2a of section II in the survey

Table 7 highlights:

- 73% of fishers' normative beliefs regarding the acceptability sanctions applied to CRM scenarios/policies significantly differed among the municipalities of Oslob, Samboan, and Santander. 80% of these differences were statistically minimal ($\eta \leq$ .221).
- Typical statistical differences among fishers' normative beliefs were sanctions applied to non-residents applied to fishing within municipal waters and larger fines given to non-residents fishing inside MPA no-take zone.
- Generally, Samboan had the least level of acceptability ($M \leq 1$) and Oslob having the greatest level of acceptability for sanctions applied to CRM policies/scenarios ($M \leq 1.5$).
- All municipalities had lower levels of acceptability for sanctions applied to fishers not registered with the municipality. Oslob and Santander ($M \leq 1$) were more acceptable of this scenario than Samboan (M= 0.071).
- Oslob and Samboan had the least level of acceptability for sanctions applied to fish pot use (M = -0.447).

Amount of Consensus for Fishers' normative beliefs regarding the acceptability of selected CRM scenarios

The amount of consensus for fishermen's normative beliefs is primarily measured through the Potential for Conflict Index (PCI_2). The PCI_2 is calculated on the basis of a distance function between response scales of the survey. A PCI_2 of 1 reflects the greatest potential for conflict because there is the least amount of consensus regarding the acceptability of a management or policy scenario. On the other hand, a PCI2 of 0 corresponds to least potential for conflict because there is the most amount of consensus for a given management scenario. The bubble graphs below display respondent's acceptability of management scenario (vertical axis) and the amount of consensus (PCI2) for that scenario (bubble size). A larger PCI_2 displays a larger bubble, indicating more potential for conflict and less consensus for a given management scenario. Likewise, a smaller bubble illustrates a smaller PCI_2, indicating less potential for conflict and more consensus for a given scenario. The center of the bubble illustrates the mean or the average respondent's evaluation on the acceptability of a given management scenario.

The PCI_2 figures below are represented by red, peach, and yellow bubbles representing Oslob, Santander, and Samboan respectively.

Figure 4. Acceptability and consensus for sanctions applied to unregistered boats, non-residents fishing in municipal waters, and cyanide fishing

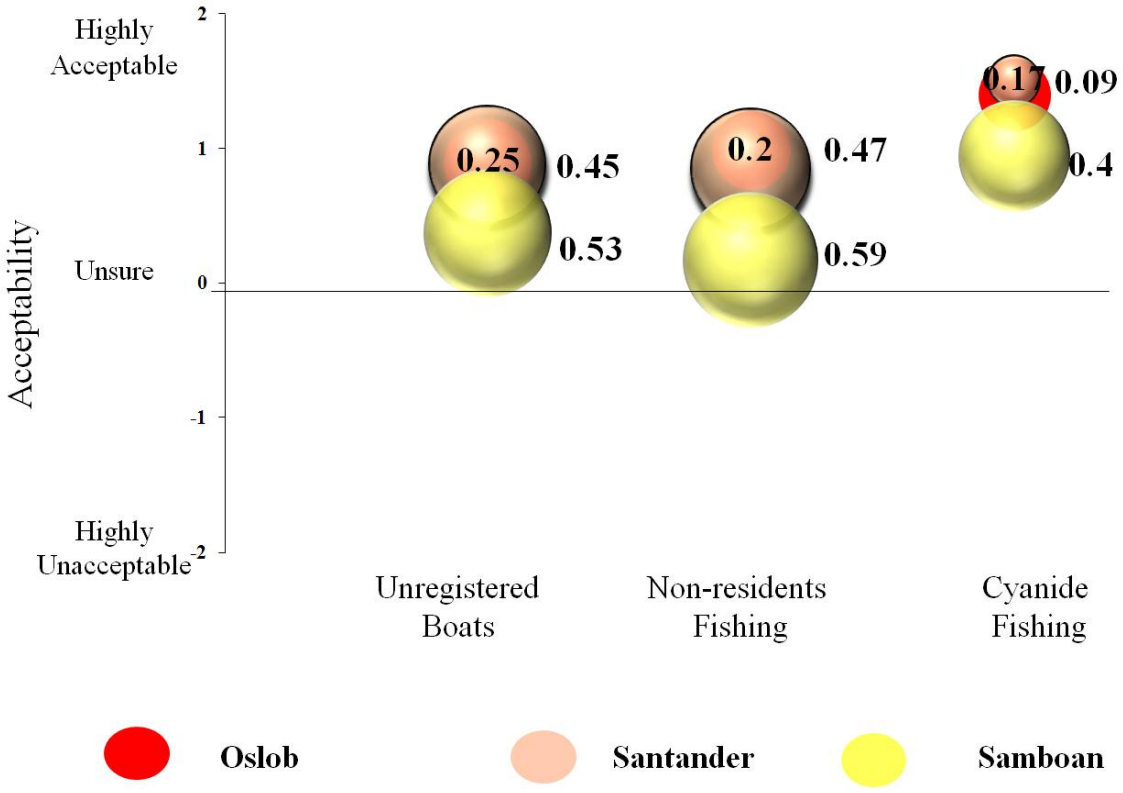


Figure 4 highlights:

- Oslob, represented by the red bubble, generally has the most amount of consensus for sanctions applied to unregistered boats, non-residents fishing in municipal waters, and cyanide fishing. Oslob residents are also more likely to comply with these CRM scenarios because of their higher level of acceptability for CRM policies.
- Sanctions applied to non-residents fishing in municipal waters would likely create conflict for Santander (represented by peach bubble)
- Samboan (displayed by the yellow bubble) had the least amount of consensus and acceptability for sanctions applied for these CRM scenarios. Sanctions applied to non-resident fishing within municipal waters will create conflict for Samboan fishers (PCI_2 = .59).

Figure 5. Acceptability and consensus for fish gear registration and sanctions applied to unregistered boats and fishers

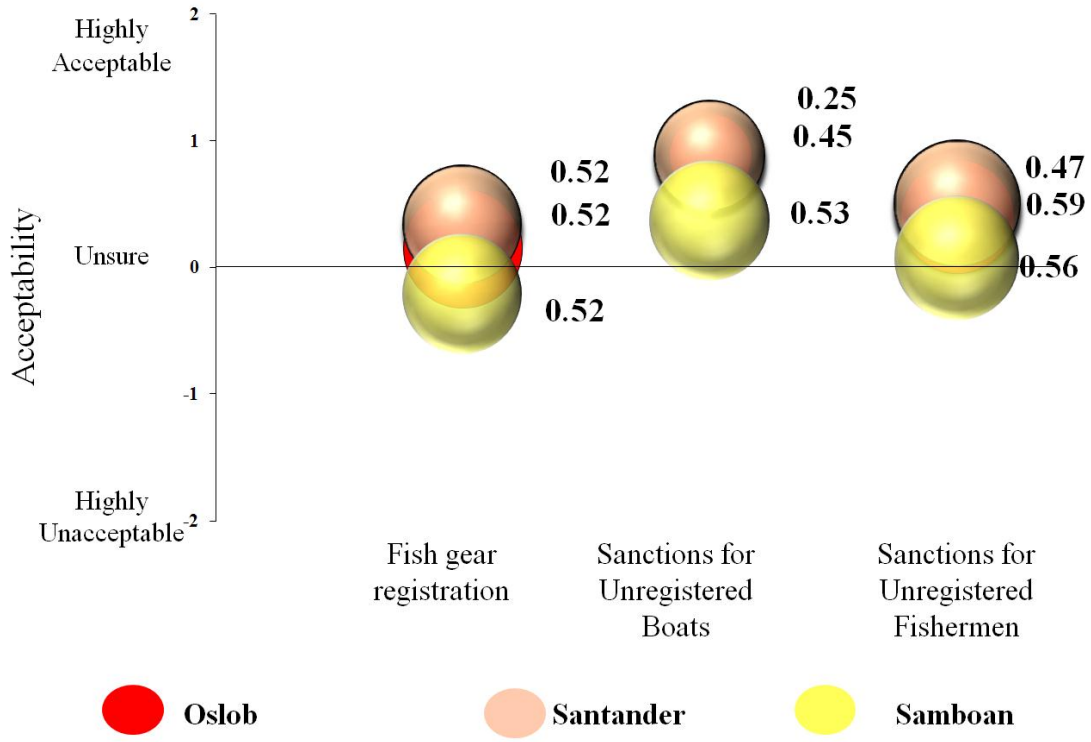


Figure 5 highlights:

- All three municipalities had the same amounts of consensus regarding the acceptability of fish gear registration. Despite these similarities, the level of acceptability differed among municipalities. Samboan fishers generally believed that fish gear registration was unacceptable while Oslob and Santander were more unsure about their acceptability for fish gear registration
- Oslob generally had the most amount acceptability and consensus for sanctions applied to unregistered boats and unregistered fishers.

- Santander had the least amount of consensus for sanctions applied to unregistered fishers. This municipality also had less consensus for sanctions applied to unregistered boats, indicating the greater potential for conflict to occur in this municipality

- Samboan had least level of acceptability and consensus for all CRM scenarios in Figure 5.

Figure 6. Acceptability and consensus for sanctions applied to use of fine mesh nets and surface gill nets (sagiwsiw).

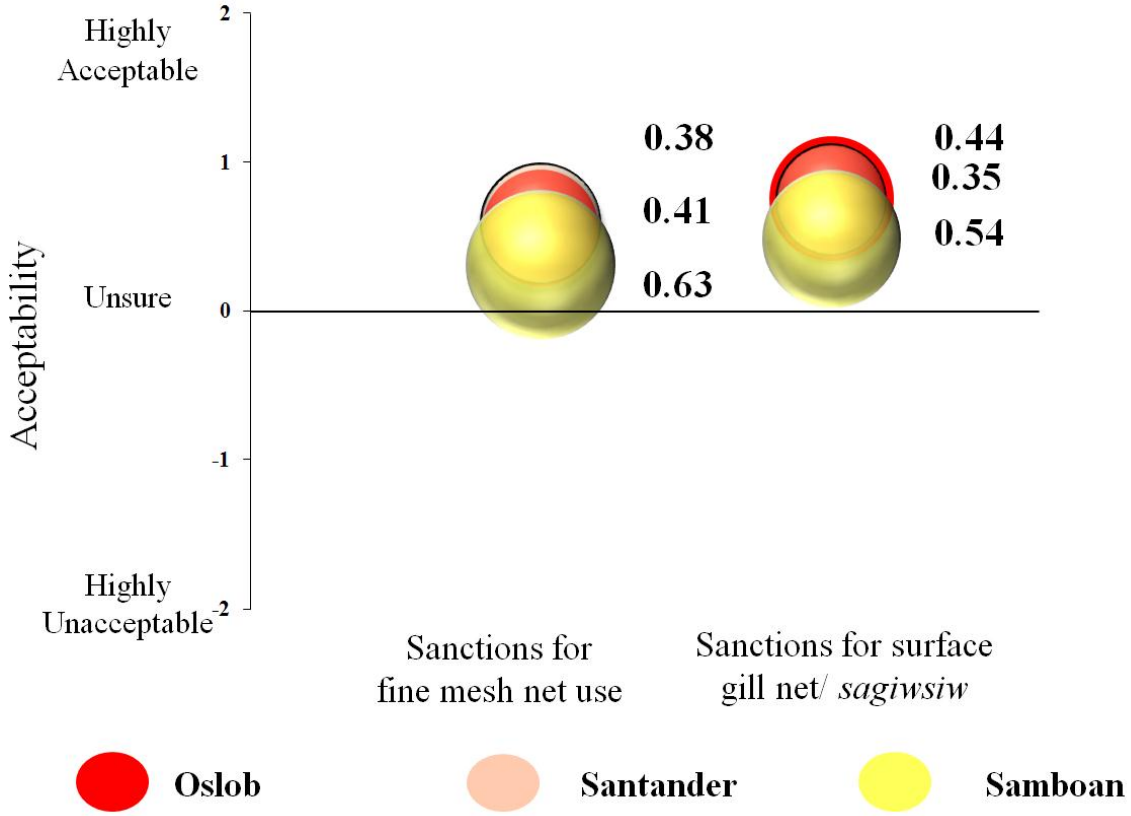


Figure 6 highlights:

- Oslob and Samboan had similar levels of acceptability and amounts of consensus ($PCI_2 \leq .38$).

- Samboan had the least level of acceptability and amount of consensus, indicating the greater potential for conflict to occur regarding sanctions for fine mesh net use and *Sagiwsiw*/surface gill net.

Figure 7. Acceptability and consensus for sanctions applied to fish port/*bubo* use and fish pot/*bubo* zoning.

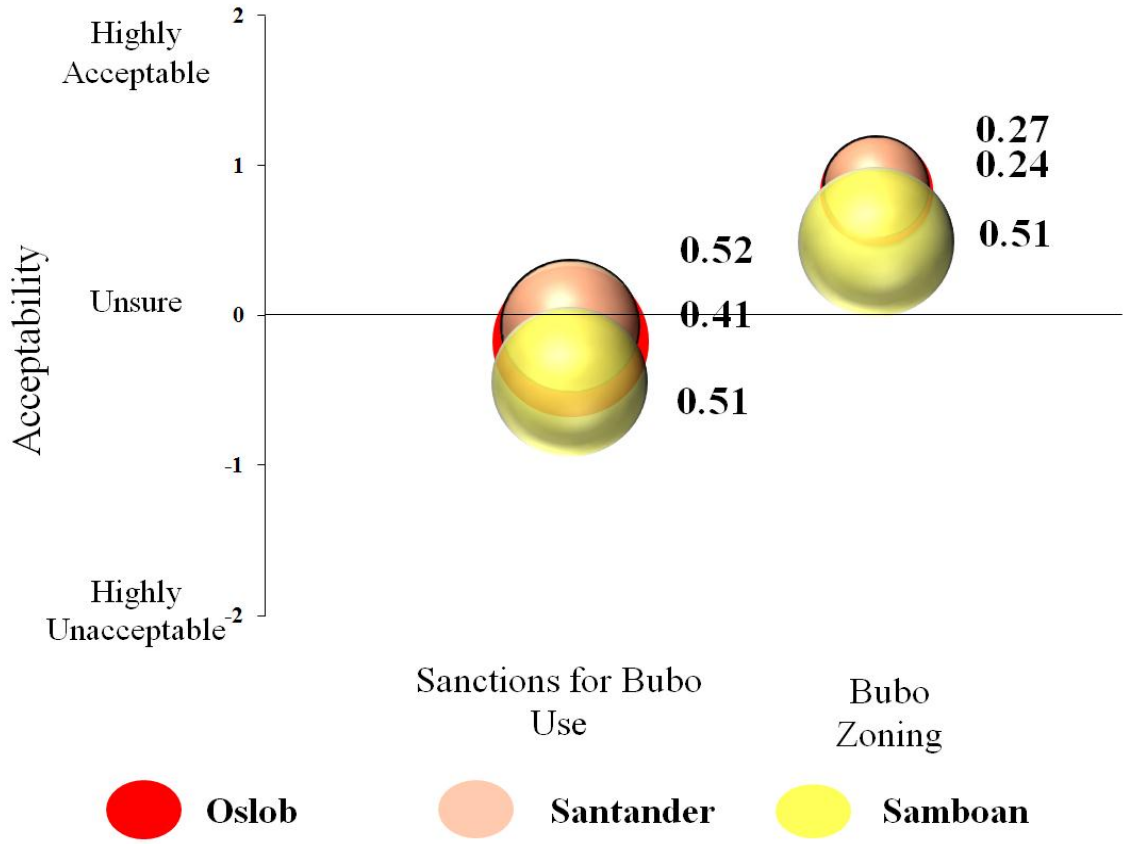


Figure 7 highlights:

- All municipalities significantly had less acceptability and consensus for sanctions applied to bubo use as compared to bubo zoning
- Oslob and Santander had the most level of acceptability and consensus for Bubo zoning
- Samboan had the least level of acceptability and consensus for Bubo zoning
- Conflict will likely occur for all municipalities if future regulatory actions employ sanctions for bubo use.
- Bubo zoning as applied in Oslob, may be the more alternate means of regulating bubo use.

Upland and coastal barangays' acceptability and consensus for selected CRM scenarios

Figure 8. Acceptability and consensus for fish gear policies, fishing permits, and consideration of barangays/community opinions in MPA management

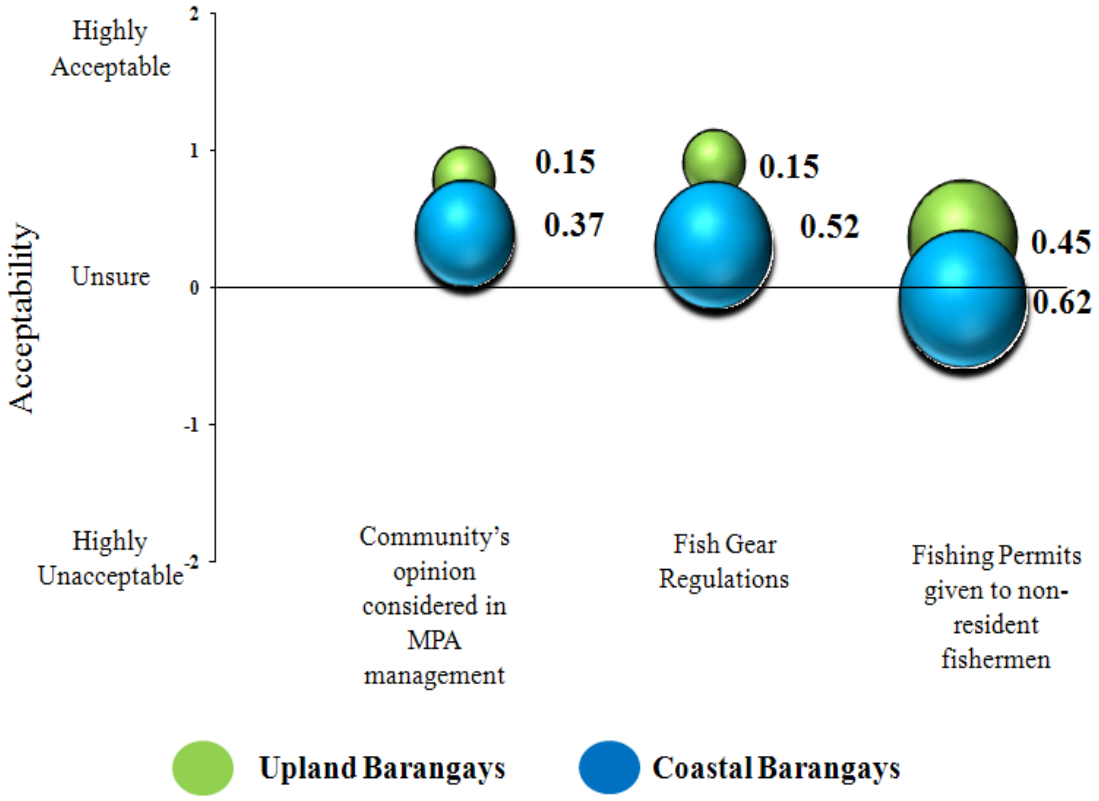


Figure 8 highlights:

- Upland barangays (represented by green bubbles) were more acceptable and had the most consensus for these CRM scenarios than coastal barangays (displayed by green bubbles).
- Both upland and coastal barangays were less acceptable and had less consensus for providing fishing permits to non-resident fishers. Coastal barangays had significantly less consensus than upland barangays.
- The larger PCI_2 for coastal barangays may illustrate the diversity of strong opinions that are salient for fishers residing in coastal barangays.

Figure 9. Acceptability and consensus for MPA regulations, fish catch increase, and fishers registration

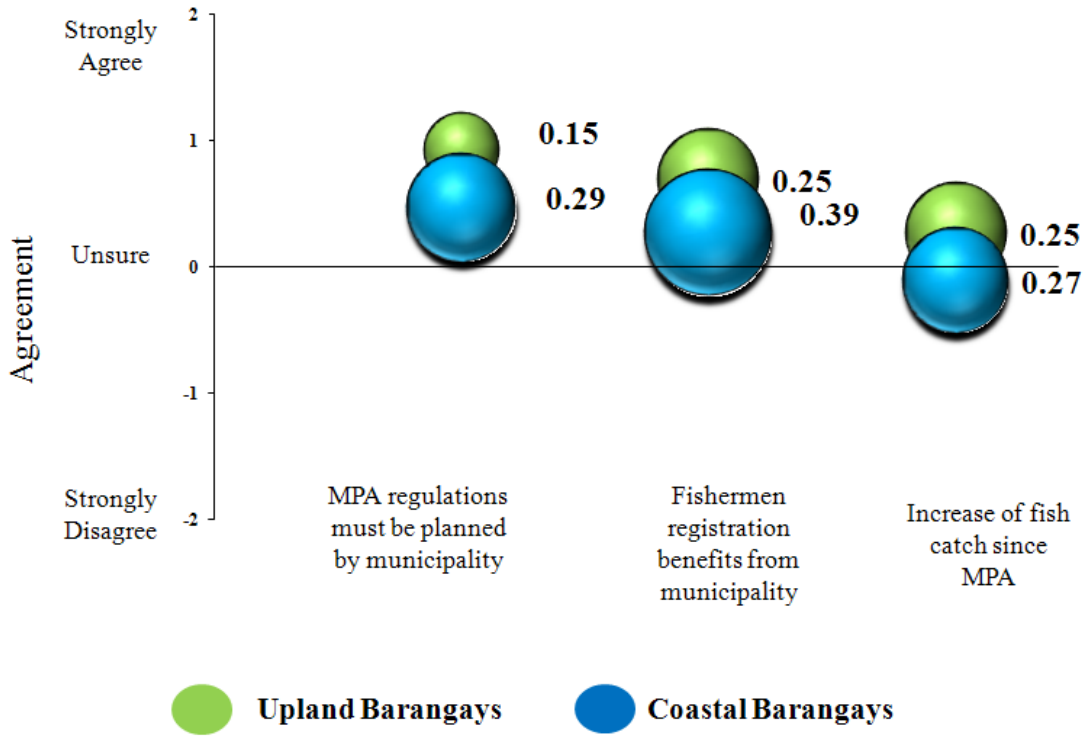


Figure 9 highlights:

- Upland barangays were more acceptable and had the most consensus for these CRM scenarios than coastal barangays.
- The larger PCI_2 for coastal barangays may illustrate the diversity of strong opinions that are salient for fishers residing in coastal barangays. The PCI_2 also depicts less consensus for these CRM scenarios in coastal barangays, thereby increasing the greater potential for conflict
- Both barangays were less acceptable of their fish catch increasing since the establishment of their MPA.

Table 8. Amount of Consensus for Fishers' normative beliefs regarding the acceptability of CRM per municipality

Comparisons of Municipalities*	PCI a[1]	PCI b[2]	PCI difference test *
1a. Necessity of buoys to mark MPA			
Oslob. vs. Santander	0.240	0.310	1.12
Oslob vs. Samboan	0.240	0.700	7.44*
Santander vs. Samboan	0.310	0.700	5.69*
1b. Prohibition of fishing in MPA			
Oslob. vs. Santander	0.400	0.200	2.86*
Oslob vs. Samboan	0.400	0.620	2.84*
Santander vs. Samboan	0.200	0.620	4.90*
1c. Hook and line fishing in MPA buffer zone			
Oslob. vs. Santander	0.190	0.170	0.10
Oslob vs. Samboan	0.190	0.610	2.11*
Santander vs. Samboan	0.170	0.610	5.60*
1d. Zoning of fish pots			
Oslob. vs. Santander	0.270	0.240	0.44
Oslob vs. Samboan	0.270	0.510	2.63*
Santander vs. Samboan	0.240	0.510	2.79*
1e. Municipal government regulating MPAs			
Oslob. vs. Santander	0.180	0.140	0.770
Oslob vs. Samboan	0.180	0.420	3.85*
Santander vs. Samboan	0.140	0.420	4.09*
1f. Fisher organizations managing MPAs			
Oslob. vs. Santander	0.090	0.110	0.51
Oslob vs. Samboan	0.090	0.320	3.98*
Santander vs. Samboan	0.110	0.320	3.39*
1g. Allotting diver user revenues to community			
Oslob. vs. Santander	0.100	0.160	1.21
Oslob vs. Samboan	0.100	0.440	5.85*
Santander vs. Samboan	0.160	0.440	4.19*
1h. Lack of communication between the community and municipal government			
Oslob. vs. Santander	0.080	0.060	0.70
Oslob vs. Samboan	0.080	0.230	2.77*
Santander vs. Samboan	0.060	0.230	3.06*
1i. Community's opinion considered in MPA management			
Oslob. vs. Santander	0.120	0.220	0.98*
Oslob vs. Samboan	0.120	0.360	3.730
Santander vs. Samboan	0.220	0.360	1.960
1j. Allotment of fish warden stipends regardless of whether violators are caught			
Oslob. vs. Santander	0.250	0.410	2.55*
Oslob vs. Samboan	0.250	0.410	2.32*
Santander vs. Samboan	0.410	0.410	0.00
1k.Allotting violator fee revenues to fish wardens			
Oslob. vs. Santander	0.330	0.380	0.88
Oslob vs. Samboan	0.330	0.390	0.87
Santander vs. Samboan	0.380	0.390	0.13

Table 8 continued

Comparisons of Municipalities	PCI a[1]	PCI b[2]	PCI difference test *
1l. Difficulty of taking municipal general funds for fish warden			
Oslob. vs. Santander	0.100	0.120	0.66
Oslob vs. Samboan	0.100	0.190	1.85
Santander vs. Samboan	0.120	0.190	1.32
1m.Necessity of fish warden trust fund			
Oslob. vs. Santander	0.110	0.110	0.00
Oslob vs. Samboan	0.110	0.250	2.35*
Santander vs. Samboan	0.110	0.250	2.28*
1n. Trust for police in supporting fish wardens			
Oslob. vs. Santander	0.170	0.240	1.40
Oslob vs. Samboan	0.170	0.390	3.56*
Santander vs. Samboan	0.240	0.390	2.230
1m.Preparedness of police for supporting fish wardens			
Oslob. vs. Santander	0.210	0.260	0.88
Oslob vs. Samboan	0.210	0.410	2.88*
Santander vs. Samboan	0.260	0.410	1.88
1n.Fish gear regulations			
Oslob. vs. Santander	0.380	0.420	0.63
Oslob vs. Samboan	0.380	0.530	2.11*
Santander vs. Samboan	0.420	0.530	1.330
1o.Fishing permits for non-residents			
Oslob. vs. Santander	0.560	0.610	0.890
Oslob vs. Samboan	0.560	0.540	0.310
Santander vs. Samboan	0.610	0.540	0.920
1q.Fish gear registration			
Oslob. vs. Santander	0.520	0.520	0.00
Oslob vs. Samboan	0.520	0.520	0.00
Santander vs. Samboan	0.520	0.520	0.00
1r. Municipal benefits for fisher registration			
Oslob. vs. Santander	0.210	0.350	2.37*
Oslob vs. Samboan	0.210	0.440	3.57*
Santander vs. Samboan	0.350	0.440	1.16
1s. Fish sold within municipality			
Oslob. vs. Santander	0.320	0.320	0.00
Oslob vs. Samboan	0.320	0.590	4.07*
Santander vs. Samboan	0.320	0.590	3.38*
1t. Increase of fish since MPA establishment			
Oslob. vs. Santander	0.240	0.320	0.21
Oslob vs. Samboan	0.240	0.230	1.27
Santander vs. Samboan	0.320	0.230	1.01
1w.Persuasion of MPA educational workshops			
Oslob. vs. Santander	0.110	0.130	0.53
Oslob vs. Samboan	0.110	0.320	5.29*
Santander vs. Samboan	0.130	0.320	4.20*
1y.Personal understanding of MPA regulations			
Oslob. vs. Santander	0.280	0.330	0.960
Oslob vs. Samboan	0.280	0.350	1.440
Santander vs. Samboan	0.330	0.350	0.330

[1]PCI a = first PCI value of the comparison. For example, PCI a corresponds to the PCI value of Oslob in the comparison of Oslob versus Santander
[2]PCI b = second PCI value of the comparison. For example, PCI b corresponds to the PCI value of Santander in the comparison of Oslob versus Santander
* PCI difference tests larger than 1.96 are significant at $p < .05$.

Table 8 highlights:

- Generally, fishers from Oslob (e.g., $PCI_2 = 0.12$) had the most amount of consensus for their agreement with the CRM scenarios listed in Table 9.
- Fishers from Samboan had the least amount of consensus for CRM scenarios/policies.
- Fishers from Santander and Samboan had the same amount of consensus ($PCI_2 = 0.410$) for their agreement with the survey question stating that fish wardens should be given stipends, regardless of whether violators are caught or not. Both municipalities had a significantly less amount of consensus and more potential for conflict than Oslob ($PCI_2 = 0.250$).
- The amount of consensus for fishers from Oslob, Santander, and Samboan did not significantly differ in terms of their agreement and acceptability for fish gear registration, increase of fish for MPA establishment, and personal understanding of MPA regulations.

Table 9. Municipality comparisons of the amount of consensus for Fishers' normative beliefs regarding the acceptability of sanctions for CRM

Comparisons of Municipalities*	PCI a[1]	PCI b[2]	PCI difference test *
2a. Boats not registered			
Oslob vs. Santander	0.250	0.450	2.66*
Oslob vs. Samboan	0.250	0.530	3.72*
Santander vs. Samboan	0.450	0.530	0.87
2b.Non-residents fishing in municipal waters			
Oslob vs. Santander	0.200	0.470	0.67
Oslob vs. Samboan	0.200	0.590	0.97
Santander vs. Samboan	0.470	0.590	1.50
2c.Cyanide fishing			
Oslob. vs. Santander	0.170	0.100	1.41
Oslob vs. Samboan	0.170	0.400	2.53*
Santander vs. Samboan	0.100	0.400	3.42*
2d.Unregistered fishers			
Oslob vs. Santander	0.470	0.590	2.02*
Oslob vs. Samboan	0.470	0.560	1.47
Santander vs. Samboan	0.590	0.560	0.42
2e. Commercial fishing in municipal waters			
Oslob vs. Santander	0.160	0.230	1.05
Oslob vs. Samboan	0.160	0.430	3.26*
Santander vs. Samboan	0.230	0.430	2.12*
2f. Residents fishing in MPA no-take zone			
Oslob vs. Santander	0.370	0.280	1.24
Oslob vs. Samboan	0.370	0.590	2.81*
Santander vs. Samboan	0.280	0.590	3.50*
2g. Larger fines for non-residents fishing in MPA no-take zone			
Oslob. vs. Santander	0.100	0.300	3.00*
Oslob vs. Samboan	0.100	0.550	6.01*
Santander vs. Samboan	0.300	0.550	2.73
2h. Use of fine mesh nets			
Oslob vs. Santander	0.380	0.410	0.48
Oslob vs. Samboan	0.380	0.630	3.94*
Santander vs. Samboan	0.410	0.630	2.96*
2i.Compressor fishing			
Oslob vs. Santander	0.110	0.220	1.68
Oslob vs. Samboan	0.110	0.440	4.19*
Santander vs. Samboan	0.220	0.440	2.40*
2j.Taking giant clams			
Oslob vs. Santander	0.390	0.370	0.32
Oslob vs. Samboan	0.390	0.600	2.99*
Santander vs. Samboan	0.370	0.600	2.87*
2k. Off-season fishing for rabbit fish/*Dariday*			
Oslob vs. Santander	0.370	0.470	1.59
Oslob vs. Samboan	0.370	0.650	4.74*
Santander vs. Samboan	0.470	0.650	2.62*

Table 9 Continued.

Comparisons of Municipalities*	PCI a[1]	PCI b[2]	PCI difference test *
2l.Use of surface gill net			
Oslob vs. Santander	0.440	0.350	1.42
Oslob vs. Samboan	0.440	0.540	1.41
Santander vs. Samboan	0.350	0.540	2.41*
2m.Dynamite fishing			
Oslob. vs. Santander	0.180	0.180	0.00
Oslob vs. Samboan	0.180	0.370	2.07*
Santander vs. Samboan	0.180	0.370	1.88
2n.Baby *muro ami* fising			
Oslob. vs. Santander	0.310	0.220	1.28
Oslob vs. Samboan	0.310	0.390	0.85
Santander vs. Samboan	0.220	0.390	1.66
2o.Lack of building permits for foreshore structures			
Oslob. vs. Santander	0.190	0.220	0.45
Oslob vs. Samboan	0.190	0.400	2.41*
Santander vs. Samboan	0.220	0.400	1.87
2p.Fishing with *superlights*			
Oslob. vs. Santander	0.170	0.240	0.99
Oslob vs. Samboan	0.170	0.380	2.43*
Santander vs. Samboan	0.240	0.380	1.42*
2q.Cutting of Mangroves			
Oslob. vs. Santander	0.190	0.170	0.34
Oslob vs. Samboan	0.190	0.360	1.85
Santander vs. Samboan	0.170	0.360	1.95
2r. Fish Pot Use			
Oslob. vs. Santander	0.520	0.410	2.13*
Oslob vs. Samboan	0.520	0.510	0.17
Santander vs. Samboan	0.410	0.510	1.55

[1]PCI a = first PCI value of the comparison. For example, PCI a corresponds to the PCI value of Oslob in the comparison of Oslob versus Santander

[2]PCI b = second PCI value of the comparison. For example, PCI b corresponds to the PCI value of Santander in the comparison of Oslob versus Santander

* PCI difference tests larger than 1.96 are significant at $p < .05$.

*The numbers and letters associated with the CRM scenario/policy correspond to section II of the survey. For example, "2a Boats not registered to mark MPA" corresponds to the question 2a of section II in the survey

Table 9 highlights:

- Generally, fishers from Oslob (e.g., $PCI_2 = 0.12$) had the most amount of consensus for their agreement with sanctions applied to the CRM scenarios listed in Table 10.
- Fishers from Samboan generally had the least amount of consensus and the greatest potential for conflict. This situation is particularly evident for Samboan's larger PCI_2 of 0.650 as compared to Oslob's PCI_2 of 0.370 regarding the consensus for sanctions applied to off-season fishing for rabbit fish or *Dariday* (2k).
- Santander fishers had the least amount of consensus and greatest potential for conflict (PCI_2=0.59) for sanctions applied to unregistered fishers (2d).
- Oslob and Santander did not statistically differ for their amount of consensus regarding dynamite and cyanide fishing. Samboan had a statistically less amount of consensus than Oslob and Santander regarding cyanide(2c) and dynamite fishing(2m) (PCI_2 =.47)
- Sanctions applied to fish pot*/bubo* use (2r) will likely create conflict for Oslob fishers, as shown by their PCI_2=.52.
- The amount of consensus for sanctions applied to baby *muro ami* fishing (2n) did not statistically differ among fishers from all three municipalities. The PCI_2 for all three municipalities were relatively small, indicating more consensus and less potential for conflict regarding baby *muro ami* fishing. This situation could indicate that the norm or standard for *muro ami* fishing an illegal fishing method is well established and enforced within the municipalities.

Survey Section III. Fishers' Behavioral Support and Intentions for CRM policies and initiatives

Table 10. Fishers' behavioral intentions and support for CRM[1]

	%	
Municipality	Yes	No
Oslob, Santander, and Samboan combined	72.0	28.0
Oslob	81.4	18.6
Santander	74.2	25.8
Samboan	41.8	58.2
Santander and Samboan upland barangays	68.5	31.5
Santander and Samboan coastal barangays	56.5	40.5

[1]Reponses are based on survey section III, question 9 asking "Would you say that you generally support most of the municipality's coastal management initiatives and regulations?"

Table 10 highlights:

- Generally, most fishers from all municipalities support most of the CRM policies and initiatives.
- 58.2% of fishers from Samboan appeared to not support the most of the CRM initiatives and policies.
- Upland barangays were more supportive (68.5%) of CRM policies and initiatives than coastal barangays (56.5%)

Table 11. Fishers' support for institutions promoting CRM

	%		
CRM scenario/survey question	Yes	No	Don't Know
Are you affiliated with any non-governmental organization in your municipality (e.g. World Vision and Coastal Conservation Education Foundation)?	11.8	88	0.2
Is there a cooperative or People's Organizations (PO) that addresses issues within your MPA?	14	12.9	73.1
Have you attended any meetings focused on managing your community's coastal waters?	23.1	73.9	0

Table 11 barangays:

- Majority (88%) of the fishers surveyed were not affiliated with an NGO in their municipality
- 73% of fishers were unaware of the presence of PO within their municipality
- Majority of the fishers have not attended public meetings about CRM.

Table 12. Fishers' use of active fish gear[1]

Municipality	%	
	Yes	No
Oslob, Santander, and Samboan combined	50.6	49.4
Oslob	56.7	43.3
Santander	45.3	54.7
Samboan	36.9	60.7
Santander and Samboan upland barangays	69.8	30.2
Santander and Samboan coastal barangays	32.5	67.5

[1] Active fish gear included the use of *sagiwsiw* or surface gill net, set floating gill net, double net or entangling gill net, compressor diving, *paglamba* or hitting the water with drift gill net, Danish seine, baby muro ami or drive in with seine, long line, and fish pots. Some of these methods (e.g. fish pots) may be not be considered as active gear because of the differing methods associated with the fish gear. R.A. 8550 considers active fishing gear as a fishing device characterized by gear movements, and/or the pursuit of the target species by towing, lifting, and pushing the gears, surrounding, covering, dredging, pumping and scaring the target species to impoundments.

Table 12 highlights:

- Half of the fishers (50.6%) surveyed use active fish gear
- Over half of the fishers from Oslob (56.7%) use active fish gear. Sagiwsiw or surface gill net is used by 4% (n = 11) of the fishers from Oslob, baby *muro ami* or drive in gill net is used by 1.4% (n = 4), and fish pots are used 3.6% (n = 10).
- Samboan and Santander mostly use inactive fish gear
- Upland barangays of Samboan and Santander use more active gear (69.8%) as compared to coastal barangays (32.5%).
- The conscientious effort of not using active gear may be a form of public support for CRM.

Table 13. Fish gear and methods most often used

Fish Method	Frequency/Count	%
Hook and Line	233	50.5
Sagiwsiw	2	0.4
Set Floating Gill Net	4	0.9
Double Net	54	11.7
Spear Fishing	34	7.4
Hitting the water	1	0.2
Danish Seine	6	1.3
long line	6	1.3
squid jigger	1	0.2
fish pots	13	2.8
bag net	2	0.4
ring net	92	20.0
Dip Net	2	0.4
other	11	2.4

Table 13 highlights:

- Hook and line appears to be used by half of the fishers surveyed. Ring net is the next method most often used.

Section IV. Demographics of Fishers

Table 14. Part-time Fisher

	Frequency/Count	%
Part-time Fishers[1]	305	62
Full –time fishers	187	38

[1]Part time fishers corresponded to fishers that had other forms of livelihood other than fishing

Table 15. Occupations for part-time fishers

Occupations	Frequency/Count	%
Farming	200	66.9
Tricycle Driver	8	2.7
Fish Warden	7	2.3
Fish seller	7	2.3
Dive resort employee	2	.7
community local government	10	3.3
Carpenter (*Panday*)	13	4.3
Other	52	17.4

Table 16. Household size

Household Size[1]			
Mean	Median	Mode	Standard Deviation
5.63	5	6	2.57

[1]Household size referred to the number of people residing within a household

Figure 10. Household Size

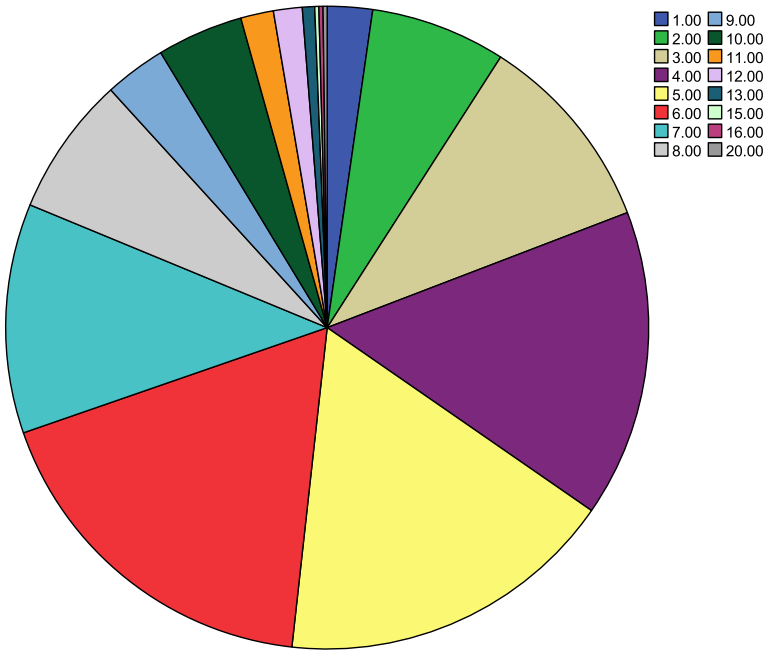


Table 17. Education level of fishers

Education Level[1]			
Mean	Median	Mode	Standard Deviation
2.65	2.00	2.00	2.00

[1]Education level corresponded to whether they have finished elementary school (1) , completed elementary schools (2), taken some high school classes (3), completed high school (4), graduated from high school, undergone vocational school (5), taken some college classes (6), graduated from college(7).

Table 17 highlights:

- The average level of education completed consisted of completing elementary school and taking some high school classes.

Table 18. Formal education completed by fishers

Education Level	Frequency/Count	%
Did not finish elementary school	94	19.3
Elementary	171	35.2
Some high school	90	18.5
High school graduate	105	21.6
Vocational School	2	.4
Some college	16	3.3
College graduate	7	1.4
Other	1	.2

Figure 11. Fishers' education level

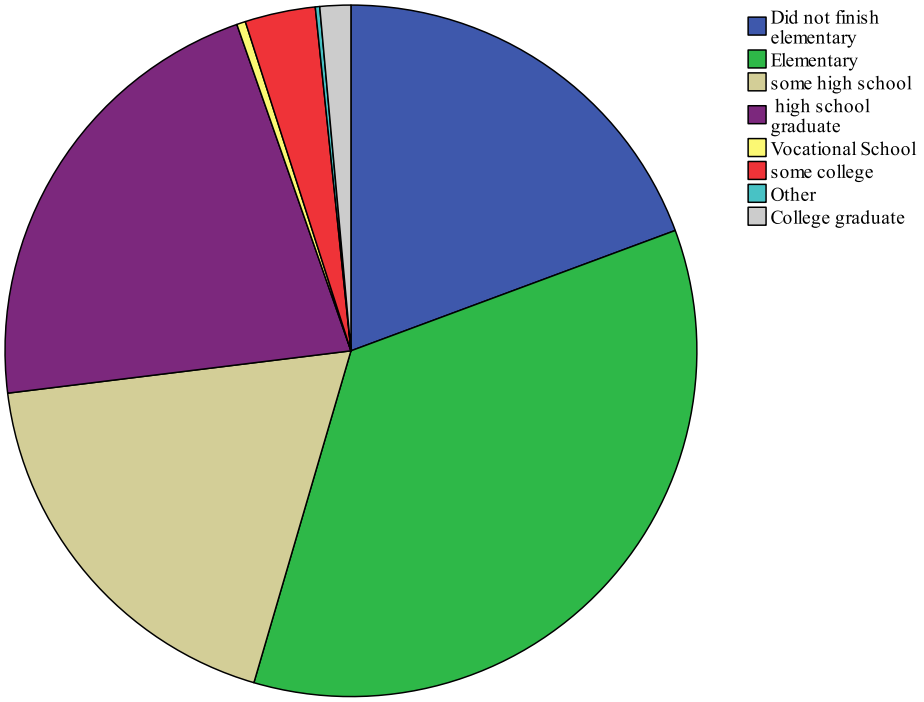


Table 19. Average age of fishers surveyed

Age			
Mean	Median	Mode	Standard Deviation
44	44	40	12.24

Table 20. Residents and non-resident fishers surveyed

Residence[1]	Frequency/Count	%
Resident	471	96.3
Non-resident	18	3.7

[1]Fishers were asked whether they were residents of their municipality

APPENDIX I
SURVEY INSTRUMENT (CEBUANO)

Local Perceptions of Coastal Resource Management: Survey of Public Opinion

Ang sanktuaryo ang usa sa mga pamaagi sa pagdumala as kadagatan. Para ma hapsay ang pagdumala sa kadagatan sa inyong lungsod, kinhanglan sila ug impormasyon bahin sa mga huna huna sa mangingisda bahin sa mga balaud ug pamaagi sa pagdumala sa kadagatan. I ipon ang mga tubag sa mga gi pangutana ninyo para makahibaw ang lungsod sa kaauyuhan sa mga mga manginisda.

Dili mi mo sulat sa inyong pangalan kay ang inyong mga tubag ug huna huna dili i saba sa uban sa mga tao . Kinhanglan maminaw ang lungsod sa inyong mga opinion o huna huna para na'y masabtan ang inyong munsipyo sa pag apekto sa sanktuaryo ug an uban mga balaud sa kadagatan sa inyong kinabuhi.

Kinahanglan ihatag ang inyong tinuoray na huna huna sa inyong dughan. Lahi na ang "sunod" ug "uyon". Kinahanglan i-hatag ang inyong ka-uyonan sa balaud ug pamaagi sa sanktuaryo.

Salamat kaayo!

Section 1.

1) Nakahibaw ka ba nga naay sanktuaryo sa kadagtan sa inyong munisipyo? ___ Oo ___ Wala nakahibaw

Kung nakahibaw ka (Oo) , palihug itubag ang mga gi-pangutana:

2) Mo uyon ba ka sa lugar sa sanktuaryo?

Uyon gyud	Uyon	Walay Opinion	Dili Mo Uyon	Dili Mo Uyon Gyud
1	2	3	4	5

3) Kasagaran, unsa ang imong nasabtan bahin bahin sa katuyuan sa sanktuaryo?

Kasabut kaayo	Kasabut	Walay ikatubag	Kasabut gamay	Wala gyud
1	2	3	4	5

4) Nakasabut ka ba sa katuyuan sa balud bahin sa kadagatan sa lungsod?

Kasabut kaayo	Kasabut	Walay ikatubag	Kasabut gamay	Wala gyud
1	2	3	4	5

5) Naka-uyon ka ba anang sanktuaryo dinhi sa imong lungsod?

Uyon gyud	Uyon	Walay Opinion	Dili Mo Uyon	Dili Mo Uyon Gyud
1	2	3	4	5

6) Makatabang ba ang sanktuaryo sa imong kinabuhi?

Makatabang gyud	Makatabang	Walay Opinion	Makadaut	Makadaut gyud
1	2	3	4	5

Nganong mao ni ang imong gi bati?

_____

_____

7) Naa bay mga zone o lugar sa inyong sanktuaryo na puede maka pangisda ? ___Oo___Wala___ Wala ko kahibalu

Kung naa, mo uyon ka ba sa lugar sa puede maka pang-isda?

Uyon gyud	Uyon	Walay Opinion	Dili Mo Uyon	Dili Mo Uyon Gyud
1	2	3	4	5

8) Na-uyon ka ba sa balaud sa sanktuaryo na gi guinadili ang…..

Na-uyon ka ba sa balaud sa sanktuaryo nga gi guinadili ang…..	Uyon Gyud	Uyon	Walay opinion	Dili Mo Uyon	Dili Gyud
a) Tanang klase sa panagat sa sulud sa sanktuaryo	1	2	3	4	5
b) Pagpanginhas sa sulud sa sanktuaryo	1	2	3	4	5
c) Pagpanguha ug korals (gasang o guso) sa sulud sa sanktuaryo	1	2	3	4	5
d) Pagpanguha ug balas sa sulud sa sanktuaryo	1	2	3	4	5
e) Pagpanguha ug bato sa sulud sa sanktuaryo	1	2	3	4	5
f) Paghimo ug mga estruktura o edipisyo daplin sa baybay sa sanktuaryo (apil ang sea wall)	1	2	3	4	5
g) Pagdalag sakayan sa panahon sa hunas sa sulud sa sanktuaryo	1	2	3	4	5
h) Pag-ankla sa pump boat sa sulud sa sanktuaryo	1	2	3	4	5
i) Pag-agi sa pumpboat nga nagpaandar ug makina sa sulud sa sanktuaryo	1	2	3	4	5

9) Naghatag ba ang inyong munisipyo/lungsod ug programa na gi tawag ug “supplemental livelihood programs” (panaliptan pagpahatag ug baboy)? ___Oo ___Dili ___ Wala ko nakahibalu

Kung Oo, natagbaw ba ka ining programa?

Natagbaw Gyud	Natagbaw	Walay Ma Ingon	Wala na natagbaw	Wala na natagbaw gyud
1	2	3	4	5

10) Contento o natagbaw ka ba sa kasagaran sa mga balaud ug initiativa bahin sa sanktuaryo?

Natagbaw Gyud	Natagbaw	Walay Ma Ingon	Wala na natagbaw	Wala na natagbaw gyud
1	2	3	4	5

Section II.

1) Palihug pag-ingon kung naka-uyon ka ba sa mga gi ingon o gibutyag bahin sa balaud ug paagi sa pagdumala sa ***kadagatan***

Naka-uyon ka ba sa gi ingon nga….	Uyon gyud	Uyon	Wala ikaingon	Dili Uyon	Dili Uyon Gyud
a. Kinhanglan dungagan ang mga buya o pataw para masbtan sa katawhan asa ang sanktuaryo	1	2	3	4	5
b. Dili puedi mangisda sa sulud sa sanktuaryo	1	2	3	4	5
c. Ang pamasol gitugot sa daplin sa sanktuaryo (dili sa sulud, sa daplin lang)	1	2	3	4	5
d. Kinahanglan naay mga lugar o “zone” para sa paggamit ug bubo sa gawas sa sanktuaryo	1	2	3	4	5
e. Ang mga balaud bahin sa sanktuaryo kinhanglan gi plano sa mga consehal ug vice-mayor sa munispyo	1	2	3	4	5
f. Kinhanglan ang organisayon sa katawhan (PO) mao gyud mo dumala sa sanktuaryo	1	2	3	4	5
g. Kinahanglan ihatag ang barangay ug porsyento sa negosyo o kita na gi kuha sa dive user fee	1	2	3	4	5
h. May kakulang sa komunikasyon ang organisayon sa katawahan (PO) ug ang lungsod.	1	2	3	4	5
i. Maminaw ang taga munisipyo sa mga huna-huna sa barangay bahin sa pagdumala sa sanktuaryo	1	2	3	4	5
j. Kinahanglan hatagun ug honararium ang mga Bantay Dagat, bisag wala na ka kuha sila ug mga mga masinupakun sa balaud sa sanktuaryo	1	2	3	4	5
k. Kinahanglan tagaon ug porciento ang maga Bantay Dagat sa negosyo o kita gikan sa multa sa mga masinupakun sa balaud sa kadagatan.	1	2	3	4	5
l. Lisud ang pagkuha o pagpagawas sa kwarta pinaagi sa general fund para sa mga kinahanglan sa mga operasyon sa Bantay Dagat.	1	2	3	4	5
m. Kinahanglan ug trust fund para sa mga operasyon sa Bantay Dagat	1	2	3	4	5
n. Maka salig ko sa kasagaran sa pulis nga mo suporta sa kalihukan sa Batay Dagat	1	2	3	4	5
o.Kasagaran, andam ang pulis sa pagsuporta sa kalihukan sa kadagatan uban sa Bantay Dagat	1	2	3	4	5
p. Kinhanglan ug balaud bahin sa pag gamit sa pagpanagat	1	2	3	4	5
q. Kinahanglan maghatag ang munispyo ug “fishing permit” o lisensya para makapanagat ang mga dili taga inyong lungsod.	1	2	3	4	5
r. Kinahanglan i-registro ang imohang mga gamit para sa pagpanagat	1	2	3	4	5
s. Na’y benepisyo gikan sa lungsod kung na registro ko sa pag-	1	2	3	4	5

panagat					
t. Kasagaran sa mga isda nga nakuha sa mga mangingisda nga taga diri kinahanglan ibaligya sa atong lungsod.	1	2	3	4	5
u. Ni daghan ang mga isda diri pag kasugod sa sanktuaryo	1	2	3	4	5
v. Ni daghan ang akong nakuha na isda pag ka sugod sa sanktuaryo	1	2	3	4	5
w. Ang sanktuaryo ang pinka-unang rason nga ni daghan ang akong nakuha na isda	1	2	3	4	5
x. Ang mga programa sa pagtudlo sa katawhan o information drives (pananglitan fisheries seminar) makapadani sa benepisyo sa sanktuaryo.	1	2	3	4	5
y. Wala ko kasabut sa katuyuan sa mga balaud bahin sa pagdumala sa kadagatan	1	2	3	4	5

2) Palihug ihatag ang imong na-uyunan bahin sa pagdumula (pananglitan multahun) sa mga situasyon (apil ang mga masinapakon sa kadagtan) bahin sa inyong ***kadagatan*:**

Mo uyon ka ba na aduna'y ***multa*** sa ……..	Uyon gyud	Uyon	Wala ikaingon	Dili Uyon	Dili Uyon Gyud
a. Mga pamb boat na wala gi registro sa lungsod sa inyong lagatan	1	2	3	4	5
b. Dili taga sa lungsod na nangisda sa inyong kadagatan	1	2	3	4	5
c. Naggamit ug makahilo sa pangisda sa inyong kadagatan	1	2	3	4	5
d. Mga mangingisda na wala na ma registro sa munisipyo	1	2	3	4	5
e. Mga kubkub nangisda sa sulud sa kadagatan sa Munisipyo	1	2	3	4	5
f. Ang mga mangingisda sa inyong lungsod na ngisda sa sulud sa sanktuaryo	1	2	3	4	5
g. Mas dakug multa sa mangisda na dili taga lungsod na ngisda sa sulud sa sanktuaryo	1	2	3	4	5
h. Naggamit ug fine mesh nets o mga pukot pino ug mata (mas pino sa 3 na gidakun)	1	2	3	4	5
i. Compressor fishing sa inyong kadagatan	1	2	3	4	5
j. Nanguha ug "taklobo" o suliut sa inyong kadagatan	1	2	3	4	5
k. Nagisda ug dariday pag ban season (May- Oct). sa inyong kadagatan	1	2	3	4	5
l. Naggamit ug "sagiwsiw" (pan hadlok sa isda) sa inyong dagatan	1	2	3	4	5
m. Naggamit ug dinamita sa inyong kadagatan	1	2	3	4	5
n. Nag siroska o "baby muro ami" (15 ka buok na tao) sa inyong ong kadagatan	1	2	3	4	5
o. Naggama ug structura o edipsiyo dapit sa kabaybayun (apil ang sea wall) na walay permit sa kadagatan	1	2	3	4	5
p. Naggamit ug super lights sa pangisda (>1000 watts) sa inyong kadagatan	1	2	3	4	5
q. Nagputul ug magroves o tungog sa inyong kadagatan	1	2	3	4	5
r. Naggamit ug bubo sa inyong kadagatan	1	2	3	4	5

Section III

2) Pangisda ba ang una nimong panginabuhi (full time fisher)?
____Oo ____Dili

Kung Oo, palihug pag isulti ang imong tubag:

1a) Ang kadagatan sa lungsod, sugod sa baybay hangtud sa kinsi (15) km kung walay isla. Kung adunay isla kini paga-tungaon sa duha sa isla.

Kasagaran, mangisda ba ka sa ***sulud* o sa *gawas*** sa kadagatan sa munispyo?

☐sa ***sulud*** sa kadagatan sa munisipyo/lungsod (panalitan, kung taga Santander ka, mangisda ba ka sa kadagatan sa Santander

☐sa ***gawas*** sa kadagatan sa munispyo/lungsod

Kung ***gawas*** sa kadagatan sa lungsod, asa man nga kadagatan o lugar?_____

2) Part-time fisher o mangisda ka usahay ba __Oo __ Dili

2a) Kung Oo, Unsa ang uban na imong mga kinabuhi?

☐Mag-uma ☐namaligya ug isda ☐Uban
☐Tricyle driver ☐ dive resort employee
☐Bantay Dagat ☐ barangay council

3) Kung part-time o full time fisher ka, palihug itubag sa mga gi-pananghid:

3a) unsa ang imong igamit sa pangisda?

☐ 1) Pamasol 5) Compressor 9) panahid ☐ 13) pang-nukus ☐17) pukot (ring net)
☐ 2) Sagiwsiw (pamalu) 6) Pamana 10) Bungsod ☐ 14) Bubó 18) uban
☐ 3) Pamarungoy (pamayagkag) ☐7) Panggito ☐ 11) Siroska ☐ 15) Tapay Tapay
☐ 4) Double Net 8) panglamba 12) Palangre ☐ 16) Kub kub

3b) ***Kasagaran***, *unsa ang imong primerong o perming* gamiton sa pangisda (***Pagsulti ug usa*** sa imong gamiton sa pangisda)?

_____

4) Adu'nay bay pagpasabut kabahin sa tuyuan sa sanktuaryo?__Oo __ Dili

5) Adunay bay pagpasabut kabahin sa pamalaud sa kadaagatan gikan sa lungsod? __Oo ___Dili

6) Naka apil ba ka sa mga miting/seminar kabahin sa pagdumala sa inyong kadagatan? ___ Oo ___Dili

Kung naka-apil ka, palihug isulti imong tubag sa mga gi-pangutana:

6a) Naka apil ka ba ug mga seminar ning nang labay nga unum (6) ka buwan? ___ Oo ___Dili

6b) Palihug i-tubag ang pinka a unang rason sa pag apil ining miting or seminar

☐ a) Kining seminar makatabang sa pagpasabut sa mga problema bahin sa kadagatan
☐ b) Maka estorya ko sa uban na katawhan na interesado kabahin sa kadagatan
☐ c) Maminaw ang tao sa akong opinion o huna huna kabahin sa sa kadagatan
☐ d) Gusto ko makatauon sa pag proteger sa kadagatan sa lungsod
☐ e) Uban na rason_____

6c) ***Kung wala ka nakaapil***, unsa ang imong pinaka-unang mga rason na wala ka nag apil ining mga miting/seminar

☐ a) naa koy lain na obligasyon
☐ b) dili maminaw ang tao sa akong gi hunana kabahin sa kadagatan
☐ c) Wala koy nakahibawan kabahin sa pagdumala sa sanktuaryo para sa pag apil ining miting/sanktuaryo
☐ d) Wala ko gi pahibaw-a nga na'y miting
☐ e) wala koy panahon para ana
☐ f) Uban na rason_____

7) Na-bay gi-tawag ug organisasyon sa katawhan (PO) kabahin sa inyong sanktuaryo?___Oo ___Dili ___ Wala ko nahibalo

Kung *naa*, palihug I sugot ang mga gi pananghid/questions

7a) Nasakop o apil ba ka ining organisasyon? ___Oo ___Dili

7b) Unsa ang pangalan sa inyong PO?

7c) Wanu man nag apil ka sa inyong PO?

_____
_____

8) Nagapasakop ka ba sa usa sa ogranisasyon sa NGO (apil ang World Vision ug an CCEF) ?___Oo ___Dili

9) Maka-ingon ka ba na mo suporta gyud ka sa kasagaran sa mga paagi ug balaud kabahin sa kadagatan sa lungsod? ___Oo ___Dili

Nganong mao ni ang imong gi-bati?

_____

Section IV.

1) Lunsuranun ka ba? __Oo___ Dili

Kung lungsuranun ka, pila ka tuig nag puyo ka aning lungsora?
____0-5 yrs
____5-10 yrs
____ mas pa sa 10yrs
Kung dili, taga asa mang kang lungsod?_____

3) Unsa man ang imong nahuman sa imong pageskuela?I-Check ang imong nahuman

- wala ka human sa Elementary
- Elementary
- wala ka human high school
- High school graduate
- Technical/Vocational school (TESDA)
- wala ka human sa college
- College graduate
- wala ka human sa graduate school
- Graduate degree (M.S. or Phd)

1) Unsa ang imong sekso? ___Babae ___Lalake

2) Unsa ang imong primerong panginabuhi?_____

3) Pila ka buuk na tao na nagpuyo sa inyong balay? ____

4) Pilay imong edad? ____

APPENDIX B

Translated Survey Instrument

Local Perceptions of Coastal Resource Management: Survey of Public Opinion

Coastal Resource Management includes the management of your municipality's coastal waters, including Marine Protected Areas (MPA's). MPA's may provide a variety of benefits to community residents in southeastern Cebu. In order to manage your municipality's coastal waters, your local government unit need good information about how people feel about the management initiatives and regulations of their coastal waters. This survey is designed to collect this type of information.

While your participation in this survey is voluntary, we would appreciate your help.

We are interested in what you believe. Please don't ask other people for their opinions. If you do not have one, simply mark the no opinion option in the survey. The best answers are the ones that most closely reflect your own feelings and beliefs. Your responses will be kept strictly confidential.

Please answer all the questions in the survey. It takes about twenty minutes to complete.

Thank you for your participation.

Section 1.

1) Are you aware that an MPA exists within your municipal waters? ___ Yes ___ No
If yes, please answer the following questions below:

2) Do you approve the location of your MPA within your municipal waters?

Strongly Approve	Approve	No Opinion	Disapprove	Strongly Disapprove
1	2	3	4	5

3) In general, how well informed are you about the purpose of your Marine Protected Area (MPA)?

Extremely Informed	Informed	No Opinion	Not Informed	Extremely Uninformed
1	2	3	4	5

4) How well informed are you about the purpose of coastal management regulations within your municipal waters?

Extremely Informed	Informed	No Opinion	Not Informed	Extremely Uninformed
1	2	3	4	5

5) To what extent do you approve of the MPA within your community:

Strongly Approve	Approve	No Opinion	Disapprove	Strongly Approve
1	2	3	4	5

6) Please rate how beneficial or harmful the MPA is to your livelihood.

Very Beneficial	Beneficial	No Opinion	Harmful	Very Harmful
1	2	3	4	5

6a. Why do you feel this way?_____
_____

7) Are there specific fishing zones within your MPA? ___Yes___No
If yes, how would you rate your approval of the location of the fishing zone (s)?

Strongly Approve	Approve	No Opinion	Disapprove	Strongly Approve
1	2	3	4	5

8) Please rate your approval/disapproval for MPA regulations below:

Statement	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
a. Prohibition of all types of fishing	1	2	3	4	5
b. Prohibition of gleaning for sea life (including sea urchins, sea weed, mollusks)	1	2	3	4	5
c. Prohibition of taking corals	1	2	3	4	5
d. Prohibition of taking sand	1	2	3	4	5
e. Prohibition of taking rocks	1	2	3	4	5
f. Prohibition of building any foreshore structure including sea walls and jetties	1	2	3	4	5
g. Prohibition of paddle boats during low tide	1	2	3	4	5
h. Prohibition of anchoring within MPA	1	2	3	4	5
i. Prohibition of motorized vessels	1	2	3	4	5

9) Does your municipality have supplemental livelihood programs (e.g swine dispersal)? ___Yes ___No
9a. If yes, please rate your satisfaction for these livelihood programs?

Strongly Satisfied	Satisfied	No Opinion	Dissatisfied	Strongly Dissatisfied
1	2	3	4	5

10) Please rate your overall satisfaction with the MPA regulations occurring within your community.

Strongly Satisfied	Satisfied	No Opinion	Dissatisfied	Strongly Dissatisfied
1	2	3	4	5

Section II.

1. Below are a series of statements about your Municipality's coastal management initiatives and regulations. Please rate your level of agreement with these statements.

Do you agree with the statement that….	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
a. More bouys are needed so that people know the location of the MPA	1	2	3	4	5
b. Fishing is not allowed inside the MPA	1	2	3	4	5
c. Hook and line fishing should be allowed in the buffer zone of the MPA	1	2	3	4	5
d. There should be designated areas for using fish pots outside the sanctuary	1	2	3	4	5
e. MPA regulations and initiatives must be planned by the counselors and vice-mayor of the municipality	1	2	3	4	5
f. Fisher or People Organizations (PO's) should manage their MPA	1	2	3	4	5
g. A percentage of revenues from dive user fees should be given to the community	1	2	3	4	5
h. There is a lack of communication between the municipal local government unit (LGU) and fisher organizations regarding coastal management issues	1	2	3	4	5
i. The *community's* opinions are taken into consideration by the LGU during management decisions concerning our MPA.	1	2	3	4	5
j. The fish wardens should be given an honorarium regardless of whether they catch fishing violators or not	1	2	3	4	5
k. As an incentive for fish wardens, a percentage of the revenues made from fishing violation fines should be given to the Fish Warden operations.	1	2	3	4	5
l. It is difficult to take funds from the municipality's general fund for fish warden operations	1	2	3	4	5
m. A trust fund is needed to support fish warden operations	1	2	3	4	5
n. I trust the Philippine National Police (PNP) to support Fish Warden operations	1	2	3	4	5
o. The PNP is always ready to provide security and support to Fish Warden operations.	1	2	3	4	5
p. There should be regulations on the type of fish gear used within the Municipal waters	1	2	3	4	5
q. Fishing permits should be given to non-resident fishers	1	2	3	4	5
r. One must register fishing gear with the municipality	1	2	3	4	5
s. There are benefits from the municipality when one is a registered fisher	1	2	3	4	5
t. Most of the fish caught by resident fishers should be sold within our municipality	1	2	3	4	5
u. Fish populations have increased since the establishment of our MPA.	1	2	3	4	5
v. My fish catch has increased since the establishment of the MPA	1	2	3	4	5
w. The sanctuary is the main reason why my fish catch has increased	1	2	3	4	5
x. Information drives such as fisheries workshops convince me of MPA benefits	1	2	3	4	5
y. I don't understand the rules and regulations pertaining to coastal resource management	1	2	3	4	5

2. Please rate your level of agreement concerning management actions (e.g fines) for fishing violations listed below:

Statements	Strongly agree	Agree	No opinion	Disagree	Strongly Disagree
a. Boats not registered with Local Government Unit within your municipal waters	1	2	3	4	5
b. Non-residents fishing in your municipal waters	1	2	3	4	5
c. Cyanide Fishing within your municipal waters	1	2	3	4	5
d. Fishing in municipal waters without proper registration with Municipality	1	2	3	4	5
e. Unauthorized commercial fishing within 10-15 km zone from shoreline	1	2	3	4	5
f. Residents fishing within the MPA	1	2	3	4	5
g. Larger fines for non-residents fishing within the MPA	1	2	3	4	5
h. Use of fine mesh nets (mesh size finer than 3 cm in width) within your waters	1	2	3	4	5
i. Compressor fishing within your municipal waters	1	2	3	4	5
j. Taking Giant clams or "taklubo" within your municipal waters	1	2	3	4	5
k. Fishing for Siganids during the closed season (May-Oct) within your municipal waters	1	2	3	4	5
l."Sagiwsiw" fishing within municipal waters	1	2	3	4	5
m. Fishing with explosives	1	2	3	4	5
n. Fishing using "baby muro ami" methods	1	2	3	4	5
o. Building foreshore structures (e.g. sea walls) without permit from local government unit by your municipal waters	1	2	3	4	5
p. Fishing with super lights(>1000 watts) in your municipal waters	1	2	3	4	5
q. Cutting of Mangroves by your municipal waters	1	2	3	4	5
r. Using fish pots or bubo in your municipal waters	1	2	3	4	5

Section III

1) Is fishing your primary occupation (full time fisher)? ____Yes ____No

If yes, please respond the following questions:

Your municipality's waters start from the shoreline and extend to 15 km. If there is an island within 15km, your municipality's waters are evenly divided between the other island.

1a) Where do you commonly fish?

☐***inside*** your municipalities waters
☐***outside*** your municipalities waters

1b) If you fish outside your municipality's waters, then what other places do you fish? Please be as specific as possible.

_____

2) Are you a part-time fisher? ___Yes ____No

2a) If yes, what else do you do for a living?

☐farming ☐fish seller ☐other
☐tricycle driver ☐dive resort employee
☐Fish Warden ☐Community local government

3) If you are a part-time or full-time fisher, please answer the following questions below:

3a) Which fish methods do you use?

1) Hook and Line	☐7) Otter trawl	13) squid jigger
☐2) Sagiwsiw	8) hitting the water	☐14) fish pots
3) Set floating gill net	9) Boat/ Danish seine	15) bag net
☐4) double net	10) Fish coral	☐16) Purse seine
☐5) compressor diving	11) Baby muro ami	17) ring net
☐6) Spear Fishing	12) long line	18) others_____

3b) Which fish method do you most often use? _____

4) Has the municipality set-up any educational programs that focus only on the purpose of your MPA?___Yes ____No

5) Has the municipality set-up any educational programs focus on the purpose of regulating your municipality's coastal waters? ___Yes ____No

6) Have you attended any meetings focused on managing your community's coastal waters? ____Yes ____No

If *yes*, please answer the following questions:

6a) Have you attended these meetings in the past 6 months? ____Yes ____No

6b) Please state your main reason for attending these public meetings?

☐ These meetings help me to understand current issues within our municipalities coastal waters
☐ I get to meet other members of the community that are interested in this topic
☐ My opinions are taken into consideration during the meeting
☐ I want to learn about protecting the municipalties coastal waters
☐ Other reasons_____

6c) If *no*, please check the following reasons for not attending these public meetings.

☐ other obligations during scheduled meeting time
☐ my opinion or voice in these meetings are not taken into consideration
☐ I am not well-informed enough to attend these meetings
☐ I was unaware that there was a meeting
☐ I don't have the time to attend to these meetings
☐ other_____

7) Is there a cooperative or People's Organizations (PO) that addresses issues within your MPA? ____Yes ____No ____ Don't know

If *yes*, please answer the following questions:

7a) Are you a part of this PO or cooperative? __ Yes ___No

7b) Please name the organization(s)/cooperatives you are involved with: _____
_____

7c) What are your reasons for joining these organizations/cooperatives? _____
_____

8) Are you affiliated with any non-governmental organization in your municipality (e.g. World Vision and Coastal Conservation Education Foundation)? ___ Yes__No

5) Would you say that you generally support most of the municipality's coastal management initiatives and regulations? __Yes__No. Why do you feel this way?_____

Section IV.

1) Are you a resident of this municipality? __Yes ___No
   If you are a resident, about how many years have you been living in this municipality?
   ____0-5 yrs
   ____5-10yrs
   ____>10 yrs

2) How much formal education have you completed? *Check one response.*
   - □ Did not finish Elementary School
   - □ Elementary School
   - □ Some high school
   - □ High school degree
   - □ Technical / vocational school
   - □ Some college
   - □ College degree
   - □ Some graduate school
   - □ Graduate degree

2) What is your sex? ___Male ___Female

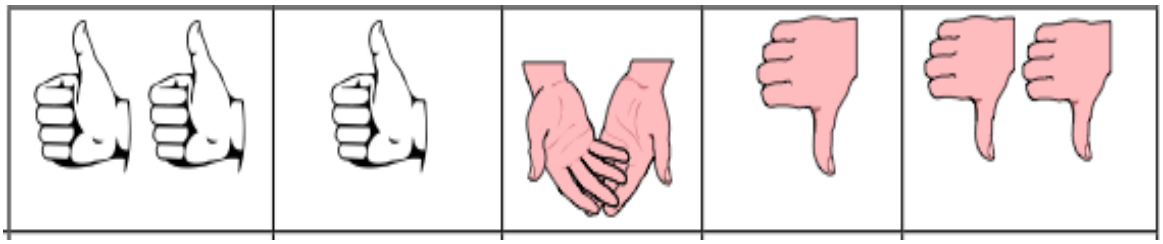
3) What is your primary occupation?_____

4) How many family members are living in your household? ____

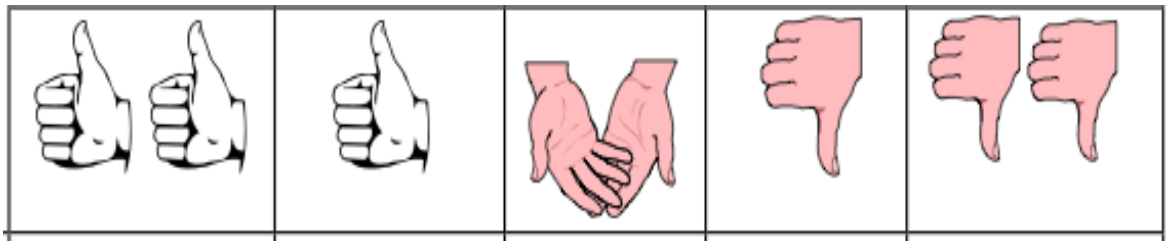
5) What is your age? _____ years old

APPENDIX C

Survey Visuals



VERY ACCEPTABLE	ACCEPTABLE	NO OPINION	UNACCEPTABLE	VERY UNACCEPTABLE
1	2	3	4	5



UYON GAYUD	UYON	WALAY OPINION	DILI MO UYON	DILI MO UYON GAYUD
1	2	3	4	5