

Community Participation in Mangrove Forest Management in the
Philippines: Management Strategies, Influences to Participation, and
Socio-Economic and Environmental Impacts

by

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ABSTRACT

Sustainable forest management is seen as a mechanism to protect the forests while ensuring the well-being of the local communities that depend on them for survival and livelihood. In the Philippines, the threatened wetland forest, mangroves, is experiencing a shift in the management strategy from a government-controlled one to local community management. The tenure instrument, Community-Based Forest Management Agreement (CBFMA) had been issued to several mangrove localities. However, participation of local communities is impeded by local government unit (LGU) intervention. In this study, I assessed the different management strategies of three different localities in the Visayas Region of the Philippines. I focused on analyzing the likely influences to community participation and its impact to the environment as well as the community well-being using surveys and focus group discussions.

In one of my study sites, the mangrove forest is being managed by a People's Organization (PO) called Pedada Fisherfolk Association. This PO has remarkably a great number of membership and participation of local communities in forest activities such as bagging, planting, and nursery establishment is well observed. In other sites, since access is restricted and gathering shells or fishing is completely prohibited, many of the local communities were not satisfied by the management strategy and in Dolores, many violated local rules. I observed that community participation is influenced by the management strategy, awareness of environmental information and programs, and membership to PO.

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INTRODUCTION

Mangrove forests are intertidal forests found in the tropical and subtropical regions of the world. They offer a range of ecosystem goods and services including fuel wood, food and timber, climate regulation and cultural services (UNEP 2014). They are highly productive ecosystems that contribute to between 10 and 15% (24 Tg C/year) coastal sediment carbon storage (Alongi 2014). Together with other coastal wetlands, they sequester and store carbon at a rate of twice to four times greater than that of mature tropical forests. (www.habitat.noaa.gov)

Despite the known economic, social and environmental benefits derived from mangrove forests, they remain one of the most seriously threatened and undervalued ecosystems. More than 35% of mangrove forests globally had been lost primarily due to coastal development, conversion to fish ponds, and deforestation (Valiela et al. 2001).

Southeast Asia is home to about 35 percent of the mangroves found on earth (Tomlinson 1986) and had been the site for a number of mangrove conservation, management, and valuation studies (Nguyen 2013, Aung et al. 2001, Sudtongkong and Webb 2008, Walters 2004). There are about 50 to 60 known species of mangroves in the world (Spalding et al. 2010) and 35 of these are found in the Philippines (Primavera et al. 2004).

The mangrove forests in the Philippines covered an area of about 450,000 ha in 1918 (Brown and Fischer 1918) but this extent declined by 51.8% in 2010 (Long et al. 2014) with the highest depletion rate from 1950 to 1972, during which the national policies encouraged the expansion and development of fisheries and aquaculture in the country. The buildup of environmental issue on mangrove biodiversity loss due to land use change resulted to changes in regulations and policies on forest use and governance. The Philippine environmental laws and

regulations prohibits further zonification of mangrove forest for fishpond development after identifying mangrove conversion into fishpond as the major cause of mangrove deforestation. The country also adopted community-based forest management as a national strategy since 1995 (Dieta and Arboleda 2004).

The treatment and regulation of mangrove forests by the Filipino government has gradually gone from non-investment to increased emphasis on protection since the mid-1900s. Prior to this, preservation of mangrove areas, and improvements in administration and implementation had been a critical forest policy issue. As of the 1940s, the government considered mangroves unproductive wasteland, coupled with a lack of knowledge of their function or services. Soon, economic development was prioritized, and starting in the 1960s, the government adopted policies aimed at increasing fish production. Large swaths of mangrove habitat were destroyed to make way for coastal fishponds, a still-thriving market in the region today. Loan windows in most government banks were opened to help finance pond development, and local communities benefitted from the ability to enter the market. It wasn't until the 1970s that the government realized the natural value of mangrove forests, and formed the National Mangrove Committee within the Ministry of Natural Resources. The committee was given the task of forming policy recommendations for helping to protect the remaining forests in the country. The idea of rehabilitation was not yet conceived. Also formed in this decade of discovery was the Mangrove Forest Research Center, which focused on the generation of technology for sustainable management (Hayman 1982; Pulhin et al. 2008).

Rehabilitation efforts took off in the next two decades, at the same time that the government declared approximately 74,267 hectares as Mangrove Swamp Forest Reserves. Soon the Research Center expanded its scope, and was absorbed by the Freshwater and Coastal Ecosystems Section of the Ecosystems Research and Development Service in the DNR. Mangroves were not only being

recognized as assets to conserve for future generations, but also as pivotal to the entire function of ecosystems as a whole (Melana et al. 2000).

A part of the current debate regarding mangrove management, national government's role in local affairs had been questioned. In an effort to involve communities in the management process, the national government developed the Community Based Forest Management Program. Still in existence today, the program issues Community Based Forest Management Agreements between communities, local government entities, and the national government to conserve and utilize mangrove forests consistent with the principles of sustainable development (Pulhin et al. 2008). One government technique to utilize community knowledge about mangroves is to implement policies that govern how a mangrove is to be managed (conservation, etc.) but leave the implementation and techniques up to the community. This allows for local expertise to play its essential role while ensuring that the resource is not depleted irresponsibly. Other techniques have the national government taking control of the mangroves so as to protect them from the community, with the community playing no role in their management. The national government can also contract out mangrove conservation or reforestation to NGOs, who would essentially take the same role as the national government (Melana et al. 2000).

In other Southeast Asian countries such as Thailand and Vietnam, NGOs worked with local communities and the local government to facilitate community-based mangrove forest management. Some studies showed that this strategy led to increased fish catch, increased villager's revenue, improved forest protection from encroaching trawlers, and improved forest health conditions; whereas other studies showed that state-managed mangrove forests exhibited more species diversity (Suutari and Marten 2007; Sudtongkong and Webb 2008; Datta et al. 2012). Many previous works discussed several factors that influence community participation in forest

management such as household size, proximity to forests, membership to forest user groups, partnership between management authorities and local communities, among others (Chhetri et al. 2013; Lestari et al.; Ezebilo 2011).

Due to the limited study on community participation and institutional analysis in the management of a globally threatened ecosystem, such as the mangrove forests, I aimed to assess the impacts of the different levels of community participation and management strategies in Philippine mangrove forests. Specifically, I aimed to answer the following questions: (1) What are the different community-based management strategies for protecting Philippine mangrove forests and how is the forest being utilized? (2) What are the different ways by which local communities participate in the management and protection of mangroves and what influenced their participation? (3) What are the socio-economic, political, and environmental impacts of the different mangrove forest management strategies?

An effective management strategy for protecting mangrove forests and ensuring their continued provision of ecosystem services especially to the local communities that depend on them for livelihood and survival is crucial to sustainable forest management. This study can help guide decision-making on institutional structures and management strategies for sustainable mangrove forest management and building resilient coastal communities, especially in typhoon-prone tropical/sub-tropical regions of the world.

METHODOLOGY

Site Selection

My study sites were three different *barangay* (smallest political division in the Philippines, which is subdivided into smaller areas called *purok*) from the provinces of Iloilo and Guimaras because they are understudied, and their differences in mangrove forest management make for an interesting comparative study. Two *barangays* (Pedada and Nabitasan) are located in the province of Iloilo. The former has a mangrove forest area that is currently managed by the local communities led by the People's Organization (PO), Pedada Fisherfolk Association, whereas the latter is governed by the Local Government Unit (LGU). The last *barangay* is Dolores, which has a protected mangrove area that is co-managed by the LGU and the PO, *Katilingban sang Magagmay nga Mangingisda sa Dolores* (KAMAMADO).

Table 1. Coordinates of the selected study sites

Barangay	Municipality	Province	Coordinates	
Pedada	Ajuy	Iloilo	11.1667° N, 123.0167° E	See Appendix A, Fig 1
Nabitasan	Leganes	Iloilo	10°47'9"N 122°37'41"E	See Appendix A, Fig 2
Dolores	Nueva Valencia	Guimaras	10°29'12.8"N 122°28'39.0"E	See Appendix A, Fig 3

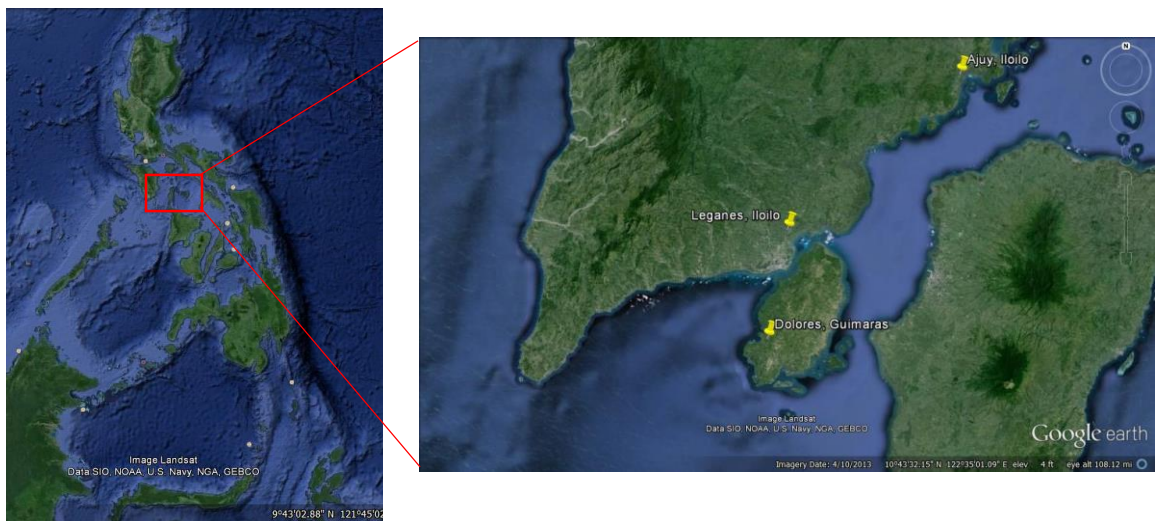


Figure 1. Map showing the proposed study sites in Western Visayas Region of the Philippines.

Description of the Study Sites

Guimaras was a sub-province of Iloilo until it was made an independent province in 1992. The economy of both provinces is dominated by the service sector (>50%). Both provinces are characterized by two pronounced seasons: dry season, usually between the months of April and November and wet or rainy season during the rest of the year. Iloilo has a total area of 78.34 km² with estimated 10.81 km² of mangroves (13.79% of total area), whereas Guimaras has a total land area of 604.7 km² with 2.85 km² of mangroves (0.5% of total area) (www.guimaras.gov.ph; www.iloilocity.gov.ph; Long et al. 2014). The following characteristics of the three study sites are from the survey conducted.

All sites are characterized by a homogenous ethnic group, *Ilonggo*. The community in both *Barangay* Pedada and Nabitasan are predominantly Catholic (94%) whereas the predominant religion in Dolores is Seventh Day Adventist (51%) followed by Catholic (45%). In terms of highest educational attainment, most graduated from high school.

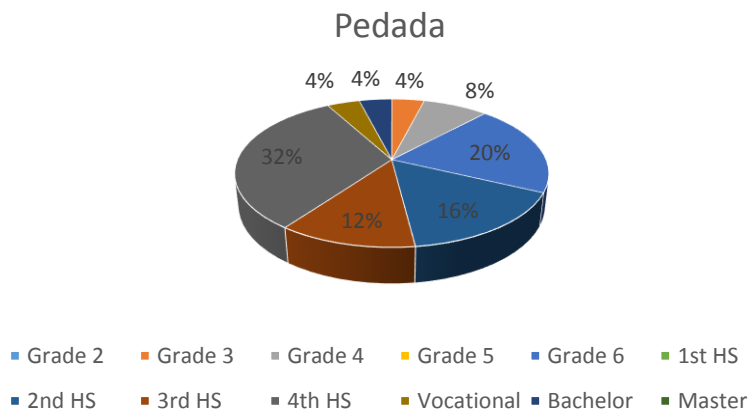


Figure 2. Highest educational attainment of HH members from Pedada (n=50)

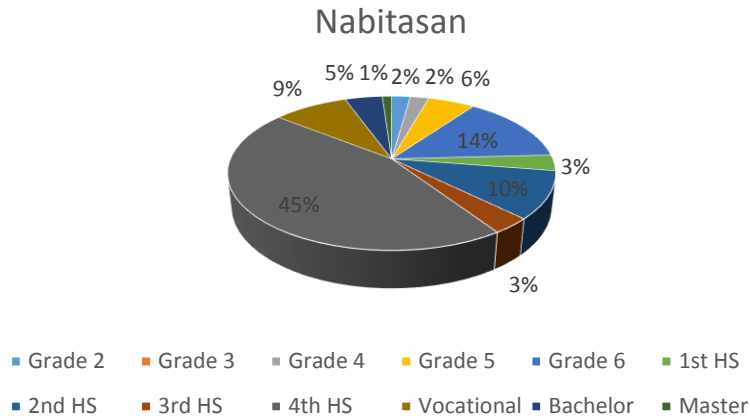


Figure 3. Highest educational attainment of HH members from Pedada (n=91)

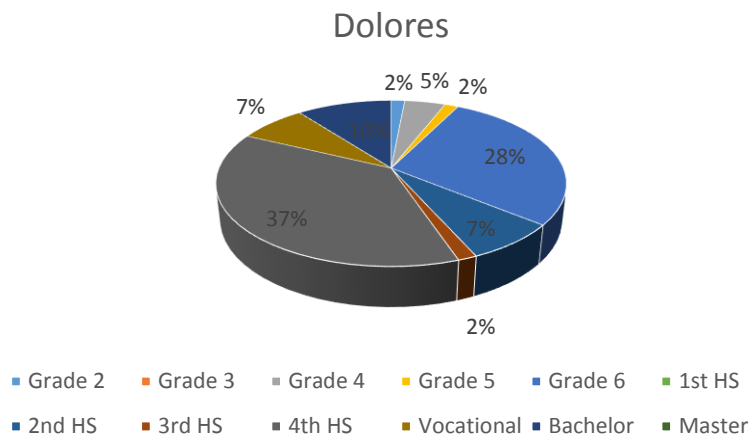


Figure 4. Highest educational attainment of HH members from Pedada (n=67)

The main occupation of HH head/spouse of HH head is fishery (28%) in Pedada, household chore helper in Nabitasan (29%) and Dolores (34%). The type of dwelling in Pedada (58%) and Dolores (37%) are predominantly of mixed type (combination of bamboo and cement), whereas in Nabitasan, it is predominantly bamboo (53%). In all sites, the main sources of fuel for cooking are either firewood or charcoal.

Survey Design

I collected data on varying levels of community participation by observing the study communities and participating in community activities. The approach I used to gather information on the extent of local community participation and their views on the state and governance of mangrove forests was through a combination of structured and non-structured survey (See Appendix C). The survey (IRB reviewed and exempt) was done using the Online Data Kit (ODK) for easy collection and storage of data. I also conducted focus group discussions with the executive committee members of PO or LGU that are directly involved with the mangrove forest governance (See Appendix C). The surveys and interviews were conducted following the International Forestry Resources and Institutions (IFRI) Research Guidelines (Ostrom 2008). In addition to focus group discussions and interviews, I also obtained manual on local ordinances concerning mangrove use and management from local government offices.

Respondent Selection

I obtained approval from the respective LGU Chairperson and City Mayor prior to visiting my research sites and conducting my study. Each LGU office has their *Barangay* Nutrition Specialist who holds record of the most updated list of Household (HH) members in their *barangay*. This record lists the HH head and *purok* where each HH head resides. Using these lists, I randomly selected a total of 15% sampling size per *barangay* using a random number generator. I conducted the survey with 3 enumerators who are locals to the province of Iloilo and hired an interpreter to accompany me during site visits and survey. In instances where the selected HH head was not present during the interview, enumerators replace this individual with the HH head spouse or with the the HH head/spouse living right next to the selected household's house.

Table 2. Household number (based on 2015 local registry) and total respondents per *barangay*.

<i>Barangay (Purok)</i>	Total Household Number	Total Respondents
Pedada		
• <i>Purok 1</i>	97	13
• <i>Purok 2</i>	65	12
• <i>Purok 3</i>	81	12
• <i>Purok 4</i>	88	13
TOTAL	331	50
Nabitanan		
• <i>Bongso-an</i>	30	4
• <i>Kaingin</i>	78	12
• <i>Dangyad</i>	45	1
• <i>Baybay</i>	84	12
• <i>Proper</i>	144	24
• <i>Pandan</i>	76	13
• <i>Panos-on</i>	72	13
• <i>Aquaville</i>	84	13
TOTAL	613	92
Dolores		
• <i>Guisi</i>	77	6
• <i>Tinusulukan</i>	121	20
• <i>Gumban</i>	183	22
• <i>Banuyo</i>	68	11
TOTAL	449	68
TOTAL RESPONDENTS		210

Data Analyses

Out of the 210 target respondents, we ended up interviewing 208 individuals. We did not find a replacement for the two selected respondents from Nabitanan and Dolores. Open-ended questions and those with a variety of answers were coded for analyses. These include HH monthly income, forest activity participation, livelihood training attendance, perception on what mangroves are used for, and types of environmental information received (See Appendix B, Tables 1 and 2 for HH income and mangrove perception). Participation in different forest activities and livelihood training were coded “0” for no participation or attendance and “1” for participation and attendance. For the types of information received, the following codes were used: “0” no information received

or uncertain, “1” if there are between 1 and 3 information received, “2” if between 4 and 6, and “3” if greater than 6.

All recordings from the focus group discussions were transcribed from Filipino to English (See Appendix D for transcripts) and analyzed using NVivo10 to find for common themes with how mangroves are utilized in each site and to determine the changes in mangroves management and related ordinances through time prior to the current management scheme. Below is the list of nodes that were used in the analysis:

Decision-making and Governance
Decision-making body
Monitoring
Income Generation and Benefit Sharing
Benefits and Sharing
Income Generation
Locality Before and After
After-area
After-people
Before - area
Before - people
Mangrove Forest Utilization
Participation and Benefit Sharing
Activities
Influences to Participation
Rules, Regulations, Penalties

The data I obtained from the survey were analyzed both quantitatively using ANOVA and Pearson correlations through SPSS 23. Here are the following questions addressed in the analyses:

1. Is there a correlation between the following factors: household income, management strategy, PO membership, and forest activity participation, correlate with one another?
2. Is there a correlation between the following factors: environmental information received, knowledge on mangrove forests, environmental program awareness, and forest activity participation?
3. Is there a significant difference with how the community perceive mangroves in all study sites?

RESULTS

Mangrove Forest Community and Management Description

Mangrove forests are typically found in the coastal intertidal zone and because of this nature, it is under the management of both the Department of Environment and Natural Resources (DENR) under Protected Areas and Wildlife Bureau (PAWB) and the Department of Agriculture (DA) under the Bureau of Fisheries and Aquatic Resources (BFAR) in the Philippines. In 1989, the DENR released the administrative order no. 123 that includes issuance of Community-based Forest Management Agreement (CBFMA). CBFMA entitles local groups (People's Organizations) the benefit from a specific forest land for a period of 25 years that is subject for renewal for another 25 years.

In my study sites, it was not until late 1900s and early 2000s that the local communities started to organize themselves as a People's Organization (PO). The POs in these communities consist mostly of fisherfolks.

In Pedada, the fisherfolks registered as a PO in 2003 under Presidential Decree No. 441. During this time, all members were only men. They formed into a PO because of the need of empowerment and obtaining sustainable income source. This PO is called the *Barangay Pedada Fisherfolk Association* (BPFA), which started with 95 members. From the time that they formed until 2008, this PO had no mangrove-related activities and the members just joined LGU-initiated coastal clean-up drives and vegetable gardening. Many of the members left and sought jobs in other places because of not meeting the expected sustained income source. In 2009, BPFA got re-organized by the assistance of an environmental NGO that helped the group apply for CBFMA, which is not yet approved until recently. This PO then opened its membership to women and grew

to having a total of 289 members in 2015 (114 women and 175 men). In order to be a member of BPFA, the organization requires that the individual is under legal, a resident of Pedada, should pay a membership fee of 50Php (\$1) and a monthly due of 5Php, and that there should be no more than 3 members per family. Although BPFA is still waiting for CBFMA approval, they are still the group responsible for protecting and monitoring the 29.5 Ha of mangrove forest in their locality. BPFA has its own executive committee members that include a President, Vice-President, Secretary, Bookkeeper, Treasurer. They implement rules for mangrove resource use and management for the 29.5 Ha based on local ordinances.

The mangrove forest is open to the local community members for harvesting resources such as crabs and shells following a 3-month rule in which harvesting is alternately allowed for *Purok* 1 and 2 then 3 and 4 every 3 months. This allows for the shells and crabs to grow at a required size and age before harvesting so as to minimize depletion of these organisms. Monitoring of the mangrove forest is done by both the PO members and the sea patrols that are under government's BFAR to ensure that rules are followed and violations are properly addressed.

The Pedada mangrove forest is basically used as an eco-park that is open to visitors from outside the community although resource harvesting is restricted to community members. The area is also used as a nursery, research site, and training site for mangrove nursery establishment (See Figure 5). The PO members also serve as tour guides to visitors and assistants during NGO or LGU-facilitated training on nursery establishment. The PO executive members themselves received training on nursery establishment, seedling propagation, as well as mangrove taxonomy from environmental NGOs including the Zoological Society of London and the Philippine Tropical Forest Conservation Foundation.



Figure 5. Mangrove nursery in Pedada Mangrove Eco-park (left) and training on mangrove nursery maintenance (right).

The second site in this study, Nabitasan do not currently have any PO and mangrove forests are governed by the Municipal Environment and Natural Resources Office (MENRO). Nabitasan has a total of 15 Ha of mangrove eco-park that is part of the 187 Ha of mangrove cover in the Municipality of Leganes. This area used to be an abandoned and underutilized fishpond that was reclaimed by the municipality. Rehabilitation of the site began in 2009 in partnership with NGOs and local schools. A total of 1,712 seedlings were planted during that year and the total planted seedlings up to date is about 54,000.

MENRO was created in 2015 and was part of the Municipal Agriculture Environment and Natural Resources Office in 2013. Prior to 2013, mangrove governance was completely under DA-BFAR. MENRO consists of only 6 officials: A supervisor, forest guards, and program assistants.

Nabitasan Mangrove eco-park is open to visitors outside the community but access of resources is very much limited even to the local communities. Cutting of mangroves, grazing of animals, and gathering of shells are prohibited. Violators that are caught by the forest guards are sent to the police and are required to replant mangroves depending on the extent of damage they

caused. In year 2014, two violators had been reported for building a house that damaged the mangrove wildings.

Nabitanan Mangrove eco-park is used both for eco-tourism and nursery for selling of seedlings (See Figure 6). This area is said to later on be opened to and co-managed with the local communities. Currently, it is being monitored by both the sea patrols and the forest guards.



Figure 6. Nabitanan Mangrove Eco-park showing the footbridge and the planted mangroves since 2009.

The last site, Dolores, has a fisherfolk PO called KAMAMADO. It was registered in 1999 with a total member of 210 in an attempt to address the decline in fish catch of the fisherfolks. This membership declined to 60 then 20 and finally to 40 presently, because the group failed to meet their demand for fishes and no alternative income source was given to them.

KAMAMADO currently co-manage the 17-Ha of mangrove forest in their locality called Basiao Cove. This group applied for CBFMA in 2002, which got approved in 2009. Prior to 2002, the area was privately-owned by businessmen who are not locals to the area. These businessmen owned the land since 1985 and used it as a fishpond. It was in 2002 that the fishpond lease agreement (FLA) of this business men expired and that time KAMAMADO started to apply for

CBFMA, which took time because of the lengthy legal process of transferring area under FLA back to DENR and finally to the PO.

Basiao Cove is also included under the 67-Ha of Marine Protected Area (MPA) referred to as Barangay Dolores Marine and Fish Haven (BDMFH). Thus, management is shared between KAMAMADO and the LGU. KAMAMADO executive officers include: President, Vice President, Secretary, Treasurer, Auditor, Business Manager, Book Keeper, and Public Relations Officer. LGU officials serve on the Board of Directors that serve as the policy-making body. Monitoring and maintenance is headed by the *Barangay* chairman and sea patrols.

Basiao Cove is currently a restricted zone where fishing and harvesting of shells are prohibited. Many fishermen break the rules and continue to fish because of their dependence on fishes for livelihood and sustenance. The area is used by some locals for bathing. It is also being used as a site for *imbao* (a shell that is common in the Philippines) culture of BFAR and less as a tourist destination although it is planned to become a tourist diving and kayaking zone (See Figure 7).



Figure 7. Dolores Basiao Cove that belongs to the larger Dolores Marine and Fish haven.

Community Participation

Prior to the PO and MENRO involvement with mangrove management of the study sites, local community participation within the *barangay* is largely through coastal clean-up drives. People did not care as much about the mangroves and only utilize them for producing charcoals or vinegar. Following community involvement in mangrove management and protection, there had been several changes in community participation.

Pedada Fisherfolk Association members began to participate in seminars on livelihood and mangrove rehabilitation training, Community Managed Savings and Credit Association (CoMSCA). The group also involves the larger community in activities that include planting, bagging, and nursery maintenance. This PO had not experienced any conflicts within the community that had not been resolved as most conflicts are minor such as children playing within the newly planted mangrove area. A major conflict within this community is misunderstandings of project finances with the *Barangay* Chairperson who oversees the whole *barangay*. There is currently no clear boundary as to the extent of mangrove forest management by the PO since CBFMA has not yet been officially granted.

The MENRO that manages Nabitasan Eco-park currently has 33 partners across different sectors ranging from the academic, other government offices, and NGOs. Only two locals of *barangay* Nabitasan are members of MENRO as forest guards. There is very little participation in forest activities such as bagging, planting, harvesting, and seedling production in this site because of budget limitation and restrictions on harvesting. Several schools partner with MENRO for mangrove forest rehabilitation activities for the required National Service Training Program (NSTP) of the students that is a volunteer work.

KAMAMADO in Dolores organized a festival called Siberan Festival in 2007 to gather communities together through triathlon, cooking contest, and paddle contest. This festival is now handled by LGU and happens every last Saturday of February. There is very little involvement of the local communities in forest protection and management since the forest is largely controlled by the LGU and provincial government unit. The few members of KAMAMADO continues to meet for CoMSCA and are waiting for next mangrove-related projects that they can get involved with.

Based on the survey results from a total of 208 HH members across the three different sites, 84% participated in forest-related activities (primarily through planting, selling of seedlings, and bagging) in Pedada, 21% participated in Nabitasan (primarily through planting), and 43% participated in Dolores (also through planting).

Using Pearson test, I found a correlation between forest activity participation and the following: Environmental information received, awareness of some environmental programs in the community, PO membership, and management type (See Appendix B, Tables 3 and 4). It is also interesting to note the differences in mangrove perception per sites. The community in Pedada (68%) and Nabitasan (64%) generally see mangroves' use as regulatory and support – protection from strong waves and to soil erosion control, whereas the community in Dolores mostly (74%) identify mangroves for its provisioning role – shelter for fishes that are food and livelihood sources.

The PO members joined the group primarily to help protect the environment and the local communities from typhoon and for them to have added income source. The POs under study, including MENRO do not yet currently generate income form the mangrove forests they manage because there is no legal support yet to allow them to charge entrance fees for the respective eco-park. As an alternative to charging for entrance fees, the POs and MENRO collects donations from

visitors, which is used for site maintenance. However, individual community or PO members are able to gain income on a work basis and get paid based on the number of seedlings they produce and sell. The DENR, through its National Greening Program, buys mangrove seedlings from local POs and also pay those that plant the seedlings for rehabilitation. Other NGO insists on no pay-planting and promotes mangrove environmental education instead.

Mangrove Management Impacts

Before these POs and MENRO formed and started to take part in the management of mangrove forests, all sites were described as unproductive. Pedada used to have the forest that was undervalued by the local communities where the people would often go to for cutting mangroves that is then used as a fuel source. There also used to have a lot of stray animals that also feed on the mangroves and outsiders were welcomed to also gather shells from this *barangay*. During this time, management was completely under the National Government through DENR and DA. The community noted a decline in fish catch since the 1970s and fishes are slowly increasing in abundance since the time the PO started taking part in management and conservation. When seminars on mangrove forests ecosystem services and mangrove taxonomy began in 2008, the local communities started to realize the importance of mangroves. One of the executive members of Pedada Fisherfolk Association mentioned during the focus group discussion: “We did not know until then that mangroves are the hidden wealth of Pedada.”

In Nabitasan, the lack of ordinance on mangrove protection and conservation resulted to the same incidence of having many stray animals wandering around the mangrove area that had parts of it converted to fishponds in the early 1970s. All mangrove areas unless under FLA were also owned by the municipality. Recently, there were no more stray animals raoming around Nabitasan Mangrove Eco-park and the people also stopped cutting mangroves because of local

ordinances. The community also noted an increase in the mangrove abundance since 2009. Although many locals were aware of the ecosystem services provided by mangroves, many did not participate in mangrove forest activities.

The Basiao Cove of Dolores was previously a privately-operated fishpond from 1985 to 2002. During those times, fisherfolks were unhappy of the lack of fish catch. The operated fishpond used to be closed and people feared entering the area because of fear from being shot with a gun. The communities used to uproot big mangrove trees around the privately-owned fishpond in order to gather oysters and shells. Now fishing and shell gleaming is completely prohibited, but people still do it illegally. There is no executive order by the Mayor yet regarding prohibition of banning so the PO members and LGU officers could do nothing with the fisherfolks who continue to fish. Many of the local communities do not collaborate with or take part in the membership of the PO because they feel that their fishing rights are violated. The PO members are hopeful that fish diversity will once again rise.

Based on the interview conducted, the local communities perceived an increase in the density of mangrove trees in the past five years. This accounts to 86%, 70.5%, and 61% of respondents from Pedada, Nabitasan, and Dolore, respectively.

DISCUSSION

Forests play a critical role in the well-being of several local communities across the globe because people depend on them for alternative sources that are limited such as fuel, constructing materials for shelter, and materials for fertilizer (Maharjan 2005). As such, community involvement or consideration of the welfare of the local communities is important in forest management. In the developing world, decentralized management of forests has become a feasible option for rural poverty alleviation and biodiversity conservation (Das 2010). The Philippines has one of the longest experience with CBFM in Asia with the goals of achieving a sustainable and equitable approach to forest management (Pulhin et al. 2007).

Mangroves are essential to the lives of many people in the Philippines, yielding food, building materials, and contributing to economic production. More than half of all towns in the country are said to depend on mangroves in some way. Another immediate benefit of a mangrove-rich coastline is the enhanced protection to natural and human structures from the erosional and flooding effects of storm waves, storm surges, and tsunamis. Along the east coast of the island of Samar, for example, this buffer zone permits coconut plantations to avoid the worst effects of wind and waves (UNEP 2014; Farley et al. 2010).

In the present study, different management strategies arose due to the differences in the historical context of the mangrove forests. In forests that are just starting to regenerate or with very few old trees because those areas were previously abandoned fishponds, strict conservation strategy is observed in which local communities have limited access to the mangrove forest and have no rights to collect resources. In certain areas of the Philippines, conservation strategy takes in the form of plantations because of the ability to store huge amount of carbons as found in certain

studies. Banacon mangroves in Bohol, Philippines, for example, was found to store as vast as 370.7 ton ha⁻¹ for the 40-year old plantation. This amount exceeded that stored in younger plantations (Camacho et al. 2011). However, with this strategy, there is a potential for perverse outcomes such as biodiversity loss (Lindenmayer 2009). This also ignores the other ecosystem services values of mangrove forests that are crucial to the local communities. In the present study, this was not noted as a conservation strategy in all study sites.

Active engagement of local communities in forest management is seen as a sustainable practice because it can increase the awareness of collective responsibility within a community and it allows for increased forest product supply without degrading the forest resources (Agrawal 2001). In my study sites, communities are better engaged in Pedada and this was not observed in the two other sites where access is restricted. In Dolores, many community members end up violating local rules because they feel that their fishing rights are being violated with the current mangrove management scheme.

Here I present some elements that I noted to have or could have played a significant role in the management strategies of all sites stemming from the strengths of each site:

1. **Limiting access to forest resource extraction.** Due to the fact that mangroves are highly threatened ecosystems, conservation is an important consideration. The rapid decline of mangroves due to land use change, primarily through conversion to fishponds in many Asian countries, is alarming. With the alternating harvest season and areas where harvesting is allowed in a *barangay* such as what Pedada follows in crab and shells gleaming, this will ensure time for crabs and shells to reach maturity prior to harvest. Alternating areas where harvest is allowed, on the other hand, will ensure population check and balance so there won't be quick depletion of the harvested products. It is important to avoid overharvesting of shells

and other NTFP products from mangrove forests because as Hall and Bawa (1993) pointed, the use of non-timber forest products as alternative income source may also lead to the same over-harvesting problems that traditional timber products had in the last century. A study also showed that restrictions on traditional community participation have encouraged unsustainable forest resource use (Maharjan 2015).

2. **Women participation in POs.** In both sites that have an organized PO, they started out with having only men on the group. Women participation was allowed in Dolores because of the livelihood component of several projects in the *barangay* that won't be granted to the community when there is no group consisting of women. In a study that examined the participation of women in the planning of joint forest management program in West Bengal, they found that women's participation ensures contribution to their household's income (Das 2011).
3. **Trainings on mangrove biology and sustainable livelihood Sustainable.** The trainings and seminars that the Pedada community members received had a significant impact in how their perception about mangrove forests change. Some of the members even lead the tours and discuss the scientific names of the mangroves in their forest. Trainings on mangrove biology (site selection, planting, care and maintenance) and sustainable livelihood is important in sustainable forest management, which ensures that environmentally and socially acceptable selection of site, species, and forest design (ITTO 1993). Effective management plans in coastal habitats require an understanding the interconnectivity of organisms among different habitats (Honda et al. 2013). Thus, training and seminars for the local communities about mangrove ecology including sea grasses and coral reefs will be helpful. A study in the Carribean found that the biomass of several reef fish species more than doubles when the reefs

were connected to the rich mangrove resources. This study shows the importance of mangrove nursery habitats that also serve as breeding place for fishes (Mumby 2006). In Dolores, where a decline of fishes had been observed, community members should support mangrove nursery establishment and the PO together with the government unit should implement a sustainable harvesting mechanism when fish diversity start to boom again. The training on sustainable livelihood could help address the concern of the community members with the lack of alternative income source. Some other means by which mangrove forests could be utilized aside from ecotourism, nursery establishment, and research, include charcoal making for dead mangrove or fallen branches, limited poultry keeping, cooking using fruits from some mangrove species, and fish smoking (Okpiliya and Effiong 2014).

Based on the survey result, none of the respondents were able to identify the role of mangrove forests in carbon storage. In a less noticeable way, mangroves benefit all humans by their ability to sequester carbon. In current times, the rapid overall decline in mangroves on Earth may contribute 10% to 20% of all carbon emissions due to deforestation, and so the prospects for curbing emissions through conservation and reforestation could be promising. Some drug researchers are also looking at mangroves as a possible source of future medicines (FAO 2010). Mangroves' disproportionate contribution to carbon sequestration is being perceived as a strategy for conservation and restoration that can help ameliorate greenhouse gas emissions (Alongi 2014). Therefore, incorporating a lecture or seminar to the local communities of this less noticeable benefit will also be beneficial.

4. **Partnerships with local schools.** MENRO of Leganes where Nabitasan is located utilize partnerships with local schools to reduce cost in seedling plantations and other mangrove-related activities. Since experiential learning is integral to environmental education to increase

consciousness in a more engaging manner, partnership with grade schools and high schools for site visit and learning could benefit both the learners and the municipality (Schneller 2008). This will particularly benefit the locality if there is a minimum entrance fee for the tour and education.

5. **Autonomy of PO from the *barangay* LGU in terms of mangrove forest management.** In Pedada, there is a tension between the *barangay* LGU headed by a chairperson and the PO that manages the mangrove forest. This tension has to do with grating permission to access the mangrove area and with funding allocations when organizations go to the site to start some programs. The same tension might play a role when the eco-park begins to collect entrance fees and start other sustainable livelihood programs using the mangrove area. Although joint forest management between forest communities and provincial governments in other places such a forest fringe in India was found to reduce inequality (Das 2010), there is no guarantee that all provincial governments will function in the same way.

In the Philippines, effective implementation of CBFM is impeded by poor institutional support system, overly bureaucratic procedures, and by viewing CBFM as a project rather than an approach to replace the centralized management system (Pulhin et al. 2007). In India, forest policies of 1984 and 1952 were aimed at expanding the government control on valuable forest resources. This led to a contention between the state agencies and the local community, curtailing the traditional rights of the forest-dependent communities. It was only until the late 1980s that policies started to advance the communities' role in forest management. However, satisfactory execution of such polies were not also met due to weak institutional mechanism (Pratap 2010). Providing an autonomy to the PO in managing the forest under CBFMA will give the members a deeper sense of ownership for the forest land.

6. **Community support from *barangay*, provincial, and municipal LGU and the national government.** I will quote Vira (2005) on this: “In a social context that continues to be characterized by inequality and hierarchy and in which state actors remain relatively inaccessible and accountable to the rural poor, it would be surprising if participatory forest management programs were able to achieve real decentralized and democratic decision making.” There needs to be a stronger support from the government even with the study sites that I visited. Most of the information and trainings on sustainable livelihood and forest conservation were from NGOs and the private sectors. In all my study sites, funding had always been a critical problem and this can be addressed by government support. Many of Dolores community members do not take part in the forest management and conservation efforts because their errands on fishing or alternate sustainable livelihood is not being addressed. Barangay Pedada had not yet been granted CBFMA after applying in 2009. MENRO failed to involve many community members in planting and seedling productions because of the lack of budget.

A study with 71 forest cooperatives in the Kastamoru province in Turkey found that member involvement, forest ownership and administration, and harmony within cooperatives and between cooperatives and the state are the most important factors affecting community forestry participation (Atmis et al. 2009).

7. **Partnership with NGOs to facilitate dispute between the government and the local communities and to assist with CBFMA applications.** Land tenure instrument such as the CBFMA can help address explicit discriminatory policies that are often times accompanied by corruption, rent seeking, and creation of patronage networks by government officials (Larson et al. 2010). In my study sites, obtaining CBFMA had always been a tedious and lengthy

process. Environmental NGOs assisted Pedada and Dolores in securing CBFMA by guiding them through the process and helping to review their constitution and by-laws. This support benefited both Pedada and Dolores.

8. **Monitoring of CBFMA sites by the local communities.** The current monitoring of mangrove forests in all study sites involve both the sea patrols who are also locals to the area but are hired under the government office. There had been complaints with some of the licenses of sea patrols already expired thus leaving no one to monitor the coastal area of the mangroves. Monitoring by local communities who are also members of the respective PO will give a sense of ownership and in some cases, this sense of ownership gave the people the confidence to confront encroaching trawlers and to lobby the government to enforce rules they feel is necessary (Suutari and Marten 2007). This will also open up more opportunities to participate in mangrove forest protection. In a study by Chhetri et al. (2013), logit analysis revealed that larger sized households of Forest User Groups (FUGs) were most likely to participate in forest protection activities. This will likely be the case because most of the household in the research site belong to the lower income class.
9. **Limit Fishpond Lease Agreements.** Fish farming in the Philippines dates back to the early 14th century, with intensified practices beginning in the 1940s. The practice is integral to the country's food security, employment and export sectors. In 1995, the Philippines ranked as the 12th largest fish producing country in the world, and the sector has only grown since. Some farm-raised fish in the Philippines is exported. This is especially true of Filipino shrimp that is commonly sent to Japan. However, the fish raised through aquaculture are also an important staple in Filipino diets, with farmed tilapia and milkfish accounting for 18% of the country's fish food supply. In fact, before 1975, milkfish was the only farmed species in the Philippines

and all aquaculture focus was on food production that would remain in the country (Hyman 1983; www.fao.org).

Through the proclamation of Wilderness Areas, investment in reforestation, and community-based mechanisms, the government of the Philippines is attempting to show a commitment to its disappearing mangrove forests. However, the Department of Agriculture still leases lands at low rates to private owners to clear forests for aquaculture. Fishponds are also a large economic driver for many local communities, and are at risk of greatly affecting the livelihoods of community members if they are prohibited from the activity in the future. While the national government is in charge of the conservation, protection and utilization of mangrove forests, local government entities are responsible for the licensing and supervision of the use of mangrove resources (Pulhin et al. 2008). Competing land uses is likely to intensify in the future that might limit mangrove protection efforts (Walters 2003). Therefore, FLAs should be limited to avoid further resource depletion and conflicts within the communities such as when the mangrove area of Dolores was privately-owned.

CONCLUSION

Community-based management of mangrove forests in the Philippines is held by POs whose members comprise mostly of fisherfolks. This shift to CBFM was highly ignited by the intensifying typhoons that hit the country regularly. Some of the strengths that led to community participation in sustainable mangrove management in the Philippines include: Awareness and knowledge about various environmental programs conducted in the locality as well as other environmental information shared to the locality, participation in the PO, and a sense of ownership to the forest being managed. Threatened ecosystems are generally managed through strict conservation means but this study shows that community participation in the management contributes not only to the improved diversity of mangroves, but also to improved well-being of the people and compliance to local rules. Harmony within the local communities and between the local communities and the government offices is necessary to promote community participation. Among the three study sites, Pedada, which is managed by the local PO group called Pedada Fisherfolkd Association showed the most participative members. Nearly half of the total household in Pedada are PO members and the community engage in bagging, selling of seedlings, monitoring and maintenance of nursery. Restricted access to the forest led to conflicts within community members who are members of the PO and who are not part of the PO in *Barangay Dolores*. Despite the increased in abundance of mangroves in Leganes through participation of schools and other agencies, the local communities did not have the same improved well-being as measured by how satisfied they are with the current mangrove management scheme. Further financial support is needed by POs to continually grow and support their membership and continued guidance on sustainable livelihood and mangrove biology is also recommended.

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APPENDIX A

FIGURES

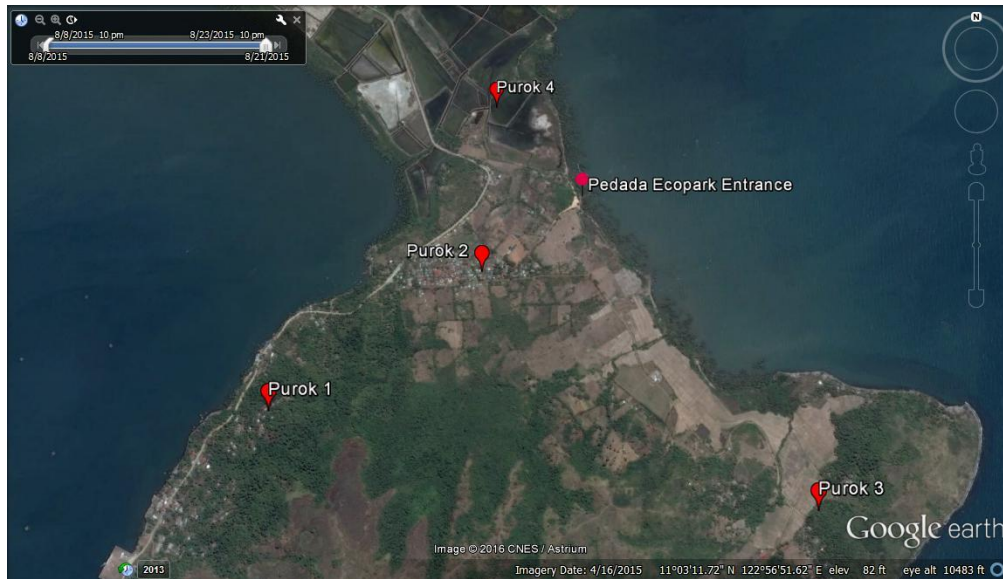


Figure 1. *Barangay* Pedada showing the location of Pedada Mangrove Ecopark and relative locations of the different districts.



Figure 2. *Barangay* Nabitasan showing the location of Nabitasan Mangrove Ecopark and relative locations of the different districts.

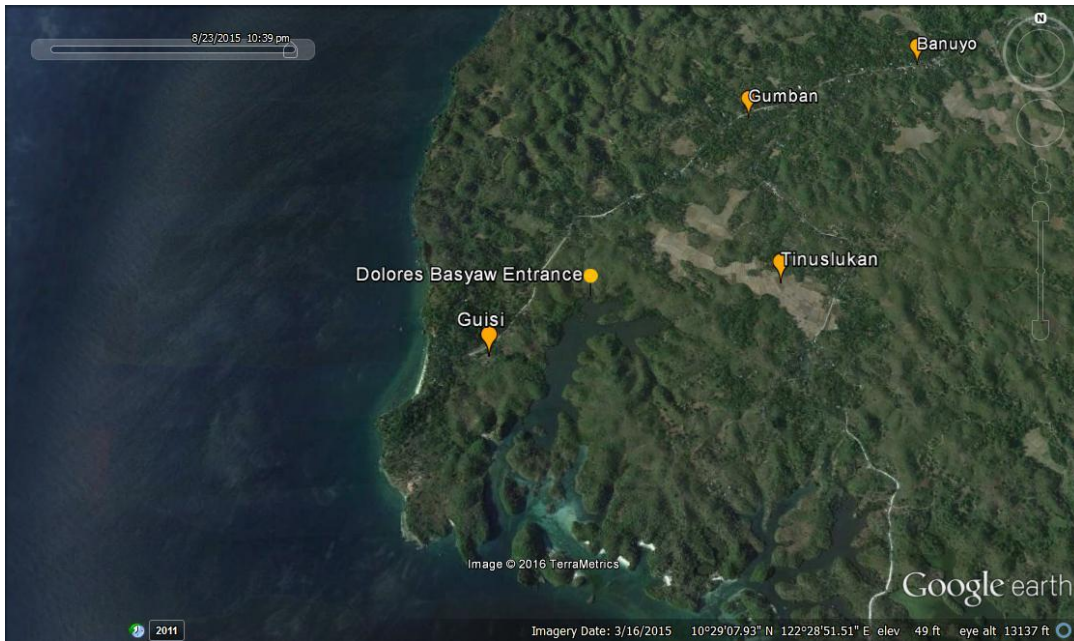


Figure 3. *Barangay* Dolores showing the location of Basyaw Cove Mangrove Ecopark and relative locations of the different districts.

APPENDIX B

TABLES

Table 1. Income class and average monthly family income in the Philippines.
(Source: Albert et al. 2015)

Code used for the analyses	Income Class	Range of Monthly Family Income (For a Family Size of 5 Members)
1	Poor	Less than 7,890
2	Low Income	7,890 – 15,780
3	Lower Middle Income	15,780 – 31,560
4	Middle Class	31,560 – 78,900
5	Upper Middle Income	78,900 – 118,350
6	Upper Income	118,350 – 157,800
7	Rich	At least 157,800

Table 2. Categorized responses and respective codes used in the analysis

Code used for analyses	Categorized responses based on type of ecosystem services
0	Don't know
1	Provisioning (food, shelter for fishes)
2	Regulating/support (protection from storm, prevents soil erosion)
3	Cultural/Economic (beautify the place, added income from ecotourism and plantings)
4	1 and 2
5	1 and 3
6	2 and 3
7	1, 2, and 3

Table 3. Pearson test result assessing the correlation between forest activity participation and information about several environmental programs and concepts.

		Correlations			
		Environmental Information Received	Forest Activity Participation	Environmental Program Awareness	Mangrove Services Knowledge
Environmental Information Received	Pearson Correlation	1	.305**	.400**	.106
	Sig. (2-tailed)		.000	.000	.126
	N	208	208	208	208
Forest Activity Participation	Pearson Correlation	.305**	1	.471**	.036
	Sig. (2-tailed)	.000		.000	.607
	N	208	208	208	208
Environmental Program Awareness	Pearson Correlation	.400**	.471**	1	.104
	Sig. (2-tailed)	.000	.000		.137
	N	208	208	208	208
Mangrove Services Knowledge	Pearson Correlation	.106	.036	.104	1
	Sig. (2-tailed)	.126	.607	.137	
	N	208	208	208	208

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4. Pearson test result assessing the correlation between forest activity participation and HH income, PO membership, and different management type.

		Correlations			
		Forest Activity Participation	Household Income	PO Membership	Management Type
Forest Activity Participation	Pearson Correlation	1	.027	.599**	-.265**
	Sig. (2-tailed)		.700	.000	.000
	N	208	208	208	208
Household Income	Pearson Correlation	.027	1	-.039	.113
	Sig. (2-tailed)	.700		.572	.104
	N	208	208	208	208
PO Membership	Pearson Correlation	.599**	-.039	1	-.288**
	Sig. (2-tailed)	.000	.572		.000
	N	208	208	208	208
Management Type	Pearson Correlation	-.265**	.113	-.288**	1
	Sig. (2-tailed)	.000	.104	.000	
	N	208	208	208	208

** . Correlation is significant at the 0.01 level (2-tailed).

APPENDIX C

QUESTIONNAIRE

THE QUESTIONNAIRE

FORM A. ENUMERATOR AND HOUSEHOLD INFORMATION

1. Enumerator ID **ENID**
2. Household ID **HHID**
3. My name is _____. I am working with Meg Daupan, a Filipino master's student from the University of Michigan School of Natural Resources and Environment, to conduct a survey related to your participation in mangrove forest management. We would like to interview you. Your personal identifying information will be kept confidential, and will only be used for the purposes of the coordination of this study. Your responses will remain anonymous in any subsequent analyses and published reports. This survey is completely voluntary and you may stop at any time. Equally, you may choose not to answer any question that you feel uncomfortable with. We would greatly appreciate your cooperation and time. This interview will take about **45min**.
4. Date **A00400**
5. Province: 1, Iloilo 2, Guimaras **A00500**
6. Municipality/Barangay **A00600**

Iloilo	Guimaras	
1, Ajuy/Pedada	3, Nueva Valencia/Dolores	
2, Leganes/Nabitanan		
7. Purok/Sitio (select one) **A00700**

Pedada	Nabitanan	Dolores
1, Purok 1	5, Bongso-an	13, Guisi
2, Purok 2	6, Kaingin	14, Tinuslukan
3, Purok 3	7, Dangyad	15, Gumban
4, Purok 4	8, Baybay	16, Banuyo
	9, Proper	
	10, Pandan	
	11, Panos-on	
	12, Aquaville	
8. Does the interviewee consent voluntarily to be a participant for this survey? **A00800**
 1, Yes
 2, No [If selected, the survey ends, but you will still save and send finalized form]
9. Name of Respondent _____ **A00900**
10. Age _____ **A01000**
11. Contact (Landline) _____ **A01100**
12. Contact (Mobile) _____ **A01200**
13. Name of Household head _____ **A01300**
14. Gender of Household head **A01400**
 1, Female 2, Male 3, Third gender
15. Religious Affiliation **A01500**
 1, Roman Catholic 2, Protestant 3, Seventh Day Adventist 4, Aglipay 5, Other, specify _____
16. To which ethnic group do you belong? **A01600**
 1, Tagalog 2, Cebuano 3, Boholano 4, Ilonggo 5, Waray 6, Ati 7, Others, please specify _____
17. Highest educational attainment **A01700**
 1. Grade 1 2. Grade 2 3. Grade 3 4. Grade 4 5. Grade 5 6. Grade 6
 7. 1st year HS 8. 2nd year HS 9. 3rd year HS 10. 4th year HS 11, Vocational
 12. Bachelor 13. Masters 14. Ph.D.
 15. Just literate [This implies no formal education but literate] Illiterate
 16. Don't know (do not offer as initial answer) 17, Not stated (do not offer as initial answer)
18. Main occupation **A01800**

1, Agriculture	2, Livestock	3, Fishery
4, Business/industry	5, Private/I/NGO Service	6, Government Service
7, Forest/Forest-Related	8, Student	9, Household chores

- 10, Not working/unwilling to work 11, Disabled 12, Looking for job/unemployment
 13, Social service/politician 14, Working abroad 15, Owns small shop (industry/business)
 16, Other 17, Not applicable 18, Other
 19, Not stated

19. Location of the house in which the respondent and respondent’s family are currently settling A01900

- 1, Landslide Prone area
 2, Flood Prone/Low-lying area
 3, None of the above
 4, Don’t know (do not offer as initial answer)
 5, Not stated (do not offer as initial answer)

Please list all members in the family and record all information about them separately

20. Name of household member A02000	21. Relation of this member to household head A02100	22. Age (Record 0 for less than 1 year old) A02200	23. Sex A02300	24. Main occupation (Select options from Q18) A02400	25. Currently at home? (Yes/No) A02500
	A, Household head		Male Female Third Gender		
	B, Spouse		Male Female Third Gender		
	C, Son or Daughter		Male Female Third Gender		
	D, Son- in law or daughter-in-law		Male Female Third Gender		
	E, Mother or Father		Male Female Third Gender		
	F, Father in law or Mother-in-law		Male Female Third Gender		
	G, Brother or Sister		Male Female Third Gender		
	H, Grandson or Granddaughter		Male Female Third Gender		
	I, Household worker		Male Female Third Gender		
	J, Other		Male Female Third Gender		

26. What is your household total monthly income? **A02600**
 27. What percentage of your income is derived from fishing? **A02700**
 1, 76%-100% 2, 50%-75% 3, 25%-50% 4, Less than 25% 5, None
 28. What percentage of your income is derived from forest-related sources? **A02800**
 1, 76%-100% 2, 50%-75% 3, 25%-50% 4, Less than 25% 5, None
 29. What percentage of your income is derived from agriculture? **A02900**
 1, 76%-100% 2, 50%-75% 3, 25%-50% 4, Less than 25% 5, None
 30. Do you harvest resources from mangrove forest? **A03000**
 1, Yes 2, No 3, Don’t know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
 31. How many years have you been harvesting resources from the mangrove? **A03100**
 32. How many months in a year do you do this? **A03200**
 33. How many days in a month do you do this? **A03300**
 34. How many times in a day do you do this? **A03400**
 35. From whom or where did you learn this activity? **A03500**
 36. What equipment do you own in doing this activity? **A03600**
 1, Fishing boat 2, Fishing net 3, Others If others, please specify _____
 37. What equipment do you rent in doing this activity? **A03700**
 1, Fishing boat 2, Fishing net 3, Others If others, please specify _____
 38. Are you aware of any organization/group/NGO in your barangay with environmental programs? **A03800**
 1, Yes 2, No 3, Don’t know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
 39. List the agencies here. **A03900**
 40. Have you received information on the following areas/topics? **A04000**

- 1, Fishing laws, policies and procedures
 3, Environmental conservation
 5, Fisheries resource management
 7, Leadership management
 9, Fish processing
 10, Aquaculture
 12, Project development and management
 14, Enterprise development and management
 16, Other
- 2, Credit
 4, Livestock raising
 6, Farming
 8, Fishing technology
 11, Marketing
 13, Information, education and communication
 15, None
 If other, please specify _____
41. If yes, from which primary agency? NGO, LGU, PO, Private, Academe, Other, specify___ **A04100**
42. What do you think are mangroves used for? (multiple option) Other, specify **A04200**
43. During the last 5 years, has there been any change in the area over which vegetation exists/existed? **A04300**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
44. Has the density of mangrove trees in the forest land changed in the past five years? **A04400**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
45. Has the diversity of fish changed over the past five years? **A04500**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
46. Has the diversity of shells (clams, baka-baka, sobra-sobra) changed over the past five years? **A04600**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
47. Has the diversity of crustaceans (lobster, shrimp, blue crab, mud crab) changed over the past five years? **A04700**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
48. Has the diversity of insects changed over the past five years? **A04800**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
49. Has the frequency of soil erosion changed over the past five years? **A04900**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)

FORM B: SOCIO-ECONOMIC SURVEY

50. Do you have your own house? **B05000**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
51. How long have you been residing in this barangay? _____ **B05100**
52. What is the type of dwelling in which the respondent is currently living? (*Do self observation, If the interview is not conducted at the home of the respondent, then ask*) **B05200**
 1, Light materials (nipa/cogon/bamboo) 2, Permanent (concrete/cement)
 3, Mixed (combination of wood/bamboo with GI roof/cement) 4, Other (specify below)
 5, Don't know (Do not offer as an initial answer) 6, Not stated (Do not offer as an initial answer)
 7, If other, please specify _____
53. How many rooms are there in your house? **B05300**
 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

54. Do you own more than one house? **B05400**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
55. Do you own any of the following appliances/equipment? **B05500**
 1, Radio 2, Sewing machine 3, Typewriter 4, Television 5, Sala set
 6, Audio cassette player 7, Video camera 8, Gas stove 9, Refrigerator 10, Bed
 11, Mobile phone 12, Landline phone 13, Computer 14, Rice cooker 15, Electric fan
 16, Bicycle 17, Motorbike 18, Biogas 19, Fish corral
 20, Long line 21, Hook and line 22, Motorized boat 23, Banca 24, Other (specify below)
 20, Don't know (Do not offer as an initial answer) 21, Not stated (Do not offer as an initial answer)

- If other, please specify _____
56. What type of toilet facility do you have in your current residence? **B05600**
 1, Open pit 2, Closed pit 3, Water-sealed 4, Automatic flush 5, Wrap and throw
 6, Other (specify below)
 7, None 8, Don't know (Do not offer as an initial answer) 9, Not stated (Do not offer as an initial answer)
 If other, please specify _____ **B05700**
57. What is the source of light in your house? (select all that apply) **B05700**
 1, Kerosene 2, Biogas 3, Shared electricity 4, Owned electricity
 5, Petromax/gas-operated 6, Generator-operated 7, Solar energy 8, Candle 9, Other (specify below)
 9, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 9, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
58. What is the provision of drinking water? (select all that apply) **B05800**
 1, Source/spring water 2, Public deep well 3, Private deep well
 4, Public artesian well 5, Private artesian well 6, Rain water
 7, Bottled water 8, Public Water service facility 9, River/stream
 10, Other (specify below)
 11, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 12, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
59. Which kind of fuel do you use for cooking? (select all that apply) **B05900**
 1, Firewood 2, Biogas 3, LPG 4, Coal
 5, Kerosene 6, Electric 7, Other (specify below)
 8, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 9, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If others, please specify _____
60. How do you dispose of your garbage? **B06000**
 1, Throw in the family or community pit 2, Collected by the garbage collector 3, Burn
 4, Recycle 5, Composting 6, Other If other, please specify _____
61. 61.1 Means of transport to nearest all-weather road (select one) **B06101**
 1, Walking 2, Bicycle 3, Motorcycle 4, Jeepney 5, Tricycle 6, Boat 7, Other
 61.2 Time required to travel to nearest all weather road (Minutes) **B06102**
 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

62. 62.1 Means of transport to nearest market (select one) **B06201**
 1, Walking 2, Bicycle 3, Motorcycle 4, Jeepney 5, Tricycle 6, Boat 7, Other
 62.2 Time required to travel to nearest market (Minutes) **B06202**
 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

63. Select which land type your family has access to. **B06300**
 1, House lot 2, Orchard/garden 3, Fish pond 4, Private forest 5, Public forest 6, Farmland 7, Other
 Please give details of your access to land by type of ownership and type of land? (select all that apply)
 1, House lot Land Ownership and cultivation _____ **B06302 - B06307**
 Land Area (Sq. m) _____ **B06308 - B06338**
- 2, Orchard/garden Land Ownership and cultivation _____
 Land Area (Sq. m) _____
- 3, Fish pond Land Ownership and cultivation _____
 Land Area (Sq. m) _____
- 4, Private forest Land Ownership and cultivation _____
 Land Area (Sq. m) _____
- 5, Public forest Land Ownership and cultivation _____
 Land Area (Sq. m) _____
- 6, Public forest Land Ownership and cultivation _____
 Land Area (Sq. m) _____
- 7, Other Land Ownership and cultivation _____
 Land Area (Sq. m) _____

64. Did you face food shortage during the last 12 months? (from own production) **B06400**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
65. How many months can you survive from your own food production? **B06500**
 1, Don't know (do not offer as initial ans) 2, Not stated (do not offer as initial ans) 3, NA 4, Provide answer below
66. What were the reasons of food deficit? (select all that apply) **B06600**
 1, No production at all 2, Own production not sufficient 3, Not enough income to purchase
 4, Not available in the market 5, Other (specify below)
 6, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 7, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
67. How do you fulfill the food requirements during food deficit months? (select all that apply) **B06700**
 1, By purchasing food grain 2, By borrowing food grain
 3, Taking wage in food grain [receiving payment for work in food] 4, Reduced quantity of food per meal
 5, Reduced number meals 6, Government support
 7, Family support 8, Other (specify below)
 9, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 10, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
68. Has the frequency of food deficiency changed over the past 5 years? **B06800**
 1, Decreased 2, Same 3, Increased 4, Don't know (do not offer as initial answer) 5, Not stated (do not offer as initial answer)
69. Did your family borrow cash within the last 12 months? **B06900**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
70. Sources of loan **B07000**
 1, Banks 2, Cooperatives 3, Microfinance 4, PO 5, Pawnshop
 6, Relatives/friends/neighbors 7, Savings credit group 8, Loan sharks (5/6)/Bombay 9, Private
 10, Other, Please specify the other sources of loan _____
71. Purpose/s of borrowing (select all that apply) **B07100**
 1, Land purchase 2, Business 3, Education 4, Foreign Employment
 5, Agriculture/Livestock 6, Marriage/Social work 7, Health/medicine 8, House maintenance
 9, Purchase of food 10, Other (specify below)
 11, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 12, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
72. How much (Php) do you owe on cash loans borrowed in the last 12 months? **B07200**
 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

73. Do you have a savings account? **B07300**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
74. Select the type/s of shocks that your family has experienced in the past 3 years (select all that apply) **B07400**
 1, Losing family member 2, Loss of livestock 3, Not being able to pay loan
 4, Crop/seedling failure 5, Social humiliation 6, Loss of house or farmland
 7, Natural calamities 8, Conflict/forced migration 9, Serious illness
 10, Theft 11, Fire 12, Other (Specify below)
 13, None (If selecting this answer, do not select any other answer)
 14, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 15, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
75. If your family experienced any form of shock, what coping strategies were adopted for relief? (select all that apply) **B07500**
 1, Loan/Pawnshop 2, Migration 3, Change of occupation
 4, Mortgage of Property 5, Selling of property/animals 6, Sale of seed reserves
 7, None (If selecting this answer do not select any other answer) 8, Others (specify below)
 9, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 10, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
76. In your opinion, what are the major causes of livelihood insecurity/instability? (select all that apply) **B07600**
 1, Limited access to land and forest assets 2, Loss of traditional occupation 3, Loan/debt
 4, Health problem 5, Lack of skill/capacity/supplies 6, Natural disasters
 7, Other (specify below)
 8, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)

- 9, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 If other, please specify _____
77. Have you worked with any organizations (LGU/NGO) to develop a livelihood improvement plan? **B07700**
 1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
78. In the past 12 months, have you participated in any training activities to develop any of the following: (select all that apply) **B07800**
 1, An enterprise/ business (e.g., a shop that sells products (grocery, furniture, etc.), eco-park establishment, or services (cycle maintenance, hair cutting, etc.))
 2, Product-based income-generating activities (e.g., producing handmade goods (grass brooms, baskets, paper, incense, etc.)
 3, Agriculture-based income (e.g., improved or new horticulture activities (producing bamboo, spices, vegetables, etc.)
 4, Fishing technology (e.g. fish processing)
 5, Livestock/animal income-generating activities (e.g., beekeeping, rearing cows, poultry, rabbits, etc.)
 6, Extractive forest-based income-generating activities (e.g., harvesting timber or non-timber forest products including shells)
 7, Forest enrichment practices (e.g., planting trees or non-timber forest products, setting up nurseries, etc.)
 8, Alternative energy use activities (e.g., bio-gas, improved cooking stove, solar panels, etc.)
 9, Sustainable forest management (e.g., training or resources to improve forest regeneration, environmental conservation, etc.)
 10, Credit
 11, Infrastructure
 12, Disaster Risk Reduction
 13, Other
 14, None (respondent has not participated in any of these activities) (If selecting this answer, do not select any other answer) [SKIP next question]
 15, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer) [SKIP next question]
 16, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer) [SKIP next question]
 [The next 2 questions will be completed for each activity selected above]
79. Who was responsible for developing these activities? **B07901 - B07925**
 1, PO alone through their own funds 2, NGOs 3, Local Government Unit
 4, Other 5, Don't know
 If other, please specify _____
80. How much do you think you have benefited from these activities? **B08001 - B08013**
 1, Not at all 2, Somewhat 3, A lot
81. Have you received any financial support or equipment to support any of the following: (select all that apply) **B08100**
 1, An enterprise/ business (e.g., a shop that sells products (grocery, furniture, etc.), eco-park establishment, or services (cycle maintenance, hair cutting, etc.))
 2, Product-based income-generating activities (e.g., producing handmade goods (grass brooms, baskets, paper, incense, etc.)
 3, Agriculture-based income (e.g., improved or new horticulture activities (producing bamboo, spices, vegetables, etc.)
 4, Fishing technology (e.g. fish processing)
 5, Livestock/animal income-generating activities (e.g., beekeeping, rearing cows, poultry, rabbits, etc.)
 6, Extractive forest-based income-generating activities (e.g., harvesting timber or non-timber forest products including shells)
 7, Forest enrichment practices (e.g., planting trees or non-timber forest products, setting up nurseries, etc.)
 8, Alternative energy use activities (e.g., bio-gas, improved cooking stove, solar panels, etc.)
 9, Sustainable forest management (e.g., training or resources to improve forest regeneration, environmental conservation, etc.)
 10, Credit
 11, Infrastructure
 12, None (respondent has not participated in any of these activities) (If selecting this answer, do not select any other answer) [SKIP next question]
 13, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer) [SKIP next question]
 14, Not stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer) [SKIP next question]
 [The next 3 questions will be completed for each activity selected above]
82. Who was responsible for the provision of financial support for these activities **B08201 - B08211**
 1, PO alone through their own funds 2, NGOs 3, Local Government Unit 4, Other 5, Don't know
 If other, please specify _____

83. How much do you think have you benefited from these activities? **B08301 - B08311**
 1, Not at all 2, Somewhat 3, A lot
84. Why did you participate in these activities? (Select all that apply) [Refers to both training and financial/equipment support] **B08400**
 1, Higher income 2, Market access 3, Better skills
 4, My friends/neighbors participated 5, I was asked by the PO 6, I was asked by IAs or NGOs
 7, To protect forests/environment 8, Participated in predecessor program 9, Access to program officials
 10, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 11, Not Stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 12, Other (specify below) _____
85. How did you learn about these activities? (Select all that apply) [Refers to both training and financial/equipment support] **B08500**
 1, Don't know about it (If selecting this answer, do not select any other answer) 2, Media (radio, newspaper, newsletter)
 3, Social media 4, Interactions with other households
 5, MSFP partner officials (IAs , NGOs) representatives 6, Elected PO
 7, Not Stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 8, Other (specify below) _____
86. If you did not participate, why not? (Select all that apply) **B08600**
 1, Not applicable (participated in activities; If selecting this answer, do not select any other answer)
 2, Was not asked
 3, Not much time
 4, Not enough information/unclear benefits
 5, Too costly
 6, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 7, Not Stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 8, Other (specify below) _____
 If other, please specify _____
87. Please select below your top 3 most important training needs. **B08700**
 1, Fishing laws, policies and procedures 2, Credit conservation 3, Environmental conservation
 4, Livestock raising 5, Fisheries resource management 6, Farming
 7, Leadership management 8, Fishing technology 9, Fish processing
 10, Aquaculture management 11, Marketing 12, Project development and management
 13, Information, education and communication management 14, Enterprise development and management
 15, Other. If other, please specify _____

FORM C: PARTICIPATION, INCOME AND PRODUCTION

88. Are you a member of any forest user group? **C08800**
89. What type of Forest User Group/PO are you a member of? (principal forest user's group) **C08900**
 1, Community forest 2, Public and Institutional Land Management Groups
 3, Collaborative forest 4, Religious
 5, Private 6, Don't know 7, None
90. Name of Forest Group associated with _____ **C09000**
91. Number of years of membership _____ **C09100**
92. Why did you join this forest user group? **C09200**
 1, Higher income 2, To protect the community against natural calamities
 3, My friends/neighbors participated 4, I was asked by POs or NGOs
 5, To protect the forests/environment
 6, Don't know (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 7, Not Stated (Do not offer as an initial answer; If selecting this answer, do not select any other answer)
 8, Other (specify below) _____
93. Are you also a member of other forest user group? **C09300**
 1, Yes
 2, No [If selecting "No," select "Not applicable" in next question]
94. If yes, what type of forest regime? **C09400**
 1, Community forest 2, Public and Institutional Land Management Groups
 3, Collaborative forest 4, Religious
 5, Private 6, Don't know 7, Not applicable

95. Are you or any member of your family in the executive committee of the forest user group you belong to? **C09500**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
96. Are there any provisions in the PO's Executive Committee (EC) for women? **C09600**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
97. Are there any provisions in the PO's Executive Committee (EC) for disadvantaged group? **C09700**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
98. Do the EC members of your family attend the meeting regularly? **C09800**
1, Always present 2, Generally present 3, Occasionally present
4, Generally absent 5, Always absent 6, Don't know 7, Not Stated
99. Do the EC members of your family raise your issues in the EC meeting? **C09900**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
100. If yes, how do others respond to your issues? **C10000**
1, Nobody listens 2, Listens and affects the decisions 3, Listens but does not affect the decision
4, Don't know 5, Not Stated
101. What is the main benefit of being in CF executive committee? **C10100**
1, Social Esteem 2, Exposure 3, Leadership development
4, Financial 5, Other 6, Don't know 7, Not Stated
If other, please specify _____
102. How are the benefits shared among the members (select all that apply)? **C10200**
1, Equal sharing 2, As per need (Equity) 3, Privilege to women-headed Hhs
4, Privilege to Poor Hhs 5, Don't know 6, Not Stated
103. How satisfied are you with current CF mechanism of benefit sharing? **C10300**
1, Highly satisfied 2, Satisfied 3, Neither satisfied nor dissatisfied 4, Dissatisfied 5, Highly dissatisfied 6, Don't know
104. Are you aware of any illegal or destructive activities in the mangrove forest of your community? **C10400**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
105. If yes, what activities are these? **C10500**
1, Illegal fishing 2, Illegal logging 3, Theft 4, Gambling 5, Illegal fishpond operation 6, Other, Specify _____
106. Does your municipality have any ordinance to stop illegal fishing? **C10600**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
107. Does your municipality have any ordinance to stop illegal activities in the mangroves? **C10700**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
108. If yes, does your municipality enforce the ordinance? **C10800**
1, Yes 2, No 3, Don't know (do not offer as initial answer) 4, Not stated (do not offer as initial answer)
109. How effective is the enforcement? **C10900**
1, Very effective 2, Effective 3, Not effective 4, Don't know
110. Select which forest activities you or your household member participated during last 12 Months? **C11000**
1, Nursery 2, Planting 3, Weeding/ Thinning /Pruning 4, Guarding
5, Tour guide 6, Harvesting (cutting timber, poles, firewood) 7, Transportation
8, Marketing / Selling 9, Other 10, None
If other, please specify _____

[This question will be filled out for each item selected above]

111. Enter the number of days your household dedicated to these activities **C11101 -11109**

Production and Income from agriculture (Past 12 months)

112. Select harvested crops (Select all that apply) **C11200**
1, Corn 2, Rice 3, Sugarcane 4, Banana 5, Coconut 6, Other fruits
7, Root crops (sweet potato, gabi, singkamas) 8, Lemongrass 9, Other leafy vegetables (kangkong, malunggay, alugbati, pechay, kamote leaves) 10, Other non-leafy vegetables (tomato, eggplant, bamboo shoots)
11, Spices (katumbal, labuyo, ginger, garlic, onions, etc.) 12, None [skips to livestock question]

[This page will be filled out for each crop selected above]

113. What do you do with the harvested products? (Select all that apply) **C11301 - C11311**
1, Sell to vendors or traders
2, Sell directly to consumers
3, Process for selling
4, Home consumption
5, Process for home consumption
6, Others
If others, please specify _____

114. Production (Unit of measurement for this crop) **C11401 - C11411**

- 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

115. How many units did you produce? (In units given above) **C11501 - C11511**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

116. Price per unit (Php/unit) **C11601 - C11611**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

117. Average units sold monthly? (In units given above) **C11701 - C11711**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

118. How has your income from crops changed over the past 5 years? **C11800**
1, Decreased 2, Same 3, Increased 4, Don't know 5, Not Stated
- Production and Income from Forests and Fishery (Past 12 months)**
119. Select harvested products (Select all that apply) **C11900**
1, Shells 2, Cephalopods (squid, octopus, cuttlefish)
3, Crustaceans (lobster, shrimp, blue crab, mud crab, dawat, kaway, alikomo, kalampay)
4, Fish 5, Mushroom 6, Tannins and sap (for dye, etc)
7, Fuelwood 8, Bamboo poles 9, Other. If other, please specify _____ 10, None
120. Select shells harvested **C12000**
1, Clams 2, Sikad-sikad 3, Sobra-sobra (abalon) 4, Litob 5, Ponaw
6, Pasyak 7, Baka-baka 8, Toway (scallops) 9, Manok-manok 10, Bagongon
11, Koring-koring 12, Soliot 13, Capiz-capiz 14, Botlog 15, Tahong
16, Talaba 17, Green shell 18, Lampirong 19, Other
If other, please specify _____
121. Select crustaceans harvested **C12100**
1, Lobster 2, Shrimp 3, Blue crab 4, Mud crab /alimango 5, Dawat
6, Kaway 7, Alikomo 8, Kalampay 9, Alimasag
122. Select fishes harvested **C12200**
1, Bullet tuna 2, Lagaw 3, Goatfish 4, Samara 5, Tambilawan 6, Maya-maya 7, Lison
8, Mangagat 9, Mullet 10, Kintob 11, Turingan 12, Ngisi-ngisi 13, Pak-an 14, Eto
15, Indangan 16, Parrot fish 17, Others, Please specify _____
- [This page will be filled out for each product selected above]
123. What do you do with the harvested products? (Select one) **C12301 - C12309**
1, Sell to fish vendors or traders
2, Sell directly to consumers
3, Process for selling
4, Home consumption
5, Process for home consumption
6, Others
If others, please specify _____
124. Production (Unit of measurement for this product) **C12401 - C12409**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

125. How many units did you produce? (In units given above) **C12501 - C12509**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

126. Price per unit (Php/unit) **C12601 - C12609**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

127. Average units sold monthly? (In units given above) **C12701 - C12709**
1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below

128. How has your income from mangrove forest changed over the past 5 years? **C12800**
1, Decreased 2, Same 3, Increased 4, Don't know 5, Not Stated 6, Not Applicable

129. How has your income from fishery changed over the past 5 years? **C12900**
1, Decreased 2, Same 3, Increased 4, Don't know 5, Not Stated

130. How has the number of your fish catch changed over the past 5 years? **C13000**
1, Decreased 2, Same 3, Increased 4, Don't know 5, Not Stated

Production and Income from Livestock and Livestock Products (Past 12 months)

131. Select all the livestock and poultry you hold (select all that apply) **C13100**
1, Buffalo 2, Cow 3, Goat 4, Pig 5, Cock/Chicken 6, Duck 7, Other. Please specify _____ 8, None

If others, please specify _____

[This form will be filled out for each livestock selected above]

132. What do you do with your livestock? **C13201 - C13207**

- 1, Sell to vendors or traders
- 2, Sell directly to consumers
- 3, Process for selling
- 4, Home consumption
- 5, Process for home consumption
- 6, Gambling
- 7, Others (Specify below)

133. Does this livestock have credentials? **C13301 - C13307**

- 1, Yes 2, No 3, Don't know 4, Not stated

134. Purchased in the last 12 months (Total Php Spent) **C13401 - C13407**

- 1, Don't know 2, Not stated 3, provide answer _____

135. Sold in the last 12 months (Total income Php) **C13501 - C13507**

- 1, Don't know 2, Not stated 3, provide answer _____

136. If your livestock grazed, where did it graze? (select all that apply) **C13601 - C13607**

- 1, Forest land (including mangrove and beach forest) 2, Common Farm land
- 3, Private Farm land 4, Abandoned fishpond
- 5, Don't know (do not offer as initial answer) 6, Not stated (do not offer as initial answer)
- 7, Not Applicable

137. Fee of Grazing (Php) **C13701 - C13707**

- 1, Don't know 2, Not stated 3, Provide answer below _____

138. Which livestock and poultry products do you produce? (Select all that apply) **C13800**

- 1, Milk 2, Meat 3, Egg 4, Manure 5, Feather
- 6, Leather 7, Horn 8, Other. Please specify _____

139. What do you do with your livestock products? **C13901 - C13908**

- 1, Sell to fish vendors or traders
- 2, Sell directly to consumers
- 3, Process for selling
- 4, Home consumption
- 5, Process for home consumption
- 6, Others

Unit: [This is for your reference, no response field]

Milk → Litre ; Meat → Kg ; Egg → Number ; Manure → Sack ; Feather → Sack ; Leather → Square feet

Horn → Number; Other → You must enter the unit used for the "other" product

[These three questions will be filled out for each livestock product selected above]

140. Quantity produced for the last 12 months **C14001 – C14008**

- 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below _____

141. Quantity sold for the last 12 months **C14101 – C14108**

- 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below _____

142. Price (Php/unit) **C14201 – C14208**

- 1, Don't know (do not offer as initial answer) 2, Not stated (do not offer as initial answer) 3, Provide answer below _____

143. Which of these did you spend money on in the last 12 months? (Select all that apply) **C14300**

- 1, Purchase of food grains 2, Spices/Oils/Salts

- 3, Agriculture Inputs (seeds/fertilizer/pesticide/herbicide/chemical spray)
- 4, Agricultural labor 5, Livestock and livestock inputs 6, Education 7, Cloth
- 8, Social/Religious activities 9, Health 10, Payment of loan interest
- 11, Payment of entire loan 12, Transportation 13, Purchase of forest related products
- 14, Electricity 15, Kerosene 16, Communication (mobile)
- 17, Foreign employment 18, Alcohol 19, Cigarette
- 20, Other. Please specify the other items you spend money on _____ **C14400**
144. From which of these sources did you receive income from in the last 12 months?
- 1, Sale of crop 2, Sale of livestock 3, All types of wage earning 4, Salary/pension from the Philippines
- 5, Salary/pension outside Philippines 6, Industry/business 7, Remittance
- 8, Mangrove ecotourism 9, Sale of mangrove seedling
- 10, Sale of NTFP (firewood, prawn, fishes, crab, tannin, etc.) 11, Loan
- 12, Other. Please specify the other sources of income _____

FOCUS GROUP DISCUSSION GUIDE QUESTIONS

1. How do you utilize the mangrove area that you currently manage?
2. What is the general mangrove governance system like in your community?
3. What rules and regulations do your community have in protecting and accessing the mangrove forest?
4. In what ways do local communities engage in forest management and protection
5. How is income generation like in terms of mangrove management and if there are benefits, how is this shared within the community?
6. How would you describe the locality now compared to the past when you were not involved with the mangrove forest management?

APPENDIX D

TRANSCRIPTS

Transcript from focus group discussion with Pedada Fisherfolk Association members

TRANSCRIPT from FGD with Pedada Fisherfolk Association members
Date: August 21, 2015

I: Can we go around and first introduce ourselves please.

M1: So okay I am Elmer Fuentes Babiera, I was assigned as mangroves, barangay Pedada Fisherfolk association PO President for more than 4 years. Thank you.

F1: I am Norma Babiera, newly elected secretary. Formerly secretary of the fisherfolk.

F2: I am Adelfa Fuentes. Before I. I came from Manila. When I arrived here this has already been in operation. 2-years term of the association and that was by the second term election I was appointed as bookkeeper because I had been helping even before I was a member. I am interested to help so I was appointed and until now I am still the bookkeeper.

F3: I am Elma Villacarlos, new member of BPPFA. I am also a banker.

I: which position?

F3: new member

F4: But even before she had been helping her husband who is a member

M2: I am Ramon Barbato, also a member and now assigned as Vice President of BPPFA

F4: do I also have to introduce myself?

F4: I am Pelsy, I spend money. Joke. Treasurer of BPPFA. At the same time local community organizer of ZSL. Can our visitors also introduce themselves.

M3: Our meeting is so wonderful we are meeting like this.

F5: I am Josefa, Meg Daupan's enumerator. I already know some of you.

F6: Hello, I am Jackielyn, enumerator with Josefa under Ma'am Meg

F7: Hello everybody, I'm Hanil we three are sisters. I also met sir counselor earlier. Thank you.

I: Again, I am here to ask about the historical context of this area, its features - how wide it is and also the historical origin of your fisherfolk association- how it started including its membership and also about livelihood- how you generate income and how you share benefits among members. Let me begin with historical context of the area and whoever would like to answer please feel free to answer.

(4:25)

M1: what is this, just questions?

I: Yes, and I will take note and again this is recorded. Let's start with history of this mangroves. Let me first ask.. how wide is this area held by BPPFA?

M1: 42.9 Ha was given by DENR to BPPFA.

I: Before this area was given to BPPFA, who was responsible for taking care of this mangrove area?

M1: The community themselves. But it's not 100% care, some cut trees and even outsiders do cut mangroves and use it for coal.

I: So this was before?

M1: The year before 1960s until the time RA 7161 was "put off" (I do not know the right word to describe when a policy is no longer in effect). I don't know what year.

I: So previously the place is open-anyone is free to enter. There are lots of large trees I see here which means this forest had been in existence a long time. Was this area previously a fishpond?

M1: No it's natural.

I: and was this previously managed by DENR?

M1: BFAR. Upland was managed by DENR, and BFAR managed the ocean and coast. Upland, because of timberland they were the ones who managed mangroves.

I: What do you think are the reasons why there were many who used to cut trees?

M1: It is because of the high quality of the coal from mangroves. And also it is easy for them to cut because once they cut trees it falls near the ocean and people will just tie a rope around it.

I: Okay, but now this cutting is prohibited?

M1: But after RA 7161 – total ban cutting. People were no longer able to move. They were frozen.

I: So this 42.9 Ha...

(9:47)

M1: Actually we are just working on 29.5 Ha.

I: Why is it so?

M1: It's because the 16Ha something, the water is deep there. And also that is included in the written CBFMA that we applied that it is included under the protection of our management.

I: So you applied

M1: Year 2009 we applied for community-based forest mgt agreement

I: When you said before that DENR gave 42.9Ha

M1: The tenure of CBFMA is number 1: rehabilitation, protection, mangrove management, planting

I: Okay so let's go to your association. What year were you formed?

M1: This fisherfolk was registered 2003.

I: Registered under what? DOLE?

M1: 2003 in DOLE but during this time, DOLE registered us in 2003. After that, since I don't know.. in our certificate since it is my basis. It was issued under Presidential decree number 442, but it did not indicate that registration is really needed. From 2003 to 2007. Nothing else entered. What did not enter Pelsy?

F4: No activities were done.

I: Okay so it was registered in 2003. Why did you form this association in 2003?

F1: because LGU said that Pedada has many fishermen why not create organization of fishermen? So under capt. Alberto barbiera's term, fisherfolk was organized.

I: what was your initial goals back then?

(15:10)

F1: Help fishermen in their needs. What they need to have sustainable income.

I: Okay so but in 2003 to 2008 it was not active. How many members did you start with in 2003?

F1: about 95

I: then after 2008 what happened to your association?

F1: In 2004 we had few activities like coastal drive with council, we helped each other to gather plastics, trash. The place was messy before. In 2005, Green Brigade of Iloilo came and 1,500 Bungalon and Pagatpat were brought here. We have photos in our barangay. Then in 2006, fisherfolk did gardening. Vegetable gardening. At the area with core shelter. We planted a variety of vegetables and seeds were given by DAR, We helped each other, council, fisherfolk, other barangays we all planted. And monitored during Saturdays. People were so happy because vegetables were free.

I: What happened to that now?

F1: It became a residential. At the welcome station. They developed it.

I: Wow free vegetables before.

F1: In 2007, they said Pedada has oilspill. So officers of fisherfolk monitored if there really is oil spill in Pedada. We gathered samples with oil. And found there really is oil

I: Where did that come from?

F1: Guimaras accident before.

I: So fisherfolk received green grant for the oil spill.

F1: Then 2008, association slept again. Many officers left and sought jobs in other places. Our members stopped meeting. CBL was not implemented well.

I: what is CBL again?

F1: constitution and by-laws. So there, ZSL researcher came in mid 2008. They said there was an organization why don't we re organize.

I: did this have to be registered under DOLE again?

F1: DOLE said it is already registered. They only need yearly report. ZSL marine biologists saw there is potential for Pedada after assessing the surroundings.

I: How was the membership like

F1: 2003 to 2008 many members left

I: How to become a member in your association?

(24:40)

F4: just to register. If you are interested you register.

M1: Okay, register does not mean to simply register. We have a rule. You have to be a Pedada resident at a legal age and for every family, only three is allowed to apply for membership. And members should undergo the membership committee.

I: Is there a membership fee?

M1: Yes, 50 pesos and monthly due is 5 pesos.

I: And in terms of management, do you make your own rules? Do you follow certain local rules such as restricting outsiders to access the area?

M1: Barangay officials, with the support of ZSL and BPP we were able to come up with an ordinance stating that Pedada is a bird and wildlife sanctuary. These barangay LGU ordinances have been credited to provincial. Then there is one ordinance there.. since Pedada is divided into 4 zones, the mangroves were also subdivided into 4 per purok. In our ordinance, it is stated that mangroves area - for gleaning, picking up shells. It can be open in every 3 months but not all of them are open. If 1 is open, 3 is closed, 2 is open, 4 is closed. Then after 3 months, 1,2 is open.. the following 3 months, 3,4 is open. The reason for this is that for shells, mudcrabs, within 3 months they can grow bigger and people should not go there during that period. This was implemented because outsiders were not allowed to gather areas.

I: I see so this is strictly for Pedada

M1: Yes

I: When did this ordinance came about again?

M1: In 2011

I: and so before 2011, people even outsiders are welcome to gather shells

M1: Yes, but we have previous ordinance on stray animals. One of the ordinances also state that birds are not allowed to be killed.

I: What do people do with those birds?

F4: They eat it.

M1: The small bats, there is a lot of them. people eat them too

I: and this was before. Okay.

M1: We also have that stray animals. The goat number one, if the goat eats Pagatpat that is small, it dies.

F1: It's just that when the goat feeds on this plant, the plant dies.

I: The plant dies. I thought it is the goat that dies.

M1: It should have been the goat that dies, right?

(32:17)

I: About management again, I am very curious of how you use mangroves. For example, in other countries, people extract tannins, for dyes and medicines. How about here?

M1: Previously we have here what is called tuba. Like that from the coconut. If you see now most of our vinegar is white, before it was red, and it was from mangroves. There is this mangrove (Bakhawan). A type of bakhawan. They will grate the fruit like how they do with old coconut. It can also be used as dye.

I: But do you still do it here?

M1: Now we don't do it. We just buy dye and you already different colors.

I: Okay, so for this 42.9 Ha, is this whole area part eco-park? And could you clarify how you generate income?

(33:50)

M1: Here the concentration of eco-park is 29.9 Ha.

I: and how many Ha is for nursery?

M1: Just the nursery or all area that can be planted?

I: Yes, Nursery

M1: This nursery just started this year but before this, nurseries were done under the plants. Now we call it nursery 1 and nursery 2. How this happened is that the first bagging is year 2008. If the seedling was from a specific mother tree then we leave the seedlings at that specific mother tree.

I: Do you know how much in sq. m is this current nursery you have?

M1: How many sq. m, man?

M2: 30ft width, length is 60ft. times 4, there's a total of 4. Capacity per nursery is 15,000.

M1: So there is 15,000 per nursery

I: One thing I also wanted to know is benefit sharing among members. Do all members also participate in planting?

M1: So for benefit-sharing, for myself, I could not implement an exact benefit sharing where everyone will get something. Because we are just starting. But once we have continued income, we can have financial policies where officials will get this or that. But this time, everything is improper since there are systems that are broken. Our sharing right now is based on our own method. What we do is that if a member is diligent for our livelihood, seedling production for example, if people buy the seedlings and you planted then you have income. Basically, if you work you get paid.

I: Let me just go back to shell harvesting, you seem to have ordinance but who monitors this implementation.

(38:50)

M1: We have "Bantay Gubat" who are registered. Although today, their registration is already expired.

I: Okay, so they have to renew. Are they also member of this fisherfolk association and do they live here in Pedada too?

F4: Yes they are also members, barangay tanod

I: Oh okay.

M1: In our CBL, there is what is called police, sgt. At arms.

I: Are you referring to CBL of the fisherfolk?

M1: Yes. Let's repeat this. In 2003, you can't register to DOLE without CBL. Then the organization slept until 2008. But there are LGUs who came here to plant. In 2006, this was re-organized. There is a boat that sunk and created an oil spill. And this is how Pedada got little benefit. The question that time was who were the members because if you are not a member then you can't get benefit. People then started to join the association again. But that membership was only used for oilspill benefit. So after that, ZSL came and helped us re-organize. The LGU was tapped, the DENR was tapped, BFAR was tapped, and then the community. The community was really confused and did not know what to do. With the help of ZSL, we got re-organized. People started to visit and it brought happiness to our barangay.

I: The establishment of this also generated income from the visitor is that right? Where does the income go?

M1: let's go to generation. The generation of income is for example when people enter and purchase ticket. We haven't done that. We have no facilities yet that is officially launched for the BPPFA. After the launching, we might start asking for entrance fees. So for now, we have not really collected anything yet. We just have there a donation box. Our generation is only from livelihood, seedlings production and visitors' catering, and our donations box.

I: So when did the organization start to really care for mangroves. What changed your ideas since you mentioned before that people used to cut mangroves.

M1: Okay, so this is what I was telling earlier that before ZSL came, community were so confused. When seminars began, taxonomy, in 2008. It was the time the mind of people was opened. It's what really opened people's mind. When students came. For example, Bill Thompson, Lizabeth Duncan, who stayed here for long time. (These are researchers)

F1: I just want to add to this. Because of ZSL, we learned how important these are. We did not know that mangroves are hidden wealth of Pedada.

I: Okay. Let me just go back to income generation okay? Do we have a record of group income?

F4: We don't have it. No group income yet.

M1: We do have financial report but only for BPPFA.

I: But do you also have COMSCA. When did this started?

F1: Just last year.

I: Lastly, I just want to follow-up with BPPFA

M1: Our papers had already been completed. There is just one missing document.

F4: It's the certification form DOLE that is missing. Once we get the certificate then it's okay. The report from 2003 to 2008 is what they are waiting.

I: What do you think is the importance of getting CBFMA?

M1: CBFMA will serve as framework. If we get it, it means that CBFMA will be our "bible". BFAR and DENR. This will be like our "bible" from issuance of certificate up to 25 years. BPPFA has the power to handle the tenure of this CBFMA. What are those tenure? Protection, management, rehabilitation, implementation of ordinances. Development especially and sustainability. So if this is followed, Pedada will be very beautiful because if we say you can't go there then people won't go. If you throw trash here then why did you throw there?!

-BREAK-

M1: About year 1977, we had so many fishes here. Now there is not much

I: Even after people planted?

M1: There is maybe just a few percentage supported by mangroves. But they can still help because one of the problems is fertilizers from the mountains. They will spray on their corns. It's good if the soil will keep it but when it rains where would the fertilizers go?

I: But now are there areas where one can fish within this area you manage?

M1: There's a lot of shrimps you see here at night.

I: Is this included in the zones 1 to 4 harvesting restriction?
M1: No those are in the waters already.
I: How about with conflict resolution. How do you resolve these?
M1: We had seminar on conflict resolution. The vice president should have members to fix dispute. But there had not been really conflicts. Just some seedlings and children play with them and that can be easily handled.
I: What is the total area then that can be planted?
M1: Perhaps between 20 and 30 Ha. Wherever there is an open space that is suitable for planting.
I: Is this area you manage also covered under MPA?
M1: No but we have MPAs here.
I: Would you think that it is better for local communities to manage the mangroves?
(5:24)
M1: There is no one who has interest apart from barangay unit. But we cannot say yet because BPPA, they already saw it. LGU did not have any projects like this before.
I: When you started in 2003 was the association mostly men?
F1: It was only for men.
I: Does it mean that you only started having women join the association in 2008?
M1: Yes we have it in our CBL – to respect the rights of a women to be equal to men. But the problem, the council says members were not totally as fisherfolk. The association is “Fisherfolk”, some marine who came back used to be fishermen too. What they eat, what gave this person nutrition.

Transcript from focus group discussion with MENRO Officials, Leganes

TRANSCRIPT from FGD with Municipal Environment and Natural Resources Office (MENRO) Officials
Date: August 10, 2015

(Introduction before the recording)

I: I would first like to start with our map, so you could pinpoint the location of the mangrove forest.
M1: It is just small, here it is. Bgy. Nabitasan is here.
I: Okay, then maybe we can also map out the different sitio.
M1: This is the sea shore, this is baybay, this is the coastal road, Dumanggas, so this is the mangrove site.
I: Which Sitio does it cover?
M1: Barangay Nabitasan, Barangay Gua-an, Sitio Trenta Nabitasan
I: Where is Sitio Proper?
M1: It's here
I: Which river is this one?
M1: It's a creek
I: Is there a name for this?
F1: Guigui
I: Yes, we passed by this.
F1: Past the bridge is Aquaville
I: I see. It just got cut out of the map. But it still is part of Nabitasan, is that correct?
M1: Yes, Panos-on, Aquaville
I: Yes so there are 8 sitio.
M1: Proper, Sitio Trenta, Aquaville, Danyad, Pandan, Bongso-an,
F1: Kaingin, Panos-on so there's 8.
I: Okay, we are to interview community members from all those 8
(4:55)
I: And how wide is the area that MENRO manager?
M1: As of now, it is 15 Ha. Before it was 9.5 Ha, but together with ZSL and the call for expansion, it expanded to 15 Ha
I: What year did that happen?
M1: 2009 we started. Basically this abandoned and underutilized fishpond is the 9.5 Ha
I: But this 9.5 Ha, were there previously planted mangroves?
F1: It was completely a barren land. That is the photo over there.
M1: 2009 photo and then 2014
I: How did it became 15? Was some land bought?
M1: No, there was just really available area for expansion. Even without ZSL. We worked with our partners. So far we have 33 partners doing the rehabilitation project. During the time ZSL was here, we only 9.5 Ha based on the Memorandum of Agreement.
I: Is the expanded area also an abandoned fishpond?
M1: Yes
I: Does it need approval
M1: Yes, from the LGU. Just the same.
F1: LGU is the one that manages anyway.
M1: If there are groups who are hoping to partner with us, there is MOA for that.
F1: What about the privately-owned fish ponds? Did they gave it up?
M1: Basically it's also owned by the municipality. 187 Ha is owned by the Municipality, this 15 Ha is included in that.
I: Does that include those fishponds in the different sitio?
M1: Yes
I: Does this government-owned fishpond be also leased using the FLA so communities could own them temporarily?
M1: Yes, but considering there is no problem. We didn't resort to that.

I: Okay

M1: Because the municipality allow the person to rent the area per Ha basis.

I: Can I please have some of the photos here?

M1: Yes

I: Thank you. I also want to learn about the history of MENRO Office.

M1: Basically the MENRO office was just recently created. Please show her the ordinance.

F1: Previously, this DA and MENRO were just one office. But recently, it got separated.

I: Are all mangrove forests under MENRO's management?

M1: Yes, all mangrove forests in the municipality. It is written in the ordinance. All mangrove in our municipality is under our jurisdiction. But the Katunggan is a special project and we manage them together with these people.

I: I'd also like to request for some photos of this one later.

F1: Yes, sure.

(10:13)

I: What year did MENRO Office started?

M1: Just this year. 2015, as a separate office.

I: When it was part of DA, since when was that?

M1: 2013. It was Municipal Agriculture Environment and Natural Resources Office.

F1: So there was no MENRO before?

M1: No, it was just agriculture. But because of urgency. Climate change, global warming, the local government prompted to create the office to address this.

I: What about in 2009?

M1: It was just Department of Agriculture

I: Was it also you who were in the office that time?

M1: Yes, as long as it is part of the jurisdiction of agriculture, we manage them. Because Agriculture covers fisheries too. Part of fisheries, Bureau of Fisheries and Aquatic Resources, is mangrove rehabilitation. But attention was not much given because priorities are farmers. Our coastal management resources were not really given attention until typhoon came, Yolanda, Frank.

I: Now I understand why it was very recent. What other forests can we see here in Nabitasan aside from mangroves?

F1: Beach forests, but just few. Majority are mangroves.

M1: Here's the photo. This is Coastal Road, Kala-or River, Gui-gui creek.

I: So this is Buntatala.

M1: Outside that bridge is the Buntatala Creek that connects to the major river basin, Kala-or.

(15:00)

I: This is clearer. Can I also get a copy of this later? I also want to know about the rules you set regarding access to mangroves.

M1: As of now, since there is an ordinance to protect the mangroves, access is really prohibited.

I: Does that mean access is completely restricted?

M1: It's limited access. No one can enter, no one can cut mangroves, no grazing of animals, no shell gleaming.

I: Do we already have this in the ordinance?

M1: Yes. When there was no ordinance on this, anyone can access the mangrove forest, goats were scattered and they eat our mangroves, people cut trees. But because of the ordinance, it doesn't happen now.

I: Who does the monitoring to ensure that no one cuts trees?

M1: Caretaker

I: Were you able to catch some violators too?

M1: Yes, we send them to the police.

I: What happens when they get caught?

M1: They have to replant depending on the extent of damage.

I: In the past year, how many were caught?

M2: Only 2

I: Could you please share with me what type of violations they did?

M1: They built a house in the area and the wildings died

I: Did they also have to replant? And what happened to the house they were building?

M1: Yes and the house was removed.

(19:47)

I: I also hope to understand the MENRO structure. Sir Wilson, so you are the Head of this office, correct?

M1: Here let me show you.

I: Where do the care takers fall under this?

M1: Job hires.

I: What does that mean?

M1: Daily basis, they are contractual.

I: What is going to happen here? Will it be the same that every 3 years there will be elections similar to what happens in our LGU offices?

M1: No, not unless for terminated positions. There will be certain requirements and standards to fit in the position. Job hires could be hired at any time depending on need. Right now we need a lot of them because of the need to plant.

I: So currently is there only 6 of you who are under MENRO?

M1: Yes

I: What about the roles of the unviuersities?

M1: Basically, their role is more of research study. UP Visayas. They also conduct barangay immersion and research. Most universities utilize our mangrove eco-park for NSTP, as work force in planting, bagging, so we don't have problem on manpower because they provide this to us.

I: Which schools do you partner with?

M1: Almost all colleges here. They do their NSTP here. That is why we have no problems with salary and wages.

I: How were you able to tie up with universities?

M1: We started with one university. But because of their corporate responsibility, and since schools were also required to plant trees, they come. To make the partnership legal, we created MOA, so they will also have a sense of ownership and join in protecting the forest.

I: For this universities, is their volunteer restricted to the mangrove eco-park?

M1: Any mangrove in the municipality as long as there are areas that are ready for planting, but we just direct them to this ecopark to complete the 15 Ha.

(25:12)

I: Since you also mentioned about restricting access to the local communities, what about those mangroves whose fruit could be harvested. Will that be allowed? Or is it complete banning of access?

M1: As long as there is permission we will allow that since it is a community-based project. But since the project is still not mature, the LGU will still be the one handling the operations, but eventually, we will pass it on to the community to be more sustainable.

I: How about the fishing in the area? Are there some restrictions?

M1: We have BFAR ordinances on that. But of course, we have *bantay dagat* but we could never exert effort to apprehend those illegal fishers. Basically there is not much illegal fishing in Leganes waters.

I: But do you still get reports on illegal fishing here?

M1: Yes, sometimes there are small fish nets.

I: Is the punishment the same for this illegal fishing and those that affect the mangrove trees?

M1: They're different.

I: For the apprehensions, do you do that?

M1: For mangrove-related ones yes, but we rely on provincial government, BFAR for illegal fishing rules. Even if we say that the municipality created *Bantay Dagat*, they are inactive in most parts of Leganes.

I: Do you also manage beach forests?

M1: Yes but there is just very little of them

I: Can I also have a copy of these ordinances? How do you guard the place then?

M2: 24/7. We live there. Sometimes we receive a call and we address illegal activities.

I: How are the ordinances communicated to the local communities?

M1: There will always be public hearing for this.

F1: We also post them.

I: My other question is for very old trees. Do you allow cutting or trimming?

M1: When we started the project, it was really barren. If we look at the ordinance, in our national law, mangrove cutting is really prohibited.

I: Does this include old trees

M1: There are some grounds for them to be cut.

I: In the sites that I visited, there were a lot of mangroves that were damaged because of the typhoon. What do we usually do in those cases? Are those given to the communities?

M2: Usually caretakers collect them and use for firewood. Caretakers gather first so most local don't get anything.

F1: We also recycle some branches for decorations.

I: Do you also plan to open this activity to the local communities?

M1: Yes, it's one part of the program – to open the area to the community as part of their livelihood.

I: But as of now, are crabs allowed to be collected?

F1: It's really prohibited. But we can't avoid because crabs move.

M1: We also have an ordinance for gathering crabs based on size.

(35:09)

I: Who do you allow to catch those crabs that are of sufficient size?

M1: The people within the community. We do not allow from other communities. Those people directly residing within the area. We may also allow mud crabs gathering as long as they're the right size.

I: Do you also sell seedlings?

M1: yes. In fact, Palawan is asking us to sell them seeds of *Bungalon*. But even here, there are corporations that buy seedlings from us. It's also part of income to the people. They organize themselves into associations and produce seedlings.

I: Can you please explain your roles to me?

M1: I supervise the project. For the mangroves, there are a lot of activities that should be done on a daily basis. Like for example, bagging of seedlings. Right now we have a lot of wildings that grow. We should bag them so we could use in assisted regeneration. If we leave them, they will die because of competition of space of soil. Now we have project with DENR, we need more than 90,000 seedlings of mangroves to restore our coastal areas, our greenbelt, in the next 2 months. As of now we haven't advised because of monsoon. This is good because they have income out of mangroves. Later on, if we get more seedlings, we call the community to plant.

They are the forest guards. They watch over the mangroves and they are my assistants in implementing rehabilitation projects and the National Greening Program.

I: Do you also plan to add forest watchers?

M1: Yes, right now we need more manpower for planting. With NSTP, there are specific schedules when they can work. We need more whom we can hire to work at any time.

(40:40)

I: For the forest income, how is this used? I can see that the eco-park here is used as a nursery, and it's also used for ecotourism, what else?

M1: Research and learning destination, as livelihood because of the seedlings.

I: In the past year, how many research was conducted?

M1: Two. One studied about medicinal values of *Pagatpat* leaves.

I: My question regarding income is how you generate it and where it goes.

M1: We do not have yet an ordinance to collect. We were advised by Mayor to just ask for donations and keep a record for it. The income is just very little out of donations and these are used for maintenance, and for purchasing of bagging supplies.

I: But do the seedlings have fixed price?

M1: Yes. If it's with MOA, they are given for free, but without MOA, we sell at 5 pesos per bag.

I: Which mangrove species do you usually sell?

M1: *Avicenia marina*. Because it is the dominant species here.

I: How about the bakhaw?

M1: Those species grow well along riverbanks, inside, and not seafront planting. *A. marina* and *Sonneratia alba* are the sturdy ones.

I: Do you also know which type of soil they are planted?

M1: Sandy loam

F1: Closer to the beach sandy, and farther is muddy

I: During our survey we also heard about ordinance on pump boat

F1: Those should be registered when they operate. There's restriction on where those are allowed to be operated.

I: Do you still have rules on mangroves that isn't yet in the ordinance?

M1: Everything is formalized.

I: That's all for today. Thank you.

(48:11)

Transcript from focus group discussion with Dolores Fisherfolk Association members – *Katilingban sang Magagamay nga Mangingisda sa Dolores (KAMAMADO)*

TRANSCRIPT from FGD with Dolores Fisherfolk Association members

Date: August 21, 2015

I: Good morning, could you please first introduce yourself

M1: I am Juarlito Garlita, retired government employee, 71 years old, but 30 years old by heart.

I: Thank you. I want to first ask about the area that KAMAMADO holds.

M1: The area of KAMAMADO that we applied for CBFMA No. 37619 is 6.37 Ha. But it has 10.5 Ha for expansion that we applied to DENR so total is about 17 Ha.

I: Has this one that you applied to DENR already been approved?

M1: Good as approved because we were granted permission to plant bakhaw in the whole area of Basiao

I: Was this 10.5 Ha previously abandoned?

M1: All of this area was previously abandoned. All were transformed to fishpond in 1985.

I: Who owned this fishpond before?

M1: Juanilio Castillo and Mariano Boulevar

I: Are they also from this place?

M1: No, they are from Ajuy

I: Until when was this owned by them?

(2:41)

M1: From 1985, the first got bakhaw, then a little development, they added dike. But later on they noted that it's not possible cause their dikes get washed out. And also the edges of this basiao has several openings, several caves. Therefore, it is unlikely to change this to fishpond.

I: and when did they abandoned this?

M1: In 19.. 5 years after, they abandoned this. But this was leased to DBP (Development Bank of the Philippines). So in 1997, there were many fisherfolk who complained that they could no longer catch fishes. Their fish production is almost 0. At that time, I just retired from a government service, so I gathered all fisherfolk and told them if they want their errs to be heard by the government, they had to be organized. So it was the start of Kamamado. 1997. But formally organized in 1998.

I: What do you mean formally organized?

M1: There was an induction ceremony, election of officers and induction.

I: how many members did you start with?

M1: The first members was about 120.

I: Oh there's a lot.

M1: Yes because there was roasted pork. Afterwards, as we moved on, members wanted money instantly. And where can we get this? Many members then left until our membership declined through time. In 1999 we had it registered with DOLE.

I: So during 1998, it wasn't yet registered.

M1: No not yet.

I: we have 3 priorities okay. Number one is for us to get CBFMA in DENR. Precedent 619. But it lasted for 7 years for this because there's a lot of things.

I: So when did you start applying for CBFMA?

M1: We started in year 2002 because we learned that FLA-fishpond lease agreement of Castro was already expired. So we applied for CBFMA with DENR but they could not issue because BFAR has not yet turned over the area to DENR. So it took time. Mangrove forest is under DENR and if is declared as fishpond is it turned over to BFAR.

I: Now I understand why it took that long.

M1: By accident, in 2008, ZSL came to visit our place and they asked if they wanted to help us and we said yes, we need support of NGO so the release of CBFMA will be speed up. So we were helped and luckily by 2009, the Secretary of DENR signed the CBFMA

(8:24)

I: Going back to KAMAMADO, was it just you who organized and no outside members.

M1: None none, just us.

I: So this CBFMA was approved in 2009. And how long does this agreement last?

M1: 25 years. Renewable for another 25 years.

F1: That is if we are still alive.

M1: So we are done with first priority. Our second priority is how to rehabilitate Basiao Cove. So, we coordinated with Municipal Local gov't unit and provincial gov't unit. So there we discussed how to rehabilitate Basiao Cove. The GENRO (General Env't Resources Office) provided us with Php 40,000 more or less and we planted about 10,000 seedlings of mangroves- in 2004. In 2005, another financial support from the province

of Guimaras, municipal gov't of Nueva Valencia, another Php 36,000 so we planted another 20,000. Then many helped us- small miners associations, during national earth day celebration. So total we planted was 22,000. But because we have no legal documents, some fisherfolk abused it.

I: What do you mean abused?

(11:59)

M1: They uproot the big trees because they have to get oysters.

(12:19) – (Quick break I ordered food from them for them)

M1: Okay, next problem we have is second priority, how to rehabilitate. When CBFMA agreement was approved, we applied for financial support from UNDP. With the help of ZSL, our application was approved. UNDP global environmental facility, small grant program and we were given about USD48,000 to rehabilitate Basiao- that includes trainings, livelihood projects, and plantings. So for 2 years, that's what we had been working on.

I: Okay and that was since CBFMA approval.

M1: Since 2012 to 2013. So we finished. Total mangrove trees we have is more or less 43,000. This 43,000 continues to grow. Hopefully fishes and shellfish will return here. Now we prohibit fishing and shell gleaming but our comrades, people living in our barangay, do it illegally.

I: So even if this has CBFMA can other communities enter to?

M1: Only Dolores, because we can't provide livelihood to them. In fact before we had people here who were not members. So we are done with Basiao, mangroves. Our other priority here, since there are 3 ecosystems here – Bakhaw, seagrass, coral reef. When we were done with Basiao mangrove, it was good that ZSL declared they will not leave for another 2 or 3 years. Because their next program is marine protected area, which aligns well with our priority number 4 – rehabilitate seagrasses and coral reefs. So after so many biophysical research, many agreed – UP Visayas, GENRO, ZSL, LGUs, agreed to establish a marine protected area here. But in 2009, I forgot, in our development plan.. it states there we will put about 200 modules of artificial reefs and BFAR Central Office gave 200 modules of artificial reefs. But when governor heard of it, governor asked for 100 and put it in other areas so we were left with 100.

(15:35)

I: What are these modules?

M1: Artificial coral reefs. Because our substrate here, there are no more corals because of dynamite, blast fishing, so to induce corals, we have to put artificial coral reefs and that we called Guisi coral garden. In 2013, ZSL advised they will not yet leave. They said there is still a program on MPA. So we followed-up with it until The municipal office declared about 67+ Ha as MPA. There's municipal ordinance on this already. No2 series of 2014. So there, one problem we still have is that since there's many fishermen who catches fish, we can't stop because we organize our management committee but there's no executive order by the Mayor yet. So this pump boat we are getting this ready to become a patrol boat. So we are done with our priorities. The problem is how to implement municipal ordinance no. 2 series of 2014. This is called by Bgy. Dolores as Marine Fish Haven.

I: Is this already the Basiao cove?

Mi: It includes the Basiao cove.

I: Do you have photos of this area before?

M1: No. when this was a fishpond before, no one could enter because they will shoot you with a gun. Only employers were allowed to enter.

(20:59)

I: When did you start and has there been natural regrowth of mangroves too?

M1: Yes, the record is in my laptop. The wildings.

I: So you have a saved record on this?

M1: Yes, ZSL has this too.

I: When did you actually start to plant here?

M1: 2004

I: and what about this 1998.

M1: In 1998 none yet, we had other projects but there in the other side, the beach, like artificial fish aggregating device- arong, payaw. But at the right time when this finished in 2004, Typhoon Frank came so everything was washed out.

I: Oh okay, and it was after Frank you started to plant. How about with Yolanda?

M1: None. Yolanda was afraid here. I also forgot to mention here the oil spill incidence in 2006. In 2006, Solar 1 tanker sunk, which held about 2 Million tanker oil. So the tanker oil was spilled all over. What we did was to encourage the barangay government unit to organize an oil response team. But they did not understand what this is. So we, KAMAMADO, together with Bgy. Dolores Tourism Council BDTC, we organized an oil response team. We established our center, at the chapel of Guisi. Before oil arrived, we already put temporary oil steel boom (or doom) so we can prevent entry of oil, but since this was only made of bamboo, oil still entered. We organized at least 50 volunteers to help clean-up.

(23:41)

I: What kind of clean-up did you do?

(25:36)

M1: We put oil spill boom, we had used clothings so oil will attach there. In some, we just scoop them out. It attached to stones, and woods. So within 15 days, we finished the clean-up. After 5 days of us cleaning, Petron declared that all volunteers will be paid, 300 pesos daily. When the government unit heard of this, they also organized their own team. But we said no more we are almost done. So Petron just said to give them a chance even just for one day so they won't be dismayed. But in this one day, they did nothing but to do picture taking. So that's bayanihan.. what the fisherfolk did. A true bayanihan project. So men and women, they helped together.

I: So this Solar 1 Tanker is this owned by Petron?

M1: Private vessel but their cargo was Petron.

I: Do they operate until today?

M1: No not anymore, the tanker was left under the ocean.

I: so this company also closed?

M1: Yes. So in 2007, because of oil spill, the fisherfolk were sad. The KAMAMADO organized a Siberan festival. It comes from the word sibat sibat.. the chicken's feather, that is pulled by fishermen, used to catch fishes-tuna. After oil spill, there was no more tuna. So we organized Siberan festival in order to eliminate boredom of fishermen-there is triathlon, cooking contest, paddle.

I: When do you hold this?

M1: Since 2007 and for 4 years that KAMAMADO held this event. On its 4th year, we received commendation from Municipal LGU, recognizing the Siberan festival as barangay activity. So it was how barangay festivals started.

I: Is this continuing until now?

M1: Yes but the LGU organize this now.

I: What month do you hold this event?

M1: Every last Saturday of February.

(31:57)

M1: It's fiesta of sitio guise.

I: Okay. Do you have a list of membership – how many members you have since this was established?

M1: We have it in our files, during induction we started with 120 members, after one year, it was reduced to 60. After another year, there were just 20 of us. The following years we had projects, it increased again, to 50, but some died, many died already, so now we are just 40 active members. But we are explaining to these fisherfolk that all fisherfolk are members but some are just inactive.

I: Is the group mostly women now?

M1: Initially we require one member per family but in the end we decided to allow wives of fisherfolk to be members because of the livelihood given by UNDP. They gave 100,000 (Php) for women's group and we didn't have women's group so we also got them as members. What happened now is that since men work, women were left here to attend the meetings. In our constitution, we allow absence as long as the reason is for livelihood.

I: When you started to form as an org, what was the reason for starting this?

M1: As I mentioned, because many complained there were no more catches from the ocean. People wanted their problems reach the government unit. And people can't go there one by one, so we had to be organized.

I: Where did you get the idea of fixing the mangrove ecosystem can help with fish yield

M1: Through experience, since before.. we can't recall the date.. this basiao cove, during southwest monsoon when there were lots of mangroves, here is where people used to fish for their livelihood. Now the lesson we learned, these leaves of mangroves, when it falls, it decays, but out of that, small animals and plants called planktons arise. That is the best food source of fishes. So before you see the waters here in basiao is green, meaning there were lots of planktons and that is what the fishes feed on.

I: In terms of livelihood for the women, what kind of livelihood do they actually have?

M1: for livelihood. For women, we have the microfinance livelihood program.

I: Who initiated this?

M1: We did. The capital was given by UNDP – 100,000 that is what they roll. The problem there sometimes is that people can't pay because we know, they are "one scratch, one peck" (living paycheck to paycheck). So we just consider them. But here I already have notice to them that by November we will collect all loans from MFAP including interest to complete the money of MFAP and to know how much we already have. So for MFAP, if you take a loan, there is an interest that is only 2%.

F1: 3% monthly.

I: Okay. So the money circulates too.

M1: Yes but now it is flat it doesn't circulate. Then there are other livelihood projects, such as COMSCA (community-managed savings and credit association).

I: and is this only for the members?

M1: Yes, kamamado members.

I: Are there still many fishermen who are not participating?

M1: Many. Because they are very stubborn. It is hard to make them understand why we established MPA. They will always come back here to fish, and not only from Dolores. Even outsiders come here to fish because they also have MPAs there.

I: But do you now have punishments or penalties?

M1: We do have it is included in Municipal ordinance number 2 but it has not yet been implemented because mayor has not yet issued an executive order to formalize the decisions of management committee. That is what we are waiting for. What's the update on this? Vice mayor? Could you follow it up with Ubing or Marino. It is in their ordinance they should issue an executive order.

I: Now let's move on to the organizational structure of KAMAMADO. Can I see the list of excomm again?

(43:50)

I: When you started was the structure the same?

M1: Every 2 years, 3 years we re-elect new officers.

I: So when will the next election be?

M1: Maybe this first week of December.

I: I would also like to understand the roles of each member.

M1: Okay. This board of Directors, they are like congress, the policy-making body. So all policy is done here. If policies, rules, regulations have been formed, we have it approved for the general assembly. We present the formed rules and regulations. If approved, we pass it on to executive offices and they are the ones to implement, execute.

I: Then for the bookkeeper and others?

M1: Mart is the President, so overall. This guy Alinsagay is replaced by Edna. Edelyn is the secretary, she gets stenographic notes during meetings, keep records. Almira is treasurer, Lilia is auditor- she audits money, equipment. Noel, he is already gone because he worked in Negros and he was replaced by.. Reynaldo Galvan PRO.

I: How about the "bantay dagat"?

M1: We also have it. All of these. I do not have the organizational management of BPMFH. The BDMFH management committee is separate from kamamado. This is the organizational structure of MPA which we call Barangay Dolores Marine and Fish Haven. We have advisory committee from DENR, BFAR, DOST, DTI, Province, LGU, Municipal pharm-sea. So this one is the management committee we organized. Chairperson is Marte Galvez, because he is the only member of Bgy. Dolores Devpt Council. Specified in the ordinance. Vice chair is kagawad for peace and order. There are 3 subcommittees: Information, Education and Communications subcommittee. They are to disseminate information and training, everything. And informs to community. Then this monitoring and maintenance team subcommittee. Bgy. Captain is chairman and vice person, all members here, monitoring and maintenance team of KAMAMADO. There is just representative of beach resorts (barangay Heritage Tourism Association). There are 4 beach resorts here: La vidara villas, clear water resort, la pachera, and villa adela. All of this have representatives to each subcommittees. This law enforcement subcommittee, the vice chairperson is tanod commander. The members here were trained by bantay gubat and deputized, environmental natural resources officer.

I: Okay, so even if KAMAMADO holds this area, when it comes to management everyone is included?
(52:26)

M1: It's not KAMAMADO that holds this. It should be held by the barangay. In their ordinance number 2, this is direct under the Mayor, through the office of the Municipal Agricultural Services (OMAS). This is the mistake of community here, they thought this is owned by KAMAMADO's. This is actually owned by the municipality. KAMAMADO just became members because in municipal ordinance the members would be bgy council, kamamado, LGUs, BHDA.

I: But the rules, you are the ones who make it since this is approved by CBFMA, is that right?
(53:50)

M1: Yes

I: and does it have to be approved by them?

M1: No, for CBFM it is really KAMAMADO's.

I: Is CBFM a separate area from BDFMH? Oh I get it, so CBFMA is a smaller area

M1: CBFMA is only the basiao cove. BDFMH includes all. CBFMA is only 17Ha. This whole is 67Ha. It's confusing right?

I: Yes but now it's getting clearer.

M1: and also the people here in the law enforcement monitoring and maintenance team, most members are also from KAMAMADO.

I: My next question is about funding. How do you use this area? Are there areas for ecotourism?

M1: That is our next plan. Right now there is nothing. We have no funding yet for ecotourism. Ma'am Jo is still searching.

I: So now you just use it as protected area and nursery? Do you know how wide the nursery is?

M2: 10x10

I: This is it right? And the whole area is it open for tourism?

M1: None yet.

I: So only locals use the area?

M1: For those who take a bath.

I: So there is actually no income generated from this area. No entrance fee and all?

M1: None yet.

I: For your group, how do you get funding.

M1: Just from COMSCA

I: I see. So there's a lot of room for development.

M1: But Ma'am Jo I think by December has some project for us, maybe it is for ecotourism.

M2: Project searhorse.

I: Do you have your email address or any other means of how I could contact you?

M1: Number of Marte.