The Philippines

Impact of Marine Protected Areas (MPAs) and
Other Effective Area-Based Conservation Measures (OECMs)
on Small-scale Fisheries and their effectiveness:
A Case Study of Binaliw Marine Protected Area and Malabrigo Fishery Refuge and Sanctuary

Written by
Rosalina Lodripas-Tarrayo

International Collective in Support of Fishworkers
ICSF

Focus group discussion (FGD) with fisherfolk in Barangay Binaliw, the Philippines, by Rosalina Lodripas-Tarrayo

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Front Cover:
Coral reef at the Malabrigo Fishery Refuge and Sanctuary (MFRS) in the Philippines,
by Rosalina Lodripas-Tarrayo

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MPA

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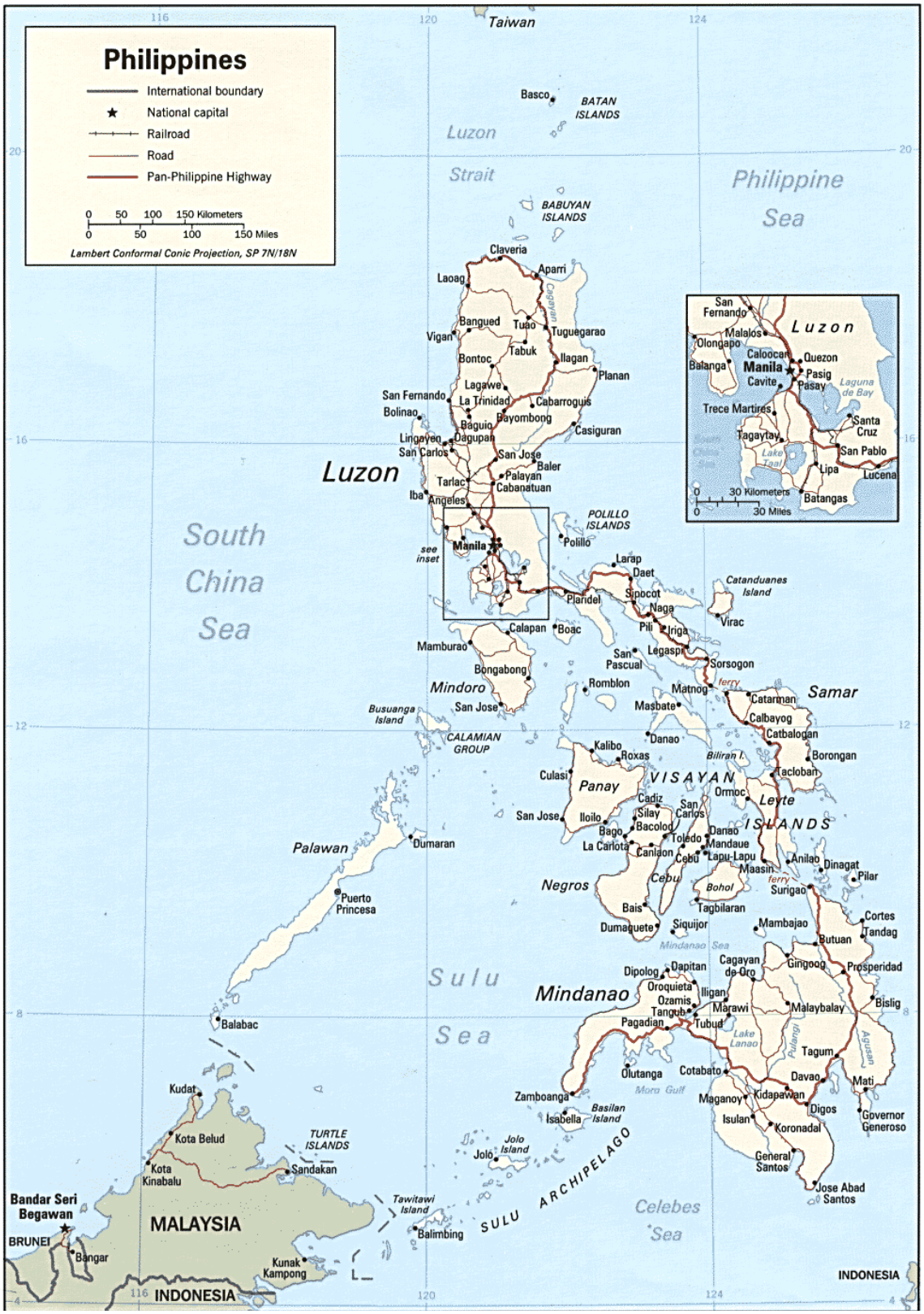

Map courtesy: Perry-Castañeda Library Map Collection, University of Texas at Austin.
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Introduction

Marine Protected Areas (MPAs) have become essential tools for preserving marine biodiversity and fostering sustainable fisheries management. While also assisting in the maintenance of fish populations and as the means of subsistence for coastal communities, these designated areas provide protection to marine ecosystems They ensure the long-term sustainability of fisheries by increasing their resilience and capacity to endure environmental stressors and the effects of climate change. Fish populations can rebound due to MPA protection of vital habitats, spawning grounds, and nursery areas.

Establishing MPAs in the Philippines involves compliance with various legal frameworks, policies, and regulations at both the national and local levels. The Philippines, being an archipelago with significant marine biodiversity, places great importance on the protection and sustainable management of its marine resources.

The 1987 Philippine constitution recognizes the state's duty to protect and advance the right of its people to a balanced and healthful ecology, including the protection of marine resources. The National Integrated Protected Areas System (NIPAS) Act of 1992 provides the legal basis for the establishment and management of protected areas in the Philippines, including MPAs. It identifies specific areas as protected areas and provides guidelines for their protection, management, and sustainable development.

In 2001, Presidential Proclamation No. 2146 declared certain marine areas as reserves to be preserved and protected. It emphasized the need to establish protected areas and sanctuaries for the sustainable use and conservation of marine biodiversity. In 2006, Executive Order No. 578 established the National Policy on Biological Diversity, setting the guidelines for the establishment and management of marine and coastal protected areas. It prioritized community involvement, scientific assessment, and sustainable management in the creation of MPAs.

There are policies and guidelines provided by the Biodiversity Management Bureau of the Department of Environment and Natural Resources (DENR) for the establishment, management, and monitoring of MPAs. Various administrative orders issued by the DENR provide guidelines and procedures for the establishment, management, and evaluation of MPAs in line with the NIPAS and other relevant laws.

The Local Government Code of 1991 (Republic Act 7160) provides the legal framework for local government units (LGUs) to enact ordinances for the establishment and management of MPAs within their jurisdictions. It empowers LGUs to take an active role in the protection and management of marine resources. Most of the locally-managed MPAs are set up through local ordinances using this code.

This legal framework is the basis for the declaration of MPAs in the Philippines. MPAs can be declared in two ways: (i) through the NIPAS Act or (ii) through the local government (municipal or city) issuing planning and ordinances. Both the DENR and the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) have authority over MPAs at the national level, while the LGUs handle local ordinances and policies.

In 2017, there were 55 MPAs across the Philippines' three island groups, of which 27 were in the Visayas, 12 in Luzon, and 16 in Mindanao. MPAs constitute only a small percentage of large marine territories; for coral reefs, only about 10 per cent of the total reef area. It is crucial to not only ensure the protection of MPAs already established, but also to increase the area covered by protection and management efforts—in order to reach the target coverage of 30 per cent, the proportion of protected areas that would sustain long-term fishery harvests and preservation of marine biodiversity.

In 2022, the Philippines witnessed noteworthy developments in its fisheries sector, marked by an overall growth in total fisheries production, which expanded by 2.2 per cent, reaching 4,339,890 metric tonnes, compared to 4,248,260 metric tonnes the previous year. But in 2024, the total volume of fisheries production had fallen to 4.05 million metric tonnes—which was itself a decrease of 5.0 per cent from the 4.26 million metric tonnes output in 2023. This pattern of growth and decline is indicative of both positive and challenging trends within sub-sectors like commercial fisheries, municipal fisheries, inland municipal fisheries and aquaculture.

Based on the data, one of the standout performers in 2022 was the marine municipal fisheries sub-sector, recording robust growth in production. Output in this segment surged by 2.2 per cent, with the volume reaching 946,880 metric tonnes. This growth was particularly encouraging, as it marked an increase from the 2021 production level of 926,370 metric tonnes. The marine municipal fisheries sub-sector's contribution to total fisheries production also expanded to 21.8 per cent.

However, reduced production from marine municipal fisheries was noted in 2024—with the total volume of production estimated at 802,770 metric tonnes during the year. This was 8.8 per cent lower than the 2023 level of 879,960 metric tonnes. The sub-sector's share of the total fisheries production had fallen to 19.8 per cent by 2024.

Local communities and small-scale fisheries (SSF) play a vital role in providing food security, income generation, and preserving cultural heritage to millions of people worldwide. However, they often face various livelihood challenges such as over-fishing, habitat degradation, and climate change impacts. For this reason, there is a need to assess the level of participation of local communities, particularly that of fishing communities in the governance and management of MPAs in their respective countries. This is an important step to enhance the resilience of small-scale fishers, for their sustainable development and the conservation of marine resources.

One of the key indicators in measuring the success of a sanctuary is the condition of the

coral reef ecosystem. Coral reefs are among the most productive and biodiverse habitats in the world. In the Philippines, millions of people depend upon coral reefs for livelihood and subsistence. But the reef resources are being degraded and destroyed due to human activities. MPAs represent a promising approach to effectively halt this ongoing degradation.

The sites selected for this case study were Barangay Malabrigo in Lobo, Batangas, and Barangay Binaliw of Calbayog City in Samar. The case study assessed the level of participation of local communities, particularly of fishing communities, in the governance and management of MPAs and Other Effective Area-Based Conservation Measures (OECMs). Its main focus was on the governance structures, policies and practices that ensure the full and effective participation of local communities—and the impact these have on sustainability and livelihood outcomes.

This analysis was conducted to see how MPAs and OECMs can meet sustainability and conservation goals without jeopardizing the livelihoods and social development of the local communities. The study results are intended to add to the literature on, and understanding of, the effectiveness of area-based conservation tools.

Brief profile of Barangay Malabrigo

Situated in the municipality of Lobo in Batangas province, the barangay (the smallest administrative unit in the Philippines) of Malabrigo has a diverse range of land uses within its total land area of 584.11 hectares. Geographically, Barangay Malabrigo is surrounded by Barangay Balibago to the east, Barangay Soloc to the west, Barangay Forest Zone to the north, and the Verde Island Passage to the south. Its proximity to the passage, renowned for its abundant marine biodiversity, is suggestive of its potential ecological significance. Malabrigo is situated on the island of Luzon at an estimated elevation of 134.7 metres or 441.9 feet above mean sea level.

Map indicating case study site 1. Malabrigo Fish Sanctuary and Refuge (Source: adapted from Google Maps)

There are 2,123 people living in Malabrigo, with 1,063 females and 1,060 males. There are 481 documented households and 650 families overall, with an average of 3.27 persons in each household. The barangay is a typical rural community in the Philippines given the relatively average size of the household.

According to a review of Malabrigo's employment statistics, about 14.62 per cent of the barangay's families are employed in the fisheries sector, demonstrating the tight association between marine resources and fishing as a source of economic activity and income. Based on data provided by the municipal agriculture office, there are 184 registered fishers (50 women and 134 men) in Malabrigo, 90 per cent of whom are directly engaged in fishing and the remaining 10 per cent are gleaners and fish vendors.

Brief profile of Barangay Binaliw

Located in the Tinambacan district of Calbayog City, the barangay of Binaliw has a total land area of about 8,999.34 hectares. It is bounded by Barangay Catabunan to the east, Barangay Bay to the west, Samar Sea to the north, and Barangay Maguinoo to the south. Binaliw is situated on the island of Samar at an elevation of 7.9 metres or 25.9 feet above mean sea level.

Of the total population of Calbayog City, Binaliw accounts for 1.08 per cent—with 2,235 individuals distributed among 393 households at an average household size of 5.69 members. The total count of individuals engaged in specific occupations adds up to 1,125,

Map indicating case study site 2. Barangay Binaliw MPA (Source: adapted from Google Maps)

indicating that about half the population is in the workforce. Fishers (28.5 per cent) represent the second largest occupational group with 321 people involved, highlighting the importance of the sector.

Fishing, agriculture, and labour-intensive work dominate the occupational landscape, indicating the main economic pillars of the barangay. Beyond the primary occupations, there is a diversified workforce involved in transportation, construction, professional services, and entrepreneurship, reflective of a multifaceted economy.

Based on data from the City Agriculture office (CAO), Barangay Binaliw has a total of 90 registered small-scale fishers, with 69 males and 21 females. They employ a variety of fishing gears based on the seasonality of fish species in the defined fishing grounds. The most common fishing gears used in the barangay include longlines, hook and line, gill net, speargun fishing, squid pot, and crab pot.

According to the CAO's Fisherfolks Registration and Boat Registration database, 35 fishers in Binaliw use motorized craft, while 17 use non-motorized craft. On average, the registered fishers in Binaliw have an estimated fish catch of 290 kg per month, indicating the productivity and yield of fishing activities in the barangay.

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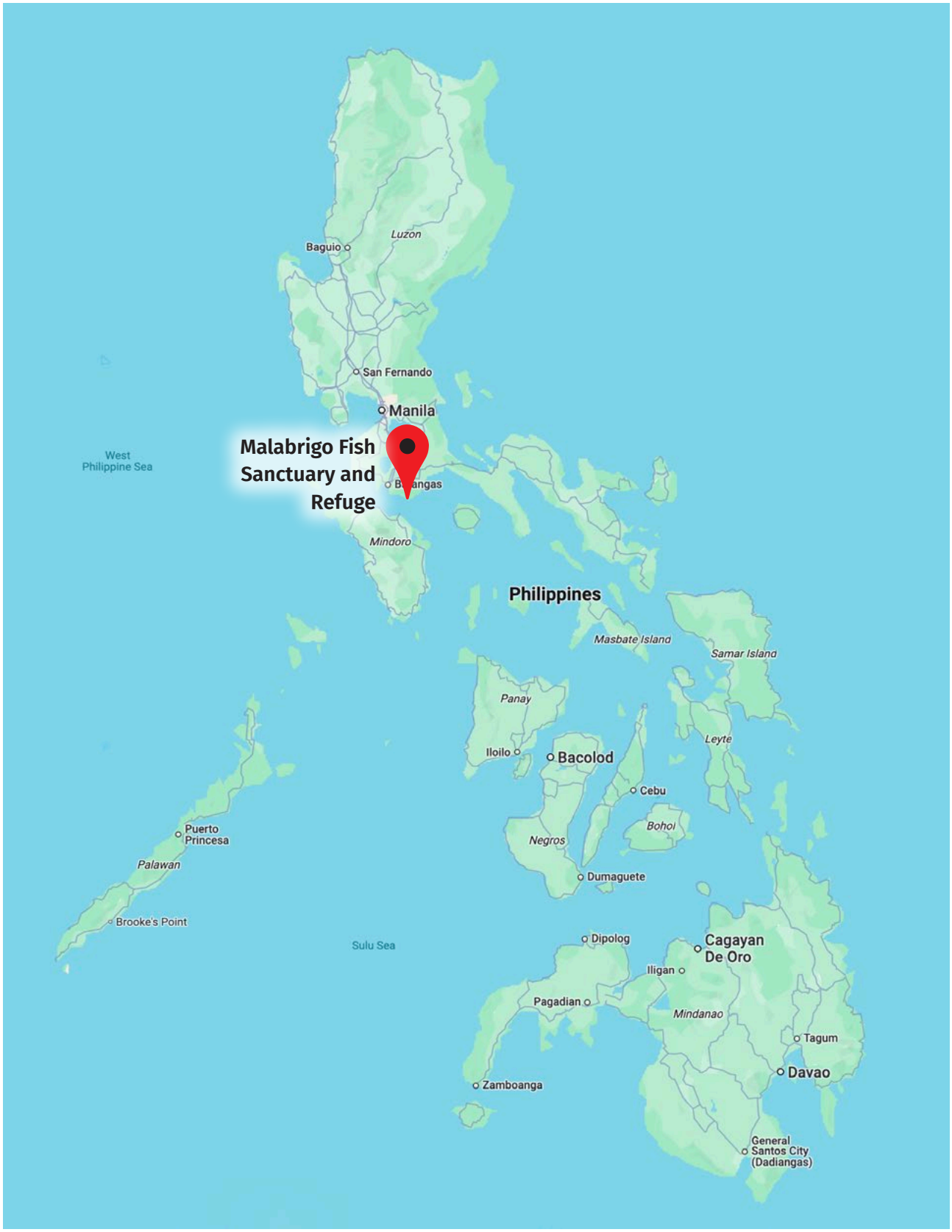

Map indicating case study site 1. Barangay Malabrigo. Source: Google Maps

Process of Declaration and Management: Site-1

Malabrigo Fishery Refuge and Sanctuary

I. Background

The establishment of a Fishery Refuge and Sanctuary in Barangay Malabrigo of Lobo, Batangas, was the result of a series of activities, consultation dialogues, and site visits by partners of the Philippine Locally Managed Marine Area Network (PLMMA).

Billosane M. Badal Jr., also known as Sonny, is the chairperson of the Municipal Fishery and Aquatic Resource Management Council (MFARMC) of the Malabrigo Fisherfolks Association. The MFARMC is responsible for preparing and recommending fisheries and aquatic resources management policies and plans. The council also recommends guidelines for the development and implementation of projects, and the issuance of permits and licenses for the appropriate use of fisheries and aquatic resources. Sonny also chairs the Lobo Bantay Dagat Taskforce (Fish Wardens), playing a significant role in recommending and establishing the sanctuary in his village due to the abundance of fish in the area.

His extensive experience in community development programmes led Sonny to recommend the establishment of a sanctuary in Malabrigo after a visit to a marine sanctuary in the municipality of Looc, Romblon province, as part of a US Peace Corps cross-site visit. Following his recommendation, the Malabrigo Fish Refuge and Sanctuary (MFRS) was established in 2002. Sonny, along with his fishers' association, actively participated in activities such as underwater clean-ups, marker buoy installations, sea-borne patrolling, and the expansion of the MPA. As a result of their efforts, the Malabrigo MPA received recognition, winning the first place in the province-level best MPA initiative in 2015 and the Outstanding MPA Award in 2018.

He firmly feels that safeguarding and managing marine resources for future generations requires cooperation, unity, and constant knowledge and skill development. "We can be certain that there is a protected area to serve as a breeding ground, a spawning ground, and a habitat for fish because of the unity and cooperation between the barangay council and fishermen," Sonny said.

To promote the importance of the fishery refuge and sanctuary, the council initiated a series of activities—one of which involved Sonny sharing his experiences during meetings organized by the Provincial Government Environment and Natural Resources Office (PGENRO). As a councillor in the Sangguniang Barangay of Malabrigo, Sonny discussed the plan to establish the sanctuary.

Sonny sponsored a resolution to establish the sanctuary during the barangay session; it went unopposed. Consultations followed with several stakeholders and community members to gauge their support and gather feedback. Sonny said that unlike other marine sanctuaries, no specific research was conducted regarding the coral reef ecosystem's condition during the establishment process. However, he relied on the legal basis provided by the Philippine Fishery Code and his experiences with other PLMMA members. These processes are contextualized into three major components that deserve a closer look:

II. The preparatory phase

a. Cross-site visits

The cross-site visits to successful marine sanctuaries or MPAs, such as the marine sanctuary in Looc, Romblon, Hinatuan municipality in Surigao del Sur province, and Maribojoc municipality in Bohol province, offered valuable opportunities to learn from the experiences of others. These visits served as an inspiration for the chairperson of the Malabrigo Fisherfolk Association (MFA) to advocate for the establishment of a Fishery Refuge and Sanctuary.

One of the cross-site visits was sponsored by the US Peace Corps and took place in Looc, Romblon. Participants from Barangay Malabrigo obtained important knowledge and insights from the host marine sanctuary's on-site experiences during this tour. Following a barangay council meeting where these lessons were reviewed, the concept of creating a fish sanctuary was considered. A resolution establishing the area as a fisheries refuge and sanctuary was suggested.

b. Stakeholders/community consultation.

The barangay council initiated an assembly where both men and women fishers were invited to discuss the advantages and disadvantages of establishing the fishery refuge and sanctuary. A summary follows:

Advantages:

- Serves as the spawning ground and nursery of fish and aquatic resources
- Fish species can grow without disturbance from human activities
- Prevent the intrusion of illegal and destructive fishing activities
- Prevent over-fishing
- Only a portion of municipal waters was declared as fishery refuge and sanctuary with a larger portion available for fishing purposes
- Since there are more pelagic species among the fishery resources in the area, through the establishment of a fishery refuge and sanctuary, the fishery resources will stay in the sanctuary sites as there are no human activities and disturbances
- Potential for tourist attraction if the fish stocks and the coral reef ecosystem are well protected
- Protection of fish habitat

Disadvantages:

- Fishing activities are not allowed inside the fishery refuge and sanctuary
- Limiting of fishing activities within the fishery refuge area
- The possibility of open and closed seasons for identified fishery species, during which the catching of specific fish species is not allowed
- Limiting catch outside the buffer zone of the fishery refuge and sanctuary
- Limiting access for traditional or subsistence fishing by local communities for a certain period of time

During the assembly, there was opposition in setting up the sanctuary. But the council made efforts to explain the concepts to make the community understand the importance of the fish sanctuary and its benefits. Eventually, after a series of discussions, those in opposition agreed to back the idea, but asked the council to make sure that only a portion of the waters was protected.

The MFRS is governed by a co-management body known as the Malabrigo MPA Council, composed of several stakeholders, including the Barangay Council, the Municipal LGU represented by the office of agriculture, the Bantay Dagat Taskforce, three representatives from people's organizations, representatives from the private sector, youth sector, women's association, academia (specifically Batangas State University and UP Marine Science Institute), resort owners, religious organizations, and local NGOs. The council makes sure that there is full representation from all stakeholders and sections in the community.

Malabrigo Fishery Refuge and Sanctuary (MFRS) Council meeting in Malabrigo, the Philippines, by Rosalina Lodripas-Tarrayo

c. Resolution and adoption
Like any other regulation, before the fish refuge and sanctuary was approved, the local government unit conducted a public hearing to consult with the community members and presented the proposed concept for the establishment of the MPA. Through this platform, suggestions and input from the community were welcomed, considered and incorporated into the concept of the fish refuge and sanctuary.

After a series of consultations with stakeholders, the Barangay Council approved a resolution in 2002 that created a Fishery Refuge and Sanctuary in the coastal area of Pook Laurel, Malabrigo. The designated area covered approximately 20 hectares, extending 60 metres from the shoreline and 500 metres in length. This ordinance from the barangay was adopted by the Sangguniang Bayan through Resolution No. 2002-60. The resolution approved Kapasiyhan Blg. 02-2002, which established the MFRS and prohibited fishing within the designated reserve. Violators of this prohibition are subject to penalties as deemed appropriate.

An additional five hectares were designated as a reserved area named 'Angel's Reef' four years later, when the benefits of the fish refuge and sanctuary became clear. According to Sonny, fish species had increased, and the benefits were enjoyed not only by the fishers from Malabrigo, but also the neighbouring barangays; and the tourists also became interested in the underwater scenery.

The MPA manager said the primary objective of the MFRS is safeguarding and overseeing Malabrigo's fishery resources. Its crucial role involves functioning as a breeding site for multiple fish species and serving as a protected area to enhance fish populations, ultimately leading to higher fish yields for local fishers. Initially, the emphasis was on benefiting the fishers specifically in Malabrigo. However, as time passed and the MPA was effectively managed, its positive impacts extended to neighbouring barangays, as attested by the local fishers.

III. The implementation phase

a. Preparation and implementation
The successful implementation of an MPA often requires a comprehensive management plan. Malabrigo MPA's management body did not have one at first. Instead, the necessary materials were obtained through requests and lobbying efforts directed towards the LGU.

b. Patrolling and enforcement
To effectively manage the MFRS, the Malabrigo MPA Council was established, with representation from several sectors. Each committee within the council has specific responsibilities, including mediation, information and education campaigns, law enforcement, planning, finance, monetary management, and MPA facilitation.

The law enforcement committee plays a crucial role in ensuring compliance with regulations within the MFRS. Deputized fish wardens, who are also fishers from Malabrigo, are responsible for enforcing laws and ordinances. They are trained and have acquired knowledge and skills on policies, ordinances, laws, and enforcement procedures/systems. They work diligently to conduct regular surveillance and monitoring activities in the MPA's vicinity.

Women fishers actively participate in enforcement. They contribute by reporting any violations of illegal fishing operations. This highlights the MFRS authorities' inclusive approach, recognizing the valuable contributions of women.

The deputized fish wardens, part of the community-based Bantay Dagat Taskforce (civilian sea patrol), collaborate and coordinate with local authorities like the police and coast guard. This partnership strengthens the MPA's enforcement capabilities and effectiveness; and violators are held accountable.

To institutionalize these efforts and recognize the dedication of the fish wardens, the LGU of the Municipality of Lobo provides incentives. While enforcement was previously a voluntary effort, the fish wardens now receive financial compensation amounting to Philippines Peso (PHP) 375 per day (1 PHP = 0.018 USD), adding up to PHP 8,250 per month, along with a food allowance. These incentives serve as a tangible recognition of the wardens' commitment and contribution.

These are examples of the concerted efforts of several stakeholders and the local government to ensure effective enforcement and management of the MPA.

c. Information and education campaign

Partner government agencies played a significant role in facilitating information and education campaign activities to raise awareness among the community members about the importance of the MFRS. The SEA Institute-Verdi Island Passage advocacy group initiated an education campaign specifically targeting students, informing them about the significance of marine conservation and the role of the fish refuge and sanctuary in protecting the coastal and marine ecosystem. The DENR conducted community awareness programmes to further help the community understand its benefits.

Additional mechanisms for information and education campaigns came through Ordinance No. 2014-05, imposing charges for the use of municipal waters in Lobo for diving. Revenues or fees collected are shared: 20 per cent goes to the tourism office; 30 per cent for MFRS maintenance; and 50 per cent goes to the members of the Lobo Boatman and Guide Association, which is responsible for tourism activities. This ordinance serves a variety of purposes, including generating revenue and ensuring the protection of the marine environment.

Lobo's LGU, in coordination with the community and beach resort owners, has established a scheme for managing diving activities at identified dive sites within the municipal waters. The Boatman and Guide Association acts as agents, facilitating tourists who wish to dive in the designated areas. The beach resort owners also need to follow the established protocols, ensuring that all divers acquire a diver pass and are accompanied by a licensed and accredited diver. Prior to departure, an orientation is conducted to inform the tourists about the MPA policies and warn against activities that might harm the coral reef. Access to the dive sites is regulated to prevent overcrowding.

To enhance awareness and understanding, display signs have been installed in public places, serving as visual reminders of the guidelines and regulations. These displays effectively communicate the dos and don'ts to both tourists and the community.

Such initiatives and management methods promote responsible tourism and sustainable practices. By raising awareness among students, community members, and tourists,

these efforts foster a deeper understanding of the marine environment and encourage its conservation. Coordination among the LGU, the community, and tourism stakeholders demonstrates a collaborative approach.

d. Capacity building

Several organizations and institutions have supported and made crucial contributions to the management and conservation of the MFRS. This highlights the collective effort to preserve the marine ecosystem, engage the local community, and promote sustainable practices. These partnerships are worth mentioning in brief.

The University of the Philippines' Marine Sciences Institute (UP-MSI) trained the local fishers on the methods for the collection and analysis of data during the underwater assessment. The ABS-CBN Foundation supported the MFA through capacity-building activities such as training the locals on offering tourist educational tours. The SEA Institute-Verdi Island Passage provided laptops, projectors, printers and other equipment for the awareness campaign. Local NGO First Gen trained six divers from among the fisherfolk. The PLMMA provided technical assistance towards the establishment of the fishery refuge and sanctuary, enhancing the knowledge and skills of the fisherfolk on marine sanctuary management.

Government agencies have made contributions to these efforts as well. The DENR provided financial support, training and monitoring of the fishery refuge and sanctuary. The DA-BFAR led the underwater assessment, and the Provincial Government Environment and Natural Resources (PGENRO) supported the underwater assessment, the underwater clean-up, and the monitoring of the crown of thorns starfish. Through this collaborative approach, these organizations have leveraged their expertise and resources to support the local community.

Coral reef at the Malabrigo Fishery Refuge and Sanctuary (MFRS) in the Philippines, by Rosalina Lodripas-Tarrayo

The PLMMA facilitates cross-site visits, allowing stakeholders to learn from existing marine sanctuaries. This exchange of knowledge and experiences contributes to the ongoing improvement of management strategies and the adoption of best practices.

IV. The assessment, monitoring, and evaluation phase

Monitoring is a crucial aspect of MFRS' management. The MPA Council employs a two-way monitoring process with the assistance of several stakeholders, agencies and partners. The monitoring activities are categorized into two components: regular patrolling and apprehension, and underwater assessment.

a. Regular patrolling operations

Regular patrolling and apprehension operations are conducted in the vicinity of the MFRS. Initially, the deputized Bantay Dagat Taskforce members were all volunteers who conducted daily roving and apprehension operations. Each barangay council initially had its own schedule for these activities for a period of two years. Thereafter, when the awareness of the MPA had significantly increased, the schedule was changed to every three days. This adjustment allowed the members to balance their economic and livelihood activities, while upholding their commitment to patrolling and enforcement. The women within the community, in particular, have remained vigilant in reporting illegal activities to the enforcement team.

The MFA was formed in 2009 to serve as a partner body in the management of the MFRS. The association members were deputized as fish wardens and actively participated in the apprehension operations. In 2017, the MFA members received a monthly honorarium of PHP 900. During this time, support from First Gen had increased due to their recognition of the sanctuary as the Best MPA Initiative in 2015. First Gen provided cash allowances, educational incentives, gasoline support for patrolling, insurance for the fish wardens, laptops, and projectors.

In 2019, the LGU of Lobo hired the 20 members of the Bantay Dagat Taskforce as Job Order Employees with a minimal daily pay of PHP 375. This reinforced the commitment to patrolling and monitoring. The LGU also provided a patrol boat, diving gears, materials for fishers affected by the establishment of the MFRS, including fishing gears, motorboats and fish aggregating devices.

The governor's office, through the PGENRO, has provided only one boat for patrol. Government agencies like the DA-BFAR also offered support, providing fishing paraphernalia, motorized craft, and implementing the payao project, which serves as a harvesting tool for fishers outside the sanctuary. It is important to note that only hook-and-line fishing is allowed within the sanctuary.

Illegal fishing cases within the sanctuary are dealt with sternly. The first offence results in reprimands, followed by a referral to the coastguard for an agreement not to engage in illegal activities within the MPA or municipal waters. Most of the illegal fishers come from neighbouring barangays, as well as other municipalities like Batangas City, and even from other provinces like Mindoro and Quezon. Legal actions, including filing cases and imprisonment, have been pursued against violators.

b. Ecological assessment.
Regular underwater monitoring is a vital tool employed by marine scientists to assess the condition of coral reefs and the overall health of the protected resources. In the MFRS, such monitoring has been conducted consistently, beginning in 2014 and continuing annually till 2019 and resuming in 2022.

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Site-1: Malabrigo Fishery Refuge and Sanctuary

Impact of MPA
(Merits and Demerits)

Conservation impacts

The conservation impact of the MFRS is significant and multi-faceted. By establishing and effectively managing this MPA, several positive outcomes have been observed, benefiting both the environment and the local communities.

As stated, the main objective of the MPA is to serve as a refuge for various fish species, providing a safe environment for them to spawn and grow. As a result, it helps maintain and even enhance the biodiversity of marine life in the municipal waters. By protecting critical habitats like coral reefs, the MPA helps preserve the balance of marine ecosystems. Table 1 gives the fish species diversity in the MFRS from surveys conducted in 2014, 2019 and 2022.

The surveys were carried out by different agencies: by the UP-MIS in 2014; by the DA-BFAR in 2019; and by the DENR in 2022. They used varying methods and survey stations, which may have influenced the observed diversity patterns. This variation in survey methodologies underscores the need for more standardized and consistent monitoring in the future.

Table 1. Summary of species richness, abundance, and biomass in Malabrigo MPA for 2014 (baseline), 2019, and 2022

Parameters	2014	2019	2022
Species diversity			
Species richness	113	42	88
No. of families	29	14	22.5
Adult abundance			
Target species	40	1,340	621.5
Coral indicator species	16	43	43
Major species	529	2,443	3,489
Total	585	3,826	4,153.5
Adult biomass			
Target species	15.10	5.36	25.65
Coral indicator species	2.50	0.172	0.65
Major species	18	9.772	5.76
Total	**35.60**	**15.304**	**32.06**

Source: Biophysical Survey of Marine Protected Areas of Lobo, Batangas, 2014; Final Report on Rapid Resource Assessment (RRSA) of Marine Protected Area and Reef Habitat in Lobo (conducted by BFAR), Batangas, 2019; and 2022 Final Report on Rapid Resource Assessment of Malabrigo Protected Area, Lobo, Batangas (conducted by the DENR)

Species diversity

As shown in Table 1, there has been an overall decline in species richness over the past decade. The species richness data indicates the number of species observed in the coral reef ecosystem. In 2014, the species richness was recorded at 113 species. However, in 2019, it declined significantly to only 42 species, before somewhat recovering to 88 species in 2022.

The observed decline in species richness from 2014 to 2019 raises concerns about the ecosystem's health and stability. A decrease in species richness could indicate habitat degradation, pollution, among other factors. Existing research emphasizes the negative effects of habitat degradation on species richness and diversity, supporting the implications drawn from this analysis.

However, the notable rebound in species richness by 2022 offers hope for potential recovery. A decrease in fishing pressure in the area, because of the stricter regulations, led to the observed recovery. Reduction in fishing pressure allows fish populations to grow and replenish. Another reason is the set of management practices employed by the stakeholders. The collaborative efforts between, and among, various stakeholders, including local communities, government bodies, conservation organizations, and scientists, have played a role in the recovery. Their concerted efforts, such as community involvement in conservation measures, have impacted the marine ecosystem.

The taxonomic diversity of the ecosystem in 2014 was 29 families, which declined to 14 families in 2022. The decrease in the number of families indicates a potential loss of unique taxonomic groups within the ecosystem. This trend could be a result of disturbances that affect certain taxonomic groups more than others. The decline in the number of families between 2014 and 2019 and the subsequent partial recovery in 2022 suggests changes in the community composition of coral reef ecosystems.

Some fish families might have experienced declines, while others increased. Understanding the reasons behind these shifts is crucial for assessing how different species respond to changing environmental conditions and identifying potential indicators of ecosystem health. Changes in community composition can affect ecosystem functioning, nutrient cycling, and species interactions. Continued monitoring and research are necessary to identify the driving forces behind these changes and their implications for ecosystem stability and resilience.

Adult abundance

The same table gives the abundance of adults (across species) in the coral reef ecosystem. The fluctuations highlight the dynamic nature of coral reef populations. The slight increase in target species' abundance from 2014 to 2019 reflects the outcome of the MFA initiatives. Changes in fishing regulations and their enforcement within the MFRS sites had a significant impact on the abundance of target species.

Stricter regulations and enforcement of the ordinances led to the increase observed between 2014 and 2019. However, the significant decline in 2022 is concerning, as it indicates continued threats to these key species. Moreover, the continuous increase in major species abundance, especially the abrupt changes in 2022, raises questions about the potential impacts of these species on other components of the ecosystem.

Adult biomass

The variations in adult biomass for target species, coral indicator species, and major species are indicative of shifts in population dynamics and resource availability. The significant recovery in the adult biomass of target species by 2022 suggests successful management efforts that have positively impacted the population growth of these species.

Social impacts

The establishment of the MFRS has brought about significant positive changes both in the local community and across the municipality of Lobo. The fishers have shown self-discipline by adhering to the policy of closed seasons for major species, understanding that such regulations are ultimately beneficial for their own well-being.

The process for establishing the MPA involved community members, including fishers, women, and youth, in decision-making through public consultations and barangay assemblies. This engagement empowered the community by giving them a voice in the conservation efforts and instilling a sense of ownership over the marine resources. As a result, there is a greater sense of commitment and responsibility among the villagers to protect and manage the fishery refuge and sanctuary.

Information and education campaigns targeting students, community members, and tourists have raised awareness about the importance of marine conservation and responsible tourism practices. The SEA Institute helped with training and education campaigns among students. The presence of display signs and guidelines for diving activities promotes responsible behaviour among visitors.

Economic impact

The establishment of MPAs often leads to restrictions on fishing. This can prompt fishing communities to adapt their traditional fishing methods or explore alternative livelihoods. The use of more sustainable fishing techniques, such as selective gear and reduced bycatch practices, may become necessary to comply with MPA regulations.

In Malabrigo, the creation of the MPAs had a substantial impact on fishing operations, as discovered during focus group discussion (FGD). Fishing in Malabrigo is mostly focused on pelagic species, and since the MPA area is within municipal waters, it is not a big challenge for the fishers to adopt the ordinances. They fish outside the municipal waters most of the time. The fishers in Malabrigo commonly catch skipjack tuna (Tulingan), long-jawed mackerel (Alumahan), purse-eyed scad (Matambaka), hard-tail mackerel (Galungong), sardinella (Tamban), Spanish mackerel (Tangigui), and blue marlin (Malasugi).

Previously, during the busiest season, fishers would spend about four hours fishing, bringing in 50-100 kg per trip. During the peak season, as disclosed in the FGD, the average catch has increased from 75 kg to 200 kg per fisher. The six participants in the FGD said that prior to the establishment of the MPA, it took them six to seven hours of fishing to get a good catch. But now, it takes them only three to four hours to get 50-100 kg per trip.

They attributed this increased catch and decreased fishing pressure to the MPA's habitat management and protection efforts. Interviews with three fishers confirmed this data. As the fishers enjoyed increased catch using the defined customs and traditional fishing methods, they saw the benefit of having to register with the municipality in order to become legal users of the municipal waters. As previously stated, Barangay Malabrigo has a total of 184 registered fishers, with 50 being women. These fishers have their own specific fishing gear, and they are allowed to fish within the municipal waters provided they use only passive gear and within the permitted limits.

About 90 per cent of registered fishers fish inside the municipal waters, but outside the MFRS, and the remaining 10 per cent are fish vendors and gleaners. The local government has further regulated the volume of harvest for specific species, such as tamban or sardine, which can only be consumed by the local people of Lobo and not transported to other provinces or municipalities. In all, the fishers expressed that they now enjoy the positive impact of the MPA on their livelihoods.

Well-managed MPAs create a spillover effect, where fish populations thriving within protected areas migrate to adjacent fishing grounds, replenishing stocks and supporting sustainable fisheries. This effect has been witnessed not only within the MFRS area, but also in neighbouring barangays like Soloc.

Malabrigo's well-managed MPA has attracted tourists interested in ecotourism and nature-based recreational activities. Snorkelling, diving, and other marine-related experiences draw tourists to the protected and pristine marine environments. This influx of tourism has created additional jobs, stimulated local businesses, and diversified the economic activities of coastal communities in the municipality of Lobo. As a result, the community's reliance on traditional fishing has decreased, leading to reduced fishing and better conservation outcomes.

The local government of Lobo, in collaboration with the community and beach resort owners, has implemented a scheme to manage diving activities at designated dive sites within municipal waters. The Boatman and Guide Association acts as an intermediary, coordinating with tourists. This has been codified in Municipal Ordinance No. 2014-05, which standardized fees and penalties for the use of Lobo's municipal waters for diving and other purposes.

Cultural impact

The MFRS has had a significant cultural impact. Through community engagement, inclusive enforcement efforts, educational initiatives, and capacity-building activities, the MPA has become a collaborative endeavour that empowers the local community in protecting their marine environment. Examples include the involvement of women in enforcement activities and the professionalization of enforcement efforts. These efforts foster a sense of ownership, contributing to the long-term sustainability of the MPA.

The practice of protecting fisherfolk rights in Barangay Malabrigo is a commendable and significant initiative that sets it apart from many other coastal areas in the Philippines with eco-tourism sites. This practice is closely tied to the coexistence of beach resorts and the traditional fishing activities of the community. By not blocking the coastline with beach resorts, Barangay Malabrigo ensures that fisherfolk have continued access to coast-

The beach area of Barangay Malabrigo, in Lobo municipality, Batangas province, the Philippines, by Rosalina Lodripas-Tarrayo

al resources, allowing fisherfolk to continue traditional practices like docking their craft and fishing along the coastline. When fishers have direct access to the sea, they are more likely to fish sustainably, thereby reducing over-fishing or destructive fishing practices.

The decision to not let the coastline be obstructed by beach resorts reflects a community-centric approach to tourism development. This is a recognition of the importance of maintaining the community's cultural and economic ties to the sea, instead of prioritizing the interests of resort owners alone. Economic opportunities meet cultural and marine conservation.

By preserving access to the coastline for fisherfolk, Barangay Malabrigo promotes sustainable tourism practices, avoiding the negative impacts that can arise from privatizing coastal areas and displacing traditional fishing communities. It also enhances the community's resilience against economic shocks and changes in tourism trends. This approach diversifies income sources for the community and ensures that it is not solely reliant on tourism, which is subject to fluctuations.

Respecting fisherfolk rights and traditional practices fosters social harmony within the community, creating an atmosphere of cooperation and mutual respect among all stakeholders. It avoids conflicts between resort owners and fisherfolk that are likely if the coastline were to be blocked or privatized.

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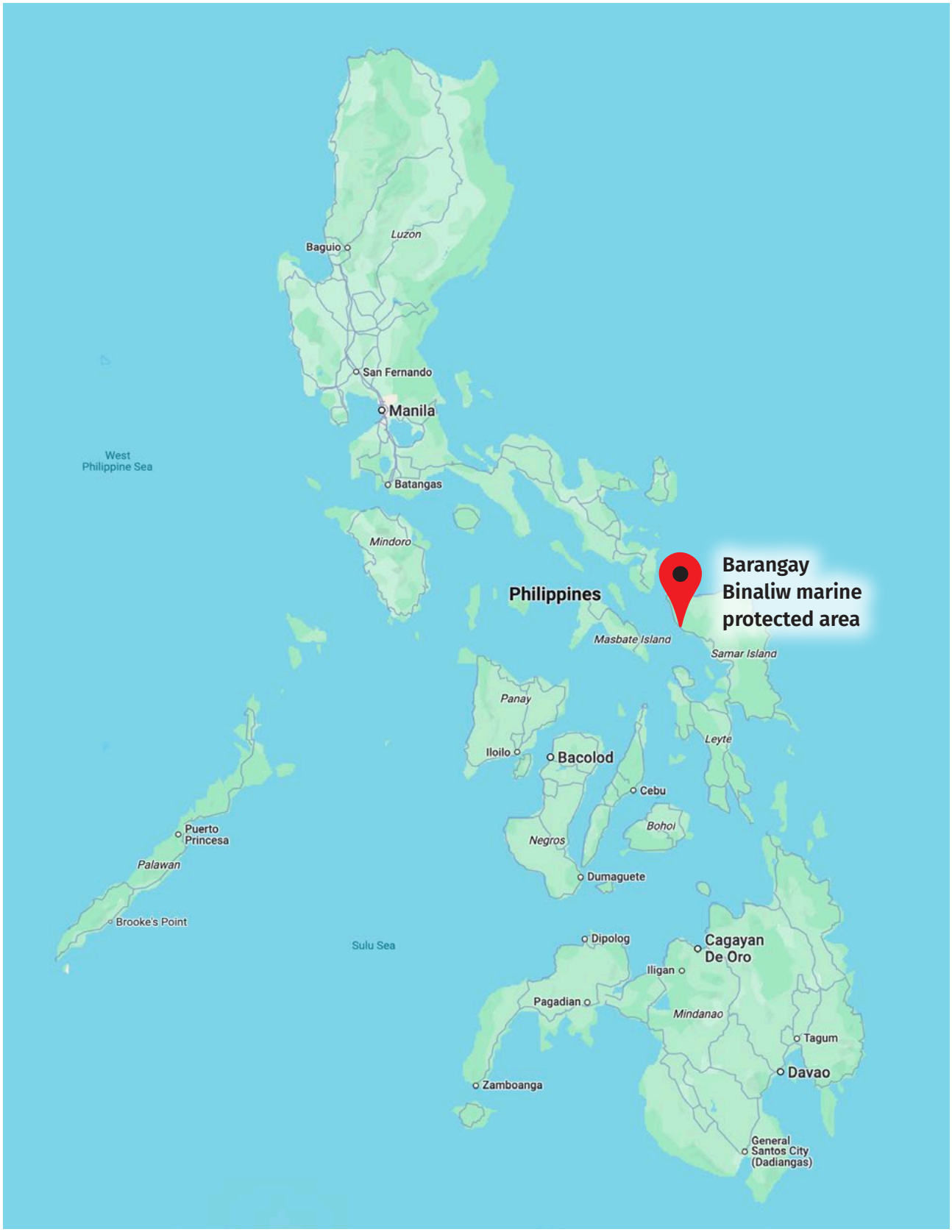

Map indicating the MPA Site in Barangay Binaliw. Source: Google Maps

Process of Declaration and Management: Site-2

Barangay Binaliw

I. Background

The establishment of the MPA in Barangay Binaliw dates back to 1997 and was made possible through the collaborative efforts of the fisherfolk organization Larang san Mga Mangirisda Sa Binaliw Aton Tindugan (LAMBAT) and the Binaliw Women's Association (BWA). The NGO Centre for Empowerment and Resource Development (CERD) facilitated this initiative through their programme on Community-based Fishery Resource Management and Economic Development (CB-FIRMED). The MPA was further supported by partnerships with the Barangay Council of Binaliw, the Tinambacan district, the DA-BFAR, and the LGU of Calbayog City in Samar, specifically through its agriculture office.

The stages of setting up this MPA differed from those in Barangay Malabrigo. The processes and approaches for MPA establishment can vary depending on the local actors and context. The involvement of fisherfolk organizations and women's associations indicates the recognition of the importance of community engagement and empowerment in managing and conserving the fishery resources.

II. The preparatory phase

The processes and initiatives that led to the establishment of the MPA in Isla Pawikan in Barangay Binaliw emphasized collaboration among multiple stakeholders. It involved the initiative of fisherfolks organizations, support from an NGO, community participation, collaboration with government agencies, scientific assessment by technical experts and the responsiveness of the barangay council. Such collaborative initiatives ensure that decisions are rooted in local knowledge, address specific issues, and promote sustainability. The engagement can be summarized into five key points in the preparatory phase.

(a) Awareness campaigns and capacity building
CERD conducted a series of awareness campaigns, training sessions, and capacity-building activities for community members and officials. These initiatives aimed to educate and empower the local community on sustainable resource management practices. As a

result, a community-based Coastal Resource Management Plan was formulated, reflecting the active participation and engagement of the community organizations like LAMBAT and BWA.

(b) Addressing specific issues

In formulating the management plan, the fisherfolk organizations prioritized the issue of massive dynamite fishing activities in Isla Pawikan. They identified the protection of the area and conservation of fishery resources as key strategies. Recognizing the importance of partnering with the barangay council and government agencies, they sought support and collaboration to address the issue effectively.

(c) Resource assessment and the proposal

At the request of the barangay council, the City Agriculture Office (CAO) of its Fishery Division, in collaboration with technical staff from DA-BFAR, the Coast Guard, and local fisherfolk, conducted a rapid resource assessment in Isla Pawikan. This assessment was to determine the status of the coral reef, fish stock biomass, and other marine organisms at the proposed site. The results indicated the potential for establishing an MPA to curb illegal fishing, conserve the coral reef ecosystem, and preserve fishery resources.

(d) Community engagement

Using the data from the resource assessment, the fisherfolk associations called for a barangay assembly to inform the community about the conditions of the fishery resources at the proposed site. Like any such development initiative, there were opposing voices, but the majority supported the MPA. In response to the assembly, the barangay council requested assistance from the CAO of the Fishery Division and DA-BFAR in order to develop a proposal.

(e) Policy Legislation

The council drafted a resolution requesting the City Council of Calbayog City to pass an ordinance designating the area as an MPA and a marine sanctuary. This became Calbayog City's first marine sanctuary. The City Council assigned its agriculture and fishery committee with the responsibility to organize a community consultation. The consultation was attended by numerous stakeholders, including fishers and farmers.

The fisherfolk expressed concerns about locating the MPA on their primary fishing ground. The LGU replied that it covered only a small portion of the municipal waters. Fishers were assured that they could continue fishing at other sites in the waters. The LGU had expressed that it was open to the possibility of helping small-scale fishers during the implementation process.

A public hearing was conducted with the participation of all coastal barangays through the Tinambacan District Fisherfolks Federation (TDFF) and the City Fishery and Aquatic Resource Management Council (CFARMC). The public hearing aimed to provide fishers from other coastal barangays the opportunity to voice their opinions as well as to increase awareness about the proposed MPA.

The resolution, community consultation and public hearing exemplify the participatory approach to decision-making and stakeholder involvement. It also proves that the LGU aimed to balance the conservation of marine resources with the needs and traditions of the fishing community.

The City Council passed Ordinance No. 97-16-083 entitled: 'An Ordinance Declaring the Coastal and Territorial Waters within the Jurisdiction of Barangay Binaliw, Tinambacan District, Calbayog City as Marine Protected Area and establishing a portion thereof as Fish Sanctuary'. This ordinance carries significant implications and demonstrates a collective commitment to preserving marine biodiversity and ensuring the long-term health of the marine ecosystem.

III. The planning phase

During the conceptualization process, Binaliw residents took a proactive approach to address the pressing issue of large-scale dynamite fishing in their waters. Fisherfolk organizations played a central role in formulating a comprehensive management plan. The community sought partnerships with the barangay council and government agencies to discuss the problem. As a result, the council adopted the plan through a resolution, signifying their commitment to address the dynamite fishing issue. However, unlike the case of the Malabrigo MPA, the Fish Sanctuary Management Council (FSMC) for the Binaliw MPA did not initially receive specific support, nor were provisions laid down during the barangay session.

IV. The implementation phase

The FSMC reflected the community's commitment to the MPA's success. It comprised representatives from fisherfolk associations, the barangay council, media practitioners, farmers, and the youth. The FSMC is the cynosure of the multi-stakeholder approach to marine conservation.

V. Challenges and Resilience

A notable challenge for the FSMC is the issue of political connections and ties among the barangay's office-bearers and the community, which has the potential for conflicts of interest and can hinder its smooth functioning. However, the fisherfolk association exhibits a strong commitment to the MPA, taking sole responsibility for its success. Their resilience is evident as they continue their monitoring activities despite threats from illegal fishers using destructive methods like dynamite fishing. But they had to balance these efforts against the need to provide for their families.

During the FGD, which was attended by 15 community members, seven of whom were women, all participants disclosed that there had been a reduction in their management activities between 2010 and 2017. The sanctuary holds significant importance as it remains a hotspot for violators who persist in their activities.

However, by 2019, the fishers observed the negative impact of such practices on their livelihoods, having experienced a decline in fish catch. As a result, they took action in mid-2019 to revive and strengthen their organization. With the assistance of the CAO, the fisherfolks organization reactivated and became more proactive. They maintained a constant (24/7) guard over the MPA site to deter violators and intruders, through a rotation system for apprehension and patrolling operations.

a. External support

The fisherfolk association received valuable support in 2019 from external organizations such as CERD, which provided markers, buoys, guardhouses, livelihood assistance and conducted capacity-building activities for the local leaders and fishers. Lobbying and negotiation efforts from the Tinambacan Fisherfolks Federation leadership and the MFARMC further garnered support from concerned agencies.

b. Diversified livelihood and eco-tourism

To enhance the livelihoods of fisherfolk and create alternative sources of income, the DA-BFAR, the Department of Trade and Industry and other government agencies provided support for seaweed farming, fishing gears, and the establishment of food processing businesses. These initiatives provide economic opportunities and promote sustainability.

The MPA's realized potential as an eco-tourism site points to the collaboration between the City Tourism Office, the CAO and the barangay council. Such efforts at cooperation are a way to mitigate the environmental destruction that can often accompany tourism initiatives and activities.

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Site-2: Barangay Binaliw

Impact of MPA
(Merits and Demerits)

The impact of the MPA in Barangay Binaliw can be contextualized under four categories that deserve closer study:

Conservation impacts

The only materials available to assess this were the FGD results and secondary data from the CAO from 1996, when the concept proposal was drafted, besides the DA-BFAR's monitoring data from 2018.

Table 2 presents the condition of the coral reef ecosystem before the MPA was established. Data was obtained using the Coastal Conservation and Education Foundation (CCEF), and classification from the Siliman University Angelo King Centre for Research and Environmental Management (SUAKCREM).

The data indicated the presence of a diversity of corals, including staghorn, branching corals, table corals, encrusting corals, sea fans, soft corals, and basket corals. The report rated the condition of the corals as 'good', indicating that the reefs of Isla Pawikan and the Poy-aw Reef were positive signs of a healthy marine ecosystem. Coral reefs are critical for marine biodiversity, acting as essential habitats for numerous marine species.

Table 2. Result of rapid resource assessment in Isla Pawikan, 1996

Location	Site	Total Area (hectares)	Transect/ Traverse Area	Corals	Estimated Fish Biomass	Estimated Fish Density
Calbayog City	Isla Pawikan and Poy-aw reef	7-10	20,500 sq. metres	**Good** • Staghorn • Branching corals • Table corals • Encrusting corals • Sea fans • Soft corals • Basket corals	**Medium** • Red snapper • Giant trevally • Grouper • Red Fusilier • Butterfly fishes • Anchovies • Catfish • Apogon • Damsel fish • Squid • Lobsters	**High** • Giant Trevally • Grouper • Red Fusilier • Butterfly fish

Source: Rapid Resource Assessment (1996), DA-BFAR

The estimated fish biomass was 'high'. The dominance of Giant Trevally, Grouper, Red Fusilier, and Butterfly fish suggests their significance in the ecosystem. These may act as keystone species, exerting considerable influence on the structure and functioning of the marine environment.

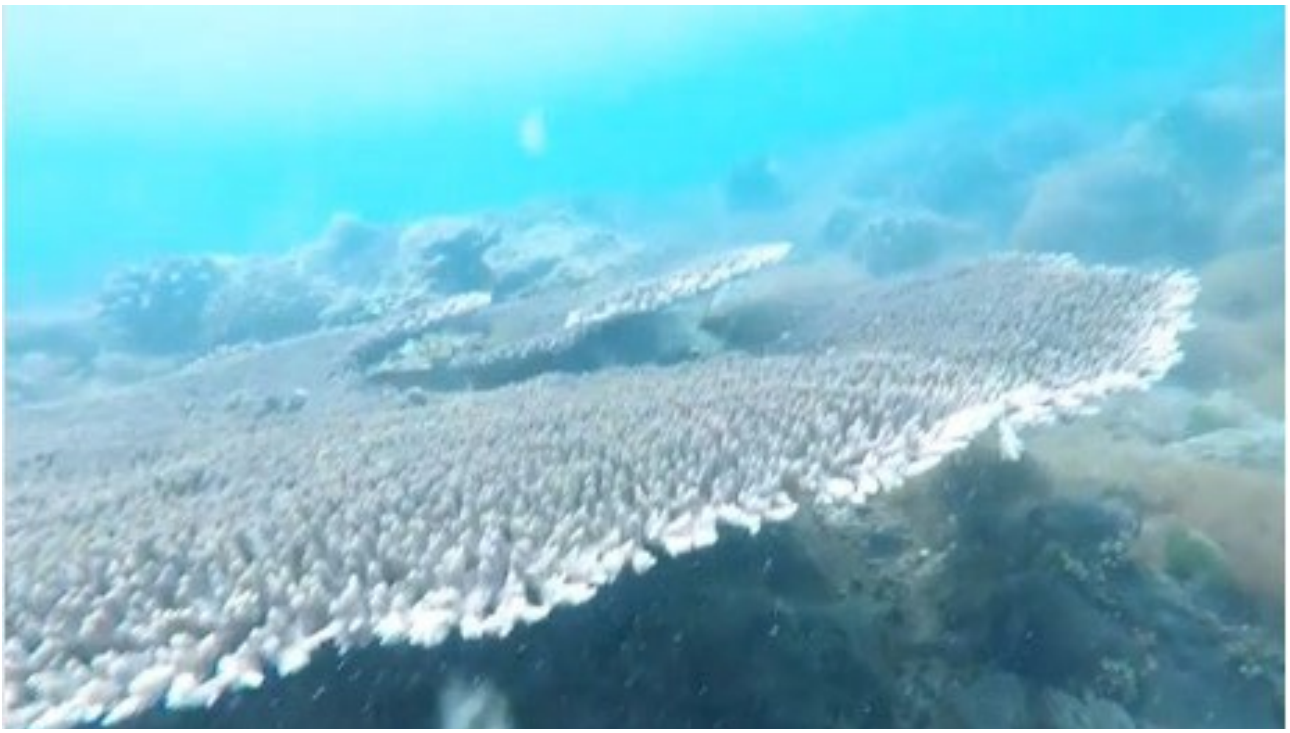
Table 3. Condition of coral reef in Binaliw Fish Sanctuary (2018)

Coral	Percentage cover
Soft Coral	9
Hard Corals	17
Dead Corals with algae	7
Dead Corals	7
Rubble	5
Others	20
Sand	35
Total Percentage Coral Cover	26

Source: DA-BFAR

Table 3 indicates a moderate coral cover of 26 per cent, suggesting that the surveyed area has experienced a mix of positive and negative impacts. The presence of dead corals with and without algae (7 per cent each) and rubble (5 per cent) points to previous disturbances or stressors that have impacted coral health. This raises concerns about potential threats that may have contributed to coral mortality, such as ocean warming, pollution, or physical damage because of destructive fishing. The moderate percentage of soft corals (9 per cent) indicates the presence of additional biodiversity and habitat complexity in the surveyed area, contributing to the overall ecological value of the reef.

By comparing Table 2 and Table 3, it is evident there is a clear decline in coral reef ecosystem health. The Coastal Conservation and Education Foundation (CCEF) in 2008 classified live hard coral cover into four categories: poor (less than 25 per cent); fair (25-49 per



Underwater resources in the Barangay Binaliw Marine Protected Area, the Philippines by Rosalina Lodripas-Tarrayo

cent); good (50-75 per cent); and excellent (more than 75 per cent). Before the establishment of the fish sanctuary, the coral reef condition was rated as good (Table 2). However, the 2018 underwater survey (Table 3) rated the coral reef condition at only 26 per cent, which places it at the lower end of the 'fair' range.

The decline in the coral reef condition after the establishment of the MPA raises questions about its effectiveness. The findings emphasize the importance of continuous monitoring and adaptive management. The decline of coral reef condition can be attributed to the reduction of management activities for seven years (as revealed in the FGD). Between 2010 and 2017, there had been no apprehension operation conducted by the management body and no implementation of the policy at all. Nor did the LGU implement the management plan. Several illegal and destructive fishing methods were used in the area over that period.

Social impacts

The social impacts highlight, among other things, the importance of integrating fishing and conservation efforts through community participation. These forms of engagement emphasize fostering stronger relationships and ensuring responsible resource management. This approach prioritizes democratic principles and human rights, recognizing that local communities can contribute significantly to both environmental protection and safeguarding their own livelihoods.

The community has faced difficulties over the years due to the presence of violators and political disputes. But it has shown adaptive management and resilience, continuing with its conservation efforts. The organization's revitalization in the latter half of 2019 is evidence of the community's determination to overcome obstacles and bolster management and law enforcement.

Economic impacts

The Binaliw MPA has had a multifaceted economic impact. It offers opportunities for diversified livelihoods, reduces dependence on traditional fishing, and promotes sustainable resource use. An example of this shift can be seen in Fedelio Tuyco, a fisher leader of Binaliw and chairperson of the City Fishery and Aquatic Management Council. Where previously he would use dynamite in his fishing, Tuyco has now changed gears both in his fishing practices and his life. Today, he is proud to be able to contribute to the preservation of the coastal and marine resources. The only tenure instrument with him now is his registration ID, evidence that he is a legitimate fisher in the city and not an illegal fisher.

What motivated this change? Fisher Mano Noknok offered an answer, "The time came that I started to worry. I thought it could indeed be destructive to the fishing grounds because the fish catch was declining even with the use of dynamite. And then something almost killed me. One day while fishing, I lit a bottle of dynamite, but it went out. So, I placed it on the boat with the other big bottles. Then I suddenly had second thoughts; I picked it up and threw it overboard. Imagine my surprise when the dynamite exploded in the sea. I was very thankful." He persuaded other dynamite users to switch to safer and more sustainable methods—fishing nets, hook and line.

The move to sustainable methods has added, not reduced, sources of income. Eco-tourism has brought economic benefits from marine conservation and its potential has been recognized. During the three months of eco-tourism operations, each association member received PHP 134, excluding tips, from tourists. The total income from tourism in this period amounted to PHP 42,000. This amount, however, is subject to deduction for expenses, including food for volunteers and gasoline supply for roving and patrolling. For the women in the community, tourists offer another income opportunity since they look for interesting and tasty food, and have the capacity to pay for new culinary experiences. Catering and preparing meals for them is an additional source of income for entrepreneurial women in the community.

However, to maximize the economic benefits of the MPA, continuous monitoring, adaptive management, and community engagement are essential. Regular assessments of the MPA's impact on the local economy, combined with measures to address challenges and threats, will contribute to the sustainable economic development of Binaliw and its neighbouring barangays.

Cultural impact

The Binaliw MPA has had a significant cultural effect, thanks to the collaborative efforts of fisherfolk associations and CERD. The collaborations have fostered a sense of ownership and responsibility in the community over the MPA and its success. The inclusion of cultural activities has shown value and respect for indigenous customs, including safeguarding essential practices such as rituals performed before launching craft into the sea. This approach ensures that conservation initiatives remain located in cultural traditions, that they are not viewed as being completely new or alien to the community. It helps address new challenges with the best of old values.

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Conclusion

The MPAs in Malabrigo and Binaliw illustrate the potential of community-driven approaches in establishing and managing marine sanctuaries. They emphasize the importance of local empowerment, multi-stakeholder collaboration, adaptive management strategies, and the balance between conservation and economic development. The success of both the Malabrigo Fishery Refuge and Sanctuary and the MPA in Binaliw stands as a testament to the effectiveness of community engagement in marine resource management, serving as models for future conservation endeavours.

The MFRS stands as a remarkable model of community-driven MPA. It showcases a comprehensive and inclusive process, starting with the community actively advocating for the sanctuary's establishment. Under the leadership of figures like Sonny Badal, community consultations and discussions were organized, addressing concerns and deliberating the potential benefits of the sanctuary. Through a unified decision to support the sanctuary, the community set conditions to safeguard their fishing interests.

The formation of the Malabrigo MPA Council, comprising diverse stakeholders, ensured a collaborative and inclusive approach towards managing the sanctuary. This involved the passage of formal resolutions and ordinances through the barangay council and Sangguniang Bayan, integrating community feedback into the legal framework. The community's involvement continued into the management phase, where the MPA Council, with representatives from various sectors, created committees and implemented specific responsibilities for effective management.

This encompassed law enforcement, information dissemination, planning, finance, and facilitation of MPA activities. Deputized fish wardens, including women fishers, took charge of patrolling and enforcement, supported by the LGU and various organizations for enhanced effectiveness. Educational campaigns, partnerships with institutions, regular patrolling operations, and job opportunities established a robust framework for ongoing success in managing the sanctuary.

The MPA in Binaliw serves as a powerful example of the effectiveness of a community-based conservation initiative. This process, initiated and sustained through the active involvement of fisherfolk organizations, women's associations, NGOs, government bodies, and technical experts, underscores the pivotal role of community engagement. The phased approach highlighted the importance of community empowerment, multi-stakeholder collaboration, as well as detailed planning and implementation. The phases encompassed a preparatory phase involving community awareness, issue identification, and policy legislation, ensuring local insights were integrated into the process.

Subsequent planning phases, particularly the formulation of a comprehensive management plan to address urgent threats, demonstrated the community's commitment to resolving critical issues, notably combating dynamite fishing activities. Challenges like political interference and threats from illegal fishers were met with resilience, indicating the community's dedication to sustaining their management efforts. This resilience was augmented by external support from organizations like CERD and collaborative efforts with concerned agencies, bolstering the conservation initiatives.

The diversification of livelihoods and the exploration of eco-tourism potential underscored the viability of a balanced approach to MPA management. Support from government agencies facilitated the development of alternative livelihood opportunities, while collaborative efforts between various local offices emphasized the community's commitment to balancing conservation and economic development through eco-tourism endeavours.

The Barangay Binaliw MPA demonstrates the potential of MPAs in promoting sustainable fisheries, conserving marine biodiversity, and benefiting local communities. While the MPA has had positive impacts, addressing challenges such as the financial and material support from the LGU to sustain the MPA, and employing adaptive management approaches, will be vital for its continued success in preserving marine resources and ensuring the well-being of the community.

The effective implementation of MPAs requires a balance between ecological objectives and the rights and needs of fishing communities—a balance that can be achieved through collaborative management approaches and clear legal frameworks. Each MPA must formulate long-term plans for sustaining conservation initiatives, ensuring continuous community involvement, and securing ongoing support from agencies concerned. As well, they must implement robust monitoring and evaluation systems to regularly assess the effectiveness of conservation measures and make data-driven adjustments to enhance the sanctuaries' management and sustainability.

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Fisherman readying his net for the next trip, Pamilacan Island, the Philippines, by Cornelie Quist

Marine protected areas (MPAs) play a crucial role in preserving marine biodiversity and fostering sustainable fisheries, with **the Philippines** emphasizing legal compliance and community engagement. Case studies in Barangay Malabrigo and Barangay Binaliw illustrate the effectiveness of community-driven approaches in MPA establishment and management.

The Malabrigo Fishery Refuge and Sanctuary exemplifies inclusive processes, community advocacy, and collaborative governance, ensuring sustained success. The Barangay Binaliw Marine protected area also showcases the power of community-based conservation, addressing challenges through phased approaches, resilience, and eco-tourism.

The case study underscores the need for financial support, adaptive management, and stakeholder collaboration for long-term MPA success, balancing ecological objectives with fishing community needs.

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International Collective in Support of Fishworkers
ICSF