FISHERIES MANAGEMENT AREA 5

FMA 5

FISHERIES MANAGEMENT AREA

MANAGEMENT FRAMEWORK PLAN

DEPARTMENT OF AGRICULTURE
BFAR

USAID
FROM THE AMERICAN PEOPLE

THE UNIVERSITY OF RHODE ISLAND
GRADUATE SCHOOL OF OCEANOGRAPHY
CRC COASTAL RESOURCES CENTER

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Management Framework Plan 2023 – 2027: Capture Fisheries Management

Covering the fishing grounds in the provinces and municipalities of:

Region VI	:	Province of Antique; Municipality of Buruanga, Aklan
MIMAROPA Region	:	Province of Palawan, Province of Occidental Mindoro
Bangsamoro	:	Municipality of Mapun, Tawi-Tawi

April 2023
Calapan City, Oriental Mindoro

Message from the Chairperson

EMMANUEL H. ASIS, DFT, CESE
Chairperson, FMA 5 Management Board
Regional Director, BFAR MIMAROPA Region

Warmest greetings!

It is with great pleasure and a deep sense of responsibility that I present the Fisheries Management Area 5 (FMA 5) Management Framework Plan. As the Chairperson of the FMA 5 Management Board, I extend my heartfelt appreciation to all those who have contributed their time, expertise, and dedication to the development of this comprehensive plan.

FMA 5, encompassing the vibrant coastal communities and diverse marine ecosystems from Occidental Mindoro to Palawan, Aklan, and Antique, all the way to Mapun, Tawi Tawi holds great significance. It is a management area teeming with rich fisheries resources that sustain the lives and livelihoods of more than 122,000 fisherfolk individuals. However, we also recognize the pressing need to ensure the long-term viability of these resources and the sustainability of our fishing communities.

The FMA 5 Management Framework Plan serves as our guiding document, outlining our collective vision for the sustainable management of our fisheries. It is the culmination of extensive collaboration among government agencies, fishing communities, academia, non-governmental organizations, and other key stakeholders. Together, we have woven a roadmap that balances the conservation of our marine ecosystems with the socio-economic well-being of our communities.

This framework plan sets forth a series of strategic objectives and targeted actions that aim to address the challenges and opportunities specific to FMA 5. It underscores the importance of science-based decision-making, adaptive management approaches, and the integration of traditional knowledge into our practices. By taking a holistic and inclusive approach, we strive to safeguard our fisheries for future generations while promoting the resilience and prosperity of our coastal communities.

The successful implementation of this framework plan relies on our ability to forge strong partnerships, foster active participation, and encourage open dialogue among all stakeholders. It is through collaborative efforts that we can pool our knowledge, resources, and experiences to devise effective solutions and drive positive change.

To the readers of this framework plan, I urge you to embrace your role as active participants in its implementation. Each of us has a part to play, whether as fishers, researchers, policymakers, educators, or concerned citizens. Together, let us champion responsible fishing practices, advocate for conservation measures, and foster a deep sense of stewardship toward our precious marine resources.

I commit to the successful execution of the FMA 5 Management Framework Plan. Together, we can create a future with thriving fisheries and resilient coastal communities.

Message from the Co-Chairperson

HON. MARY JEAN N. TE
Co-Chairperson, FMA 5 Management Board
Municipal Mayor, Libertad, Antique

It is my utmost pleasure to introduce the Fisheries Management Area 5 Management Framework Plan. As the Co-Chairperson of the Management Board and the Local Government Unit (LGU) of Libertad, Antique Mayor, I am proud to be part of this significant endeavor.

Fisheries Management Area 5 (FMA 5) is a vital fishing ground that provides livelihood to thousands of fisherfolk and their families. It is essential to maintain the balance between the sustainability of fishery resources and the livelihoods of the fisherfolk. The FMA 5 Management Board recognizes the importance of sustainable management in the preservation of these resources, and thus, the board was created.

The Management Board is tasked with developing a framework plan that will guide the sustainable management of FMA 5. This plan encompasses various aspects, such as fishing regulations, resource management, infrastructure development, and institutional cooperation.

The development of the Framework Plan was a collaborative effort among the stakeholders. It underwent a series of consultations and workshops to ensure that it reflected the interests and needs of the fishing communities and other stakeholders. The FMA 5 Management Board recognizes the value of the involvement of the fisherfolk in the process of developing the plan. As a result, a comprehensive plan that takes account of the unique needs and perspectives of the stakeholders was formulated.

I, together with my fellow Management Board members, commend everyone involved in this process, especially the fisherfolk who actively participated and shared their knowledge and experiences. It is essential to recognize the significant role that the fisherfolk play in the sustainable management of the area. The Framework Plan is focused on ensuring that the fisherfolk have access to livable income, decent working conditions, and appropriate livelihood alternatives. The plan seeks to support the growth of sustainable and viable livelihood opportunities that will contribute to the welfare of fishing communities and ensure they can support their families' needs.

It is our hope that the implementation of this Framework Plan will lead to the conservation of fishery resources in FMA 5, improved livelihoods for the fisherfolk, and a better future for the next generation. The FMA 5 Management Board is committed to the successful implementation of the plan, and we are optimistic that its benefits will extend beyond the fishing industry and aid communities in cultivating a more sustainable ecological and economic environment.

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VISION

A sustainably managed fisheries supporting gender–responsive, economically-stable, and climate-resilient communities through holistic, science-based, and transparent governance.

HIGH FIVE PARA SA FMA 5!

FISHERIES MANAGEMENT AREA 5

Introduction

Fisheries Administrative Order (FAO) 263 (2019) established twelve (12) Fisheries Management Areas (FMAs) to provide a platform for a science-based, participatory, and transparent governance framework and mechanism to sustainably manage fisheries in the country. Through the creation of FMAs, the management of fisheries resources becomes holistic across the various administrative divisions of provinces and regions. Management of fisheries resources requires complementation of responsibilities of Local Government Units (LGUs) within the Municipal Waters (MW) and that of the Bureau of Fisheries and Aquatic Resources (BFAR) the waters beyond fifteen (15) kilometers.

Management regimes in all FMAs are based on the Ecosystem Approach to Fisheries Management (EAFM), which recognizes the biological, economic, social, and physical interactions among the components of ecosystems and the people dependent on the ecosystem services provided by the natural resource base.

Fisheries Management Area 5 (FMA 5) covers the southeastern portion of the West Philippine Sea, Mindoro Strait, Cuyo Pass, and the western portion of the Sulu Sea. It consists of the Provinces of Palawan, Occidental Mindoro, and Antique, and the Municipalities of Buruanga in Aklan and Mapun in Tawi-Tawi. It covers approximately 48,541,700 hectares of land and water area and is the second-largest FMA created in the country.

The management of the FMA is lodged in a multi-sectoral Management Body (MB), and supported by a Scientific Advisory Group (SAG). BFAR serves as secretariat. In FMA 5, the secretariat is based in BFAR MIMAROPA Region, with offices in Calapan, Oriental Mindoro. The Management Body led the preparation of the FMA Framework Plan to guide the implementation of actions to conserve the fisheries resources in the FMA. The participatory planning process began with a Start-Up Workshop held last December 17-18, 2021. Given the limitations brought about by the COVID-19 pandemic, the workshops took a blended mode with two (2) onsite venues. This was followed by several meetings to refine the initial output and validate the results. This Management Framework Plan will guide implementers in conservation, management, and utilization to attain food security and sufficiency in Fisheries Management Area 5.

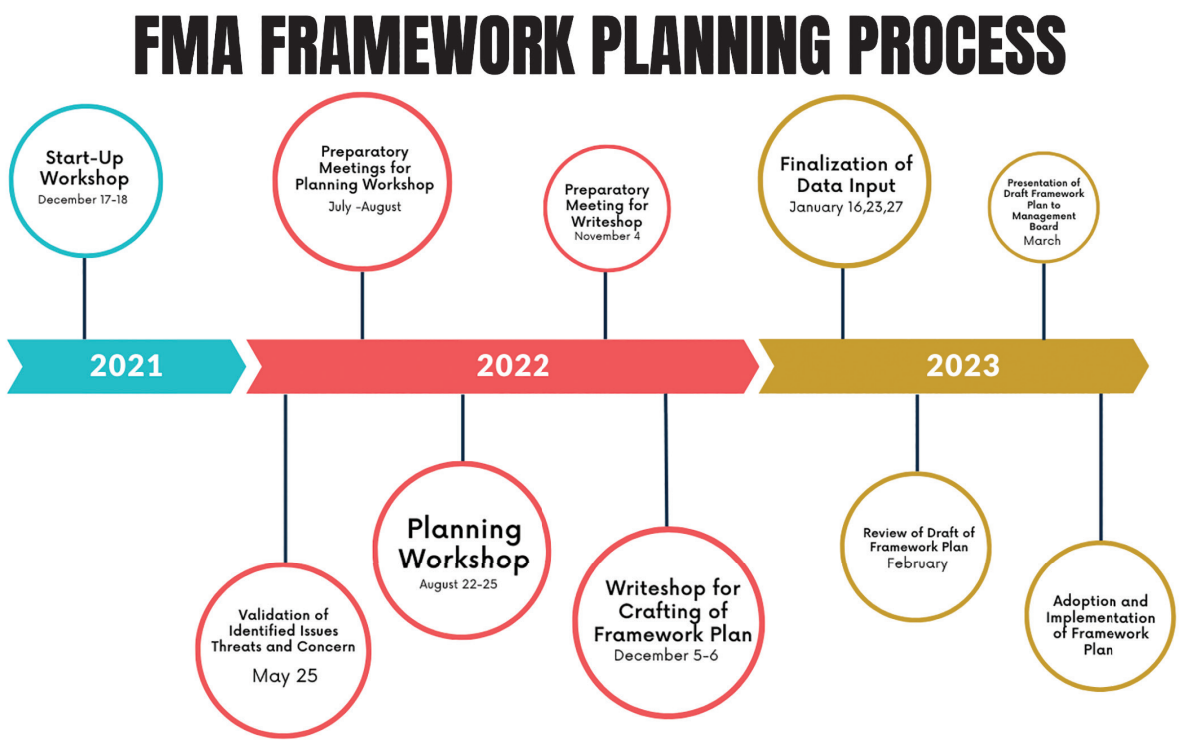


Figure 1. Timeline for the preparation of the FMA Framework Plan.

FMA 5 Profile

FMA 5 lies within the borders of the three (3) administrative regions (MIMAROPA, Western Visayas (VI), and Bangsamoro Autonomous Region of Muslim Mindanao (BARMM)), comprising fifty (50) municipalities and cities in the five (5) provinces of Occidental Mindoro, Palawan, Aklan, Antique and Tawi-Tawi with a total of 648 barangays (Annex A).

Table 1. List of Municipalities and Cities included in FMA 5.

PROVINCE OF AKLAN
Buruanga[8]
PROVINCE OF ANTIQUE
Anini-y[17], Barbaza[11], Belison[6], Bugasong[7], Caluya[18], Culasi[19], Hamtic[13], Laua-an[12], Libertad[13], Pandan[15], Patnongon[10], San Jose[14], Sebaste[8], Tibiao[8], Tobias Fornier[13]
PROVINCE OF OCCIDENTAL MINDORO
Calintaan[4], Looc[9], Lubang[14], Mamburao (Capital)[7], Paluan[10], Rizal[4], Sablayan[10], San Jose[21], Santa Cruz[5]
PROVINCE OF TAWI-TAWI
Mapun[14]
PROVINCE OF PALAWAN
Aborlan[9], Agutaya[10], Araceli[13], Bataraza[20], Balabac[18], Brooke's Point[14], Busuanga[14], Cagayancillo[12], Coron[19], Cuyo[14], Dumaran[13], El Nido[16], Linapacan[10], Magsaysay[10], Narra[14], Quezon[11], Roxas[19], San Vicente[10], Taytay[28], Kalayan1, Culion[13], Rizal[11], Sofonio Espanola[7], Puerto Princesa City[49]

**Superscript notation indicates the total number of barangays in each LGU.*

FMA 5 is the second largest FMA in the country which covers an area of 48,541,700 hectares. The boundaries were defined after consultations with stakeholders, considering the range and distribution of major fish stocks, as well as the political / administrative jurisdictions.

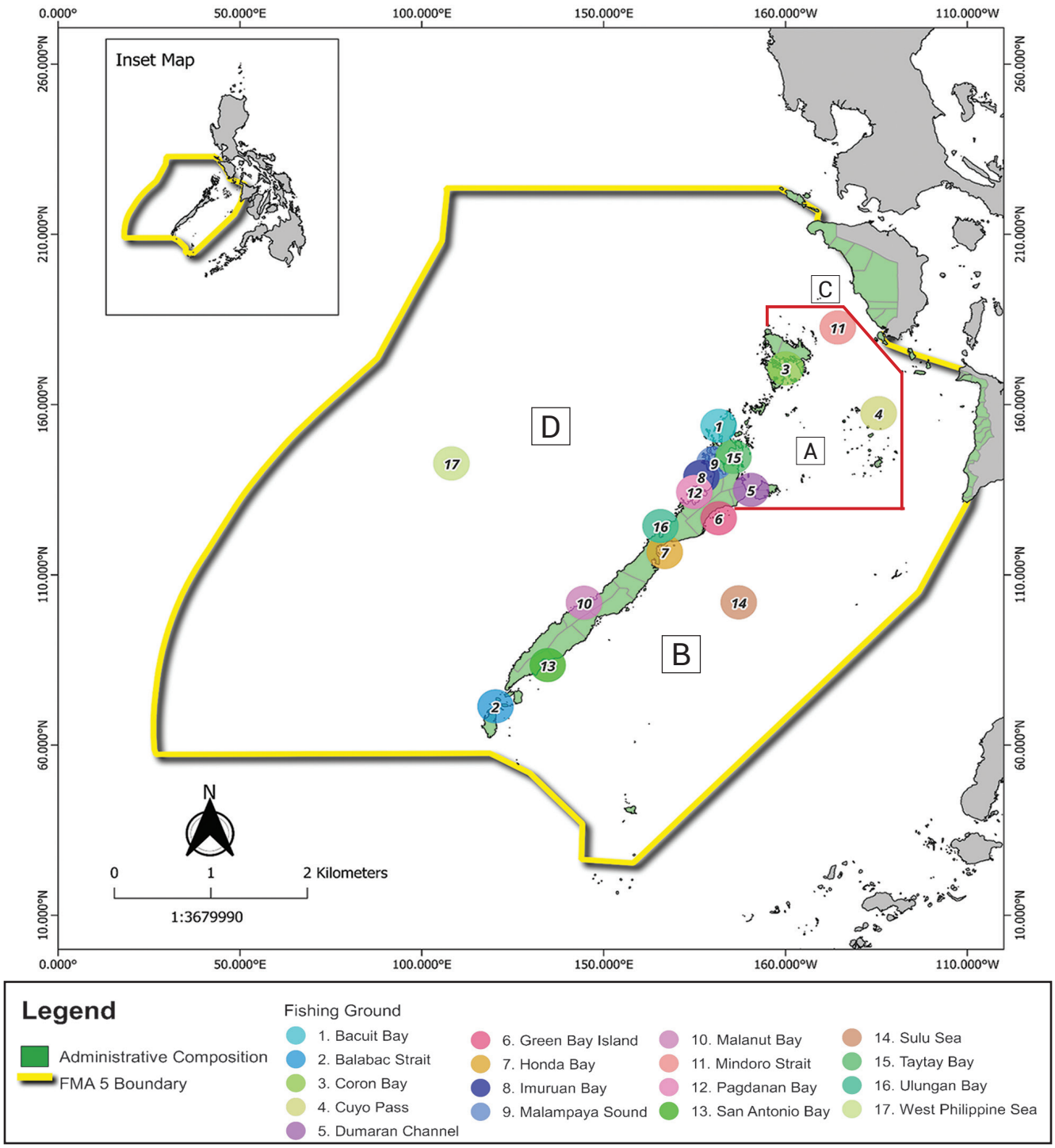
FMA 5 includes more than seventeen (17) fishing grounds, including the most important fishing grounds in the country - Mindoro Strait, Sulu Sea, Cuyo Pass, the West Philippine Sea. The Mindoro Strait down to Antique is a tuna migration pathway. The spawning ground of *galunggong* (roundscad) is located at Cuyo Pass, off the northeastern part of Palawan Island. Further, Reed Bank (Recto Bank), located at the West Philippine Sea, is one of the most productive traditional fishing grounds for commercial fisheries. On the other hand, the Sulu Sea is known as the spawning and breeding ground of sea turtles and sharks.

The area also hosts a number of protected areas, landscapes, and seascapes, including the entirety of mainland Palawan, Tubbataha Reefs Natural Park, Apo Reef Natural Park, and Turtle Islands, among others.

In consultation with the LGUs concerned and other key stakeholders, the FMA is subdivided for a more purposive and targeted scale of management, taking into consideration the approximation of fish stocks, its distributions, features, characteristics or structure of fisheries and/or administrative divisions. The proposed sub-areas include:

A. The Roundscad Conservation Area (Cuyo East Pass) in northeastern Palawan,
B. Sulu Sea,
C. Mindoro Strait, and
D. West Philippine Sea

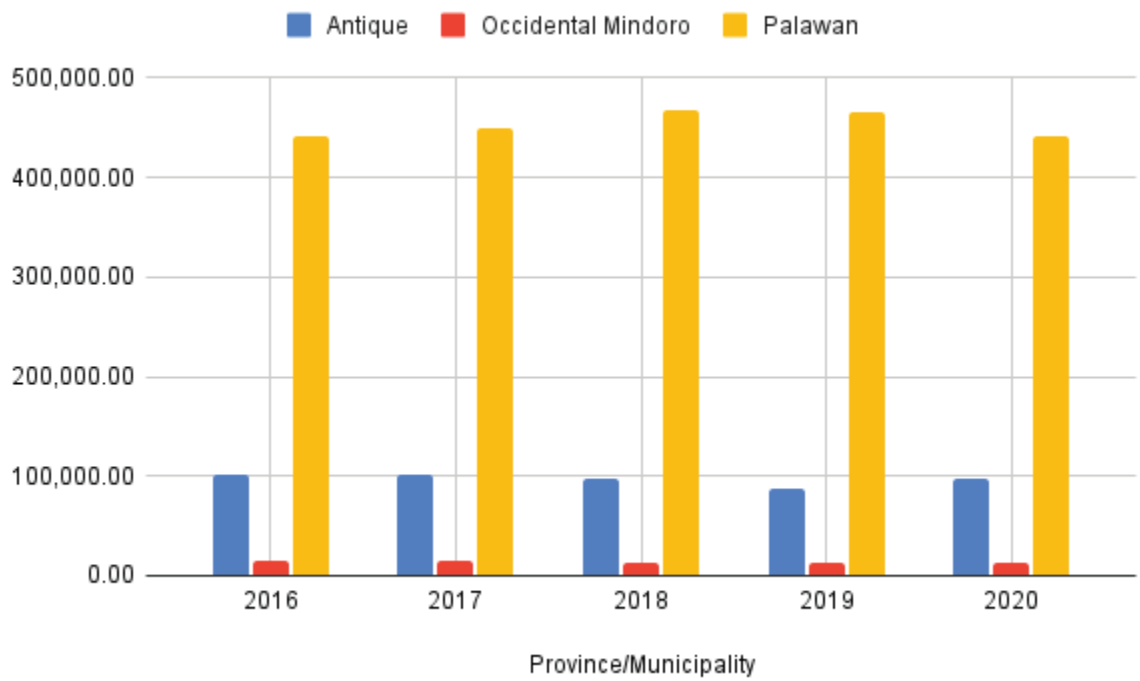
Figure 2. Fishing grounds and sub-management areas in FMA 5.



Of the major fishing grounds in the country, the Province of Palawan figures as the country's most productive in terms of volume, accounting for 12% of total fish production in the country. In 2020 alone, the volume of fish production in Palawan was at 441,311.96 metric tons, with the said province being considered the top producer both in the commercial and municipal fisheries valued at P12,052,718.87. Combined fisheries production of the three (3) provinces in FMA 5 already comprises 12.55% of the entire country's production.

From 2016-2020 (Figure 5), the production trend of FMA5 varied among its major provinces. The province of Palawan, as the top contributor, has consistently contributed the highest production in terms of both volume and value, accounting for nearly 12% of the country's total fish production, followed by Antique and Occidental Mindoro. In 2020 alone, Palawan reported its aggregated commercial and municipal fisheries volume of production at about 441,311.96 metric tons with an accumulated value of P12,052,718.87. The combined fishery production of the three (3) provinces in FMA 5 comprises 12.55%.

Figure 3. Capture fisheries production in the three major provinces.



Fisheries stocks in FMA 5 consist mainly of tuna species, including: Neritic Tunas (Frigate tuna, Kawakawa, and Bullet tuna) and Oceanic Tunas (Skipjack tuna and Yellowfin tuna). Additionally, small pelagic species (such as scads, mackerels, anchovies, sardines, ponyfish, flying fish, and dolphinfish) and mollusks (sword tip squid) are also dominant.

Figure 4. Dominant fish species in the FMA 5.

Yellowfin Tuna
(Thunnus albacares)

Bullet Tuna
(Auxis rochei)

Shortfin Scad
(Decapterus macrosoma)

Indian Scad
(Decapterus russelli)

Skipjack Tuna
(Katsuwonus pelamis)

Spotted Sardinella
(Amblygaster sirm)

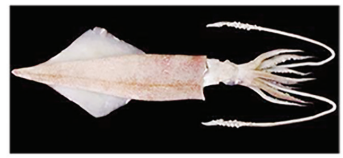
Frigate Tuna
(Auxis thazard)

Kawa - Kawa
(Euthynnus affinis)

Mackerel Scad
(Decapterus macarellus)

Bigeye Scad
(Selar crumenophthalmus)

Indian Mackerel
(Rastrelliger kanagurta)



Swordtip Squid
[Uroteuthis (Photololigo) edulis]

Devis' Anchovy
(Encrasicholina devisi)

Island mackerel
(Rastrelliger faughni)

Glider flyingfish
(Cheilopogon atrisi-gnis)

Bali Sardinella
(Sardinella lemuru)

Common Dolphinfish
(Coryphaena hippurus)

Buccaneer anchovy
(Encrasicholina punctifer)

Splendid Ponyfish
[Eubleekeria (Leiognathus) splen-dens]

Yellowtail Scad
(Atule mate)

*Top species are determined based on percentage volume of monitored landed catch of both commercial and municipal fishers in monitored landing centers of BFAR/NFRDI National Stock Assessment Program. This is clustered information from 2015-2018 from the regional teams forming the FMA, unless date is otherwise specified.

Figure 5. Fish Catch Data in Sulu Sea including the Roundscad Fisheries Management Area.

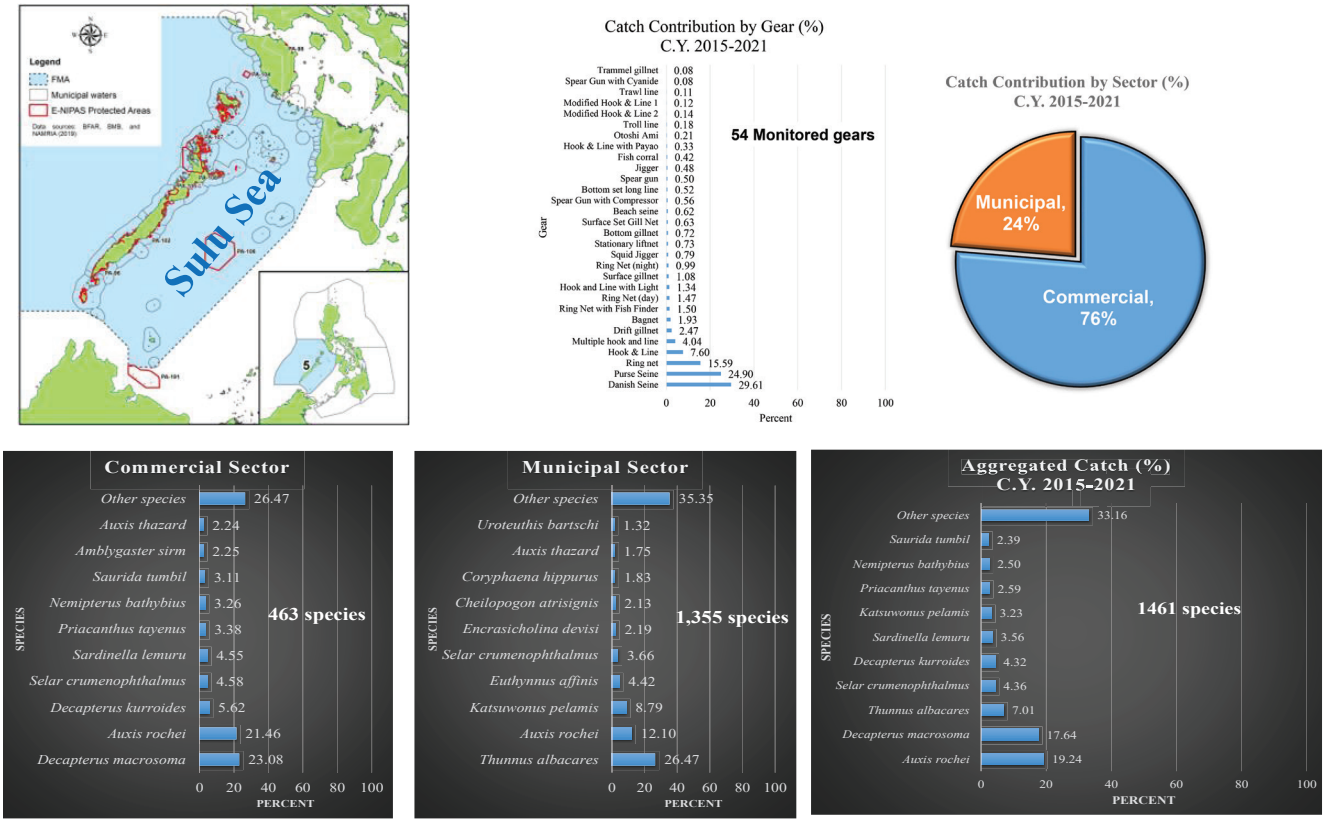


Figure 6. Fish Catch Data in the Southern Part of the West Philippine Sea

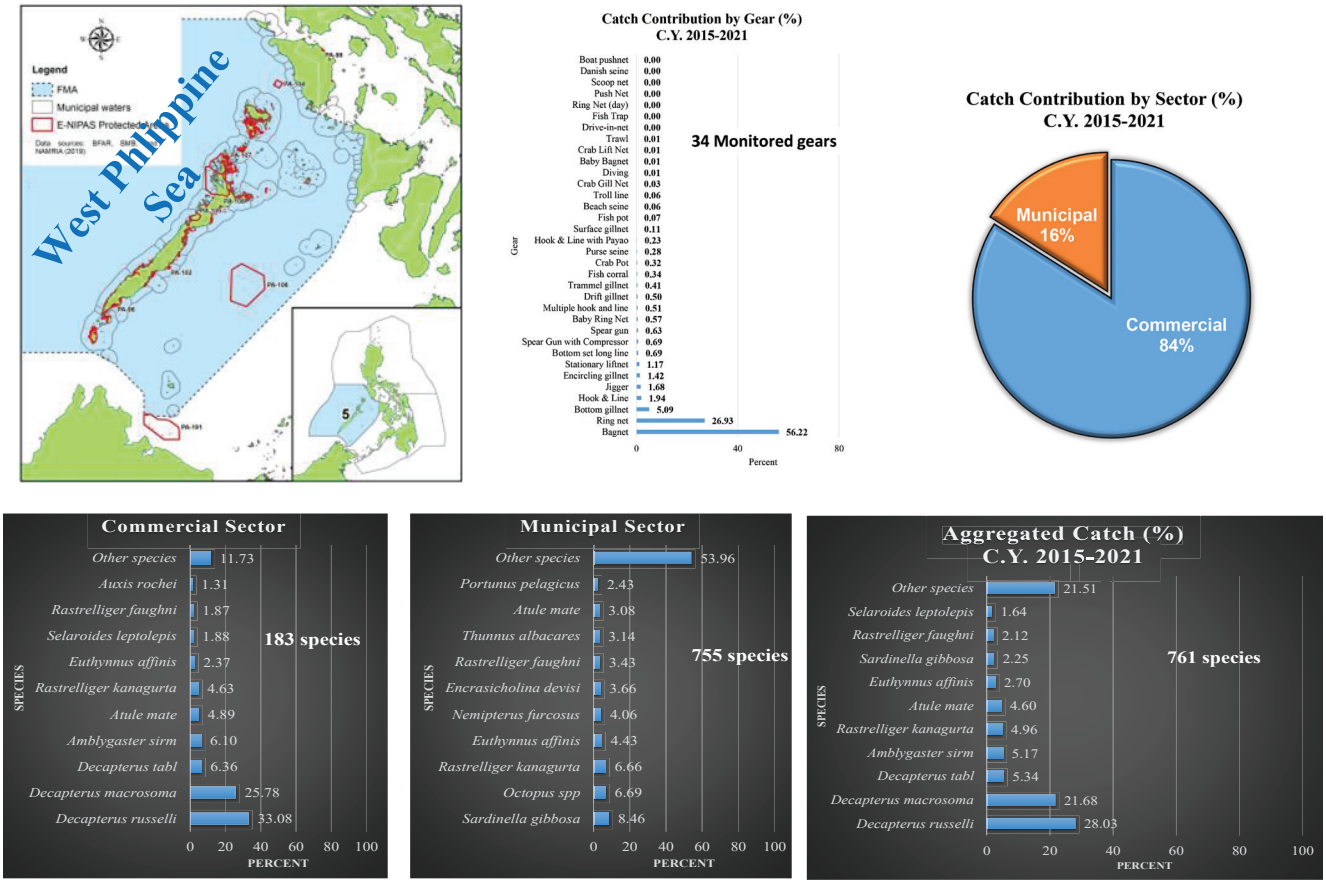
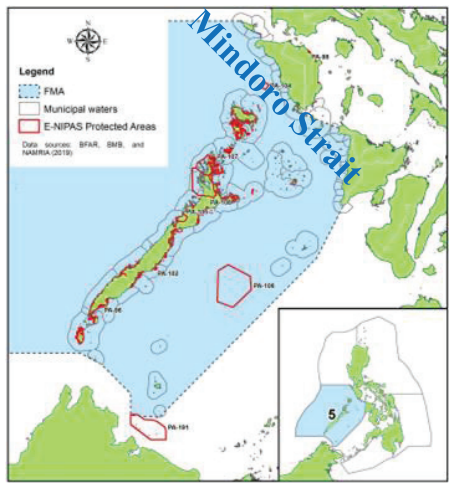
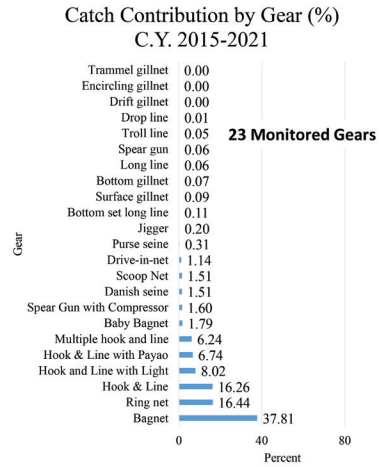
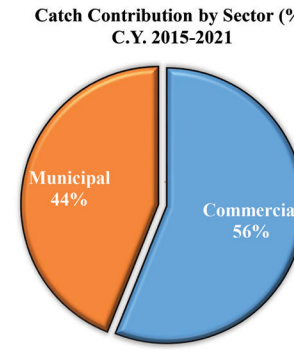
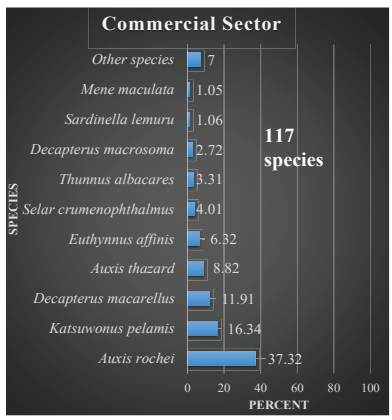


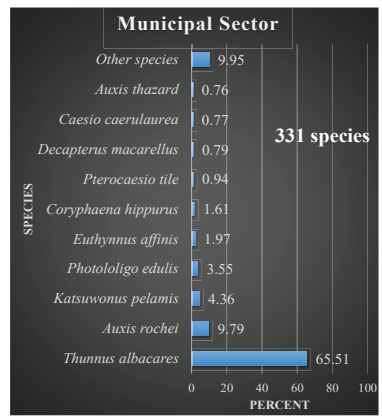
Figure 7. Fish Catch Data in Mindoro Strait

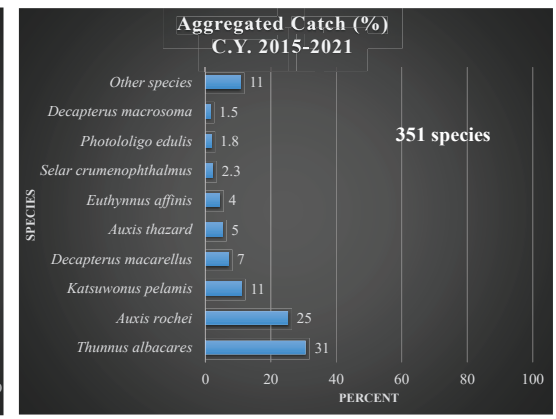












Galunggong caught in Northeastern Palawan landed at the Navotas Fish Port Complex.

FMA 5 has extensive coastal habitats comprising coral reefs, seagrass beds, and mangrove forests.

Table 2. Known habitat areas in FMA5.

		Habitat Class (Area in hectares)		
Region	**Province**	**Mangrove Forest**	**Coral Reef**	**Seagrass**
MIMAROPA	Occidental Mindoro	1,5941	17,928.38	5,075.60
	Palawan	63,821	1,020,0004	
Region 6	Antique[2]	621.9339	4,582.512	1,507.83
	Buruanga, Aklan[3]	6	49	8
BARMM	Mapun, Aklan[5]	~447	~1,679	~1,390

~Approximately

The total approximate area cover of locally managed MPA is 230,830.32 ha., while the total NIPAS area inside municipal water covers 349, 655.54 ha., which together comprise 8.52 % of 6,809,684.26 hectares of the total municipal water within the FMA.

In addition, there are NIPAS areas situated beyond municipal waters (355,787.5 ha.) and inland waters (21,908.60 ha.). The total NIPAS area is about 727,351.68 ha. which includes Tubbataha Reef Natural Park, Apo Reef Natural Park and Puerto Princesa Subterranean River Natural Park.

Overall, there are 958,182 hectares of total protected area within FMA 5, comprising 1.97% of the whole FMA 5.

Table 3. Protected areas in FMA 5.

Classification	Area in hectares
LGU-managed marine protected area	230,830.32
NIPAS areas within municipal waters	349,655.58
NIPAS areas beyond municipal waters	355,787.50
NIPAS area in inland waters	21,908.60
Total protected areas within FMA 5	958,182.00

There is more than 112,507 registered fisherfolk in FMA 5. The province of Palawan with the highest number of registered fisherfolk with 54% or about 86,702 registered fisherfolk, this was followed by the province of Antique contributing 28% with about 44,649 registered fisherfolk, the province of Occidental Mindoro (15%) with a total of 24,343 registered fisherfolk. Meanwhile, Aklan (1%) and Tawi-Tawi (2%) with 1,703 and 2,423 registered fishers, respectively.

Table 4. Summary of Fisherfolk per Province in FMA 5.

LGU	Male	Female	Total Number of Fisherfolk
Buruanga, Aklan	1,441	397	1,838
Mapun, Tawi-Tawi	1,428	34	1,462
Antique	28, 486	16, 163	44,649
Occidental Mindoro	14,932	7,111	22,043
Palawan	47,896	27,996	79,304
TOTAL	**105,061**	**53,933**	**158,994**

Table 5. Commercial Fishing Vessels registered in FMA 5.

Province/ Homeport	Registered Commercial Fishing Vessel Size			Total
	Small Scale	Medium Scale	Large Scale	
Buruanga, Aklan				
Mapun, Tawi-tawi				
Antique				
Occidental Mindoro	36	18	54	184
Palawan	89	24	0	113

Issues and Threats

During stakeholders' planning and convergence meetings, several major fisheries issues and threats were identified as existing within the FMA level, including:

Table 6. Priority issues and problems

Priority Issue and Problems
1. Habitat degradation
2. Overfishing
3. Weak compliance with existing fishery laws rules and regulations, which resulted in the prevalence of IUU fishing
4. Decreasing income due to low fish catch; Lack of livelihood support and diversification
5. Weak governance arrangements
6. Low capacity for fisheries management

Habitat degradation occurs when there is a decline in the original condition or state of an ecosystem wherein it could result in less suitability or incapability to support life. Two major causes in FMA 5 were identified, natural phenomena and anthropogenic activities. Natural phenomena are typhoons, storm surges, and earthquakes that are beyond human control, while anthropogenic activities are environmental changes caused or influenced by people, either directly or indirectly. During the planning workshop, anthropogenic activities presented are:

1. Quarrying;
2. Mining;
3. Reclamation;
4. Unsustainable fishing practices (blast fishing and cyanide fishing);
5. Improper waste disposal (agricultural waste and domestic waste);
6. Oil spill incidence;
7. Cutting and conversion of mangrove areas for government project;
8. Anchorage in coral areas due to tourism activities;
9. Unregulated tourism activities, and
10. Illegal settlement in coastal areas

Moreover, the stakeholders present during the workshop agreed that climate change is a driving force that worsens habitat degradation. Climate change is known to result in increased sea surface temperature, ocean acidification and other changes that adversely affect marine life. The solution to some of the above-mentioned root causes is beyond the authority of FMA 5, however, the FMA Plan can monitor the changes and impacts and to raise awareness among authorities and communities for them to initiate adaptive measures.

Overfishing is defined as the removal of a fish species from a body of water at a rate that the species cannot replenish, resulting in the species becoming underpopulated or extirpated in that area (Source: Science Direct). Fisheries production in FMA 5 has been declining, particularly for the priority stocks of roundscads and tuna. The assessment conducted by BFAR- National Stock Assessment Program observed a relatively high exploitation rates (>50% E, NSAP) and a declining trend (13% downtrend from 2003-2013, PSA) in catch of top species (e.g. roundscads, tuna and tuna-like species) implies that major fishing grounds within FMA 5 are overfished. This is attributed to decades of overfishing and other unsustainable fishing practices.

According to PSA data, Palawan contributes more than 90% of roundscads landed in Navotas Fish Port. Studies show that roundscad stocks from FMA 5 are overexploited, based on several reference points:

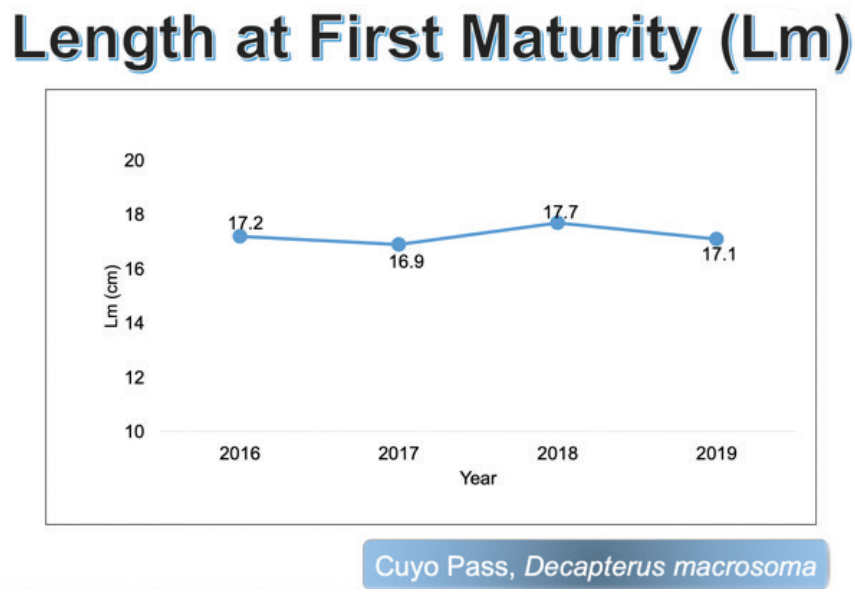


Figure 8. The size when roundscads *(Decapterus macrosoma)* first mature and reproduce averages at 17.2 cm, which is smaller than the published Lm of 19 cm for the species.

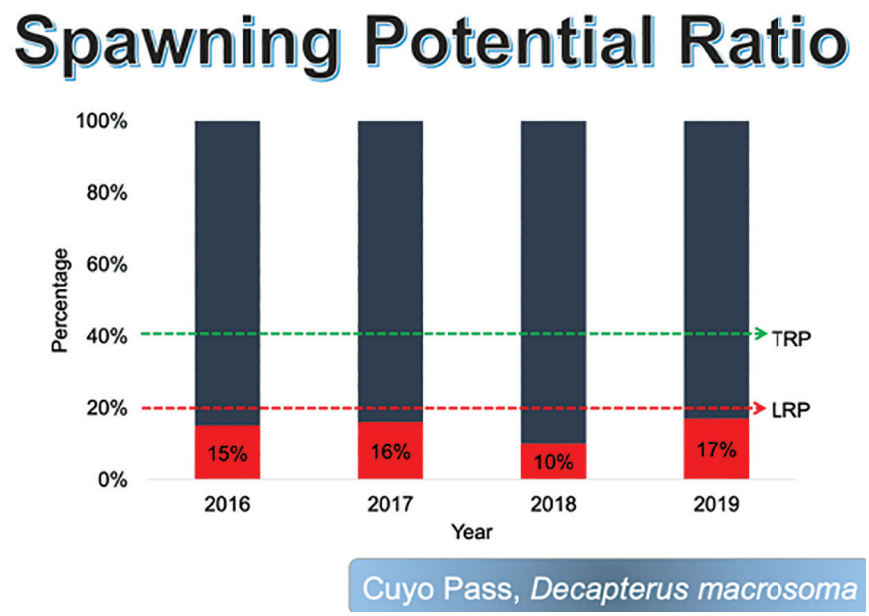
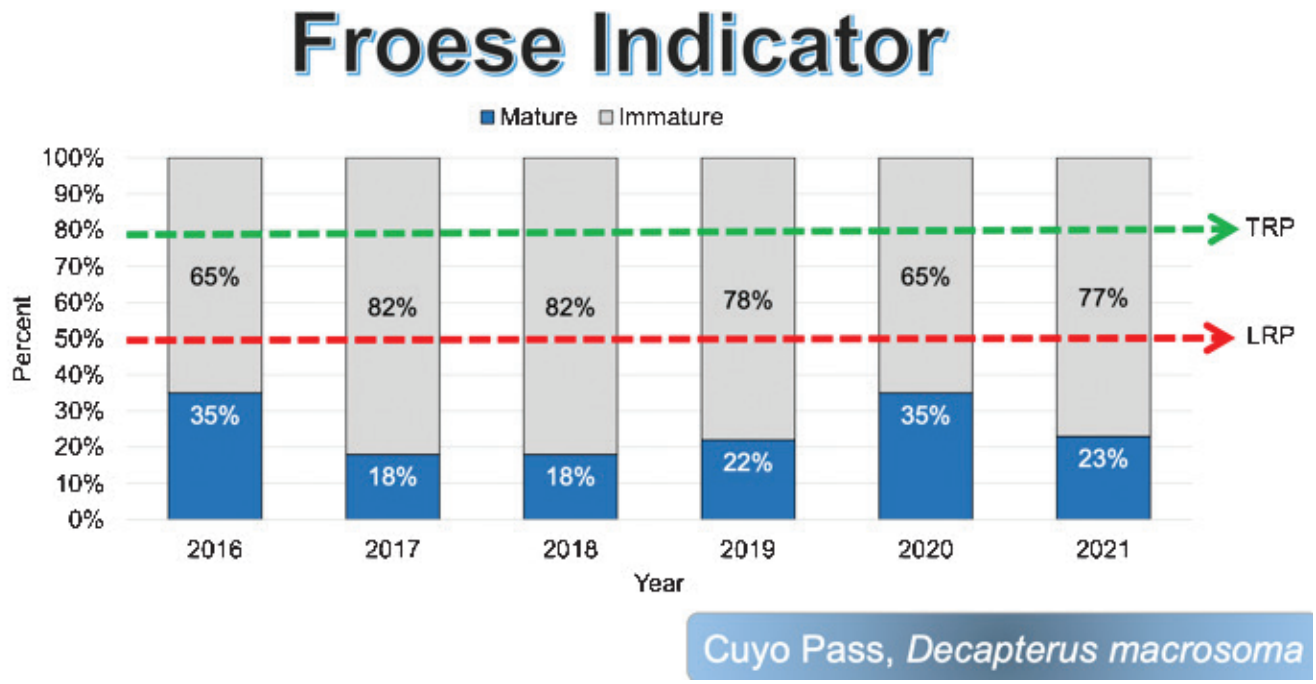


Figure 9. There are fewer reproducing individuals in the population (17%) than the minimum required to sustain the stock (20% at a minimum, and 40% ideal).

Figure 10. The catch is also composed mostly of juveniles (only 23% mature) as compared to the minimum (50%) and ideal (80%) proportion of mature individuals.



Other major fish stocks in FMA 5 are similarly overexploited, as shown by the same performance indicators and the respective reference points.

By far, the major cause of overfishing is ***illegal, unreported and unregulated (IUU) fishing*** practices. Initial consultations on the major types of IUU fishing in FMA 5 show the following results in each of the identified sub-areas:

Table 7. Major IUU fishing in the roundscad fisheries management area.

	Coron	Culion	Linapacan	Busuanga	Agu-taya	Cuyo	Araceli	Magsay-say	Cagayan-cillo	Antique	Buruanga
Round-scad Fisheries Manage-ment Area	Bagnet	Blast Fishing	Blast Fishing	Blast Fishing	NO DATA					Use of fine meshed nets	Poison fishing
	Use of fine meshed nets	Fishing with Air com-pressor	Purse seine	Poison fishing						CFV in Municipal Waters	Unregistered municipal fishing boat
	Fishing with Air com-pressor	Cutting of man-groves	Lintigan use of com-pressor	Fishing with Air Com-pressor						Unregistered municipal fishing boat	CFV in Municipal Waters

Table 8. Major IUU fishing in the Mindoro Strait.

	Mamburao	Looc	Lubang	Sablayan	Palauan	Sta. Cruz	Coron	Culion	Linapacan	Busuanga
Mindoro Strait	Unregis-tered municipal fishing boat	NO DATA	Use of Active Gear	Ring Net	CFV in Municipal Waters	Use of fine meshed nets	Bagnet	Blast Fishing	Blast Fishing	Blast Fishing
	Use of fine meshed nets		Fishing with Air Com-pressor	Bagnet	Unregis-tered municipal fishing boat	Use of Active Gear	Use of fine meshed nets	Fishing with Air Com-pressor	Purse Seine	Poison fishing
	CFV in Municipal Waters		Blast Fishing	NO DATA	Fishing with Air Com-pressor	Batingting /Fishing inside MPA	Fishing with Air Com-pressor	Cutting of man-groves	Lintigan use of com-pressor	Fishing with Air Com-pressor

Table 9. Major IUU fishing in the West Philippine Sea.

	BALABAC	RIZAL	QUEZON	ABORLAN	SAN VICENTE	TAYTAY	EL NIDO	PUERTO PRINCESA CITY	CULION	LINAPACAN	BUSUANGA	KIG
WPS	Blast Fishing	Cutting of man-groves	Kulong/ Ring Net	Modified Danish seine	Talakop (Small) Com-mercial Fishing Method)	Blast Fishing	Poison Fishing	Unauthorize Fishing activities (illegal struc-tures and inlicensed vessel	Blast Fishing	Blast Fishing	Blast Fishing	Poaching
	Poison Fishing	Blast Fishing	Poison Fishing	Fishing with Air Com-pressor	Spare Fishing inside MPA	Hulbot-hulbot Danish seine	Lintigan/ Pa-aling (Modified muro-ami)	Cutting of man-groves	Fishing with Air Com-pressor	Purse Seine	Poison Fishing	Blast Fishing
	Selling of Blast Caps	Poison Fishing	Blast Fishing	Kulong/ Ring Net	Beach Seine	Bagnet	Blast Fishing	Use of prohibited gears in municipal waters	Cutting of man-groves	Lintigan use of com-pressor	Fishing with Air Com-pressor	Poison Fishing

Table 10. Major IUU fishing in the Sulu Sea

–	BATARAZA	BROOKES POINT	S. ESPAÑOLA	NARRA	ABORLAN	PUERTO PRINCESA CITY	ROXAS	DUMARAN	TAYTAY	CORON	MAPUN	BALABAC
Sulu Sea	Selling of Cyanide	Commer-cial Fishing in Municipal Water (Likom, Lintig)	Blast Fishing	Blast Fishing	Modified Danish seine	Unautho-rize Fishing activities (illegal struc-tures and inlicensed vessel	Timbog	Poison Fishing	Blast Fishing	Bagnet	NO DATA	Blast Fishing
	Blast Fishing	Fishing with Air Compres-sor	Use of Fine Messed Nets	Poison Fishing	Fishing with Air Compres-sor	Cutting of man-groves	Poison Fishing	Blast Fishing	Hulbot-hulbot Danish seine	3 ply		Poison Fishing
	Hulbot-hulbot Danish seine	Blast Fishing	Fishing with Air Com-pressor	Encroach-ment of Commercial Fishing Vessel	Ring Net	Use of prohibited gears in municipal waters	Electro-fishing	Fishing with Air Com-pressor	Bagnet	Fishing with Air Com-pressor		Selling of Blasting Caps

If the occurrence of overfishing (prevalence of IUU fishing and fishing overcapacity) became incessant, it may result in an unsustainable and/or depleting fishery resource that would greatly affect the fishery industry and fishery-dependent livelihoods/communities. Relevant conservation and management efforts containing proactive measures in the context of an ecosystem-based approach to fishery management were formulated to efficiently address those persisting issues that continuously undermine the sustainability of fisheries.

For effective restoration of stocks, some notable government initiatives including the Conservation and Management Plan of Roundscads for Northeastern Palawan and the Tuna Fisheries Management Plan for Mindoro Strait were implemented in order to sustainably manage the resource (an increased reproductive capacity, spawning potential, and stocks recruitment), specifically at the FMA level.

There is little available specific information on the socio-economic condition of fishers in FMA 5. What is clear from existing data from PSA and the provinces is that fisherfolk are among the poorest sector in the population.

Addressing poverty among fishers is a major goal of fisheries management, but because of the complexity and enormity of the issues, the FMA Management Framework will focus on the aspect that ***links poverty to low fish catch and lack of livelihood support and diversification.***

As part of the management strategy, the FMA bodies, particularly the SAG, will be requested to conduct research to help design management actions that systematically target improvement of fishery and non-fishery-based livelihoods of marginal fisherfolk, and those adversely affected by fisheries regulations, such as closed season. For example, about 1,300 fishers have been affected by the roundscad closed season. BFAR and LGUs aim to provide alternative sources of income for the fishers affected.

Fisheries governance at the FMA level is new, but there have been decades of experiences and best practices in inter-LGU cooperation (alliances) as well as in managing NIPAS protected areas and local MPAs. The FMA bodies will help catalyze the revival of alliances at the FMA sub-area level, which will then serve as foundation for the FMA-level management. This will require the revival/ strengthening of existing alliances.

Members of the FMA 5 Management Body led by BFAR RD Manny Asis and Mayor Mary Jean N. Te make the "Hi 5 sa FMA 5" sign to signal approval of the FMA 5 Framework Plan.

Table 11. Existing LGU alliances in FMA 5

Name of Alliance	Province	Purpose	Operational /Functional	Remarks
LIPASECU *(Libertad-Pandan-Sebaste-Culasi)*	Antique	Bay-wide alliance; protect/conserve; unified ordinance bound by MOA; established in 1980s	Yes	
CAMCRAME Inc.	Antique	Protect/conserve common fishing ground-Central Antique through assistance from GIZ; established in 2009/2010	No	
COASTHAVEN	Antique	Established in early 2000; Protect/conserve common fishing ground -South Sulu Sea	No	
BCCL Alliance-Fisheries/ Environment	Palawan	Protect Coron-bay; priority species: anchovies, grouper and other reef species; established in 2010 thru MOU then MOA	Yes	
SPIDERMAN Southern Palawan Initiative and Dedication for Environmental Restoration and Management (Narra, Española, Bataraza, Aborlan, Brooke's Point)	Palawan	Common policies that will be implemented on fisheries management (focus on law enforcement); established in 2019 thru MOA; with assistance from SMARTSEAS	No	
CMN - Calamianes Group of Island MPA Network (Coron-Culion-Busuanga-Linapacan)	Palawan	Created to strengthen MPAs in CIG; Protect source and sink of fish larvae; established in 2009	Yes	
NPMPAN Northeastern Palawan Marine Protected Area Network *(Araceli, Dumaran, El Nido, Linapacan, Roxas, and Taytay)*	Palawan	Created to strengthen MPAs in Northeastern Palawan; Protect SPAGS; established in 2017	Yes	
BCCL-Health (Busuanga-Coron-Culion-Linapacan)	Palawan	Created to provide health services to CIG	Yes	

Summary of Goals and Objectives

Table 12

Goals	Objectives
1. Improved fish catch rate within sustainable limits	a) Catch of round scads (Decapterus spp) and tuna trending towards target reference points by 2027, consistent with approved management plans;
	b) Establish reference points and stock status of other priority species by 2023;
	c) Adopt management measures for grouper and lobster by 2024;
	d) Reduce catching of immature fish sizes by 10% in 5 years; and
	e) Boost aquaculture production by 20% for 5 years to augment the demand for food fish and lessen pressure in capture fisheries.
2. Systematically conserved coastal habitats.	a) Assist LGUs/ Alliances to establish MPA Networks covering 15% of municipal waters based on systematic conservation planning by 2027;
	b) Improved coordinated protection of critical habitat by year 2024; and
	c) By 2023, Database of critical habitat in FMA 5 is established, well-maintained and updated.
3. Improved economic security, resilience and welfare of coastal communities;	a) 25% increased income of at least 25% registered fisherfolk living below poverty threshold in FMA 5 by 2027;
	b) Increase awareness & advocacy of stakeholders by year 2027.
4. Mainstream equitable access to economic opportunities; and	a) By 2027, a financial literacy program for fisherfolk will be established and sustained.
	b) By 2027 at least 25% of registered fisherfolk received livelihood support;
	c) By 2027 at least 5 types of fishing livelihood support provided to 25% of registered fisherfolk;
5. Reduced FMA - wide reported and or actual occurrence of Illegal, Unreported, and Unregulated Fishing (IUUF) activities.	a) To strengthen collaboration of national government agencies and all LGUs concerned on fishery law enforcement by 2023;
	b) Strengthen functionality and effectiveness of bantay-dagats through IATF-IUU fishing by 2024
	c) Increase the number of LGUs with reviewed & updated MFO (based on R.A 10654) by 80% by year 2025 and 100% by 2027.
	d) Consult and adopt voluntary compliance principles and plans for CFVs by 2024
	e) Establish coordination mechanisms with national agencies to address poaching by foreign fishing fleets by 2023
6. Established effective institutions for fisheries management	a) By 2025, establish and/or strengthen LGU alliances as platforms for cooperation in implementation of management actions.
	b) Prepare a Joint Administrative Order between BFAR, DENR, and DILG for Local Government Units to adopt FMA Framework Plan for all coastal communities/cities within FMA 5.
	c) Allocate 100% increase of LGUs budget for fisheries management by 2024;
	d) Enhance fisheries program, activities, and project assessment and monitoring system by 2024
	e) Strengthening of Fisheries Management Area 5 - Bodies (Management Board, Technical Working Group, Scientific Advisory Group, and Secretariat by 2023.
	f) Create and maintain fisheries database system for FMA 5 by year 2025

MANAGEMENT ACTIONS

GOAL 1:
Improved fish catch rate within sustainable limits

For purposes of focusing management actions on specific stocks, FMA5 is subdivided into 4 areas, each with a priority stock focus. The roundscad conservation area in Northeastern Palawan will prioritize the management of galunggong (roundscad), especially its spawning grounds and nursery areas. Roundscads are also very important in Sulu Sea, together with other small pelagics. In Mindoro Strait, the priority stocks are the tuna species. Finally, in the West Philippine Sea, the management focus will be on other small pelagics xxx

Palawan contributes about 22% of the galunggong catch nationwide. In 2015, the DA-DILG Joint Administrative Order No. 1 implemented a closed season for galunggong in Northern Palawan from November 1 to January 31, initiating fisheries management in the area. As a result of this initiative, galunggong production in Palawan increased by 22%, from 7,507 metric tons in 2016 to 9,185 metric tons in 2021 (PSA).

The increase in galunggong production in Northern Palawan following the establishment of a closed season has been accompanied by a rise in the percentage of juvenile round scads catch, from 65% in 2016 to 78% in 2019. While the closed season has led to an overall increase in production, the predominance of juvenile catch represents a lost opportunity for increased economic value and sustainability due to the possibility of roundscad juvenile when fully mature can generate up to five (5) times greater value.

To achieve sustainability, management actions should focus on the implementation of policies and or programs that will limit the catching of the juveniles. The management actions are designed to establish a science-based approach to limiting the catch of juveniles while minimizing further adverse economic impact of the closed season. While the closed season for roundscads is implemented only in Northeastern Palawan, overall management of the stock will entail assessment and monitoring of its entire range including the Sulu Sea. Based on the results of the studies, DA-DILG JAO 1 may be amended to achieve sustainable management of roundscads.

In Occidental Mindoro, the most important stocks are the tunas. With support from WWF-Philippines, BFAR launched the Mindoro Strait Tuna Fisheries Management Plan last May 2, 2019 in close collaboration with DTI, BFAR, and the Provincial Government. Since 2016, WWF-Philippines' Sustainable Tuna Partnership (STP) team has been working on the development of the Plan with the endorsement of the Integrated Fisheries and Aquatic Resources Management Councils (IFARMCs) and aligning with the Mindoro Occidental Tuna Roadmap. Regional studies and consultations between local fishers, tuna traders, local entities, and relevant concerned agencies and authorities eventually led to the completion of the plan in 2019.

Through the STP project, WWF-Philippines helped fishers secure certification from the Marine Stewardship Council (MSC) in a historic first for handline fishers in the Philippines. MSC Certification recognizes fisheries that are working towards environmental sustainability while opening small-scale fishers to wider markets. Since tuna species are migratory, the

management of tuna stocks in FMA5 will be coordinated with FMA6. It will also have to be consistent with the international regulations that the Philippines has agreed to, such as those of the Western and Central Pacific Fisheries Commission (WCPFC).

In addition to roundscad and tuna, the FMA SAG shall also conduct studies to assess the status of other commercially important species. Based on these studies, the Management Board shall adopt reference points and harvest control measures, and propose appropriate management measures at the LGU and FMA levels. The FMA MB shall also recommend local management measures for lobsters and groupers, based on the assessment of the status of the stocks.

Table 13. Status of stocks of other commercially-important species

Species	Local Name	Performance indicator	
		Froese indicator (*catching of juveniles)	E-Value (*level of exploitation)
Sardinella lemuru	tamban	fail	fail
Decapterus macrosoma	galunggong lalaki	fail	fail
Nemipterus hexodon	bisugo	fail	fail
Eublekeeria splandens	sapsap lawayan	fail	fail
Atule mate	kalapato	fail	fail
Selar crumenophthalmus	matambaka	fail	fail
Saurida tumbil	karaho	fail	fail
Decapterus macarellus	galunggong laot	fail	fail
Auxis thazard	tulingan	fail	fail
Sardinella gibbosa	tamban	fail	fail
Decapterus kurroides	galunggong pula	fail	fail
Ambligaster sirm	turay	fail	fail
Auxis rochei	tulingan	fail	fail
Decapterus tabl	galunggong pula	fail	fail
Decapterus russelli	galunggong babae	fail	fail
Lethrinus lentjan	kanuping	fail	fail
Selaroides leptolepis	salay ginto	fail	fail
Nemipterus furcosus	bisugo	fail	fail
Rastrelliger kanagurta	buraw/ alumahan	fail	fail
Portunus pelagicus	alimasag/ tarawis	fail	fail

In consideration of the possible reduction in capture fisheries production due to regulatory measures, the FMA MB shall recommend measures to boost aquaculture production to ensure food security especially during closed season.

GOAL 2:
Systematically conserved coastal habitats

The area established as marine protected areas in FMA5 is 958,182 hectares, comprising about two percent (2%) of the total area. This includes locally managed MPA of 230,830.32 ha., while the total NIPAS area inside municipal water covers 349, 655.54 ha., which together comprise 8.52 % of 6,809,684.26 hectares of the total municipal water within the FMA. This is still significantly short of the recommended 15% under the Fisheries Code.

In addition, there are NIPAS areas situated beyond municipal waters (355,787.5 ha.) and inland waters (21,908.60 ha.). The total NIPAS area is about 727,351.68 hectares, which includes the Tubbataha Reef Natural Park, Apo Reef Natural Park and Puerto Princesa Subterranean River Natural Park, among others.

Palawan is considered the last frontier for biodiversity conservation. In 1981, the entire province of Palawan was declared as mangrove swamp forest reserve under Proclamation No. 2152. In 1992, Congress passed the Strategic Environmental Plan for Palawan Act (R.A. No. 7611) that established environmentally critical areas network (ECAN) zones, including coastal and marine areas. There are at least 115 MPAs in Palawan (MSN Database).

In the Calamianes, the four municipalities of Busuanga, Coron, Culion and Linapacan created the Calamianes MPA Network, which integrates the various MPAs established in the area. With support from the USAID Fish Right Program, the MPAs were identified through a process of Systematic Conservation Planning – a science-based and participatory method of deciding the location, size and regulation of MPAs. Each of the MPAs are formally established through ordinances managed by local councils. A number of these MPAs are managed by women's groups known as "women-managed areas (WMA)", many of which are from the indigenous Tagbanua people.

Tagbanua women manage the MPA in Calauit that is the habitat of "cachipay"- an important shellfish.

The Balisungan MPA protects the critical mangrove habitats in Coron.

The provinces of Antique and Mindoro Occidental also have a long history of establishment of MPAs, many of which were initiated by NGOs in partnership with local communities. In Antique, Rare Philippines' Fish Forever Program assists local governments update their fisheries ordinances, MPA management plans and build community capacity for communication campaigns, compliance promotion and livelihood. WWF-Philippines has similar programs supporting local fisherfolk communities in Mindoro Occidental.

These examples of collaboration among community, local governments and civil society organizations are ripe for replication and expansion in other parts of FMA5.

LGUs have primary jurisdiction in managing their coastal areas and municipal waters. The major causes of loss and degradation of coastal habitats are unregulated development activities in the coastal areas. During the stakeholder consultations, participants identified the following major threats:

- Siltation and sedimentation
- Coastal Erosion
- Pollution
- Quarry, Mining and Reclamation
- Cutting of mangroves and Illegal settlement in mangrove areas
- Unregulated expansion of tourism activity

BFAR, LGUs anf local communities regularly conduct costal clean-up activities.

The FMA Management Framework aims to provide technical support to LGUs so that they may be able to perform their function of protecting the critical habitats in their jurisdiction. The key management actions include:

1. Capability-building for LGUs to establish science-based MPA networks through systematic conservation planning to achieve the target of 15% of municipal waters;
2. Improving coordination among LGUs and national agencies to regulate development activities in critical coastal habitats;
3. Establish database for monitoring and evaluation of habitats and their management effectiveness.

GOAL 3:
Improved economic security, resilience and welfare of coastal communities

To address the problem of low income from fisheries, the strategy to achieve the goal is two-pronged:

1. Expand livelihood/income sources of fishers without increasing fishing pressure on the overexploited stocks;
2. Target fisherfolks that are adversely affected by fishing regulations, and those that are marginalized, such as women and indigenous peoples.

A number of organizations including USAID Fish Right and WWF-Philippines have conducted value-chain studies that point to opportunities for increasing the share of fisherfolk. These opportunities include post-harvest processing and directly linking fishers-suppliers to consumers (e.g. through direct selling online). The Sustainable Seafood Partnership has also demonstrated the feasibility of responsible seafood sourcing where fishers practicing sustainable fisheries are directly linked to buyers who specifically require sustainably caught products. The MSC certification for yellowfin tuna facilitated by WWF-Philippines also serves the same purpose of providing higher value to the fisheries products produced and sold by responsible fishers.

Women play a vital role in fisheries, even though their contributions are often overlooked. The livelihood support component of the FMA Framework Plan will target women's groups for developing conservation enterprises, while at the same time elevating the role and participation of women in decision-making in fisheries management.

These are examples of livelihood approaches that can complement the existing programs of BFAR. The overall goal is to be able to raise the income of 25% of registered fisherfolk living in poverty.

Awarding of fishing boat with complete accessories at Pag-asa Island, Kalayaan, Palawan.

GOAL 4:
Mainstream equitable access to economic opportunities

The benefits derived from the utilization of fisheries resources are not always equitably distributed. For example, IUU fishers take away catch and destroy potential catches that would have gone to legitimate fishers. The distribution of benefits across the value-chain are more often favorable to the people who provide the capital, leaving little value to the fishers who do not have the resources to finance their operations. In providing livelihood opportunities to fishers, the programs have to ensure equitable sharing of benefits. This is the rationale behind policies such as reserving the municipal waters to small fishers.

Equity considerations shall guide the provision of livelihood support (e.g. fishing gears and paraphernalia, post-harvest equipment and aquaculture input assistance) coming from DA, BFAR, NFRDI, DTI, DOLE, DSWD, DOST, other NGAs, NGOs and LGUs, and in the design of convergence livelihood programs targeting fisherfolk.

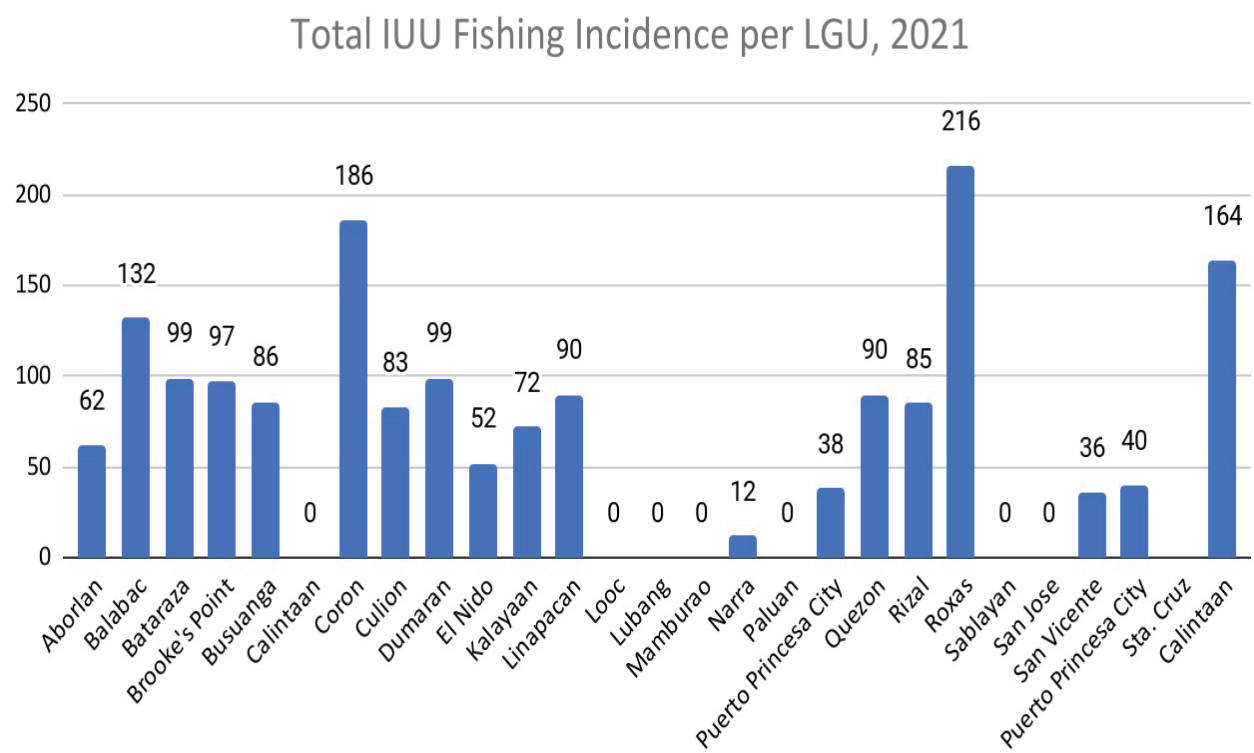
Awarding of Fish Aggregating Device to a fisherfolk Association in Rizal, Palawan.

GOAL 5:
Reduced FMA-wide reported and or actual occurrence of IUU Fishing activities

With the use of IUU fishing Index and Threat Assessment Tool (IFIT), the prevalence of IUU fishing, and the vulnerability and response of the LGU to IUU fishing can be estimated more accurately and systematically. IFIT assessment was conducted in Palawan Province in 2021 (see data below), and is ongoing for the rest of FMA 5.

Initial data from Palawan for IUU fishing assessment done in 2021 shows the following:

Figure 11. Total IUU Fishing Incidence per LGU, 2021



The top LGUs with the most IUU fishing incidence are Roxas, Coron, Taytay, Bataraza and Dumaran which account for 52% of all IUU fishing incidence for the assessment period. It is noted that Kalayaan Island which account for the most IUU fishing yield only had 72 IUU fishing incidences for 2021. (Figure 8)

BFAR works with LGUs to combat IUU fishing, such as the intrusion of commercial fishing operations in municipal waters.

IFIT also allows self-rating of the ability of the LGU to respond to IUU fishing incidences. On a scale of 1-10, corresponding to enforcement ability questions, LGUs in Palawan rated their own abilities. Initial findings show that:

- 84% LGUs have an operational enforcement team. Of these, 79% have a team leader, assistant team leader, and 2 other personnel. 63% of LGUs reported all members of the Enforcement Team had basic training and/or retraining on coastal law enforcement but only 25% of LGU enforcement teams are fully capacitated on the enforcement loop and actively adjusting strategies based on data analysis.
- 74% of LGUs have an operational plan targeting specific types of illegal fishing with LGU Quezon notably having an operational plan without an operational enforcement team. 74% of LGUs have access to a land-based vehicle and a patrol boat. Additionally, 69% of LGUs file criminal cases against those apprehended.
- 52% of LGUs enforcement team conducts seaborne patrol operations, market-denial operations, fish landing inspections, port-side inspections, and checkpoints. However, only Aborlan reported having enough assets needed for the activity.
- 16% of LGUs reported having enough assets (personnel, land-based, and floating) to cover patrolling the entire municipal waters, all fish landing areas, docking areas, and marketplaces. However, Linapacan and Culion reported not undertaking patrol operations despite having sufficient personnel and land-based/ floating assets.

The priority management actions for the FMA are:

- To strengthen collaboration of national government agencies and all LGUs concerned on fishery law enforcement by 2023
- Strengthen functionality and effectiveness of bantay-dagats through IATF-IUU fishing by 2024
- Increase the number of LGUs with reviewed & updated MFO (based on R.A 10654) by 80% by year 2025 and 100% by 2027.
- Consult and adopt voluntary compliance principles and plans for CFVs by 2024
- Establish coordination mechanisms with national agencies to address poaching by foreign fishing fleets by 2023

GOAL 6:
Established effective institutions for fisheries management

The establishment of the FMA is a paradigm shift in management of fisheries. It requires the re-orientation of personnel and realignment of resources. The first task of institutional development to create functional FMA bodies - Management Board, Scientific Advisory Group, Technical Working Groups, Secretariat – with the capacity to perform their functions and the skills to engage in science-based, participatory management. With support from the BFAR Central Office, the FMA Secretariat will facilitate capacity-building of the FMA bodies as they perform their functions.

The development and implementation of the FMA Framework Plan is anchored on the strong participation of LGUs. Since the FMA-level bodies are limited in resources to conduct field-level implementation of activities, implementation of the management interventions will rely mainly on LGU partners in their respective municipal jurisdictions. The FMA will prioritize working with LGU alliances to align with the sub-area management approach, beginning with the strengthening and/or reactivation of existing LGU alliances.

BFAR will lead cooperation and coordination with national agencies, together with:

- DILG, DENR, PCSD and DOT on coastal development activities that have potential adverse impacts on critical habitats
- Uniformed services (PCG, Navy, PNP-Maritime Group for IUU fishing reduction
- DSWD, DOLE, DTI for conservation enterprises development and livelihood support for fishers adversely affected by fisheries regulations.

In addition, partnerships with civil society organizations and academic institutions will be strengthened to support consensus-building on science-based fisheries management measures.

Priority interventions for the FMA include:

a) By 2025, establish and/or strengthen LGU alliances as platforms for cooperation in implementation of management actions.
b) Prepare a Joint Administrative Order between BFAR, DENR, and DILG for Local Government Units to adopt FMA Framework Plan for all coastal communities/cities within FMA 5.
c) Allocate 100% increase of LGUs budget for fisheries management by 2024;
d) Enhance fisheries program, activities, and project assessment and monitoring system by 2024
e) Strengthening of Fisheries Management Area 5 - Bodies (Management Board, Technical Working Group, Scientific Advisory Group, and Secretariat by 2023.
f) Create and maintain fisheries database system for FMA 5 by year 2025


PAGSARAYEN

Summary Table of Management Actions

Table 14

Goals	Objectives	Management Actions (Indicative Activities)	Year					Indicators and Benchmarks
			I	II	III	IV	V	
1. Improved fish catch rate within sustainable limits	a) Catch of round scads (Decapterus spp) and tuna trending towards target reference points by 2027, consistent with approved management plans;	I. Conduct research on the status of the roundscad stocks, including:						• length at first maturity (Lm)
		a. Gonadal maturity determination of Roundscad (Decapterus spp.) in MIMAROPA, Western Visayas (FMA 5 side) and Navotas Fishport Complex;	✓	✓	✓	✓	✓	• percentage of mature catch (Froese)
		b. Food and feeding habits of Roundscad (Decapterus spp.) in FMA 5;			✓			• trend for spawning potential ratio
		c. Seasonal and Geographical Distribution of Fish Eggs and Larvae of Roundscad (Decapterus spp.)	✓	✓	✓	✓	✓	
		d. Stock assessment, including monitoring of landings in Navotas Fish Port		✓	✓	✓	✓	
		e. Migratory patterns throughout the life cycle.			✓	✓	✓	
		II. Review and update DA-DILG JAO No. 1, s. 2015 on the closed season for roundscads, and enhance its implementation, including:						Targets: • 5% increase in catch rates • Increasing trend for length at first maturity • Increasing percentage of mature catch towards 50% (LRP)
		a. Conduct of annual perception survey (Anecdotal information) on increase and decrease of catch and level of awareness of the JAO No. 1, s. 2015;	✓	✓	✓	✓	✓	
		b. Intensify IEC campaign and seaborne patrol operation during conduct closed fishing season for roundscads;	✓	✓	✓	✓	✓	

		c. Conduct SAG and TWG meetings to review and finalize the established Performance Indicators, Reference Points, and Harvest Control Rules for Roundscad and Tunalike species, and	✓	✓	✓	✓	✓	
		d. Adoption and implementation of Municipal Catch Document, and			✓	✓	✓	
		e. Assessment on Socio-Economic Impact of Roundscad Closed Fishing Season in Northern Palawan.	✓	✓	✓	✓	✓	
		III. Review, update and adopt the Conservation and Management Plan of Roundscad in Northern Palawan, based on the results of research	✓	✓	✓	✓	✓	
		IV. Conduct studies on tuna stocks, including:						
		a. Tuna and tuna-like stock assessment in FMA 5;	✓	✓	✓	✓	✓	
		b. Consolidate and analyze FMA 5 and 6 Tuna and Tuna-like Catch and Effort data and Length frequency, and	✓	✓	✓	✓	✓	
		c. Traceability System for Tuna and Tuna-like species.			✓	✓	✓	
		V. Adoption of harvest control measures for roundscads and tuna, based on scientific research and consultations with stakeholders.	✓	✓	✓	✓	✓	
		VI. Implementation of harvest control measures for roundscads and tuna, based on scientific research and consultations with stakeholders.	✓	✓	✓	✓	✓	

Goals	Objectives	Management Actions (Indicative Activities)	Year					Indicators and Benchmarks
			I	II	III	IV	V	
	b) Adopt management measures for grouper and lobster (Panulirus) by 2024;	I. Initiate the consolidation of available data for the development of management measures for grouper and lobster; II. Initiate meeting of relevant stakeholders group (Live fish traders, Academe, NGAs, NGOs and other); III. Development of a technical working group/ committee that will focus on regulation, research and policy development; IV. Scientific Advisory Group (SAG) convergence meeting to draft Harvest Control Measure (HCM) based on best available data; V. FMA 5 Stakeholders consultation meeting; VI. Management Board (MB) to adopt and institutionalize the management measures for Grouper and Lobster within FMA 5, and VII. Publication of annual briefer for the status of Grouper and Lobsters.	✓ ✓	 ✓ ✓	 ✓	 ✓ ✓		
	c) Establish reference points and update the status of other priority species by 2023;	I. Scientific Advisory Group (SAG) convergence meeting to set a benchmark used to judge the status of the stocks as measured by the Performance Indicators, and II. Management Board (MB) to adopt reference points.	✓ ✓					• Number of fish species with established reference points;
	d) Reduce catching immature fish sizes by 10% in 5 years; and	I. SAG to review and adopt the results of the NSAP Study on Reference Points and Performance Indicators of priority species and draft Harvest Control Measures (HCM) for recommendation to MB;	✓					• Percentage of mature catch (Froese)

		II. MB to adopt HCM and formulate a policy to reduce the catching of immature fish; III. Conduct capacity building on Right-sizing; IV. Intensify enforcement of Section 93 of RA 10654 and Fisheries Administrative Order 155 and 155-1, and V. Intensification of information, education and communication campaign on right-sizing	✓ ✓ ✓	 ✓ ✓ ✓	 ✓ ✓ ✓	 ✓ ✓ ✓	 ✓	Target: • Increasing percentage of mature catch (Froese) towards 50% (LRP) for priority stocks
	e) Boost aquaculture production by 20% for 5 years to augment the demand for food fish and lessen pressure in capture fisheries.	I. Assistance to fisherfolk/ fisherfolk organizations willing to shift to aquaculture/ mariculture, including: a. Capability building and provision of techno-demo for fisherfolk organizations and cooperatives; b. Provision of input materials for aquaculture (fingerlings, feeds, and HDPE cage..etc); and c. Provision of aquaponics materials and training for housewives of fishermen. II. Capability building for LGU Fisheries Technicians in modern aquaculture techniques, to enable LGU to assist fisherfolk	 ✓ ✓ ✓	 ✓ ✓ ✓ ✓	 ✓ ✓ ✓ ✓	 ✓ ✓ ✓ ✓	 ✓ ✓ ✓ ✓	
2. Systematically conserved coastal habitats.	a) Assist LGUs/ Alliances to establish MPA Networks covering 15% of municipal waters based on systematic conservation planning by 2027;	I. Capability Building of LGU Personnel in Resource Assessment; II. Creation of a Province-wide monitoring/ assessment team; III. Conduct of Rapid Resources Assessment of Areas feasible for the establishment of a Marine Protected Area and/or Fish Sanctuary; IV. Expanding the existing area of MPA/FS within the LGU to at least 15% of the total area of MW in consultation with the stakeholders and/or fisherfolk;	✓ ✓ ✓ 	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓	✓ ✓	• Percentage of municipal waters established as MPAs • Percentage of MPAs under improved management (based on increased MEAT scores)

Goals	Objectives	Management Actions (Indicative Activities)	Year I	II	III	IV	V	Indicators and Benchmarks
		V. Formulation of Monitoring/ Assessment Manual of Operation;		✓				• Number of women-managed areas, IP-managed areas in ancestral domains
		VI. Preparation of Work and Financial Plan of the province-wide monitoring team, and	✓	✓	✓	✓	✓	
		VII. Regular conduct of Biophysical, Effectiveness, and Socio-economic assessment.	✓	✓	✓	✓	✓	
	b) Improved coordinated protection of critical habitat by year 2024; and	I. Conduct training and capability building activities to further enhance the coordination function of different government agencies in the management of critical habitats;	✓	✓	✓			
		II. Conduct awareness-raising activities for critical habitat protection, and	✓	✓	✓	✓	✓	
		III. Creation of coordination unit re: critical habitat		✓	✓			
	c) By 2023, Database of critical habitat in FMA 5 is established, well-maintained and updated.	I. Consolidation of primary and secondary data on seagrass, coral reefs and mangroves forest within FMA 5;	✓					
		II. Validation of data gathered through habitat assessment;	✓	✓				
		III. Conduct training/ orientation on proper data consolidation, banking, storage, and workshop on the creation of databank through virtual platforms, and	✓	✓	✓	✓	✓	
		IV. Continuous updating of data.	✓					
3. Improved economic security, resilience and welfare of coastal communities.	a) 25% increased income of at least 10% registered fisherfolk living below poverty	I. Workshop in the establishment of the poverty threshold in FMA 5;		✓				• Number of fisherfolks and organizations benefiting from livelihood assistance
		II. Provision of livelihood to 10% of registered fisherfolk living below the poverty threshold;		✓	✓	✓	✓	
		III. Capacity building of beneficiaries on financial literacy;		✓	✓	✓	✓	

	threshold in FMA 5 by 2027;	IV. Development of fisherfolk cooperatives from organized fisherfolk, and V. Establishment of fisherfolk saving clubs.			✓ ✓	✓ ✓	✓ ✓	
	b) Increase awareness & advocacy of stakeholders by year 2027.	I. Signing of MOU with concerned agencies; II. Continuous conduct of Information Education; III. Communication Campaign through tri-media, and IV. Conduct of Capacity Building Training for LGU Technicians	✓	✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓	
4. Mainstream equitable access to economic opportunities	a) By 2027, a financial literacy program for fisherfolk will be established and sustained.	I. Conduct financial literacy training; II. Strengthening and activation of fisherfolk; III. organizations through vitalizing cooperative and saving clubs, and IV. Build partnership with Philippine Crop Insurance Corporation and or Social Security System etc.		✓	✓	✓	✓	• Number of fisher organizations (including women and IP organizations) with established savings clubs
	b) By 2027 at least 25% of registered fisherfolk received livelihood support;	I. Provision of livelihood support (fishing gears and paraphernalia, post-harvest equipment and aquaculture input assistance coming from DA, BFAR, NFRDI, DTI, DOLE, DSWD, DOST, other NGAs, NGOs and LGUs, and II. Creation of livelihood support group (convergence of NGA livelihood programs targeting fisherfolk).		✓ ✓	✓	✓		
5. Reduced FMA - wide reported and or actual occurrence of Illegal, Unreported, and Unregulated Fishing (IUUF) activities; and	a) To strengthen collaboration of national government agencies and all LGUs concerned on fishery law enforcement by 2023;	I. Drafting of Memorandum of Agreement/ Understanding with LGUs and mandated Law Enforcement Agencies (LEAs) on collaborative partnership as well as information, logistical and human resources sharing; II. Regular Convergence meeting with LGUs and LEAs with focus to the law enforcement planning, monitoring and operation within the municipal waters and areas of special concern. (West Philippine Sea; Mindoro Strait, Sulu Sea, Northrn Palawan);		✓	✓	✓	✓	

Goals	Objectives	Management Actions (Indicative Activities)	Year					Indicators and Benchmarks
			I	II	III	IV	V	
		III. Formulation, review, approval and adoption of fishery law enforcement operational plan for FMA - wide implementation, and		✓				• Number of women-managed areas, IP-managed areas in ancestral domains
		IV. Conduct regular FMA wide joint Fishery Law Enforcement operations together with partner LEAs.		✓	✓	✓	✓	
	b) Strengthen functionality and effectiveness of bantay-dagats through IATF-IUU fishing by 2024	I. Assistance to the LGU alliances in the formation of Bantay-Dagat IATF - IUUF;	✓	✓	✓	✓	✓	
		II. Capacity building of Bantay-Dagat volunteers through training and/or seminar in the conduct of fishery law enforcement operations as well as paralegal education;	✓	✓	✓	✓	✓	
		III. Formulation of Plan of Action (IUUF Reduction Plan) to prevent, deter and eliminate IUUF;	✓	✓	✓	✓	✓	
		IV. Fund allocation to support sea and land - based operations as well as other activities Bantay Dagat IATF -IUUF;	✓	✓	✓	✓	✓	
		V. Intensify fishery law enforcement operations identified IUUF hotspots within the FMA 5, and	✓	✓	✓	✓	✓	
		VI. Regular assessment of LGUs using the Illegal, Unreported and Unregulated Fishing (IUUF) Index and Threat Assessment Tool (IFIT).	✓	✓	✓	✓	✓	
	c) Increase the number of LGUs with reviewed & updated MFO (based on R.A 10654) by 80% by year 2025 and 100% by 2027.	I. Consolidation and Review of existing MFOs being implemented by the local government within the FMA 5.	✓	✓	✓	✓	✓	• Percentage of LGUs with updated MFOs incorporating management measures for priority stocks
		II. Coordination meeting with LGUs without updated MFOs.		✓	✓	✓	✓	
		III. Assist the LGUs in the drafting of Municipal Fishery Ordinance.	✓	✓	✓	✓	✓	
		IV. Public and stakeholders consultation prior to the legislation of the draft MFO.	✓	✓	✓	✓	✓	
		V. Review and approval of the draft Municipal Fishery Ordinance	✓	✓	✓	✓	✓	

	d) Consult and adopt voluntary compliance principles and plans for CFVs by 2024	I. Inventory of all registered and unregistered CFV operating with homeport within and outside FMA 5.	✓	✓	✓	✓	✓	
		II. Development of registration and monitoring mechanisms for CFVs fishing within FMA 5 with homeports outside FMA 5.		✓				
		III. IEC for CFV Operators/Owners.	✓	✓	✓	✓	✓	
		IV. Mobile registration of CFV.	✓	✓	✓	✓	✓	
		V. Digitalization of CFV Registration.						
		VI. Strict implementation of Certificate of Clearance (COC) issuance among operating CFVs.		✓				
	e) Establish coordination mechanisms with national agencies to address poaching by foreign fishing fleets by 2023	I. Inter - agency convergence on fishery law enforcement operation in poaching hotspot areas.	✓	✓				
		II. Joint - fishery law enforcement operations within poaching priority areas.	✓	✓	✓	✓	✓	
		III. Inter - agency fishery law enforcement operational planning to address poaching activities within identified areas of cooperation.	✓		✓		✓	
		IV. Preparation of activity reports related to the fishery law enforcement operations conducted within poaching hotspot areas.		✓		✓		
		V. Provision of technical support for systematic data collection and analysis (poaching patterns and significant hotspots)	✓	✓	✓	✓	✓	
6. Established effective institutions for fisheries management	a) By 2025, establish and/ or strengthen LGU alliances as platforms for cooperation in implementation of management actions.	I. Strengthen Existing LGU Networks and Alliances among FMA 5 LGUs thru Memorandum of Agreement/Understanding			✓			• Functional FMA MB, TWG, SAG, secretariat (based on performance evaluation by constituents/ stakeholders
		II. Regular Convergence Meeting among LGU Networks/Alliance and adoption of FMA Management Actions			✓	✓	✓	
		III. Conduct Regular Capacity Building of Alliances			✓	✓	✓	

Goals	Objectives	Management Actions (Indicative Activities)	Year					Indicators and Benchmarks
			I	II	III	IV	V	
	b) Prepare a Joint Administrative Order between BFAR, DENR, PCSD and DILG for Local Government Units to adopt FMA Framework Plan for all coastal communities/cities within FMA 5.	I. Consolidation of LGUs Annual Investment Plan and PPMP in Fisheries for 2024. II. Consolidation of LGUs AIP and PPMP in Fisheries for 2024; III. Consolidation of BFAR and other concerned agencies PPMP.		✓	✓ ✓	✓		
	c) Allocate 100% increase of LGUs budget for fisheries management by 2024 d) BFAR and other concerned NGAs to allocate and or increase budget allotment for the operationalization of FMA.	I. Consolidation of LGUs Annual Investment Plan and PPMP in Fisheries for 2024. II. Consolidation of LGUs AIP and PPMP in Fisheries for 2024; III. Consolidation of BFAR and other concerned agencies PPMP.		✓ ✓ ✓	✓ ✓ ✓	✓	✓	• Percentage increase in LGU budget for fisheries management Target: 100% increase
	e) Enhance fisheries program, activities, and project assessment and monitoring system by 2024	I. Conduct of training workshop in the development of M&E OM		✓				Target: • FMA 5 M&E Plan adopted

	f) Strengthening of Fisheries Management Area 5 - Bodies (Management Board, Technical Working Group, Scientific Advisory Group, and Secretariat by 2023.	I. Capacity building for FMA Bodies	✓	✓	✓	✓	✓	Target: • Orientation-Training for FMA MB, SAG, TWG and Secretariat on priority topics • Skills training for TWG and Secretariat on selected priority topics
	g) Create and maintain fisheries database system for FMA 5 by year 2025	I. Consolidation and verification of data collected II. Conduct training/ orientation on proper data consolidation, banking, storage and workshop on the creation of databank thru: virtual platforms III. Creation of online data bank	✓ ✓	✓ ✓	 ✓			Target: • Establishment of FMA 5 database

Monitoring and Evaluation

Table 15. Indicators and Benchmarks

Goals	Indicators and Benchmarks (See Table 14 above for specific details)
1. Improved fish catch rate within sustainable limits	NSAP stock assessment performance indicators will be used to gauge the state of the commercially important stocks as compared to the respective reference points. The indicators include: length at first maturity (Lm), percentage of adults and juveniles in the catch (Froese), catch per unit effort (CPUE), spawning potential ratio (SPR), among others. The target is to increase catch rates by 5% while trending towards meeting the reference points in the relevant performance indicators.
2. Systematically conserved coastal habitats.	In terms of coverage, the indicator is the percentage of municipal waters established as MPAs, sanctuaries or refugia. The target is to comply with the 15% requirement under the Fisheries Code. In terms of management effectiveness, the indicator would be the MPA Effectiveness assessment tool (MEAT), with MPAs achieving at least level 2 (effectively strengthened) or 3 (effectively sustained). The number of women- and IP- managed areas will also be monitored.
3. Improved economic security, resilience, and welfare of coastal communities;	The indicator to be used is the percentage increase in income, with a target of 25% increased income of at least 25% of registered fisherfolk living below poverty threshold in FMA 5 by 2027.
4. Mainstream equitable access to economic opportunities; and	The key indicators will be the number of poor fisherfolk provided with livelihood support, including trainings. The targets are: at least 25% of registered fisherfolk received livelihood support, and at least 5 types of fishing livelihood support provided to 25% of registered fisherfolk by 2027.
5. Reduced FMA - wide reported and or actual occurrence of Illegal, Unreported, and Unregulated Fishing (IUUF) activities.	In terms of IUU fishing reduction, the IUU fishing index scores will be the primary outcome indicators of IUU fishing risk reduction in addition to the standard reporting of output indicators of a number of apprehensions and successful disposition of cases filed. The strength, functionality and effectiveness of bantay-dagats will also be assessed. Measuring policy measures to combat IUU fishing will involve monitoring the number of LGUs with reviewed & updated MFO (based on R.A 10654), with a target of 80% by the year 2025 and 100% by 2027.
6. Established effective institutions for fisheries management	A key measure of institutional strengthening is the increase in budget allocation for fisheries management, with a target of a 100% increase of LGUs budget for fisheries management by 2024 Qualitative assessment of capacities and performance of the FMA bodies will be done through interviews and FGDs

Engagement with Stakeholders

The communications strategy for engaging stakeholders will be anchored on the following priorities:

1. Information campaign among stakeholders about the FMA Framework Plan and support implementation at provincial, LGU-alliance and individual LGU levels; increase participation of women and marginalized groups
2. Campaign against IUU fishing - detection and reporting, compliance promotion
3. Promotion of sustainably-sourced, value-added seafood; alternative (e.g. online) supply and marketing
4. Campaign for municipal/city FARMCs to develop ordinances to implement HCRs relevant to their LGUs.

BFAR works with development partners, NGOs, LGUs, private sector and local communities to improve science-based management decision-making.


INFORMATION
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Strengthening stakeholders collaboration through establishment of Fisheries Management Areas

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