



Department of Environment and Natural Resources  
Provincial Environment and Natural Resources Office

MIMAROPA Region

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August 15, 2022

MEMORANDUM

**FOR :** The Regional Executive Director  
DENR MIMAROPA  
1515 L&S Bldg., Roxas Blvd.  
Ermita, Manila

**FROM :** The Provincial Environment and  
Natural Resources Officer

**SUBJECT :** 2<sup>ND</sup> QUARTER REPORT ON COASTAL AND MARINE  
ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP) OF  
DENR PALAWAN



Respectfully submitted are the consolidated reports on Coastal and Marine Ecosystems Management Program (CMEMP) of three (3) Marine Protected Areas of DENR Palawan for the 2<sup>nd</sup> quarter of CY 2022, thus:

1. Malampaya Sound Protected Landscape and Seascape (MSPLS);
2. Rasa Island Wildlife Sanctuary (RIWS);
3. Tubbataha Reefs Natural Park (TRNP);

These serve as **Means of Verification (MOV)** of the target activities under the Coastal and Marine Ecosystems Rehabilitation Sub-program – Management of Coastal and Marine Resources/Areas.

For information and record.



*[Signature]*  
**FELIZARDO B. CAYATOC**

DENR-PALAWAN  
PENRO-RECORDS  
**RELEASED**  
By: *Rhen*  
Date: *2122-2191*  
**18 AUG 2022**





Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
National Highway, Bgy. Alfonso XIII, Quezon, Palawan  
Contact No.: 0917-160-4920  
Email: cenroquezon@denr.gov.ph

June 28, 2022

**MEMORANDUM**

**FOR :** The Provincial Environment and  
Natural Resources Officer  
Sta. Monica, Puerto Princesa City, Palawan

**FROM :** The Community Environment and  
Natural Resources Officer

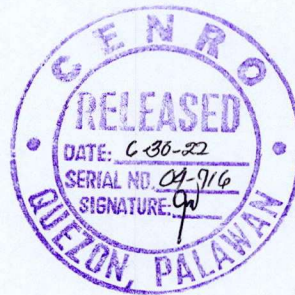
**SUBJECT :** **2<sup>ND</sup> QUARTER ACCOMPLISHMENT REPORT FOR THE  
COASTAL AND MARINE ECOSYSTEM MANAGEMENT  
PROGRAM (CMEMP) OF RIWS FY 2022**

DENR PENRO  
PALAWAN RECORDS  
**RECEIVED**

BY: *[Signature]*  
DATE: 07-05-2022 22:59:58

Respectfully forwarded is the Memorandum of Protected Area Superintendent Rasa Island Wildlife Sanctuary dated June 15, 2022 re: above subject with attachment.

For your information and record.



*[Signature]*  
**LEONARD T. CALUYA**





Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region

**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
**PROTECTED AREA MANAGEMENT OFFICE – RASA ISLAND WILDLIFE SANCTUARY**  
National Highway, Antipuluan, Narra, Palawan  
Telephone No.: 048 - 716 - 1224  
Email: [rasaislandwildlifesanctuary@gmail.com](mailto:rasaislandwildlifesanctuary@gmail.com)

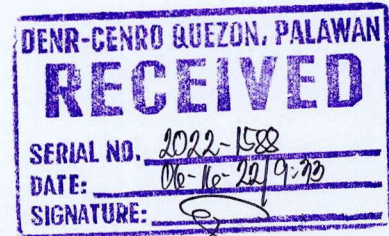
June 15, 2022

**MEMORANDUM**

**FOR** : The Community Environment and  
Natural Resources Officer  
Quezon, Palawan

**FROM** : The Protected Area Superintendent  
Rasa Island Wildlife Sanctuary

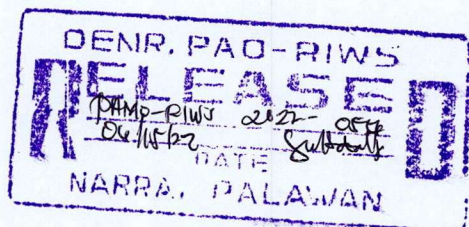
**SUBJECT** : **2<sup>nd</sup> QUARTER ACCOMPLISHMENT REPORT OF RIWS  
COASTAL AND MARINE ECOSYSTEM MANAGEMENT  
PROGRAM (CMEMP) FY 2022**



Respectfully forwarded herewith the 2<sup>nd</sup> Quarter report of RIWS for the targets under Coastal and Marine Ecosystem Management Program (CMEMP) FY 2022.

For your information, record and reference.

**MA. TERESA V. AYSON**





Protected Area Management Office –  
Rasa Island Wildlife Sanctuary

# **Coastal and Marine Ecosystems Management Program**

## **Report**

2<sup>nd</sup> Quarter FY 2022

By:

**PROTECTED AREA MANAGEMENT OFFICE  
RASA ISLAND WILDLIFE SANCTUARY**



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## **Protected Area Profile on Coastal and Marine Ecosystems**

### **Protected Area: Rasa Island Wildlife Sanctuary**

#### **Introduction**

Rasa Island is a small, flat coral island that surrounded by mangroves and tidal flats situated in the Sulu Sea and located within the municipal waters of Narra, Palawan, Philippines. It is within the geographic coordinates of 9°13'25" N latitude 118°26'35" E longitude. It has a total area of 1,983 ha which only about one third is permanently dry and two-thirds are occasionally exposed to the tides. Extensive tidal flats and pristine mangroves border the island.

It is the natural habitat of the critical endangered species Philippine Cockatoo (*Cacatua haematorupygia*) locally known as "katala". It holds the largest number of the Katala species which leads that the municipality of Narra known as the "Philippine Cockatoo Capital of the World", also, the island was named as "One of the Top 13 Bird Watching Sites in the Philippines" by the Philippine Department of Tourism (PDOT) and was promoted during the 2009 World Travel Market in London.

In order to protect this bird species whose number dropped sharply from as many as 4,000 in 1994 to only about 1,000 in 2001 due to illegal poaching and rapid deforestation of its coastal environment, the Philippine government declared the whole island and surrounding waters as protected area known as Rasa Island Wildlife Sanctuary through Philippine Presidential Proclamation 1000.

Activities in accordance to the work plan for PA-RIWS such as Maintenance and Protection under Coastal and Marine Ecosystem Management Program (CMEMP), Biodiversity Monitoring System (BMS), PAMB Meetings, Communication Education and Public Awareness (CEPA), and Integrated Protected Area Fund Updates. These activities were implemented and conducted under the direct supervision of the PASu of RIWS and are participated the Protected Area Management Board, CDU Staff under CENRO-Quezon, LGU-Narra and KFI.



## HABITAT ASSESSMENT/ MONITORING RESULTS

### a. Coral Reef Assessment (including Fish Visual Census)

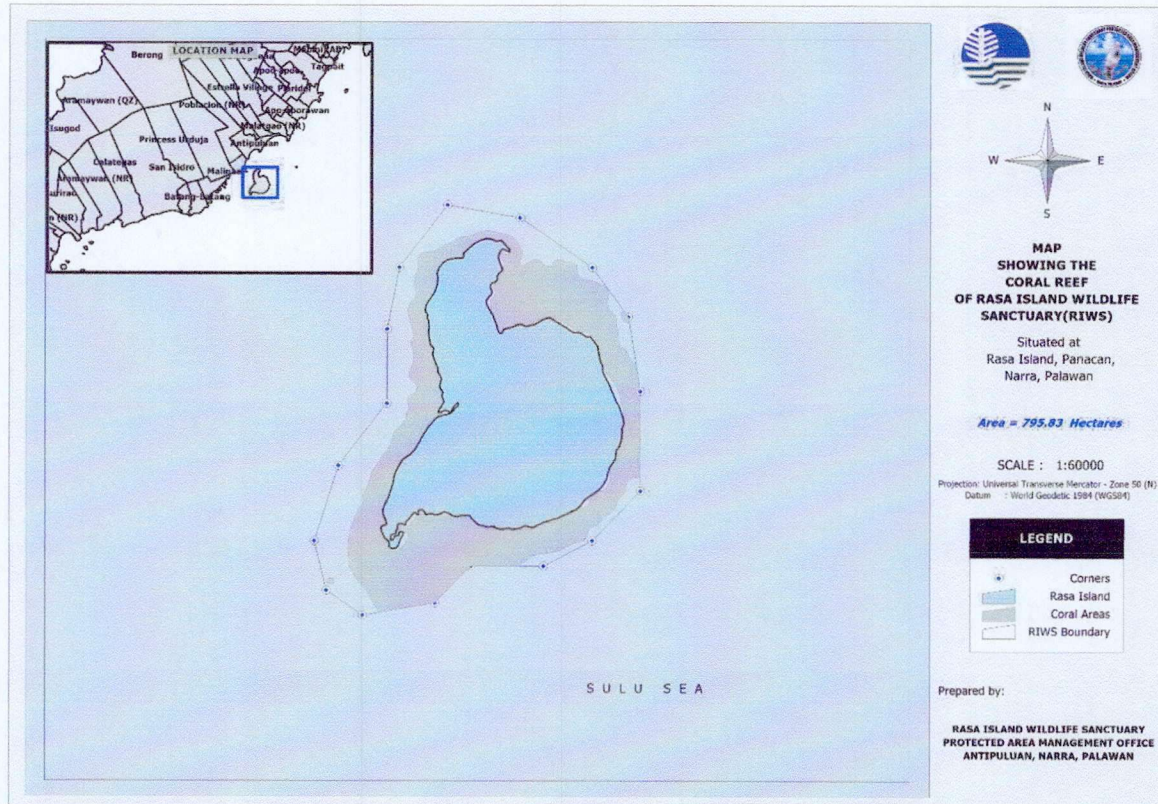


Figure 1. Map Showing the Coral Reef of Rasa Island Wildlife Sanctuary

Number of Hectares (Habitat Extent): 795.83 has

- Methodology

Coral reef assessment in RIWS was conducted on March 12-18, 2022 in collaboration with the DA-BFAR of LGU-NARRA using the method prescribed in Technical Bulletin 2019-05 or the "Technical Guide on Biodiversity Assessment and Monitoring System for Coastal and Marine Ecosystem". A total of three stations were established in RIWS, 100m transect were laid out in every station. Every meter of transect were photographed using a digital camera (Go-Pro Hero 6). These photos were analysed using Coral Point Count with Excel extensions (CPCe) in which benthos under each point was identified in Taxonomic Amalgamation Units (TAUs).



The coral cover and diversity were categorized based on the introduced category of Licuanan et.al (2017 and 2019) as shown in Table 1 and 2 below.

**Table 1.** New scale for coral cover

# of Taxonomic Amalgamation Units	HCC Category
>26 TAUs	HCC Category A
>22-26 TAUs	HCC Category B
>18-22 TAUs	HCC Category C
0-18 TAUs	HCC Category D

**Table 2.** New scale for coral generic diversity

# of Taxonomic Amalgamation Units	Diversity Category
>26 TAUs	Diversity Category A
>22-26 TAUs	Diversity Category B
>18-22 TAUs	Diversity Category C
0-18 TAUs	Diversity Category D



- Results

Out of three stations established, Station 3 has the highest cover of live corals with 35.45% which falls in Hard Coral Cover Category B. Likewise, this station got the highest number of TAUs present in the transect. (Fig. 2)

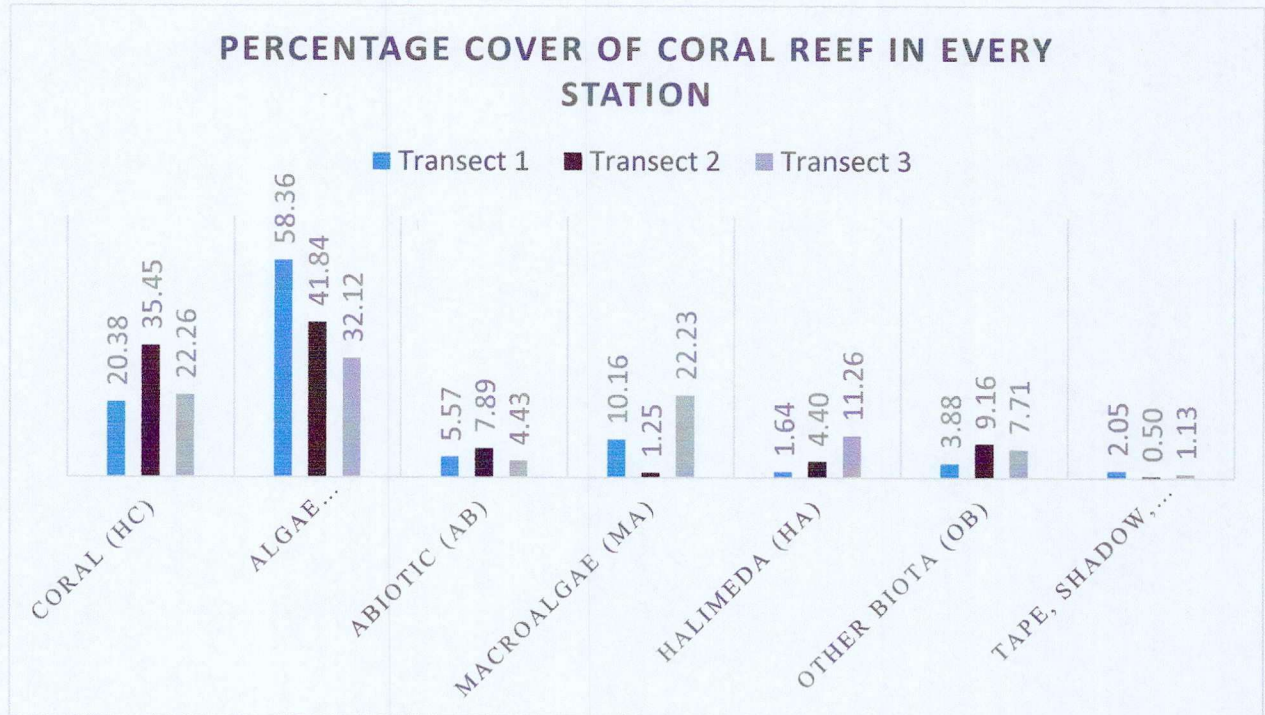


Figure 2. Percentage of corals in three stations

A total mean of 26.03% was computed for hard live corals. Meanwhile, corals with algal assemblage turns to have a higher mean percentage (44.11%). This implies that ecological factors deteriorating the community of coral reefs could be present. However, there is a presence of macroalgae with 11% mean cover in which contributes to the mortality of corals. In average Rasa Island Wildlife Sanctuary Coral cover falls in HCC Category B and generic coral diversity of Category B. (Table 3).

Table 3. Major Categories with mean percentage of every transect

MAJOR CATEGORY (% of transect)	Transect 1	Transect 2	Transect 3	AVERAGE
CORALS (HC)	20.38	22.26	35.45	26.03
ALGAE ASSEMBLAGE (AA)	58.36	32.12	41.84	44.11
ABIOTIC (AB)	5.57	4.43	7.89	5.97



MACROALGAE (MA)	10.16	22.23	1.25	11.21
HALIMEDA (HA)	1.64	11.26	4.40	5.77
OTHER BIOTA (OB)	3.88	7.71	9.16	6.92
TAPE, SHADOW, BLOCKS, IND (TWB)	2.05	1.13	0.50	1.22
Sun (excluding tape + shadow + wand)	100	100	100	100

## Fish Visual Census

- Methodology

Fish Visual Census activity was conducted in Rasa Island Wildlife Sanctuary in collaboration with the LGU-Narra DA-BFAR. Three (3) stations were surveyed by visual census using Line Intercept Transect (LIT) method in selected reefs of Rasa Island between depths of 5m-7m on March 12-18, 2022. In each station, a belt transect of 100m x5m was establish. All reef fishes encountered within 2.5m either side of the transect line with the aid of SCUBA was identified and recorded using underwater slate board.

Fish abundance was determined by actual counts. The total length of fish species was estimated and later used to estimate fish biomass. Parameter *a* and *b* were taken from Kulbicki et.al 1993. For fish species with no available *a* and *b*, the known values of the closest relative (e.g. same genus) with the most similar body size and shape were used.

Global Positioning System (GPS) was used to record the coordinates of each sampling station, so that it can be used for future monitoring plan. Reference used for fish identification were; Gonzales 2013, Allen.et.al 2003 and Myers 1999. Scientific names was also verified in FISHBASE (fishbase org.).

Fishes were categorized as Target, Major families and Indicator. Target species are those commonly utilized in fisheries with varying commercial value (e.g. grouper, (Serranids), rabbitfish (Siganids), snapper (Lutjanids), parrot fishes (Scarids) and fusilier (Caesionids). Major families are those species with less commercial value and less priority to fisherfolks. Indicator species are fishes that are highly territorial as such their appearance and abundance may indicate the condition of their habitat (e.g. butterfly (Chaetodontids) and damselfish (Pomacentrids).



- Results

The total number of fish species perceived in three (3) station was 87 individuals were identified to species level and distributed to 21 families. The families with higher species were Pomacentridae (damselfish 20), Labridae (wrasse 14) Chaetodontidae (butterflyfish 11) and Scaridae (parrotfish 8) (Table 4).

**Table 4. Number of Individuals of fish species and biomass in three sampling stations in Rasa Island, Narra, Palawan.**

Station	Family	Individual/1000 m <sup>2</sup>	Biomass (MT/Km)	Category
1	18	638	68.0	High
2	19	1,295	285.93	Very high
3	16	1,653	397.83	Very high
Total			<b>751.8</b>	
Ave.			<b>250.6</b>	

#### Fish biomass

In this survey, the highest individual counts (1,653) were station 3, followed by station 2 (1295) and station 1 with 638. The average fish biomass was estimated at 250.6 mt/km. Based on the category of Hilomen (1998), the average fish biomass of Rasa Island can be categorized as very high. The very high biomass of sampling stations might be attributed to its location and the condition of reefs in the areas (Table 4). Considering the surveyed areas made in the drop-off, it could be assumed that the large and variety of fishes are still concentrated at deep. Thus, favorable water movement carried out by water current influencing the diversity and productivity of the area.

**Table 5. Species composition and category of fishes in Rasa Island, Narra, Palawan.**

Station	Family	No. of species	Categories		
			Target	Major	Indicator
1	18	69	34	29	6
2	19	75	35	33	7
3	16	85	38	38	9
		<b>229</b>	<b>107</b>	<b>100</b>	<b>22</b>



## Species category

Of these fish species identified and recorded, 107 species (46.7%) were target species, 100 (43.7%) were major and 22 (9.6%) were indicator species (e.g. butterfly and damselfish) (Table 5). The number of indicator species was remarkably low. Butterfly fish have been used as indicator for reef health since they are highly associated with coral reef. Damselfish is known to be a highly territorial reef fishes. In this survey, this group has the highest number of species. The complete list of all fish species encountered from the sampling stations is listed in Table 6.

**Table 6. Summary of reef fishes encountered in three stations in Rasa Island with its categories: Target ,Major, Indicator.**

FAMILY	SPECIES	TARGET	MAJOR	INDICATOR
Acanthuridae	<i>Ctenochaetus striatus</i>	+		
	<i>Ctenochaetus binotatus</i>	+		
	<i>Naso unicornis</i>	+		
	<i>Acanthurus nigroris</i>	+		
	<i>Zebrasoma scopas</i>		+	
Balistidae	<i>Balistapus undulatus</i>	+		
Caesionidae	<i>Caesio cuning</i>	+		
	<i>Pterocaesio pisang</i>	+		
Chaetodontidae	<i>Chaetodon decussatus</i>			+
	<i>Chaetodon baronessa</i>			+
	<i>Chaetodon lunulatus</i>			+
	<i>Chaetodon lunula</i>		+	
	<i>Chaetodon melannotus</i>			+
	<i>Chaetodon octofasciatus</i>			+
	<i>Chaetodon rafflesi</i>			+
	<i>Chaetodon auriga</i>		+	
	<i>Chaetodon lineolatus</i>			+
	<i>Heniochus monoceros</i>		+	
	<i>Heniochus varius</i>			+
Ephippidae	<i>Platax teira</i>	+		
Fistularidae	<i>Fistularia commersonii</i>	+		
Haemulidae	<i>Plectorhincus lineatus</i>	+		
	<i>Plectorhincus pictus</i>	+		
Holocentridae	<i>Myripristis berndti</i>	+		
	<i>Sargocentron rubrum</i>	+		
Kyphosidae	<i>Kyphosus vaigiensis</i>	+		



Labridae	<i>Thalassoma lunare</i>		+	
	<i>Choerodon anchorago</i>	+		
	<i>Choerodon oligacanthus</i>	+		
	<i>Chelinus chlorourus</i>	+		
	<i>Cheilinus trilobatus</i>	+		
	<i>Coris pictoides</i>		+	
	<i>Coris dorsomacula</i>		+	
	<i>Cirrhilabrus cyanopleura</i>		+	
	<i>Diproctacanthus xanthurus</i>			+
	<i>Gomphosus varius</i>		+	
	<i>Hemigymnus melapterus</i>	+		
	<i>Hemigymnus fasciatus</i>	+		
	<i>Labroides dimidiatus</i>		+	
	<i>Macropharyngodon meleagris</i>		+	
Lethrinidae	<i>Lethrinus olivaceus</i>	+		
Lutjanidae	<i>Lutjanus decussatus</i>	+		
	<i>Lutjanus russelli</i>	+		
	<i>Lutjanus bohar</i>	+		
	<i>Lutjanus carponotatus</i>	+		
	<i>Lutjanus fulviflamma</i>	+		
Monodactylidae	<i>Monodactylus argenteus</i>	+		
Mullidae	<i>Parupeneus bifasciatus</i>	+		
	<i>Parupeneus multifasciatus</i>	+		
Pomacanthidae	<i>Centropyge vrolikii</i>		+	
	<i>Pomacanthus sexstriatus</i>		+	
Pomacentridae	<i>Abudefduf vaigiensis</i>		+	
	<i>Pomacentrus smithi</i>		+	
	<i>Pomacentrus lepidogenys</i>		+	
	<i>Plectroglyphidodon lacrymatus</i>		+	
	<i>Neoglyphidodon melas</i>		+	
	<i>Pomacentrus moluccensis</i>		+	
	<i>Pomacentrus stigma</i>		+	
	<i>Amblyglyphidodon curacao</i>		+	
	<i>Pomacentrus littoralis</i>		+	
	<i>Amblyglyphidodon batunai</i>		+	
	<i>Dascyllus aruanus</i>		+	
	<i>Amphiprion frenatus</i>		+	
	<i>Amblyglyphidodon aureus</i>		+	



	<i>Dascyllus reticulatus</i>		+	
	<i>Amphiprion sandaracinos</i>		+	
	<i>Chrysiptera parasema</i>		+	
	<i>Chromis ternatensis</i>		+	
	<i>Neoglyphidodon bonang</i>		+	
	<i>Dischistodus prosopotaenia</i>		+	
	<i>Pomacentrus simsiang</i>		+	
Ptereleotridae	<i>Ptereleotris evides</i>		+	
Scaridae	<i>Chlorurus bleekeri</i>	+		
	<i>Chlorurus capistratoides</i>	+		
	<i>Chlorurus bowersi</i>	+		
	<i>Chlorurus sordidus</i>	+		
	<i>Scarus dimidiatus</i>	+		
	<i>Scarus schlegeli</i>	+		
	<i>Scarus globiceps</i>	+		
	<i>Cetoscarus bicolor</i>	+		
Serranidae	<i>Cephalopolis cyanostigma</i>	+		
	<i>Ephinepelus bontoides</i>	+		
	<i>Ephinepelus merra</i>	+		
Siganidae	<i>Siganus canaliculatus</i>	+		
	<i>Siganus guttatus</i>	+		
	<i>Siganus virgatus</i>	+		
Zanclidae	<i>Zanclus cornutus</i>		+	
<b>Total</b>	<b>87</b>	<b>43</b>	<b>35</b>	<b>9</b>

### Recommendations:

1. Continuous and intensive information education campaign (IEC) on the role of coral reef on the marine ecosystems;
2. Implementation of strict protection and monitoring in the coastal and marine habitats of Rasa Island Wildlife Sanctuary;
3. Incorporating adaptive mitigating measures on the effects of climate change and adverse anthropogenic activities on our coastal and marine ecosystems.



## Seagrass

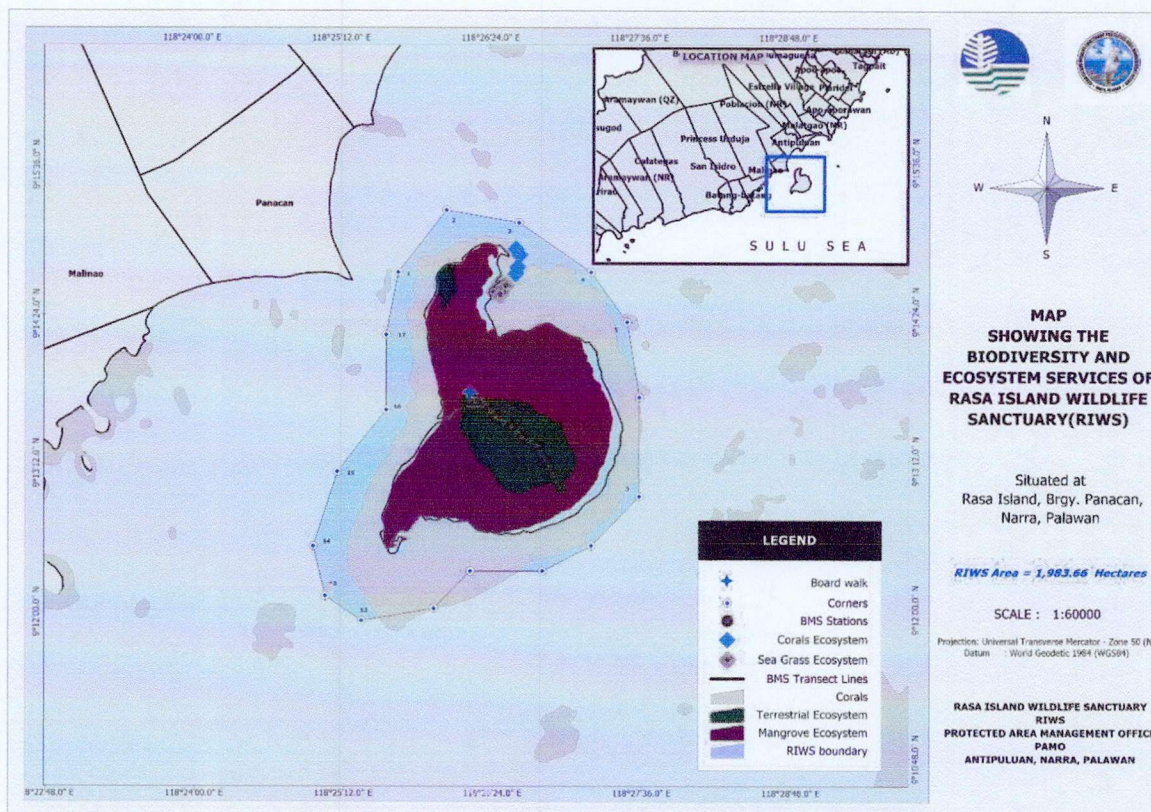


Figure 3. Map Showing the Seagrass Ecosystem of Rasa Island Wildlife Sanctuary

LOCATION (Province/Municipality/ Barangay)	NUMBER OF HECTARES ASSESSED	CONDITION	THREATS IDENTIFIED
Rasa Island Wildlife Sanctuary	153.32	Fair	Wilting and Siltation

Seagrass assessment in Rasa Island Wildlife Sanctuary was conducted from February 11, 2022 to May 21, 2022.

The methodology used in the conduct of seagrass assessment in Rasa Island Wildlife Sanctuary was in accordance with the BMB Technical Bulletin Nos. 2017-05 and 2019-04.



## Seagrass Assessment

- Methodology

Three 100 m transect lines, separated by a 25 m distance in between was laid parallel to each other. Transect lines was laid perpendicular to the shore, from the shallow intertidal zone to a depth until where seagrass are present. Start and end of the transect tapes was marked using a GPS. Pegs was used to hold transects in place until all sampling has been completed.

A 0.5 m by 0.5 m quadrat was laid starting from the 0-m mark on the right side of each transect at 5 m interval. Data recorder walked on the left side of transect to avoid any sediment disturbance on the quadrats measured.

Photograph of the quadrat was taken at 5-, 25-, and 45-m or on quadrats of particular interest (e.g. dugong trail, high algal abundance, lots of gastropods, etc.). Photos was taken before any measurements are taken to avoid sediment disturbance.

- Results

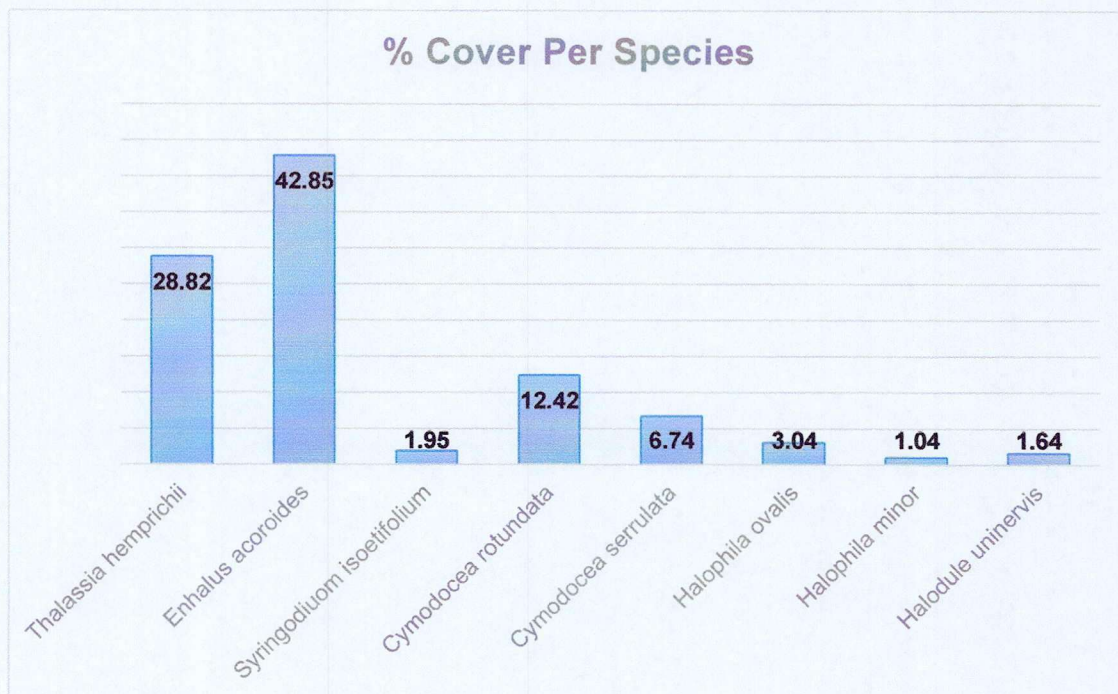


Figure 4. Percent Cover per species



Figure 4. shows the percentage cover of seagrass found in Rasa Island Wildlife Sanctuary. The highest percentage cover consist of *Enhalus acoroides* with a total percentage cover of 42.85% followed by *Thalassia hemprichii* with total percentage cover of 28.82 %, *Cymodocea rotundata* with total percentage cover of 12.42%, *Cymodocea serrulata* with total percentage cover of 6.74%, *Halophila ovalis* with total percentage cover of 3.04%, *Syringodium isoetifolium* with total percentage cover of 1.95%, *Halodule uninervis* with total percentage cover of 1.64% and *Halophila minor* with the lowest percentage cover of 1.04%.

○ **Category condition**

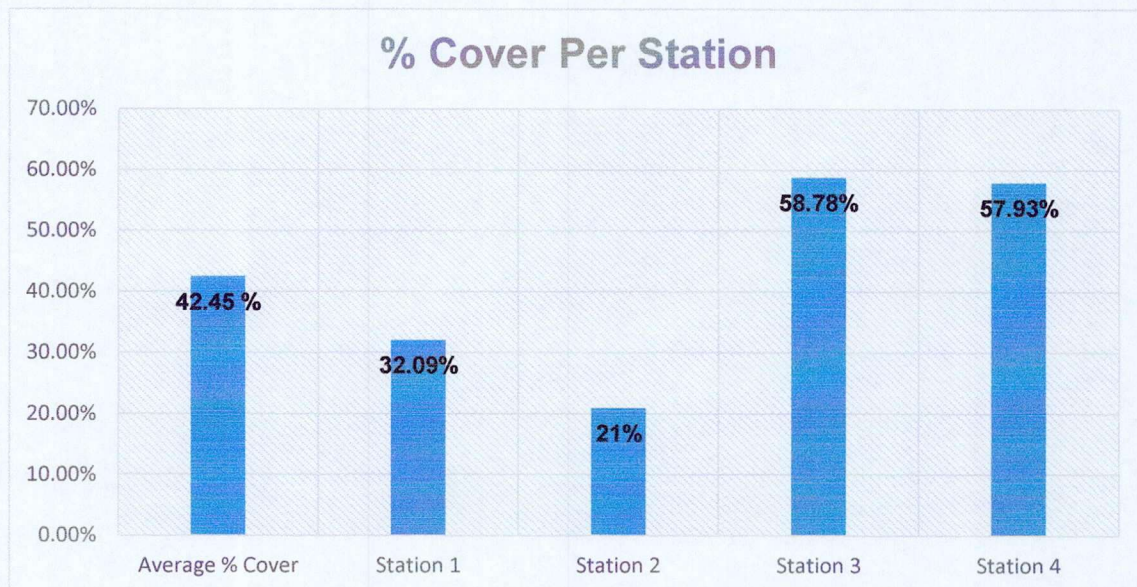


Figure 5. Category condition per station and average category condition

Figure 5. Shows the category condition of seagrass in Rasa Island Wildlife Sanctuary. It also shows that among the four stations that was assessed, Station 3 has the highest category condition which falls into good condition followed by station 4 which also falls into good condition, Station 1 which falls into fair condition and station 2 which falls into poor condition (Amran 2010). The total average category condition of seagrass in Rasa Island Wildlife Sanctuary is 42.45% which falls into Fair condition.



- **Species richness**

A total of 8 endemic species of seagrass were found which are the following: *Thalassia hemprichii*, *Enhalus acoroides*, *Cymodocea rotundata*, *Cymodocea serrulata*, *Halophila ovalis*, *Halophila minor*, *Syringodium isoetifolium* and *Halodule uninervis*. *Enhalus acoroides* was the dominant species since it was also the most common seagrass occurring in Palawan. On the other hand, *Halophila minor* was the least dominant species found.

**Recommendations on how to maintain or improve current condition:**

1. Continuous and intensive information education campaign (IEC) on the role of seagrass on the marine ecosystems;
2. Implementation of strict protection and monitoring in the coastal and marine habitats of Rasa Island Wildlife Sanctuary;
3. Incorporating adaptive mitigating measures on the effects of climate change and adverse anthropogenic activities on our coastal and marine ecosystems.



## Mangrove Assessment

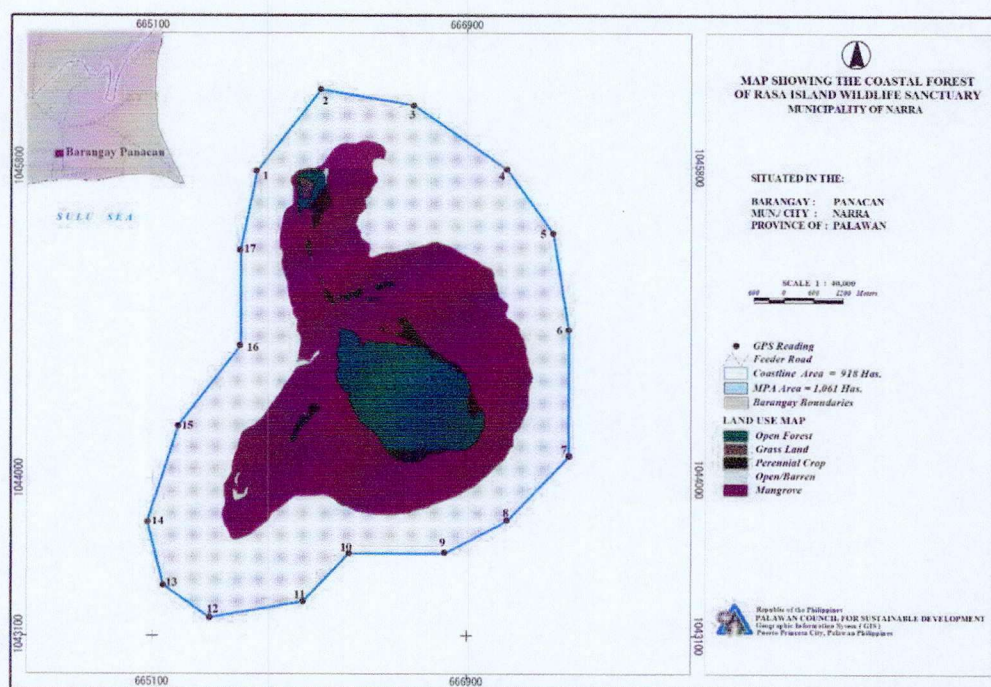


Figure 6. Map Showing the Mangrove Forest Area of Rasa Island Wildlife Sanctuary

Mangrove assessment in Rasa Island Wildlife Sanctuary initially conducted on May 2022.

The methodology used in the conduct of mangroves assessment in Rasa Island Wildlife Sanctuary was in accordance with the BMB Technical Bulletin Nos. 2017-05 and 2019-04.

Currently, the assessment is still on-going. Final report will be submitted when the activity is already completed.



## MAINTENANCE AND PROTECTION ACTIVITIES CONDUCTED IN RASA ISLAND WILDLIFE SANCTUARY

### 1. Patrolling

AREAS PATROLLED Municipality/ Barangay / General location within PA	FREQUENCY	NUMBER OF HECTARES COVERED
Mangrove Ecosystem	Monthly	700 has.
Barangays Antipuluan, Panacan and Panacan II	Weekly	Coastal area of the 3 barangays
Perimeter of Rasa Island Wildlife Sanctuary	Weekly	1,983 hectares
Coastal Forest	Monthly	160 has.

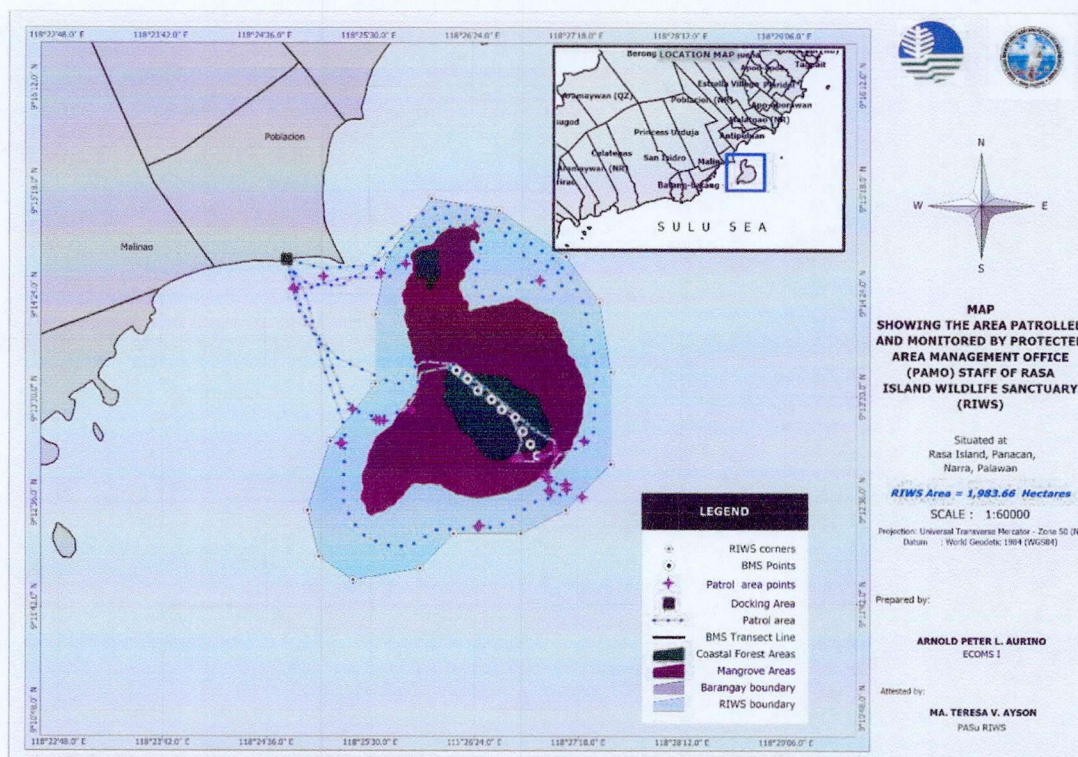


Figure 7. Map of Area Patrolled by PAMO-RIWS Monitoring Team for this quarter

Mangrove and the coastal forests covered by the PA are patrolled by our Katawa wardens on daily basis. During this report period, no any illegal incidence was



monitored/observed. No adverse human activities observed on RIWS during monitoring.

## 2. Threats Observations *(From Habitat surveys activities)*

No illegal incidence was reported, monitored and observed aside from Lobster traps at Borbon and floating fish cage near old trident pier.

Seagrass wilting and siltation was also observed. Accordingly, wilting and siltation of seagrass was usually due to agricultural runoff pollution, coastal development, unregulated fishing, boating activities, and climate change.

\*Summary of Activities conducted

PA	ACTIVITIES CONDUCTED				
	PATROLLING	RESPONSE PLAN	THREATS OBSERVED	DIRECT ACTIVITIES CONDUCTED	EQUIPMENTS MAINTAINED
Rasa Island Wildlife Sanctuary	Coastal Forest		No threats observed		Turn-over KFI boat was maintained
	Mangrove Forest		No threats observed		All scuba gears were inventoried and 2 scuba tank were hydro-tested.
	Periphery of the island		Seagrass wilting and siltation		3 sets of SCUBA gears unserviceable (lacking of scuba tank)

## 3. Maintenance of equipment

\*Inventory of Equipment / Infrastructure of the PA

EQUIPMENT	NUMBER OF UNITS	YEAR ACQUIRED/ DEVELOPED	DATE LAST MAINTAINED	CONDITION
SCUBA GEARS	5 sets	2016 (2 set complete)	2021 (tanks hydro tested)	Functioning



		2019 (3 set, lacking of scuba tank)		
BOAT	1	3 <sup>rd</sup> quarter 2021	3 <sup>rd</sup> quarter 2021	Functioning but needs maintenance (repainting)
SIGNAGES	11	2016	3 <sup>rd</sup> quarter 2021	Repainted and repaired on the 3 <sup>rd</sup> quarter of 2021.
CAMERA	1	2016	2020	unserviceable, for new procurement this 2022
RANGERS CAMP	1	2010	2020	For repair, to be calendared this 2022 subject to the availability of fund.
BIRD WATCH TOWER	1	2010	2019	TOR already posted
PAMO BUILDING	1	2015	2019	TOR already posted

#### 4. Direct Activities Conducted

DIRECT ACTIVITIES	LOCATIONS	FREQUENCY	REMARKS
<b>Coastal Clean-up Activity</b>	Panacan II, Narra, Palawan	Twice a year	On June 8, 2022, in celebration of World Oceans Day, the PAMO-RIWS personnel conducted coastal clean-up activity in Brgy. Panacan II, Narra, Palawan in collaboration with the BLGU and local fisher folk community.

On June 08, 2022, PAMO-RIWS personnel conducted a coastal clean-up activity in the coastal area of barangay Panacan II, Narra, Palawan together with the fisher folk and some barangay officials in the area. The activity was conducted in celebration of World Ocean's Day with a theme of "Revitalization: Collective Action for the Ocean".



A total of 11 sacks of garbage were collected weighing more or less 60 kilograms. It was also observed that most of the garbage found in the shore were not drifted by waves but left by the community living in the area and most of it were partially buried in the beach sand.

List of waste/garbage collected:

1. Plastic bottles
2. Plastic bags (use in ice case)
3. Rice sacks
4. Styrofoam
5. Facemask
6. Junk food wrapper
7. Lumber debris
8. Coconut shell
9. Cigarette case/box

#### **Recommendations:**


1. Continuous implementation of IEC and CEPA activities focusing on proper waste disposal and segregation;
2. Continuous conduct of coastal clean-up activity in coordination with the BLGU and local communities; and
3. To strictly implement the "Tapat Ko, Linis ko" program.

#### **Demarcation status**

Installation of markers/buoys in the 17 corners boundary of Rasa Island Wildlife Sanctuary will be conducted in the following quarter. TOR for the installation was already posted and currently waiting the signing of MOA. Final report with complete documentation will be submitted when the target is already conducted and accomplished.



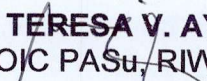
**Prepared by:**

  
**NINA LIZA B. NAVANES**  
Coastal Extension Officer

**Checked/Verified by:**

  
**JERRY P. BAUTISTA**  
FR/APASu

**Attested by:**

  
**MA. TERESA V. AYSON**  
OIC PASu, RIWS



## REFERENCES

BMB Technical Bulletin No. 2019-04: Technical Guide on Biodiversity Assessment and Monitoring System for Coastal and Marine Ecosystems

BMB Technical Bulletin No. 2017-05: Guideline on the Assessment of Coastal and Marine Ecosystem

Allen, G., Steene, R., Humann, and DeLoach, N. 2003. Reef Fish Identification: Tropical Pacific. New World Publication, Inc. P 484.

Gonzales, B. 2013. Field guide to coastal fishes of Palawan. CTSP-CTI. 208 p

Hilomen, V.V. 1998. Associated reef fishes. *In*: Manual on the standardization of field methods for assessment of coral resources. Sulu-Celebes Project (PCICDSCS).

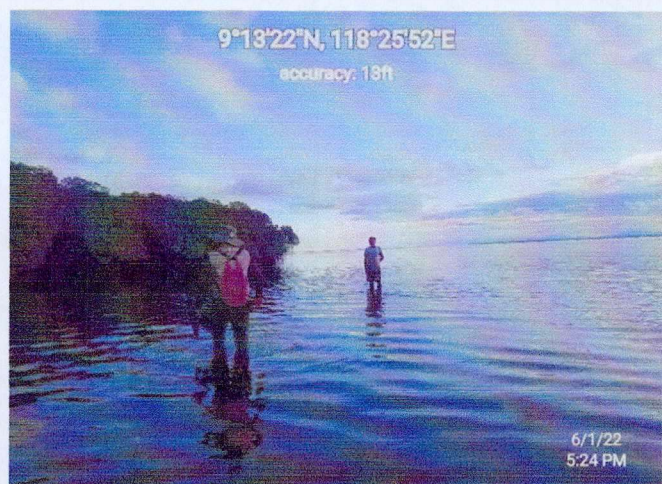
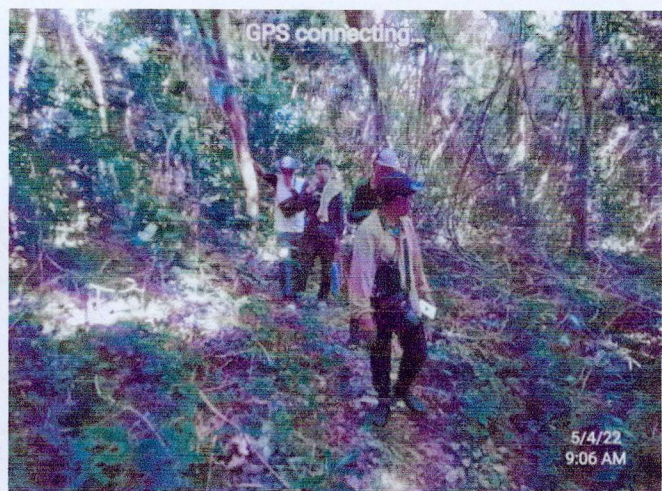
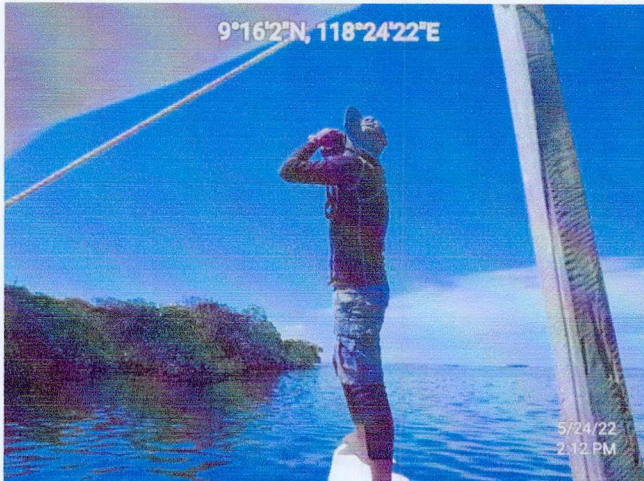
<http://www.fishbase.org> – Accessed on March 18-19, 2022.

Myers, R. 1999. Micronesian reef fishes: a field guide for divers and aquarists.



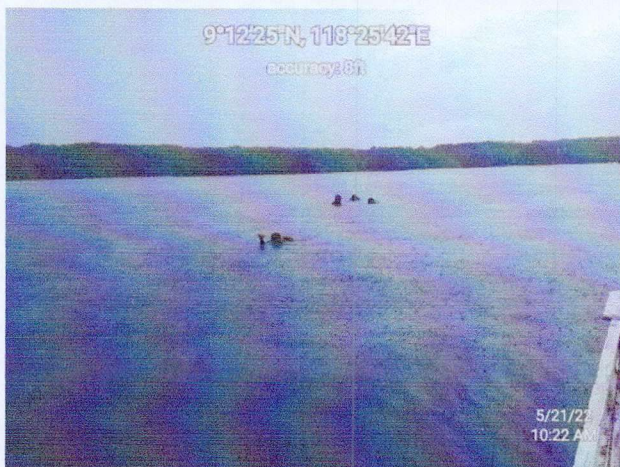
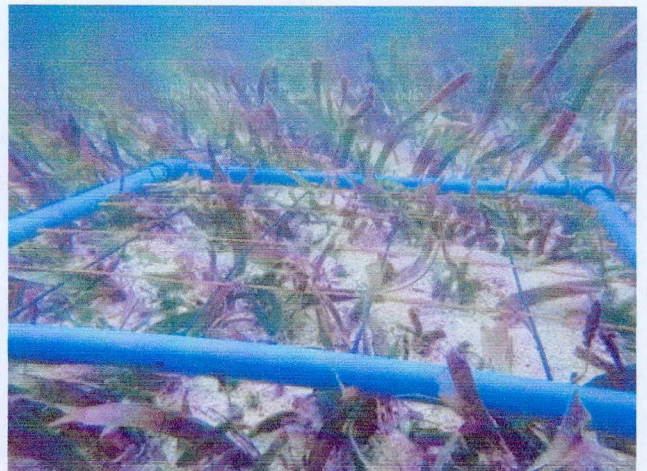
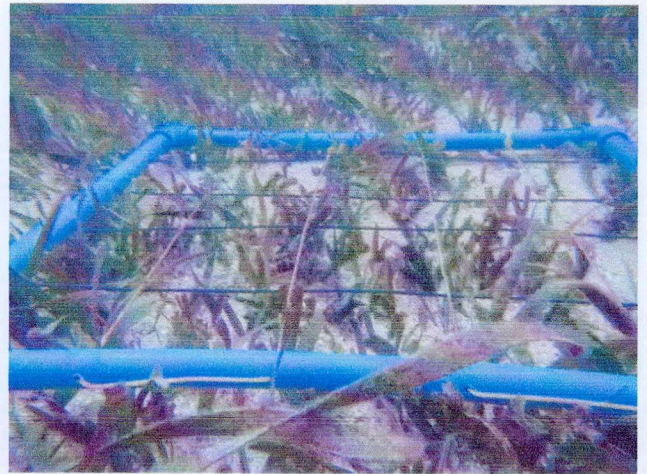
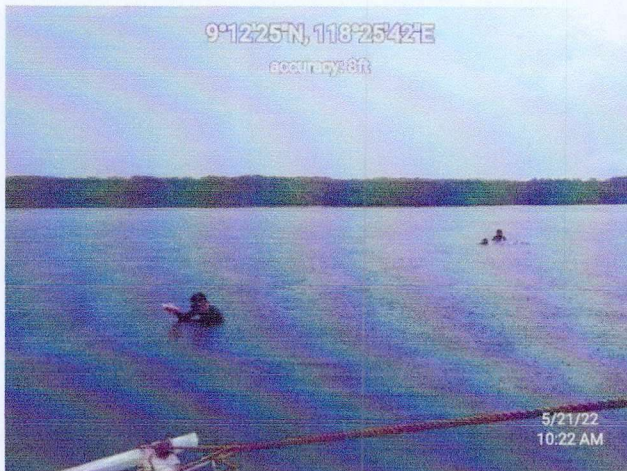
## ANNEXES

### A. Photo documentation during the conduct of patrolling, wildlife monitoring and habitat survey activity in Rasa Island Wildlife Sanctuary



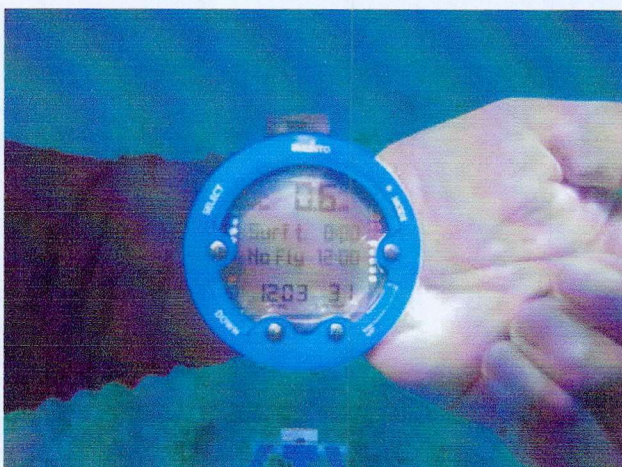
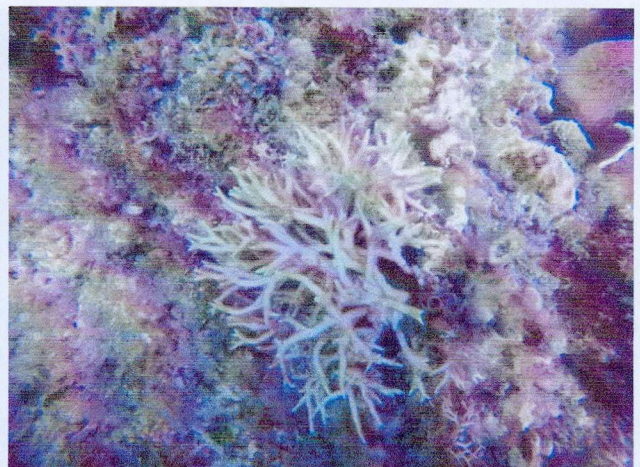


*B. Photo documentation during the conduct of seagrass assessment in Rasa Island Wildlife Sanctuary*





*C. Photo documentation during the conduct of corals assessment and fish visual census in Rasa Island Wildlife Sanctuary*





*D. Photo documentation during the initial conduct of mangrove assessment in Rasa Island Wildlife Sanctuary*





E. Photo documentation of coastal clean-up activity in Panaca II, Narra, Palawan







Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region

**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**

By the National Highway, Poblacion, Taytay, Palawan 5312

Mobile: 0926-505-9335 TM 0912-171-3889 TNT

Email: cenrotaytay@denr.gov.ph

DENR CENRO  
PALAWAN RECORDS  
RECEIVED

July 11, 2022

**MEMORANDUM**

**FOR :** The Provincial Environment and Natural Resources Officer- Palawan  
Sta. Monica, Puerto Princesa City

**FROM :** The Community Environment and Natural Resources Officer  
This jurisdiction

**SUBJECT :** **2<sup>ND</sup> QUARTER NARRATIVE REPORT ON COASTAL AND  
MARINE ECOSYSTEM MANAGEMENT PROGRAM (CMEMP)  
OF MALAMPAYA SOUND PROTECTED LANDSCAPE AND  
SEASCAPE (MSPLS), TAYTAY-SAN VICENTE, PALAWAN**

Respectfully forwarded is the memorandum dated July 4, 2022 of Protected Area Superintendent (PASu) Clarissa P. Pador of Malampaya Sound Protected Landscape and Seascape (MSPLS), Taytay-San Vicente, Palawan.

For his information and record.

DENR CENRO  
TAYTAY, PALAWAN  
RELEASED

BY: *[Signature]*  
DATE: JUL 12 2022 CENRO 1946

*[Signature]*  
ALAN VALLE

Cc: PAMO-MSPLS





Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region

**PROTECTED AREA MANAGEMENT OFFICE**  
**MALAMPAYA SOUND PROTECTED LANDSCAPE AND SEASCAPE (MSPLS)**

Taytay-San Vicente, Palawan  
Barangay Old Guinlo, Taytay, Palawan

Email add: [pamomspls@gmail.com](mailto:pamomspls@gmail.com)/Contact #: 0938-786-3728 (SMART)



July 4, 2022

MEMORANDUM

FOR : The Community Environment and Natural Resources Officer  
Taytay, Palawan

FROM : Protected Area Superintendent  
Malampaya Sound Protected Landscape and Seascape (MSPLS)  
Taytay-San Vicente, Palawan

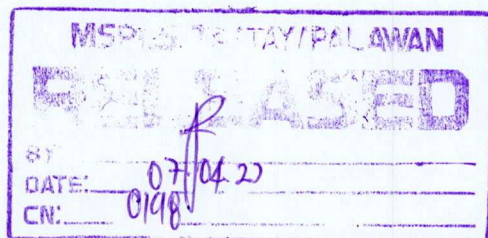
SUBJECT : **2<sup>ND</sup> QUARTER NARRATIVE REPORT ON COASTAL AND  
MARINE ECOSYSTEM MANAGEMENT PROGRAM (CMEMP)  
OF MALAMPAYA SOUND PROTECTED LANDSCAPE AND  
SEASCAPE (MSPLS), TAYTAY-SAN VICENTE, PALAWAN**

This pertains to the target activity on the Maintenance and Protection of Coastal and Marine Ecosystem (e.g. reduction of threats and enforcement)- Hiring of CMEMP Extension Officer under 001 Management of Coastal and Marine Resources/Areas of Malampaya Sound Protected Landscape and Seascape (MSPLS), Taytay-San Vicente, Palawan.

Respectfully forwarding is the memorandum dated July 4, 2022 of CMEMP Extension Officer Maria Lilibeth E. Arojo concerning the above subject. Attached is the narrative report, accomplished template and photo documentation for the said target activities.

For his information and record.

CLARISSA P. PADOR







Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region

**PROTECTED AREA MANAGEMENT OFFICE**  
**MALAMPAYA SOUND PROTECTED LANDSCAPE AND SEASCAPE (MSPLS)**

Taytay-San Vicente, Palawan  
Barangay Old Guinlo, Taytay, Palawan

Email add: [pamomsppls@gmail.com](mailto:pamomsppls@gmail.com)/Contact #: 0938-786-3728 (SMART)



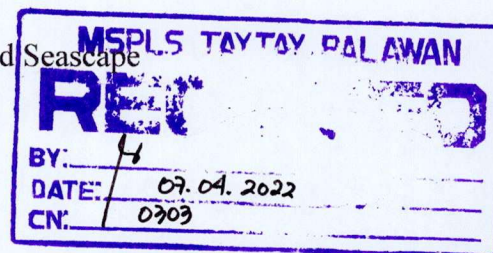
July 4, 2022

**MEMORANDUM**

FOR : The Protected Area Superintendent  
Malampaya Sound Protected Landscape and Seascape  
Taytay, Palawan

FROM : CMEMP Extension Officer  
MSPLS, Taytay, Palawan

SUBJECT : **NARRATIVE REPORT ON THE COASTAL AND MARINE  
ECOSYSTEMS MANAGEMENT PROGRAM FOR MALAMPAYA  
SOUND PROTECTED LANDSCAPE AND SEASCAPE (MSPLS),  
TAYTAY-SAN VICENTE, PALAWAN.**



In compliance with the target activity on the Marine Protected Area Strengthening and Networking under Management of Coastal and Marine Resources/Areas for Malampaya Sound Protected Landscape and Seascape (MSPLS), Taytay, Palawan for the 2nd quarter CY 2022.

Respectfully submitted is the template of the following activities on the above mentioned subject:

- a. Monitoring of corals, mangroves and seagrass
- b. Maintenance and Protection
  - Patrolling
  - Conduct of regular habitat surveys
  - Repair and maintenance of equipment (i.e speedboat)
  - Conduct of direct activities

However, as per review of the result of the assessment conducted by the academe last 2017-2018, the area covered include outside the Protected Area, hence resulted to the larger target (hectares) as compared to the actual area of both ecosystem. Wit this, the undersigned recommends for the reduction of the target hectares for the monitoring of corals and seagrass stipulated in approved Work and Financial (WFP) for FY 2022. And continous monitoring of the target activities in order to comply and submit the same to the PASu and CENRO.

Attached is the copy of narrative report with template and photo documentation.

For information and record.

MARIA LILIBETH E. AROJO





## COASTAL AND MARINE ECOSYSTEM MANAGEMENT PROGRAM NARRATIVE REPORT

**Protected Area:** Malampaya Sound Protected Landscape and Seascape (MSPLS),  
Taytay-San Vicente, Palawan

### I. PHYSICAL ACCOMPLISHMENT

#### Component 1: MPA/MPA Strengthening and Networking under Management of Coastal and Marine Resources/Areas

##### A. Monitoring of corals, mangroves and seagrass

###### Corals

Number of hectares Targeted for the Quarter: 481.31 has

Total Hectares Assessed: 35.97 has

LOCATION (Province/Municipality/Barangay)	NUMBER OF HECTARES ASSESSED	CONDITION	THREATS IDENTIFIED
	35.97 has		
	(Based on ground truthing conducted for the 2 <sup>nd</sup> quarter of CY 2022)	Good	None

###### Mangroves

Number of hectares Targeted for the Quarter: 1,531.905 ha

Total Hectares Assessed: 2,203.4 has

LOCATION (Province/Municipality/Barangay)	NUMBER OF HECTARES ASSESSED	CONDITION	THREATS IDENTIFIED
Bgy. Alacalian, Taytay. Palawan	2,203.4 has		
	(Based on ground truthing conducted for the 2 <sup>nd</sup> quarter of CY 2022)	Good	Cutting of mangroves









Department of Environment and Natural Resources  
MIMAROPA Region  
**PROTECTED AREA MANAGEMENT OFFICE**  
MALAMPAYA SOUND PROTECTED LANDSCAPE AND SEASCAPE (MSPLS)  
Taytay-San Vicente, Palawan  
Barangay Old Guinlo, Taytay, Palawan  
Email add: [pamomspls@gmail.com](mailto:pamomspls@gmail.com)/Contact #: 0938-786-3728 (SMART)



The PAMO-MSPLS conducted ground truthing on mangrove areas of Barangays Alacalian, Abongan, Bato and New Guinlo, Taytay, Palawan with a total area of 2,203.4 hectares.

The team conducted initial mangrove assessment/monitoring within Sitio Balingbing, Bgy. Alacalian, Taytay, Palawan with a total area of 70 hectares of which a total of 31.87 hectares was assessed and monitored. The method of assessment followed the BMB Technical Bulletin No. 2017-05 Global Positioning System (GPS) was also utilized to take readings otherwise note the points of the location of each corner of the plot in the Landsat imagery.

A total of thirteen (13) species were assessed and identified. Species identified were *Acanthus ebracteatus*, *Acrostichum speciosum*, *Bruguiera cylindrical*, *Bruguiera gymnorhiza*, *Bruguiera sexangula*, *Ceriops decandra*, *Ceriops tangal*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Sonneratia alba*, *Xylocarpus granatum*, *Xylocarpus moluccensis* and *Nypa fruticans*. During monitoring, some of the threats recorded were (1) sporadic mangrove cutting, (2) domestic garbage and (3) fallen trees due to typhoon Ondette.

To further protect and conserve the existing condition of the mangrove, regular patrolling and monitoring in the area in coordination with BLGU's is highly to prevent the illegal activities.

#### Seagrass

Number of hectares Targeted for the Quarter: 633.933 has

Total Hectares Assessed: 6.2 has

LOCATION (Province/Municipality/Barangay)	NUMBER OF HECTARES ASSESSED	CONDITION	THREATS IDENTIFIED
Barangay Pancol, Taytay, Palawan	6.2 ha (Based on initial assessment conducted for the 2 <sup>nd</sup> quarter of CY 2022)	Poor	None
Barangay Tumbod, Taytay, Palawan		Poor	None





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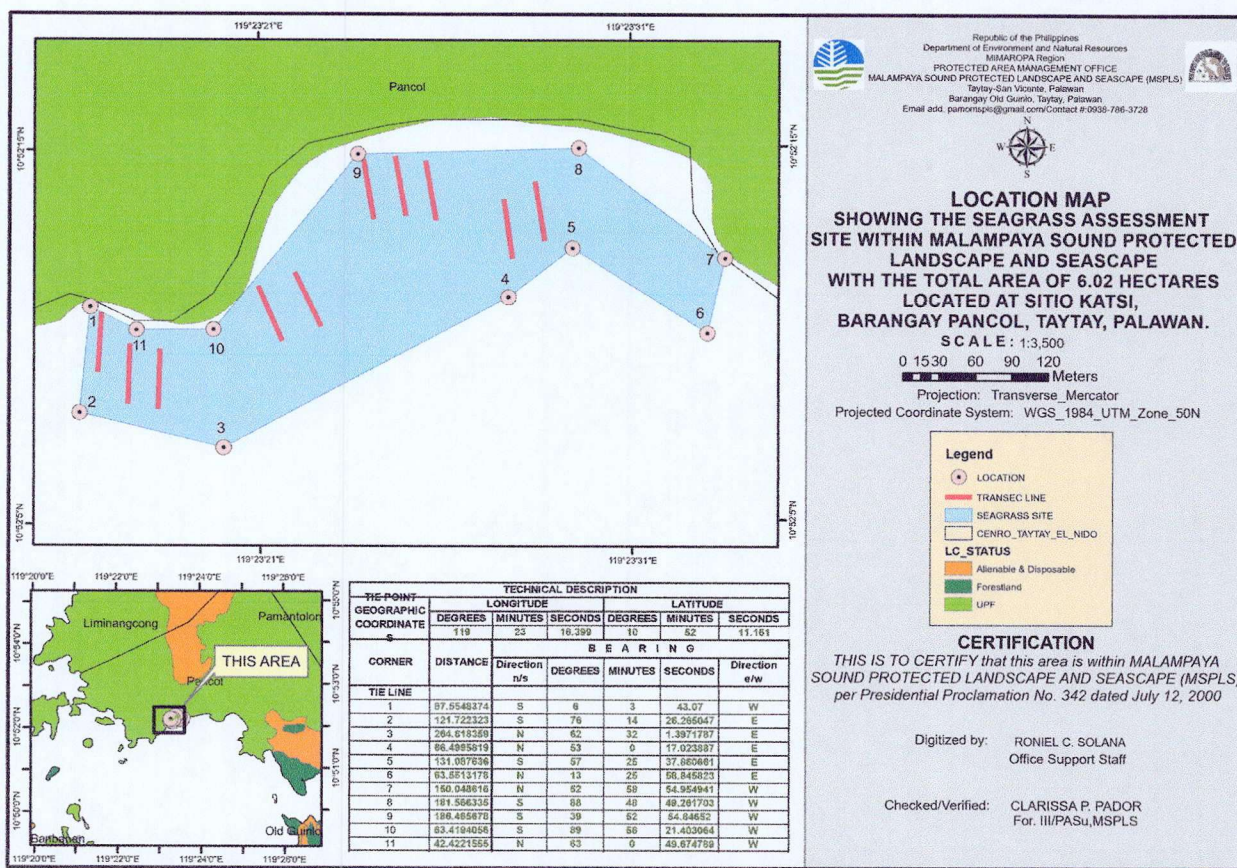


Figure 3. Map showing the seagrass assessment site within MSPLS.

A total of four (4) seagrass species were recorded during the monitoring of seagrass habitat within the established sites in MSPLS. These includes *Halodule pinifolia*, *Cymodocea rotundata*, *Enhalus acoroides* and *Talassodendron Ciliatum*. Among these species, *Cymodocea rotundata* species have the highest occurrence and the status of the seagrass is still considered in poor condition.

Awareness raising through intensive Information Education and Communication (IEC) campaign on the role of seagrasses in the marine ecosystem, their significant contribution to fisheries and their ecological functions is necessary to maintain and protect the current condition of this habitat.

## B. Maintenance and Protection of Coastal and Marine Ecosystems

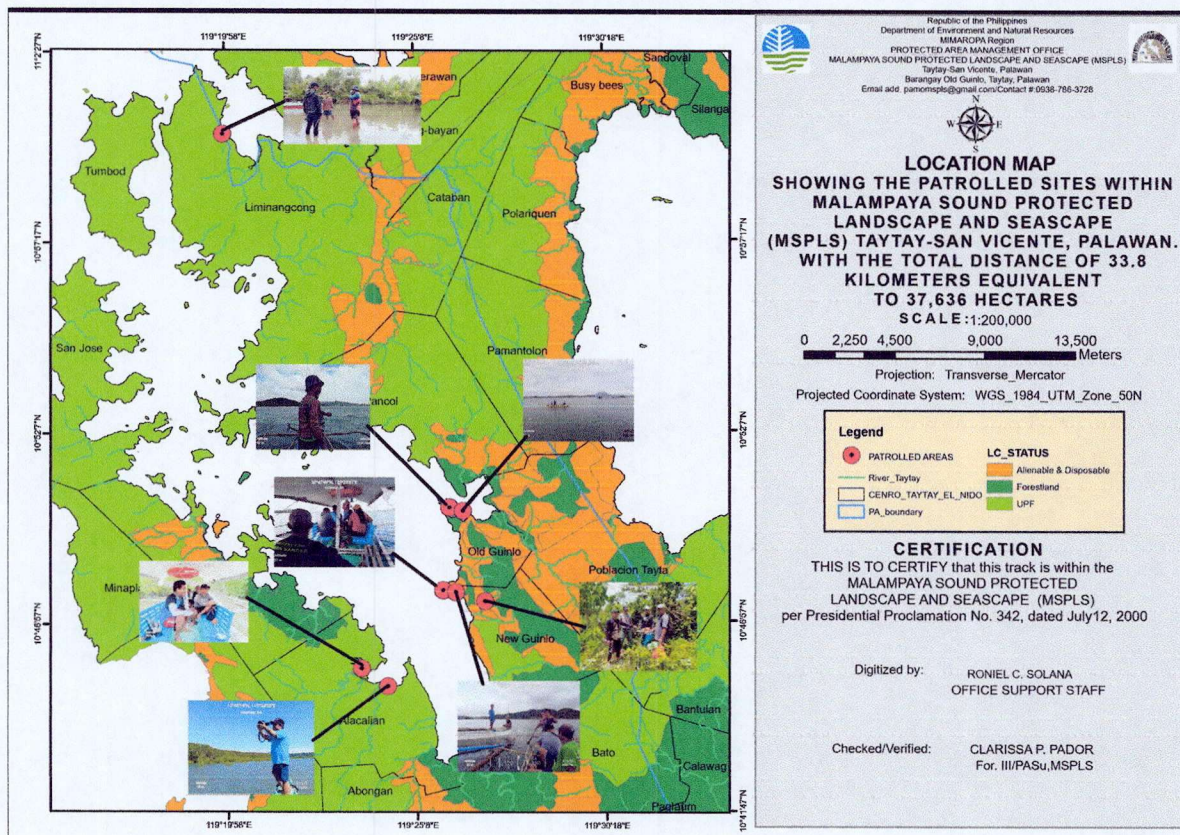
### 1. Patrolling

Areas Patrolled Municipality/ Barangay/ General Location within PA	Frequency	Number of Hectares covered
Outer Malampaya Sound	Monthly	37,636 has
Inner Malampaya Sound	Monthly	





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MIMAROPA Region  
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Email add: [pamomspls@gmail.com](mailto:pamomspls@gmail.com)/Contact #: 0938-786-3728 (SMART)



**Figure 4 Map showing the location of patrolled areas within MSPLS.**

Three (3) personnel hired under the target to augment the law enforcement in the protected area together with the Forest Product Monitoring Station (FPMS) VI in weekly basis particularly in the marine areas of MSPLS. Major threats observed during the period were the rampant illegal cutting of trees and trawl fishing. A total of four (4) apprehensions were conducted. Abandoned lumbers were recommended for forfeiture order in favor of the government. Moreover, other apprehended items had already undergone administrative hearing subject for review and evaluation of higher Office for appropriate action based on the statement of the offenders. The said issues and concerns were presented to Protected Area Management Board (PAMB) of MSPLS for comments and guidance of crafting policies for MSPLS.

## 2. Response Plan

## 3. Threats observations

ACTIVITIES CONDUCTED					
PA	Patrolling	Response Plan	Threats observed	Direct activities conducted	Equipments maintained
Malampaya Sound Protected Landscape and Seascape	Regular seaborne patrol (day and night)  4 apprehensions; no case filed	N/A	<ul style="list-style-type: none"> <li>Illegal cutting of magrove tress</li> </ul>	Coastal clean-up	1 speedboat under repair





## 2. Conduct of regular habitat surveys

The activity was conducted during assessment on mangroves and seagrass within MSPLS. During the monitoring of the area, there are sightings of cutting of mangroves and fallen/uprooted trees due to typhoon Odette. No threats were observed and recorded in the seagrass areas.

Awareness raising through Information Education Communication (IEC) campaign on the role of mangroves and seagrass is a single system towards keeping coastal zones healthy and as provider of essential habitat to the marine species.

## 3. Maintenance of equipment

### Inventory of Equipments

Equipment	Number of Units	Year acquired/developed	Date last maintained	Condition
Speedboat	1	May 7, 2019	February 5, 2021	The speedboat was burned down with report submitted. Currently, the said speedboat is being repaired at Puerto Princesa City.

## 4. Conduct of direct activities

Coastal clean-up	A total of 61.5 kg of garbage were collected during the conduct of the activity within the inner part of MSPLS which consist of biodegradable and non-biodegradable waste materials. The collected garbage/waste was properly segregated and transferred in the Material Recovery Facility (MRF) of Barangay Old Guinlo Taytay, Palawan.	Continuous conduct of Information Education Campaign (IEC).
Crown of Thorns	A total of three (3) crown of thorns (COTs) were extracted during the monitoring of corals within Barge Reef and it was properly buried for disposition.	Continuous monitoring of the crown of thorns (COTs)





## PROGRAM SUPPORT

Performance Indicator: Coastal Extension Officer hired  
Target CEO for CY 2022

CEO Name	Sex	Mobile Number	Email address	Components assigned	Major accomplishment/output/Contribution to CMEMP implementation
Maria Lilibeth E. Arojo	Female	09269424489	<a href="mailto:arojobeth@gmail.com">arojobeth@gmail.com</a>	<ul style="list-style-type: none"><li>Monitoring of corals, mangroves and seagrass;</li><li>Maintenance and protection of coastal and marine ecosystems.</li></ul>	<ul style="list-style-type: none"><li>Facilitated the conduct of ground truthing, mapping, assessment and monitoring on the target sites.</li><li>Facilitated the preparation of reports and other documents.</li></ul>





## PHOTO DOCUMENTATION

### I. Monitoring of habitats



Figure I. The PAMO-MSPLS personnel during the conduct of mangrove assessment/monitoring at Sitio Balingbing, Bgy. Alacalian, Taytay, Palawan.



Figure II. The PAMO-MSPLS personnel during the conduct of seagrass assessment in Katsibayugan, Bgy, Pancol, Taytay, Palawan.

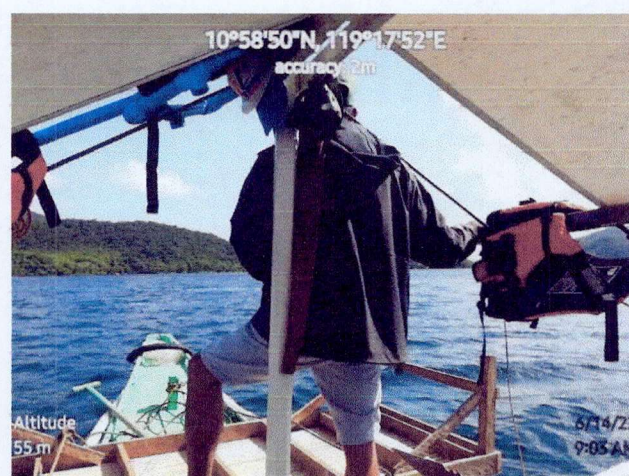


Figure III. The PAMO-MSPLS personnel during the conduct of ground truthing within coral areas of Bgy. Tumbod and Liminangcong, Taytay, Palawan.





## II. Maintenance and protection of coastal and marine ecosystems

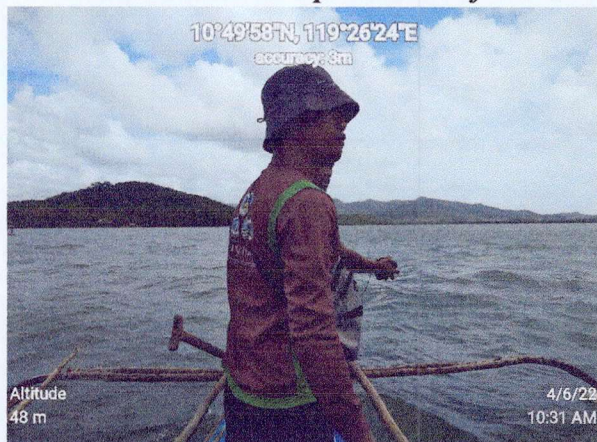


Figure IV. The PAMO-MSPLS personnel during the conduct of patrolling within MSPLS.



Figure V. The PAMO-MSPLS personnel during the conduct of regular habitat survey within mangroves area of MSPLS.



Figure V. The PAMO-MSPLS personnel during the conduct of direct activities within MSPLS.

I hereby certify that the above photos are true and correct and was taken during the conduct of activities within MSPLS under CMEMP target for CY 2022.

MARIA LILIBETH E. AROJO





# Tubbataha Management Office

## Tubbataha Reefs Natural Park & World Heritage Site

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06 July 2022

PENRO FELIZARDO B. CAYATOC  
DENR-PENRO Palawan  
Sta. Monica, Puerto Princesa City



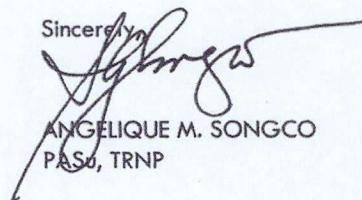
Dear PENRO Cayatoc,

We are pleased to submit the TRNP Accomplishment Report for the support of DENR from January to June 2022. We uploaded the photos to DENR's Google Drive.

Thank you for your support.



Sincerely,



ANGELIQUE M. SONGCO  
PASO, TRNP




## Accomplishment Report

January – June 2022

Tubbataha Reefs Natural Park

DENR PENRO  
PALAWAN RECORDS  
RECEIVED

BY:   
DATE: 08/09/2022 22:6/21

### Hiring of Personnel under Job Order

From January to June 2022, four personnel were hired: Executive Assistant (1), IEC Assistant (1) and Ecosystem Management Specialist II (2) under Job Order contracts. They perform functions critical to the continuation of the conservation work for Tubbataha.

Prepared by:



Mary Grace D. Barber  
Administrative Officer

Approved by:



Angelique M. Songco  
PASu, TRNP



## Accomplishment Report

January – June 2022

Tubbataha Reefs Natural Park

PCSD PENRO  
PALAWAN RECORDS  
RECEIVED  
BY: *[Signature]*  
DATE: 05/04/2022 22:4121

### Water quality monitoring



Figure 1. Researchers transfer equipment from MY Navorca to the patrol boat. Photo by TMO/Gerlie Gedoria

The water quality monitoring was conducted in TRNP on May 10-13, with the assistance of the Palawan Council for Sustainable Development Staff. Water samples and *in situ* water parameters were collected from the 20 monitoring sites on the reefs, inside the lagoon, and in the buffer zone of the park. *In situ* water parameters collected include temperature, dissolved oxygen, pH, total dissolved solids, conductivity, and salinity. Water samples were taken to the PCSD Environmental Laboratory for analysis of the following parameters: oil and grease, nitrates, phosphates, total suspended

solids, color, total coliform and fecal coliform.

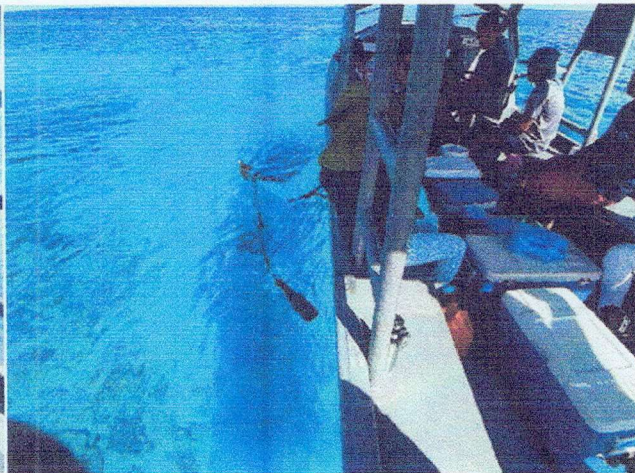


Figure 2. (Left) The team collects water samples for laboratory analysis. (Right) Dr. Faith Perez (PCSDS) deploys a multiparameter water quality meter to obtain *in situ* data. Photo by TMO/Anthea Valenzuela

Prepared by:

*[Signature]*

Rowell C. Alarcon  
EMS I/Researcher

Approved by:

*[Signature]*

Angelique M. Songco  
PASu, TRNP *[Signature]*



## Accomplishment Report

January – June 2022

Tubbataha Reefs Natural Park

DENR PENRO  
PALAWAN RECORDS  
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BY: *[Signature]*  
DATE: 08/04/2022 22-6121

### Fish, benthos and seabird survey



Figure 1. Ace Acebuque takes coral photos using an underwater camera mounted in a monopod. Photo by TMO/Joan Pecson

The annual fish, benthos, and seabird monitoring was conducted in the Tubbataha Reefs Natural Park on April 24 to May 7, 2022. The teams revisited the 11 regular monitoring stations and two (2) ship grounding sites (USS Guardian and Min Ping Yu) and established one (1) additional station. In these stations, various activities were performed – fish visual census, reef benthos monitoring using phototranssect method, coral recruitment, collection of turf algae height, and photos of sponges. Permanent quadrats were also established in areas where there were *Terpios* cyanobacteria and corallimorphs.

The seabird monitoring was done in the Bird and South Islets. The activities include daytime counts of all seven (7) breeding species (Red-footed Booby, Brown Booby, Masked Booby, Great crested Tern, Sooty Tern, Brown Noddy and Black noddy), inflight and early morning counts of Boobies, islet measurement, and photo documentation. The two Masked Boobies were also tagged with plastic and steel ring bands to monitor their breeding behavior.

WWF research vessel, MY Navorca, transported the team to Tubbataha. This activity was funded by the Jimenez Group of Companies and the DENR.



Figure 2. TMO researchers and volunteers count the Brown Booby adults, nests, eggs and chicks. photo by TMO/Gerlie Gedoria

Prepared by:

*[Signature]*  
Gerlie T. Gedoria  
Ecosystem Management Specialists II

Approved by:

*[Signature]*  
Angelique M. Songco  
PASu, TRNP *[Initials]*



## Accomplishment Report

January – June 2022

Tubbataha Reefs Natural Park

TRNP PENRO  
PALAAN RECORDS  
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05/04/2022 22-Cel21

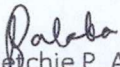
### Beach reforestation

The saplings planted in Bird Islet in 2021 did not thrive due to lack of fresh water, excessive pressure from the seabirds that build their nests on the saplings, and disproportionate amount of sea spray due to rough seas. TMO commissioned residents of Cagayancillo to propagate beach forest trees for planting in Tubbataha during the wet season. A nursery of *Pisonia grandis*, *Heliotropium foertherianum* and *Scaevolla taccada* was also established at TMO and at the ranger station.





Figure 1. *Heliotropium foertherianum* (tree heliotrope) being propagated in Cagayancillo for planting in the park.

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# Accomplishment Report

January – June 2022

Tubbataha Reefs Natural Park

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## Patrolling

A composite team of marine park rangers (MPR) from the Tubbataha Management Office, Local Government Unit of Cagayancillo, Philippine Navy, and Philippine Coast Guard safeguard the reefs year-round and are rotated at the end of two-months' tour of duty in the park.

There were four (4) relieving trips conducted from January to June. One relieving trip was funded by the DENR.



Figure 1. Marine park rangers during their relieving trip to TRNP before the conduct of ship-to-shore movements.

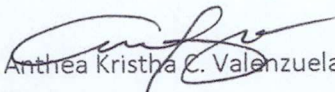


Figure 2. Marine park rangers conducting maritime patrol.

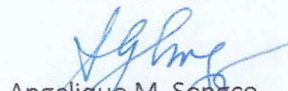
During their tour of duty, the marine park rangers conducted 86 maritime patrols in North Atoll, South Atoll, and Jessie Beazley Reef to ensure that the park is safe from violators and any other illegal activities. For the last six months, a total of 26 passing vessels inside and outside of the buffer zone were recorded based on their monitoring of the automated identification system (AIS).

Aside from maritime patrols, marine park rangers conducted regular seabird monitoring activities such as monthly distance counts and quarterly inventories in the North and South Islets. The marine park rangers also participated in the research and monitoring activities in TRNP, e.g., annual fish, benthos and seabird monitoring, water quality monitoring, deep sea exploration, and habitat mapping. Other Park management activities include surface and coastal cleanups and maintenance of equipment and other assets.

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## Accomplishment Report

2<sup>ND</sup> Quarter

Tubbataha Reefs Natural Park

### GARBAGE COLLECTION

Aside from ensuring that the park is safe from violators or any illegal activities the marine park rangers also conducted surface and coastal clean-ups during their tour of duty.



Figure 1. Figure 2. Marine park rangers retrieving the plastic straw near black rock.



Figure 2. Segregating and weighing marine debris is part of monitoring the volume of debris in Tubbataha.

They have collected the following with a total of 85.4 kilos of garbage in Tubbataha.

Specification	Estimated weight
1. Nylon Rope	4 kls
2. Plastic Water Bottles	3 kls
3. Plastic Facial Bottles	1 kl
4. Plastic Straw	70 kls
5. Assorted Plastic items (Garbage bags, sacks)	5 kls
6. Footwear	1.5 kls
7. Styro foam	.9 kls
<b>Total weight</b>	<b>85.4 kls</b>

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