Republic of the Philippines
Department of Environment and Natural Resources
PROVINCIAL ENVIRONMENT AND NATURAL RESOURCES OFFICE
MIMAROPA Region

DEC 28 2022
DENR-MIMAROPA RECORDS SECTION
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BY:
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MEMORANDUM

FOR : The Regional Executive Director
1515 DENR By the Bay Building,
Roxas Boulevard,
Barangay 668, Ermita, Manila

THRU : The ARD for Technical Services

FROM : The PENR Officer

SUBJECT : ANNUAL REPORT FOR COASTAL AND MARINE RESOURCES/AREAS WITHIN THE ADMINISTRATIVE JURISDICTION OF PENRO OCCIDENTAL MINDORO CY 2022

Respectfully submitted is the Annual Report for Coastal and Marine Resources/Areas within the administrative jurisdiction of PENRO Occidental Mindoro CY 2022.

Please be informed that all targets were 100% accomplished with Means of Verifications (MOVs) endorsed to the Regional Office.

For your information and ready reference.

ERNESTO E. TAÑADA

TSD/CDS-12/23/22

So. Pag-asa, Brgy. Payompon, Mamburao, Occidental Mindoro
E-mail: tsdoccmin042@gmail.com / penroocc.mindoro@denr.gov.ph

Executive Summary

The Coastal and Marine Ecosystems Management Program (CMEMP) is a national program which aims to comprehensively manage, address and effectively reduce the drivers and threats of degradation of the coastal and marine ecosystems in order to achieve and promote sustainability of ecosystem services, food security and climate change resiliency for the benefit of the present and future generations of the Filipino people.

The general objective of CMEMP is to achieve the effective management for the country's coastal and marine ecosystems thereby increasing their ability to provide ecological goods and services to improve the quality of life of the coastal population particularly ensuring food security, climate change resiliency and disaster risk reduction. Specifically, the program aims to: (1) Establish a well-connected network of MPAs to ensure the effective and sustainable management of coastal resources; (2) Implement sustainable management of coastal and marine resources to contribute to food security and improve human-well-being of the coastal communities; (3) Effectively reduce threats and factors of degradation on coastal and marine ecosystems; (4) Enhance the formation of positive values among all stakeholders including the youth through shared responsibilities in sustainable management of coastal and marine resources and habitats, and; (5) Develop and or enhance the skills and expertise of DENR concerned staff as well as other stakeholders on coastal and marine management.

The Program Management and Supervision shall be led by the national government agency- Department of Environment and Natural Resources. The implementation shall be led by the DENR Regional Offices with the technical assistance and guidance from the Biodiversity Management Bureau (BMB). The program shall engage in collaborative partnerships with other National Government Agencies, LGUs, Academe, Civil Society Organizations, and or/ other stakeholders in the implementation of the Program.

For the implementation of Coastal and Marine Ecosystems Management Program in the Province of Occidental Mindoro the following activities were undertaken such as:

1. *MPA Management, Strengthening, and Networking*
   a. Monitoring of Coral Reefs and Mangrove Forest
   b. Water Quality Monitoring within Legislated NIPAS PAs (Apo Reef Natural Park)
   c. Maintenance and Protection of Coastal and Marine Ecosystems
      i. Patrolling
      ii. Habitat Survey
   - Nesting Beach Surveys
   - Asian Waterbird Census
   - F/V Monalinda 85 Grounding Damage Assessment

      iii. Direct Activities
   - Crown-of Thorns Starfish Surveillance
   - Waterbirds Survey (Breeding Season)
   - Coral Bleaching Monitoring
   - Coastal Clean-up Activity

      iv. Maintenance of Equipment

2. *Technical Assistance on ICM*
   a. Technical Assistance to Local Government Units (LGUs) on ICM
   b. Technical Assistance on MPA Networking for LGU managed MPAs
      i. Sablayan-Calintaan Marine Protected Areas Networking (SaCa MPAN)
      ii. Verde Island Passage Localization

3. *Social Marketing and Mobilization/Communication, Education and Public Awareness (CEPA)*

a. Conduct of Regular Special Events related to coastal and marine protection, conservation and management
   - Month of the Ocean (May)
   - Coral Triangle Day (June) and World Ocean's Day (June)
   - International Coastal Cleanup (September)

4. *Program Support and Management*
   a. Hiring of CMEMP Extension Officer
   b. Hiring of Boat Captains

5. *Monitoring and Evaluation*

PENRO Occidental Mindoro – Technical Services Division under Conservation and Development Section conducted quarterly regular monitoring of target activities for physical and financial and submitted report to Regional Office using the prescribed format.

6. *Other Accomplishments*
   a. Re-calibration, Refresher Course, and General Maintenance of Equipment for Assessment and Monitoring of Coastal and Marine Habitats in Apo Reef Natural Park
   b. Apo Reef Natural Park was conferred a platinum-level Blue Park Award by Marine Conservation International last July 1st at the 2022 United Nations Ocean Conference in Lisbon, Portugal.
   c. The Year of the Protected Areas, with the theme "Protected Areas for a Protected Future" is a commemoration of the 90th year since the enactment of Republic Act 3915 or the National Parks Act.
   d. Sub-Allotment Advice (SAA) No. 2022-04-021 was issued by BMB Director Natividad Y. Bernardino to Apo Reef Natural Park for the procurement of various water quality tools and equipment. This SAA amounted to Php 60,000.00, and it was used for the purchase of the following: one ice chest, 16 BOD bottle with stopper, 2 BOD bottle carrier, 18 sampling bottle with screw cap, 10 buckets, 10 plastic dipper, 10 plastic funnel, and one roll of nylon rope.

Accomplishment

A. Coastal and Marine Rehabilitation Sub-Program

I. MPA Management, Strengthening, and Networking

a. Monitoring of Corals and Mangroves

Coral Reef Monitoring

The fifteen pre-established coral reef monitoring stations were sampled last March. The HCC estimate in ARNP is 10.41% which is at the lower threshold of HCC Category D (0-22%) and less than half of the reported HCC in 2017 (21.2%) (Figure 6). This is also much lower than the regional (WPS Bioregion) and nationwide estimates which are 21.2% and 22.8%, respectively. Contrastingly, coral diversity (as TAUs) in ARNP (22 TAUs) remained within the same category as that of the WPS Bioregion (Diversity Category C) (Figure 7).

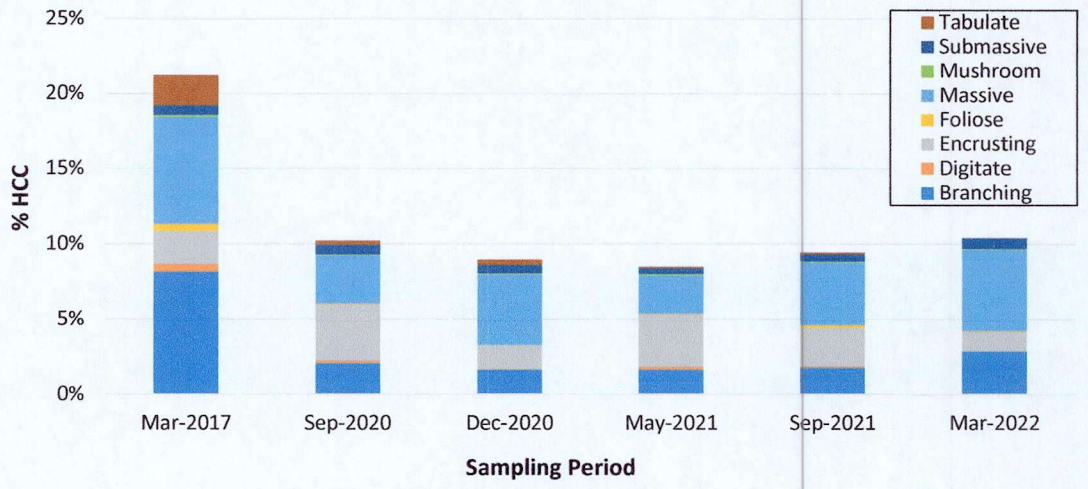

Figure 1. Changes in the overall average cover of coral growth forms from 2017 to 2022.

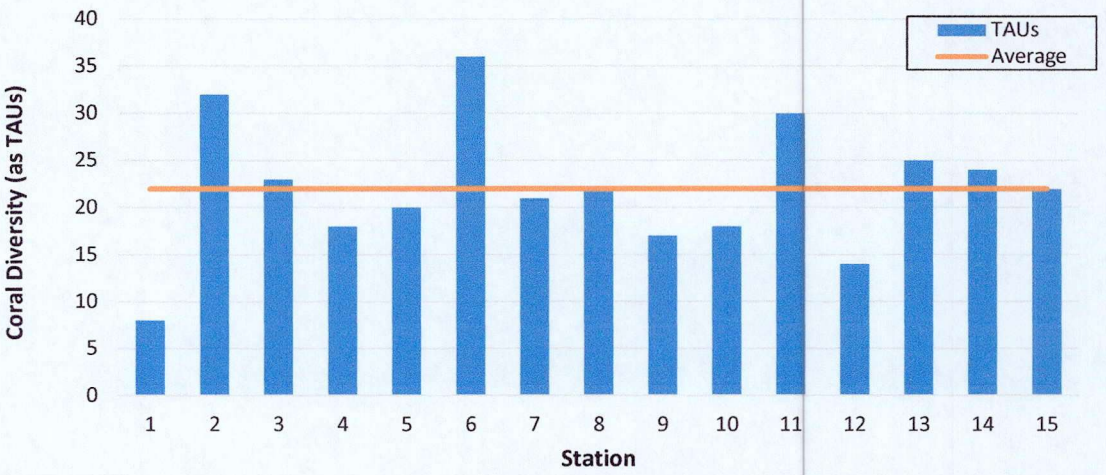

Figure 2. Average coral diversity (as TAUs) in the 15 monitoring stations in Apo Reef Natural Park.

Acute stressors, particularly storms and CoTS outbreaks, may be attributed for the more than 10% decrease in HCC from 2017 to 2020. Evidence of recovery following the major disturbances was only observed in few monitoring stations. The slow recovery of coral reef

areas in ARNP may be the outcome of combined impact of smaller outbreaks of CoTS and storms (Typhoon Quinta and Typhoon Rolly) which followed the major disturbances. The increase in algal cover, excluding CCA cover, may also be exacerbating the effects of these stressors specifically by inhibiting the settlement of coral larvae, increasing the mortality of coral juveniles, and overgrowing adult corals.

Despite the more than observed decrease in HCC, communities of reef-associated macroinvertebrates and reef fish did not reflect a similar magnitude of change (Figures 8-11). For reef-associated macroinvertebrates, only crinoids showed a decrease in abundance and this may be attributed to the loss of structurally complex coral growth forms. Similarly, species richness and abundance as well as biomass of reef fish remained fairly similar pre-disturbance estimates. These findings may indicate that reef-associated macroinvertebrate and fish communities are more resilient and are able to recover at a faster rate than hermatypic corals. Although reef-associated macroinvertebrate and fish communities have remained stable in the recent years, further coral cover loss may cause these communities to decline sharply.

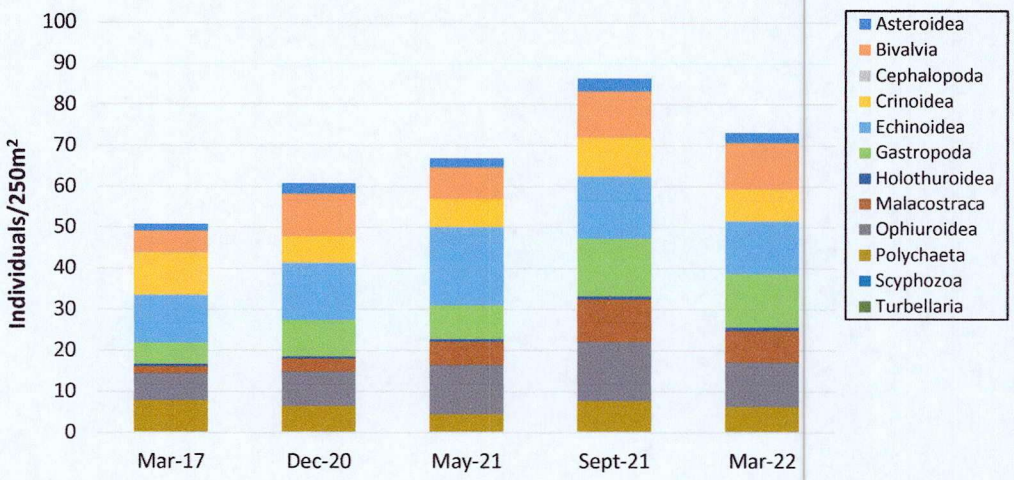

Figure 3. Overall average macroinvertebrate abundance in the 15 monitoring stations in Apo Reef Natural Park since 2017.

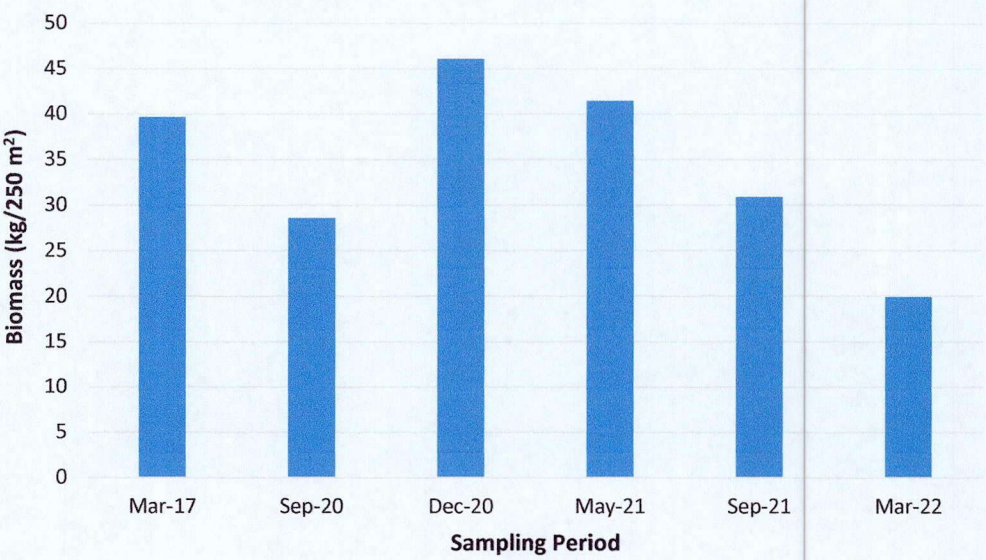

Figure 4. Overall average fish biomass (in kg/250 m^2) in Apo Reef Natural Park from 2017 to 2022.

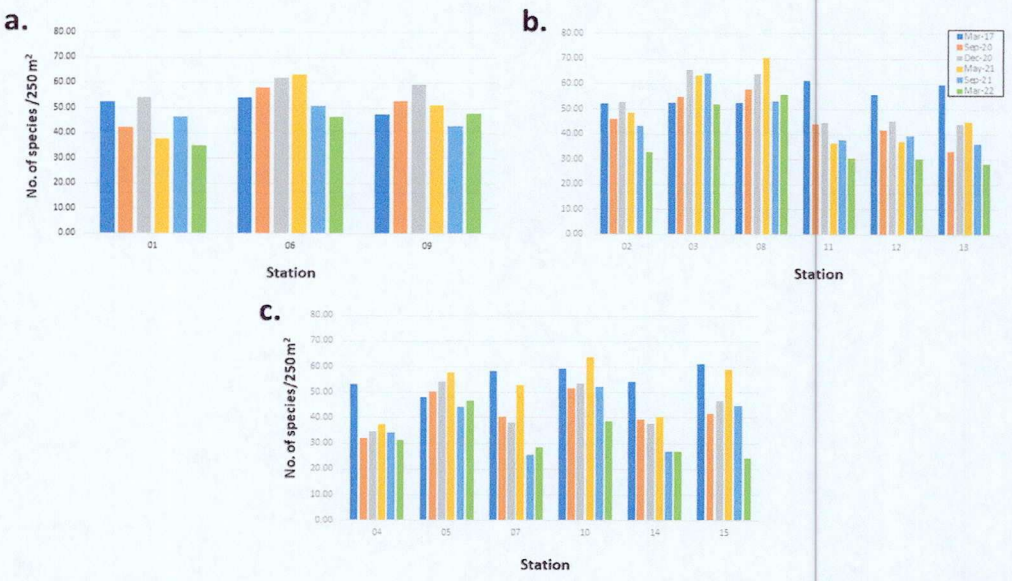

Figure 5. Average fish species richness in the 15 monitoring stations in Apo Reef Natural Park in 2017, 2020, 2021, and 2022. A) Apo Island stations, B) northern stations, and C) southern stations.

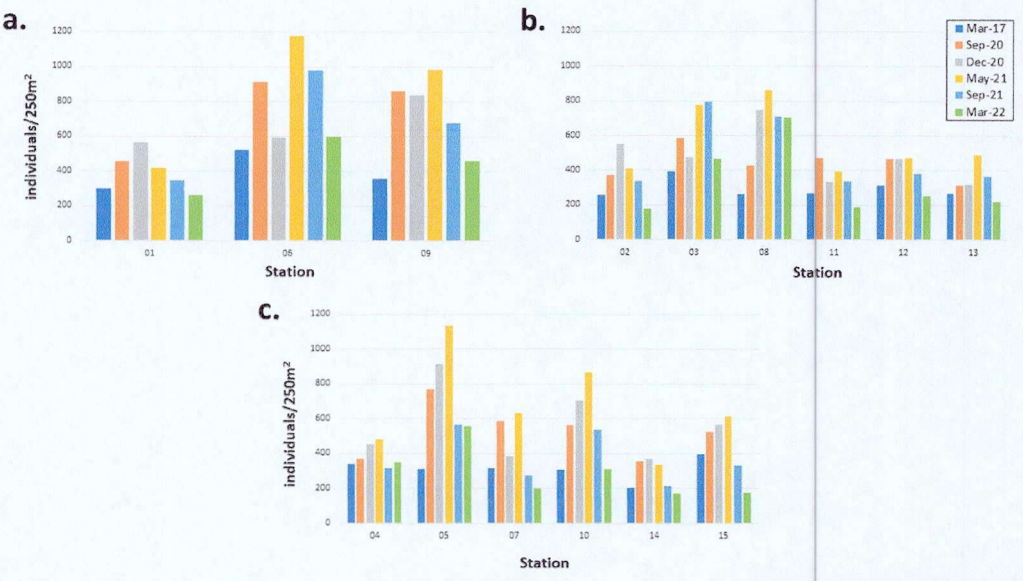

Figure 6. Average fish abundance in the 15 monitoring stations in Apo Reef Natural Park in 2017, 2020, 2021, and 2022. A) Apo Island stations, B) northern stations, and C) southern stations.

Mangrove Forest Monitoring

Seven of the 11 known species of true mangroves in the island were identified during the survey. These were namely, *B. cylindrica, R. apiculata, R. mucronata, R. stylosa, P. acidula, S. alba,* and *X. rumphii,* All of these species are listed under *Least Concern* in the IUCN Red List

of Threatened Species however, *P. acidula* is also classified as *Endangered* under DENR Adminsitrative Order 2017-11. *R. mucronata* is the most ecologically important species based on IVI (152.91), followed by *R. apiculata* (65.64) (Table 8). These two occurred in all zones, but specifically dominated the middle and seaward zone. *B. cylindrica*, *S. alba,* and *X. rumphii* were restricted in the landward margin of the mangrove forest. In terms of crown cover, total height, and level of disturbance, the mangrove forest still falls under *Excellent Condition* based on Deguit et al. (2017). Ultimately, this assessment suggests that the mangrove forest in Apo Island, Apo Island Natural Park is a well-conserved ecosystem.

Table 1. Relative density, frequency, and dominance, and importance value of mangroves in Apo Island, Apo Reef Natural Park.

Species	Relative Density	Relative Frequency	Relative Dominance	Importance Value
Bruguiera cylindrica	11.54	20.95	12.90	45.39
Rhizophora apiculata	26.92	22.30	16.42	65.64
Rhizophora mucronata	46.15	53.38	45.16	144.70
Rhizophora stylosa	3.85	0.68	0.10	4.63
Sonneratia alba	7.69	1.35	23.98	33.02
Xylocarpus rumphii	3.85	1.35	1.43	6.63

It is recommended that monitoring plots be established at Binanggaan in the future. Tabaranza et al. (2014) reported small stands of Rhizophora spp. and Sonneratia spp. on this island. Furthermore, the management staff shall be capacitated in conducting more advanced methodologies such as, but not limited to, carbon stock assessment.

b. Water Quality Monitoring within Legislated NIPAS PAs

Seven monitoring stations were sampled for surface water and groundwater on May and August. The stations passed the set standard (Class SA and B) for most of the water quality parameters measured. Results suggest that the domestic wastewater coming from Apo Island is effectively controlled or treated given the consistently low levels of nutrients (nitrate and phosphate) and fecal coliform in monitoring stations proximal to the existing septic tank systems (Figure 12). Hence, the bathing beach and groundwater remains safe for bathing and domestic use, respectively.

Oil and grease was the only water quality parameter wherein the monitoring stations failed consistently (Figure 13). Marine transport activities remain to be the most likely source of the increased oil and grease recorded which ranged from 2 to 3 mg/L. Being proximal to navigational shipping lanes, the Protected Area is mainly exposed to oil discharge from Ropax and cargo vessels. Commercial and small-scale fishing boats and recreational boats operating inside or outside the Protected Area may also be contributing to oil pollution in the area but to a lesser extent.

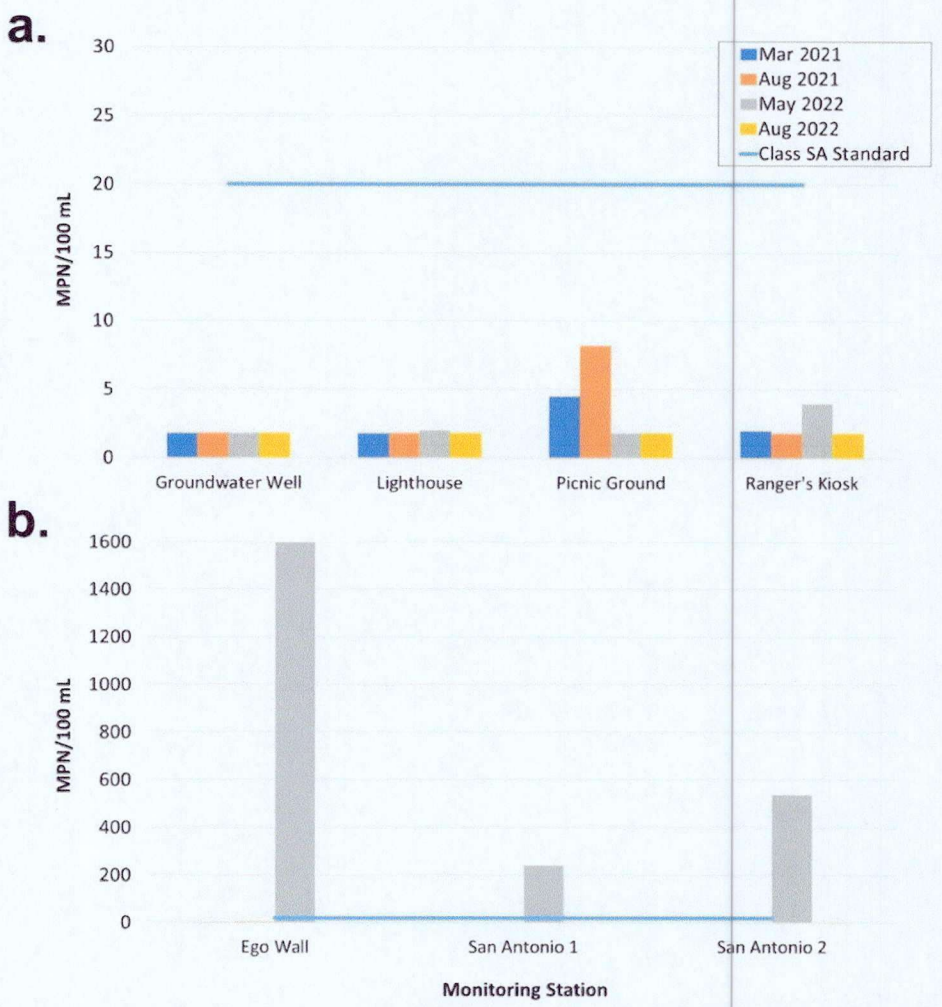

Figure 6. Fecal coliform count across the offshore (a) and island monitoring stations (b) from 2021 to 2022.

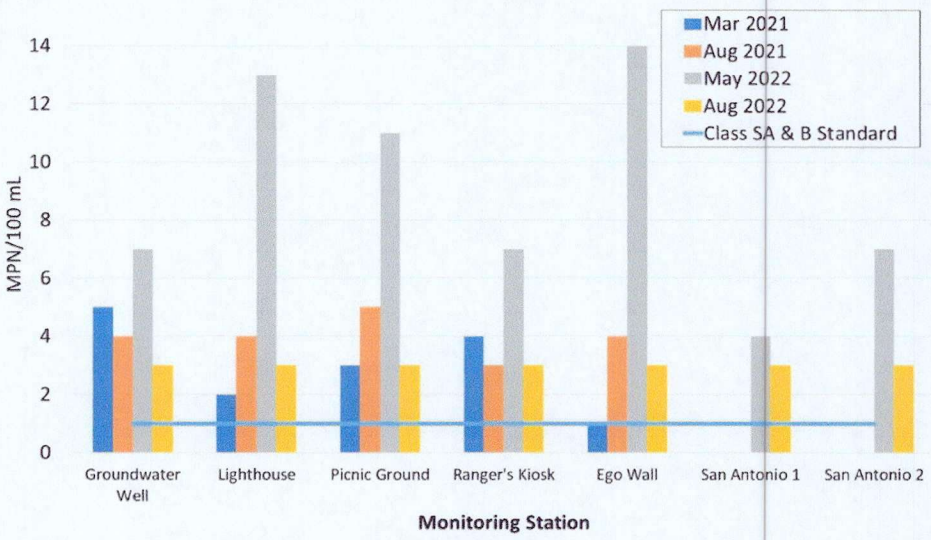

Figure 7. Oil and grease concentration across the monitoring stations from 2021 to 2022.

It is recommended that other quality assurance and control measures, like the collection of field blank, equipment blank, and field duplicates, be taken when more funding becomes available. Sampling sites within the Protected Area may be increased afterwards to improve the generality of the findings. Aside from these, the Maritime Industry Authority (MARINA) should be consulted for feasible actions addressing the increased oil and grease levels within the MPA and response plans for major accidents which may lead to oil spills should be developed.

c. Maintenance and Protection of Coastal and Marine Ecosystems

i. Patrolling

The 15,799.23-hectare core zone of ARNP was patrolled this year. Operations were greatly decreased in the last three quarters of the year because most watercraft of ARNP were nonfunctional and undergoing repair. To compensate for the decrease, the Park Rangers increased their foot patrols within Apo Island and surveillance effort from the lighthouse.

Three groups of fisherfolks were apprehended this year. The group that was intercepted on January 28, 2022, at approximately 3.5 km from Cajos del Bajo, were comprised of Darwin I. Arabis, Jeto P. Agbo, Jerick Agbo, and Jorven Trangeja. Criminal cases were filed against these fishermen in violation of Republic Act 11038 or the Expanded National Integrated Protected Areas System Act of 2018. Darwin I. Arabis and Jeto P. Agbo were acquitted of the crimes they were charged with on August 8, 2022. Meanwhile, the trial of Jerick Agbo and Jorven Trangeja is ongoing. The two other groups of fisherfolks composed of Roquito Francisco Dioso, Robert Caspillo Natumbo, and Jayar Arcelo Agustin were apprehended on December 13, 2022 within Bahura 7. The inquest of the fisherfolks was conducted on December 14, 2022.

The Park Rangers were also able to encounter two pieces of large debris on November 9, 2022. These were suspected to be from a Chinese Long March rocket. Parts of the debris were retrieved by Coast Guard Sub-station Sablayan on November 10, 2022, and it was transported back to mainland Sablayan on November 11, 2022.

ii. Habitat Survey

Nesting Beach Surveys

Nesting beach surveys are conducted at Apo Island, ARNP in the morning and night. During daytime surveys, the nesting activities of sea turtles were counted using crawls (also called tracks), body pits, and nests. Nesting activities include all attempts of female sea turtles to nest, whether successful or not. The data collected for each nesting activity includes the species of sea turtle, incident type (nesting emergence or false crawl), and GPS location of the nest or false crawl. Night-time surveys were also carried out but with much less effort than daytime surveys. When nesting sea turtles were encountered during the surveys, they were tagged with Inconel® tags with inscribed numbers and letters (i.e. PH1515K) on the flippers. Marine Turtle Tagging Forms (MT01) were then accomplished. The protocol for sea turtle tagging was adopted from the Philippine Aquatic Wildlife Rescue and Response Manual Series: Marine Turtles.

235 crawls have been recorded along the sandy beach of Apo Island from January 1, 2022 to November 28, 2022 (Figure 14). These crawls were from the two identified nesting species in ARNP: the Green Turtle (Chelonia mydas) and Hawksbill Turtle (Eretmochelys imbricata). Crawls from Green Turtles (n=199) were more numerous than Hawksbill Turtles (n=36). This was expected due to the higher abundance of green turtles than that of the latter

which is Critically Endangered under the IUCN Red List. Of the total number of crawls recorded, only 47 are considered nesting emergences. Most of which were also from Green Turtles (n=42).

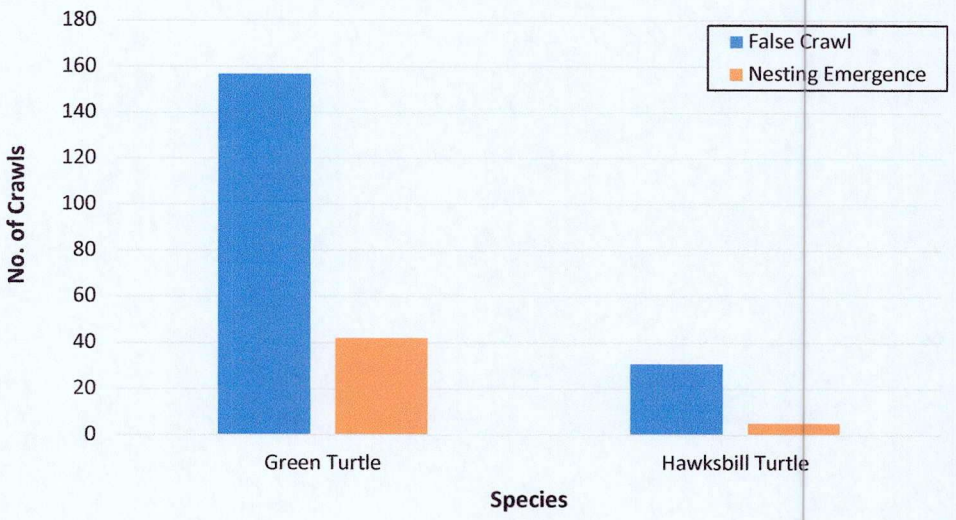

Figure 8. Crawls of Green Turtle and Hawksbill Turtle recorded from January 1, 2022 to November 28, 2022.

Six individuals have been tagged to date. Four of which are Green Turtles while the other two are Hawksbill Turtles. The most recent tagging activity was conducted on November 27, 2022. The mean curved carapace length and width for both species are shown in Table 8. None of the turtles had existing tags prior to tagging.

Table 2. Curved carapace length and width of the sea turtles tagged in 2022.

Tag No.	Species	CCL (cm)	CCW (cm)
PH1538K	*Chelonia mydas*	96	87.3
PH1539K	*Chelonia mydas*	97	90
PH1540K	*Chelonia mydas*	95	83
PH1541K	*Eretmochelys imbricata*	73	60
PH1542K	*Eretmochelys imbricata*	76.2	70
PH1544K	*Chelonia mydas*	100	95

Asian Waterbird Census

Transect cruise was the main method used to assess the population of waterbirds in ARNP. Dedicated transect cruises were conducted around the three islands (Apo Island, Apo Menor, and Cajos del Bajo) and within the buffer zone of the MPA (near Barkong Lutang and Parolang Putol). All waterbirds observed during at-sea surveys were identified and counted by the volunteer birders. This report also recorded opportunistic observations during transit and within the MPA.

Aside from at-sea surveys, transect walks were conducted in Apo Island from 5:30 AM to 7:00 AM to record other species of waterbirds. Species of non-waterbirds and their corresponding counts were also noted during transect walks. The highest count acquired for each waterbird and non-waterbird species during the four-day survey is presented in this report. Waterbird counts were also reported to Wetlands International as part of the AWC, and this was done using the site and count forms distributed by the DENR-Biodiversity Management Bureau.

Eight species and at least 54 individuals of waterbirds were recorded during the survey (Table 10). The most numerous species was the Barred Rail (Hypotaenidia torquata), with 40 individuals recorded in Apo Island. This species is often observed aggregating at the Ranger's Station to forage.

Table 3. List of the waterbird species recorded from January 13 to 16, 2022.

Common Name	Scientific Name	Conservation Status**		Highest Count
		IUCN Red List	PH Red List	
Common Kingfisher	*Alcedo atthis*	LC		2
Collared Kingfisher	*Halcyon chloris*	LC		3
Peregrine Falcon	*Falco peregrinus calidus*	LC		1
Streaked Shearwater	*Calonectris leucomelas*	NT		4
Barred Rail	*Hypotaenidia torquata*	LC		40
Black-winged Stilt	*Himantopus himantopus*	LC		1
Pomarine Jaeger	*Stercorarius pomarinus*	LC		1
Brown Booby	*Sula leucogaster*	LC	EN	2

* R – Resident, M – Migrant, R/M – Resident and Migrant, A – Accidental
** LC – Least Concern, NT – Near Threatened, EN – Endangered

Of the recorded waterbird species in Figure 1, three were identified as seabirds which include the Pomarine Jaeger (Stercorarius pomarinus), Streaked Shearwater (Calonectris leucomelas), and Brown Booby (Sula leucogaster) (Figure 15). One male Pomarine Jaeger individual was observed while in transit to ARNP. This rare winter migrant species was confirmed by the Wild Bird Club of the Philippines; it was only the 20th sighting of this species in the Philippines. The two other seabirds recorded were the Streaked Shearwater and Brown Booby. During the survey, a group of four Streaked Shearwaters was encountered, which is identified as Near Threatened (NT) under the IUCN Red List of Threatened Species. Meanwhile, two individuals of Brown Booby were recorded, and it is only categorized as Least Concern (LC) in the IUCN Red List of Threatened Species. However, the species is Endangered (EN) in the National List of Threatened Fauna (DENR Administrative Order No. 2019-09).

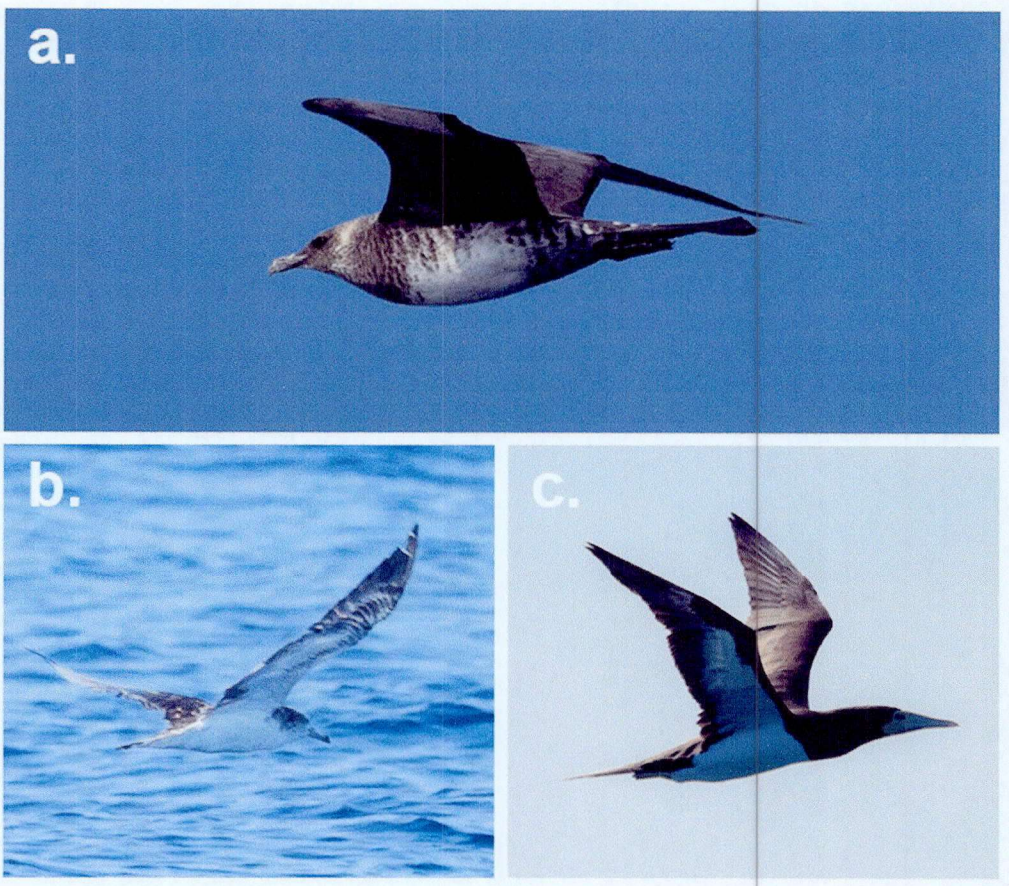

Figure 9. The seabirds recorded within and while in transit to Apo Reef Natural Park. Pomarine Jaeger (a); Streaked Shearwater (b); Brown Booby (c).

The other waterbird species recorded were Peregrine Falcon (*Falco peregrinus calidus),* Collared Kingfisher (*Alcedo atthis*), and Common Kingfisher (*Halcyon chloris*). The lone Peregrine Falcon recorded is possibly the same individual recorded during the survey in November 2021. During the two surveys, the species was recorded perching on a tree in Binanggaan, though it was also observed in Apo Island on the recent survey.

There were 12 non-waterbird species recorded. The notable ones were, namely, the Nicobar Pigeon (*Caloenas nicobarica*), Philippine Megapode (*Megapodus cumingii*), and Mantanani Scops-Owl (*Otus mantananensis*). All three are not listed under the IUCN Red List's threatened categories but are included in the National List of Threatened Fauna. The Mantanani Scops-Owl and Philippine Megapode are categorized as Vulnerable (VU), while the Nicobar Pigeon is listed as Endangered (EN).

The number of bird species observed within the survey duration was relatively low compared to previous surveys. Despite this, continuous participation in the AWC is still recommended, especially to monitor non-breeding season populations of seabirds within the MPA. The frequency of at-sea surveys may be increased in the following years. Based on the result of this survey, the monthly monitoring of birds in the protected area is still recommended. It is to understand further the movements, migration, and breeding activities all year round.

The volunteers also recommend the installation of birdbaths in Apo Island. It was pointed out during the survey that Apo Island possibly serves as a stopover for migratory

birds. Thus, birdbaths in Apo Island may improve refueling opportunities for resting migrants. Regarding the matter, dead or sick migratory birds should not be handled without the proper protective equipment and expert supervision to prevent the transmission of diseases.

Lastly, citizen science is essential now in biodiversity research and conservation. Thus, the capacity development of park rangers in bird identification and counting should be continued. Regular lectures and in-situ training facilitated by the MBCFI remain an integral part of the capacitation of park rangers. There must be adequate birding equipment available to the rangers year-round to support the current efforts. It is important to note that the ARNP-PAMO is set to procure one birding camera, three binoculars, one spotting scope, and two field identification guides this year. However, more equipment should be purchased when the budget becomes available.

F/V Monalinda 85 Grounding Damage Assessment

F/V Monalinda 85 ran aground the southwestern portion of Apo Reef Natural Park on March 30, 2022 at approximately 2:00 AM (Figure 16). It was headed towards Navotas City, Manila carrying 1,700 crates of fish locally known as galunggong from a fishing ground in El Nido, Palawan. The Philippine Coast Guard – Sablayan Substation (PCGSS) visually inspected the vessel and its perimeter for oil leakage and there was no trace of an oil spill observed. At approximately 7:00 PM, F/V Monalinda 85 was towed by its sister vessel, F/V Monalinda 66.

Figure 10. F/V Monalinda 85 aground the southwestern portion of Apo Reef Natural Park.

The Protected Area Management Office mobilized an internal assessment team headed by the Protected Area Superintendent and mostly comprised of licensed SCUBA divers. The team conducted field surveys on April 20 and 26, 2022 to assess the damage incurred by the grounding of F/V Monalinda 85 to the seabed. The preliminary assessment aimed to a) delineate the area damaged by the grounding incident, b) collect photos and video footages representative of the damaged area, and c) provide an initial estimate of the damage cost based on PAMB Ordinance No. AR07-001-1, series of 2011.

The physical damage of F/V Monalinda 85 to the coral reef was approximately 191.556 m^2. The linear strip of damage featured a central portion of severely damaged corals, wherein only reef rubbles were left (Figure 17). To its sides were piles of displaced and/or overturned corals and limestone as well as surviving but damaged coral colonies. Long-term impact to coral reef may be expected from the grounding incident due to the instability of resulting

substrate, algal overgrowth, and possible antifoulant contamination which are barriers to coral reef recovery.

The estimated value of the damage caused by the grounding of F/V Monalinda 85 is P2,298,720.00. This was based on the PAMB Ordinance No. AR07-001-1 wherein it is stated that an administrative fine of P12,000.00 shall be paid for every square meter of coral reef damaged from a ship grounding incident. On top of the estimated value, another P50,000.00 to P100,000.00 shall be claimed from the shipping company for unauthorized entry into the MPA.

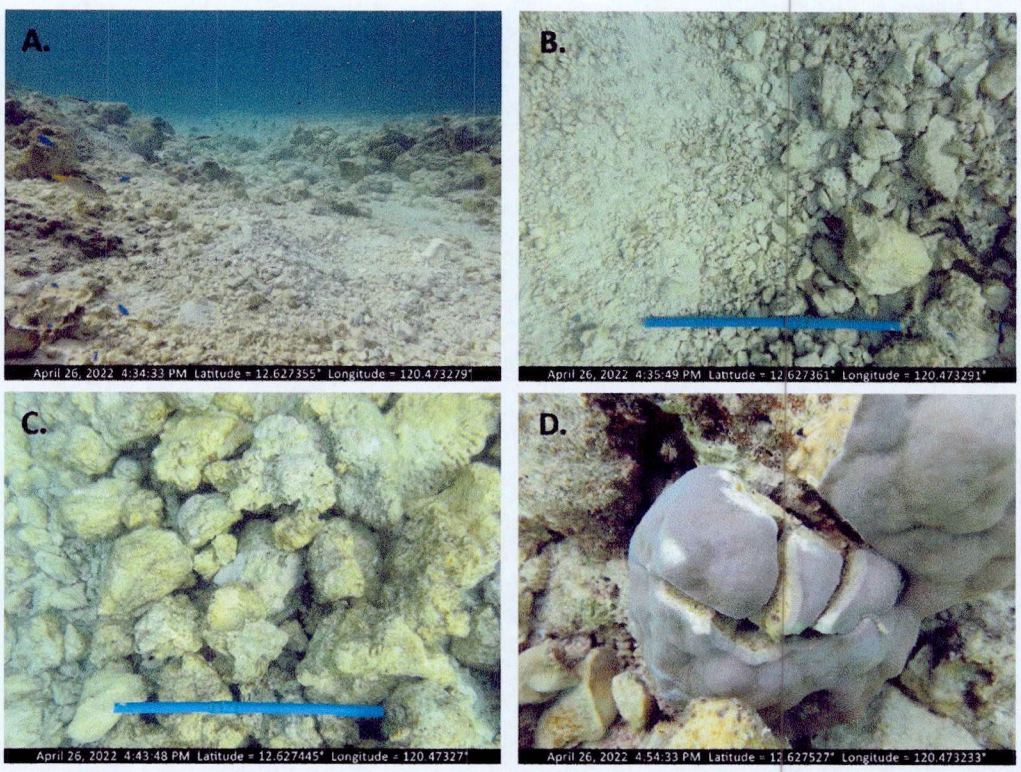

Figure 11. Representative photographs from the damaged area caused by F/V Monalinda 85. (A-B) Severely damaged seabed; (C) Piles or berms of dislodged and/or overturned corals and limestone; (D) Fractured yet intact coral colony. Scale bar = 50 cm.

Waterbirds Survey (Breeding Season)

Black-naped Terns (n=824) and Bridled Terns (n=757) were the most numerous bird species during the survey (Table 11 & Figure 18). The counts for both species this year were the highest since breeding season surveys began in 2018. Greater Crested Tern (n=6) and Brown Noddy (n=1) were also recorded during the survey. Both species are listed as *Vulnerable* under the National Red List of Threatened Fauna.

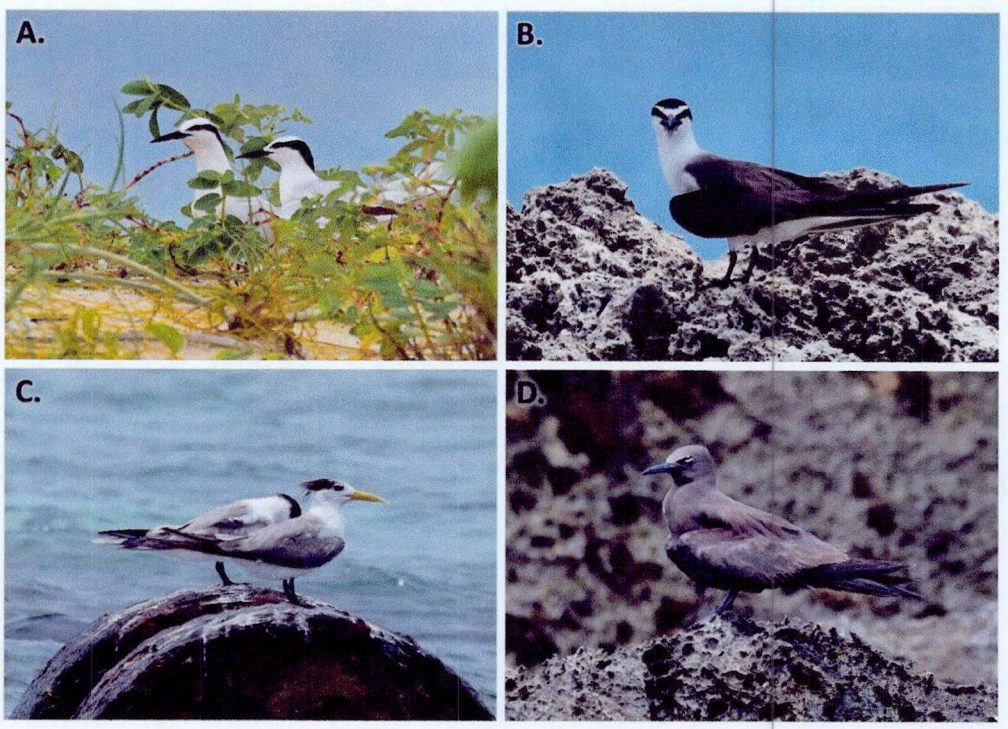

Figure 12. Four of the five seabird species recorded during the survey from July 16 to 19, 2022. A.) Black-naped Tern, B.) Bridled Tern, C.) Greater-crested Tern, and D.) Brown Noddy.

Table 4. Highest count of seabirds in ARNP from July 16 to 18, 2022.

Species	Conservation Status		Highest Count				Total
	PH	IUCN	AI	BG	TK	IT	
Bridled Tern	LC	OTS	36	565	64	92	757
Black-naped Tern	LC	OWS	347	158	260	59	824
Greater Crested Tern	LC	VU	3	0	0	3	6
Brown Noddy	LC	VU	1	0	0	0	1
Tern sp.	-	-	0	0	0	50	50
Brown Booby	LC	EN	1	0	0	0	1

LC - Least Concern, OTS – Other Threatened Species, OWS – Other Wildlife Species, VU – Vulnerable, EN – Endangered

During the ground counts for nests, eggs and chicks of Black-naped Terns and Bridled Terns were recorded. In Tinangkapan, both Black-naped Tern and Bridled Tern nests were recorded. Partitioning of nesting space was observed in the 0.28-ha rocky islet. Bridled Terns occupied the portion of the island with slightly higher elevation and vegetation while Black-naped Terns nested on areas that were mostly bare and more prone to flooding. Eggs and chicks of Bridled Tern were more numerous than Black-naped Tern in this islet (Table 12). Along the sandy beach in Apo Island, only Black-naped Tern nests were present. The nests were shallow depressions on coral rubble or bare sand with no nesting material. The number of eggs per clutch ranged from one to three eggs. A total of 253 eggs and 71 chicks were

recorded and these were all within the southern section of the beach that is within the Strict Protection Zone.

Table 5. Number of eggs and chicks of Black-naped Terns and Bridled Terns in two of the three islets in ARNP.

Species	Apo Island*		Tinangkapan	
	Eggs	Chicks	Eggs	Chicks
Bridled Terns	0	0	13	11
Black-Naped Terns	253	71	7	4

**Only the sandy beach was surveyed*

Regular monitoring of bird populations within the breeding season should be continued along with other capacity-building activities for the management staff. Anthr`opogenic threats to the breeding seabirds should also be addressed. These threats include human visitation in nesting areas which are within the SPZ. Strict enforcement and effective communication of PA rules and regulations will be key in addressing this. Closing the south trail to tourists every breeding season may also be considered because Black-naped Terns were observed to flush when people pass the trail. This will be feasible once the other boardwalk, located at the northern portion of the island, has been repaired. Another threat is predation by invasive rats. Traps may be regularly deployed, with increasing trapping effort during the breeding season, to reduce the invasive rat populations in Apo Island.

iii. Direct Activities

Crown-of Thorns Starfish Surveillance

Crown-of-thorns starfish (CoTS) is a corallivorous starfish with venomous spines. It can have up to 23 arms and grow to over half a meter in diameter. CoTS naturally occur in coral reefs in low densities but populations of this organism can reach very high densities and cause significant damage to reefs. The largest CoTS outbreaks in Apo Reef Natural Park have occurred in 2018 and 2019 with 2,099 and 10,680 individuals culled, respectively.

This year, dedicated surveys for CoTS were conducted in 21 sites within the Protected Area. These sites include the fifteen coral reef monitoring stations and four *transect* swim sites, and the frequency of survey ranged from 1-2. CoTS were only observed in two sites: Parolang Putol and San Antonio. Only 1 individual was observed in the former last August. Meanwhile, 8 individuals were recorded in the latter last March. Another survey was conducted in this site last August and the number of individuals recorded decreased to 2. Ultimately, no localized outbreak of CoTS was confirmed in 2022.

Coral Bleaching Monitoring

The occurrence of coral bleaching was also monitored this year albeit at much lower effort than CoTS. Three sites were monitored namely, Parolang Putol, San Antonio, and Barracuda Point. Reefscape photographs were taken at these sites. The photographs were conservatively post-processed in Adobe Lightroom and then submitted to Philippine Coral Bleaching Watch (PCBW) through their Online Submission Form.

There were not any noticeable patches of bone-white corals in three sites on all monitoring dates. However, a few colonies in San Antonio and Parolang Putol were observed to exhibit fluorescent shades of green and violet in February. It cannot be determined whether these were the natural colors of the corals or they were showing signs of thermal stress thus, it was reported to the PCBW that the observers are uncertain whether there is an occurrence of

coral bleaching in both sites. No signs of bleaching were recorded in the three sites in the following monitoring activities.

Coastal Clean-up Activity

Coastal clean-up activities are regularly conducted on Apo Island by management staff. 74 sacks of marine litter were collected from September to November 2022. To date, 214 sacks of mixed marine litter and 250 kilograms of derelict fishing gear have been collected within Apo Island (Table 13). All of these were transported back to mainland Sablayan for proper disposal. Larger debris like drift lumber was also removed from the sandy beach prior and during the peak of the sea turtle nesting season in the Protected Area.

Table 6. Marine litter collected within Apo Island from January to November. 2022.

Month	Type	Approximate Quantity
January	Mixed	15 sacks
February	Mixed	28 sacks
	Derelict Fishing Gears	150 kilograms
March	Mixed	13 sacks
April	Mixed	13 sacks
May	Mixed	17 sacks
June	Mixed	15 sacks
July	Mixed	20 sacks
August	Mixed	19 sacks
September	Mixed	24 sacks
October	Mixed	25 sacks
November	Mixed	25 sacks
	Derelict Fishing Gears	100 kilograms

iv. Maintenance of Equipment

All watercraft of ARNP-PAMO is currently dry-docked (Table 14). The 30-footer hi-speed watercraft has been dry-docked since the first quarter of this year. To date, the repair of its hull, windshield, and roofing have been completed. The watercraft is expected to be fully functional by the end of the year after the installation of a new engine. Aside from the 30-footer hi-speed watercraft, the outrigger boat (MBca Jerlyn) is also dry-docked. The repair of its sternpost, outrigger boom, pilot house, and hull are ongoing. The completion of which is expected within the first quarter of 2023.

Table 7. Parts of watercraft that were repaired from January to December 2022.

Watercraft	Parts Repaired	Status
MBca Jerlyn	Engine generator, carburetor, and outriggers	For replacement of sternpost, outrigger boom, and pilot house, and strengthening of boat hull
24-footer Hi-speed Watercraft	Hull	For replacement of steering cable and repainting of boat hull
30-footer Hi-speed Watercraft	Stainless frame and fiber-coated roofing	For engine replacement and installation
Spotter Boat	None	Serviceable

Radio transceivers and several diving equipment were also maintained during the year (Table 15). The two radio transceivers were kept in good condition but the unit in the office of ARNP-PAMO was replaced with a more recent model (ICOM Dual Band Transceiver IC-230A) that was purchased this year. Most of the diving equipment are presently in good condition. 23 diving tanks were inspected and subjected to hydrostatic testing by Aquamundo Sports Inc. on May 25, 2022. Meanwhile, five sets of the diving gears need replacement.

Table 8. Status of other equipment of ARNP-PAMO as of December 2022.

Equipment	Quantity	Status
Kenwood TM-271A Base Radio	1	Good condition
Kenwood TM-281A Base Radio	1	Good condition
Diving Tanks	30	Good condition
Dive Gears	10	5 in good working condition; 5 functional but needs replacement

II. Technical Assistance on ICM

Technical Assistance to Local Government Units (LGUs) on ICM

As part of the continuous activity particularly in the technical assistance of the Department of Environment and Natural Resources (DENR) as a commitment to the Local Government Units (LGUs) the activity has been targeted this year. The activity was accomplished late due to the confusion as to what is the proper Means of Verification (MOV) of the activity should be. And upon learning that a new policy will be implemented for the same activity thus the section decided to wait for the roll-out and implementation of Biodiversity Management Bureau Technical Bulletin No. 2022-02 or the Mainstreaming the Integrated Coastal Management (ICM) Approach to the Local Government Units Comprehensive Land Use Plan (CLUP).

After the regional roll-out of the said policy, this office has sent communication letter to the Local Government Unit of Sablayan as early as June 13, 2022 informing the LGU that considering the data currently available and considering that the LGU will be conducting an updating activity of their Comprehensive Land Use Plan (CLUP) for 2023 the DENR is proposing that the LGU Sablayan be the partner agency for the implementation of the said activity in which the LGU Sablayan has confirmed their willingness to be the partner agency for the implementation of the said activity thru a letter of reply form MENRO Robert P. Duquil dated June 27, 2022.

And on June 25, 2022, a communication was then sent to Hon. Walter B. Marquez informing his office on the scheduled orientation on the Mainstreaming the Integrated Coastal Management (ICM) Approach to the Local Government Units Comprehensive Land Use Plan (CLUP) or the BMB Technical Bulletin No. 2022-02 on August 5, 2022 at Sabayan, Occidental Mindoro.

In order for the activity to be more productive this office has also coordinated with the Regional Office particularly in the Conservation and Development Division by sending a Memorandum dated July 22,2022 requesting for the resource person for the technical assistance

to LGUs on the Mainstreaming of the Integrated Costal Management (ICM) Approach to their Comprehensive Land Use Plan (CLUP).

The orientation activity did materialize last August 5, 2022, the activity was attended by the personnel from the Municipal Planning and Development Office, Municipal Environment and Natural Resources Office, DENR PENRO Occidental Mindoro and DENR CENRO Sablayan-Conservation and Development Section with Engr. Ronnie Alpajaro serve as the resource person for the said activity.

During the said activity Engr. Alpajaro presented and discussed the principles that form the foundation of ICM practice, delineating the ICM operational boundary. He presented/ requested for the input of the LGU particularly in the names of the major river sytems, n ame of the receiving body of water, name of protected area, status of the ICM Plan, CLUP and CDP together with its year of implementation in which MPDC Luzviminda C. Alto and MENRO Robert P. Duquil have added the Pasugui, Alipid and Busuangan as additional river systems in which a ground validation will be conducted by the CENRO personnel.

The discussion also includes the ICM Program Development and Implementation cycle of the program which mirror the 12 step in CLUP process, ICM framework for sustainable development of the coastal and Marine Environment resources specifically the thirty-five (35) core indicators on ICM CLUP.

Milestone activity/ activity report was then submitted last Augut 22, 2022. Also, on the same date a communication letter was sent to LGU Sablayan regarding the updating/ filling out of the Checklist of data and map requirement for ENR profile that is also a requirement for the mainstreaming of ICM to the LGU CLUP.

The report with the filled-out forms for the] Checklist of data and map requirement for ENR profile, result of the ground truthing activity and other documents was submitted last November 17, 2022. (Scanned copy of the reports can be accessed through bit.ly/CSby-CDS-MPAN).


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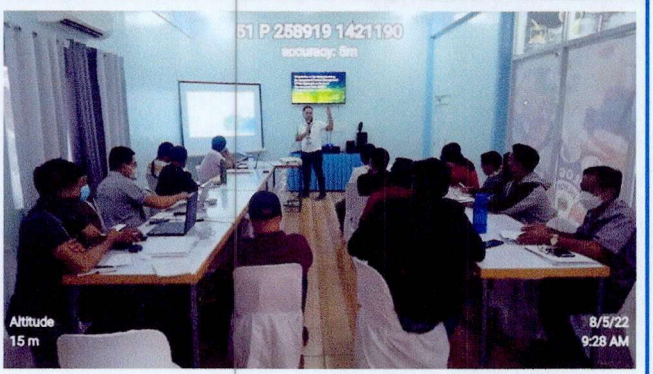
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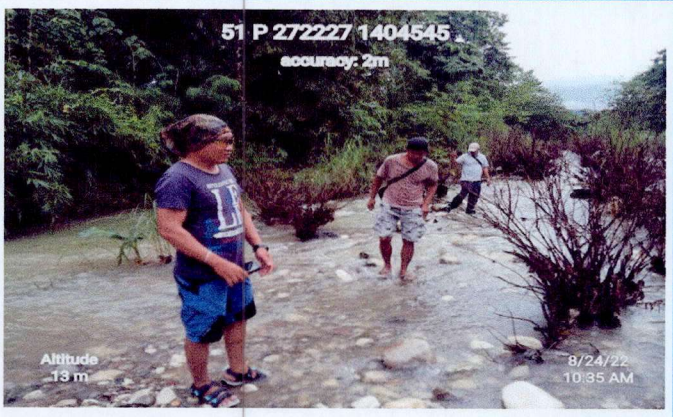
TECHNICAL ASSISTANCE TO LGUs - INTEGRATED COASTAL MANAGEMENT MAINSTREAMING
(Ground Truthing on Additional River Systems identified by Sablayan LGU)



TECHNICAL ASSISTANCE TO LGUs - INTEGRATED COASTAL MANAGEMENT MAINSTREAMING
(Orientation to BMB TB 2022-02)

-Sablayan-Calintaan Marine Protected Areas Networking (SaCa MPAN)

The Sablayan- Calintaan Marine Protected Areas Network (SaCa MPAN) was a pilot activity for the province of Occidental Mindoro with regards to the implementation of the Marine Protected Areas Networking (MPAN).

The Sablayan- Calintaan Marine Protected Area Network (SaCa MPAN) is a partnership agreement between the two municipalities with regards to marine conservation and protection.

The activity started in 2019 with discussions with both municipality and coordination meetings have been conducted. The Memorandum of Agreement wasnsigned by Hon. Eduardo B. Gadiano, Provincial Governor, Occidental Mindoro with then RED Henry Adornado of DENR MIMAROPA Region.

For this year, quarterly meetings were conducted. The first quarter meeting was conducted last March 29, 2022 wherein the draft Manual operation was presented to the Executive committee members with comments/ suggestion from the body were recorded by the secretariat. Also, during this meeting the inventory of policies was suggested for inventory for possible issuance of joint ordinance for both municipalities.

The second quarter, a more serious climate was observed during the discussion of the Manual of Operations wherein the secretariat presented the draft with the corrections from the previous meeting was incorporated. During this meeting some members still have additional comments/ corrections with the Manual of Operations. The second quarter meeting was supposedly scheduled on June 17, 2022 but due to the busy schedule of the LGUs because of the conducted election it was the rescheduled and conducted last July 15, 2022.

The third quarter meeting was conducted at Calintaan, Occidental Mindoro last September 15, 2022. The draft manual of operations was then again discussed for the comments/ suggestions presented. Also during the said meeting updates/ activities conducted by the LGUs at their Locally Managed Marine Protected Areas (LMMPAs) were presented. Activities such as reef check, patrolling, maintenance of equipment and IEC are conducted.

While the fourth quarter meeting was conducted last December 7, 2022. On this meeting no quorum was observed as members of the committee have prior engagements thus the final draft of the manual of operations was not presented. The secretariat presented the Result of the inputs and outputs during the national consultation workshop for the future target setting of MPANs. The secretariat also discussed the parameters to be set/ standardize by the Biodiversity Management Bureau (BMB). And shared that almost all of the regions agreed that certain activities of the MPANs should not be targeted in just a single year.The accomplishment mapping for the SaCa MPAN was also presented together with the National MPAN Roadmap per region for 2023-2028.

Lastly, as part of the commitment of the DENR in the activities for the MPAN a symposium was conducted by the Provincial Planning and Development Office (PPDO) wherein the said activity is collaboration between DENR, PPDO and LGU Calintaan. (Scanned copy of the reports can be accessed through bit.ly/CSby-CDS-MPAN).

SABLAYAN CALINTAAN MARINE PROTECTED AREA NETWORK
(Symposium at Calintaan, Occidental Mindoro)

SABLAYAN CALINTAAN MARINE PROTECTED AREA NETWORK
(1st Quarter Executive Committee Meeting)

SABLAYAN CALINTAAN MARINE PROTECTED AREA NETWORK
(2nd Quarter Executive Committee Meeting)

SABLAYAN CALINTAAN MARINE PROTECTED AREA NETWORK
(3rd Quarter Executive Committee Meeting)

SABLAYAN CALINTAAN MARINE PROTECTED AREA NETWORK
(4th Quarter Executive Committee Meeting)

- Verde Island Passage Marine Protected Areas Networking (VIP Localization Plan)

For 2022, the Conservation and Development Section has a target activity for Verde Island Passage (VIP) as a component of the Marine Protected Areas Network (MPAN) with this activity and in relation to the implementation of the strategic management and law enforcement plan of the VIP.

The Verde Island Passage (VIP) is a 1.7 million hectare-strait between the islands of Mindoro and Luzon, connecting Tayabas Bay and the West Philippine Sea. It encompasses five provinces: Batangas, Occidental Mindoro, Oriental Mindoro, Marinduque, and Romblon. The VIP is recognized as "the center of the center of marine shore fish biodiversity" (Carpenter & Springer, 2005) and it is one of the 228 Key Biodiversity Areas (KBAs) in the Philippines (Ambal et al., 2008). Fisheries and marine-based tourism thrive in the VIP. Aside from these, the waterway also supports transportation and international shipping.

The conservation significance of VIP has prompted conservation partnerships between the public and private sectors. In 2006, former Philippine President Gloria M. Arroyo signed Executive Order No. 578 entitled *"Establishing national policy on biological diversity prescribing its implementation throughout the country, particularly in the Sulu Sulawesi Marine Ecosystem and the Verde Island Passage Marine Corridor"*. This was followed by the formulation and adoption of The Verde Island Framework in 2009. In 2017, the establishment of the VIP Marine Protected Area Network and Law Enforcement Network (VIP MPAN and LEN) was established. A Memorandum of Agreement formalized the partnership among the five provinces within the VIP and national agencies namely, DENR, DA-BFAR, PNP, and PCG. In the same year, the VIP MPAN and LEN Strategic Management Plan was developed by the VIP MPAN and LEN Management Board and Secretariat. The former consists of the Provincial Governments of Batangas, Marinduque, Romblon, Oriental Mindoro, and Occidental Mindoro, the DENR Secretary; the DA-BFAR Director; the PNP Chief, and the PCG Commandant.

Four of the ten municipalities in Occidental Mindoro are included in the VIP. These are Paluan, Abra de Ilog, Looc, and Lubang, which are all in the northern part of Mindoro Island. These four municipalities have a total population of 78,981 and more than half of which (45,529) are from coastal barangays facing the VIP. To date, there are 20 locally managed Marine Protected Areas (LMMPAs) distributed across the four municipalities that are included in the VIP MPAN. The 13 LMMPAs in Looc and Lubang form the Looc-Lubang MPAN which is the lone MPAN in the four municipalities.

This Localized Action Plan was formulated with the involvement of local government units, particularly the Municipal Environment and Natural Resources Officers and/or Municipal Planning and Development Coordinators, to ensure that the goals and objectives of the VIP MPAN and LEN are achieved. The meetings were facilitated by the Department of Environment and Natural Resources (DENR) – Community Environment and Natural Resources Office Sablayan (CENRO Sablayan). This Plan shall be valid from 2023-2030 and it shall be duly updated every two years.

The VIP MPAN and LEN Strategic Management Plan identified 8 thematic areas relevant to the conservation of VIP. These are a) Sustainable Productions, b) Biodiversity Conservation, c) Pollution, d) Governance, Policy, and Marine Law Enforcement, e) Socio-economics and Sustainable Financing, f) Communications Strategy, g) Climate Resilience, and h) Ecotourism. This section presents the thematic areas and the objectives under each thematic area.

Sustainable Productions. Albeit not one of the major fishing grounds in the Philippines (Philippine Statistics Office, 2021), the VIP is an important source of livelihood for the 31 coastal municipalities and 2 cities that border it. In Batangas, whose entire coastline faces the VIP, the volume of production from marine municipal fisheries ranged from 4.908.02 to 8,236.07 metric tons in 2018, 2019, and 2020 (Philippine Statistics Office, 2021). In Looc and Lubang, fisheries is the major source of income (Muallil et al., 2011). This is also likely for Abra de Ilog and Paluan. There is a wide range of fisheries products that are harvested from the VIP. *Dulong* (fish fry), anchovy, squid, and Skipjack Tuna (*Katsuwonus pelamis*) were found to be the main products harvested by fishermen from Abra de Ilog based on landings data (Servonnat et al., 2019).

This thematic area aims to ensure that fisheries continue to thrive in the VIP and maintain the livelihood of households dependent on fishing whilst contributing to global food security.

Biodiversity Conservation. The VIP is globally-renowned as the "center of the center for marine shore fish biodiversity" with up to 1,736 species of shore fish over a 10 x 10 km area (Carpenter & Springer, 2005). It has at least 338 species of corals (PAWB, 2009) up to 20 species of mangroves (Salmo, 2019), and at least 8 seagrass species (Genito et al., 2009; Brazas & Lagao, 2019) It also hosts a number of marine megafauna of conservation concern including three species of sea turtles (Green Turtle, Hawksbill Turtle, and Olive Ridley Turtle) and five cetaceans (Risso's Dolphin, Spinner Dolphin, Pantropical Spotted Dolphin, Fraser's Dolphin, and Common Bottlenose Dolphin) (PAWB, 2009).

Marine Protected Areas are marine areas with restrictions on human activities at varying degrees. They are tools that are used to protect vulnerable habitats or species and improve productivity for fisheries. They are also often regarded as the "cornerstone" of global marine conservation efforts. The thematic area *Biodiversity Conservation* touches on the conservation of the rich vast biodiversity in VIP primarily through MPAs and their networking.

Pollution. Pollution is a global threat to marine ecosystems. It causes biodiversity loss and negatively impacts ecosystem functions and services. During the Sulu-Sulawesi Congress in 2007, it is identified as one of the seven issues affecting the VIP (PAWB, 2009). Pollutants in the VIP include toxic chemicals, oil, sewage, light, noise, and plastic. For instance, excessive concentrations of phosphate, chromium, total copper, lead, and zinc have been reported in Batangas Bay (Wagas & Andres, 2022). Increased concentrations of lead were also recorded along Lobo Coast (Briones et al., 2015). This thematic area focuses on the management of pollution from land-based and sea-based sources.

Governance, Policy and Law Enforcement. Strong governance is essential to the conservation of the VIP and the effectiveness of MPAs inside it. At present, laws like Republic Act 8550 (The Philippine Fisheries Code of 1988) as amended by Republic Act 10654 and Republic Act 9147 (Wildlife Resources Conservation and Protection Act), as well as municipal ordinances are in place to protect the VIP. The enforcement of these policies and the establishment of new ones that are of relevance to the goals and objectives of the VIP MPAN and LEN is the focus of this thematic area.

Socio-economic and Sustainable financing. Overfishing is among the human-induced drivers of the degradation of ecosystems within the VIP. This in turn has affected the catch of fisherfolks dependent on the VIP. For instance, the mean catch per unit effort in Abra de Ilog is only 0.92 kg/person/hour (Sonnerat et al., 2019) while published values for Looc and Lubang are 5.1 and 6.8 kg/person/day, respectively (Muallil et al., 2012).

This thematic area aims to improve sustainable incomes for fishers by providing alternative livelihood and facilitating recovery and resilience of depleted fisheries.

Communications strategy. Support from the local community is highly important in ensuring the effectiveness of MPAs and conservation initiatives in general. Apart from this, policymakers also play a big role as they can promote policies promoting conservation and stop or alter policies that negatively affect conservation. This thematic area therefore aims to garner support from stakeholders of the VIP MPAN.

Climate Resilience. Like the rest of the world, the VIP is being negatively impacted by the effects of climate change. Horigue & Licuanan (2013) projected a 3% to 22% hard coral cover (HCC) loss in the VIP from increasing sea surface temperature (SST) and 12.5% to 37.5% HCC loss from storms. A corresponding decrease in fish species richness and abundance in the VIP was also projected (Horigue & Licuanan, 2013). Fisheries targeting species that utilize different marine and coastal habitats throughout their life cycle (e.g. snappers and groupers) are the most vulnerable (Boquiren et al. 2010).

This thematic area focuses on increasing the adaptive capacity of the VIP to the rapidly changing climate.

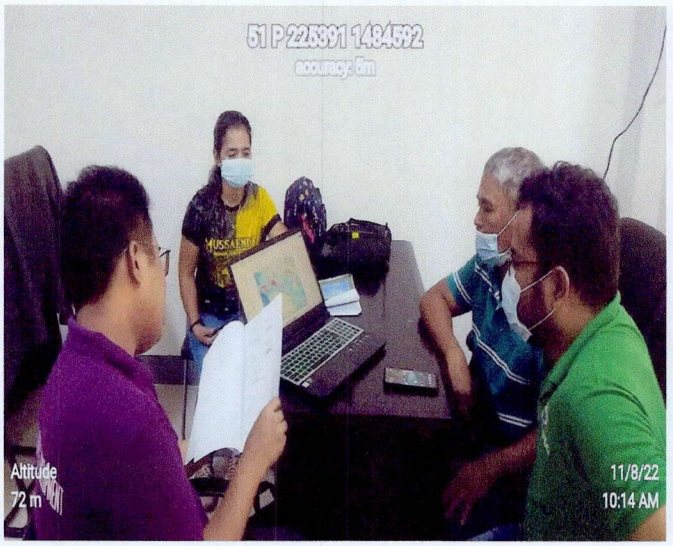
Ecotourism. One of the livelihoods generated from the VIP is tourism. Tourism in the VIP is mainly marine-based and recreational diving is the most popular tourism activity. At least 95 establishments offer recreational diving within the VIP and most of which are situated in Mabini and Puerto Galera (Boquiren et al., 2010). Although relatively limited, ecotourism in mangrove areas within the VIP also exists. Some examples of mangrove areas open to tourism are Calatagan Mangrove Conservation Park (also known as *Ang Pulo*) in Batangas and Silonay Mangrove Conservation Ecopark in Oriental Mindoro.

This thematic area focuses on the promotion of eco-tourism in both MPAs and LMMPAs to increase the ecological, social, and economic benefits derived therefrom.

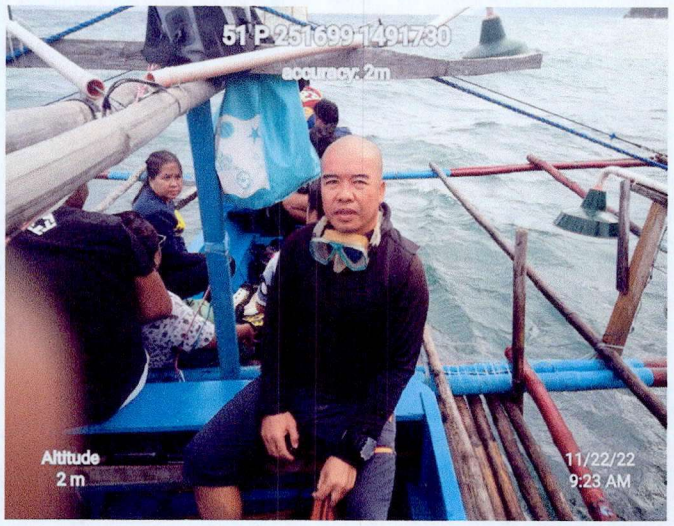
The localized action plan was formulated in the last quarter of 2022. With the VIP MPAN and LEN Strategic Management Plan as our guide, we were able to include a total of 45 activities across the 8 thematic areas. However, it is important to note that the planning team was not able to identify an activity under a number of objectives.

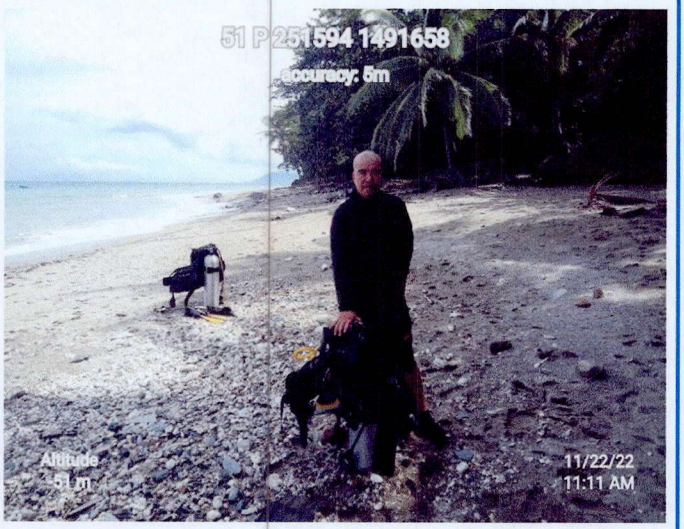
The total budget required for the activities from 2023 to 2030 is P69,913,000.00. The primary sources of the budget and the implementing agencies of the activities are local government units of Abra de Ilog, Paluan, Looc, and Lubang as well as the Provincial Government Office of Occidental Mindoro. National government agencies such as the DENR and Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) and non-governmental NGOs such as World Wildlife Fund for Nature – Philippines (WWF-Philippines) will also be involved in the accomplishment of this plan. (Scanned copy of the reports can be accessed through *bit.ly/CSby-CDS-MPAN*).

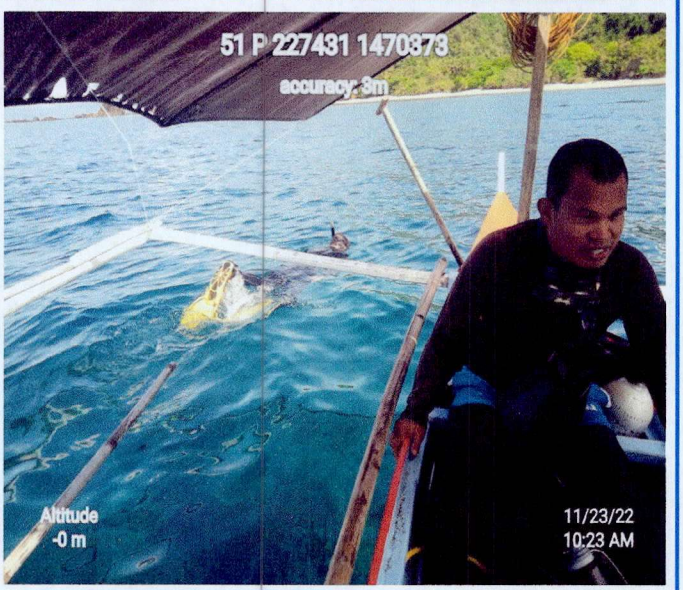
VERDE ISLAND PASSAGE MARINE PROTECTED AREA NETWORK
(Consultation with LGU)



VERDE ISLAND PASSAGE MARINE PROTECTED AREA NETWORK
(Reef Check at Abra de Ilog and Paluan,Occidental Mindoro)







VERDE ISLAND PASSAGE MARINE PROTECTED AREA NETWORK
(Conduct of Symposium in Collaboration with PGO, Abra de Ilog, Occidental Mindoro)



III. Social Marketing and Mobilization/Communication, Education and Public Awareness (CEPA)

a. Conduct of Regular Special Events related to coastal and marine protection, conservation and management

***Month of the Ocean (May)**

In line with the celebration of this year's Month of the Ocean 2022 with the theme, "Protect and Restore Ecosystems and Biodiversity," PENRO Occidental Mindoro conducted various activities within the administrative jurisdiction. The CENRO Sablayan, Occidental Mindoro conducted several activities such as 1.) Kick-off activity through a motorcade around the town of Sablayan on March 4, 2022; 2.) Coastal Clean-up at So. Tabuk, Brgy. Buenavista, Sablayan on May 6, 2022; 3.) Symposium/Lecture on the Celebration of Month in Occidental Mindoro State College- Sablayan Campus on May 13, 2022, attended by students and selected faculty staff which discussed about Marine Ecosystem, present status, threats, and possible help to employ to conserve and protect the marine ecosystem, 4.) Operation Baklas of Election Tarpaulin on May 10, 2022 within MAPSA and Sablayan; 5.) Marine Biodiversity Conservation Camp in Apo Reef Natural Park on May 26-27, 2022, participated by Sangguniang Kabataan in coastal barangays and officials of the Bureau of Jail Management and Penology in the Municipality of Sablayan; lastly, 6.) Culmination Day of 2022 Month of the Ocean by conducting Coastal Clean-up cum SCUBASURA on May 31, 2022, in Free Beach Area, Sablayan, respectively. Likewise, the CENRO San Jose conducted a series of activities of CEPA campaigns in partnership with the Task Force Cali-Kasan that was attended by different partners including the Fraternity Organizations, Municipal LGU, Barangay LGU, other government offices, ENR Ambassadors of Calintaan, Occidental Mindoro and also, PENRO Ernesto E. Tañada, DENR Task Force Tayo ang Kalikasan Executive Director/Assistant Director, SCIS – Maria Matilda A. Gaddi, SCIS DCD Chief – Adona P. San Diego and team.

In addition, on May 20, 2022, the PENRO Occidental Mindoro conducted a coastal clean-up activity in Barangay Lumangbayan, Abra de Ilog, Occidental Mindoro in coordination with the Local Government Unit of Abra de Ilog, which resulted to the collected thirty (30) sacks of non-biodegradable wastes. Prior to the clean-up, short program was held, wherein the Brgy. Captain of Lumangbayan expressed their willingness in participating to environmental activities and informed that there are volunteers from other organizations have regular clean-up activities within the said barangay. In addition, PENR Officer Ernesto E. Tañada explained the effect of the waste being washed in to the sea as it negatively affects the marine resources in the Verde Island Passage (VIP) which recognised as the "Center of the Center of Marine Biodiversity" and how proper solid waste management greatly contributes to its protection and conservation. This activity had a total of one hundred eighteen (118) participants were composed of barangay health workers, barangay police, barangay kagawad, Philippine Coast Guard and PENRO Personnel.

Coral Triangle Day (June) and World Ocean's Day (June)

In celebration of Coral Triangle Day and World Ocean's Day, the employees of DENR-PENRO Occidental Mindoro conducted a coastal clean-up activity at Sitio. Maasim, Brgy. Payompon, Occidental Mindoro on June 17, 2022. Ten (10) sacks of non-biodegradable waste were collected by the employees. The coastal area where the activity was held is facing the Philippine West Sea.

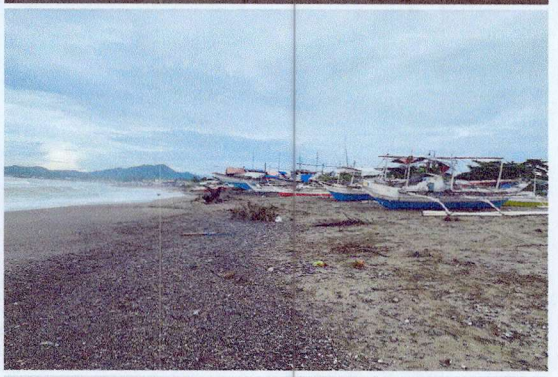
The employees of PENRO Occidental Mindoro during the coastal clean-up activity in celebration of Coral Triangle and World Ocean's Day

International Coastal Clean-up (September)

In celebration of the International Coastal Clean-up Month 2022, with the theme, 'Fight for Plastic-Free Seas, Pilipinas: Ending the Flow of Trash at the Source", the CENRO Sablayan, Occidental Mindoro spearheaded the coastal cleanups in various barangays within the municipalities of Sta. Cruz, Paluan and Sablayan on September 17, 2022. In Sta. Cruz around partially full sacks of wastes were collected within 4.3 kilometers of the coastline. Two hundred seventy-seven (277) individuals (Male-139, and female-138) participated in the activity, while on CENRO San Jose conducted the said event within the municipalities of San Jose, Magsaysay, Rizal and Calintaan (SAMARICA) on September 16-17, 2022. A total of 2,411.75 kilos and additional 100 sacks (not weighed) of wastes were collected by 1,274 participants within 32 kilometers of coastal area. Furthermore, a coastal clean-up was also conducted on the 16th of September 2022 within coastal barangays of the municipality of Mamburao, Occidental Mindoro. The activity resulted to the collection of 650 kilos of waste within 2.5 kilometers of coastal area. One hundred twenty-nine (129) participants from different government agencies and academe actively participated in the said activity.

Photo-documentation during the International Coastal Clean up 2022 conducted within the Province of Occidental Mindoro

Photo-documentation during the International Coastal Clean up 2022 conducted within the Province of Occidental Mindoro



IV. Monitoring and Evaluation

Regular monitoring and validation of all activities including on CMEMP Quarterly report submitted April 1, 2022 (1st quarter); (2nd Quarter- Memo dated June 30, 2022; 3rd Quarter - September 30, 2022); 4th Quarter – November 24, 2022 using the prescribed format.

V. Program Support and Management

Hiring of CMEMP Extension Officer

Hugo Ignacio G. Salvador was employed as the CMEMP Extension Officer for 2022. She is a graduate of Bachelor of Science in Biology (major in Zoology) from the University of the Philippines Los Baños. She has been the CMEMP Extension Officer of ARNP-PAMO since February 2020.

This year, she oversaw the accomplishment of CMEMP activities primarily monitoring of coral reef and mangrove forest, water quality monitoring, and sea turtle nesting beach surveys. She was also involved in the two bird surveys (breeding and non-breeding) conducted this year in partnership with the MBCFI. Accordingly, she has played a key role in the accomplishment of activities outside of CMEMP including implementation of biodiversity monitoring system and communication, education, and public awareness. As of this writing, she is also participating in the development of the localized action plan of Occidental Mindoro as part of VIP MPAN and LEN.

Hiring of Boat Captain

Two Boat Captains were hired this year: Romel M. Pacaul and Mark Dennis M. Barretto. The former has been in service to Apo Reef Natural Park for X years, while the latter has been employed by the Office since last year. These two Boat Captains belong to separate teams of Park Rangers (Team Pating and Team Barracuda).

Romel M. Pacaul and Mark Dennis M. Barretto has primarily ensured the safety of the members of their respective teams while traversing the Mindoro Strait and during at-sea patrol operations day and night. To date, no maritime incident has occurred under their watch. Aside from this, these two boat captains are also highly skilled boat mechanics. This year, they have assisted in the repair of the three watercraft of ARNP-PAMO: MBCa Jerlyn and the 26- and 30-footer speed boats.

VI. Other Accomplishments

Re-calibration, Refresher Course, and General Maintenance of Equipment for Assessment and Monitoring of Coastal and Marine Habitats in Apo Reef Natural Park

The Biodiversity Management Bureau is looking to conduct coastal and marine habitat assessments and monitoring to the Philippine Rise Region, and to other priority project sites, key biodiversity areas and NIPAS MPAs in the following years. In preparation for this, they conducted an activity in Apo Reef Natural Park to inspect and recalibrate their survey equipment, and refresh their personnel on using the equipment. This was held from April 20 to 24, 2022. ARNP-PAMO provided logistic support to the participants of the activity. The sub-allotment of P162, 250.00 (SAA No. 2022-04-004) was also managed by the Office.

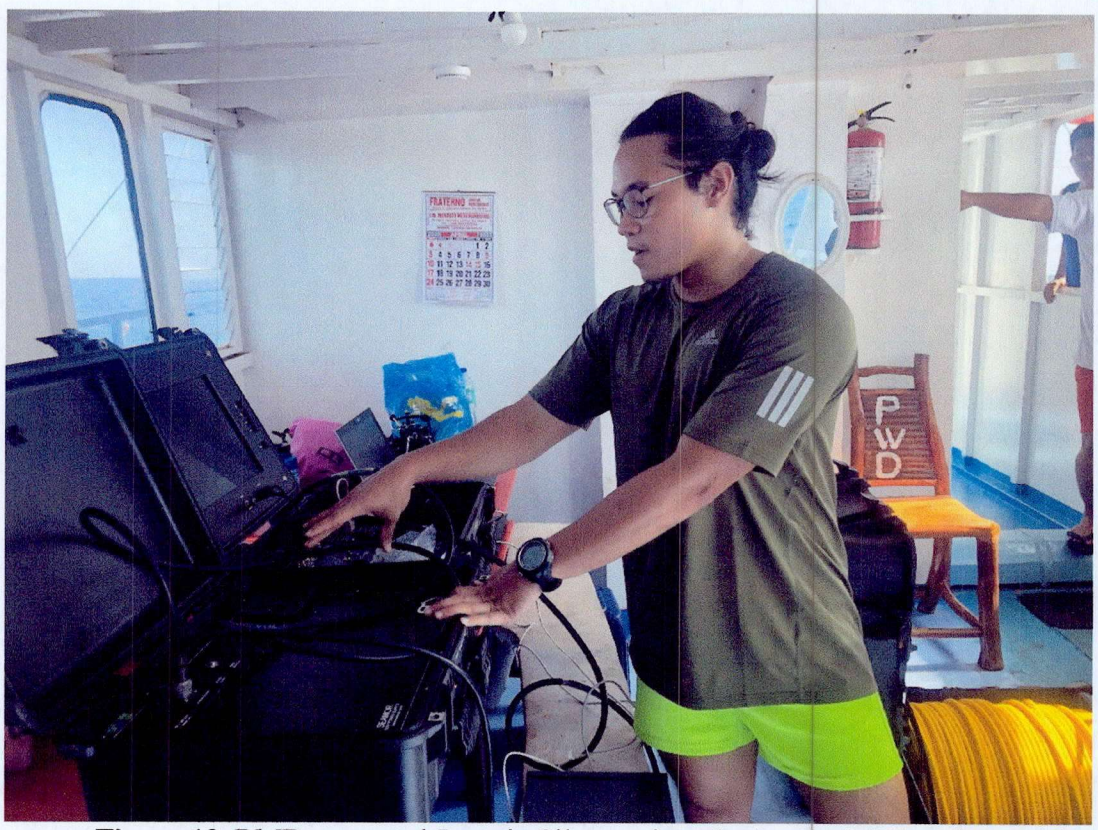


Figure 13. BMB personnel Joaquin Silvestre introducing the ROV to the participants of the activity.

Blue Park Awards

Apo Reef Natural Park was conferred a platinum-level Blue Park Award by Marine Conservation International last July 1st at the 2022 United Nations Ocean Conference in Lisbon, Portugal. The award was received by Protected Area Superintendent Krystal Villanada and Philippine Ambassador to Portugal Celia Anna Feria (Figure 14). Apo Reef Natural Park now joins a growing network of 24 awarded Blue Parks around the globe that have met the highest science-based standards for conservation effectiveness.

Figure 14. Philippine Ambassador to Portugal Celia Anna Feria (left) and PASu Krystal Dayne T. Villanada receiving the Blue Park Award of Apo Reef Natural Park.

After its nomination in April, an international council of marine conservation experts evaluated Apo Reef Natural Park against a rigorous, science-based set of criteria which ensure that only MPAs with the most effective marine life conservation qualify for the Blue Park Award. Apo Reef Natural Park earned the distinction this year alongside Raja Ampat Islands, Marine Conservation Area in Indonesia and Old Providence McBean Lagoon National Park in Colombia.

The Blue Park Award recognizes outstanding efforts by national governments, nonprofit organizations, MPA managers, and local communities "*to ensure that designated MPAs become places that truly safeguard biodiversity*". The award has been given annually since its launch in 2017. Apo Reef Natural Park is the second Blue Park in the Philippines – next to Tubbataha Reefs Natural Park. Both Philippine MPAs have a platinum-level Blue Park Award which is the highest possible award that may be given to an MPA by Marine Conservation Institute.

Apo Reef Natural Park also received recognition from national agencies and local government units (LGUs) for its Blue Park Award. The Office of the Sangguniang Bayan passed a resolution to laud the management of the Protected Area for earning the distinction. Accordingly, the Provincial Governor's Office and DOT MIMAROPA gave recognition to Apo Reef Natural Park during the culmination of Arawatan Festival and the 2022 MIMAROP Tourism Appreciation Awards, respectively.

Launching of the Year of the Protected Areas (YoPA) Campaign

The Year of the Protected Areas, with the theme *"Protected Areas for a Protected Future"* is a commemoration of the 90th year since the enactment of Republic Act 3915 or the National Parks Act. The YoPA campaign aims to raise the call for the urgent conservation of Philippine PAs, while also promoting them to the public as great ecotourism destinations. This year's campaign kicked-off by featuring six PAs in different regions, one of which was Apo Reef Natural Park.

The launching event was attended by Protected Area Superintendent Krystal Dayne T. Villada last May 24, 2022. During the event, the Department of Environment and Natural Resources (DENR), Department of Tourism (DOT) and the Department of Interior and Local Government (DILG) signed a joint declaration supporting the Campaign. To date, two videos featuring Apo Reef Natural Park has been released under the Campaign.

Procurement of Water Quality Tools and Equipment

Sub-Allotment Advice (SAA) No. 2022-04-021 was issued by BMB Director Natividad Y. Bernardino to Apo Reef Natural Park for the procurement of various water quality tools and equipment. This SAA amounted to Php 60,000.00, and it was used for the purchase of the following: one ice chest, 16 BOD bottle with stopper, 2 BOD bottle carrier, 18 sampling bottle with screw cap, 10 buckets, 10 plastic dipper, 10 plastic funnel, and one roll of nylon rope. The purchase of these tools and equipment was awarded to BEPER Shopping Center. The Purchase Order was issued on November 16, 2022 and the tools and equipment are expected to be delivered within December 2022.

Consolidated by:

VERNADETTE O. FULGENCIO
Forest Technician II

Reviewed by:

EMILIZA A. CALABIO
For.III/Chief, CDS

Attested by:

ERNESTO E. TAÑADA
PENR Officer

TEMPLATE ON THE QUARTERLY MONITORING OF ACCOMPLISHMENTS ON COASTAL AND MARINE ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP)
DENR MIMAROPA REGION CY 2022
AS OF DECEMBER 23, 2022
OCCIDENTAL MINDORO

CMEMP Component	Performance Indicator	Location/Office (PENRO/Region)	FY 2022 Target		Accomplishment		% Accomplishment		Financial Accomplishment			%Disb/ Allot.	Re-marks
			Annual Target	Accomp	CENRO MOV/MEMO	PENRO TRANSMITTAL	Annual	Annual	Alloted	Obligated	Disbursed		
Coastal and Marine Ecosystems Rehabilitation Sub-Program									**2,652**	**2,523**	**2,396**	**90%**	
Management of Coastal and Marine Resources/Areas													
MPA Management, Strengthening, and Networking													
a. Monitoring of corals, mangroves, and seagrass per PA													
Corals	Q1-Q2 : assessment conducted, data gathered Q2-Q3 : analysis and report writing Q4 : consolidated report per PA submitted to Region for inclusion to annual report	Total Area of Corals: OccMin - 6,357.732 ha			Milestone Accomp. Report - **March 23, 2022**; Assesment Report - **August 24, 2022**	Milestone Accomp. Report - **March 30, 2022**; Assesment Report - **August 31, 2022**							
Apo Reef Natural Park (ARNP)	6,357.732 hectares (based on ground truthing)	Sablayan, OccMin (CENRO Sablayan)	1	1			100%	100%	165	165	165		
Mangroves	Q1-Q2 : assessment conducted, data gathered Q2-Q3 : analysis and report writing Q4 : consolidated report per PA submitted to Region for inclusion to annual report	Total Area of Mangroves: OccMin - 9.538 ha			Milestone Accomp. Report - **March 25, 2022**; Assesment Report - **June 29, 2022**	Milestone Accomp. Report - **April 4, 2022**; Assesment Report - **July 11, 2022.**							
Apo Reef Natural Park (ARNP)	9.538 hectares (based on ground truthing)	Sablayan, OccMin (CENRO Sablayan)	1	1			100%	100%	165	165	165		

TEMPLATE ON THE QUARTERLY MONITORING OF ACCOMPLISHMENTS ON COASTAL AND MARINE ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP)
DENR MIMAROPA REGION CY 2022
AS OF DECEMBER 23, 2022
OCCIDENTAL MINDORO

CMEMP Component	Performance Indicator	Location/Office (PENRO/Region)	FY 2022 Target		Accomplishment		% Accomplishment		Financial Accomplishment			%Disb/ Allot.	Re-marks
			Annual Target	Accomp	CENRO MOV/MEMO	PENRO TRANSMITTAL	Annual	Annual	Alloted	Obligated	Disbursed		
b. Water Quality Monitoring within Legislated NIPAS PA/Total Actual pollution load on coastal and marine ecosystems within PA	PAs assessed/monitored on water quality parameters			First Semester (Dry Season)	Milestone Accomp. Report - **June 7, 2022**; Assesment Report - **August 8, 2022**	Milestone Accomp. Report - **June 15, 2022;** Assesment Report - **August 12, 2022**							
				Second Semester (Wet Season)	Assesment Report - **September 14, 2022**	Assesment Report -**September 27, 2022.**							
Apo Reef Natural Park (ARNP)		Sablayan, OccMin (CENRO Sablayan)	2	2			100%	100%	100	100	100		
c. Maintenance and protection of coastal and marine ecosystems (e.g. reduction of threats and pressures identified, enforcement, etc.)					First Quarter - **March 14, 2022**; Second Quarter - **June 20, 2022**; Third Quarter - **August 24 , 2022**; Fourth Quarter - **December 19, 2022**	First Quarter - **March 24, 2022**; Second Quarter - **June 29, 2022;** Third Quarter - **August 31 , 2022;** Fourth Quarter - **December 23, 2022**							
c.1 Patrolling	No. of sites patrolled with kilometers covered (and its equivalent estimates in hectares as applicable)	OccMIn - 15,799 ha			First Quarter - **March 14, 2022**; Second Quarter - **June 20, 2022**; Third Quarter - **August 24 , 2022**; Fourth Quarter - **December 19, 2022**	First Quarter - **March 24, 2022**; Second Quarter - **June 29, 2022;** Third Quarter - **August 31 , 2022;** Fourth Quarter - **December 23, 2022**							
Apo Reef Natural Park (ARNP)	15,799 hectares	Sablayan, OccMin (CENRO Sablayan)	4	4			100%	100%	200	191	182		

TEMPLATE ON THE QUARTERLY MONITORING OF ACCOMPLISHMENTS ON COASTAL AND MARINE ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP)
DENR MIMAROPA REGION CY 2022
AS OF DECEMBER 23, 2022
OCCIDENTAL MINDORO

CMEMP Component	Performance Indicator	Location/Office (PENRO/Region)	FY 2022 Target		Accomplishment		% Accomplishment		Financial Accomplishment			%Disb/ Allot.	Re-marks
			Annual Target	Accomp	CENRO MOV/MEMO	PENRO TRANSMITTAL	Annual	Annual	Alloted	Obligated	Disbursed		
c.2 Conduct of regular habitat surveys													
Apo Reef Natural Park (ARNP)	No. of habitats surveyed with pressures and threats identified	Sablayan, OccMin (CENRO Sablayan)	4	4	First Quarter - **March 14, 2022**; Second Quarter - **June 20, 2022**; Third Quarter - **August 24 , 2022**; Fourth Quarter - **December 19, 2022**	First Quarter - **March 24, 2022**; Second Quarter - **June 29, 2022**; Third Quarter - **August 31 , 2022;** Fourth Quarter - **December 23, 2022**	100%	100%	100	99	77		
c.3 Repair and maintenance of equipment (boats, gears, signages, buoys, camera, monitoring tools/equipment, etc.)	No. of equipment maintained/repair (boat, gears, signages, buoys, camera, monitoring tools/equipment etc.)												
Apo Reef Natural Park (ARNP)		Sablayan, OccMin (CENRO Sablayan)	46	46			100%	100%	300	299	282		
	patrol boats (26 footer and 30 footer)												
	2 marine base radio												
	10 sets dive gears												
	30 dive tanks												
	1 outrigger boat												
	1 spotter boat												
c.4 Conduct of Direct Activities													
Apo Reef Natural Park (ARNP)		Sablayan, OccMin (CENRO Sablayan)	**4**	**4**	First Quarter - **March 14, 2022**; Second Quarter - **June 20, 2022**; Third Quarter - **August 24 , 2022**; Fourth Quarter - **December 19, 2022**	First Quarter - **March 24, 2022**; Second Quarter - **June 29, 2022**; Third Quarter - **August 31 , 2022;** Fourth Quarter - **December 23, 2022**	100%	100%	100	82	65		
	Coastal Clean up						100%	100%					
	COT monitoring and clean up						100%	100%					
	Coral bleaching monitoring						100%	100%					
	Assessment of installed ARMS						100%	100%					

TEMPLATE ON THE QUARTERLY MONITORING OF ACCOMPLISHMENTS ON COASTAL AND MARINE ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP)
DENR MIMAROPA REGION CY 2022
AS OF DECEMBER 23, 2022
OCCIDENTAL MINDORO

CMEMP Component	Performance Indicator	Location/Office (PENRO/Region)	FY 2022 Target		Accomplishment		% Accomplishment		Financial Accomplishment			%Disb/ Allot.	Re-marks
			Annual Target	Accomp	CENRO MOV/MEMO	PENRO TRANSMITTAL	Annual	Annual	Alloted	Obligated	Disbursed		
Technical Assistance on ICM													
a. TA to LGUs on coastal and marine related concerns	LGUs/NGOs/Stakeholders Assisted assessment of ICM Plans	Occidental Mindoro	1	1	March 21, 2022 ; July 5, 2022; August 8, 2022; October 6, 2022; November 17, 2022; December 14, 2022	May 16, 2022, July 29, 2022;November 21, 2022; December 23, 2022.			150	116	116		
b. TA on MPA Networking for LGU managed MPAs	No. of MPAN member LGUs assisted with name of MPAN (LGU-LGU) inlcuded in the MPAN roadmap					**Accomplished per MOV/Memo dated October 6, 2022, transmitted by PENRO to Regional Office on October 2022.**			400	359	351		
		Sablayan Calintaan (SaCa) MPAN	1	1	March 21, 2022 ; July 5, 2022; August 8, 2022; October 6, 2022; November 17, 2022; December 14, 2022	May 16, 2022, July 12, 2022;November 21, 2022; December 23, 2022.							
		Occidental Mindoro (VIP)	1	1	March 21, 2022 ; July 5, 2022; August 8, 2022; October 6, 2022; November 17, 2022; December 14, 2022	May 16, 2022, July 12, 2022;November 21, 2022; December 23, 2022.							
Social Marketing and Mobilization/Communication, Education and Public Awareness (CEPA)													
a. Conduct of Regular Special Events related to coastal and marine protection, conservation and management	Special events related to coastal and marine protection conservation and management report submitted								100	100	70		
	Month of the Ocean (May)		1	1	PENRO Occidental Mindoro - **May 23, 2022**; CENRO San Jose - **June 01, 2022;** CENRO Sablayan - **June 13, 2022**	Consolidated Report - **June 24, 2022**	100%	100%					

TEMPLATE ON THE QUARTERLY MONITORING OF ACCOMPLISHMENTS ON COASTAL AND MARINE ECOSYSTEMS MANAGEMENT PROGRAM (CMEMP)
DENR MIMAROPA REGION CY 2022
AS OF DECEMBER 23, 2022
OCCIDENTAL MINDORO

CMEMP Component	Performance Indicator	Location/Office (PENRO/Region)	FY 2022 Target		Accomplishment		% Accomplishment		Financial Accomplishment			%Disb/ Allot.	Re-marks
			Annual Target	Accomp	CENRO MOV/MEMO	PENRO TRANSMITTAL	Annual	Annual	Alloted	Obligated	Disbursed		
	Coral Triangle Day (June)	Occidental Mindoro	1	1		PENRO Occidental Accomplishment Report transmitted to Regional Office on **November 21, 2022**	100%	100%					
	World Ocean's Day (June)		1	1			100%	100%					
	International Coastal Clean-up (September)		1	1	CENRO Sablayan -**September 20, 2022**;San Jose - **September 30, 2022**; PENRO Occidental	**October 4, 2022; November 4, 2022**	100%	100%					
Monitoring and Evaluation													
a. Regular monitoring and validation of all activities including on CMEMP	Quarterly monitoring activities conducted	Occidental Mindoro	4	4		First Quarter - First Quarter - **April 01, 2022** ; Second Quarter - **June 30, 2022**; Third Quarter - **September 30 , 2022**; Fourth Quarter - **November 25, 2022**	100%	100%	244	241	236		
Hiring of CMEMP Extension Officers	No. of Coastal Extension Officers hired	ARNP	1	1	January 10 to June 30, 2022 ; July 4 to December 31, 2022	Approved Contract of Service	100%	100%	268	263	263		
Hiring of Boat Captain	No. of boat captain hired	ARNP	2	2	January 10 to June 30, 2022 ; July 4 to December 31, 2022	Approved Contract of Service	100%	100%	360	344	324		
					1. Re-calibration, Refresher Course, and General Maintenance of Equipment for Assessment and Monitoring of Coastal and Marine Habitats in Apo Reef Natural Park; **2.** Apo Reef Natural Park was conferred a platinum-level Blue Park Award by Marine Conservation International last July 1st at the 2022 United Nations Ocean								
Other Activities					Conference in Lisbon, Portugal. The award was received by Protected Area Superintendent Krystal Villanada and Philippine Ambassador to Portugal Celia Anna Feria ; **3.** Launching of the Year of the Protected Areas (YoPA) Campaign; **4**. CENRO San Jose conducted CEPA Activity/ Basic Course on Marine Turtle Cvonservation and Management on November 11, 2022 at LGU Calintaan, Occidental Mindoro. **5.** Sub-Allotment Advice (SAA) No. 2022-04-021 was issued by BMB Director Natividad Y. Bernardino to Apo Reef Natural Park for the procurement of various water quality tools and equipment. This SAA amounted to Php60,000.00								

ANNEXES

A. Photo-documentation of the coral reef and mangrove forest monitoring in ARNP

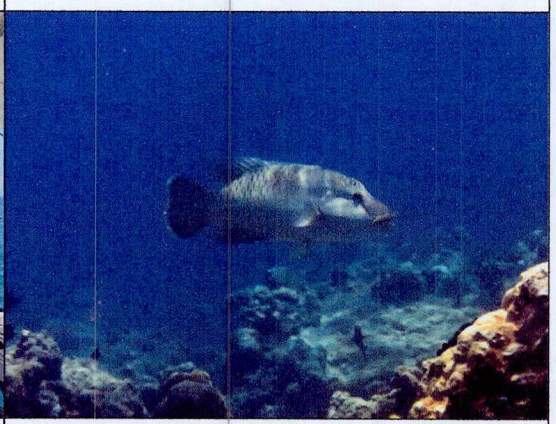
Park Ranger Kelvin U. Zubiri preparing the equipment of the participating divers on March 14, 2022.

Boat Captain Romel M. Pacaul inspecting the speedboat prior to the field survey in Binanggaan on March 17, 2022.

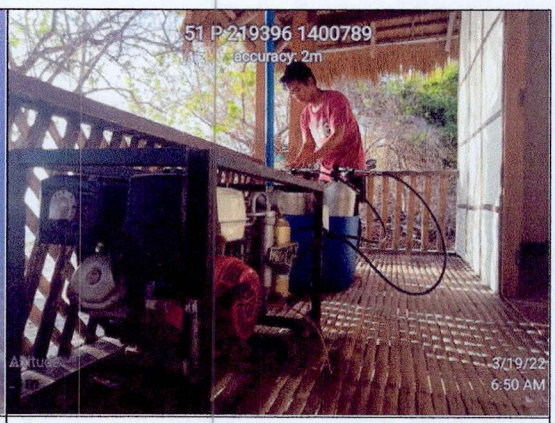
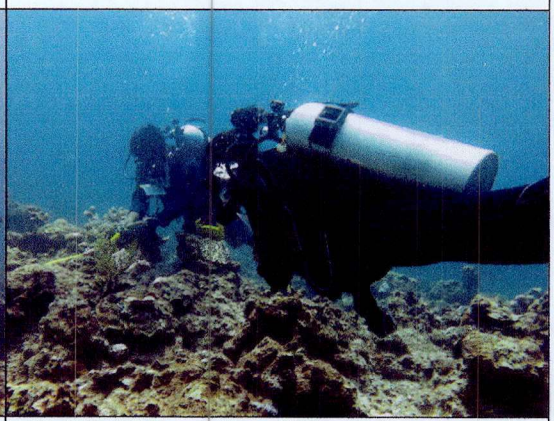
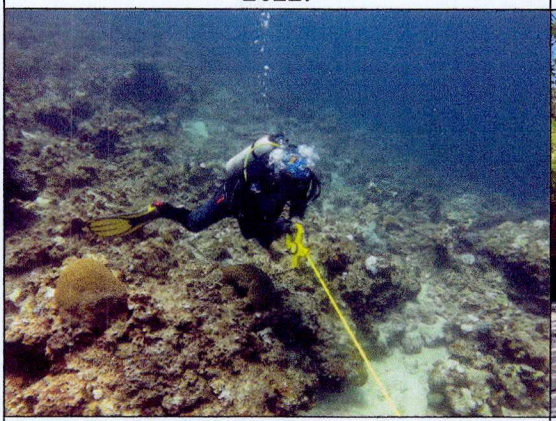
Boat Captain Romel M. Pacaul operating the outrigger boat while in transit to San Antonio (Station 15) on March 18, 2022.

Forest Ranger Efraim Z. Pagador reeling the transect laid on Station 15.

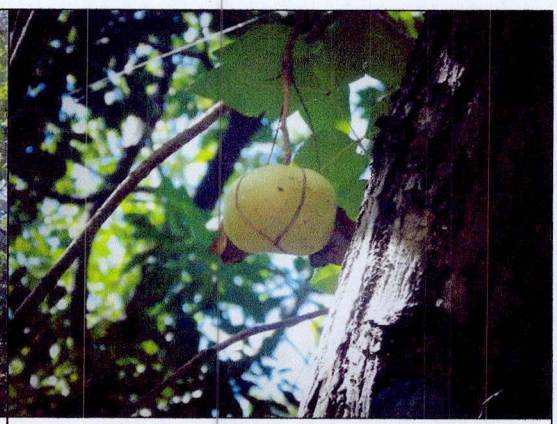
Park Rangers transferring used diving tanks to the spotter boat for refilling.



Humphead Wrasse (*Cheilinus undulatus*) recorded off-transect at Station on March 18, 2022.

	
Park Maintenance Foreman Roberto P. Beringuela searching for the coral restoration blocks in Bahura Cinco on March 18, 2022.	Park Ranger Sherwin R. Benoza filling up the diving tanks for the scheduled field survey on March 19, 2022.
	
PMF Roberto P. Beringuela preparing to reel Transect 3 at Station 11 on March 19, 2022.	CMEMP Extension Officer Hugo Ignacio G. Salvador surveying invertebrates at Station 11.
	
Forest Ranger Efraim Z. Pagador reeling the transect surveyed for fish communities at Station 11.	Participants of the coral reef assessment in Apo Reef Natural Park for CY 2022.

Xylocarpus rumphii recorded in Plot 1 on March 16, 2022.



Fruit of *Xylocarpus rumphii* photographed in Plot 1.

Park Rangers Sherwin R. Benoza and Ludygario D. Matira demarcating Plot 1 using a nylon wire.

Leaves of *Sonneratia alba* recorded in Plot 1.

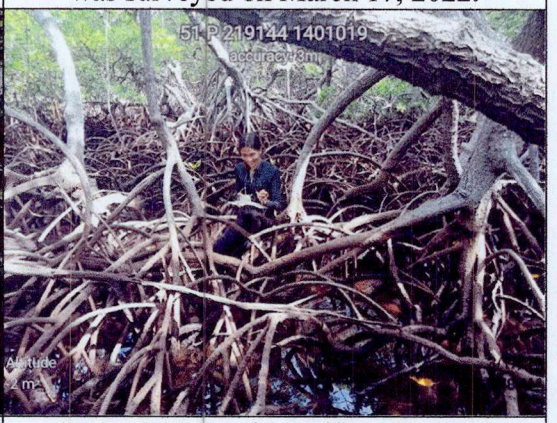
Representative photograph of Plot 2 which was surveyed on March 16, 2022.

Flowers of *Rhizophora. mucronata,* the most numerous species in Plot 2.

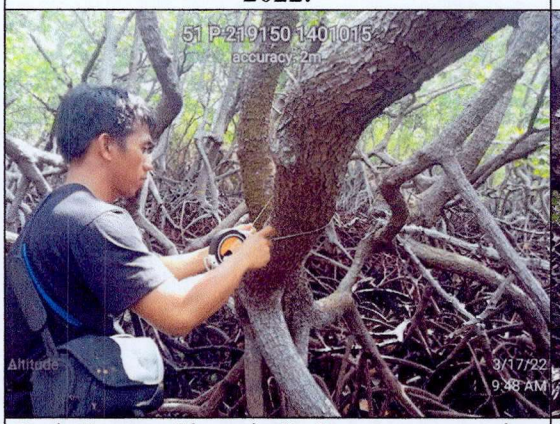
Representative photo of Plot 3 which was surveyed on March 16, 2022.

Flowers of *Bruguiera cylindrica*, the species that was most numerous in Plot 4. This plot was surveyed on March 17, 2022.

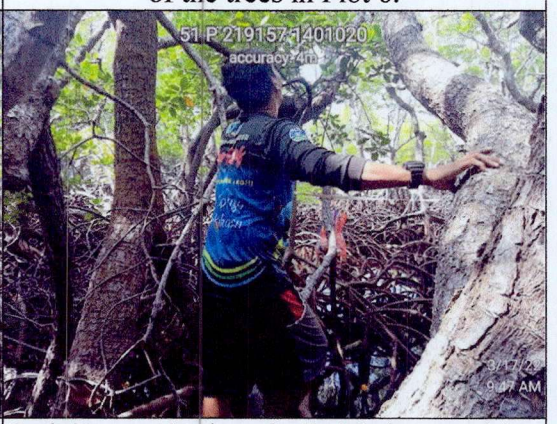
Park Ranger Ludygario D. Matira marking a *R. mucronata* tree in Plot 5 on March 17, 2022.



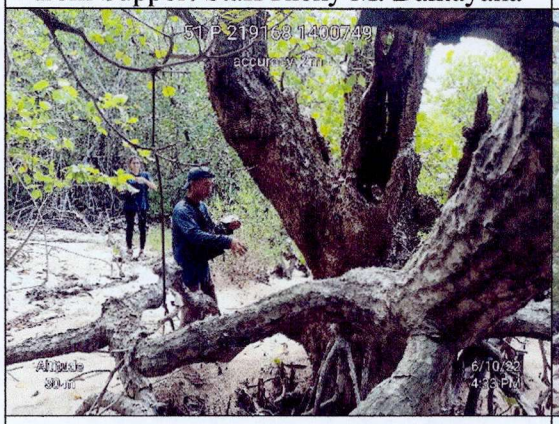
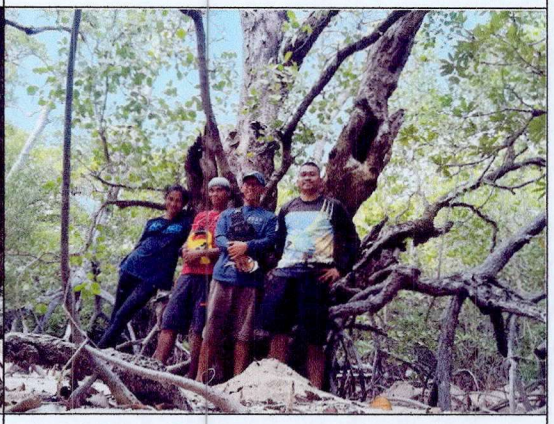
CMEMP Extension Officer Hugo G. Salvador recording the dbh and total height of the trees in Plot 6.



Park Ranger Sherwin R. Benoza measuring the dbh of a *Rhizophora apiculata* tree in Plot 6.



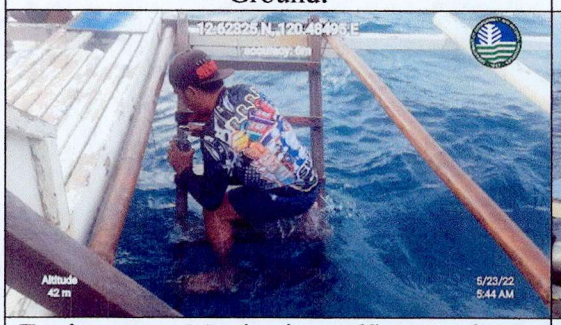
Park Ranger Ludygario D. Matira acquiring measurements for the computation of elliptical crown cover.

	
Park Ranger Sherwin R. Benoza preparing to demarcate Plot 10 on June 10, 2022.	CMEMP-EO Hugo Salvador identifying the species of mangroves within Plot 10.
	
Park Ranger Ludygario M. Matira measuring crown diameter with assistance from Support Staff Ricky M. Dantayana	Park Rangers in transit to Plot 11.
	
Park Ranger Sherwin R. Benoza demarcating Plot 8.	Members of the Mangrove Assessment Team for CY 2022.

B. Photo-documentation of the water quality monitoring in ARNP.

EMS II Josephine Lovella M. Cruz collecting water samples in front of Picnic Ground.

Forest Ranger Efraim Z. Pagador closing the sampling equipment in San Antonio at 5-meter mark.



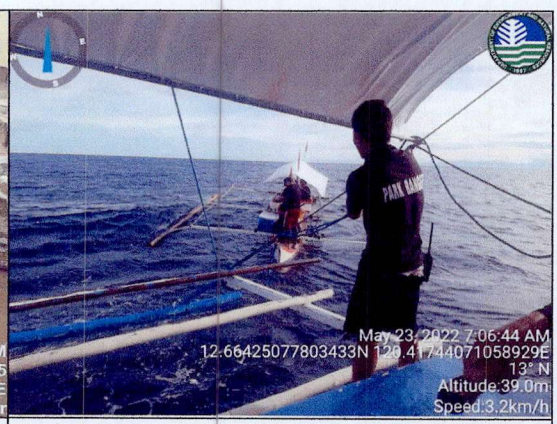
Environment Monitoring Officer Fenly M. Galindez collecting water sample for oil and grease using a 1L wide mouth bottle.

CMEMP Extension Officer and Support Staff Salvador M. Ciasico transferring water from the sampling equipment.

Josephine Lovella M. Cruz collecting water samples in front of the Rangers' Kiosk.

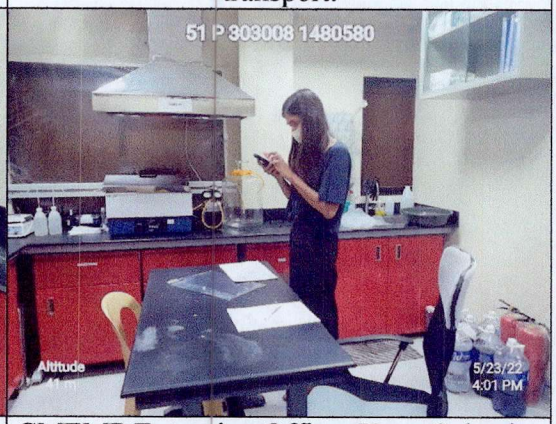
Park Rangers Kelvin U. Zubiri and Joel A. Pagador, Jr. sealing the water samples collected in front of the lighthouse.

Collection of water samples from the groundwater well beside the Rangers' Station.

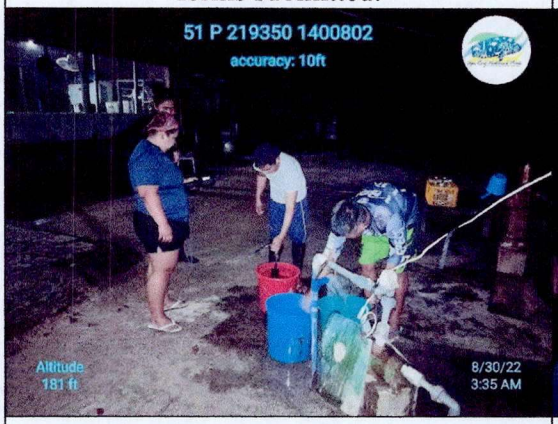


Park Rangers transferring samples collected from Apo Island to MBca Jerlyn for transport.

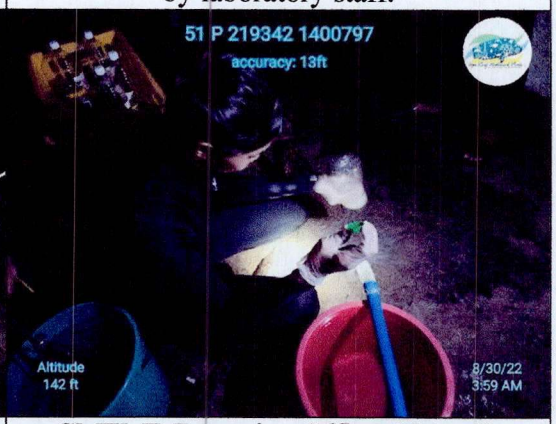
SCDO Anna Ritchelle D. Nicanor ensuring the correctness of the chain-of-custody forms submitted.



CMEMP Extension Officer Hugo Salvador taking photographs of the forms duly signed by laboratory staff.



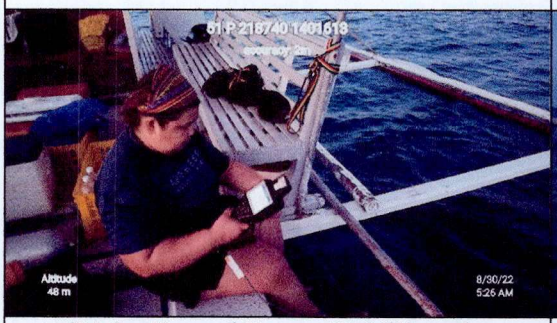
PAMO Staff purging stagnant water out of the groundwater well



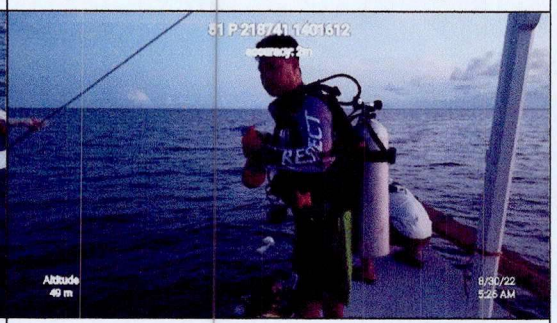
CMEMP Extension Officer Hugo G. Salvador preparing to sample water from the groundwater well

Water sampling along the bathing beach of Apo Island

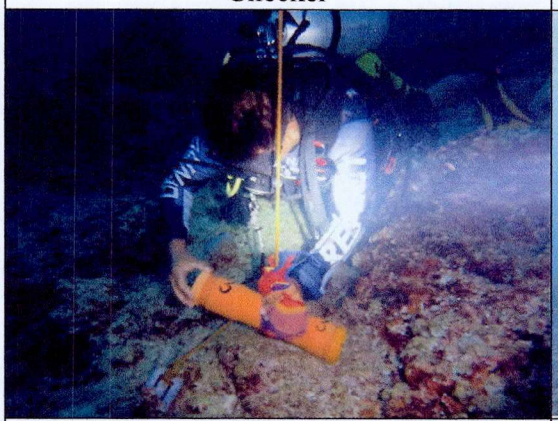
Park Rangers Temart E. Rebito organizing samples collected in front of the lighthouse



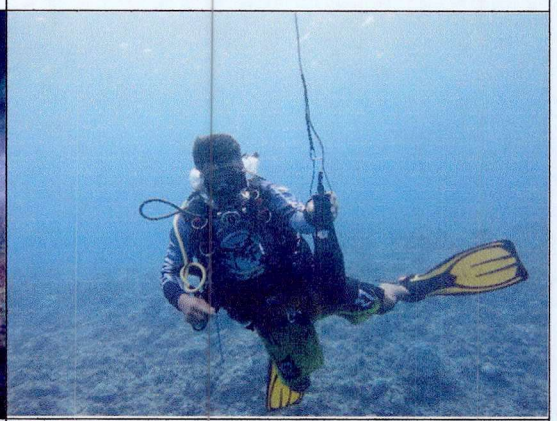
PASu Krystal Dayne T. Villanada measuring several parameters *in-situ* with a Horiba U-50 Multiparameter Water Quality Checker



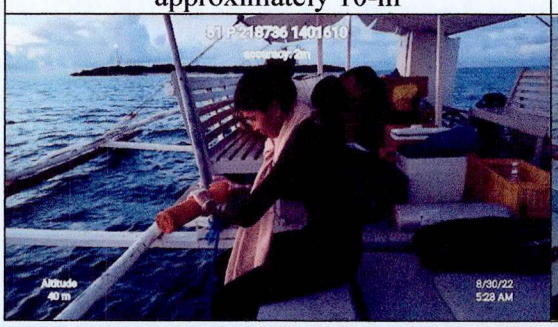
Park Maintenance Foreman Roberto P. Beringuela preparing to collect samples at different depths in Ego Wall

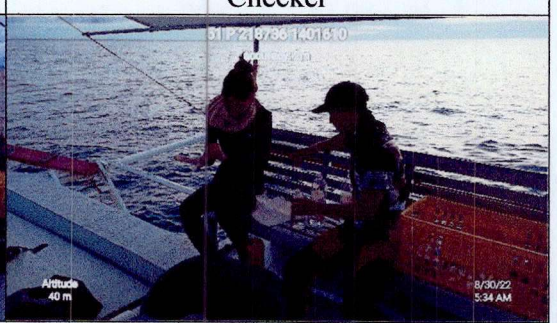


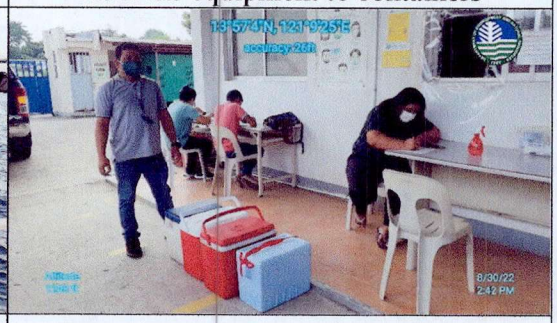
PMF Beringuela closing the improvised PVC sampler in Ego Wall at a depth of approximately 10-m



PMF Beringuela assisting the probe of the Horiba U-50 Multiparameter Water Quality Checker

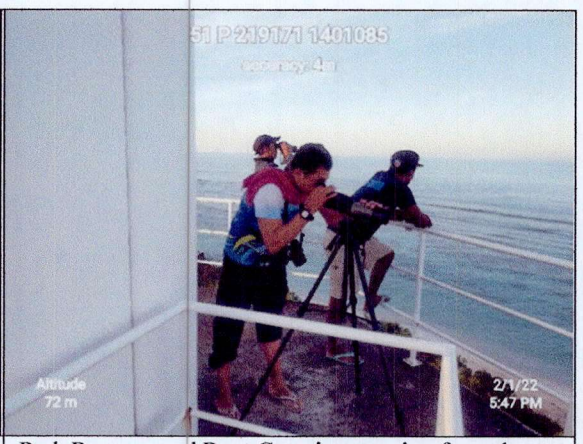




CMEMP Extension Officer Hugo Salvador collecting water sample from the surface at Ego Wall	Boat Captain Romel M. Pacaul assisting the CMEMP-EO in transferring the samples from the equipment to containers
	
PASu Villanada measuring DO, pH, and temperature in San Antonio	Four ice coolers containing the water samples collected from ARNP
	
PASu Villanada filling out the Chain of Custody Form of Optimal Laboratories, Inc.	SCDO Anna Ritchelle D. Nicanor managing the payment for the laboratory analyses of the samples

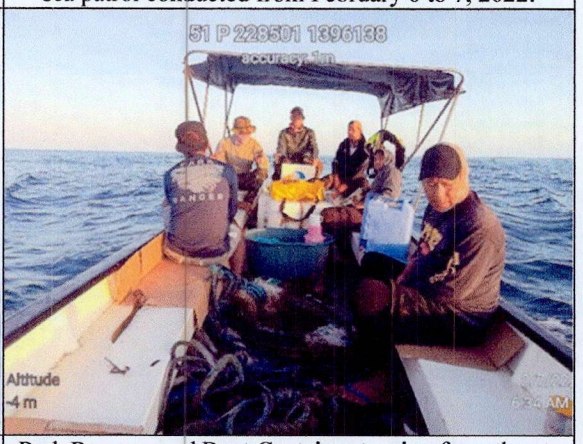
C. Photo-documentation of the patrol operations conducted within ARNP from January to December 2022.

Boat Captain Romel M. Pacaul and Park Ranger Ricky M. Dantayana discussing PA regulations to a fisherman.

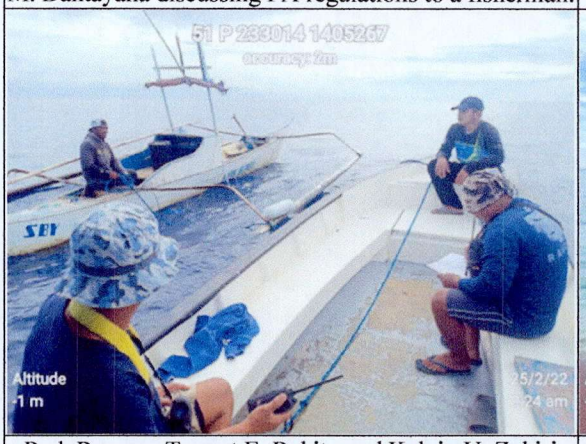


Park Rangers and Boat Captain returning from the at-sea patrol conducted from February 6 to 7, 2022.

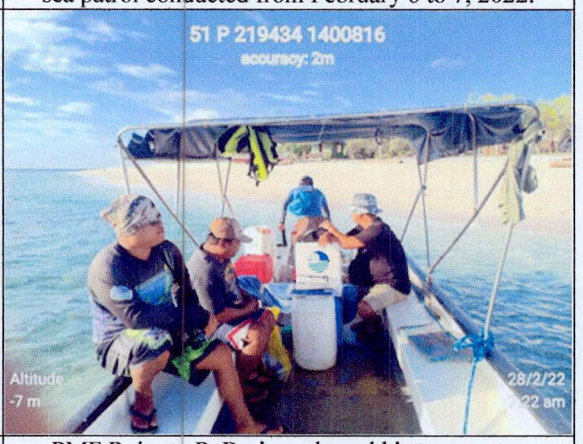
Boat Captain Romel M. Pacaul and Park Ranger Ricky M. Dantayana discussing PA regulations to a fisherman.



Park Rangers and Boat Captain returning from the at-sea patrol conducted from February 6 to 7, 2022.



Park Rangers Temart E. Rebito and Kelvin U. Zubiri discussing PA rules and regulations to a fisherman on February 25, 2022.



PMF Roberto P. Beringuela and his teammates returning from an at-sea patrol conducted from February 27 to 28, 2022

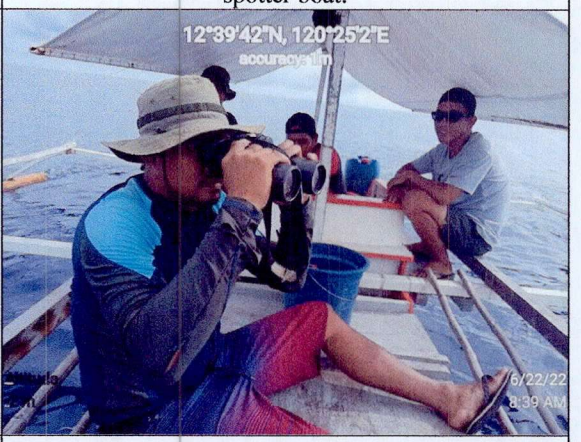
Park Rangers dislodging the 26-footer high speed watercraft after a seaborne patrol from April 14 to 15, 2022.

Motorized banca encountered within PA boundaries on June 7, 2022.

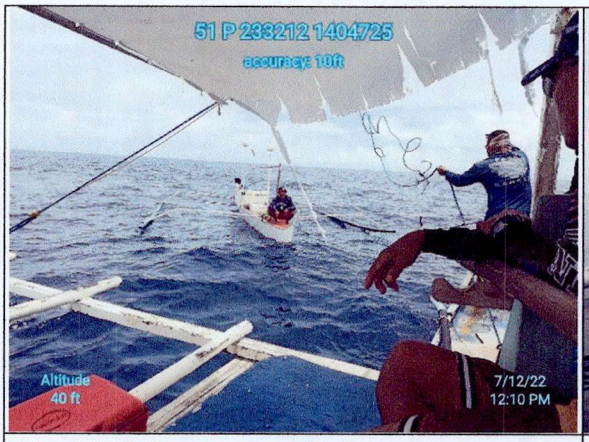
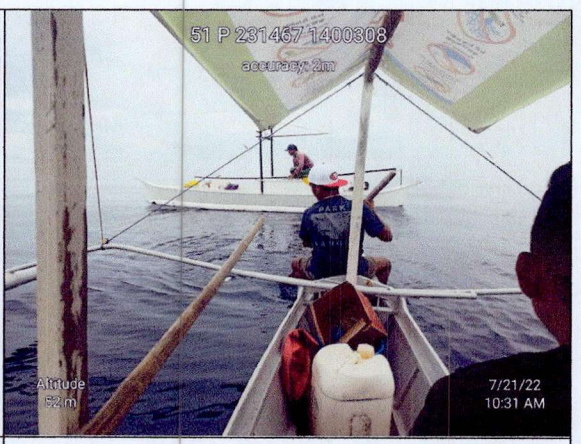
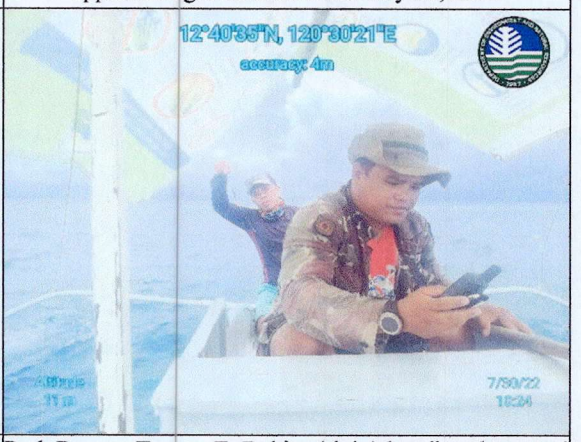
Park Ranger Temart E. Rebito informing a motorized banca on PA rules and regulations.

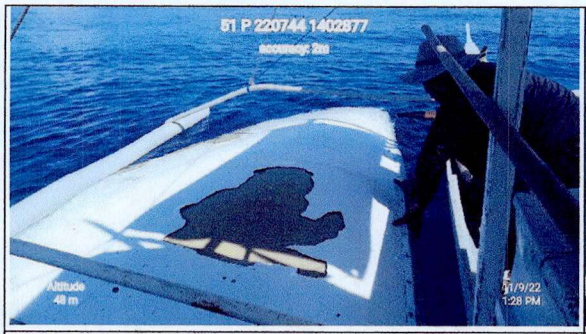
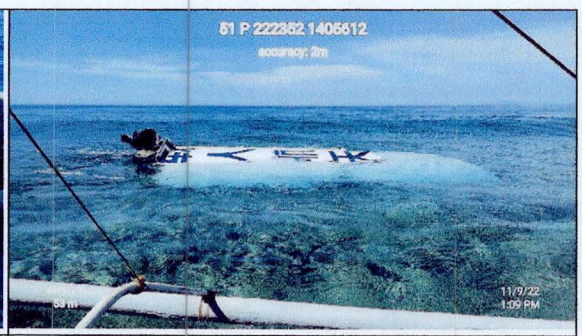
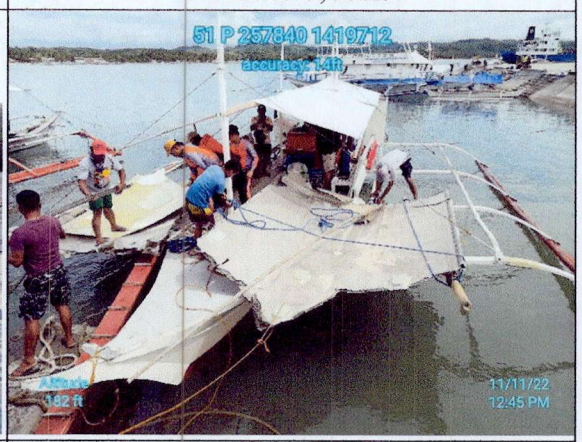
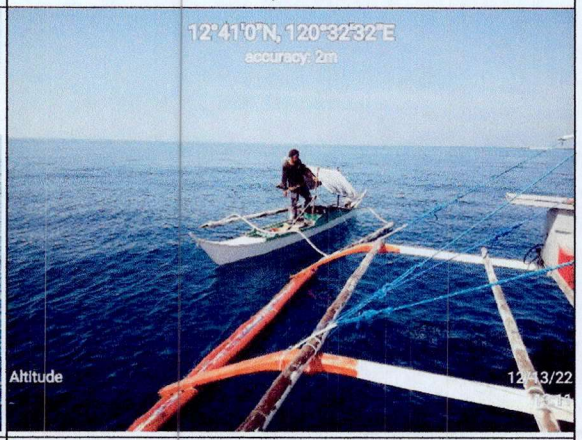
Park Rangers preparing to conduct a seaborne patrol at Parolang Putol on June 8, 2022 using the refurbished spotter boat.

Park Ranger Kelvin U. Zubiri monitoring the vicinity from the lighthouse



Support Staff Ricky M. Dantayana surveying the area with binoculars on June 22, 2022

	
Fisherfolk (left) encountered by the Park Rangers during their seaborne operations on July 12, 2022.	Park Ranger Ludygario M. Matira (middle) approaching a fisherfolk last July 21, 2022
	
Park Ranger Kelvin U. Zubiri surveying the core zone for illegal fishing activity last July 30, 2022	Park Ranger Temart E. Rebito (right) heading the patrol operations
	
Salvador M. Ciasico (left) and Boat Captain Mark Dennis Barretto participating in the seaborne patrol last August 13, 2022	Park Ranger Temart E. Rebito telling a fisherfolk encountered during the seaborne patrol to stop the engine of his boat

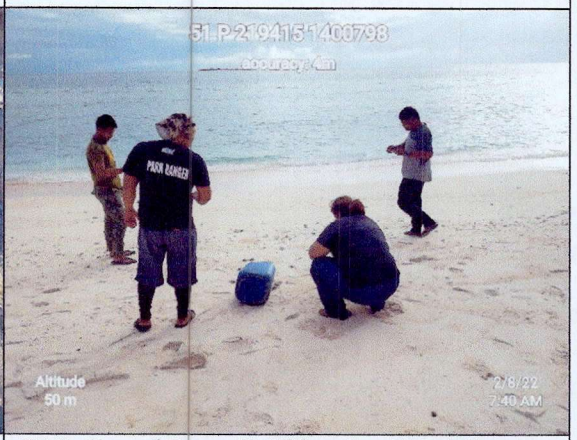
	
Forest Ranger Efraim Z. Pagador attempting to retrieve one of the suspected rocket debris	The other suspected rocket debris with blue Chinese inscription recorded in Apo Reef Natural Park last November 9, 2022.
	
Park Rangers and Coast Guards pulling the retrieved debris to the beach of Apo Island, Apo Reef Natural Park on Novemeber 10 to 11, 2022	Park Rangers and Coast Guards unloading the suspected rocket debris at Sablayan Pier on November 11, 2022
	
Park Ranger Temart E. Rebito (right) apprehending a fisherfolk operating within the PA on December 13, 2022	Another fisherfolk apprehended on December 13, 2022

D. Photo-documentation of the nesting beach surveys from January to December 2022.

CMEMP-EO Hugo G. Salvador measuring the CCL of the Green Turtle prior to tagging with Tag No. PH138K.

CMEMP-EO Hugo G. Salvador conducting a refresher training on nesting beach surveys last January 15, 2022.

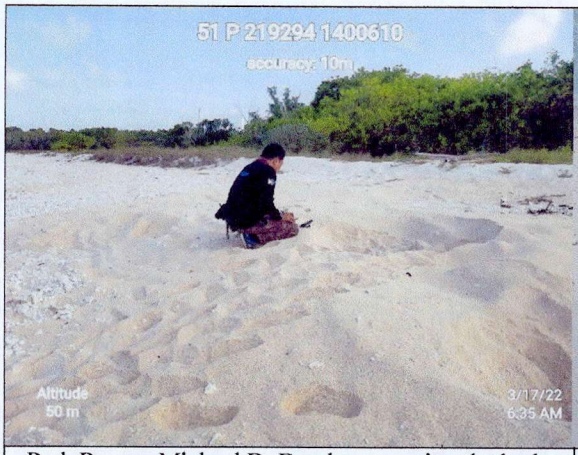
Park Ranger Michael D. Dagdag measuring a Green Turtle Track on February 3, 2022.



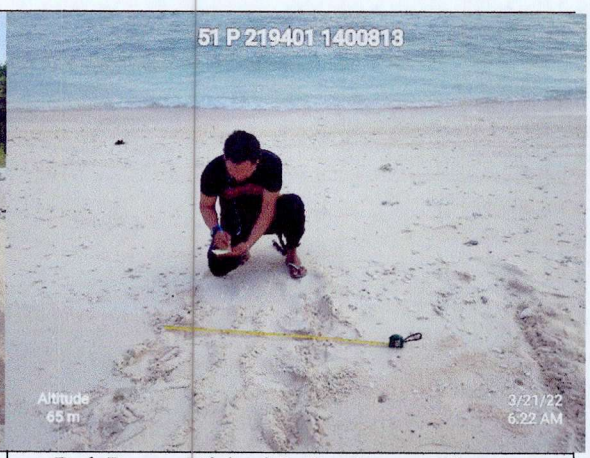
PASu Krystal Dayne T. Villanada and Park Rangers releasing Green Turtle hatchlings on February 8, 2022.

Newly emerged Green Turtle hatchlings recorded near the helipad on February 18, 2022.

Park Ranger Kelvin U. Zubiri acquiring the geolocation of a Green Turtle nest on February 23, 2022.



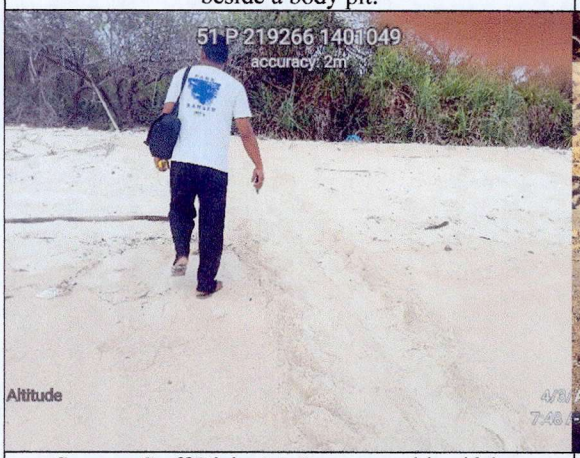
Park Ranger Michael D. Dagdag assessing the body pit of a green turtle on March 17, 2022.



Park Ranger Michael D. Dagdag recording the measurement of a crawl on March 21, 2022.

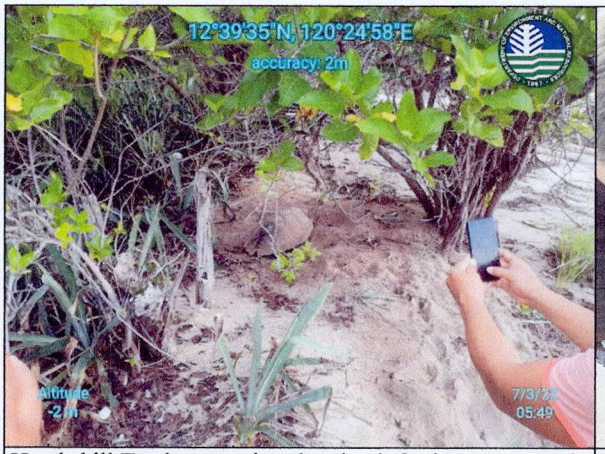
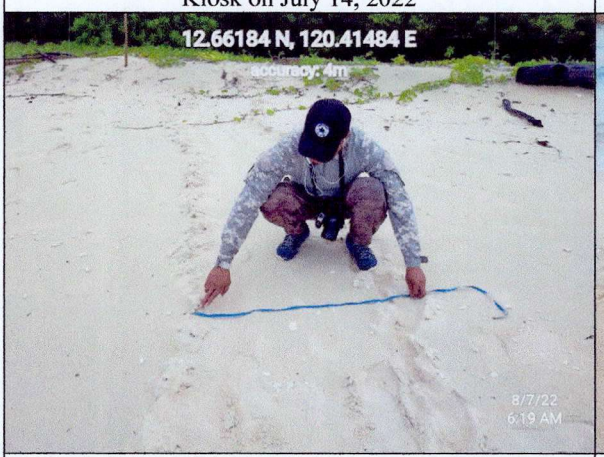
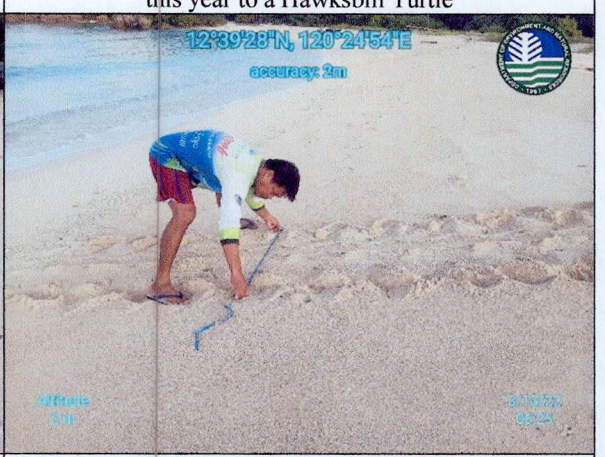
Park Ranger Michael D. Dagdag inspecting a mound beside a body pit.

Hawksbill turtle track photographed on March 22, 2022.

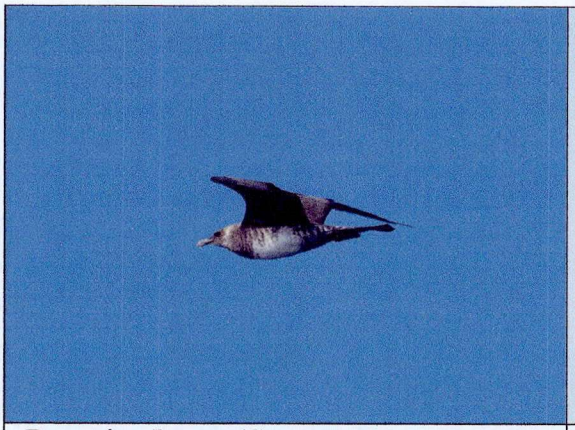


Support Staff Ricky M. Dantayana identifying whether a track is a nesting emergence or a false crawl.

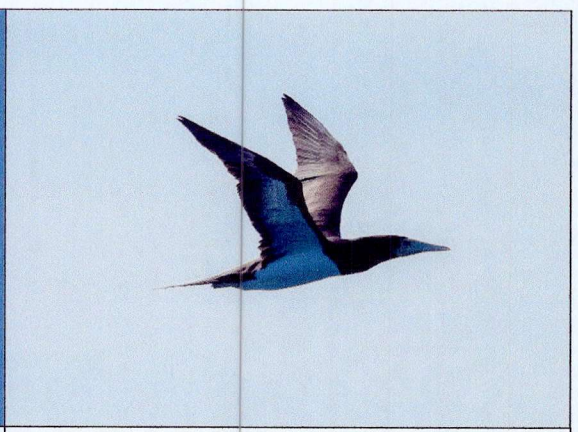
Incoming and outgoing tracks of a green turtle that was photographed by Park Ranger Kelvin U. Zubiri.

	
Hawksbill Turtle preparing the clutch for its eggs on July 3, 2022	Park Rangers attaching an Inconel tag (PH1541K) to the Hawksbill Turtle after nesting
	
A different Hawksbill Turtle nesting beside the Ranger's Kiosk on July 14, 2022	Second Inconel tag (PH1542K) attached by Park Rangers this year to a Hawksbill Turtle
	
Park Ranger Michael D. Dagdag measuring the width of a Green Turtle turtle track on August 7, 2022	Park Maintenance Foreman Roberto P. Beringuela measuring the width of a Green Turtle track within the southern portion of the sandy beach

E. Photo-documentation of the Asian Waterbird Census 2022.



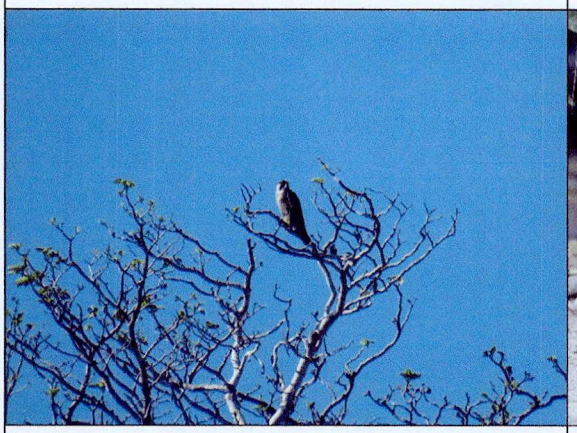
Pomarine Jaeger (*Stercorarius pomarinus*) encountered while in transit to Apo Reef Natural Park



Brown Booby (*Sula leucogaster*) near Cajos del Bajo (Tinangkapan)

Streaked Shearwater (*Calonectris leucomelas*) at Cayos del Bajo (Tinangkapan)

Barred Rail (*Hypotaenidia torquata*) at Apo Island

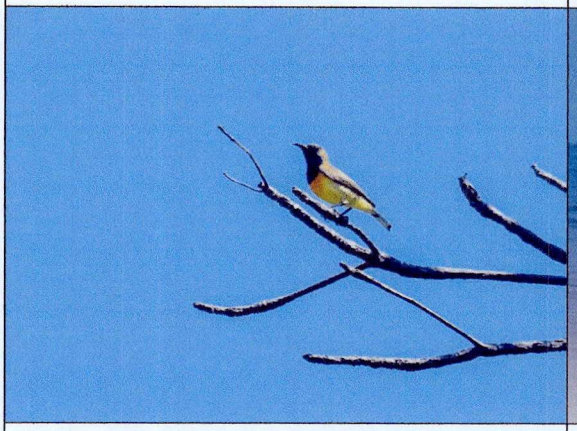


Peregrine Falcon (*Falco peregrinus calidus*) at Apo Menor (Binanggaan)

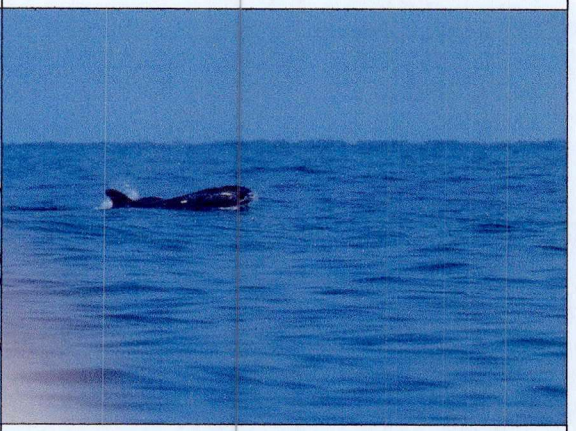
Nicobar Pigeon (*Caloenas nicobarica*) at Apo Island

Mantanani Scops Owl (*Otus mantananensis*) at Apo Island

Eyebrowed Thrush (*Turdus obscurus*) at Apo Island



Olive-backed Sunbird (*Cinnyris jugularis aurora*) at Apo Island

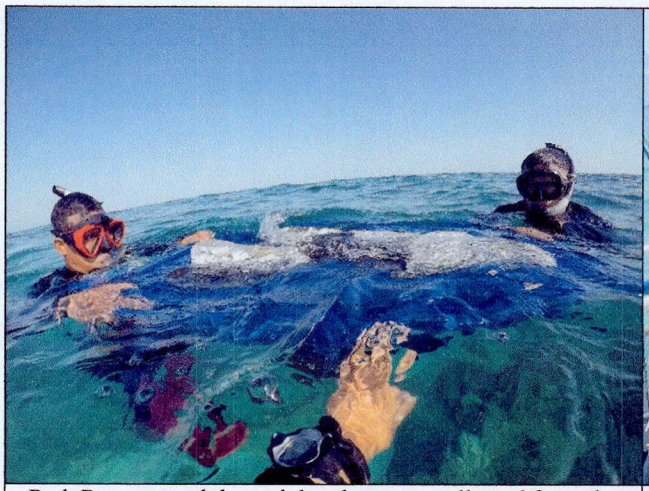


Unidentified cetacean recorded while in transit to Apo Reef Natural Park

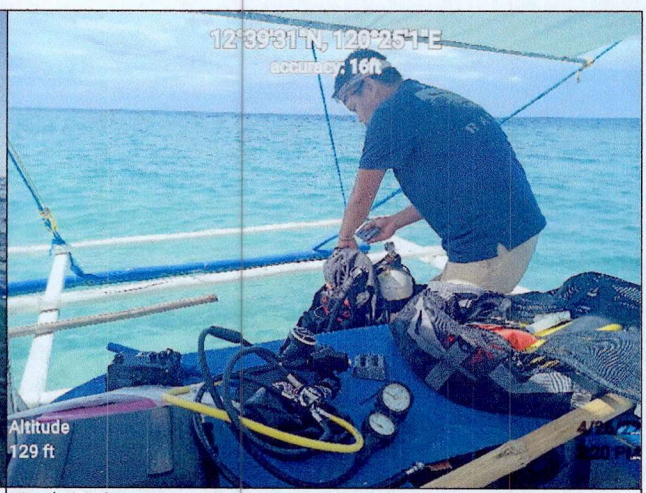
Three volunteers from WBCP with Michael D. Dagdag surveying Apo Island

All participants of the 2022 Waterbirds Survey in Apo Reef Natural Park

F. Photo-documentation of the damage assessment for the F/V Monalinda 85 grounding incident.



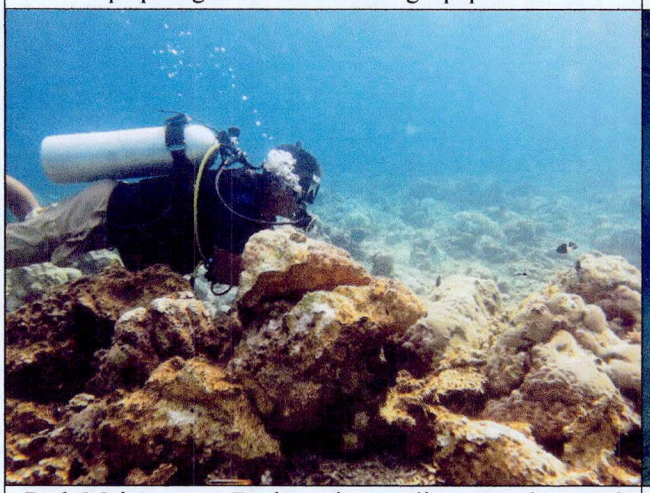
Park Rangers and the weights that were collected from the grounding site on April 20, 2022.



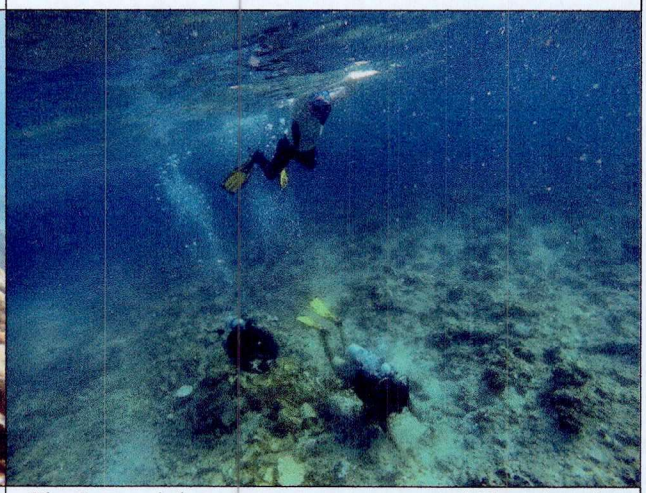
Park Maintenance Foreman Roberto P. Beringuela preparing his equipment on April 26, 2022.

Other members of the internal damage assessment team preparing their SCUBA diving equipment.

Forest Ranger Pagador testing out the GPS float.



Park Maintenance Beringuela crawling over damaged benthos while attached to the GPS float.



The Internal damage assessment team delineating the damaged area.

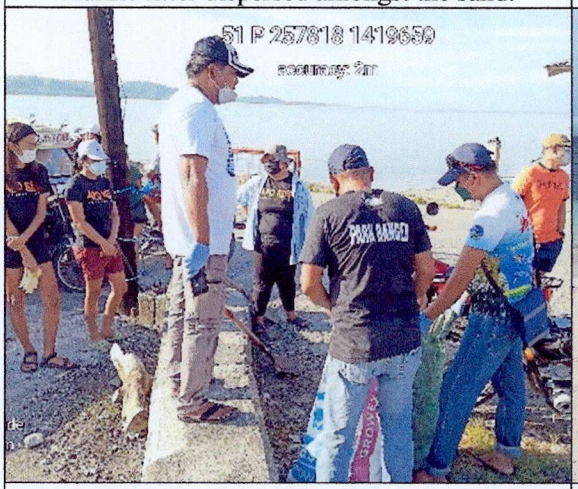
G. Photo-documentation of coastal clean-up activities conducted from March 9 to June 19, 2022.

Park Rangers Ricky Dantayana and Ludygario Matira conducting a coastal clean-up activity on April 5, 2022.

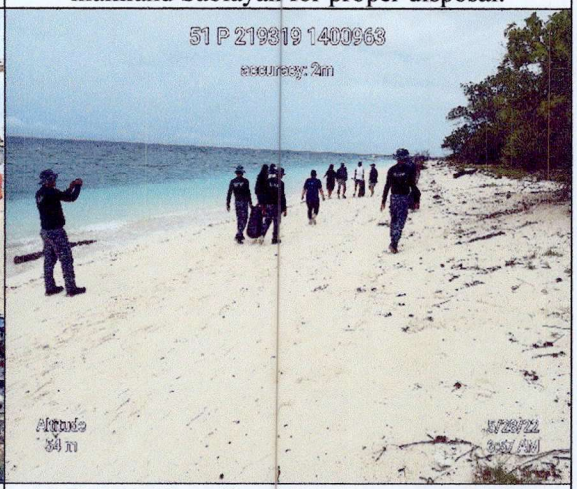
Participants of the coastal clean-up activity at Sitio Tabuk on May 6, 2022

Park Ranger Sherwin Benoza collecting small marine litter dispersed amongst the sand.

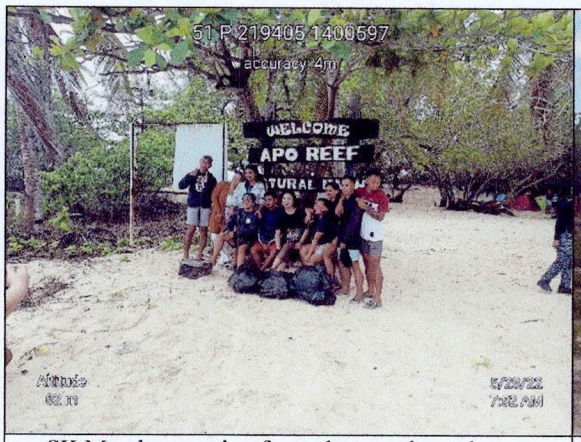
Wastes to be transported on May 17, 2022 to mainland Sablayan for proper disposal.



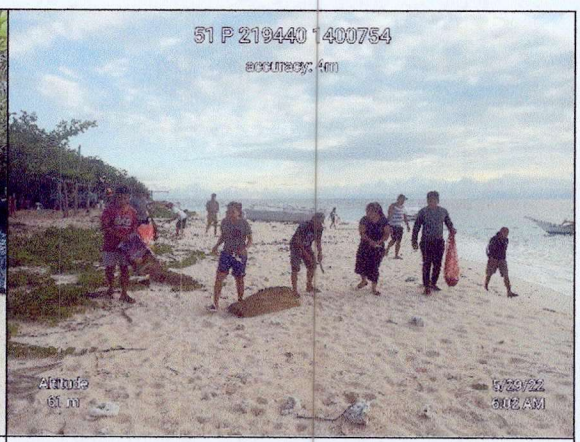
ARNP-PAMO staff participating in the coastal clean-up activity at Sablayan Pier.



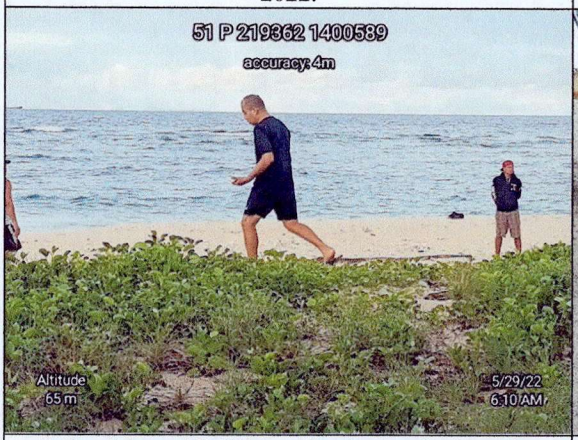
ARNP-PAMO staff and BJMP personnel joining youth leaders in cleaning up the sandy shore in Apo Island.



SK Members posing for a photo at the welcome signage after the coastal clean-up activity on May 28, 2022.

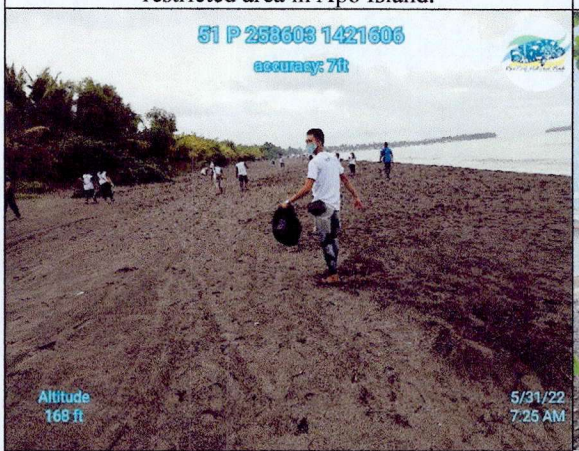


Park Rangers joining the personnel of the Municipal Trial Court in their clean-up activity on May 29, 2022.



Judge Jeicqpoi Politico collecting trash along the restricted area in Apo Island.

Park Ranger Michael D. Dagdag segregating wastes collected from coastal clean-up activities.

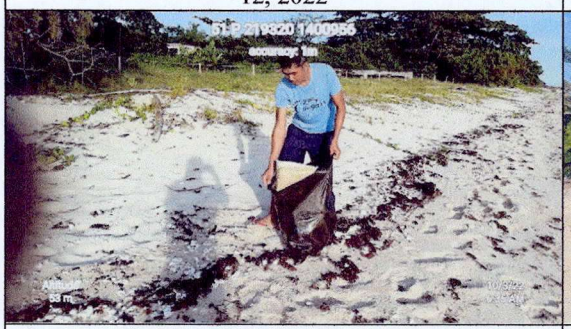


Park Ranger Salvador M. Ciasico participating in the second coastal clean-up at Sitio Tabuk on May 31, 2022.

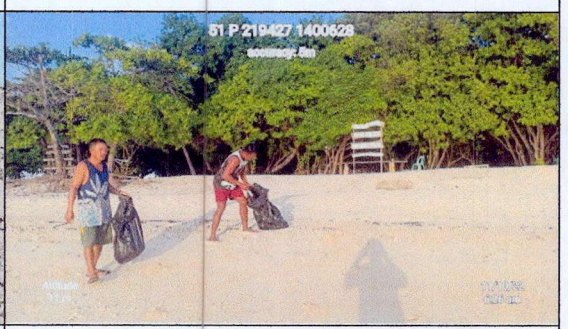
Participants of the SCUBAsura held at Free Beach, Barangay Poblacion on May 31, 2022.

Park Ranger Temart E. Rebito and MENRO personnel conducting a coastal clean-up activity on September 12, 2022

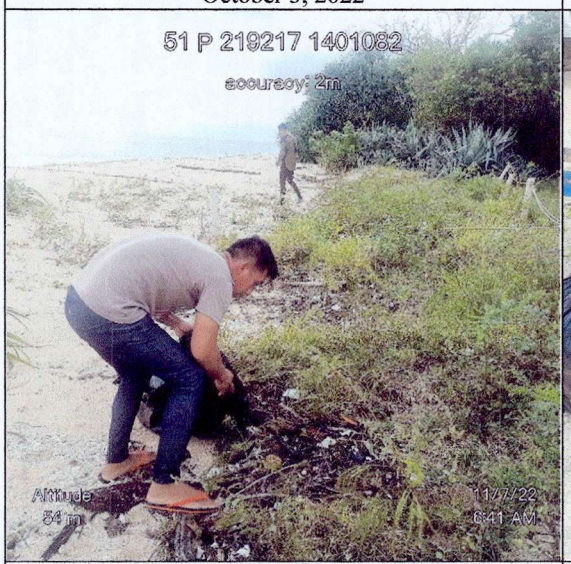
Park Ranger Jun G. Serquiña removing drifted lumber from the shore on September 27, 2022



Boat Captain Romel M. Pacaul collecting styrofoam pieces from the sandy beach of Apo Islanad on October 3, 2022

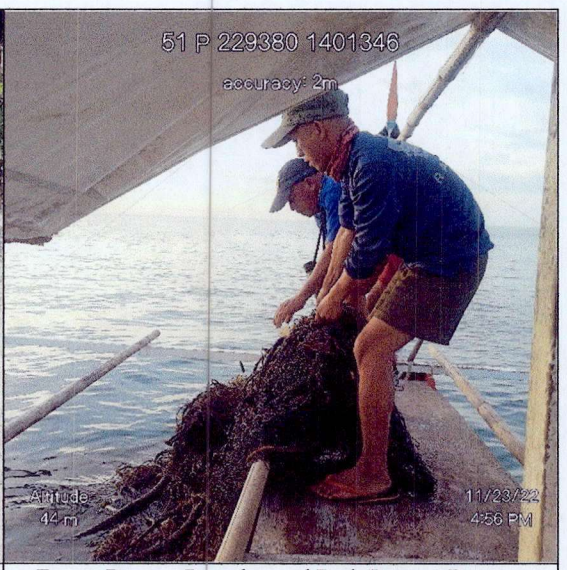


Park Ranger Jun G. Serquiña and MENRO staff conducting coastal clean-up activity in Apo Island on October 11, 2022



Park Ranger Sherwin R. Benoza collecting small pieces of styrofoam along the shore of Apo Island on November 7, 2022

Sacks of mixed garbage collected during the coastal clean-up activity in Apo Island on November 7, 2022

	
Forest Ranger Efraim Z. Pagador and Boat Captain Romel M. Pacaul segregating the wastes collected on November 15, 2022	Forest Ranger Pagador and Park Ranger Benoza retrieving derelict fishing gears entangled onto the reef last November 23, 2022

H. Photo-documentation of the ARMS monitoring for 2022.

Park Rangers preparing while in transit to Ego Wall, one of the three stations where ARMS were installed.

Park Ranger Temart E. Rebito and Support Staff Salvador M. Ciasico assisting in the assembly and disassembly of diving equipment.

Park Rangers Sherwin R. Benoza and Ricky M. Dantayana geared up for the ARMS monitoring activity in Binanggaan on November 27, 2022

Boat Captain Romel M. Pacaul assisting Park Rangers in setting up their diving gears for the ARMS monitoring activity

Forest Ranger Efraim Z. Pagador and Park Ranger Ricky M. Dantayana searching for the ARMS in Binanggaan

Forest Ranger Efraim Z. Pagador inspecting the one of the six ARMS in Binanggaan