



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

Bgy. Sta. Monica, Puerto Princesa City, Palawan

E-mail: penropalawan@denr.gov.ph

Telfax No. (048) 433-5638 / (048) 433-5638

DENR MIMAROPA RECORDS SECTION
RECEIVED
09 DEC 2022
INCOMING
OUTGOING
DATE NO.

December 01, 2022

MEMORANDUM

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

THRU : The OIC, ARD for Technical Services

FROM : The Provincial Environment and
Natural Resources Officer

SUBJECT : **REPORT ON SEAGRASS MONITORING OF EL NIDO-TAYTAY MANAGED RESOURCE PROTECTED AREA (ENTMRPA)**

Forwarded is the memorandum dated November 21, 2022 of CENRO Taytay along with the report on seagrass monitoring of El Nido-Taytay Managed Resource Protected Area (ENTMRPA) that serves as **Means of Verification (MOV)** to the target activity under Management of Coastal and Marine Resources/Areas – Monitoring of Seagrass in ENTMRPA.

Please be informed that four (4) monitoring sites were identified and established out of twenty (20) sampling sites in El Nido-Taytay Managed Resource Protected Area (ENTMRPA). The monitoring of seagrass is 100% accomplished.

For information and record.

FELIZARDO B. CAYATOC



DENR-PALAWAN
PENRO-RECORDS
RELEASED
By: *[Signature]*
Date: 07 DEC 2022 CN 22-3237



Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE
By the National Highway, Poblacion, Taytay, Palawan 5312
Mobile: 0926-505-9335 TM 0912-171-3889 TNT
Email: cenrotaytay@denr.gov.ph

**DENR CENRO
PALAWAN RECORDS
RECEIVED**

November 21, 2022

MEMORANDUM

BY: _____
DATE: _____ CN _____

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

FROM : The Community Environment and Natural Resources Officer
This jurisdiction

SUBJECT : **REPORT ON SEAGRASS MONITORING OF EL NIDO TAYTAY
MANAGED RESOURCE PROTECTED AREA (ENTMRPA)**

Respectfully forwarded is the memorandum dated November 16, 2022 of Protected Area Superintendent (PASu) Mildred A. Suza being an accomplishment and **Means of Verification (MoV)** on the target activity on the Monitoring of Corals, Mangroves and Seagrass under 001 Management of Coastal and Marine Resources/Areas of El Nido-Taytay Managed Resource Protected Area (ENMTRPA), El Nido, Palawan.

Based on the report, the activity for the assessment resulted to the identification and establishment of four (4) monitoring sites out of twenty (20) sampling sites is accordingly accomplished 100%.

Please confirm the receipt hereof. Thank you.

For and in the absence of the CENRO:

**DENR CENRO
TAYTAY, PALAWAN
RELEASED**

BY: _____
DATE: NOV 21 2022 3408

MARIANO P. LILANG, JR.
Development Management Officer IV
Per DAO-2022-09, page 3

Cc: PAMO-ENTMRPA



Republic of the Philippines
Department of Environment and Natural Resources
MIMAROPA Region
Community Environment and Natural Resources
EL NIDO-TAYTAY MANAGED RESOURCE PROTECTED AREA
Calle Real, Barangay Masagana, El Nido, Palawan, 5313
Telephone No. 048-716-0674
Email: entmrpa@gmail.com

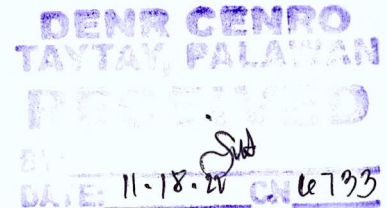
November 16, 2022

MEMORANDUM

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

FROM : The Protected Area Superintendent
El Nido-Taytay Managed Resource Protected Area

SUBJECT : **REPORT ON SEAGRASS MONITORING OF EL NIDO – TAYTAY MANAGED RESOURCE PROTECTED AREA (ENTMRPA)**



Respectfully forwarded is the memorandum report of CMEMP Extension Officer of El Nido- Taytay Managed Resource Protected Area - Protected Area Management Office (ENTMRPA-PAMO) regarding the above subject. This pertains to the target activity 001 Monitoring of Seagrass per Protected Area (PA) under Marine Protected Area Strengthening and Networking.

Please be informed that the ENTMRPA-PAMO together with Municipal Environment and Natural Resources Office (MENRO) conducted seagrass assessment and monitoring from June to November 2022. Out of twenty (20) sampling sites, four (4) established monitoring sites was selected which were located at So. Seminaytay, Barangay Manlag, So. Simpian, Bgy. Aberawan, Snake Island, Bgy. Bebeladan, So. Caalan, Bgy. Masagana, El Nido, Palawan. Below are the result and findings of the conducted activity;

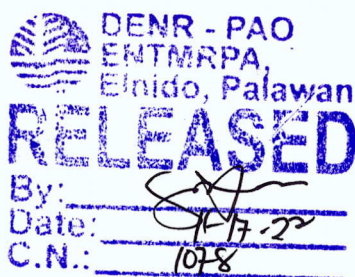
MONITORING SITES	AREA (ha)	SEAGRASS CONDITION	BIODIVERSITY INDEX CATEGORY
So. Seminaytay, Barangay Manlag	57.43	Fair	Low diversity
So. Simpian, Bgy. Aberawan	36.36	Good	Low diversity
Snake Island, Bgy. Bebeladan	14	Poor	Low diversity
So. Caalan, Bgy. Masagana	6	Fair	Low diversity

Furthermore, this office concurs with the recommendation to intensify the conduct of Communication Education and Public Awareness (CEPA) regarding on seagrass habitat especially in terms of their importance to the environment and community in order to conserve and protect from anthropological disturbances.

Moreover, the monitoring of seagrass in ENTMRPA has been completed in accordance to BMB Technical Bulletin No. 2019-04, hence 100% accomplished for CY 2022.

This serves as our Means of Verification (MOV) of the target.

For information and record.



h/w
MILDRED A. SUZA



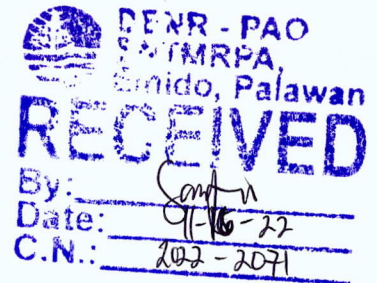
November 16, 2022

MEMORANDUM

FOR : The Protected Area Superintendent
El Nido- Taytay Managed Resource Protected Area

FROM : CMEMP Extension Officer
El Nido- Taytay Managed Resource Protected Area

**SUBJECT : REPORT ON SEAGRASS MONITORING OF EL NIDO – TAYTAY
MANAGED RESOURCE PROTECTED AREA (ENTMRPA)**



This pertains to the target activity 001 Monitoring of Seagrass per Protected Area (PA) under Marine Protected Area Strengthening and Networking of El Nido-Taytay Managed Resource Protected Area (ENTMRPA) – Protected Area Management Office (PAMO).

Please be informed that the undersigned, together with ENTMRPA-PAMO staffs Steven John Andao, Faith D. Bangalisan, Reina Rose Abordo, John Vincenth Cuyo, Bret Hart Sanogal, and Ryan Cacacha with the participation of Municipal Environment and Natural Resources Office (MENRO) staffs conducted seagrass assessment and monitoring from June to November 2022 within ENTMRPA. The ENTMRPA covers 521.83 hectares of seagrass as per ground-truthing 2022 conducted by this office. Out of the twenty (20) sampling sites, four (4) established monitoring sites were selected based on the monitoring sites consideration of BMB – Technical Bulletin 2019-04 and the method used in the said activity. The four (4) established monitoring sites were located at So. Seminaytay, Bgy. Manlag (57.34 hectares), Sitio Simpian, Bgy. Aberawan (36.36 hectares), Snake Island, Bgy. Bebeladan (14 hectares), and Sitio Caalan, Bgy. Masagana (6 hectares).

As reflected in Table 1 there were eight (8) species recorded at four (4) established monitoring sites composed of *Enhalus acoroides* (Ea), *Thalassia hemprichii* (Th), *Cymodocea serrulata* (Cs), *Halodule pinifolia* (Hp), *Syringodium isoetifolium* (Si), *Halodule uninervis* (Hu), *Halophila ovalis* (Ho) and *Cymodocea rotundata* (Cr). Six (6) species of seagrass was recorded in So. Seminaytay, Bgy. Manlag and So. Caalan, Bgy. Masagana, and seven (7) species were recorded in Snake Island, Bgy. Bebeladan, while five (5) species recorded in So. Caalan, Bgy. Masagana.

Table 1. List of seagrass species recorded at four (4) established monitoring sites

SITES	Seagrass Species							
	<i>Enhalus acoroides</i>	<i>Thalassia hemprichii</i>	<i>Cymodocea serrulata</i>	<i>Halodule pinifolia</i>	<i>Syringodium isoetifolium</i>	<i>Halodule uninervis</i>	<i>Halophila ovalis</i>	<i>Cymodocea rotundata</i>
So Seminaytay, Bgy. Manlag	√	√		√	√		√	√
So. Simpian, Bgy. Aberawan	√			√	√		√	√
Snake Island, Bgy. Bebeladan	√	√		√	√	√	√	√
So. Caalan, Bgy. Masagana	√	√		√	√		√	√

In table 2 shows the percent cover of seagrass across transect stations at four (4) established monitoring sites. The most dominant species in So. Seminaytay, Bgy. Manlag is *Cymodocea rotundata* with an average of 22.91%, in So. Simpian, Bgy. Aberawan and Snake Island, Bgy. Aberawan is *Enhalus acoroides* with an average of 31.3 % and 10.33%, respectively. While, in So. Simpian, Bgy. Masagana the most dominant species is *Thalassia hemprichii* with an average of 11.76%.

Table 2. Percent Cover of seagrass across transect stations at four (4) established monitoring sites.

Sites	Species	T1	T2	T3	Average
So Seminaytay. Bgy. Manlag	<i>Enhalus acoroides</i>	2.09	1.45	0.45	1.33
	<i>Thalassia hemprichii</i>	0	0.09	0	0.03
	<i>Halodule pinifolia</i>	26.73	23	5.55	18.43
	<i>Syringodium isoetifolium</i>	5.45	0	0	1.82
	<i>Halophila ovalis</i>	2.91	0.91	0	1.27
	<i>Cymodocea rotundata</i>	22.82	39.09	6.82	22.91
	Subtotal	60	64.54	12.82	
So. Simpian, Bgy. Aberawan	<i>Enhalus acoroides</i>	42.91	27	24	31.3
	<i>Thalassia hemprichii</i>	0.18	2.55	7.82	3.5
	<i>Cymodocea serrulata</i>	0	1.73	0	0.6
	<i>Halodule pinifolia</i>	2.73	1.64	9.73	4.7
	<i>Syringodium isoetifolium</i>	10	8	6.09	8
	<i>Halophila ovalis</i>	0.45	5.73	0.91	2.4
	<i>Cymodocea rotundata</i>	1.45	0.64	5.73	2.6
	Subtotal	57.72	47.29	54.28	
Snake Island, Bgy. Bebeladan	<i>Enhalus acoroides</i>	0.45	27.73	2.82	10.33
	<i>Thalassia hemprichii</i>	0	5.73	1.45	2.39
	<i>Halodule pinifolia</i>	0.73	0	0	0.24
	<i>Syringodium isoetifolium</i>	0.18	13.18	0.27	4.54
	<i>Halodule uninervis</i>	0	0.91	0	0.30
	<i>Halophila ovalis</i>	0	0.64	4	1.55
	<i>Cymodocea rotundata</i>	0	0	0.27	0.09
	Subtotal	1.36	48.19	8.81	
So. Caalan. Bgy. Masagana	<i>Thalassia hemprichii</i>	10.73	15.55	9	11.76
	<i>Halodule pinifolia</i>	4.27	4.09	4	4.12
	<i>Syringodium isoetifolium</i>	0	0.45	0	0.15
	<i>Halophila ovalis</i>	0	1.45	0	0.48
	<i>Cymodocea rotundata</i>	7.27	1.82	0.18	3.09
	Subtotal	22.27	23.36	13.18	

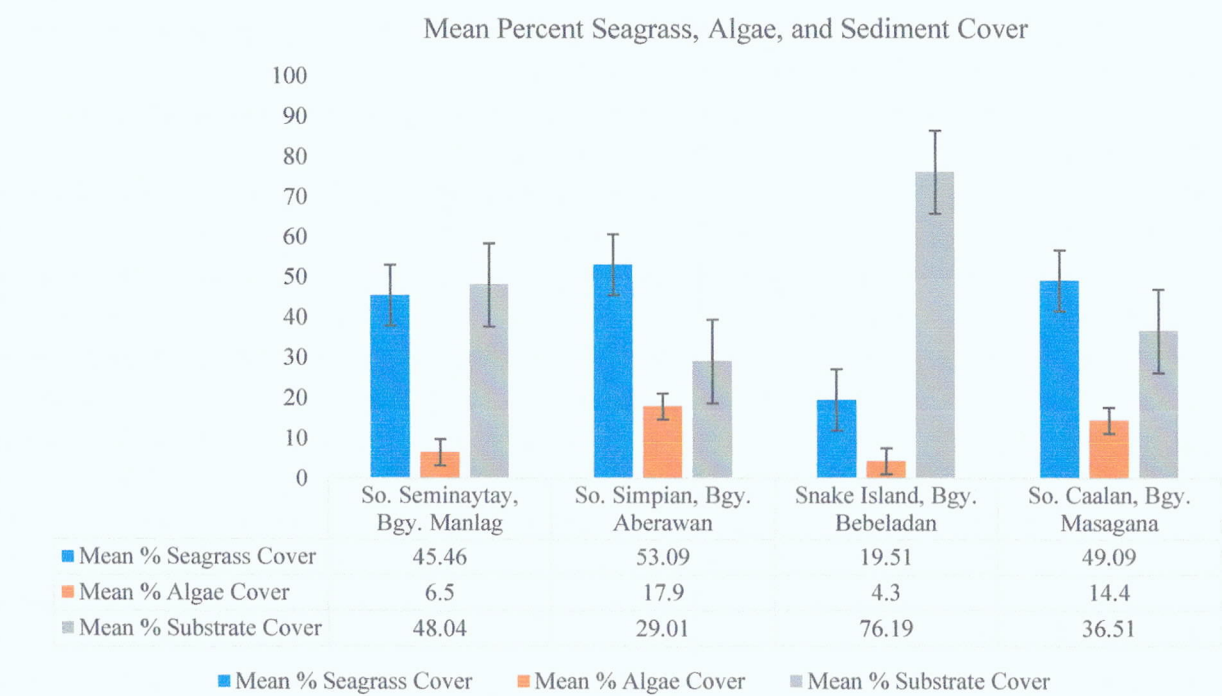


Figure 1. Mean percent seagrass, algae, and sediment cover at four (4) established monitoring sites

Figure 1 shows the computed mean percentage of seagrass, algae, and sediment cover at four (4) established monitoring sites. The highest percentage of seagrass cover is in So. Simpian Bgy. Aberawan, the seagrass condition is categorized as good based on Amran, 2010. On the other hand, in So. Seminaytay, Bgy. Manlag and So. Caalan. Bgy. Masagana the seagrass cover is 45.46% and 49.09%, respectively; which are categorized as fair condition. However, in Snake Island. Bgy. Bebeladan, the seagrass cover is 19.51% which is categorized as poor condition.

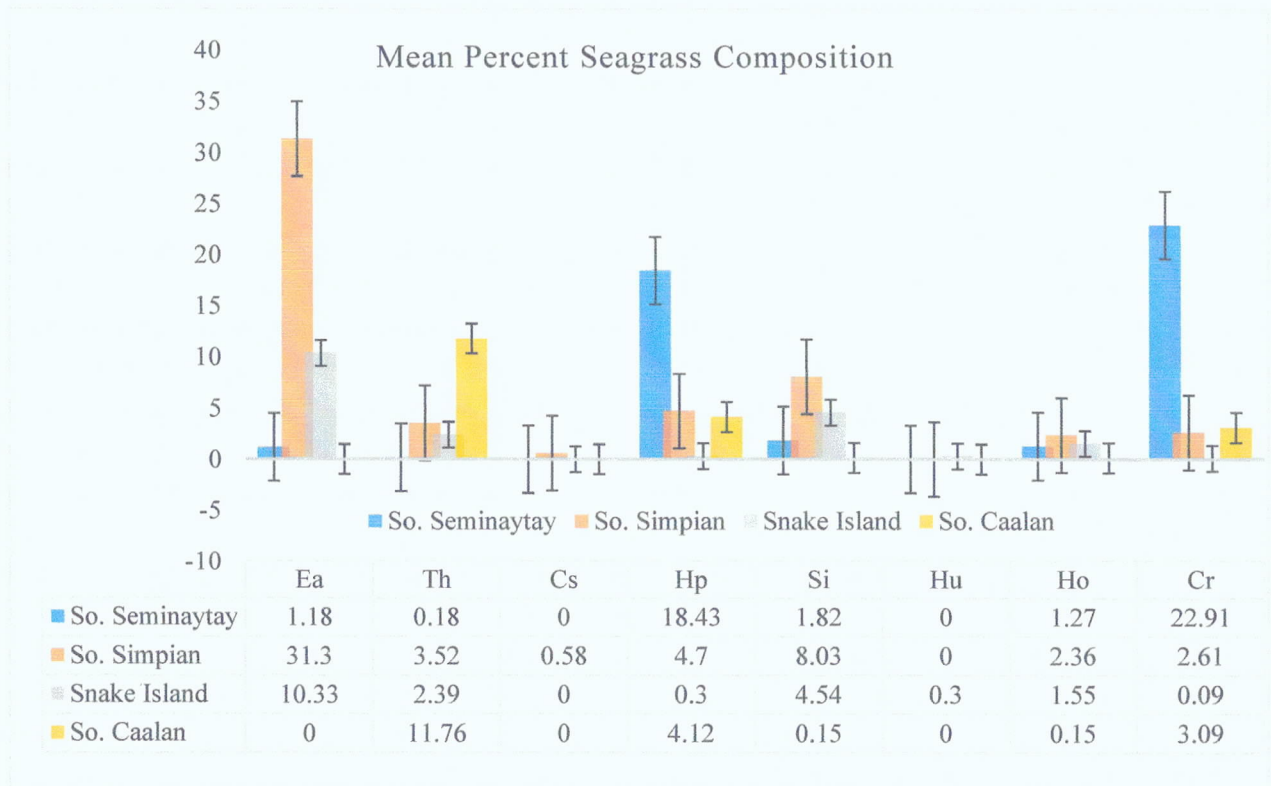


Figure 2. Mean percent seagrass composition at four (4) established monitoring sites

Figure 2 shows the computed mean percent seagrass composition at four (4) established monitoring sites. In eight (8) species of seagrass species recorded the *Enhalus acoroides* is the most dominant species which is recorded in So. Simpian, Bgy. Aberawan. While the *Halodule uninervis* is the least dominant species which is only recorded in Snake Island, Bgy. Bebeladan.

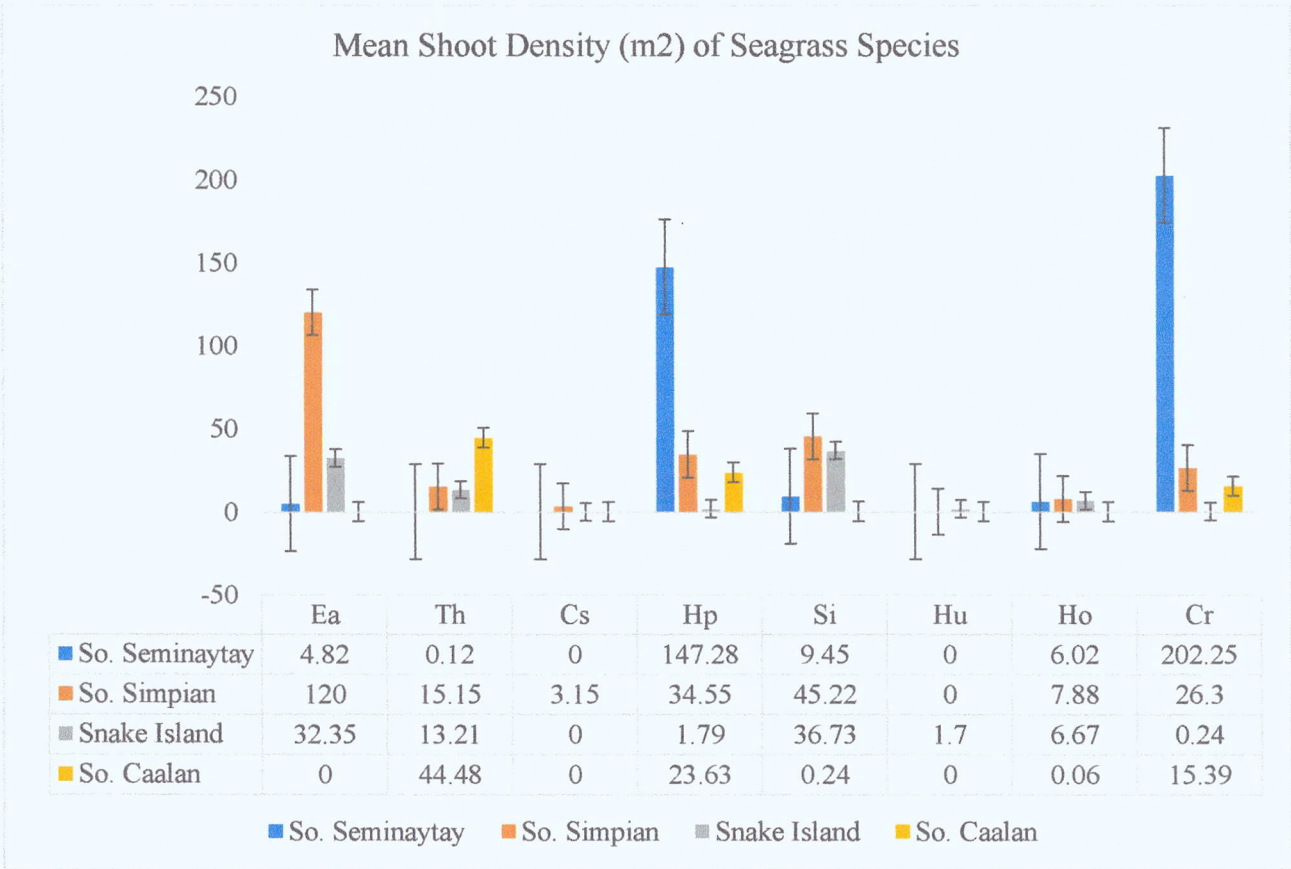


Figure 3. Mean shoot density (m²) of seagrass species at four (4) established monitoring sites

Figure 3 shows the computed mean shoot density (m²) of seagrass species at four (4) established monitoring sites. Among the eight (8) species recorded the *Cymodocea rotundata* has the highest shoot density with 202.25 m² which is recorded at So. Seminaytay, Bgy. Aberawan, followed by *Halophila pinifolia* with 147.28 m² which was recorded also in the said site.

In table 3 shows the result and findings of the site characteristics and biodiversity indices of four (4) established monitoring sites. All sites are composed of eleven (11) quadrats for every transect. Shannon-Weiner Diversity Index was used to determine the seagrass diversity and categorized based on Odum (1983). So. Seminaytay, So. Simpian, Snake Island, and So. Caalan was acquired with a value of 0.443, 0.293, 0.303, and 0.393, respectively; which all falls under low diversity category. However, in terms of evenness of species there is no significant difference in two (2) monitoring sites where they acquired 0.8 values in So. Aberawan and Snake Island. Meanwhile, in So. Caalan and So. Seminaytay they had 0.6 and 0.5 values, respectively.

Table 3. Site characteristics and Biodiversity Indices at four (4) monitoring sites

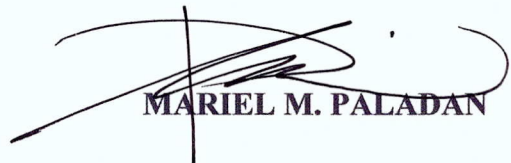
SITE CHARACTERISTICS	Bgy. Manlag	So. Aberawan	Bgy. Bebeladan	Bgy. Masagana
Sitio	So. Seminaytay	So. Simpian	Snake Island	So. Caalan
Latitude	11° 6'18.96"N	11° 4'46.06"N	11° 5'33.97"N	11°11'38.48"N
Longitude	119°24'50.47"E	119°24'56.35"E	119°20'22.48"E	119°23'49.21"E
Number of quadrats	11	11	11	11
Sediment type	Sandy-silt	Sandy	Sandy	Coarse Sand
Water condition	A bit turbid	High Tide	Low Tide	Turbid
Other observations/remarks			Tourist Spot	Near Resort
Estimated seagrass (ha)	56.7	36	14	6
Diversity Indices				
Shannon-Weiner diversity index (H')	0.967	1.5	1.377	1.038
Simpson's diversity index	0.443	0.293	0.303	0.393
Evenness of Species (E)	0.5	0.8	0.8	0.6
Number of seagrass species (in quadrats)	6	7	7	5

Furthermore, it is recommended to intensify the conduct of Communication Education and Public Awareness (CEPA) regarding on seagrass habitat specially in terms of their importance to the environment and community in order to conserve and protect from anthropological disturbances.

Attached are the photo-documentation, maps and raw data of the said activity.

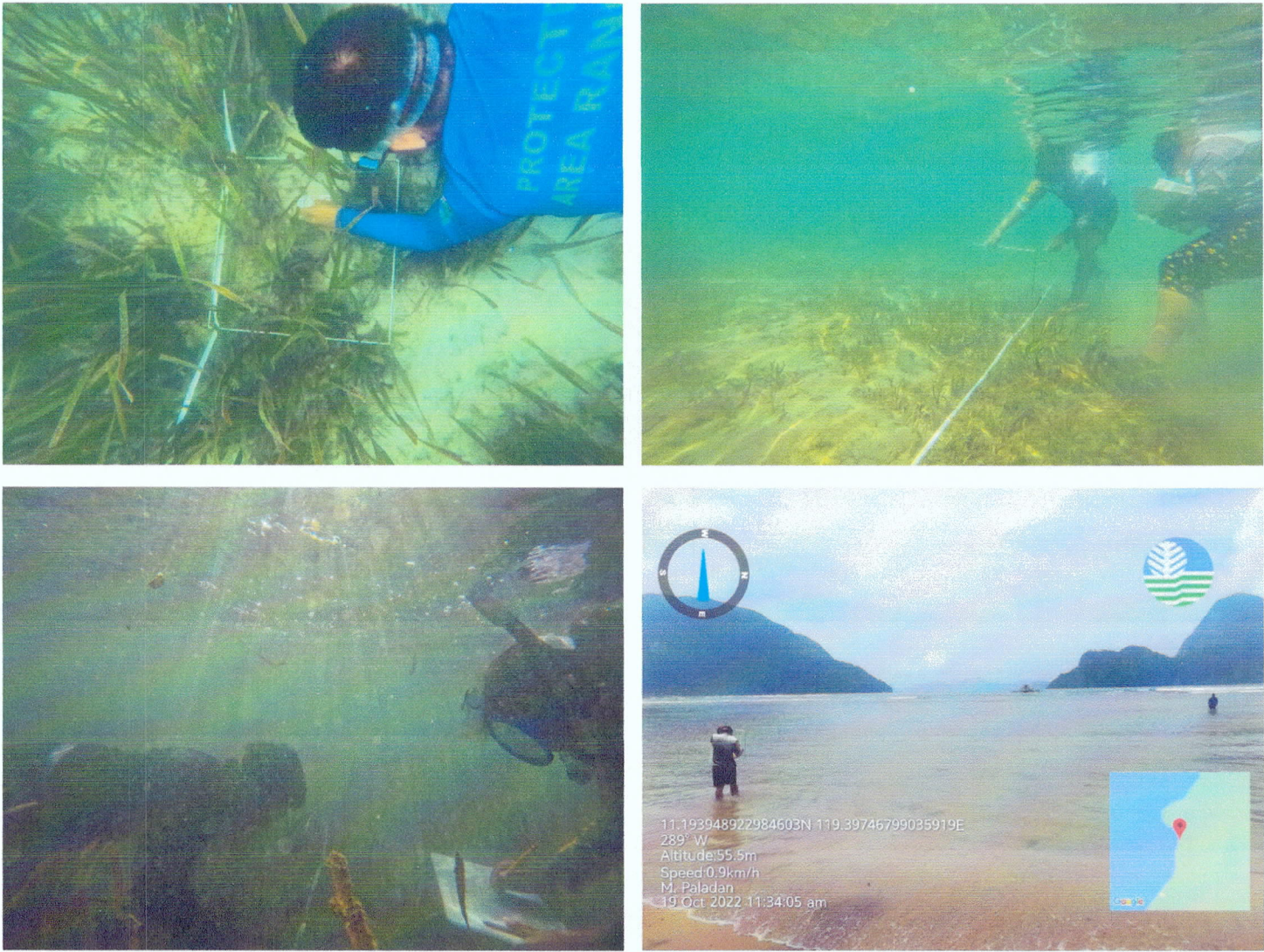
This serves as our Means of Verification (MOV) of the target.

For information and record.



MARIEL M. PALADAN

PHOTO DOCUMENTATION



CERTIFICATION

I hereby certify that the above photos were true and correct and taken during the conduct of activities.


MARIEL M. PALADAN
CMEMP Extension Officer

Observer: Mariel Paladan, Faith D. Bangalisan, and Steven John Andao,
Location: So. Simpian, Bgy. Aberawan, El Nido, Palawan

Date: July 8, 2022

TRANSECT 1

QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COMPOSITION					SHOOT DENSITY (m2)								CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER				
				Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si				Hu	Ho	Cr	
1 (0m)	Sandy	Forams		35	0	0	0	0	0	0	0	152	0	0	0	0	0	0	0	0	47,50,52	50	70
2 (5m)	Sandy	Forams	x	50	45	0	0	0	0	0	5	196	0	0	0	0	16	0	0	0	4,6,5	10	70
3 (10m)	Sandy	Forams		70	60	0	0	0	10	0	0	256	0	0	0	60	0	0	0	0	14,12,17	10	90
4 (15m)	Sandy	Forams		85	42	0	0	0	43	0	0	204	0	0	0	248	0	0	0	0	18,17,20	20	80
5 (20m)	Sandy	Forams		50	40	0	0	0	7	0	0	184	0	0	48	0	0	0	16	10,8,11	5	85	
6 (25m)	Sandy	Forams	x	70	54	0	0	7	7	0	2	244	0	0	56	44	0	0	8	13,15,8	10	80	
7 (30m)	Sandy	Forams		20	18	0	0	1	0	0	1	88	0	0	16	0	0	0	4	10,10,12	5	70	
8 (35m)	Sandy	Forams		85	73	2	0	5	5	0	0	288	4	0	48	28	0	0	0	15,22,18	20	70	
9 (40m)	Sandy	Forams		85	55	0	0	0	25	0	5	236	0	0	0	116	0	0	48	14,15,13	10	60	
10 (45m)	Sandy	Forams	x	50	25	0	0	10	10	0	5	112	0	0	76	56	0	0	64	20,18,17	40	50	
11 (50m)	Sandy	Forams		35	25	0	0	0	10	0	0	124	0	0	0	48	0	0	0	22,26,24	20	60	
AVERAGE				57.73	42.91	0.18	0.00	2.73	10.00	0.00	0.45	1.45	189.45	0.36	0.00	22.18	54.55	0.00	1.45	12.73		18.18	71.36
SUM				635	472	2	0	30	110	0	5	16	2084	4	0	244	600	0	16	140		200	785

TRANSECT 2

QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COMPOSITION					SHOOT DENSITY (m2)										CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER		
				Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr				
1 (0m)	Sandy	1 gastropod, forams		25	0	0	10	0	0	0	0	112	0	0	0	64	0	0	0	0	27,25,24	5	85
2 (5m)	Sandy	2 gastropod, forams	x	15	0	5	8	0	0	2	0	0	28	0	56	0	0	8	0	0	10,8,12	0	80
3 (10m)	Sandy	forams		20	13	7	0	0	0	0	0	40	32	0	0	0	0	0	0	0	21,20,25	10	70
4 (15m)	Sandy	forams		50	33	14	0	0	0	2	1	108	48	0	0	0	0	4	4	4	20,22,25	10	60
5 (20m)	Sandy	forams		50	46	2	0	0	0	2	0	128	4	0	0	0	0	4	0	0	29,28,31	15	85
6 (25m)	Sandy	forams	x	70	60	0	0	0	0	10	0	184	0	0	0	0	0	32	0	0	31,33,30	10	90
7 (30m)	Sandy	forams		70	35	0	0	0	0	32	3	124	0	0	0	0	0	108	16	0	26,20,24	5	75
8 (35m)	Sandy	2 gastropod, forams		35	25	0	8	0	0	2	0	88	0	48	0	0	0	4	0	0	5,8,10	5	70
9 (40m)	Sandy	1 gastropod, forams		35	20	0	11	0	2	2	0	72	0	56	0	20	0	4	0	0	10,15,12	5	60
10 (45m)	Sandy	1 fish, forams	x	70	20	0	0	46	0	3	1	84	0	0	0	256	0	16	4	0	11,15,12	15	75
11 (50m)	Sandy	forams		70	20	0	0	0	0	8	2	76	0	0	0	0	236	0	40	8	31,28,25	10	70
		AVERAGE	47 27	27 00	2 55	1 73	1 64	8 00	0 00	5 73	0 64	92 36	10 18	9 45	10 91	46 55	0 00	20 00	2 91		8 18	74 55	
		SUM	520	297	28	19	18	88	0	63	7	1016	112	104	120	512	0	220	32		90	820	

TRANSECT 3

QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COMPOSITION							SHOOT DENSITY (m2)							CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER			
				Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr				
1 (0m)	Sandy	Forams		0	0	0	32	0	0	0	0	0	0	0	244	0	0	0	0	0	5,5,6	5	50
2 (5m)	Sandy	Forams	x	5	0	0	7	30	0	0	8	12	0	0	52	168	0	0	84	0	14,16,12	0	60
3 (10m)	Sandy	Forams		30	0	0	10	0	0	0	30	84	0	0	76	0	0	0	0	312	16,10,14	5	70
4 (15m)	Sandy	Forams		35	5	0	30	0	0	0	15	116	20	0	208	0	0	0	0	148	18,17,21	40	60
5 (20m)	Sandy	Forams		20	0	0	10	0	0	0	5	68	0	0	68	0	0	0	0	64	8,14,16	15	60
6 (25m)	Sandy	Forams	x	23	2	0	18	37	0	0	5	84	4	0	128	212	0	0	88	0	20,17,24	30	60
7 (30m)	Sandy	Forams		45	40	0	0	0	0	0	0	136	188	0	0	0	0	0	0	0	20,15,14	35	60
8 (35m)	Sandy	Forams		40	10	0	0	0	0	0	0	144	60	0	0	0	0	0	0	0	12,16,20	30	50
9 (40m)	Sandy	Forams		35	15	0	0	0	0	0	0	112	52	0	0	0	0	0	0	0	14,18,17	50	60
10 (45m)	Sandy	Forams	x	25	8	0	0	0	0	2	0	72	36	0	0	0	0	4	0	0	10,8,11	60	50
11 (50m)	Sandy	Forams		6	6	0	0	0	0	8	0	32	24	0	0	0	0	0	20	0	4,10,12	30	40
AVERAGE				24.00	7.82	0.00	9.73	6.09	0.00	0.91	5.73	78.18	34.91	0.00	70.55	34.55	0.00	2.18	63.27		27.27	56.36	
SUM				264	86	0	107	67	0	10	63	860	384	0	776	380	0	0	24	696		300	620

Observer: Mariel Paladan, Faith D. Bangalisan, and Steven John Andao,
Location: Snake Island, Bgy. Bebeladan, El Nido, Palawan

Date: July 8, 2022

TRANSECT 1

QUADRAT	SEDIMENT	COMMENT s	PHOTO	SEAGRASS COVER	% SEAGRASS COMPOSITION										SHOOT DENSITY (m2)								CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER			
					Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr								
1 (0m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	
2 (5m)	sandy	forams	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	
3 (10m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	
4 (15m)	sandy	forams		10	2	0	0	8	0	0	0	0	20	0	0	56	0	0	0	0	0	0	15,10,5	5	60	0	0	
5 (20m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	
6 (25m)	sandy	forams	x	5	3	0	0	0	2	0	0	0	32	0	0	0	12	0	0	0	0	0	18,12,9	15	70	0	0	
7 (30m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	
8 (35m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	-	0	
9 (40m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
10 (45m)	sandy	hard corals	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11 (50m)	sandy	forams		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AVERAGE				1.36	0.45	0.00	0.00	0.73	0.18	0.00	0.00	0.00	4.7	0.0	0.0	5.1	1.1	0.0	0.0	0.0	0.0			6.09	11.82	67	130	
SUM				15	5	0	0	8	2	0	0	0	52	0	0	56	12	0	0	0	0	0	0	0	67	130	0	0

TRANSECT 2

QUADRAT	SEDIMENT	COMMENTS	PHOTO	SEAGRASS COVER	% SEAGRASS COMPOSITION										SHOOT DENSITY (m2)										CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER
					Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr							
1 (0m)	sand	forams		15	0	3	0	0	0	10	2	0	0	20	0	0	56	20	0	0	15,8,4	0	40	0			
2 (5m)	sand	forams	x	80	30	10	0	0	35	0	5	0	104	52	0	0	284	0	40	0	40,15,8	0	60	0			
3 (10m)	sand	forams		60	30	10	0	0	20	0	0	0	88	40	0	0	156	0	0	0	60,15,10	0	60	0			
4 (15m)	sand	forams		70	40	10	0	0	20	0	0	0	100	56	0	0	168	0	0	0	6,18,10	25	40	0			
5 (20m)	sand	forams		40	30	0	0	0	10	0	0	0	68	0	0	0	64	0	0	0	50,30,15	0	30	0			
6 (25m)	sand	forams	x	90	55	0	0	0	35	0	0	0	156	0	0	0	316	0	0	0	40,50,15	5	40	0			
7 (30m)	sand	forams		50	30	15	0	0	5	0	0	0	80	72	0	0	48	0	0	0	45,18,10	0	40	0			
8 (35m)	sand	forams		15	13	0	0	0	2	0	0	0	36	0	0	0	12	0	0	0	30,25,12	5	60	0			
9 (40m)	sand	forams		50	45	0	0	0	5	0	0	0	124	0	0	0	52	0	0	0	40,45,10	0	8	0			
10 (45m)	sand	forams	x	50	30	10	0	0	10	0	0	0	96	56	0	0	64	0	0	0	30,18,25	2	72	0			
11 (50m)	sand	forams		10	2	5	0	0	3	0	0	0	8	32	0	0	16	0	0	0	25,10,12	2	40	0			
AVERAGE SUM					48.18	27.73	5.73	0.00	0.00	13.18	0.91	0.64	0.00	78.18	29.82	0.00	0.00	107.27	5.09	5.45	0.00		3.55	44.55			
					530	305	63	0	0	145	10	7	0	860	328	0	0	1180	56	60	0		39	490			

QUADRAT	SEDIMENT	COMMENTS	PHOTO	SEAGRASS COVER	% SEAGRASS COMPOSITION										SHOOT DENSITY (m2)										CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER
					Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr							
1 (0m)	Sandy	Forams		5	5	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	12,10,15	0	65			
2 (5m)	Sandy	Forams	x	3	3	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	8,10,18	5	50			
3 (10m)	Sandy	Forams		10	6	0	0	0	0	3	0	4	1	20	0	0	0	20	0	20	4	12,25,13	0	65			
4 (15m)	Sandy	Forams		10	0	6	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	10,9,13	20	70			
5 (20m)	Sandy	Forams		4	0	1	0	0	0	0	0	3	0	0	12	0	0	0	0	12	0	8,11,12	0	10			
6 (25m)	Sandy	Forams	x	5	0	0	0	0	0	0	0	3	2	0	0	0	0	0	8	4	0	1,2,1	0	0			
7 (30m)	Sandy	Forams		9	7	0	0	0	0	0	0	1	0	36	0	0	0	0	8	0	0	11,13,7	10	65			
8 (35m)	Sandy	Forams		10	0	8	0	0	0	0	0	2	0	0	48	0	0	0	8	0	0	15,10,10	0	70			
9 (40m)	Sandy	Forams		8	7	0	0	2	0	0	0	0	0	32	0	0	3	0	0	0	0	13,15,116	0	65			
10 (45m)	Sandy	Forams	x	30	3	0	0	0	0	0	0	27	0	20	0	0	0	0	88	0	0	10,5,3	0	60			
11 (50m)	Sandy	Forams		5	0	1	0	0	0	0	0	4	0	0	8	0	0	0	16	0	0	5,7,7	0	60			
AVERAGE				9.00	2.82	1.45	0.00	0.18	0.27	0.00	4.00	0.27	14.18	9.82	0.00	0.27	1.82	0.00	14.55	0.73	0.00	3.18	52.73	35	580		
SUM				99	31	16	0	2	3	0	44	3	156	108	0	3	20	0	160	8	0	35	580				

Observer: Mariel Paladan and Steven John Andao,
Location: So. Caalan, Bgy. Masagana, El Nido, Palawan

Date: October 19, 2022

TRANSECT 1

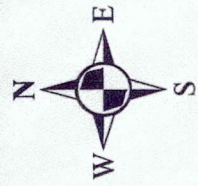
QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COVER	% SEAGRASS COMPOSITION								SHOOT DENSITY (m2)								CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER
					Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr			
1 (0m)	Coarse Sand			50	0	40	0	10	0	0	0	0	0	104	0	80	0	0	0	12,9,9	0	5	0
2 (5m)	sandy	x		40	0	5	0	25	0	0	0	0	10	0	28	0	120	0	0	11,8,5	0	5	0
3 (10m)	sandy			20	0	2	0	12	0	0	0	0	6	0	28	0	200	0	0	6,3,7	0	0	0
4 (15m)	sandy			5	0	3	0	0	0	0	0	0	2	0	16	0	0	0	0	5,5,2	0	0	0
5 (20m)	sandy			15	0	9	0	0	0	0	0	0	6	0	40	0	0	0	0	7,5,7	0	2	0
6 (25m)	sandy	x		35	0	30	0	0	0	0	0	0	5	0	60	0	0	0	0	3,7,5	5	0	0
7 (30m)	sandy			10	0	2	0	0	0	0	0	0	8	0	8	0	0	0	0	5,7,8	2	2	0
8 (35m)	Sandy muddy			20	0	5	0	0	0	0	0	0	15	0	12	0	0	0	0	5,9,8	5	0	0
9 (40m)	Coarse Sand			10	0	2	0	0	0	0	0	0	8	0	4	0	0	0	0	5,4,7	2	2	0
10 (45m)	Coarse Sand	x		20	0	2	0	0	0	0	0	0	18	0	4	0	0	0	0	3,5,9	5	20	0
11 (50m)	Coarse Sand			20	0	18	0	0	0	0	0	0	2	0	40	0	0	0	0	8,10,5	3	5	0
AVERAGE				22.27	0.00	10.73	0.00	4.27	0.00	0.00	0.00	0.00	7.27	0.00	31.27	0.00	36.36	0.00	0.00		2.00	3.73	
SUM				245	0	118	0	47	0	0	0	80	0	344	0	400	0	0	0		22	41	

TRANSECT 2

QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COMPOSITION								SHOOT DENSITY (m2)								CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER			
				% SEAGRASS COVER				Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp				Si	Hu	Ho
1 (0m)	Sand			0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2 (5m)	Sand		x	35			0	10	0	0	20	5	0	0	0	92	0	108	8	0	0	0	6,5,7	0	10
3 (10m)	Sand			50			0	5	0	0	25	0	0	0	0	8	0	84	0	0	0	44	10,8,7	0	5
4 (15m)	Sand			35			0	33	0	0	0	0	0	0	0	108	0	0	0	0	2	0	5,10,11	0	15
5 (20m)	Sand			30			0	30	0	0	0	0	0	0	0	92	0	0	0	0	0	0	8,7,7	5	15
6 (25m)	Sand		x	5			0	5	0	0	0	0	0	0	0	16	0	0	0	0	0	0	4,2,5	50	5
7 (30m)	Sand			10			0	10	0	0	0	0	0	0	0	56	0	0	0	0	0	0	8,5,6	60	15
8 (35m)	Coarse Sand			28			0	28	0	0	0	0	0	0	0	100	0	0	0	0	0	0	8,7,10	40	50
9 (40m)	Coarse Sand			5			0	5	0	0	0	0	0	0	0	20	0	0	0	0	0	0	5,7,8	85	20
10 (45m)	Coarse Sand		x	40			0	40	0	0	0	0	0	0	0	200	0	0	0	0	0	0	4,5,3	50	40
11 (50m)	Coarse Sand			5			0	5	0	0	0	0	0	0	0	20	0	0	0	0	0	0	5,7,7	95	25
AVERAGE				22.09			0.00	15.55	0.00	4.09	0.45	0.00	1.45	1.82	0.00	64.73	0.00	17.45	0.73	0.00	0.18	4.00		38.50	20.00
SUM				243			0	171	0	45	5	0	16	20	0	712	0	192	8	0	2	44		385	200

TRANSECT 3

QUADRAT	SEDIMENT	COMMENTS	PHOTO	% SEAGRASS COVER	% SEAGRASS COMPOSITION										SHOOT DENSITY (m2)										CANOPY HEIGHT (CM)	% ALGAE COVER	% EPIPHYTE COVER
					Ea	Th	Cs	Hp	Si	Hu	Ho	Cr	Ea	Th	Cs	Hp	Si	Hu	Ho	Cr							
1 (0m)	Sandy			40	0	19	0	19	0	0	0	0	2	0	80	0	60	0	0	0	8	8,10,18	10	20			
2 (5m)	Sandy		x	20	0	5	0	15	0	0	0	0	0	0	28	0	80	0	0	0	0	6,8,4	5	25			
3 (10m)	Rubbles			10	0	10	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	8,9,8	0	25			
4 (15m)	Rubbles			10	0	10	0	0	0	0	0	0	0	0	48	0	0	0	0	0	0	5,7,8	0	30			
5 (20m)	Sandy/Rubbles			15	0	10	0	5	0	0	0	0	0	0	60	0	36	0	0	0	0	8,5,4	0	15			
6 (25m)	Sandy		x	20	0	15	0	5	0	0	0	0	0	0	60	0	12	0	0	0	0	6,8,12	0	10			
7 (30m)	Sandy/Rubbles			20	0	20	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	10,9,5	15	5			
8 (35m)	Sandy/Rubbles			5	0	5	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	9,7,9	0	5			
9 (40m)	Sandy/Rubbles			5	0	5	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	12,11,11	0	5			
10 (45m)	Sandy/Rubbles		x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11 (50m)	Sandy			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
AVERAGE				13.18	0.00	9.00	0.00	4.00	0.00	0.00	0.00	0.18	0.00	37.45	0.00	17.09	0.00	0.00	0.00	0.00	0.73		2.73	12.73			
SUM				145	0	99	0	44	0	0	0	2	0	412	0	188	0	0	0	0	8	0	30	140			



MAP

SHOWING THE SEAGRASS SITE
MONITORED WITHIN EL NIDO-TAYTAY
MANAGED RESOURCE PROTECTED AREA
(ENTMRPA), EL NIDO, PALAWAN

Area : 57.34 Hectares

Specific site : So. Seminaytay, Bgy. Manlag,
El Nido, Palawan

SCALE : 1:16,994



LEGEND

- Transect Line
- Seagrass
- Political Boundary
- PA Boundary

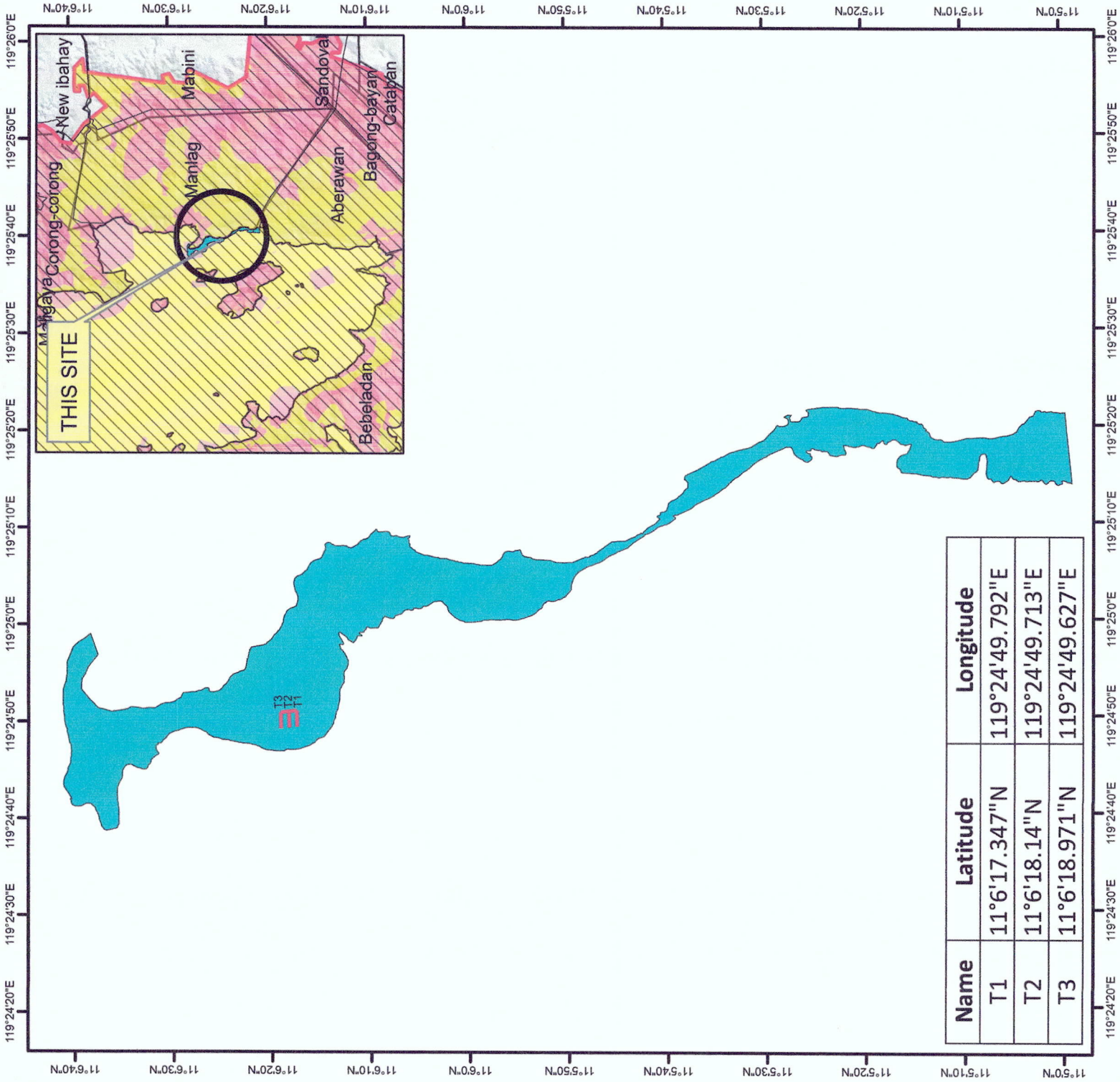
Projection : Universal Transverse Mercator Z50N
Datum : World Geodetic System 1984



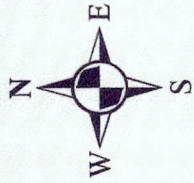
Republic of the Philippines
Department of Environment and Natural Resources
Region IV - MIMAROPA
Community Environment and Natural Resources Office
Taytay 5312, Palawan

PREPARED BY :

THE PROTECTED AREA MANAGEMENT
OFFICE - EL NIDO-TAYTAY MANAGED
RESOURCE PROTECTED AREA
(PAMO-ENTMRPA)



Name	Latitude	Longitude
T1	11°6'17.347"N	119°24'49.792"E
T2	11°6'18.14"N	119°24'49.713"E
T3	11°6'18.971"N	119°24'49.627"E



MAP

SHOWING THE SEAGRASS SITE
MONITORED WITHIN EL NIDO-TAYTAY
MANAGED RESOURCE PROTECTED AREA
(ENTMRPA), EL NIDO, PALAWAN

Area : 36.36 Hectares

Specific site : So. Simpian, Bgy. Aberawan,
El Nido, Palawan

SCALE : 1:7,185



LEGEND

- Transect Line
- Seagrass
- Political Boundary
- PA Boundary

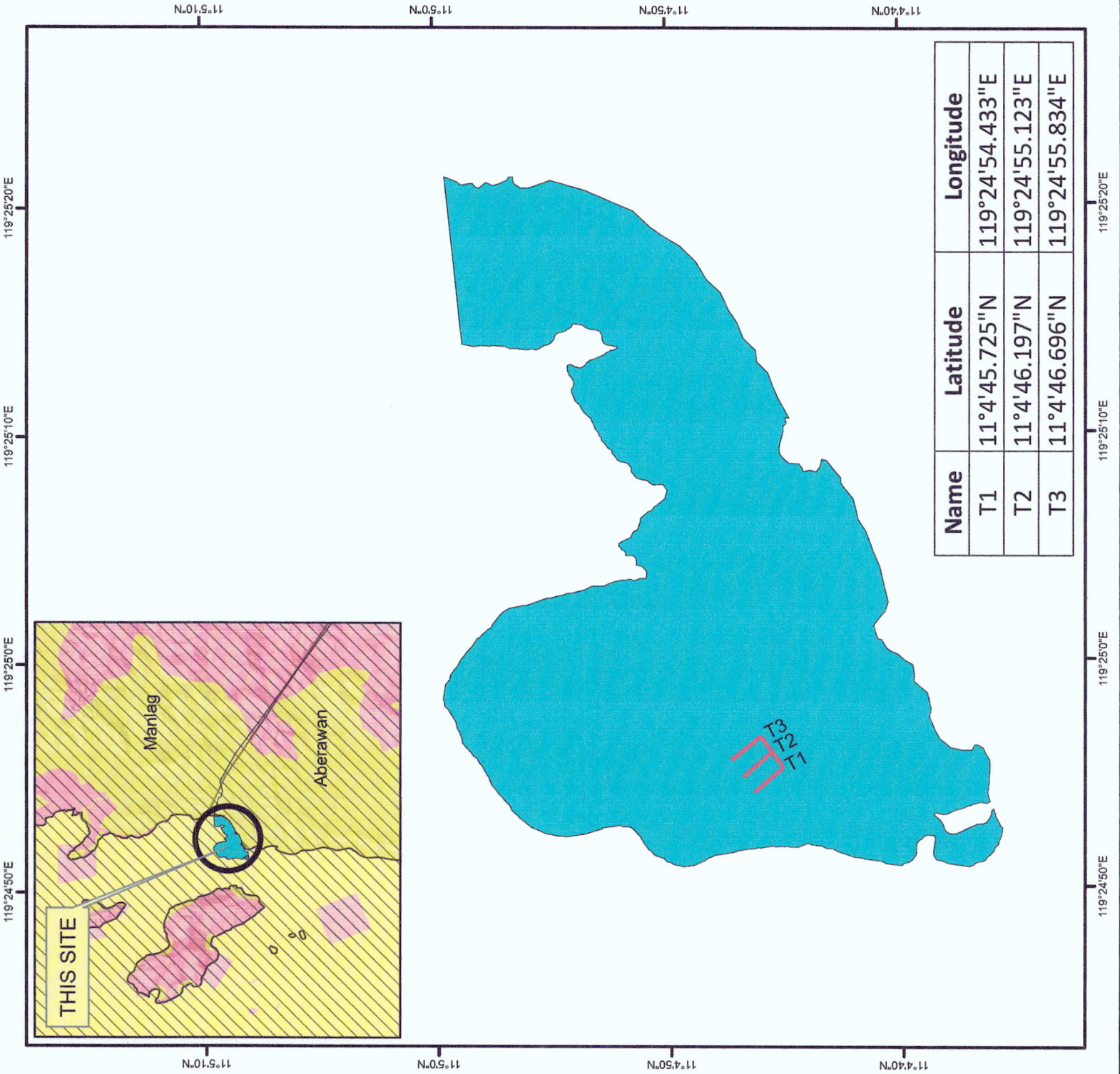
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Datum : World Geodetic System 1984



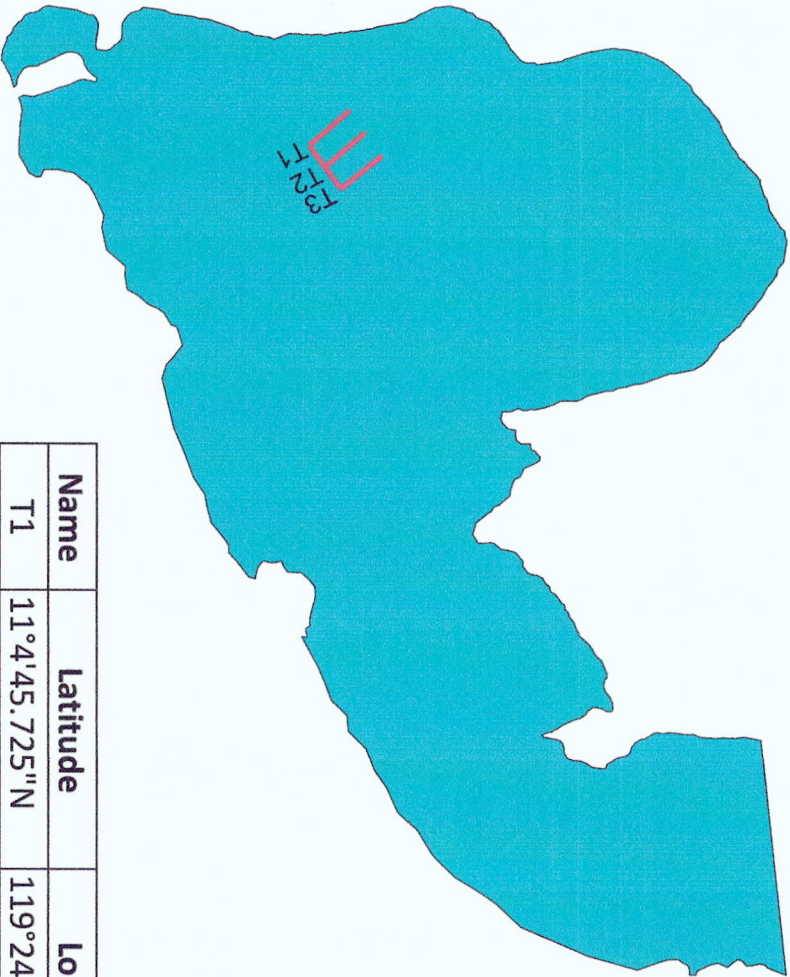
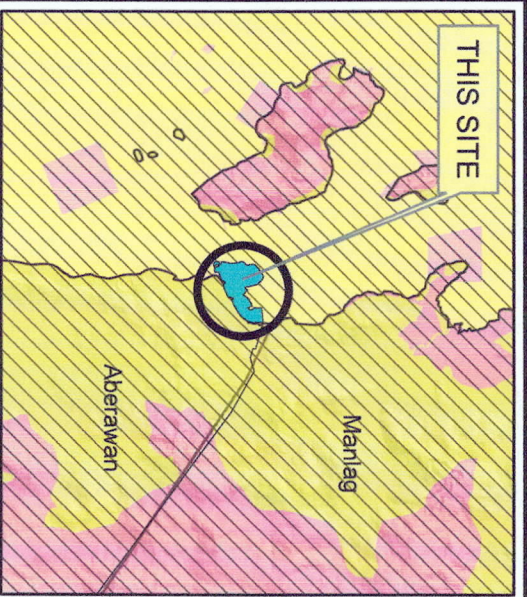
Republic of the Philippines
Department of Environment and Natural Resources
Region IV - MIMAROPA
Community Environment and Natural Resources Office
Taytay 5312, Palawan

PREPARED BY :

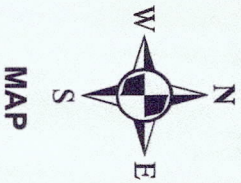
THE PROTECTED AREA MANAGEMENT
OFFICE - EL NIDO-TAYTAY MANAGED
RESOURCE PROTECTED AREA
(PAMO-ENTMRPA)



Name	Latitude	Longitude
T1	11°4'45.725"N	119°24'54.433"E
T2	11°4'46.197"N	119°24'55.123"E
T3	11°4'46.696"N	119°24'55.834"E



Name	Latitude	Longitude
T1	11°4'45.725"N	119°24'54.433"E
T2	11°4'46.197"N	119°24'55.123"E
T3	11°4'46.696"N	119°24'55.834"E

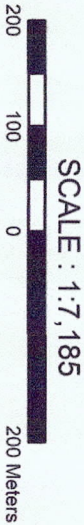


MAP

**SHOWING THE SEAGRASS SITE
MONITORED WITHIN EL NIDO-TAYTAY
MANAGED RESOURCE PROTECTED AREA
(ENTMRPA), EL NIDO, PALAWAN**

Area : 36.36 Hectares

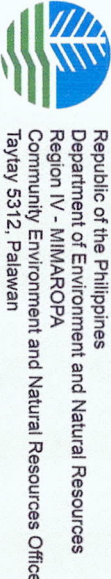
Specific site : So. Simpian, Bgy. Aberawan,
El Nido, Palawan



LEGEND

- Transect Line
- Seagrass
- Political Boundary
- PA Boundary

Projection : Universal Transverse Mercator Z50N
Datum : World Geodetic System 1984

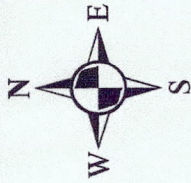
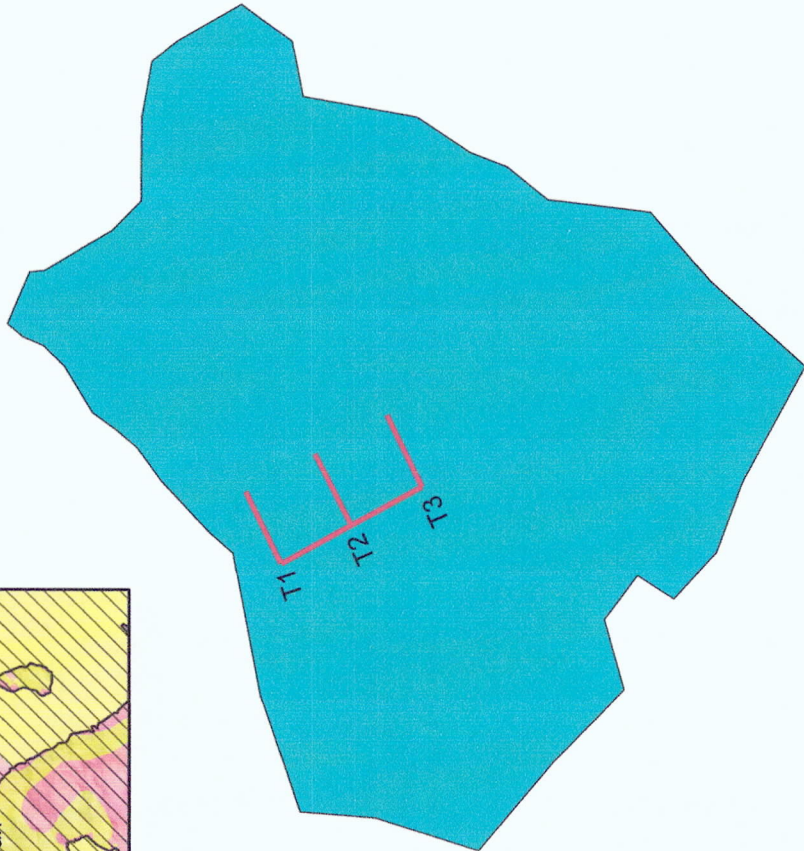
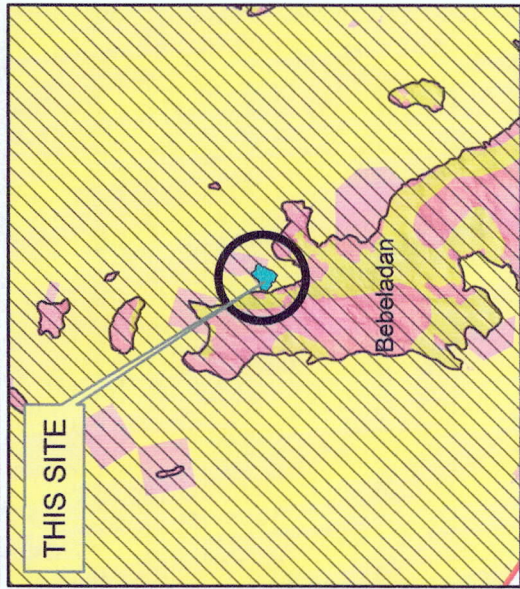


PREPARED BY :

THE PROTECTED AREA MANAGEMENT
OFFICE - EL NIDO-TAYTAY MANAGED
RESOURCE PROTECTED AREA
(PAMO-ENTMRPA)

119°20'10"E 119°20'20"E 119°20'30"E

11°5'40"N 11°5'30"N 11°5'20"N



MAP

SHOWING THE SEAGRASS SITE
MONITORED WITHIN EL NIDO-TAYTAY
MANAGED RESOURCE PROTECTED AREA
(ENTMRPA), EL NIDO, PALAWAN

Area : 14.0 Hectares

Specific site : Snake Island, Bgy. Bebeladan,
El Nido, Palawan

SCALE : 1:4,762



LEGEND

- Transect Line
- Seagrass
- Political Boundary
- PA Boundary

Projection : Universal Transverse Mercator Z50N
Datum : World Geodetic System 1984



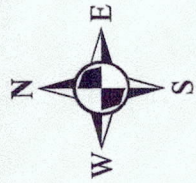
Republic of the Philippines
Department of Environment and Natural Resources
Region IV - MIMAROPA
Community Environment and Natural Resources Office
Taytay 5312, Palawan

PREPARED BY :

THE PROTECTED AREA MANAGEMENT
OFFICE - EL NIDO-TAYTAY MANAGED
RESOURCE PROTECTED AREA
(PAMO-ENTMRPA)

Name	Latitude	Longitude
T1	11°5'33.974"N	119°20'22.486"E
T2	11°5'32.549"N	119°20'23.261"E
T3	11°5'31.095"N	119°20'24.051"E

119°20'10"E 119°20'20"E 119°20'30"E



MAP

SHOWING THE SEAGRASS SITE
MONITORED WITHIN EL NIDO-TAYTAY
MANAGED RESOURCE PROTECTED AREA
(ENTMRPA), EL NIDO, PALAWAN

Area : 6.0 Hectares

Specific site : So. Caalan, Bgy. Masagana,
El Nido, Palawan

SCALE : 1:3,992



LEGEND

- Transect Line
- Seagrass
- Political Boundary
- PA Boundary

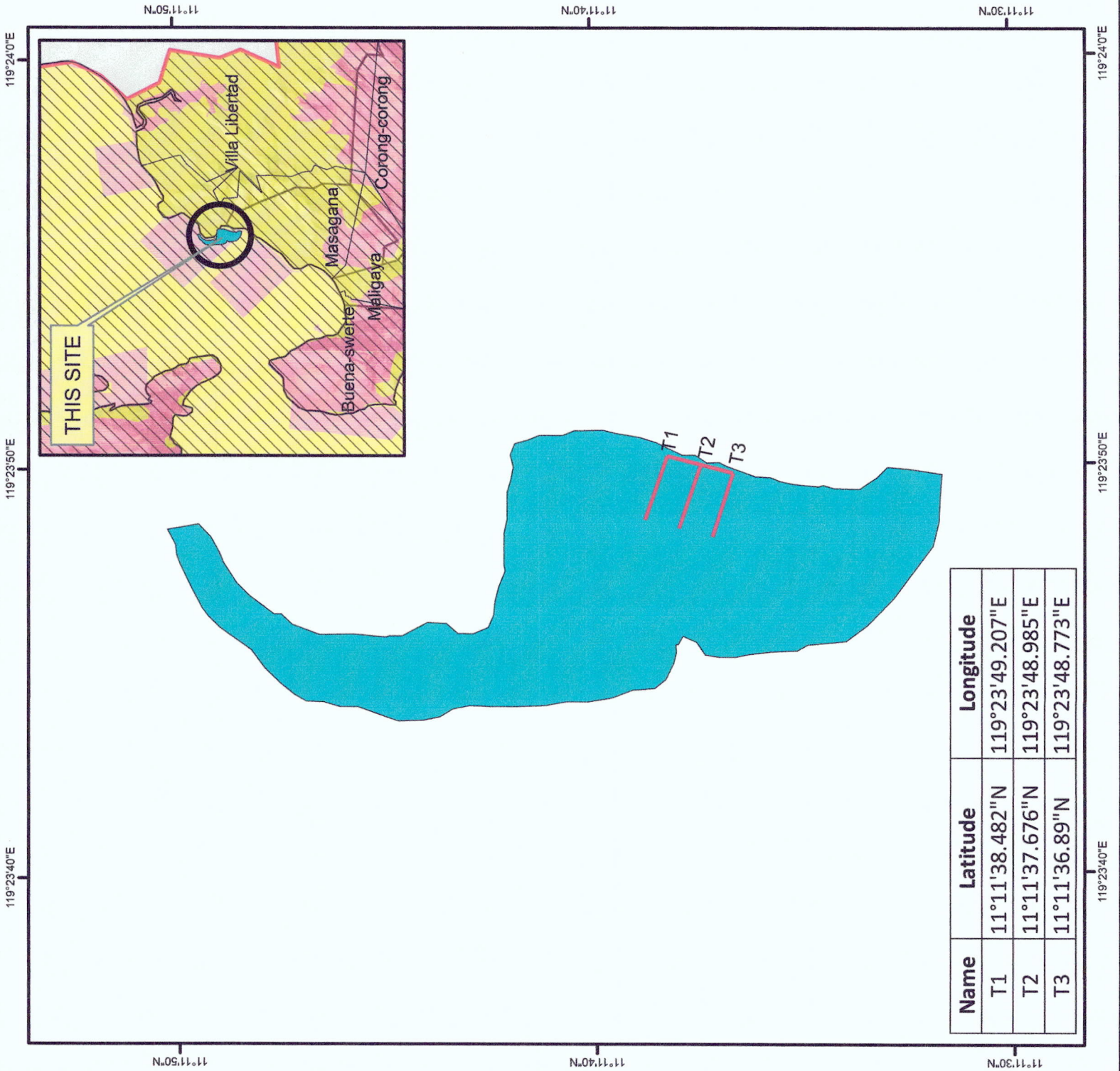
Projection : Universal Transverse Mercator Z50N
Datum : World Geodetic System 1984



Republic of the Philippines
Department of Environment and Natural Resources
Region IV - MIMAROPA
Community Environment and Natural Resources Office
Taytay 5312, Palawan

PREPARED BY :

THE PROTECTED AREA MANAGEMENT
OFFICE - EL NIDO-TAYTAY MANAGED
RESOURCE PROTECTED AREA
(PAMO-ENTMRPA)



Name	Latitude	Longitude
T1	11°11'38.482"N	119°23'49.207"E
T2	11°11'37.676"N	119°23'48.985"E
T3	11°11'36.89"N	119°23'48.773"E