PROCEEDINGS OF THE PCRA TRAINING WORKSHOP OF R.T. LIM, ZAMBOANGA SIBUGAY
November 5-8, 2013

The DENR – IX, PAWCZMS – Coastal and Marine Management Division and CENRO CMMS Focal Person arrived in R.T. Lim, ZSP on November 4, 2013 for the conduct of PCRA from November 5-8, 2013. The workshop was held at the Municipal Legislative Office. The Activities were scheduled as follows:

November 5, 2013	-	Opening Program, MOA Signing, ICM Orientation
November 6-7, 2013	-	Field Assessment and sampling period
November 8, 2013	-	Tabulation and computation of data, Commitments and closing program

Registration of participants coming from the six (6) coastal Barangays commenced before 8:00 am during the Opening Program. At 9:00 am, the program hosted by For. Hiya I. Jaapar, CMMD-LGTAS Chief formally opened. After the invocation and singing of National Anthem, Hon. Vice Mayor Inocencio Cubio gave his welcome remarks while the OIC, MENRO acknowledged the participants and the resource persons. Mayor Micheal A. Piodena gave his inspirational message appreciating the gesture of the technical staff of the Department led by the CMMD Chief. This is followed by the reading of the content of the MOA by the CMMD Chief before the signing between the Municipality and the Department being represented by For. Neneth T. Ordoño in behalf of RED Arleigh J. Adorable.

The expectation setting was facilitated by Jericho V. Tomlod while CMMD Chief facilitated the Rationale and Objectives of the training workshops as well as ICM orientation and PCRA's importance and benefits.

In the afternoon, LGTAS Chief For. Hiya Jaapar lectured on Mangrove Ecology and its assessment methods followed by Marc Mustre P. Sarcauga on Seagrass and its assessment methods. WMS Chief Ahmad S. Julkarnain then lectured on Coral Ecology and assessment methods while Jericho V. Tomlod discussed Fish Visual Census and methodologies. Once again, the CMMD Chief facilitated the Socio-Economic conditions using FGD. This is followed by the grouping of the participants into four (4) groups. A Briefing on the task and schedules of areas to be visited were discussed by each group.

From November 6-7, 2013, before each group take off in the morning, brief instructions were conducted. On November 8, 2013 in the morning, each group tabulated and computed their data before presentation. These are being facilitated by their respective facilitators. Presenters were chosen and coached prior to the presentations.

In the afternoon, each group presented their outputs started with mangroves, seagrass, corals, fish visual census and socio – economic conditions to a panel of local officials led by the Honorable Mayor. Comments, observations and commitments were elicited from them particularly on issues and recommendations. This is followed by the impressions from selected participants and synthesis by the CMMD Chief prior to the awarding of Certificates of Participation and Closing message.

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GENERAL INTRODUCTION

The municipality of RT Lim, Zamboanga Sibugay Province comprises six (6) coastal barangays with fishing, farming, and business entrepreneurship as the major source of income within the locality.

The local officials of RT Lim recognizes the importance of drawing a coordinating mechanism between and among the fishers, local government, and other concerned stakeholders in the community to help enhance meaningful community participation towards the management of their coastal resources. They perceived and believed that the participation of the local residents should start from the beginning to foster continuing commitment towards the formulation of an organized plan that will systematize the management of the coastal marine resources.

Prior to the actual assessment of the coastal resources in the municipality of RT Lim, the PCRA training was conducted with the following objectives:

1. Provide the rationale for PCRA in the context of good governance in the Coastal Resources Management (CRM) process particularly planning and monitoring and evaluation.

2. Familiarize participants with participatory methods and apply these in actual habitat, fisheries, and socio-economic assessment.

3. Compile a preliminary coastal environment and socio-economic profile based on the PCRA results.

4. Analyze results to identify issues and recommend possible management guidelines to LGU.

This report presents the status of the coastal resources of RT Lim to facilitate informed decision-making by the local community and LGU in the development and management of the marine sanctuaries in the area. Included in this report is the proceeding of the PCRA training conducted on November 5-8, 2013.

" M A N G R O V E S "

INTRODUCTION

Mangroves are coastal trees or shrubs that are adapted to estuarine or even saline environment. The term mangroves refer to individual plants, whereas Mangal refers to the whole community or association dominated by these plants and occupies coastal belt margins. In the Philippines, the most common mangroves species are Rhizophora (Bakauan), Sonneratia (Pagatpat), Bruguiera (Pototan), Avicennia (Piapi) and Nypa (Nipa).

Mangroves are one of the most diverse communities in the coastal area, harboring small mammals, birds, reptiles, crustaceans, mollusks and invertebrates. Some organisms in the mangroves are harvested as food such as oysters, and other bivalves, crabs, shrimps and fishes. It serves also as nursery and feeding ground of many fishes, crustaceans and mollusks that are vital to the replenishment of stocks in the coastal area. They are also good source of Nipa singles for housing materials, firewood and charcoal and timber products.

Aside from providing economic goods, mangroves also provide ecological benefits to mankind. They protect shore from typhoons, strong winds and tidal waves and minimize coastal erosion. Mangroves are capable of these functions because of their strong and complex roots system.

In spite of the many benefits, mangroves are being threatened both directly and indirectly. The direct threats are being done by human being which include conversion to fish ponds, salt beds and the like; reclamation and settlement as well as pollution and siltation. Meanwhile, indirectly are caused by pest and diseases and natural phenomena.

METHODOLOGY

The assessment of mangrove resources in RT Lim, ZSP was actively participated by selected LGU's, TWG and local stakeholders of the different barangays of the municipality. The method used was the modified transect plot technique pattern after English, *et. al.* (1994), and based on the PCRA Guidebook.

The mangrove species and associates per barangay were identified and recorded in two (2) separate tally sheets using form # 1 for mature tree species and form # 2 for

mangrove regeneration (seedling and Sapling) counts. Other observations were also recorded and noted.

RESULTS AND DISCUSSIONS

A total of 27 mangrove species and associates belonging to 14 families were identified in the mangrove forest of R.T. Lim, Zamboanga Sibugay.

As per actual survey of the mangrove stands in the six (6) coastal barangays of R.T. Lim, ZSP, Families Sonneratiaceae (Pagatpat), Avicenniaceae (Piapi) and Rhizophoraceae (Bakawan babae and lalake) were the most dominant mangrove species as they can be seen in all coastal barangays of R.T. Lim, ZSP. However, the most diverse family is Rhizophoraceae with six (6) species (*Please refer to Table 1 list of different Mangrove Flora and Associates found in the coastal barangays of R.T. Lim, ZSP*).

In the case of seeds/ seedlings and saplings availability, propagules, seedlings and saplings are presently available in all the coastal barangays during the time of assessment.

Based on the date obtained during the assessment period, the mangrove forest conditions as analyzed and computed showed the estimated average height of 5-10 meters in barangays Gango, Pres. Roxas and Tupilac, while 5-12 meters in Barangay Ali Alsree and Silingan and 5-8 meters in Magsaysay.

For the crown cover, the output was 51% crown cover with slight disturbances and few cuttings. Abandoned fishponds were planted with mangroves particularly in Barangays Gango, Pres. Roxas, Silingan, Ali Alsree and Tupilac.

Generally, R.T. Lim mangrove forest is rated good with more than 51% crown cover basing from the PCRA Guidebook Criteria with slight disturbances and few cuttings while the regeneration per square meter is very good at the time of the assessment period. For the mangrove fauna, a total of 11 finfishes were noted and recorded, 12 crustaceans, 17 mollusks, 11 birds and 1 reptile with a grand total of fifty two (52) species (*Please refer to Table 2 for details*).

Table 1. MANGROVES FLORA AND ASSOCIATES FOUND IN RT LIM, ZSP

Barangay	Common Name	Scientific Name	Family Name
GANGO	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Busain	*Bruguiera gymnorrhiza*	Rhizophoraceae
	Piapi	*Avicennia lanata*	Avicenniacea
	Dungon Late	*Heritiera littoralis*	Sterculiaceae
	Pototan	*Bruguiera sexangula*	Rhizophoraceae
	Piagao	*Xylocarpus moluccensis*	Meliaceae
	Tui	*Dolichandrone spathacea*	Bignoniaceae
	Bungalon	*Avicennia marina*	Avicenniaceae
	Api - api	*Avicennia officinalis*	Avicenniaceae
	Lagolo	*Acrostichum aureum*	Pteridaceae
	Diliuriu	*Acanthus ebracteatus*	Acanthaceae
	Malubago	*Hibiscus tiliaceus*	Malvacea
	Dapdap	*Erythrina orientalis*	Leguminosae
	Talisay	*Terminalia catappa*	Combretaceae
	Bani	*Pongamia pinnata*	Leguminosae
SILINGAN	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Langarai	*Bruguieria parviflora*	Rhizophoraceae
	Nipa	*Nypa fruticans*	Palmae
	Tangal	*Ceriops tagal*	Rhizophoraceae
	Tabigi	*Xylocarpus granatum*	Meliaceae
	Piagao	*Xylocarpus moluccensis*	Meliaceae
	Tinduk - tindukan	*Aegiceras floridum*	Myrsinaceae
	Bungalon	*Avicennia marina*	Avicenniaceae
	Pototan	*Bruguieria sexangula*	Rhizophoraceae
	Talisay	*Terminalia catappa*	Combretaceae
	Lagolo	*Acrostichum aureum*	Pteridaceae
PRES. ROXAS	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Nipa	*Nypa fruticans*	Palmae
	Tangal	*Ceriops tagal*	Rhizophoraceae
	Piapi	*Avicennia lanata*	Avicenniaceae
	Bungalon	*Avicennia marina*	Avicenniaceae
	Piagao	*Xylocarpus moluccensis*	Meliaceae

	Bungalon Puti	*Avicennia alba*	Avicenniaceae
	Api - api	*Avicennia officinalis*	Avicenniaceae
	Tabigi	*Xylocarpus granatum*	Meliaceae
	Talisay	*Terminalia catappa*	Combretaceae
	Lagolo	*Acrostichum aureum*	Pteridaceae
ALI ALSREE	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Piapi	*Avicennia lanata*	Avicenniaceae
	Bungalon Puti	*Avicennia alba*	Avicenniaceae
	Bungalon	*Avicennia marina*	Avicenniaceae
	Api - api	*Avicennia officinalis*	Avicenniaceae
	Lagolo	*Acrostichum aureum*	Pteridaceae
	Talisay	*Terminalia catappa*	Combretaceae
	Tabao	*Lumnitzera littorea*	Combretaceae
MAGSAYSAY	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Piapi	*Avicennia lanata*	Avicenniaceae
	Bantigi	*Pemphis acidula*	Lythraceae
	Saging-saging	*Aegiceras corniculatum*	Myrsinaceae
	Nipa	*Nypa fruticans*	Palmae
	Busain	*Bruguiera gymnorrhiza*	Rhizophoraceae
	Langarai	*Bruguieria parviflora*	Rhizophoraceae
	Dungon Late	*Avicennia alba*	Avicenniaceae
	Tabao	*Lumnitzera littorea*	Combretaceae
	Dapdap	*Erythrina orientalis*	Leguminosae
	Lagolo	*Acrostichum aureum*	Pteridaceae
	Talisay	*Terminalia catappa*	Combretaceae
	Bani	*Pongamia pinnata*	Leguminosae
	Tangal	*Ceriops tagal*	Rhizophoraceae
	Api - api	*Avicennia officinalis*	Avicenniaceae
TUPILAC	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Babae	*Rhizophora apiculata*	Rhizophoraceae
	Bakauan Lalaki	*Rhizophora mucronata*	Rhizophoraceae
	Piapi	*Avicennia lanata*	Avicenniaceae
	Busain	*Bruguiera gymnorrhiza*	Rhizophoraceae
	Bungalon	*Avicennia marina*	Avicenniaceae
	Nipa	*Nypa fruticans*	Palmae
	Api - api	*Avicennia officinalis*	Avicenniaceae
	Tangal	*Ceriops tagal*	Rhizophoraceae

	Piagao	*Xylocarpus moluccensis*	Meliaceae
	Tabigi	*Xylocarpus granatum*	Meliaceae
	Tangal	*Ceriops tagal*	Rhizophoraceae
	Talisay	*Terminalia catappa*	Combretaceae
	Bungalon Puti	*Avicennia alba*	Avicenniaceae

Table 2. MANGROVE FAUNA FOUND IN RT LIM, ZSP

BARANGAY	COMMON NAME	ENGLISH NAME	FAMILY NAME
GANGO	**FINFISHES**		
	Gisao	Mullet	Mugilidae
	Tambasakan	Mudskipper	Periopthalmus
	Ibis	Goby	Gobiidae
	Bangus	Milk fish	Chanidae
	CRUSTACEANS		
	Agokoy	Mud fiddler crab	
	Alimango	Mud crab	Portunidae
	Kalas-kalas		
	Kagang		
	Pasayan	Shrimp	Penaeidae
	Locon	Tiger prawn	
	Umang	Hermit crab	
	MOLLUSK		
	Litob	Blood arc	Cardiidae
	Bacalan	Cockle	Cardiidae
	Tuway	Mud clam	
	Bagongon	*Telescopium telescopium*	
	Dalo-dalo		
	Tapok-tapok		
	Saka-saka	Periwrinkle	Littorinidae
	Sihi		
	Talaba	Wing oyster	Pterridae
	BIRDS		
	Tukmo		
	Antulihao		
	Tamsi		
	Tulabong	Egret	
	Maria Capra		
SILINGAN	**FINFISHES**		

	Tambasakan	Mudskipper	Periopthalmus
	Gisao	Mullet	Mugilidae
	Bangus	Milk fish	Chanidae
	Sigwil	Needle fish	Belonidae
	CRUSTACEANS		
	Alimago	Mud crab	Portunidae
	Kalas-kalas		
	Pasayan	Shrimp	Penaeidae
	Locon	Tiger prawn	
	Umang	Hermit crab	
	Agokoy	Mud fiddler crab	
	MOLLUSK		
	Sihi		
	Dalo-dalo		
	Litob	Blood arc	Cardiidae
	Balinsala		
	Saka-saka	Periwrinkle	Littorinidae
	Tuway	Mud clam	
	Bug-atan		
	Talaba	Wing oyster	Pterridae
	Tapok-tapok		
	Bagongon	*Telescopium telescopium*	
	Imbao	Cockle	Cardiidae
	Tagnipis		
	BIRDS		
	Tulabong	Egret	
	Tikarol	Kingfisher	Alcedinidae
	Kanaway	Seabird	
ALI ALSTREE	**FINFISHES**		
	Tambasakan	Mudskipper	Periopthalmus
	Gisao	Mullet	Mugilidae
	Bangus	Milk fish	Chanidae
	Sigwil	Needle fish	Belonidae
	Ibis	Goby	Gobiidae
	CRUSTACEANS		
	Alimango	Mud crab	Potunidae
	Kalas-kalas		

	Agokoy	Mud fiddler crab	
	Locon	Tiger prawn	
	Pasayan	Shrimp	Penaeidae
	Umang	Hermit crab	
	MOLLUSK		
	Tuway	Mud clam	
	Dalo-dalo		
	Bangongon	*Telescopium telescopium*	
	Paitan		
	Sihi		
	Tapok-tapok		
	Talaba	Wing oyster	Pterridae
	Balinsala		
	BIRDS		
	Wild duck	Wild duck	
	Tulabong	Egret	
	Tikarol	Kingfisher	Alcedinidae
	Uwak	Crow	
PRES. ROXAS	**FINFISHES**		
	Tambasakan	Mudskipper	Periopthalmus
	Gisao	Mullet	Periopthalmus
	Bangus	Milk fish	Chanidae
	Sigwil	Needle fish	Belonidae
	Ibis	Goby	Gobiidae
	CRUSTACEANS		
	Locon	Tiger prawn	
	Alimango	Mud crab	Potunidae
	Pasayan	Shrimp	Penaeidae
	Umang	Hermit crab	
	Agokoy	Mud fiddler crab	
	Kagang		
	Umang	Hermit crab	
	MOLLUSK		
	Tuway	Mud clam	
	Imbao	Cockle	Cardiidae
	Balinsala		
	Litob	Blood arc	Cardiidae
	Sihi		
	Talaba	Wing oyster	Pterridae

	Bangongon	*Telescopium telescopium*	
	Dalo-dalo		
	Paitan		
	BIRDS		
	Tulabong	Egret	
	Tikarol	Kingfisher	Alcedinidae
MAGSAYSAY	**FINFISHES**		
	Ibis	Goby	Gobiidae
	Gisao	Mullet	Periopthalmus
	Pugapo	Grouper	Serranidae
	Aluman	Lentjan	Letherinidae
	Asoos	Sillago	Sillaginidae
	Bonog		
	Tambasakn	Mudskipper	Periopthalmus
	Bangus	Milk fish	Chanidae
	Sigwil	Needle fish	Belonidae
	CRUSTACEANS		
	Alimango	Mud crab	
	Dawat		
	Takla		
	Agokoy	Mud fiddler crab	
	Pasayan	Shrimp	Penaeidae
	Locon	Tiger prawn	Penaeidae
	umang	Hermit crab	
	MOLLUSK		
	Balinsala		
	Sihi		
	Bacalan	Cockle	Cardiidae
	Imbao	Cockle	Cardiidae
	Tuway	Mud clam	
	Dalo-dalo		
	Saka-saka	Periwrinkle	Littorinidae
	Bangongon	Telescopium telescopium	
	Paitan		
	Tapok-tapok		
	BIRDS		
	Kanaway	Seabird	
	Tulabong	Egret	
	Tikarol	Kingfisher	Alcedinidae
	Wild duck	Wild duck	

	Banog	Brahminy kite	
TUPILAC	**FINFISHES**		
	Gisao	Mullet	Mugilidae
	Bangus	Milk fish	Chanidae
	Asoos	Sillago	Sillaginidae
	Bonog		
	Sigwil	Needle fish	Belonidae
	Ibis	Goby	Gobiidae
	CRUSTACEANS		
	Alimango	Mud crab	Potunidae
	Dawat		
	Takla		
	Agokoy	Mud fiddler crab	
	Locon	Tiger prawn	
	Pasayan	Shrimp	Penaeidae
	Umang	Hermit crab	
	MOLLUSK		
	Talaba	Wing oyster	Pterridae
	Balinsala		
	Tuway	Mud clam	
	Dalo-dalo		
	Tapok-tapok		
	Bagongon	*Telescopium telescopium*	
	Imbao	Cockle	Cardiidae
	Bacalan	Cockle	Cardiidae
	Bog-atan		
	Tagnipis		
	Hiyom-hiyom		
	BIRDS		
	Tulabong	Egret	
	Tikarol	Kingfisher	Alcedinidae
	Uwak	Crow	

OTHER OBSERVATIONS

1. Existing mangrove plantations in Gango, Silingan, Pres. Roxas, Ali Alstree, Magsaysay, Tupilac which are potential ecotourism sites.

2. Existing operational and abandoned fishponds which were planted with mangroves.

3. Existing wharf in Ali Alstree

4. Existing beach with unfinished construction of 3 cottages in Magsaysay by LGU

5. Available areas for mangrove rehabilitation in all coastal barangays

6. Existing agar-agar farms as livelihood of the community which is time consuming and far distance during navigation.

7. Existing fish corrals in Silingan, Tupilac and Magsaysay

8. Existing and dilapidated driers in Ali Alstree, Pres. Roxas and Magsaysay

9. Existing and used fit for charcoal making in Magsaysay and Silingan

10. Existing rivers in Silingan, Magsaysay and Tupilac

11. Existing local private cottages for rent in Laboyo Beach in Barangay Gango

12. Very wide muddy substrates shorelines during low tide.

13. Flowering season of B. lalaki and fruiting season of B. babae in majority coastal barangays.

14. Substrates were mostly muddy, rocky and sandy

15. Existing garbage in mangrove areas

ISSUES

1. Mangrove cuttings;
2. Improper waste disposal; and
3. Unregulated agar-agar farming.

RECOMMENDATIONS

1. Strict implementation of environmental laws, Mangrove rehabilitation;
2. Implement RA 9003, conduct IEC campaign and coastal cleanup; and
3. Zoning of coastal areas

Mangrove Group

1. Angelita G. Narciso	-	MLGOO, recorder
2. Darwin A. Matindo	-	Silingan
3. Rodrigo Y. Calibo	-	Tupilac
4. Edito Pabalate	-	Magsaysay
5. Raymund Basmayor	-	Tupilac
6. Joel Agoo	-	Ali Alstree
7. Romeo Mopon	-	Gango
8. Fernando Calibo	-	Tupilac
9. Abduwa Maito	-	Pres. Roxas
10. Angie Espadilla	-	MENRO staff
11. For. Hiya I. Jaapar	-	DENR-IX, PAWCZMS Team Leader

SEAGRASSES

INTRODUCTION

Seagrass meadows form an important shallow water marine ecosystem. They reduce current velocity and erosion by binding the sediments together and provide food directly or indirectly to various animals (Thayer and Phillips, 1977). They are one of the most productive ecosystems in the world, with productivity almost comparable to that of agricultural croplands (Odum, 1971). Thus, an assessment study on the status and spatial distribution is of great relevance that would eventually lead towards sustainable development of seagrass resources in the shoreline of Roseller T. Lim, Zamboanga Sibugay.

Knowing the existence of different marine resources, seagrass as a source, is in fact believed to have importance, both ecologically and economically. They exist in enormous quantities that form large dense meadows, which perform several biological and physical functions such as regulating water flow and reducing wave action. Seagrass are also being utilized as food for marine turtles and dugongs (sea cow) as well as nursery ground for fishes and invertebrates. Subsequently, seagrasses are the only group of submerge flowering plants adapted to saline habitat. They thrive in the shallow water coastal habitats and are usually intermingled with mangroves estuaries at the shoreline and with the coral reefs in the deeper waters. Morphologically, seagrasses resembles the structures as to that of terrestrial plants, they bear flowers, develop fruits and produce seeds that make it totally different from macro benthic algae (seaweeds), for seaweeds do not possessed this kind of characteristics, they only have holdfast, and structures that help them cling to the substrates.

However, the impact of the multiple demands on coastal environment, the resources is still threatened and unabatedly destroyed. Alarmingly, conservation measures cannot cope with the present rate of habitat destruction.

The assessment study was carried out along the six (6) coastal Barangays of Roseller T. Lim, ZSP. Data are presented in terms of percentage cover. The quantitative interpretations of these figures are discussed as well as other aspects of the survey including the associated flora and fauna, and the probable causes of destruction.

The conduct of actual participatory coastal resource assessment of seagrasses in the municipality of RT Lim is a vital phase of any management and conservation effort for the coastal ecosystem. Data on what is there to conserve or manage provide

direction for the local governments and policy makers and hence, ensure success in the undertaking.

METHODOLOGY

The assessment of seagrass in RT Lim Municipal coastal waters was conducted using the standard transects quadrat method. With the help of the participants who knows well the coastal area ocular inspection of the sites was conducted to determine the extent of seagrass beds. Line transects were laid perpendicular to the shoreline in each and every coastal barangay. A 50-meter transect was used and a quadrat 0.5 m^2 with 25 small grids was positioned with an approximate 100 meters interval along the transect line starting from the shoreline edge of the bed going seaward edge of the seagrass beds. Seagrass assessment was done during low tide, where part of the seagrass community are exposed; however, for seagrass beds that were totally submerge in water during the assessment, mask and snorkels were used as to aid in determining the species and the cover within the specific quadrat laid.

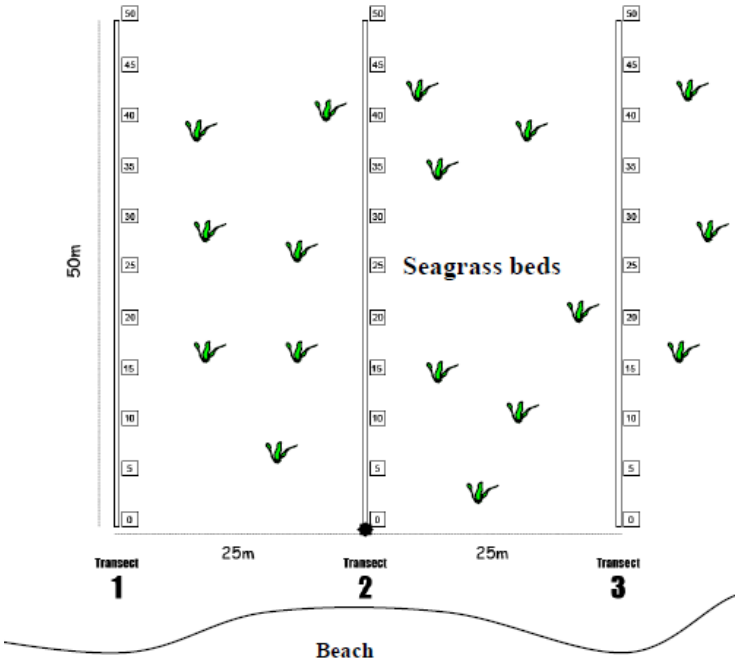

Figure 1: Layout of Seagrass Assessment Transects and Quadrats (McKenzie *et al*, 2001)

Species and its individual cover observed within the quadrat were recorded. All species lying inside the grid of the quadrat were identified to species level. Substrate

type and associated fauna that are found in the seagrass beds were also determined through ocular inspection.

The percentage cover of each species was recorded. Cover refers to the percentage of the area covered by individual species. Condition of the seagrass in the area was analyzed through the following standard criteria matrix.

Table 3. Seagrass Cover and Condition Index

Percent Cover (%)	Condition
76-100	Excellent
51-75	Good
26-50	Fair
0-25	Poor

To further determine the condition of the assessed seagrass area, the following criteria for evaluation was used.

Table 4. Criteria for Evaluating Condition of Seagrass Habitat

STATUS/ CLASSIFICATION	CRITERIA FOR EVALUATION	MANAGEMENT PRIORITY
Pristine seagrass beds	High or low species diversity bordering land masses or islands far removed from human habitations, disturbed only by normal intensity of natural elements: often form thick assemblages in shallow waters	– High priority for protection and management
Disturbed seagrass beds	High or low diversity beds occupying bays and coves, near human habitation; these beds receive constant impacts of human activities such as slight to moderate physical disturbance and various kinds of pollution that are not severe enough to eliminate or kill the seagrasses	– High priority for minimizing the existing human impacts in the area
Altered seagrass beds	Low species diversity, permanently and completely changed or converted into other coastal uses like fishponds, landfill or heavily	– Low priority for management unless

	impacted by sedimentation and physical damage	rehabilitation is still possible in the area
Emergent seagrass beds	Low species diversity, largely controlled by extreme physico-chemical conditions such as low levels of salinity or variations thereof within the natural environment	– Medium priority for management and conservation depending on controlling conditions

RESULTS AND DISCUSSIONS

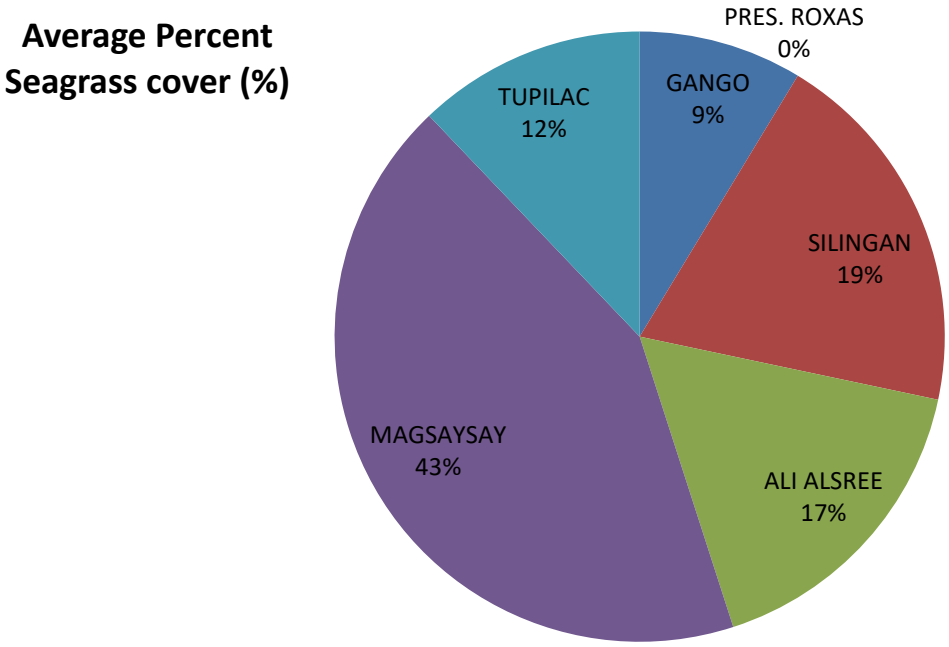

Figure 2. Average Percentage Seagrass Cover of the Six (6) Coastal Barangays of Roseller T. Lim, Zamboanga Sibugay

Of the six (6) coastal Barangays assessed, five (5) have seagrass communities in their coastal areas with barangay Magsaysay having the highest percentage cover (82%) though the seagrass present was only *Enhalus acoroides*. The least percentage cover was observed in Barangay Gango which is observed to have three (3) seagrass species present (*Thalassia hemprechii, Cymodocea rotundata and Enhalus acoroides)*.

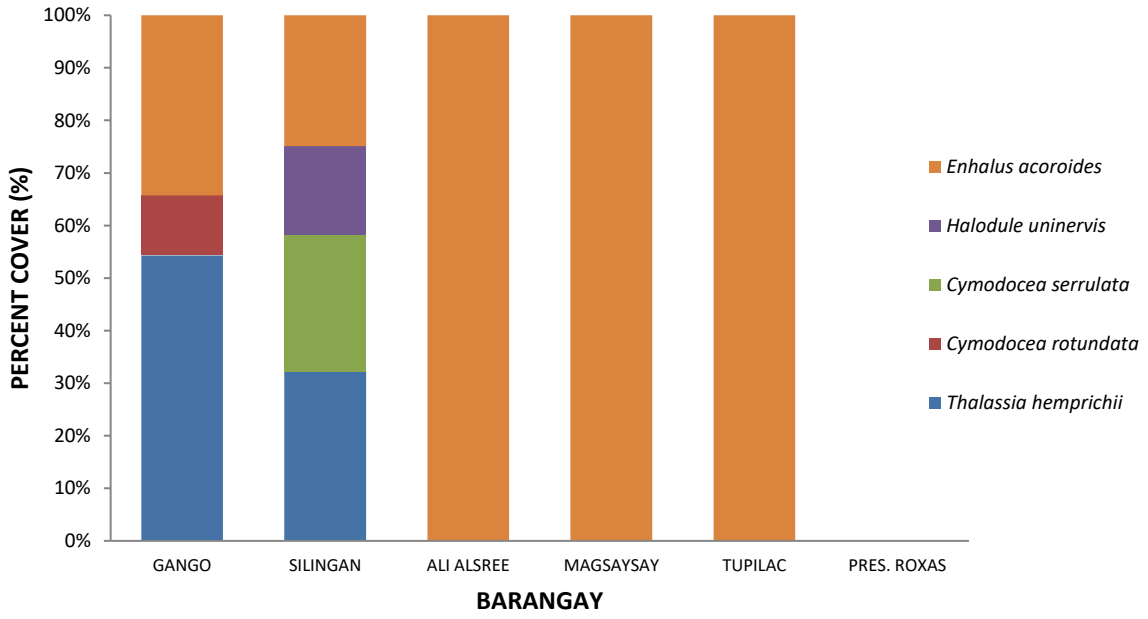

Figure 3. Average Percentage Cover of the Five (5) Seagrass Species Observed in the 6 Coastal Barangays of RT Lim, Zamboanga Sibugay.

The most dominant species found in all the coastal barangay's is the *Enhalus acoroides* which is present in all of the coastal barangays and the least observed seagrass species were *Cymodocea rotundata, Cymodocea serrulata* and *Halodule uninervis* which is only present in Barangay Gango for *Cymodocea rotundata* species and Silingan for *Cymodocea serrulata* and *Halodule uninervis* seagrass species. Absence of seagrass community was observed in the coastal waters of President Roxas which was observed to have very low water visibility during the time of assessment.

Table 5. List of Seagrass Species Found in 6 Coastal Barangays of RT Lim, ZSP

BARANGAY		Gango	Silingan	Ali Alsree	Magsaysay	Tupilac	Pres. Roxas
SEAGRASS SPECIES	*Thalassia hemprechii*	*	*				
	Cymodocea rotundata	*					
	Cymodocea serrulata		*				
	Halodule uninervis		*				
	Enhalus acoroides	*	*	*	*	*	
TOTAL NUMBER OF SPECIES		3	4	1	1	1	

From the five (5) total seagrass species observed in the six (6) coastal Barangays of RT Lim, Zamboanga Sibugay, the barangays with the highest number of seagrass present was in Barangay Silingan (4 seagrass species). The least were observed in Barangay Ali Alsree, Magsaysay and Tupilac to have only 1 seagrass species (*Enhalus acoroides*).

Noted that due to very low water visibility of the coastal area Pres, Roxas, no seagrass was observed in the area.

Table 6. Seagrass Assessment Data of Barangay Gango, RT Lim, ZSP

Date: 6-Nov-13					**Location/Area: Gango,RT Lim, ZSP**
Transect No.	**Quadrat No.**	**Species**		**Substrate**	**Other Observations**
1	**1**	*none*	0	sandy	
	2	*none*	0	sandy	
	3	*Thalassia hemprichii*	80	sandy	poor water visibility
		Cymodocea rotundata	16		
	4	*none*	0	sandy	
	5	*none*	0	sandy	
			19.2		
2	**1**	*none*	0	sandy	
	2	*none*	0	sandy	
	3	*Thalassia hemprichii*	72	sandy	poor water visibility
		Cymodocea rotundata	16		
	4	*none*	0	sandy	
	5	*none*	0	sandy	
			17.6		
3	**1**	*none*	0	sandy	
	2	*none*	0	sandy	poor water visibility
	3	*none*	0	sandy	
	4	*Enhalus acoroides*	24	sandy	
	5	*Enhalus acoroides*	20	sandy	
			8.8		
4	**1**	*none*	0	sandy muddy	
	2	*none*	0	sandy muddy	
	3	*none*	0	sandy muddy	poor water visibility
	4	*none*	0	sandy muddy	
	5	*Enhalus acoroides*	100	sandy muddy	
			20		

Table 7. Seagrass Assessment Data of Barangay Silingan, RT Lim, ZSP

Date: Nov. 7, 2013			**Location/Area: Silingan, RT Lim, ZSP**		
Transect No.	**Quadrat No.**	**Species**	**% Cover**	**Substrate**	**Other Observations**
1	**1**	*none*	0	Muddy	
	2	*none*	0	Muddy	
	3	*Cymodocea serrulata*	36	Muddy	
		Enhalus acoroides	40		poor water visibility, sargassum
	4	*Cymodocea serrulata*	8	Muddy	
		Enhalus acoroides	88		
	5	*none*	0	Muddy	
			34.4		
2	**1**	*Enhalus acoroides*	20	sandy	
		Thalassia hemprichii	80		
	2	*Enhalus acoroides*	8	sandy	Sargassum, *Chlorodesmis fastigiata*
		Thalassia hemprichii	72		
	3	*none*	0	sandy	
	4	*none*	0	sandy	
	5	*none*	0	sandy	
			36		
3	**1**	*none*	0	sandy	
	2	*Cymodocea serrulata*	60	sandy	
		Haloduleuninervis	24		
	3	*none*	0	sandy	
	4	*Cymodocea serrulata*	28	sandy	*Padina minor, Halimeda macroloba*
	5	*Cymodocea serrulata*	24	sandy	
		Thalassia hemprichii	20		
			31.2		
4	**1**	*Cymodocea serrulata*	44	sandy	
		Enhalus acoroides	8		
	2	*Cymodocea serrulata*	60	sandy	Sargassum, *Padina minor*
	3	*Enhalus acoroides*	36	sandy	
	4	*Enhalus acoroides*	44	sandy	
	5	*Enhalus acoroides*	52	sandy	
			48.8		

Table 8. Seagrass Assessment Data of Barangay Ali Alsree, RT Lim, ZSP

Date: 6-Nov-13		**Location/Area Covered: Ali Alsree, RT Li, ZSP**			
Transect No.	**Quadrat No.**	***Species***	**% Cover**	**Substrate**	**Other Observations**
1	**1**	*Enhalus acoroides*	80	Muddy	
	2	*none*	0	Muddy	poor water visibility, bahag-bahag, sea star
	3	*none*	0	Muddy	
	4	*none*	0	Muddy	
	5	*Enhalus acoroides*	80	Muddy	
			32	Muddy	
2	**1**	*Enhalus acoroides*	80	Muddy	
	2	*none*	0	Muddy	
	3	*none*	0	Muddy	poor water visibility
	4	*none*	0	Muddy	
	5	*Enhalus acoroides*	80	Muddy	
			32		

Table 9. Seagrass Assessment Data of Barangay Magsaysay, RT Lim, ZSP

Date: Nov. 7, 2013			**Location/Area Covered:** Magsaysay, RT Lim		
Transect No.	**Quadrat No.**	***Species***	**% Cover**	**Substrate**	**Other Observations**
1	1	*Enhalus acoroides*	100	clay	
	2	*Enhalus acoroides*	100	clay	
	3	*Enhalus acoroides*	100	clay	poor water visibility
	4	*Enhalus acoroides*	100	clay	
	5	*Enhalus acoroides*	100	clay	
			100		
2	1	*Enhalus acoroides*	100	clay	
	2	*Enhalus acoroides*	100	clay	
	3	*Enhalus acoroides*	100	clay	poor water visibility
	4	*Enhalus acoroides*	100	clay	
	5	*Enhalus acoroides*	100	clay	
			100		
3	1	*Enhalus acoroides*	80	clay	
	2	*Enhalus acoroides*	80	clay	
	3	*Enhalus acoroides*	80	clay	poor water visibility
	4	*Enhalus acoroides*	80	clay	
	5	*Enhalus acoroides*	80	clay	
			80		
4	1	*Enhalus acoroides*	20	clay	
	2	*none*	0	clay	
	3	*Enhalus acoroides*	60	clay	poor water visibility
	4	*Enhalus acoroides*	60	clay	
	5	*Enhalus acoroides*	100	clay	
			48	clay	

Table 10. Seagrass Assessment Data of Barangay Tupilac, RT Lim, Zamboanga Sibugay

Date: 7_Nov-13		**Location/Area Covered: Tupilac, RT Lim, ZDS**			
Transect No.	**Quadrat No.**	**Species**	**% Cover**	**Substrate**	**Other Observations**
1	1	*Enhalus acoroides*	80	muddy	
	2		0	muddy	poor water visibility
	3		0	muddy	
	4		0	muddy	
	5		0	muddy	
			16		
2	1	*Enhalus acoroides*	80	muddy	
	2		0	muddy	
	3		0	muddy	poor water visibility
	4		0	muddy	
	5	*Enhalus acoroides*	72	muddy	
			30.4		

Five (5) seagrass species were observed in the six (6) coastal barangays of Municipality of RT Lim. These coastal barangays were Gango, Silingan, Ali Alsree, Magsaysay, Tupilac and Pres. Roxas. Of the ten (6) coastal barangay, Pres. Roxas was observed with no seagrass beds on its coastline. The seagrass species found in the coastal Municipality were Tropical Eelgrass (*Enhalus acoroides*), Dugong grass or Trophical eel seagrass (*Thalassia hemprichii*), Fiber-strand grass (*Halodule uninervis*), round tipped seagrass (*Cymodocea rotundata)* and Toothed seagrass (*Cymodocea serrulata)*. Substrate types ranges from sandy to clay substrates, but most of the sampling areas were composed of muddy substrate. All of the coastal barangay in RT Lim were dominated by *Enhalus acoroides* covering up to 100% which was commonly observed at barangay Magsaysay.

Due to poor water visibility of the area, observations on associate marine organisms where was limited. But so far during the conduct of the assessment Sargassum species and *Padina Minor* were observed in their coastal area.

Table 11. Seagrass Community Condition of the six (6) Coastal Barangays of RT Lim, Zamboanga Sibugay.

BARANGAY	AVERAGE PERCENT COVER (%)	CONDITION INDEX
Gango	16.6	Poor
Silingan	37.6	Good
Ali Alsree	32	Good
Magsaysay	82	Excellent
Tupilac	23.2	Poor
Pres. Roxas	0	Poor

The seagrass community of the coastal of RT Lim were in fair condition with low diversity beds occupying bays, near human habitation. These beds receive constant impacts of human activities such as slight to moderate physical disturbance and various kinds of pollution that are not severe enough to eliminate or kill the seagrasses. Thus it has high priority for minimizing the existing human impacts in the area

Fig. 4. Common Seagrasses Found in RT Lim, Zamboanga Sibugay Province

Thalassia hemprichii
Round-tip seagrass

Halodule uninervis
Fiber-strand seagrass

Cymodocea serrulata
Toothed seagrass

Enhalus acoroides
Tropical seagrass

Cymodocea rotundata
Round-tip seagrass

ISSUES AND RECOMMENDATIONS

In order to effectively manage the seagrass resources of RT Lim, there's a need for better understanding of their ecology, their frailties and strengths, in the face of a rapidly deteriorating marine environment. With high and low diversity of seagrass beds occupying the coastal area and are close to human habitations, the seagrass beds received constant impacts to human activities. Thus it is evaluated to be disturbed with high priority for minimizing the existing human impacts in the area.

Basically, the seagrass resources in the coastal zone of RT Lim are threatened by various human activities. Listed below are some strategies and approaches recommended to save the seagrass in the area from further destruction.

1. Provide/conduct Information and Education Campaign on the ecological and economic value of seagrasses;
2. Conservation of the remaining seagrasses to serve as food, nursery and feeding grounds for fishes and invertebrates.
3. Public awareness campaign on the qualities and economic values of seagrass system through the formulation and implementation of seagrass management programs;
4. A holistic approach in planning for both scientific research and environmentally related decisions;
5. Development of a program to intensify application of the most practical and proven means of rehabilitating or restoring degraded seagrass habitats; and
6. LGU and Barangays should work hand in hand and allot funds for the salary of Bantay Dagat to purchase equipment and maintenance.

"C O R A L R E E F S"

Introduction:

Long before, the fishermen would always thought that resources from the sea were infinite and imperishable, and the ocean's ability to endure human activities was never ending. However people, are now starting to feel and realized that marine resources are indeed finite, it has a tendency to deplete and those activities can be devastating and destructive to the sea. The economic and ecological importance of coral reefs is very much beneficial particularly to coastal municipalities like R.T. Lim, Zamboanga Sibugay Province where number of fishers are very much dependent on coastal resources to sustaine their livelihood and their daily sustenance.

Coral reefs are one of the highly productive ecosystems that play a vital role in replenishing the depletion of reef fishes and other marine organisms. As home to fishes and other marine resources, they supply food to fishes, marine invertebrates and plants that are being collected and utilized as food. Unfortunately, many coral reefs are now in danger and being abused by human interventions without even allowing for its regeneration and recovery. With the passage of the Fisheries Code of 1998 (R.A. 8550), the importance of coral reef ecosystem to coastal fishery resources in our country has now become the focused of our government to preserve and rehabilitate these natural resources. Seemingly, the establishment of Marine Protected Areas (MPAs) or Fish Sanctuaries within every coastal municipality would ease the increasing rate of degradation of our coral reef ecosystems.

Assessment of coral reef in six (6) coastal barangays of R.T. Lim, Zamboanga Sibugay Province was conducted with strong participation of the Local Government Units (LGU's), Law Enforcement Unit particularly the Philippine National Police (PNP), Non-Government Organization, People's Organization and the fisherfolks. It aimed at accomplishing the objectives for Coastal Resource Management (CRM) implementation, habitat classification and specifically as Monitoring and Evaluation (M&E) updates of the its established Fish Sanctuaries.

Methodology:

Reefs assessment and monitoring method described here generally collect the **simplest type** of data with which changes can be detected. Prior to the actual assessment an orientation lecture on reef ecology and methodology was conducted at the municipal building to elaborate details and understanding on the methods being used. Assessments were conducted using a *manta tow* to get a general idea of the various types and amounts of habitat types and large obvious things in an area. A *manta tow* survey is the observation of an underwater area of good visibility by a snorkeler who is being pulled by a small boat running at an average speed. During each tow, the observer estimates the approximate percentage cover of the hard, soft, and dead corals, which shall be recorded on the board every 2 minutes that covers a distance of approximately 100 to 150 meters. Area viewed is up to 10 meters wide depending on depth and water clarity. Information may be used to help in the selection of sites and number of samples for closer observation. It could also be used as basis for comparison with local perceptions of the coastal area and in the detection of large-scale changes (e.g due to storms or mass siltation).

Key content points:

- Habitat assessment is a process designed to evaluate the condition and structure of environmental habitat like **coral reefs**.
- The PCRA looks into the current conditions and relative abundance of the coastal resources/ecosystems using a simplified scientific method that involves the use of transect lines and/or quadrats in the assessment process.
- Quadrats are effective tools to determine abundance/ condition of the assessed habitat in terms of percentage cover observed.
- Percentage cover of the assessed habitat is determined through actual observations using the habitat rating criteria.

Use of Transect Lines:

- The line may be an abaca rope, a nylon string or a fancy transect made of fiberglass. If it's not the commercial kind, calibrate the lines beforehand with one meter intervals.
- If the habitat starts beyond the shoreline, take note of the distance between the shoreline and where the habitat begins and start laying the transect line *parallel to the shoreline.*
- To ensure that transect will be straight, utilize landmarks as a guide or use the triangulation methods, a compass or even a GPS.

Use of Quadrats:

- A quadrat generally measures 1 m x 1 m. It may be made of aluminum or PVC pipes with smaller grids inside or simply of small tree branches or bamboo poles tied together.
- Placement of the quadrat follows the transect line and is laid down in pre-determined specific intervals.
- Quadrats are established every 10 meters along the transect line to serve as the representative samples of the assessed habitat.
- A 1mX1m quadrat is divided into 4 subsquares for easy percentage cover estimation of the assessed coral habitat.
- It is recommended that a suitable number of transect lines and quadrats be used to serve as samples of the assessed habitat.

Habitat criteria rating chart for coral reefs (Gomez et al.)

The percent cover of live coral was categorized as ***poor*** (0-24.9%), ***fair*** (25-49.9%), ***good*** (50-74.9%) and ***excellent*** (75-100%) to indicate the condition of the reef (Gomez *et al*. 1981).

The percentage bottom cover for lifeform categories were estimated using the formula adapted by Uychiaoco *et al*. (2001).

$$\text{Percent cover (lifeform category)} = \frac{\text{Total percentage (\%) of lifeform}}{\text{Number of transitions}}$$

Point-intercept method is used to more precisely estimate the relative abundance of living and nonliving things on the reef bottom observed within a defined area (Uychiaoco et al. 2001). It is used by more experienced researchers to record all observed benthic life forms underneath each 0.25 m interval along the transect line. A 50 m transect line is laid parallel to the shoreline and should be kept at the same depth. A standard of 6 – 7 m depth is required when using scuba. Observations and recordings are taken from one end of the line to the other. The PCRA generally employs the snorkel method and is complemented by the point intercept method, using scuba.

Results and Discussions:

Generally based on the conduct of snorkel survey method, only barangay Gango, Silingan, Pres. Roxas and Magsaysay, which has coral reef assemblages.

Both reef formation at Barangay Gango and Silingan yielded poor coral cover conditions. The reef is of moderate slope mostly with patches of corals dominated by massive and sub-massive specie with purely large coverage sandy substrate. The area is a silted and manifest poor visibility especially during rainy and windy weather condition. At its slope trace of dynamite fishing activity is evident with coral rubbles obviously noticeable probably done a long time ago. There are lots of agar-agar plantation at the area. Debris such as, tree branches, bamboo posts and plastic ties entangled around the corals were encountered during the assessment.

Barangay Pres. Roxas has fair coral cover condition and coral assemblages that composed its Fish Sanctuary and contain an aggregate area of 20 hectares. It has clear water visibility and a little bit silted going to its deeper area. Branching corals dominates its fringing slope with massive and sub massive corals at the shallow portion which harbors the presence of some seagrass specie. Its moderate slope going to deeper portion has sandy substrate. Further observed that the Fish Sanctuary has no definite marker buoys and sign boards. There is also fishery extraction at the area as witnessed by the team during the assessment.

The Diosan Islet Marine Protected Area which was established in 2004 is situated at Barangay Magsaysay with an area of 112 hectares. It has fair coral cover condition and comparatively good than those other mentioned barangays. The MPA has stretch of mangrove ecosystem and portion of white sandy beaches which is ideal for ecotourism. Likewise there has been no definite marker buoys at the area, plastic debris and ties were also noticeable and were entangled around some hard coral species. There has been limited specie of soft corals being observed.

Common corals found at the coastal municipality includes; foliose (*montipora, pavona, pachyserra*), coral sub-massive (*pocillorora, euphyllia, merulina*), coral massive (*porites, galaxea, diploastrea, lobophylia*), mushroom corals (*fungia, polyphylia*), coral branching (*seriatopora, porites*), acropora (digitate, tabulate, sub-massive), millepora (fire corals) and encrusting coral species.

There were also algae (macroalgae, coralline algae) and abiotic which includes; sand, silt, rubble, rock. While other organisms includes sea urchins, tunicates, feather stars, starfish, etc. *(Pls. refer to pie charts and photo documentations).*

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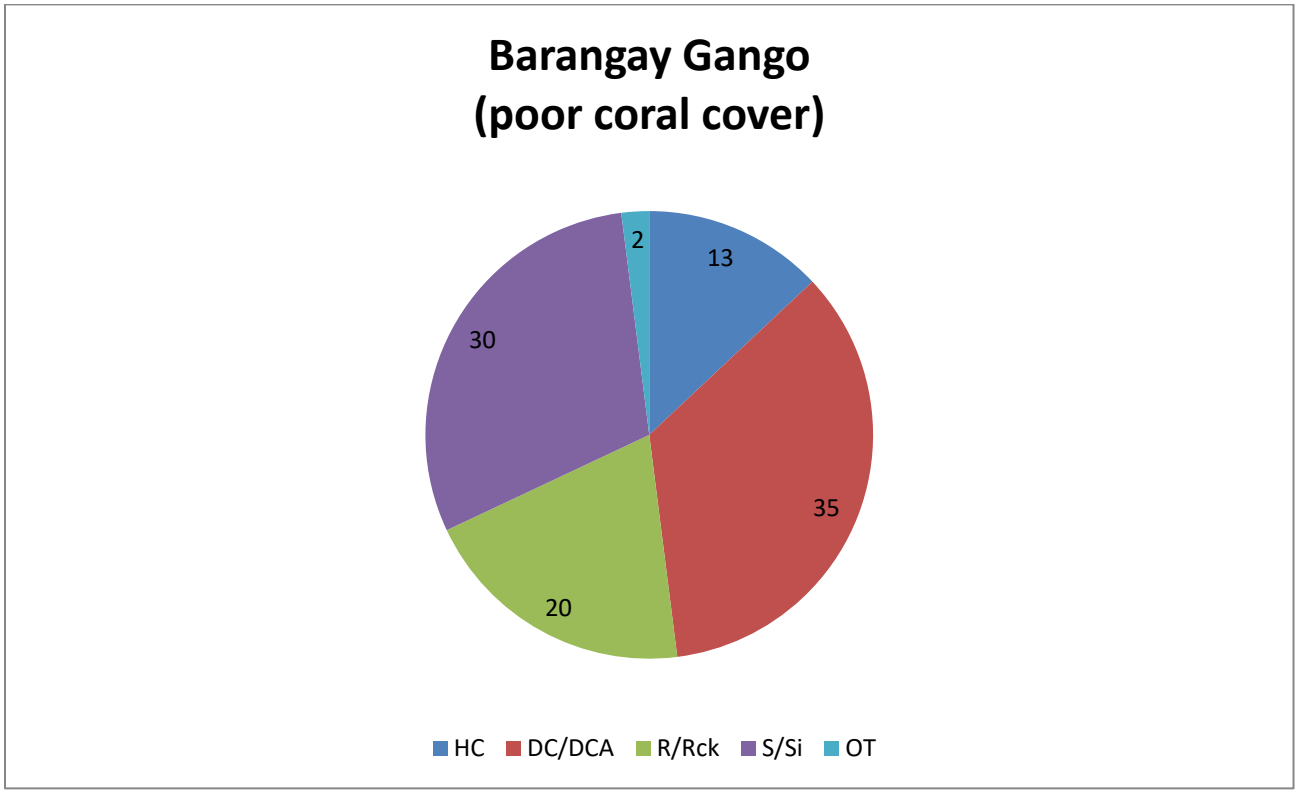
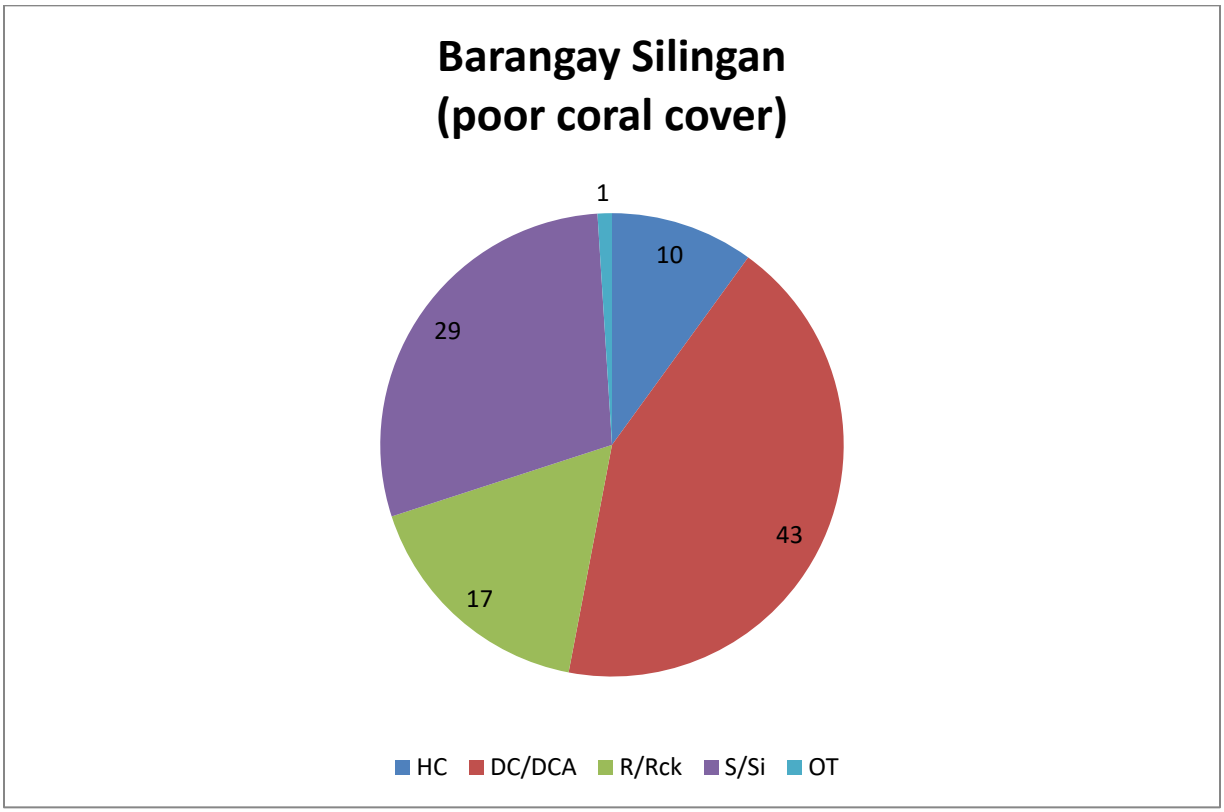
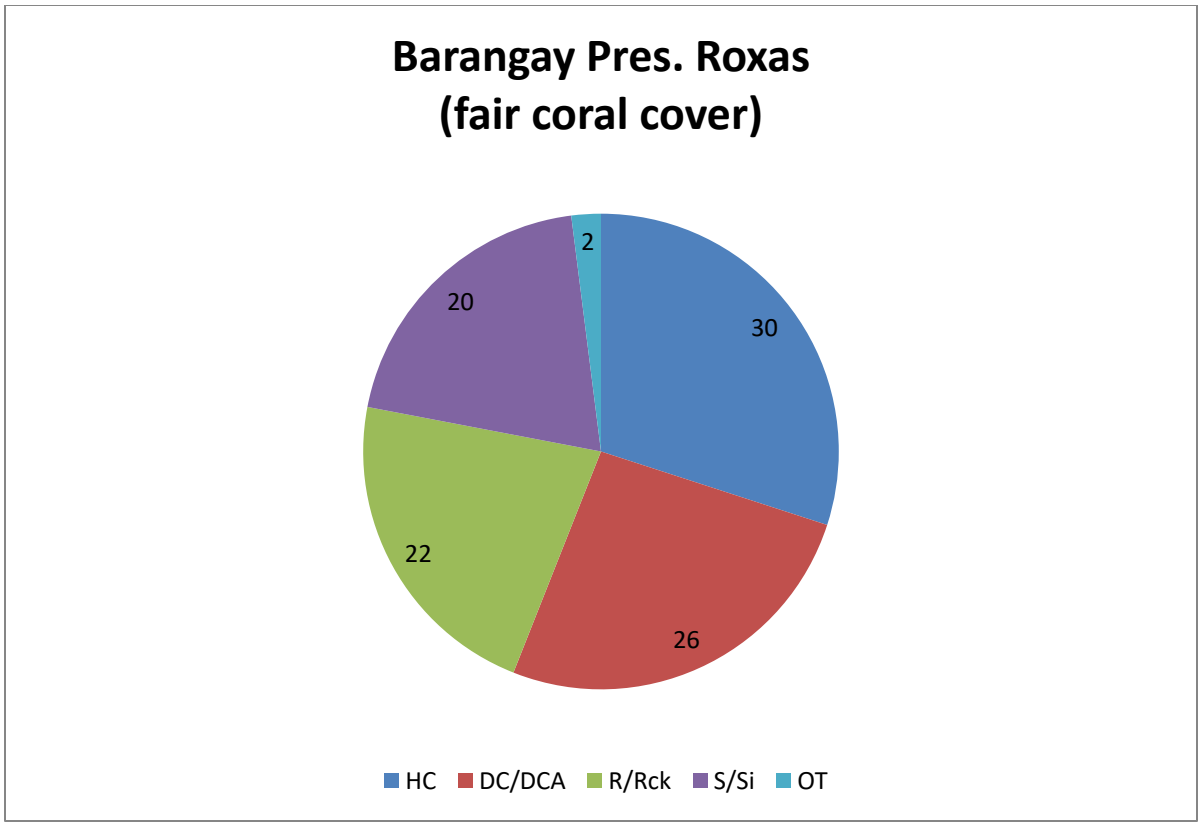
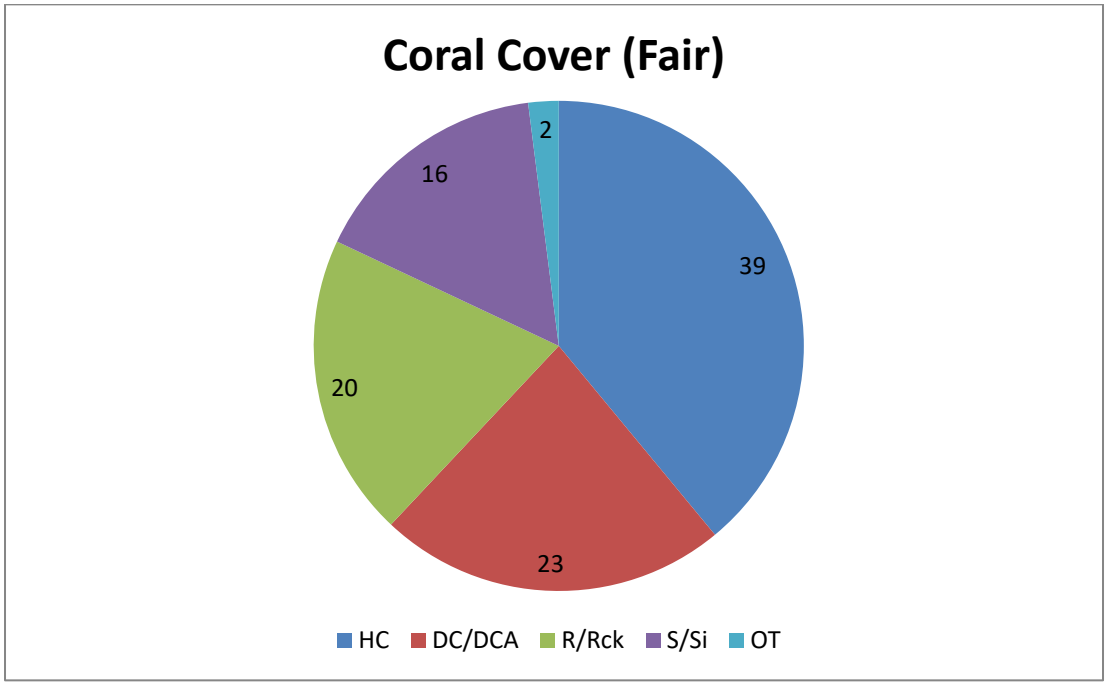
Figure 5. PIE CHARTS ON CORAL COVER






Barangay Pres. Roxas
(fair coral cover)
2
20
30
22
26
HC
DC/DCA
R/Rck
S/Si
OT


Coral Cover (Fair)
2
16
39
20
23
HC
DC/DCA
R/Rck
S/Si
OT

Issues & Concerns:

Coral reefs at Municipality of RT Lim, Zamboanga Sibugay Province has condition that manifested patterns of destruction caused by illegal fishing activities. It was further observed that majority of the local fishers depends on the pelagic fishes such as tunas, scads, sardines, mackerels, anchovies and other associated species. Aside from illegal fishing activities, other factors to be considered include sedimentation and siltation particularly those barangays with river tributaries. These corals reefs ecosystem have greater chance to regenerate if left undisturbed. The Fish Sanctuaries at Pres. M. Roxas and Magsaysay have great potential of recovery if left undisturbed. Management intervention must be address to maintained and protect of what is left within the sanctuary to ensures protection, conservation and sustainable utilization of the coastal resources in the area. Further, recommend that a biophysical assessment be conducted during calm weather condition.

Below are the following issues and recommendations solicited from Bantay Dagat and other members of the Group, to wit:

Issues:

1. Problem on waste management;
2. Illegal entry of big commercial fishing boats within the municipal waters;
3. Inadequate fund for the management, mobilization and operation of Bantay Dagat;
4. Presence of illegal fishing activities like use of compressors, *pakpakan* and other illegal activities; and
5. Fish Sanctuaries has no definite marker buoys.

Recommendations:

1. LGU to provide garbage bins and regularly collects the garbages and conducts coastal cleanups especially during the month of September and right after the town fiestas;
2. Conduct regular patrolling activities by the Bantay Dagat in coordination with the law enforcement agency like the Philippine National Police (PNP);

3. Provide adequate fund for the operation and mobilization of Bantay Dagat thru seminars and trainings, purchased of paraphelnalias (i.e. radios, uniforms, binoculars) and honorarium;
4. Strict implementation of laws (R.A. 8550 and other related ordinances) and apprehension of illegal fishers by law enforcers and concerned agencies (PNP, PCG, BFAR); and
5. LGU to allot funds for marker buoys of fish sanctuaries.

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" F I S H E S "

INTRODUCTION

Coral reef fish are fish which live amongst or in close relation to corals. Coral reefs form complex ecosystem with tremendous biodiversity. Among the myriad inhabitants, the fish stand out as particularly colorful and interesting to watch. Hundreds of species can exist in a small area of a healthy reef, many of them hidden or well camouflaged. Reef fish have developed many ingenious specializations adapted to survival on the reefs.

However, loss and degradation of coral reef habitat, increasing pollution, and overfishing including the use of destructive fishing practices, are threatening the survival of the coral reefs and the associated reef fish. Overfishing was the major factor contributing to the decline in fisheries. According to the marine scientists, the increased fishing activity has gradually undermined the health of many marine fish stocks estimated that about 74% of the worlds marine fish stocks had been exploited, overexploited or depleted.

Fish visual census assessment was conducted aiming to observe the number, types of fishes and condition of the habitat to whether it can still support the sustainability of the species especially the fishes in the municipality of R.T. Lim, Zamboanga Sibugay Province.

METHODOLOGY

The assessment was carried out using SCUBA gear for better observation underwater. Other materials used are 50 m transect line, underwater slates with attached pencil and guide book.

Areas assessed were the coastal barangays of Gango, Selengan, pres. Roxas and Magsaysay. Transect line was laid for every barangay and observe the reef fishes present in every 5 meter square both left and right side of the line until the transect is completed.

RESULT AND DISCUSSION

In the municipality of R.T. Lim, Zamboanga Sibugay, Participatory Coastal Resource Assessment (PCRA) was conducted to know the condition of fish population in the area. The activity was done in the field for two (2) days. A total of twenty five (25) fish families were recorded during the assessment.

Table 12. Fish families identified in the municipality of R.T. Lim, Zamboanga Sibugay Province.

FAMILY		
Local		**Scientific**
Groupers	Lapo, Pugapo, Suno	Serranidae
Snappers	Maya-maya	Lutjanidae
Sweetlips	Lipti	Haemulidae
Fusiliers	Dalagang bukid, Solid, Bilason	Caesionidae
Coral breams	Silay	Nemipteridae
Goatfish	Timbongan	Mullidae
Trigger fish	Pakol, Pugot	Balistidae
Butterfly fish	Alibangbang	Chaetodontidae
Angelfish	Adlo	Pomacanthidae
Wrasses	Labayan	Labridae
Parrot fish	Mol-mol	Scaridae
Damsel fish	Palata	Pomacentridae
Moorish idol	Kanding-kanding	Zanclidae
Lizardfish	Tiki-Tiki	Synodontidae
Rabbitfish	Danggit, Kitong	Siganidae
Puffer fish	Butete/ Tagutungan	Diodontidae
Cornet fish		Fistularidae
Jack, Trevally	Talakitok, Mamsa, Baho-ulo	Carangidae
Shrimpfish	Sundang-Sundang	Centriscidae
Squirrel fish	Ganting	Holocentridae
Spadefish	Bayang	Ephippidae
Stingray	Pagi, Kiampaw	Dasyatidae
Dusky sweeper	Tabas	Pempheridae
Catfish	Ito	Plotosidae
Cardinalfish	Moong	Apogonidae

Among the four (4) coastal barangays assessed, Magsaysay has the greater number of fish families (22) identified which includes the family Apogonidae, Balistidae, Caesionidae, Carangidae, Centriscidae, Chaetodontidae, Dasyatidae, Diodontidae, Ephippidae, Fistularidae, Haemulidae, Holocentridae, Labridae, Lutjanidae, Nemipteridae, Pempheridae, Pomacentridae, Scaridae, Serranidae, Siganidae, Synodontidae, and Zanclidae. This was followed by barangay Pres. Roxas having fourteen (14) fish families, next is Brgy. Selengan with six (6) and Brgy. Gango with only five (5) (Table 13).

Table 13. List of Fish Families per Barangay Assessed in R.T. Lim, Zamboanga Sibugay.

Gango	Selengan	Pres. Roxas	Magsaysay
Caesionidae	Carangidae	Fistularidae	Apogonidae
Serranidae	Ephippidae	Caesionidae	Balistidae
Haemulidae	Labridae	Chaetodontidae	Caesionidae
Labridae	Pomacentridae	Epinephilinae	Carangidae
Pomacanthidae	Scaridae	Haemulidae	Centriscidae
Pomacentridae	Siganidae	Holocentridae	Chaetodontidae
Balistidae		Labridae	Dasyatidae
		Nemipteridae	Diodontidae
		Plotosidae	Ephippidae
		Pomacentridae	Fistularidae
		Scaridae	Haemulidae
		Siganidae	Holocentridae
		Synodontidae	Labridae
		Zanclidae	Lutjanidae
			Nemipteridae
			Pempheridae
			Pomacentridae
			Scaridae
			Serranidae
			Siganidae
			Synodontidae
			Zanclidae

A total of sixty three (63) fish species were recorded during the fish visual census conducted in the four (4) barangays. The family Labridae has the greatest number of fish species having 12 species followed by family Pomacentridae with 9 species while the rest of the fish families has lower fish composition (Table 14).

Table 14. List of Fish species identified in the municipality of R.T. Lim, Zamboanga Sibugay

Local Family Name	Scientific Family Name	Species
Lapu, Pugapo, Suno	Serranidae	*Cephalopholis miniata* *Epinephilus macrospilos* *Epinephilus quoyanus* *Diploprion bifasciatum*
Maya-maya, Katambak	Lutjanidae	*Lutjanus biguttatus*
Lipti	Haemulidae	*Plectorhincus chaetodonoides* *Diagramma sp.*
Dalagang bukid, Solid, Bilason	Caesionidae	*Caesio cuning* *Pterocaesio tile*
Silay	Nemipteridae	*Scolopsis ciliates* *Scolopsis lineatus*
Timbongan	Mullidae	*Parupeneus barberinus*
Pakol/ Pugot	Balistidae	*Balistapus undulates* *Pseudobalistes flavimarginatus* *Rhinecanthus verrucosus*
Alibangbang	Chaetodontidae	*Chaetodon octofasciatus* *Chelmon rostratus* *Heniochus chrysostomus* *Heniochus acominatus*
Adlo	Pomacanthidae	*Chaetodontoplus mesoleucos*
Labayan	Labridae	*Coris aurilineata* *Coris auricularis* *Labroides dimidiatus* *Halichoeres melanurus* *Halichoeres argus* *Halichoeres vrolikii* *Halichoeres rubricephalus* *Thalassoma lutescens* *Thalassoma lunare* *Bodianus mesothorax* *Cheilinus chlorourus*
Mol-mol	Scaridae	*Chlorurus capistratoides* *Scarus dimidiatus* *Scarus globisceps* *Scarus oviceps*

		Scarus russellii
Palata, Kapal	Pomacentridae	*Abudefduf sexatilis* *Amblyglyphidodon curacao* *Amblyglyphidodon leucogaster* *Amphiprion akallopisos* *Amphiprion ocellaris* *Chromis flavomaculata* *Chrysiptera brownriggii* *Pomacentrus coelestis* *Pomacentrus moluccensis*
Kanding-kanding	Zanclidae	*Zanclus cornotus*
Butete	Diodontidae	*Arothron mappa*
Danggit/ Kitong	Siganidae	*Siganus canaliculatus* *Siganus guttatus* *Siganus unimaculatus*
Cornetfish	Fistularidae	*Fistularia commersonii*
Tiki-Tiki	Synodontidae	*Synodus variegates*
Talakitok/ Mamsa/ Baho ulo	Carangidae	*Carangoides gymnostethus* *Selaroides leptolepis*
Sundang-Sundang	Centriscidae	*Centriscus scutatus*
Ganting	Holocentridae	*Myripristis botche* *Myripristis kuntee* *Myripristis pralinia*
Bayang	Ephippidae	*Platax teira* *Platax pinnatus*
Pagi/ Kiampaw	Dasyatidae	*Taeniura lymma*
Tabas	Pempheridae	*Pempheris adusta*
Ito	Plotosidae	*Plotosus sp.*

In barangay Gango we recorded only seven (7) fish family and these are Balistidae, Caesionidae, Labridae, Haemulidae, Pomacentridae, Serranidae and Pomacanthidae. With the seven (7) fish family only thirteen (13) fish species was recorded during the assessment. It was found out by the team that the area was prone to human activities and disturbances because agar-agar farming was rampant just above the reef we have surveyed. In this condition, fishes are dispersed and disturbed (Table 15).

Table 15. List of fish species per family in barangay Gango, R.T. Lim, Zamboanga Sibugay Province

Fish Family	Fish Species
Balistidae	*Rhinecanthus verrucosus*
Caesionidae	*Caesio cuning*
	Pterocaesio tile
Haemulidae	*Diagramma sp.*
Labridae	*Halichoeres argus*
	Halichoeres melanurus
	Labroides dimidiatus
	Thalasoma lunare
	Thalasoma lutescens
Pomacentridae	*Amblyglyphidodon curacao*
	Amblyglyphidodon leucogaster
Serranidae	*Epinephelus quoyanus*
Pomacanthidae	*Chaetodontoplus mesoleocus*

Barangay Silingan has the same situation with Barangay Gango. The reef was silted and intrusion of agar-agar farming was noticed causing pollution to the area and making the team difficult in laying the transect line. Poor visibility was also observed.

This barangay has the same number of fish composition recorded with Barangay Gango when it comes to fish family which includes Pomacentridae, Carangidae, Labridae, Scaridae, Ephippidae, Siganidae and Caesionidae. Unfavorable disturbance and condition of the area yielded a total of fourteen (14) fish species was recorded during the assessment.

Table 16. List of fish species per family in barangay Silingan, R.T. Lim, Zamboanga, Sibugay.

Fish Family	Fish Species
Pomacentridae	*Amblyglyphidodon curacao*
	Amblyglyphidodon leucogaster
	Amphiprion akallopisos
	Chrysiptera brownriggii
Carangidae	*Selaroides leptolepis*
Labridae	*Halichoeres argus*
	Halichoeres melanurus
	Labroides dimidiatus
	Thalasoma lunare
	Thalasoma lutescens
Scaridae	*Scarus globiceps*
Ephippidae	*Platax teira*
Siganidae	*Siganus guttatus*
Caesionidae	*Caesio cuning*

The next barangay assessed was Pres. Roxas. A total of fifteen (15) fish families were recorded which was higher compared to the two previous barangays. Among the fifteen (15) fish families recorded, family Labridae showed the highest number of fish composition (6) and then followed by Pomacentridae with five (5).

Table 17. List of fish species per family in barangay Pres. Roxas, R.T. Lim, Zamboanga Sibugay.

Fish family	Fish species
Fistularidae	*Fistularia commersonii*
Caesionidae	*Caesio cuning*
Chaetodontidae	*Chaetodon octofasciatus*
	Chelmon rostratus
	Heniochus chrysostomus
Serranidae	*Epinephelus macrospilos*
	Diploprion bifasciatum
Haemulidae	*Plectorhinchus chaetodonoides*
Holocentridae	*Myripristis botche*
	Myripristis kuntee
Labridae	*Halichoeres argus*
	Halichoeres melanurus
	Labroides dimidiatus
	Coris auricularis
	Thalasoma lunare
	Thalasoma lutescens
Pomacanthidae	*Chaetodontoplus mesoleucos*
Nemipteridae	*Scolopsis ciliatus*
	Scolopsis lineatus
Plotosidae	*Plotosus sp.*
Pomacentridae	*Amblyglyphidodon curacao*
	Amblyglyphidodon leucogaster
	Amphiprion akallopisos
	Chrysiptera brownriggii
	Pomacentrus moluccensis
Scaridae	*Chlorurus capistratoides*
	Scarus dimidiatus
	Scarus globiceps
Siganidae	*Siganus guttatus*
Synodontidae	*Synodus variegatus*
Zanclidae	*Zanclus cornotus*

The last barangay assessed was Magsaysay where the Marine Protected Area (MPA) was located. A total of fifty six (56) fish species belonging to twenty two (22) fish

families was recorded. Among the twenty two fish families Labridae was the most abundant with nine (9) species followed by Pomacentridae (7) and then Scaridae (5).

Table 18. List of Fish per Family in Barangay Magsaysay, R.T. Lim, Zamboanga Sibugay.

Fish family	Fish species
Apogonidae	*Apogon compressus*
Balistidae	*Balistapus undulates* *Psedobalistes flavimarginatus*
Caesionidae	*Caesio cuning* *Pterocaesio tile*
Carangidae	*Carangoides gymnostethus* *Selaroides leptolepis*
Centriscidae	*Centriscus scutatus*
Chaetodontidae	*Chaetodon octofasciatus* *Chelmon rostratus* *Heniochus chrysostomus* *Heniochus acominatus*
Dasyatidae	*Taeniura lymma*
Diodontidae	*Arothron mappa*
Ephippidae	*Platax pinnatus* *Platax teira*
Fistularidae	*Fistularia commersonii*
Haemulidae	*Plectorhinchus chaetodonoides* *Diagramma sp.*
Holocentridae	*Myripristis botche* *Myripristis kuntee* *Myripristis pralinia*
Labridae	*Halichoeres argus* *Halichoeres melanurus* *Halichoeres rubricephalus* *Halichoeres vrolikii* *Labroides dimidiatus* *Cheilinus chlorourus* *Coris aurilineata* *Thalasoma lunare* *Thalasoma lutescens*
Lutjanidae	*Lutjanus biguttatus*
Nemipteridae	*Scolopsis ciliates* *Scolopsis lineatus*
Pempheridae	*Pempheris adusta*
Pomacentridae	*Abudefduf sexatilis*

	Amblyglyphidodon curacao *Amblyglyphidodon leucogaster* *Amphiprion ocellaris* *Chromis flavomaculata* *Chrysiptera brownriggii* *Pomacentrus moluccensis*
Scaridae	*Chlorurus capistratoides* *Scarus dimidiatus* *Scarus globiceps* *Scarus oviceps* *Scarus russellii*
Serranidae	*Cephalopholis miniata* *Epinephelus macrospilos* *Epinephelus quoyanus* *Diploprion bifasciatum*
Siganidae	*Siganus canaliculatus* *Siganus guttatus* *Siganus unimaculatus*
Synodontidae Zanclidae	*Synodus variegates* *Zanclus cornotus*

ISSUES

All barangays were affected with human activities such as intrusion into the MPA area, agar-agar farming where ropes used by farmers were anchored to corals and also siltation was heavy in the area. For the four barangays assessed three barangays (Gango, Selengan and Pres. Roxas) were closely disturbed by agar-agar farming compared to Magsaysay. Barangay Magsaysay has the most number of fish (family and species) because the area was well guarded by bantay dagat and prohibiting the intrusion of agar-agar farming to anchor their ropes inside the MPA.

INTRODUCTION

The Focus Group Discussion (FGD) with key informants was used to generate information on the status of the fisheries, coastal habitat, socio-economic condition of fisherfolks and other relevant information in the Municipality of RT Lim, Zamboanga Sibugay Province. Secondary data from the local government unit were also gathered to validate and supplement the data generated from the FGDs.

CMMD Chief Neneth T. Ordoño , LGU officials & staff, together with the different barangay secretaries were instrumental in setting up the schedules of the FGDs conducted in the six (6) barangays and the arrangement of transportation used in going to the different areas. Respective barangay officials were tasked to identify participants and to arrange the venues of the different FGDs. Likewise, these local government personnel also served as facilitators and active participants during the conduct of FGDs.

Each FGD started with a short program and orientation on the objectives of the activity and how the activity to be conducted. Participants of the FGD comprised of fishermen, seaweed growers, fish vendors, farmers, housewife and key barangay officials.

RESULT AND DISCUSSION

The information generated from the two hundred ten (210) FGD participants, although limited by time constraints, offer some overview on coastal and marine resources, fishers and other stakeholders situation of the nine coastal barangay.

I. HOUSEHOLD DATA

The average number of children in the family is two (3) and the average number of person per household is four (4). Population comprises of diverse ethnic origin.

Table 19. Population and Number of Households from Barangay Profile

Name of Coastal Barangay	Number of Population	Number of Household	Land Area in Hectares (ha)
1. Ali Alsri			
2. Gango	1,399	377	
3. Magsaysay	1,496	290	1,845
4. P.Roxas	2,250	520	368
5. Silingan	1,528	346	1,900
6. Tupilac	1.258	260	3,767

II. EDUCATIONAL ATTAINTMENT

Almost all barangays have primary and elementary schools. However, majority of the parents have not finished their elementary level, while most of the children are still in secondary level.

III. SOURCE OF WATER

Four (4) of the six (6) coastal barangays of RT Lim have piped water system in place while the other two is sourcing potable water out of a pit or artesian wells.

III. TYPE OF HOUSING MATERIALS

Majority of the housing materials commonly used by the community of the six (6) coastal barangays are nipa for their roofings and bamboo mixed with assored lumbers for the flooring and walling.

IV. MIGRATION PATTERN

All FGD participants have affirmed that there was a population increased in their respective barangay, said increased was attributed from migrants coming from neighboring barangays, municipalities and other provinces purposedly to look for job opportunities and make a living.

V. OCCUPATIONAL STRUCTURE

Fishing and farming is the most important livelihood for the coastal communities. Due to overfishing and declining fishery production most fishers obtain meager incomes

from fishing often not sufficient to meet their daily household needs. As a result some family members opted to find alternative livelihood that can add to their income.

VI. FAITH AND RELIGION

The Municipality of RT Lim is being dominated by Christian Community. Other religion like Islam thrive at particular sitios of the coastal barangays.

VII. COMMUNITY INFRASTRUCTURE

Listed hereunder are the different infrastructures that can be commonly found in the six (6) coastal barangays;

1. Churches/mosques
2. (4) Solar Dyer
3. Barangay Hall
4. Barangay Market
5. Basketball Court
6. BNS Center
7. Day Care
8. Elementary School
9. Health Center
10. Nutrition Center
11. Pier
12. Primary School
13. Session Hall
14. SK Hall
15. Water System

Table 20. PEOPLES ORGANIZATION ESTABLISHED BY BARANGAY

People's Organization	When established	Formal/Informal	Main function
1. Ali Alsri			
*Agar-agar Farmers Association	2009	Formal	Livelihood
* Women's Association	2011	Formal	Livelihood
* Fisher Folk Organization	2013	On going for DOLR reg	Livelihood
2. Gango			
*GIDA	.	Formal	Agriculture
*GIPO		In-formal	Livelihood
* TAFIARO		Formal	Livelihood
* Agar-agar Farmer's Association		Formal	Livelihood
3. Magsaysay			
*Women's Association	2012	Formal	Livelihood
* Kapamilya	2007	Formal	Livelihood
* 4Ps	2009	Formal/DSWD	
4. P Roxas			
*Samahan ng Magsasaka ng Barangay Pres. Roxas	2008	Formal	Livelihood
* Farmer's Association	2008	Formal	Livelihood
5. Silingan			
*Women's Association	2012	Informal	Livelihood
* Rubber Farmer's Association	2013	On-going	Livelihood
*RT Lim Seaweeds Farmers Association	2009	Formal/DOLE	Livelihood
* Silingan Integrated Farmers Association	2011	Formal/DOLE	Livelihood
6. Tupilac			
*Women's Organization	2010	Formal	Livelihood
*Tupilac Farmers Association	2008	Formal	Livelihood
	2012	Formal	Livelihood

Table 21. PERCEPTION OF RESOURCES CONDITIONS

Resources	Very Good	Good	Neither Good/Bad	Bad	Very Bad
Mangroves		✓			
Coral Reefs			✓		
Seagrass		✓			
Beaches		✓			
Freshwater		✓			
Upland Forest	**-none-**				
Fishery			✓		

Above table shows a generalized condition of the resources. FGD participants revealed that their mangroves, seagrass, beaches and freshwater are in good conditions while coral reef and fishery falls under neither good/bad conditions.

COASTAL LAW ENFORCEMENT

As to the enforcement of coastal and other environmental laws and policies, the Municipal Local Government Unit of RT Lim, ZSP spearheads in the implementation of laws and other related rules, regulations and policies. Bantay-dagat was also organized per barangay to provide assistance in the municipal coastal law enforcement.

Hereunder are the generalized issues and problems identified during the conduct of FGD;

ISSUES AND PROBLEMS

1. Mangrove cutting
    - 1.a. charcoal making,
    - 1.b. construction/building materials
    - 1.c. firewood & fuel wood for sale

2. Illegal Fishing Activities and Destructive Fishing Gears such as;
    - 3.a. Dynamite Fishing
    - 3.b Sud-sud
    - 3.c. Tuble
    - 3.d Cyanide

3. Encroachment/entry of commercial fishing boat to municipal water
    * hulbut-hulbot
    *zipper-zipper
    * trawl

RECOMMENDATIONS

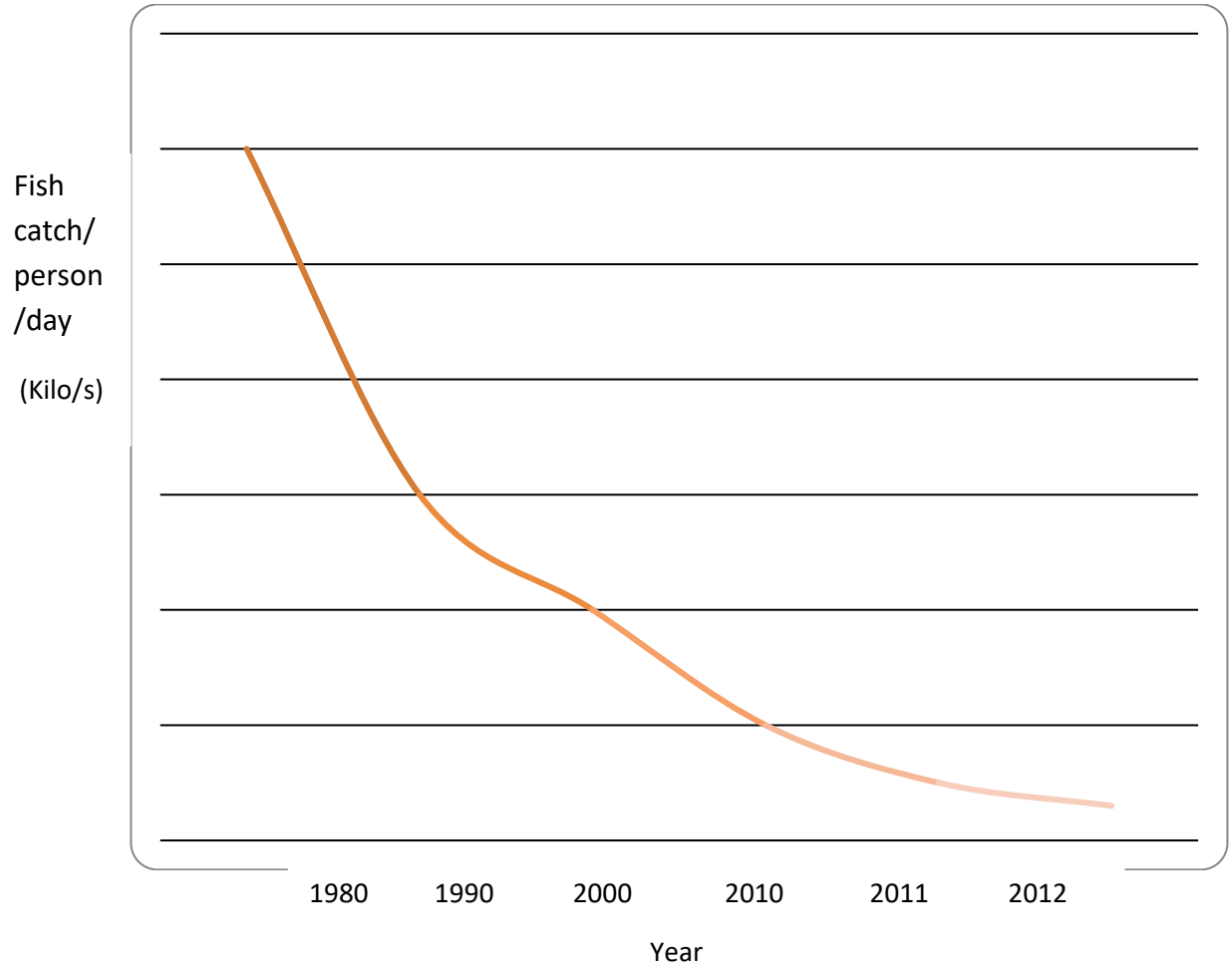
1. Strengthening of bantay-dagat members
2. Forge the active partnership between the local governments, fisher folk communities and other sectors.
3. Strict enforcement of coastal and other environmental laws
4. Provision of alternative livelihood
5. Apprehend commercial fishing boat
6. Dredging of silted river beds
7. Intensify mangrove/ tree planting activity
8. Conduct Information, Education & Communication Campaign (IEC)
9. Formulation of ordinance designating area for *sud-sud*

Table 22. FISHERS, FISHING CRAFTS AND GEARS

Coastal Barangay	No. of Fishermen		Fishing Boat			Fishing Gear
	Full time	Part time	Commercial	Motorized	Non-motorized	
1. Ali Alsri	500		none	150	100	pasol,pukot, palangre,bobo pana,sudsud bungsod
2. Gango	60	60	none	34	200	pasol,palangre, bobo, pukot, new look
3. Magsaysay	20	80	none	20	70	pasol, pukot,pana, palangre
4. P Roxas	10	70	none	20	280	
5. Silingan			none	4	30	pasol, pukot,pana, palangre
6. Tupilac	25	5	none	5	40	
TOTAL	**615**	**215**		**233**	**720**	

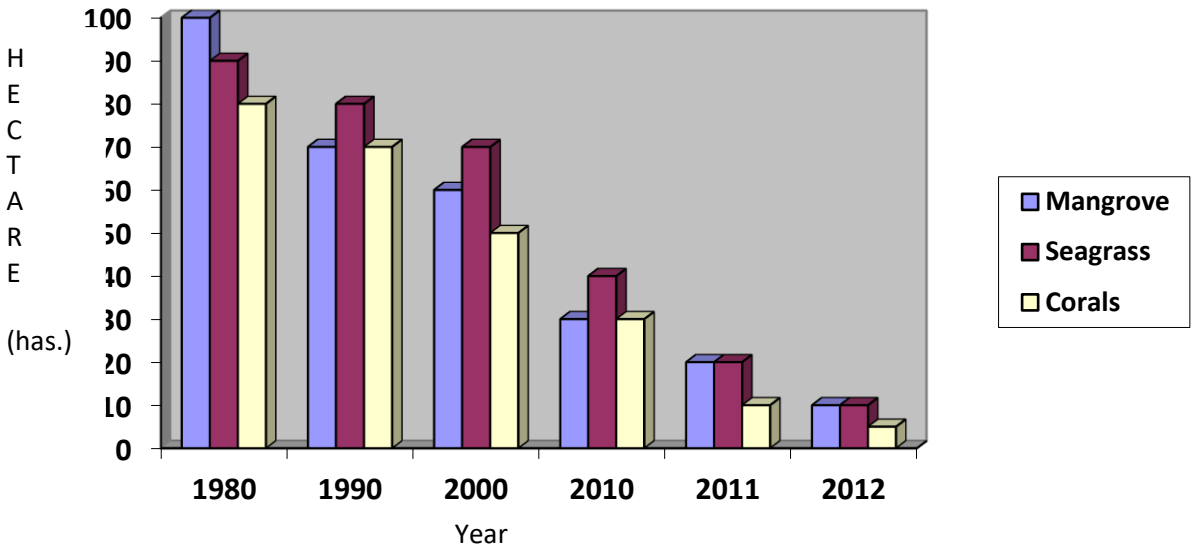
A series of focus group discussions (FGD) was conducted in the six coastal barangays of RT Lim to generate a minimum set of information on the nature and status of its coastal fishery. Participants of FGD identified a total of 830 fishermen using various fishing gears. Out of the total number of fishermen, 215 (25.90%) are part time fishermen and 615 (74.10%) are full time. An estimated 953 boats operates in the municipal fishing ground, 233 (24.45%) of which are motorized and 720 (75.55%) are non-motorized. Top five most abundantly used gears are *pasol, pukot, pana, palangre and bobo*.

Fig. 6 TREND DIAGRAM



As reflected in the trend diagram, the FGD participants of all the coastal barangays provided the information that they are experiencing shortfall in fish supply as compared way back in 1980. Accordingly, fishers need to seek alternative ways to earn more money to meet the most basic needs of the family. Some travel far or outside of the municipal waters and resort to using several types of gears in order to increase their fish catch.

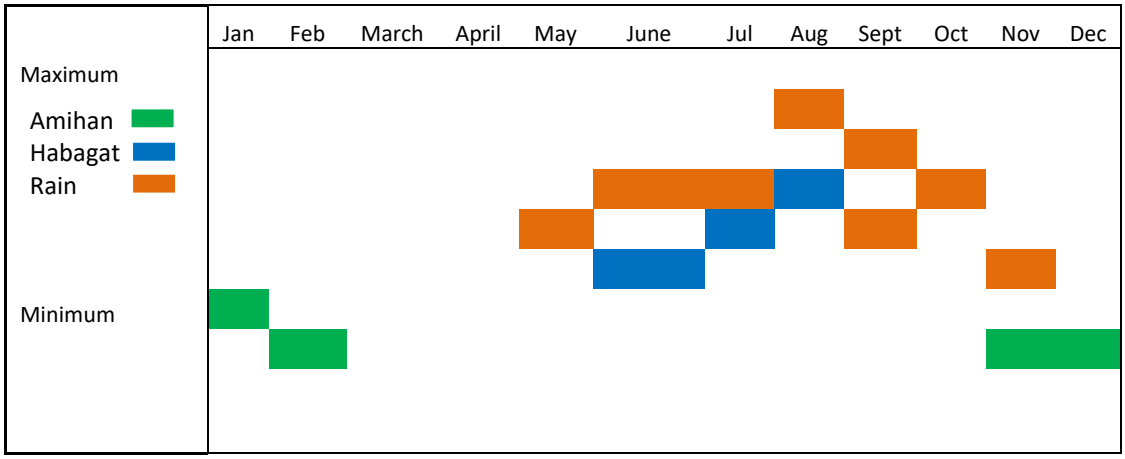
Fig. 7 HABITAT DIAGRAM



The coastal ecosystems of the Philippines are some of the most productive and biologically diverse in the world. The diversity is associated with high primary productivity and high fishery yields.

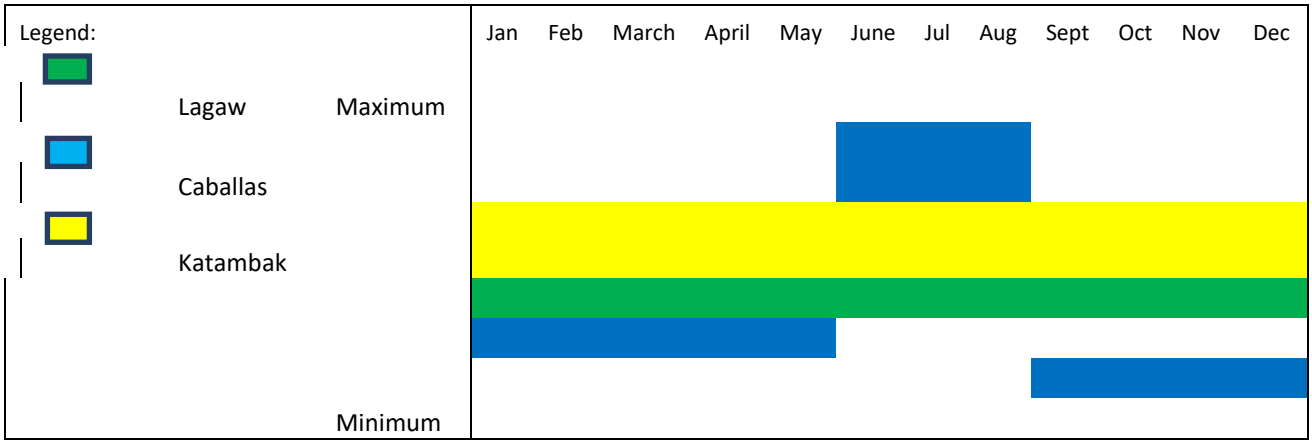
In as much of the direct and indirect benefit to human, the coastal habitat became under severe stress from the combined impact of human overexploitation, physical disturbance, pollution, sedimentation and general neglect. Thus, the graph shows that the mangrove areas, seagrass beds and corals of RT Lim declined greatly**.**

Fig. 8 RAINFALL AND WIND CALENDAR



The Municipality of RT Lim has two (2) distinct seasons or weather pattern within the year, namely the northeast monsoon (*amihan*), southeast monsoon (*habagat*) which influenced both productivity and fishing success of fishers. FGD participants who are mostly fishers declared that the period of amihan starts in December and ends in March while habagat starts in June to August. Rainy season starts in May until November.

Fig. 9 SPECIES CALENDAR DIAGRAM



The FGD participants of the six coastal barangays identified seventeen kinds/species of fish caught inside and some outside of their municipal waters. Likewise, they identified top three (3) species caught by fishers as *lagaw, caballas and katambak.*

PICTORIALS

For. Neneth T. Ordoño reading the content of the Memorandum of Agreement

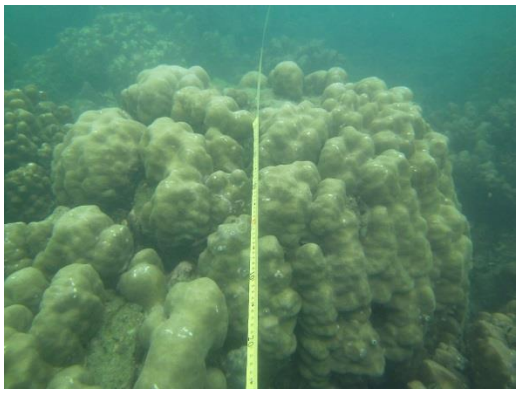
The witnesses signing the Memorandum of Agreement

The participants listening to the lectures

Focus group discussion for social economic assessment

The Mangrove assessment group

The seagrass assessment group

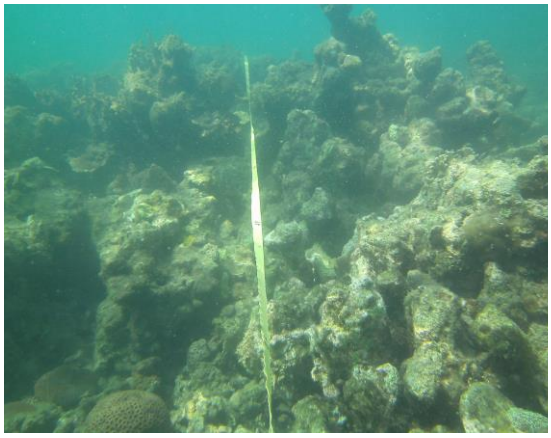


Underwater photograph of coral reef area

The assessment team

Hon. Mayor Inocencio Cubio giving his commitments

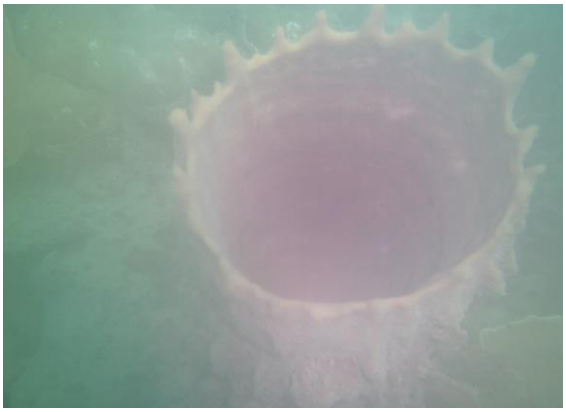
The distribution of certificate of participation



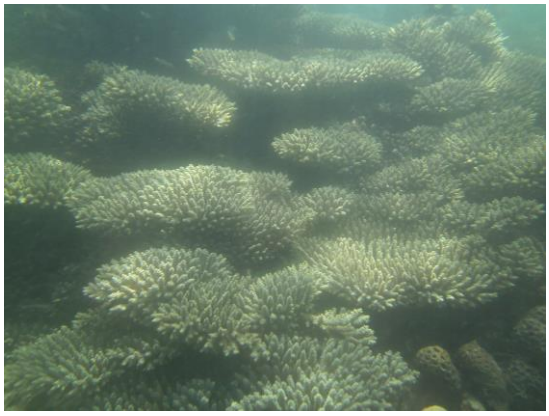
Transect Line at Brgy. Gango,
RT Lim. ZSP

Plastic debris mixed with *Fungia*
specie at Brgy. Gango.

Digitate branching acropora found at
Brgy. Silingan



Barrel sponge found at Brgy. Silingan



Branching *acropora* found at Brgy.
Pres. Roxas

Foliose sp. found at Brgy. Pres. Rojas

Assessment Team on the way to Brgy. Magsaysay, RT Lim, ZSP

Foliose sp. found at Brgy. Magsaysay, RT Lim, ZSP

Branching *acropora* found at Brgy. Magsaysay, RT Lim, ZSP

Transect established at Brgy. Magsaysay, RT Lim, ZSP

Assessment Team validates the output for presentation

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