Participatory Coastal Resource Assessment [PCRA] Results

Municipality of Siay
Province of Zamboanga Sibugay

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Chapter 1

Introduction

Rationale and Background

The Municipality of Siay in the Province of Zamboanga Sibugay, like other towns and cities of the Philippines had been endowed with rich natural resources. From its upland areas, Siay owns an approximately small area of forest, significant area of agriculture lands and within it are abundance mineral resources with iron, nickel, and manganese as most dominant.

In its urban and lowland areas are its people, settlements, infrastructure and other economic development activities that support the well being and living condition of the its populace. Siay , is occupied by 32, 907 according to the latest NSO Survey [2007] distributed in its 29 barangays. Majority of the populace are dependent to the agriculture sector (upland agriculture and fisheries) as source of livelihood.

Siay, as a coastal town, also owns a productive coastal area, one of the largest in the northern cluster of municipalities of the Province of Zamboanga Sibugay. Its coastal zone which is also the center of settlements for its fishers and other stakeholders caters a wide array of activities, uses and issues that made it a very significant venue for development including challenges accompanying it.

The municipality owns a significant area of municipal waters. In the coastal zone are important coastal ecosystems that support the productivity of the municipality's fisheries and other aquatic resources. These ecosystems include mangrove, seagrass, coral reef, estuaries and beaches. The marine waters of Siay was once teemed with fish stocks not until indiscriminate hunting of these wild creature was not regulated in the early 70's that contributed to lesser fish stocks in the fisheries nowadays and habitat degradation is evident due to illegal and other destructive fishing activities, siltation in its estuaries that reached even its once pristine seagrass and coral reefs.

This document presents the concerted efforts of the Barangay Officials, fishers and other coastal residents in trying to assess and understand the dynamics of the coastal zone and the resources within that Siay owned. The members of the Technical Working Group of Siay, which is a multi-sectoral group had also provided the necessary technical guidance during the assessment.

The support of various national government agencies such as the Department of Environment and Natural Resources in Region 9, through its Coastal and Marine Management Division of the PAWCZMS ; its Community Environment and Natural Resources Office in Ipil; the Bureau of Fisheries and Aquatic Resources – Provincial Fisheries Office of Zambanga Sibugay ; the Philippine National Police - Siay Municipal Police Station, the Local DILG in Siay; The Provincial Government of Zamboanga Sibugay through its Provincial Environment and Natural Resources Office have also provided enormous support during the conduct of the PCRA.

The Municipal Fisheries and Aquatic Resources Office (MFARO) of the Municipality had been the essential coordinating office for the completion of the PCRA Activity which was slated on March 30 – April 1. Other departments of the LGU are also providing support, especially the able leadership of Hon. Julius R. Acosta, the Municipal Mayor.

Non-Government Organization such as the AADC, the Fisheries and Aquatic Resources Management Council and the different Barangay Councils, especially the coastal barangays of Laih, Bato, Monching and Log pond had also provided overall support in the successful conduct of the PCRA.

Scope and Limitation

This report provides the results of the Participatory Coastal Resource Assessment Appraisal (PCRA) in the municipality of Siay, Zamboanga Sibugay. It was done to determine the current state of the coastal resources of the municipality. The methodology include a participatory approach in taking the data on the field, and analyzed through given process as described in the PCRA Handbook of the Coastal Resource Management Project. All of the data were gathered and analyzed with reference to the PCRA.

Objectives of the Participatory Resources Appraisal

Participatory Coastal Resource Assessment is an essential element of successful Integrated Coastal Management [ICMM] with the active participation by the entire community including day-to-day resource users (fisherfolk), local government, national government, NGOs, academe, private sector and other stakeholders. PCRA is an effective process of gathering information from local residents that involves the community in data collection.

The conduct of the assessment aims to achieve the following:

- To determine the state of the coastal ecosystem of Siay that would serve as reference in making important decisions in terms of developing and managing the coastal resources;
- To let the communities appreciate the values of the coastal resources by making them participate in hands-on educational experience about the coastal environment they will help manage.

- To gather important field observations and anecdotes on the state of the resources that would enhance the strategies in managing these resources.

- To gather important firsthand information from the field relative to the status of the coastal resources of the Municipality of Siay that would form part of their Municipal Coastal Environmental Profile (MCEP).

- To analyze existing strengths and opportunities as well as issues and concerns relative to the coastal resources of Siay that would influence the decision in terms of planning interventions relative to the Integrated Coastal Management Program of the Municipality.

Chapter 2

Methodology

Introduction

The Participatory Coastal Resource Assessment (PCRA) conducted in the Municipality of Siay involved various methodologies in assessing different coastal ecosystem using the methodologies described in the PCRA Handbook. The data were analyzed also using the standard data analysis process described in the book although added information on the actual observations of the research team was also noted.

However, other methods such as in taking samples on water quality, soft bottom communities and current pattern is not described in the PCRA Handbook. Methods used in taking samples of these parameters were done using the standard processes as employed by technical persons in the Philippines. All of these methods are described in this Chapter, including other significant modifications as to the sampling procedures.

a. Mangrove Assessment

The mangrove community within the municipality was assessed through standard methods specifically the methodology described in the PCRA Training Guide established by the Department of Environment and Natural Resources (DENR) through its Coastal Resources Management Project (CRMP).

A 100-m transect had been established with four quadrats had been fabricated for the purpose: one 10m x 10 m quadrats, and three 1m x 1m quadrat which were used to count the number trees in each of the regeneration plots. The total area of investigation for mangrove assessment was 10%. Observations on the number of trees, average

Healthy Mangroves in Siay, Zamboanga Sibugay [March 30, 2011]

height, crown cover and species including number of regeneration plots were undertaken in the survey.

Transects were established perpendicular to the shoreline and started where the mangroves habitat starts and ends where the mangrove ends. Analysis of the assessment results was done using the methods as adopted and provided by the PCRA Manual. In the analysis it is significant to determine the percent crown cover, regeneration per square meters and average height. The aforementioned parameters are measured through the following standard equations:

$$\textbf{Percent Crown Cover} = \frac{\text{Total Crown Cover of all trees}}{\text{Total Area sampled}}$$

$$\textbf{Regeneration per m}^2 = \frac{\text{Total regeneration count}}{\text{Total No. of regeneration plots}}$$

$$\textbf{Average Height} = \frac{\text{Total Height of all Trees Recorded}}{\text{Total number of all trees recorded}}$$

The condition of the mangrove habitat in the fish sanctuary is classified into four categories: excellent, good, fair and poor. The table below shows the criteria of the mangrove area with their corresponding conditions:

Table 1. Criteria in determining condition of the mangrove habitat.

Condition	Criteria
Excellent	76% and above in % crown cover 1 regeneration per m^2 Above 5 m in average tree height Undisturbed to negligible disturbance
Good	51-75% crown cover <1 – 0.76 regeneration per m^2 <3 m – 2m in average tree height Slight disturbance and few cuttings

Fair	26 - 50% crown cover 0.50 - .75 regeneration per m^2 <2m in average tree height Moderate disturbance and noticeable cuttings
Poor	0-25% crown cover <0.50 regeneration per m^2 <2m in average tree height Heavy disturbance/cuttings/pollution, rampant, conversion to other uses, nearly destroyed

b. Seagrass Assessment

The seagrass community of the Siay had been assessed through standard methods as outlined in the PCRA Handbook also.

During the assessment a quadrat of size 1 m x 1 m and a transect line of 100 meters were used. The transects and quadrats are laid where the seagrass habitat begins, and ends where the seagrass habitat ends. Intervals between transects was 100 meters and for each of the quadrats was 1 meter.

Seagrass assessment was done during low tide, where part of the seagrass community was exposed; however, for seagrasses beds that were totally submerged in water during the assessment, mask and snorkels were used as to aid in determining the species, the cover within the specific quadrats laid.

Species and its individual cover within its of the quadrat were recorded. Other observations during the survey such as existing threats, water quality, organisms found, extent of seagrass damage and probable causes were carefully noted.

Condition of the seagrass in the MPA was analyzed through the following standard criteria matrix.

Table 2. Seagrass Cover and Condition Index

Seagrass 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. Raw Data for Seagrass is attached as Annex E of this Report.

Table 3. Criteria for evaluating condition of the seagrass habitat.

Status/Classification	**Criteria for Evaluation**	**Management Priority**
Pristine seagrass beds	High or low species diversity bordering land masses or islands for removed human habitations, disturbed only be the normal intensity of natural elements; often from 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 habitations; 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 seagrass	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, land fill and heavily impacted by sedimentation and physical damage	Low priority for management unless rehabilitation is still possible in the area

Emergent seagrass beds	Low species diversity, largely controlled by extreme physic-chemico conditions such as low levels of salinity or variations thereof within the natural environment	Medium priority for management and conservation depending on controlling conditions

c. Reef Survey. Siay has a very small coral reef area near the boundaries of Payao. The PCRA team tried to reach and did ocular inspection in the site, but unfortunately, the water was too murky and the visibility was very poor. Hence, no coral data is presented in this result.

d. **Socio-Economic Survey.** For the Socio-Economic Surveys, four (4) coastal barangays where involved in the activity. These are the barangays of Monching, Laih, Bato and Logpond. The Team adopted the Socio-Demographic Survey Format as outlined in the PCRA. Results of the Surveys are attached as Annex A – D of this report.

Chapter 3

Results and Discussion

Introduction

This chapter presents the result of the Participatory Coastal Resources Assessment [PCRA] conducted in the municipality of Siay was undertaken based in the methods described in Chapter 2 of this report. Conditions of the habitats and other results are presented by coastal barangays covered by the PCRA.

a. Mangrove Assessment Results

Introduction

Mangroves are coastal trees or shrubs that are adapted to estuarine or even on saline environment. The term mangroves refer to individual plants, whereas mangal refer 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), *Bruquiera* (Patotan), *Avicennia* (Piapi) and *Nypa* (Nipa).

Mangroves are one of the most diverse communities in the coastal area, harboring small mammals, birds, reptiles, amphibians and invertebrates. Some organisms in the mangroves are harvested as food; oyster and other bivalves, crabs, shrimps and fishes. Mangrove serves as nursery and feeding ground of many fishes, crustacean, and mollusk that are vital to the replenishment of stocks in the coastal area. They are also good sources of nipa shingles for housing materials, firewood, and charcoal and timber products.

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

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

Assessment Results

A total of thirteen (13) mangroves species and associates belonging to 8 families were identified and recorded in the mangrove forest of Siay, Zamboanga Sibugay. The most diverse family are *Rhizophoraceae* and *Aviceniaceae* consisting of 3 species respectively followed by *Sonneratiaceae* with two (2) species.

As per actual survey of mangrove stands in the five (5) coastal barangays of Siay, *Sonneratia alba* (Pagatpat) was the most dominant species as this can be found in all the coastal barangays of the municipality.

In the case of seeds/seedlings and saplings availability, species of *Pagatpat, Bakauan Lalaki, Bakauan Babae, Piapi Bungalon Puti Langarai* and *Nipa* are found in all the coastal barangays of Siay, Zamboanga Sibugay.

Table. 4. List of Mangrove Species and Associates Found in the Different Coastal Barangays of Siay, Zamboanga Sibugay.

Name of Coastal Barangays	***Common Name***	***Scientific Name***	**Family Name**
1. Simarol			
	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Piapi	*Avicennia lanata*	Aviceniaceae
	Bakauan Lalaki	*Rhizophora Apiculata*	Rhizophoraceae
	Nipa	*Nypa fruticans*	Palmae
	Bungalon Puti	*Avicenia Alba*	Aviceniaceae
2. Kabog Island			
	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bakauan Lalaki	*Avicennia lanata*	Aviceniaceae
	Nipa	*Nypa fruticans*	Palmae
	Lagolo	*Acrostichum aureum*	Pteridaceae
	Tigbau	*Acanthus ebracteatus*	Acanthaceae
	Bungalon Puti	*Avicenia Alba*	Aviceniaceae
3. Laih			
	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bungalon Puti	*Avicenia Alba*	Aviceniaceae
	Nipa	*Nypa fruticans*	Palmae
4. Bato	Pagatpat	*Sonneratia alba*	Sonneratiaceae
	Bungalon	*Avicennia marina*	Aviceniaceae
	Bungalon Puti	*Avicenia Alba*	Aviceniaceae

	Bakauan Lalaki	*Rhizophora Apiculata*	Rhizophoraceae
	Bakauan babae	*Rhizophora mucronata*	Rhizophoraceae
	Nipa	*Nypa fruticans*	Palmae
5. Bakid	PagatpatPedada	*Sonneratia alba*	Sonneratiaceae
	Bungalon	*Sonneratia caseolaris*	Sonneratiaceae
	Bungalon Puti	*Avicennia marina*	Aviceniaceae
	Piapi	*Avicenia Alba*	Aviceniaceae
	Bakauan Lalaki	*Avicennia lanata*	Aviceniaceae
	Bakauan babae	*Rhizophora Apiculata*	Rhizophoraceae
	Saging-Saging	*Rhizophora mucronata*	Rhizophoraceae
	Langarai	*Aegiceras corniculatum*	Myrsinaceae
	Lagolo	*Bruguiera parviflora*	Rhizophoraceae
	Tigbau	*Acrostichum aureum*	Pteridaceae
	Tabigi	*Acanthus ebracteatus*	Acanthaceae
	Nipa	*Xylocarpus granatum*	Meliaceae
		Nypa fruticans	Palmae

Mangrove Crown Cover, Average Height of Trees and Regeneration

Relative to what has been discussed in Chapter 2 of this report; the mangroves in Siay had been assessed by community members representing the barangays of the municipality with the assistance from the personnel from the DENR and the Municipal Technical Working Group of Siay.

Figure 1, presents the Mangrove Crown Cover in the coastal barangays where the assessment was conducted. It can be gleaned from the figure that mangroves in Bakid has the highest average crown cover, this means that the canopies in the area of mangroves trees are healthy and this provide further interpretation that the mangroves in Sitio Bakid are healthy.

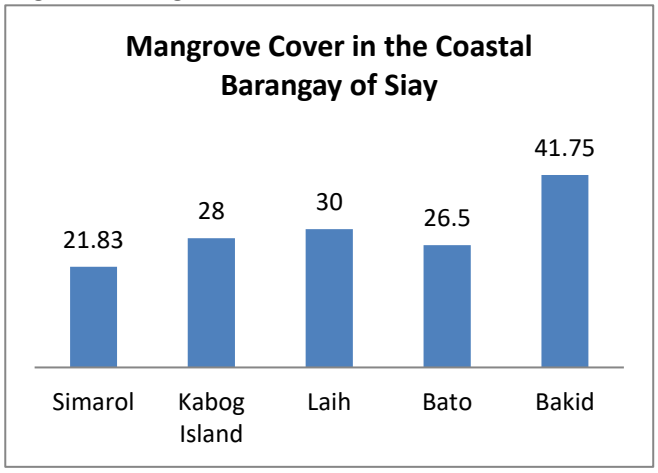


Figure 1. Average Crown Cover of Mangroves in the Coastal Barangays of Siay (PCRA 2011)

The rest of the coastal barangays surveyed have almost uniform average crown cover although lowest was recorded in Simarol site.

Relative to the height of mangroves trees observed, Figure 2 gives us a picture on how tall are the mangroves in Bakid that correlates to the high average in its crown cover.

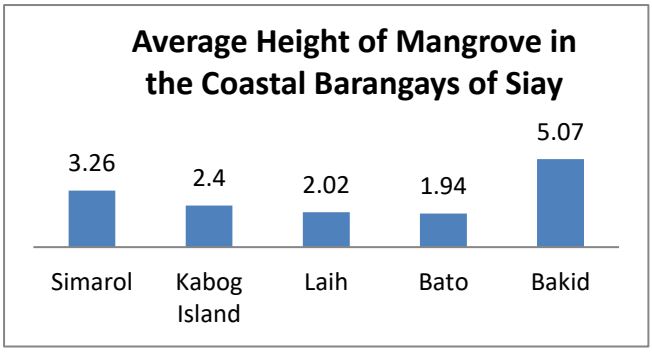


Figure 2. Average Height of Mangroves in the Coastal Barangays of Siay (PCRA 2011)

Figure 3, present the average regeneration for each site surveyed for the mangrove ecosystem in the municipality of Siay. It can be gleaned from Figure 3, that the number of regeneration was highest in the Bakid Site. This is attibuted to the numbers of mature trees in the site that give way to the natural production of seedlings and naturally growing mangrove seeds in the area. Lowest regeneration percentage was observed in Simarol.

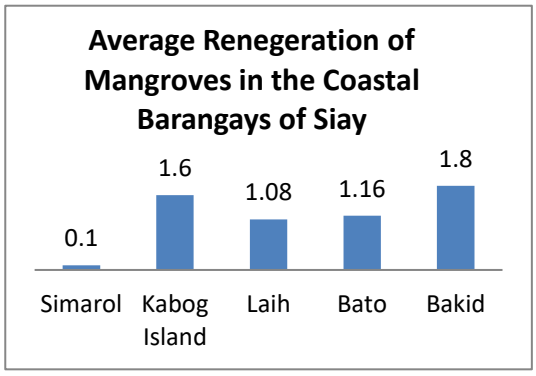


Figure 3. Average Height of Mangroves in the Coastal Barangays of Siay (PCRA 2011)

Table 5, presents the consolidated results for the mangrove crown cover, average height of trees, and no, of regenerations. The table also showed the overall condition in the respective site where the assessment was conducted.

It can be gleaned from the table that the condition of the mangrove habitat in Siay is at Fair condition mostly, although Poor mangrove condition was observed in Simarol. This is attributed to the fact that the area has smaller trees and less regeneration counts.

The overall condition of the mangrove ecosystem in Siay as determined through the Participatory Coastal Resources Assessment is at **Fair Condition**. This could be further interpreted that there are still needs to be done for the mangrove development and growth in the area. The amount of siltation downloaded to the marine environment from the uplands of the municipality had prompted the degradation of newly grown mangrove in the area. Although positive effects of this are that the amount of silts that reaches the seagrasses in the area was reduced because of the presences of the mangrove trees.

Table 5 . Consolidated Results of the Mangrove Assessment in Siay, Zamboanga del Sur

Barangays	Percent Crown Cover	Average Height	Regeneration per sq. m.	Condition
1. Simarol	21.83	3.26	0.1	Poor
2. Kabog Island	28	2.40	1.60	Fair
3. Laih	30	2.02	1.08	Fair
4. Bato	36.5	1.94	1.16	Fair
5. Bakid	41.75	5.07	1.80	Fair
Ave. for Siay	**31.62**	**2.94**	**1.15**	Fair

Siltation is a major issue to be resolved in the municipality of Siay in their Integrated Coastal Management Plan

Associated Fauna

The following tables enumerated the associated fauna in the mangroves of Siay:

Table 6, presents the fish species observed, Table 7 on mollusks and Table 8 presents the species of crustaceans as identified by local fisherfolks and communities who actively participated during the PCRA.

Table 6. Fish Species observed in the mangrove areas of Siay, Zamboanga Sibugay (April 2011)

LOCAL NAME	ENGLISH NAME	FAMILY NAME
1. Tambasakan	Mudskippers	*Periopthalmus sp.*
2. Ibis	Goby	*Apogon sp.*
3. Iswil	Needle Fish	*Unidentified*
4. Bangus	Milkfish	*Chanus chanus*
5. Banak	Mullet	*Mugilidae*

Table 7. Mollusk observed associated to the Mangrove Forest of Siay [April 2011]

LOCAL NAME	ENGLISH NAME	FAMILY NAME
1. Tuway	Mud clam	*Geloina strata*
2. Bagongon	Unidentified	*Unidentified*
3. Bug-atan	Cockle	*Cardidae*
4. Imbao	Venus Shell	*Veneridae*
5. Sisi	Unidentified	*Unidentified*
6. Dalo-Dalo	Unidentified	*Unidentified*

Table 8. Species of crustaceans observed associated to the Mangrove Forest of Siay [April 2011]

LOCAL NAME	ENGLISH NAME	FAMILY NAME
1. Agukoy	Mud fiddler crab	*Uca pugmax*
2. Kalampay	Mangrove Crab	*Portunidae*
3. Umang	Hermit crab	Unidentified
4. Kasag	Blue Crab	*Potunidae*
5.Takla	Unidentified	*Unidentified*

Other Significant Observations

1. Although the municipality has still vast mangrove forest compared to other Local Government Units in the province of Zamboanga del Sur or Region 9, there are areas available for mangrove reforestation in all coastal barangays and this should be considered in drawing program for mangrove reforestation in the integrated coastal management plan.

2. Seedlings of piapi, pagatpat , bungalon puti , B. Lalaki, nipa and Langarai in all coastal barangays that can be used for reforestation purposes and for livelihood of fishers if agreement is made among the LGU and the communities regarding mangrove seedling collection.

Solid waste in the households affected the coastal ecosystems in Siay, an immediate concern to be address

3. Another concern to be address in the municipality is the management of its solid waste -mostly domestic waster from households living along the riverbanks and near fishpond dikes.

4. Muddy/Sandy mangrove substrate should be considered as to select the correst mangrove seedstocks to be used in mangrove reforestation projetcs in all coastal barangays

5. Presence of finfishes like tambasakan, bangus, ibis, banak and iswil in all coastal barangays which is not that healthy compared to an intact mangrove ecosystems.

6. There are still cases of mangrove cutting and mangrove conversion in the municipality, The LGU and the DENR should make necessary actions to control these activities if successful mangrove management is expected in the municipality.

c. Socio – Demographic Assessment Results

Part of knowing the socio-economic and demographic of the coastal communities, Socio – Demographic Interviews were also conducted in the four (4) coastal barangays of Siay: Monching, Laih, Bato and Logpond.

Fig. 9 Focus Group Discussion at Barangay Logpond during PCRA

Unfortunately, the Municipality of Siay doesn't have the maps showing the boundaries of their coastal barangays. Hence, we have prepared a general map of the municipality showing its coastal barangays and the indicative resources within. The preparation of the map is still on progress prior to conducting through GPS reading of the coastal barangays and the resources within.

The maps will be firmed up also during the preparation of the Integrated Coastal Management [ICM] Plan of the Municipality. Accompanying in this section of the report are the different trend diagrams, calendar diagrams of events, and the status of resources described historically by the community members who participated during the Focus Groups Discussions [FGDs] in the four [4] coastal barangays.

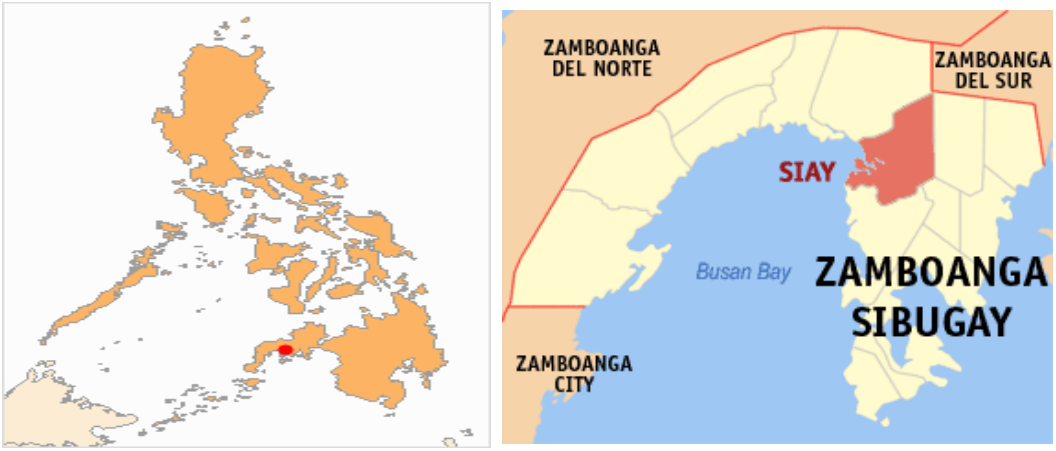


Figure 10, The Philippines showing the municipality of Siay, Zamboanga Sibugay

Figure 11. Raw PCRA Map of the Municipality of Siay [April 2011]

Trend Diagram for Fish Catch

Figures 12, 13, 14 and 15 presents the trend diagram for fish catch in the four Barangays of Siay subjected during the PCRA from March 30 – April 1, 2011.

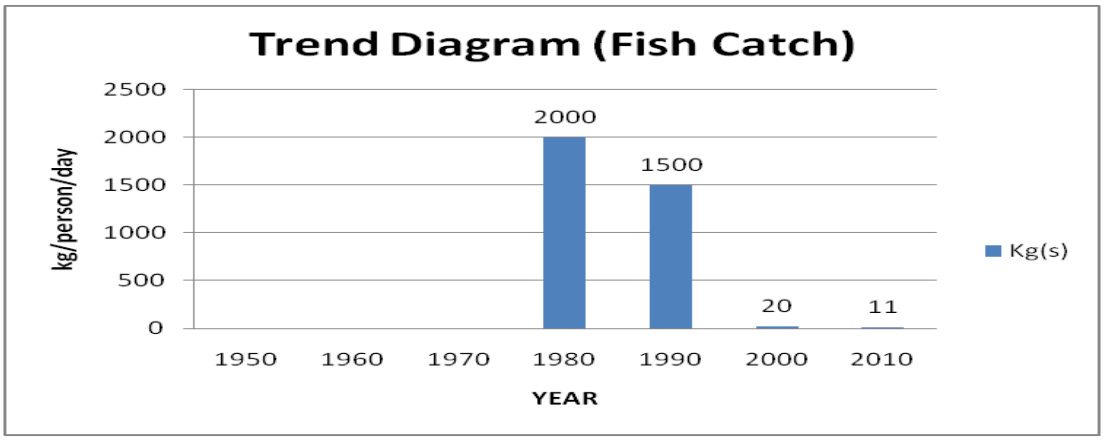


Figure 12. Trend Diagram for Fish Catch in Barangay Monching

The trend diagram presented above shows that there is a very sudden drop on the fish catch from as high as 2,000 kilos in 1980 down to 11 kgs/person/day in 2010. Based on the accounts by the community members who were present during the FGD causes of the dramatic decline are:

1. Siltation which was caused by mining and loss of forest cover in the municipality
2. Increasing population and number of fishers in the area
3. Use of dynamite in fishing
4. Piracy and extortion at sea

For Barangay Laih, the trend diagram for Fish Catch showed the same dramatic decrease like Barangay Monching. From an estimated catch of 100 kg/person/day in the 1950s it has reduced to 5kgs/person/day in 2010. The decrease in fish catch was attributed by the following as determined by the community and fishers participating the Focus Group Discussion.

1. Degradation and destruction of mangrove ecosystem
2. Use of dynamite in fishing
3. Encroachment of commercial fishers to the municipal waters
4. Upland deforestation and mining activities

5. Use of poisonous chemicals in farming activities that is flushed to rivers and to the marine waters

Figure 13. Trend Diagram for Fish Catch in Barangay Laih

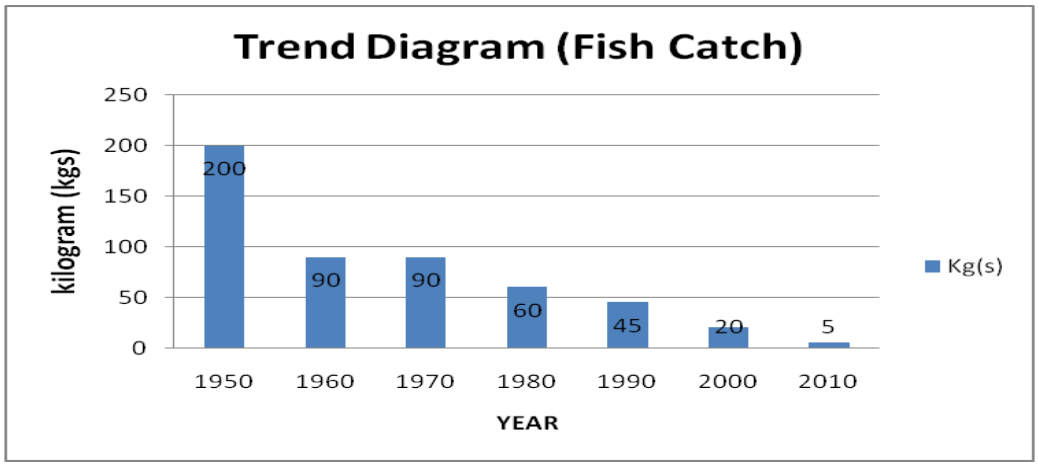
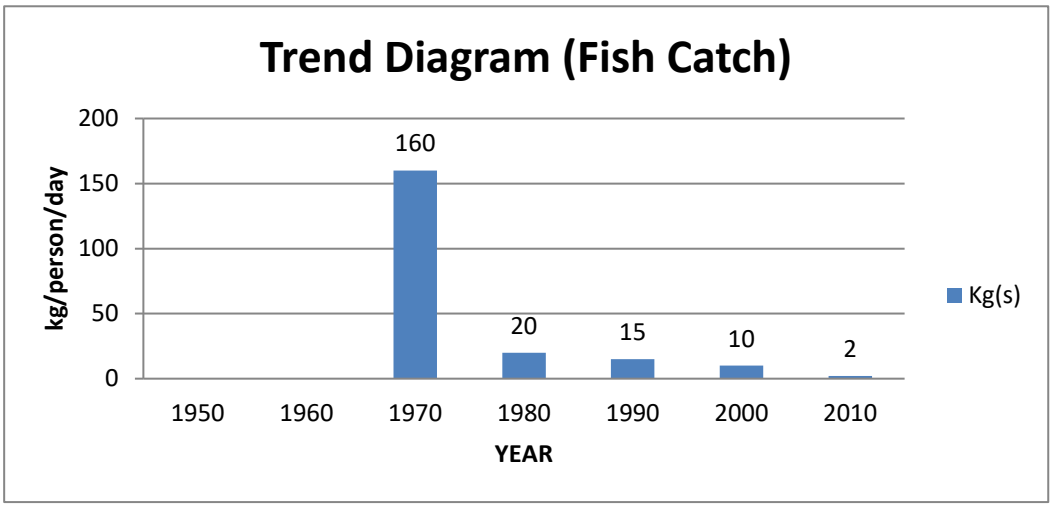


Figure 14, presents the fish catch trend diagram for Barangay Logpond. The diagram shows the same trend of decrease in the catch of fishers from the 1970's to 2010.

Figure 14. Trend Diagram for Fish Catch in Barangay Logpond

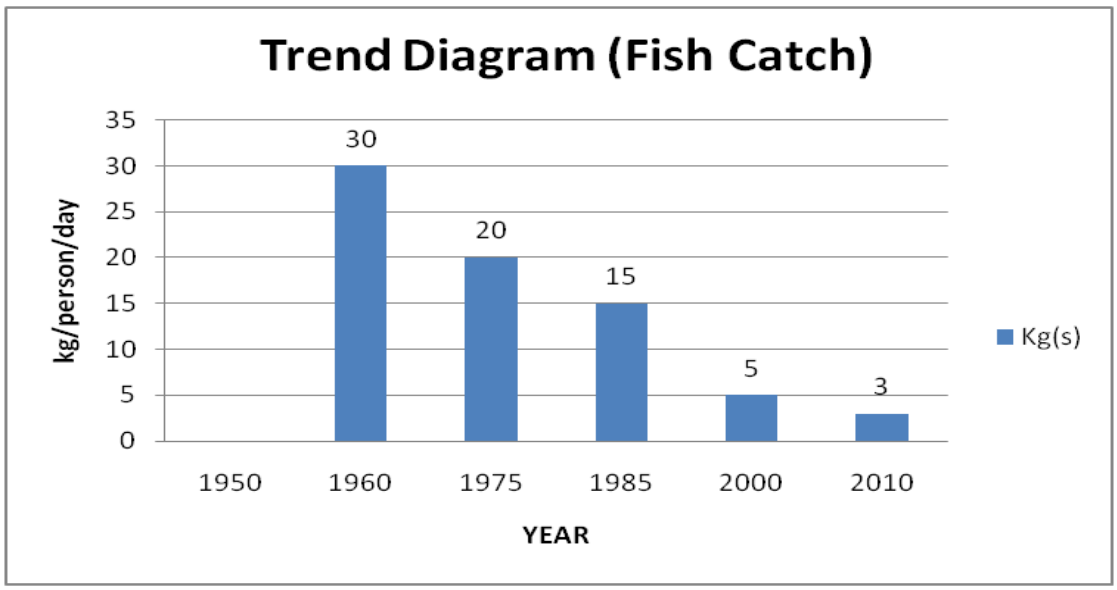


Like other coastal barangays of Siay, there is great decrease in the fish catch in Barangay Logpond. The diagram showed a 160kg/person in the 1970s' to two (2) kilograms per person per day in 2010. Causes of the severe decline include:

1. Degradation of the mangrove habitat and conversion of mangrove areas to fishponds
2. Chemical discharges form the fishponds especially harmful pesticides
3. The 1976 earthquake cause severe damage and alterations of the Sibugay River System

The Fish Catch Trend Diagram for Barangay Bato is presented in Figure 15.

Figure 15. Trend Diagram for Fish Catch in Barangay Bato



Barangay Bato has the least approximation in terms of the Fish Catch in the year 1960's but like other coastal barangays it shows a very intense decrease in the total fish catch per person per day. The diagram shows a 3kg/person/day of catch in 2010. With the current averages, we can say that the current fish catch of fishers in Siay is within the range of 4 – 5 kgs/person/day.

Trend Diagram for Coastal Habitats in Siay

The socio-demographic data information interview also generated local knowledge in terms of the habitat cover in the coastal barangays in Siay. The information gathered herein provide a very concrete although macro picture view on the different coastal habitats that are now gone in the municipality and is impossible to recover [i.e coral reef].

Figures 16, 17, 18 and 19 presents the different trend diagrams of habitats in the municipality's coastal barangays. It is worth noting that Siay was once blessed with abundant coastal habitats but the trend shows that they are now lost because of issues like siltation and illegal fishing activities in the site. These trend diagrams also showed that coastal habitat loss especially for seagrass and coral reefs are very hard to recover since rehab is very difficult compared to the mangrove habitat.

Figure 16. Trend Diagram for Coastal Habitats in Barangay Monching

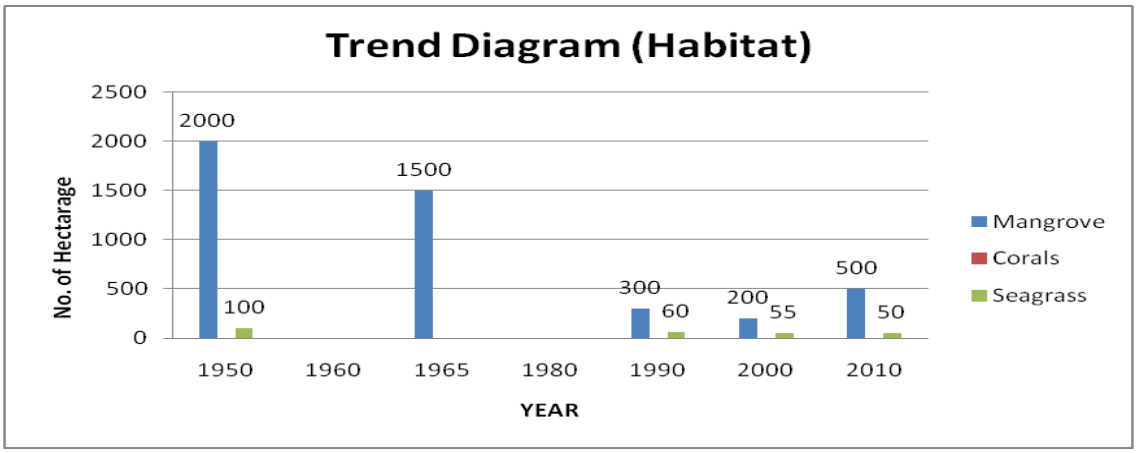


Figure 17. Trend Diagram for Coastal Habitats in Barangay Laih

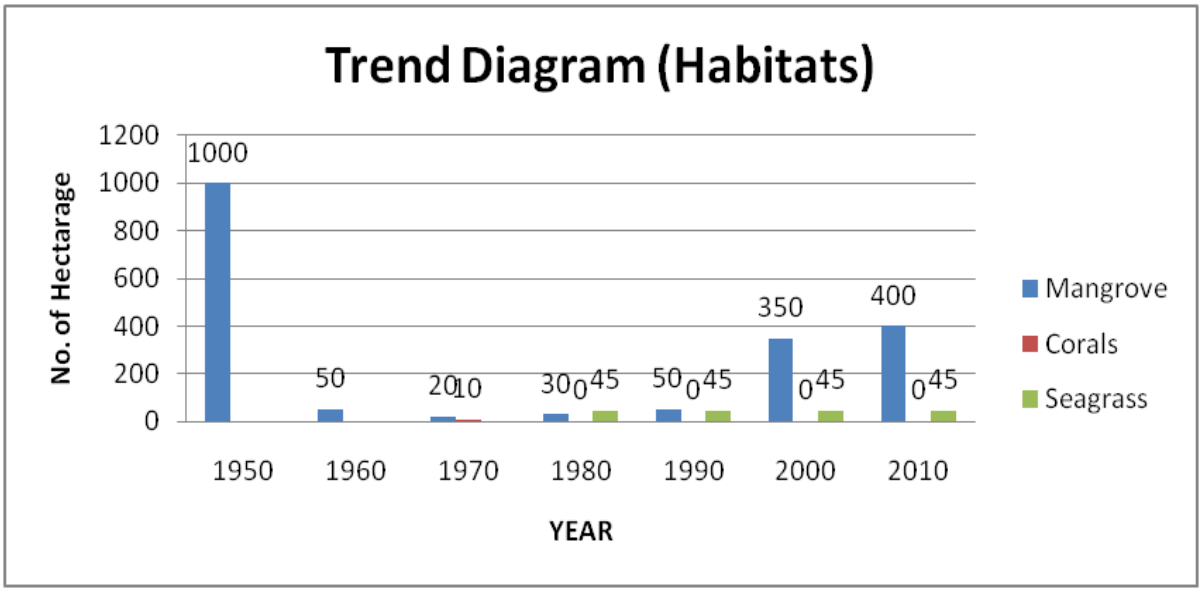


Figure 18. Trend Diagram for Coastal Habitats in Barangay Logpond

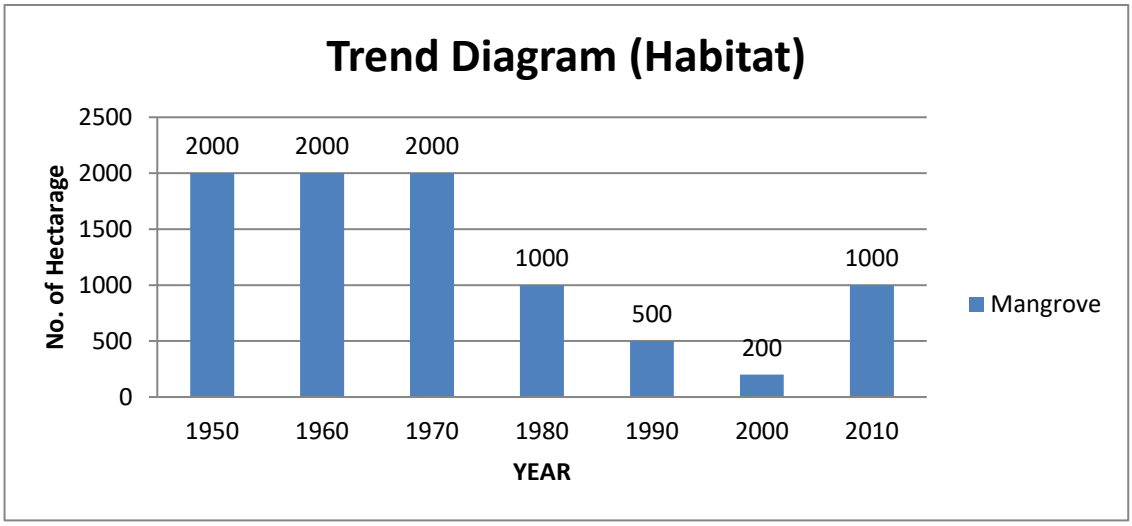
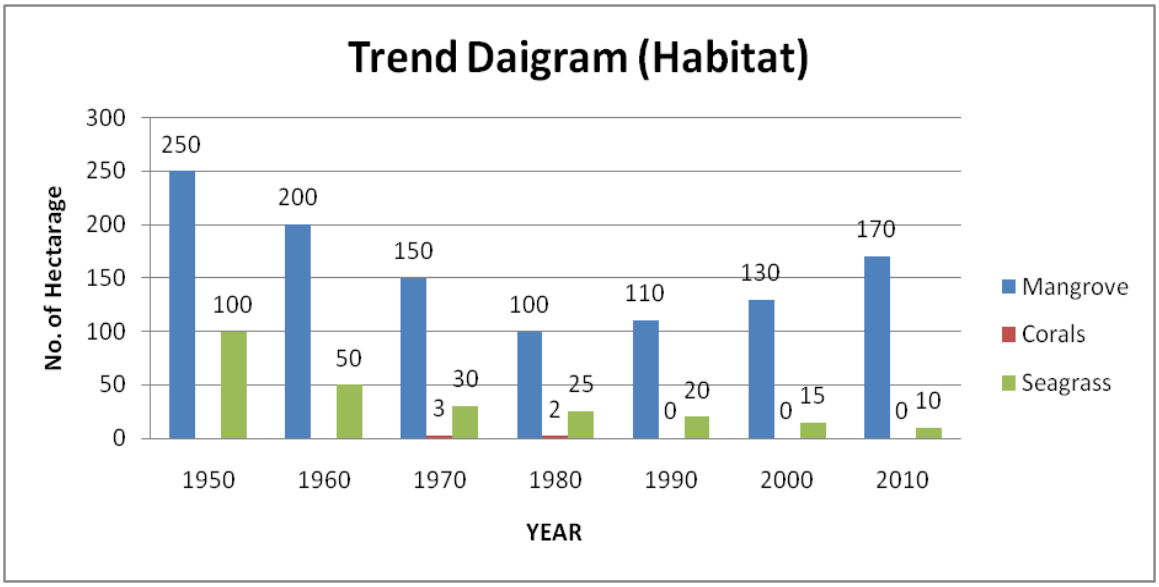


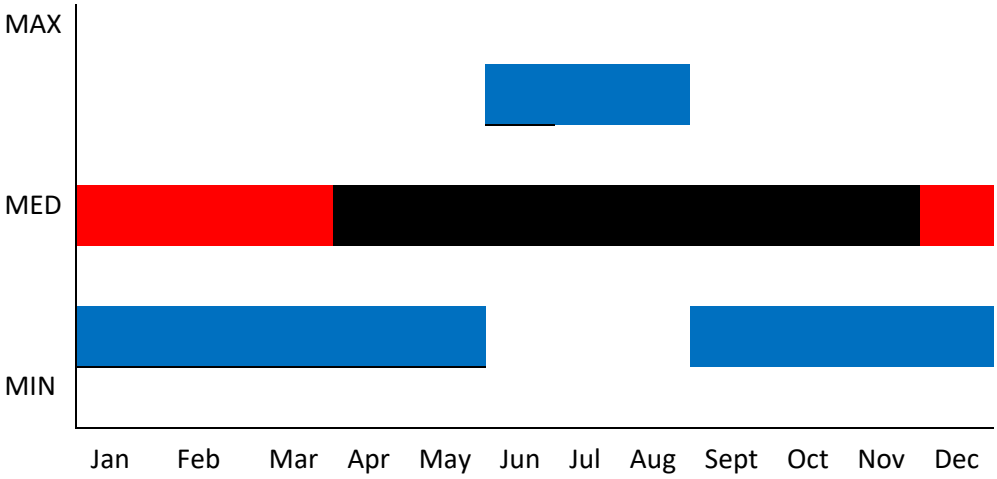
Figure 18. Trend Diagram for Coastal Habitats in Barangay Bato



Calendar Diagrams for Rainfall and Wind

Figure 19. Rainfall and Wind Calendar Diagram in Barangay Monching

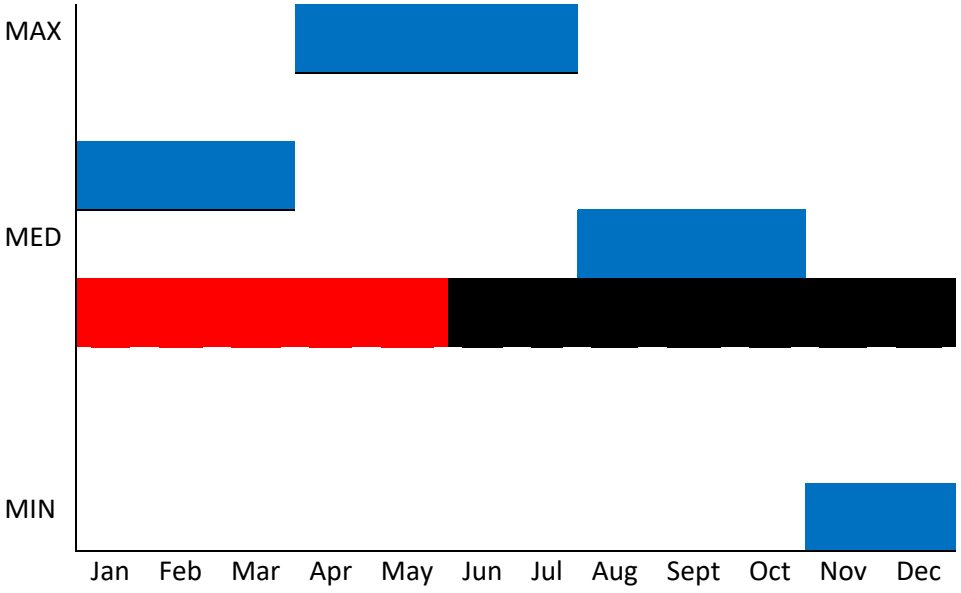
Calendar Diagram (Wind/Rainfall)



Blue:Rainfall
Red:Amihan
Black: Habagat

Figure 20. Rainfall and Wind Calendar Diagram in Barangay Laih

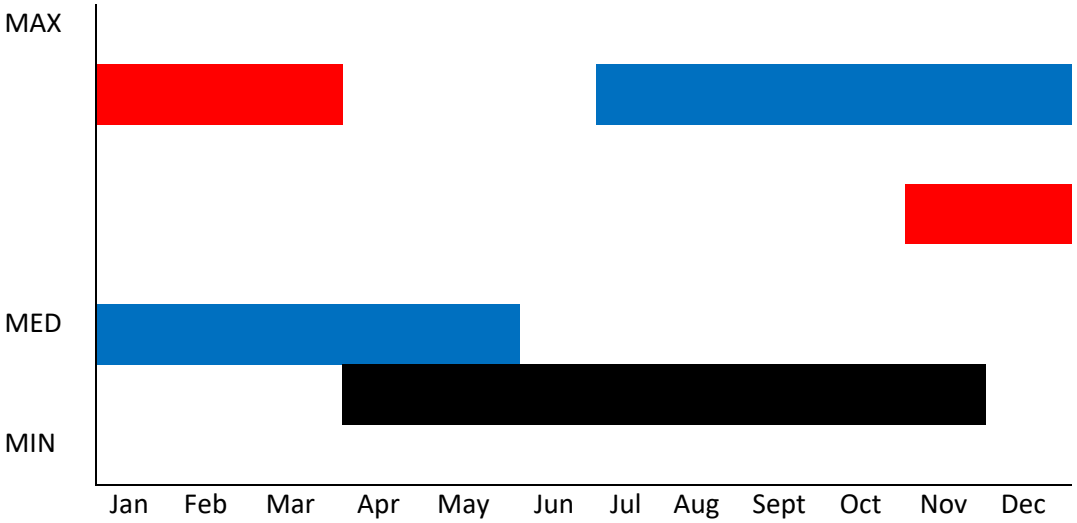
Calendar Diagram (Wind/Rainfall)



Blue:Rainfall
Red:Amihan
Black: Habagat

Figure 21. Rainfall and Wind Calendar Diagram in Barangay Logpond

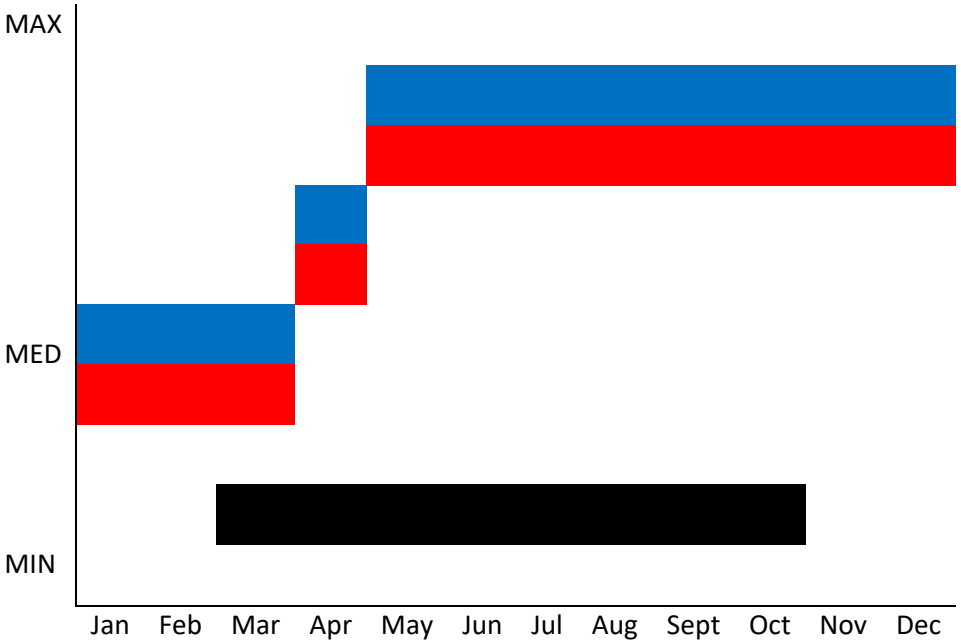
Calendar Diagram (Wind/Rainfall)



Blue: Rainfall
Red: Amihan
Black: Habagat

Figure 22. Rainfall and Wind Calendar Diagram in Barangay Bato

Calendar Diagram (Wind/Rainfall)



Blue: Rainfall
Red: Amihan
Black-Habagat

Calendar Diagrams for Fishing Gears

Figure 23. Calendar Diagram for Fishing Gears in Barangay Monching

Calendar Diagram (Fishing Gear)

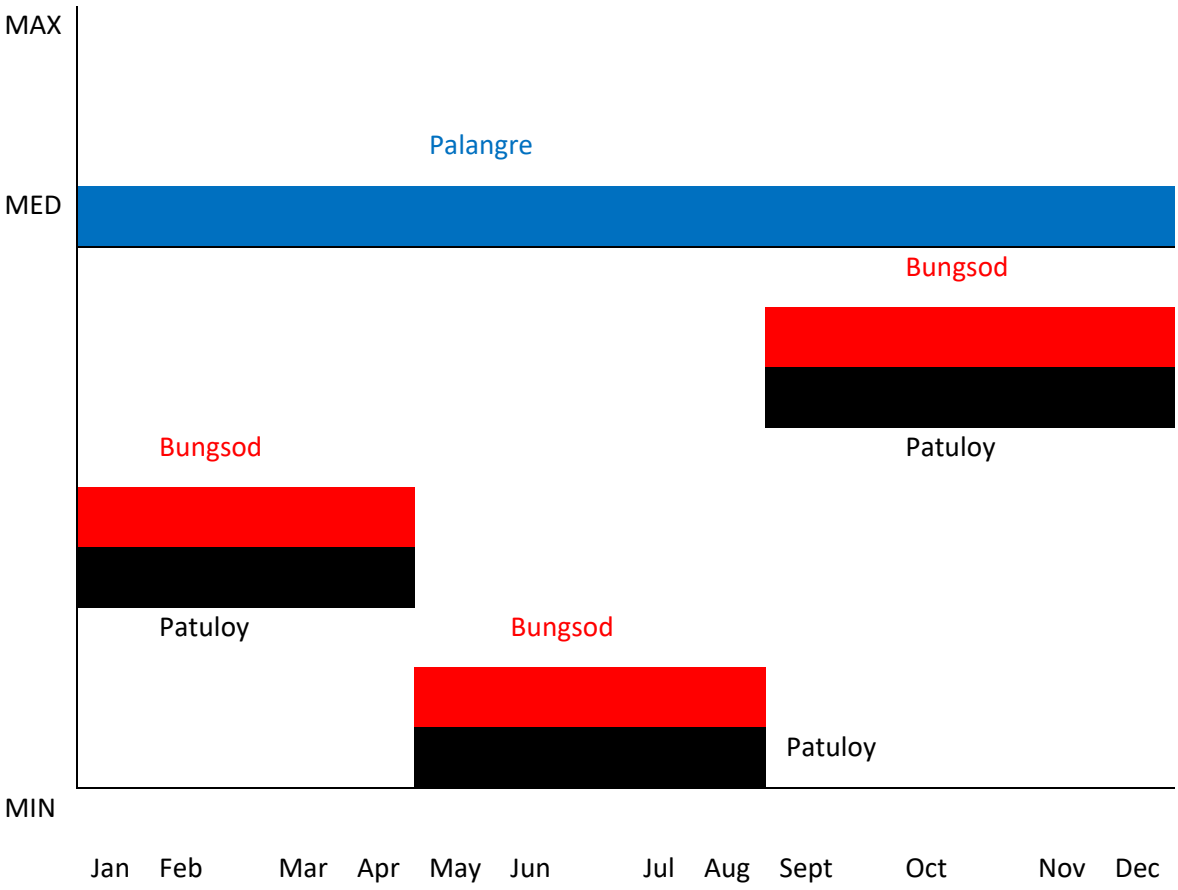


Figure 24. Calendar Diagram for Fishing Gears in Barangay Laih

Calendar Diagram (Fishing Gear)

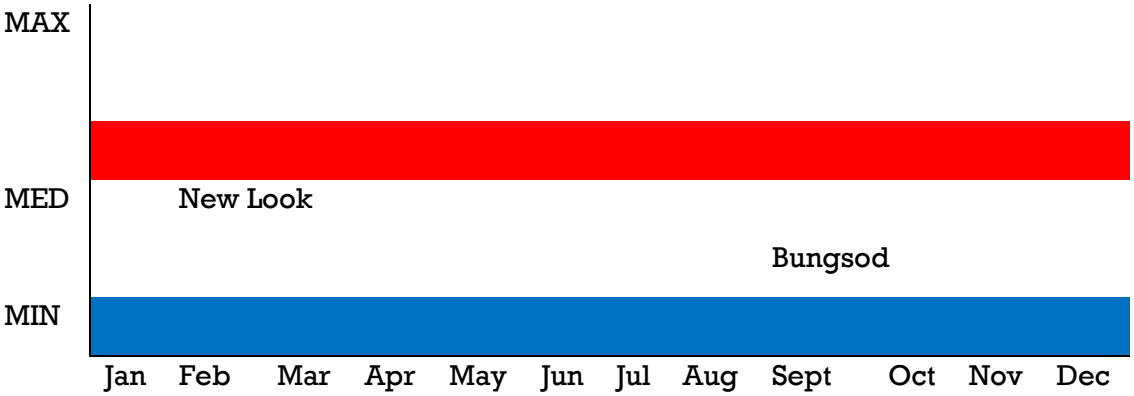


Figure 25. Calendar Diagram for Fishing Gears in Barangay Logpond

Calendar Diagram (Fishing Gear)

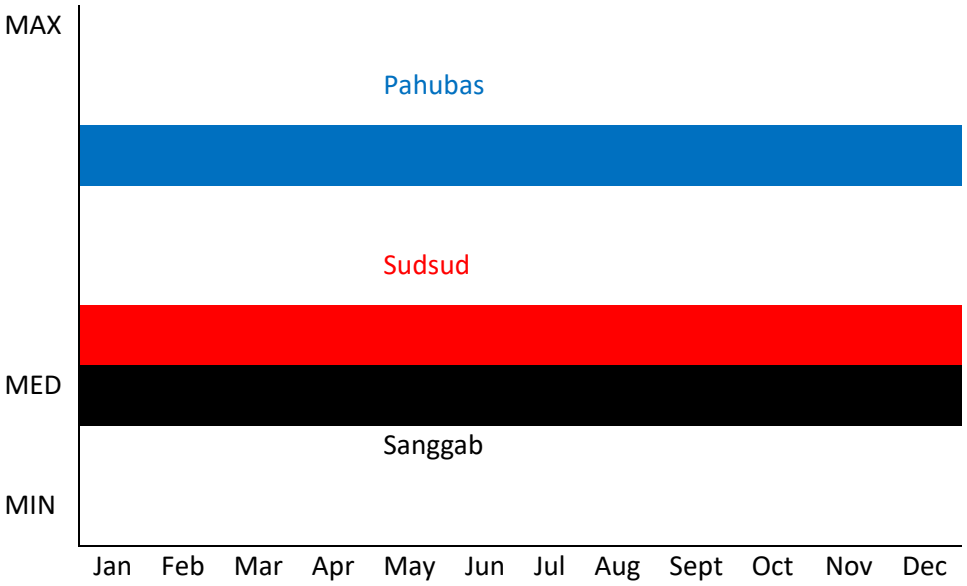
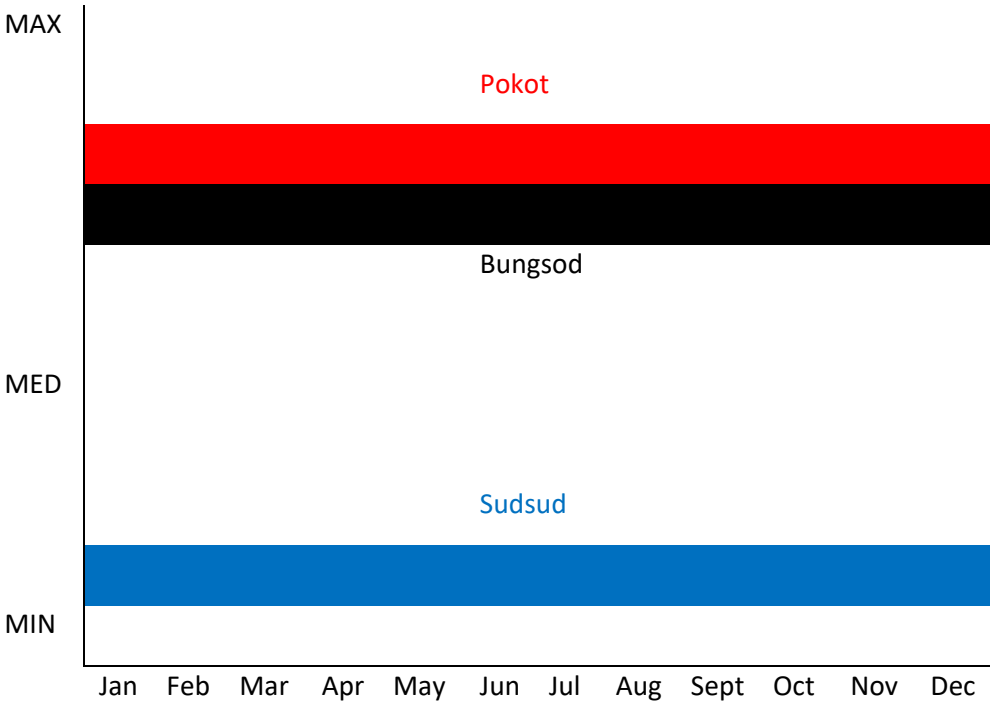


Figure 26. Calendar Diagram for Fishing Gears in Barangay Bato

Calendar Diagram (Fishing Gear)



Calendar Diagrams for Fish Species Caught

Figure 27. Calendar Diagram for Fish Species Caught in Barangay Monching

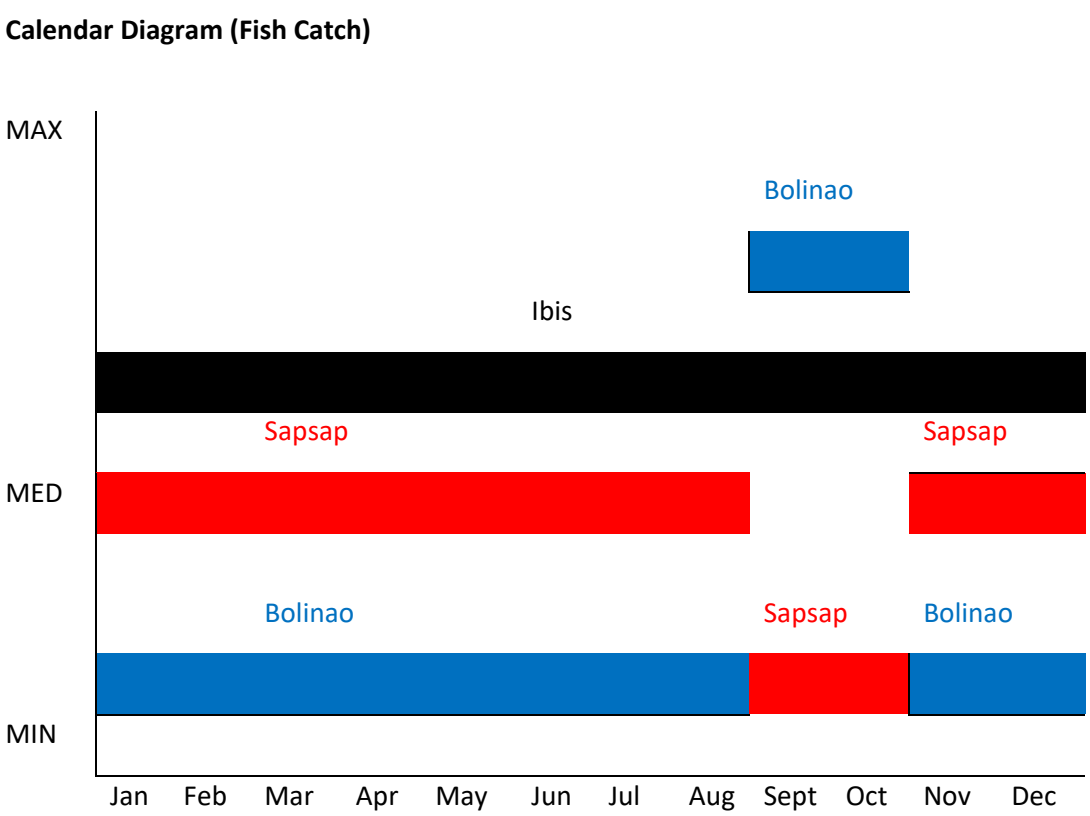


Figure 28. Calendar Diagram for Fish Species Caught in Barangay Laih

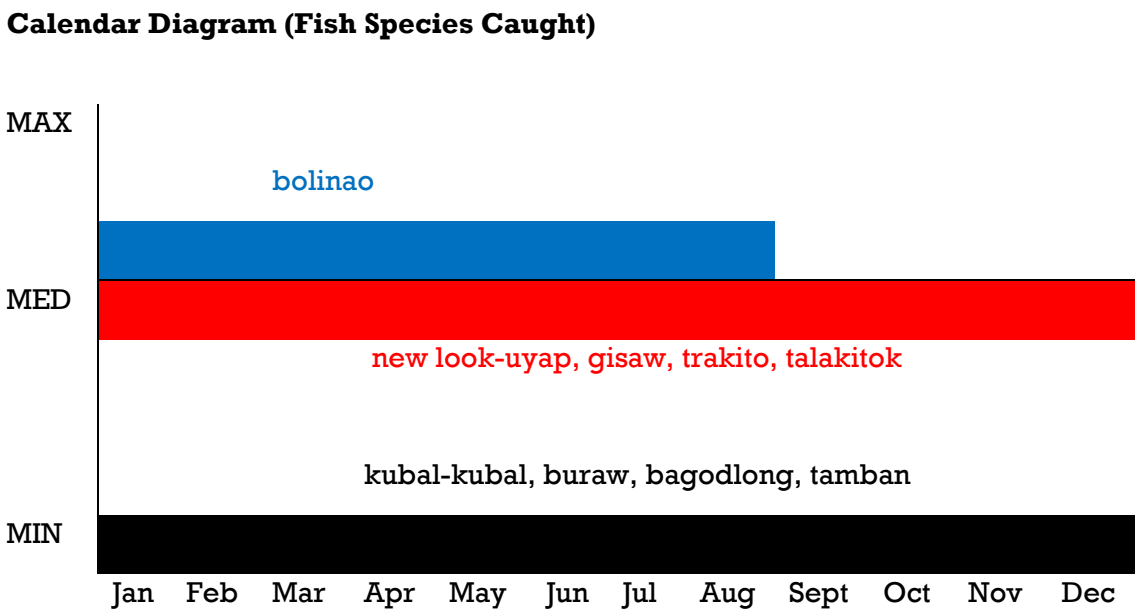


Figure 29. Calendar Diagram for Fish Species Caught in Barangay Logpond

Calendar Diagram (Fish Catch)

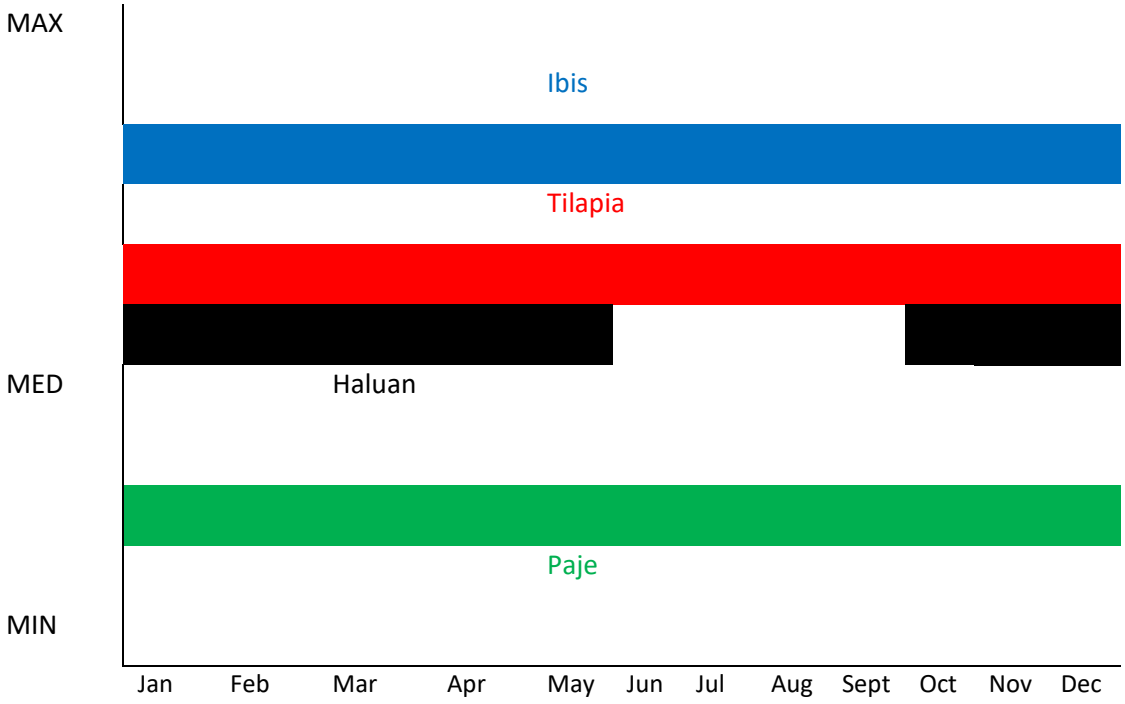
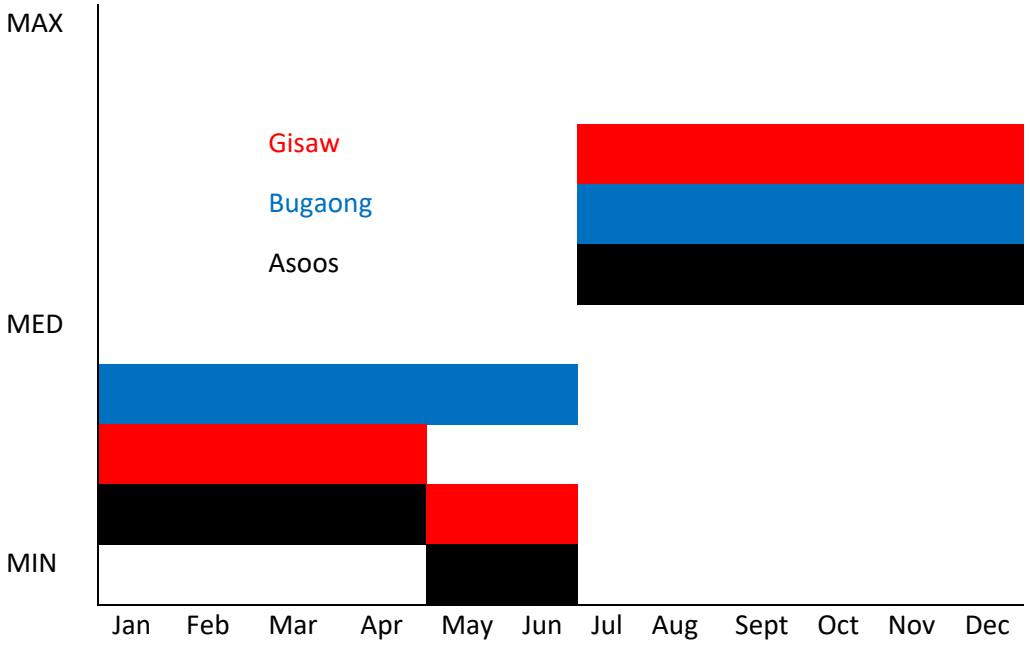


Figure 30. Calendar Diagram for Fish Species Caught in Barangay Bato

Calendar Diagram (Fish Catch)



Complete results of the Socio – Demographic Surveys are attached as:

Annex B – Barangay Monching
Annex C – Barangay Laih
Annex D – Barangay Logpond
Annex E – Barangay Bato

Pictures during the PCRA Focus Group Discussions:

Chapter 4

Recommendations

The following are the recommendations of the PCRA Team:

1. Given the intensity in the flow of siltation to the coastal area and other upland activities in the area, the Municipality of Siay should conduct regular monitoring of the condition of each coastal habitat. It is further recommended to follow the different stations established in this PRCA report as to monitor and evaluate changes along time ;
2. Alignment of plans especially for the management and development of coastal and fisheries resources of the Municipality and the Upland environmental program especially for projects and activities to be implemented in four coastal barangays assessed as to complement effort and maximize counter parting of resources both human and financial resources;
3. The LGU should exert effort in feedbacking these results and even upcoming assessment results to the communities of the four barangays assessed for their appreciation and participation relative to the development and management of the coastal and fisheries resources of the barangay;
4. Conduct of a study on the level of sedimentation/siltation as to further mitigate the potential influence of silts and other sediments in the coastal habitats should be conducted (i.e. seagrass, and mangroves).
5. Water quality monitoring should be done periodically in the strategic and most appropriate areas of the barangays.
6. A concrete zoning should be done by the municipality to arrange use in the municipal waters.
7. An integrated coastal management [ICM} plan should be prepared using this data to plan strategies and activities towards the development of Siay's coastal area, and a Municipal Coastal Environmental profile should be formulated also.

References

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Deguit, E.T., R.P. Smith, W.P. Jatulan and A.T. White. 2004. Participatory Coastal Resource Assessment Training Guide. Coastal Resource Management Project of the Department of Environment and Natural Resources, Cebu City Philippines. 134 p.

White, A.T. 2001. Philippine Coral Reefs: A Natural History Guide. Bookmark, Inc. and Sulu Fund for Marine Conservation Foundation, Inc. Manila, 276 pp.