

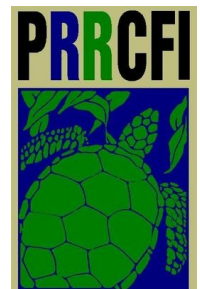
Socio-Economic Study:

Local Livelihoods, Use and Management of Coastal Resources and Efficiency of Marine Protected Area's in Panaon Island



Report by

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Table of Contents

Abstract	2
Acknowledgements	2
1. Introduction: Socio-economic research at Coral Cay	3
2. Methods	3
2.1 Field Methods	3
2.2 Selection of villages and surveying sampling method	4
3. Livelihoods: assets and strategies	5
3.1 Livelihood characteristics of Panaon Island	5
3.2 Household occupational structure in the studied barangays	6
3.3 Social participation / involvement	8
3.4 Distribution and access to knowledge	8
4. Patterns of marine resource use	9
4.1 Local marine resources use patterns	9
4.2 Illegal fishing	11
4.3 Law enforcement	12
5. Perceptions of coastal resources	13
5.1 Perception of local resources harvest and seafood availability	13
5.2 Monetary values from marine resources	15
5.3 Perception on non-market and non-use value of coastal resources	16
5.4 Level of understanding of environmental and social sustainability	18
5.5 Level of scientific knowledge	19
6. Assessment of current MPA's and potential for new MPA's in Panaon Island	19
6.1 Satisfaction with MPA	19
6.2 Efficiency of MPA management	20
6.3 Interest in new MPA	21
7. Governance	22
7.1 Involvement and empowerment in decision-making process	22
7.2 Awareness of regulations for coastal use	23
7.3 Management marine resources and MPA	23
8. Alternative livelihood development – tourism	25
8.1 Potential tourism	25
8.2 Top destinations and activities in San Francisco	26
9. Conclusions and recommendations	26
9.1 Livelihoods: assets and strategies	26
9.2 Patterns of marine resource use	27
9.3 Perceptions of coastal resources	28
9.4 Assessment of current MPA's and potential for new MPA's in Panaon Island	28
9.5 Governance	29
9.6 Alternative livelihoods	29
Appendix	31

Abstract: *This report is a study of the local livelihoods on Panaon Island, Southern Leyte, with a case study of three barangays; Napantao, Punta and Marayag. We looked at the local livelihoods, the current patterns of marine resource use, the local perspectives towards coastal resources and the current management and efficiency of coastal resources management, including Marine Protected Areas. The research discusses livelihood diversification opportunities, essential improvements in management and how and by whom the access to marine resources is regulated. We also assessed efficient ways to reach and educate local communities on sustainable coastal resource usage. We applied the sustainable livelihood approach, which places people and the households at the centre and looks at their capabilities, assets and livelihood strategies.*

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And of course, thanks to all the CCC local and overseas staff, volunteers and counterparts for their help, support and for making this an amazing experience.

1. Introduction: Socio-economic research at Coral Cay Conservation

One of CCC's primary objectives is to alleviate poverty through coastal conservation, community education, capacity building and livelihood diversification. The overall aim is to develop local capacity and ensure the long-term protection and sustainable use of marine resources. CCC has helped improve the management and the creation of numerous Marine Protected Areas (MPAs) in the Philippines. CCC acknowledges that for conservation to be successful, it is essential to have the support and participation of the local coastal communities.

In order to attain optimal community support and participation as well as avoid conflicts between coastal conservation management and traditional practices, we need to understand local livelihoods' practices, perspectives and the usage of their marine resources.

CCC includes socio-economic research into their conservation programmes in order to better understand local communities and in turn receive increased community support, by improving community participation and therefore MPA effectiveness and management.

2. Methodology

The approach used for this research derives from the Sustainable Livelihood Approach (SLA) and tends to maximise the positive as opposed to many other approaches that try to minimise the negative. The point of departure lies in the assets and resources of the local people but it also comprises social exclusion, capabilities, vulnerability and security.

The focus of the approach is to place people and the households at the centre, starting with their capabilities and assets. Livelihoods are often reduced to occupation and income, however a livelihood encompasses many more assets; natural, financial, physical, human, social and political assets. We can only understand people's behaviour and perspectives once we know how they use these assets and adapt them to external changes.

The socio-economic study focused on the following questions/assessment:

- ◆ What are the local livelihoods?
- ◆ What are the current patterns of marine resources use?
- ◆ What are the local perspectives towards coastal resources?
- ◆ What is the current management and effectiveness of coastal resources management, including Marine Protected Areas? Are any improvements necessary? Is there potential for new MPA's? This includes a case study of the Marine Protected Area in Napantao.
- ◆ By who and how is access to marine resources mediated?
- ◆ Assessment of livelihood diversification opportunities: Is there potential for sustainable eco-tourism? Where? How? And who is interested?

2.1 Field Methods

This study combines qualitative and quantitative methods, which together provide a richer base for analysis. Whereas quantitative data explains structures through figures and numbers and provides practical statistics that will give information applicable to the rest of the community, qualitative data gives more insights into the context and helps understand the reasons behind the data.

Table 1 Assessment Methods

Phase	Method	
Orientation	Analysing secondary sources, observation, informal conversations, discussion	Qualitative

	groups	
Contextual description	Formal open and semi-structured in-depth interviews with key informants, discussions with local residents and focus group discussions	Qualitative
Explanatory phase	Survey (closed questions and semi-structured open questions)	Quantitative

2.2 Selection of villages and surveying sampling method

We selected the area of Panaon Island, after the Provincial Government of Southern Leyte (PGSL) requested that CCC expand their research in this region and the relocation of the CCC project base to this area in 2008. We completed a broad study of the four municipalities on Panaon Island, followed by a case study of three barangays in the municipality of San Francisco.

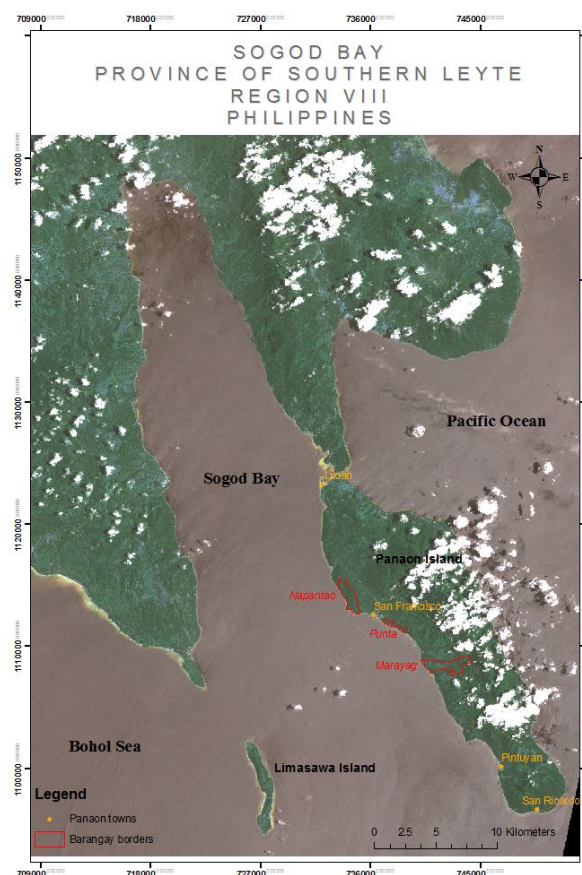
We initially conducted semi-structured open interviews with several key stakeholders from each municipality (Officers from a number of Government Departments such as Agriculture and Fisheries, Tourism, Environment, Development and Planning and also law enforcement officers) to identify the context, local practices and issues regarding livelihoods and coastal resource management.

For the case study we selected two barangays that currently have an existing Marine Protected Area (MPA); Napantao and Anislagon, and two barangays that showed interest in creating new MPA's; Punta and Marayag.

We held several focus groups in each barangay, although we realised that focus groups in barangays without MPA, are better conducted after surveys and orientation days as the respondents are not aware of the basic principals of an MPA and therefore cannot really discuss it.

For a survey to be representative of the whole population, 30% of the households were selected. They were chosen through random sampling. However, in order to avoid clustering, we surveyed every fourth household. Unfortunately we only managed to survey Napantao, Punta and Marayag due to time restrictions. Nonetheless, we did hold a focus group discussion in Anislagon, which will be included in the analysis. In total 122 surveys were conducted.

Figure 1: Map of Sogod Bay showing the four barangays –Napantao, Anislagon, Punta and Marayag



3. Livelihoods: assets and strategies

3.1 Livelihood characteristics of Panaon Island

Panaon Island is made up of four municipalities; Liloan, San Francisco, Pintuyan and San Ricardo. The largest and most populated municipality is Liloan, followed by Pintuyan, San Francisco and San Ricardo. The PGSL has been able to provide some data on the four municipalities as indicated in Table 2. Unfortunately, more detailed HDI¹ indicators are not available yet. The four municipalities are currently conducting a census and their data analysis is still in progress.

Table 2 Main HDI indicators for Panaon Island (based on the 2006 census)

Municipality	% Malnourished children 7-10 yrs	Infant Mortality rate ²	% Elementary school enrolment	% Elementary completion	Illiteracy	% Household with access to potable water	% Household with access to Sanitary toilet
Liloan	18.6	18.3	97.4	81.6	10.9	74.5	80.7
Pintuyan	15.7	5.2	95.5	78.3	9.5	89.8	90
San Francisco	18.6	0	97.4	81.6	16	99.8	89.2
San Ricardo	15.7	0	95.5	78.3	18.8	85.1	85.2
Southern Leyte	15.1	7.8	91.8	78.1	9.1	89.6	87.5

Source: Provincial Government Data

----- = Situation has worsened since 2004

The illiteracy rate in all four municipalities is significantly higher than the average value for Southern Leyte. However there has been some improvement, since the illiteracy rate has diminished in all municipalities since 2004 whilst the enrolment and completion percentages all exceeded the Provincial average.

Health conditions on the island are of concern, especially in Liloan and Pintuyan where infant mortality has increased since 2004. Access to potable water and sanitation has decreased in Liloan, Pintuyan and San Francisco. Malnourishment of children under 10 is still high especially in Liloan and San Francisco. In Pintuyan and San Ricardo the number of malnourished children has also increased since 2004. The diet of most inhabitants of Panaon Island consists of rice and fish. The increase in malnourishment raises questions about the availability of local fish.

Table 3 displays the demographic characteristics of the Barangays that were part of the pilot surveys. Barangay Punta, Napantao and Anislagon all show a decrease in household size since 2005. Although a traditional household used to have at least 6 members, the households nowadays are smaller with 2-3 people per household being the breadwinners.

Table 3 Demographic indicators for the case-study Barangays

Barangay	Population	Male	Female	Households per Barangay	Size of households	Working population per household	Average age of respondent
Napantao	584	296	288	146	4	2.3	45
Punta	357	183	174	83	4.3	2.7	44.5
Marayag	749	383	366	166	4.5	2.2	43.7
Anislagon	286	131	155	61	4.7	-	-

Source: Municipal Office of San Francisco, based on the 2007 census

¹ Human Development Index

² Number of death among infants per 1000 live births

Table 4 below shows that medical facilities are lacking in the region. Both Marayag and Anislagon have a Barangay health centres but only with nurses available. The nearest hospital is in Liloan although it has inadequate facilities and lacks medicine. Hospitals in Sogod, Maasin and Tacloban are better equipped but are all some distance away. When asked what people would like to change in their Barangay during focus group discussions, the majority complained about the lack of medical facilities.

Table 4 Access to basic needs

Barangay	Elementary school present	Secondary school present	Medical facilities present	Waste management	% Households with electricity	%Households with water supply
Napantao	yes	no	no	compost	100	100
Punta	no	no	no	open dump site	100	100
Marayag	yes	yes	yes	compost	92	100
Anislagon	yes	no	yes	compost / open dump site	82	100

Source: Municipal Office of San Francisco, based on the 2005 census

The access to electricity and water is high in all barangays. Barangays Marayag and Punta receive their water through a communal deep well and spring, while Anislagon and Napantao have organised water associations NARWASA and AWSA. In Napantao, the water originates from underground sources. Although only 118 households are members of the NARWASA, all households in the community have access to the water supply. Members pay a one-off membership fee of PHP 50 and have water access through communal taps, except for only 30 households that have direct supply in their house. The use of every communal tap is monitored by a tap-leader. One 5-litre tank of water costs PHP 1 for members and PHP 5 for non-members. In all four barangays, waste management remains unstructured and it is up to individuals to deal with their waste.

Table 4 confirms that all barangays have reasonably good access to elementary schools (Punta is very close to San Francisco central) however the nearest secondary schools are in San Francisco central, Marayag and Sta Paz Sur.

Table 5 Access to education by gender (%)

Barangay	Gender	Elementary School	High School	College	Vocational/ Uni	Total (%)
Napantao	Female	53	34	11	2	100
	Male	51	45	0	4	100
Punta	Female	32	46	19	3	100
	Male	30	46	24	0	100
Marayag	Female	44	42	14	0	100
	Male	29	55	16	0	100

During the survey we gathered information on education and occupation of 288 people (Table 5). The distribution of education between genders seems reasonably equal; however males more often have high school degrees than females. Comparing the barangays, the majority of Napantao only has elementary school degree, and less people than in other barangays have higher or college degrees. On the other hand more people in Napantao have vocational degrees. Punta appears to have the most people with college education.

3.2 Household occupational structure in the studied Barangays

In order to understand people's livelihoods and their use of natural resources, it is essential to consider the occupational structure of the community.

Table 6a Household monthly income distribution by Barangay

	Max.	Min.	Average
Napantao	23,666.00	300.00	5,192.84
Punta	20,633.00	666.00	4,200.71
Marayag	15,500.00	600.00	3,986.79

(All Values in Philippines Pesos)

Table 6b Household monthly income distribution by Gender

	Gender	Max.	Min.	Average
Napantao	women	3,000.00	133.00	1,087.69
	men	15,000.00	75.00	2,332.64
Punta	women	5,500.00	100.00	1,801.68
	men	8,000.00	71.00	1,042.38
Marayag	women	8,000.00	200.00	1,879.27
	men	13,000.00	100.00	2,531.56

Comparing the households' monthly revenue in Table 6a, it is clear that Napantao's households on average earn more than Punta and Marayag, with Marayag earning the least. However, Napantao shows the biggest gap of all the barangays between genders (Table 6b). Whereas in Punta, women on average earn more than men, the opposite occurs in Napantao and Marayag, with Napantao showing the highest inequality between men and women.

Beside the income structure, there is an obvious difference in occupation types between genders (Table 7). While women are firstly housewives and have secondary occupations such as gardening, livestock raising and retail, men do the more manual work. The main occupations in the barangays are quite similar, the main occupation for men being farming, mainly rice, copra and root vegetables. Fishing is the second most common occupation, except in Punta where many fishermen have ceased fishing after the forced relocation (the area was deemed unsafe due to the likelihood of a landslide) and have become carpenters. This could make it easier to create a marine protected area at the old site, since fewer fishermen will 'lose' access to fishing grounds.

Table 7 Household occupational structure per Gender

Barangay	Gender	Occupation 1	Occupation 2	Occupation 3
Napantao	Women	housekeeper	livestock raising	retail
	Men	(copra/rice) farming	fishing	livestock raising /driver
Punta	Women	housekeeper	gardening	retail
	Men	(copra/rice) farmer	carpentry	fishing
Marayag	Women	housekeeper	retail	farming
	Men	(copra/rice) farming	fishing	labourer

These are the most common occupations in the communities but not the highest earning jobs. Table 1 in the Appendix, shows that none of these occupations are in the top five earning occupations. The highest incomes are from jobs in services and from overseas relatives sending money back, except on one occasion in Napantao where farming (large land cultivation) is the highest earning occupation.

Although many households use fishing and farming only for their own food consumption, both practises are still in the top 10 earning occupations. People farming root vegetables use these mainly for their own consumption. When vegetables are sold, it is mainly amongst family, friends and neighbours. In Anislagon, vegetables are also sold on the market in Sta Paz. The farming practise that provides the highest earning is copra, followed by rice farming.

Copra is collected weekly by buyers from San Francisco and vendors are paid by the kilo. If people do not have coconut trees on their plot of land, they can be employed by neighbours as farm labour to collect and smoke the copra. In that case half of the profit goes to the landowner and half to the labourer. Both men and women are involved in the process. Copra is collected 3 to 4 times a year. People working in rice farming normally receive payment through bags of rice rather than money. Rice is collected 2 to 3 times a year.

In Punta, an additional livelihood of hanging gardens was introduced; the vegetables are mainly sold in the barangay and occasionally at the market in San Francisco. Before the landslide of 2006, the women also did mat weaving, crochet and hat making but most of the materials were buried under the mudslides and there is currently no finance to buy new materials.

The communities, including Anislagon, explained that several livelihood-diversifying projects were introduced by various NGOs over the years. However the recurring problem is that once the institution has left the region, the projects ceased. They all stressed that they are in need of more sustainable livelihoods and better planning and management. Some stated that the projects should not be group-based as there are usually disagreements within the group and the initiatives falter. An alternative would be to have family-based projects instead or strengthen the People's Organisations through improved management and communication.

a. Social participation / involvement

Social involvement and participation in the community are two important assets to consider when looking at people's livelihoods strategies. There seem to be a relationship between the Barangays' and the rate of social involvement (Cramer's V: 0.388, Sig.: <0.001). Whereas in Punta over 70% of the population is part of an active organisation or association, in Napantao and Marayag the involvement is significantly lower (38.6% and 22%).

Gender also appears to influence the rate of involvement in the community. Women are more likely to be part of an organisation than men. Among the 122 respondents 57% of the women were a member of an organisation compared to only 27% of the men. Although the relationship between age groups is less obvious, it appears that younger people are less likely to be part of a PO or organisation. This information can be useful when reaching out and providing community education, as well as for alternative livelihood development, including community-based ecotourism. Table 8 shows which organisations are the most popular in each barangay.

Table 8 Most relevant organisations per Barangay

Napantao	Punta	Marayag
NARWASA	Women's PO	Senior Citizens
Senior Citizens	Plan	-
-	PUSCO	-
-	Senior Citizens	-
-	Fisher folk	-

b. Distribution and access to knowledge

The surveys indicate that there is no clear relationship between gender, age, and Barangay or the way people have access to information regarding the Barangay. In the three Barangays the tanod/bandilyo (Barangay watchmen) and the barangay are the main sources of information regarding the neighbourhood. In Napantao, friends and the church are also an important source of information. In Marayag the radio is used more frequently as a source of information than in other barangays.

Information regarding the use of marine resources (mainly fishing) however is mainly transferred from generation to generation in the family. When asked who taught the fishermen how to fish, the most common answer in the three barangays is 'someone from the family'. Friends are the second source of information. The rest were self-taught, especially the age groups 45-50 and people over 60. People in the age category 18-29 are more likely to be taught by their employer.

Access to information regarding coastal laws, however, seems to be quite different between the barangays. Whereas the majority in Napantao and Marayag were informed through the barangay (78% and 90% respectively), only 20% of the people in Punta were informed through the barangay. The sources of information in Punta are more divided between the barangay, the Municipality, BFAR, friends and family. The people receiving information through other sources than the barangay and the tanod, are more likely to be in the age category 18-29.

4. Patterns of Marine Resource Use

4.1 Local marine resources use patterns

From the 122 interviewed households 45.5% in Napantao use marine resources, 42.9% in Punta and 38% in Marayag. Fishing is the main activity and only the men are involved. This confirms earlier findings that fishing is not the main occupation in the three barangays, however it is still an important occupation. Age has no significant influence on the use of marine resources, although the percentage of fishermen between 18-29 is slightly lower than that for the other age categories.

Table 9 presents the fishing methods used in each barangay. There are some significant differences between Napantao and the other two barangays regarding hook and line fishing and net fishing. Whereas Napantao mainly uses hook and line, Punta and Marayag use fishing nets more often. This is an interesting fact in the discussion regarding gear restriction. It is concerning that one respondent admitted that they still practice hooka diving (compressor fishing), which is an illegal practice in the Philippines. Most of the respondents confirmed that they own their own equipment.

Table 9 Fishing methods per barangay (%)

Method	Napantao	Punta	Marayag
Hook and line	60.7	40.0	32.3
Net fishing	3.6	33.3	38.7
Spear fishing	17.9	13.3	16.1
Squid fishing	14.3	0.0	6.5
Fish trap	0.0	0.0	3.2
Sibot/ lampara (light and scoop net fishing)	0.0	6.7	3.2
Gleaning	3.6	0.0	0.0
Hooka/busso	0.0	6.7	0.0
Total	100.0	100.0	100.0

In Anislagon the most common fishing practices are hook and line and net fishing. Some do also use fish traps (cage), and state that they do not damage the coral since the cages are not dragged, but have a special hook to be picked up.

We also assessed temporal trends in terms of what time of day and year a method is more likely to be practiced. In Punta, fishermen seem to be fishing at various times of the day regardless of the fishing method. In Napantao hook and line and spear fishing are predominantly practiced in the morning, contrarily to Marayag where hook and line, net fishing and spear fishing mainly occur in the evening. Squid fishing and Lampara occur late in the evenings and at night.

In Napantao and Marayag, a high percentage of the population fishes all year round (Napantao: 38%, and Marayag: 59%, opposed to Punta: 21%). The high season however, coincides for all the barangays as being between November and May.

In Punta the fishermen gave us a specification of the catch per season:

Nov – Feb: Min. 4 kg/ day

Dec – Jan: 8-10 kg/ day

March – May: 1-4kg / day

June – Sept: Habagat (seasonal easterly winds) – irregular catch (although in 2008 the squid arrived early and there was more catch than usual)

Table 10 gives more details on the mean weight of the catch, the time spent fishing and catch per unit effort (CPUE) per fishing method. Marayag generally had higher catches than Napantao, and although they spend more time fishing, CPUE values for Marayag were also higher than in Napantao for all fishing techniques practise in both barangays. Fishers in Punta also spent more hours fishing than in Napantao but CPUE values were similar between the two barangays for hook and line and net fishing. In Punta and Napantao spear fishing has low returns in relation to effort with a CPUE's of 0.13 and 0.34 kg/hr/fisher respectively. In Marayag on the other hand, spear fishing has the highest CPUE (1.31 kg/hr/fisher). Hooka diving has the second highest CPUE of 1kg/hr/fisher.

Table 10 Mean Catch Weight and Fishing Effort per method

Methods	Napantao			Punta		
	Weight (kg)	Hours/day	CPUE (kg/hr/fisher)	Weight (kg)	Hours/day	CPUE (kg/hr/fisher)
Fish trap	-	-	-	-	-	-
Hook and line	2.1	3.8	0.55	4.4	7.6	0.58
Net fishing	2.0	3.3	0.61	3.4	5.8	0.59
Spear fishing	1.3	3.8	0.34	0.5	4.0	0.13
Squid jigging	-	-	-	-	-	-
Gleaning	1.0	3.5	0.29	-	-	-
Buso / hooka	-	-	-	2.0	2.0	1.00

Methods	Marayag		
	Weight (kg)	Hours/day	CPUE (kg/hr/fisher)
Fish trap	3.0	8.0	0.38
Hook and line	2.8	4.1	0.68
Net fishing	4.0	4.5	0.89
Spear fishing	6.8	5.2	1.31
Squid jigging	5.0	6.0	0.83
Gleaning	-	-	-
Buso / hooka	-	-	-

Table 11 shows the type of fish caught per methods in each barangay. Every barangay mainly catches reef fish and there does not seem to be a specific method to catch a certain type of fish. Nevertheless, this should be compared with the records from fish catch data when available. Napantao obviously catches more types of fish through hook and line than in the other barangays.

Table 11 Type of fish caught per fishing method (see appendix Tables 4 - 6 for more details)

	Napantao	Punta	Marayag
Buso / hooka		Reef fish	
Hook and line	damselfish, grouper, mackerel, parrotfish, squid, jack, trevally, octopus, barracuda, wrasse, big-eye, fusiliers, anchovies, bream, milkfish, rainbow runners, lizardfish, barracuda, scad	damselfish, goatfish, grouper, mackerel, parrotfish, rabbitfish, soldierfish, squid, jack, trevally	damselfish, mackerel, squid, sea pike, fusiliers, scad

Net fishing	fusiliers, anchovies	fusiliers, mackerel, rainbow runners, tuna	damselfish, grouper, mackerel, jack, cuttlefish, wrasse, anchovies, lizard fish, sweetlips
Spear fishing	Damselfish, grouper, mackerel, parrotfish, rabbit fish, squid, surgeonfish, wrasse	drummer, grouper	grouper, mackerel, parrotfish, porcupine fish, soldierfish, sweetlips, fusiliers, snapper, scad, eel
Gleaning	shells		
Fish trap			'reef fish'

In Punta the fishermen also explained that they have fish pens for milkfish.

We also recorded information on fishing location. Punta seems to differ from Marayag and Napantao in their fishing location. Whereas a strong majority of the fishing population of Napantao and Marayag only fish in their own barangay (90% and 89.5% respectively), 27.3% of the fishermen in Punta fish in other barangays (compared to only 5.3% in Marayag and 10% in Napantao). Only 1 respondent in Marayag and in Punta fishes in other municipalities.

We asked the respondents whether their fishing practices have changed over time (either the location of fishing or the method of fishing), but most state that they always fished in the same area and with the same methods (Napantao: 90%, Punta: 81.8%, Marayag: 94.7%). Two people in Napantao and Punta have altered the location where they fish and one person in Marayag has changed the method of fishing.

4.2 Illegal Fishing Practises

Discussions with key informants and focus groups pointed out that illegal fishing was still practiced, however they did not seem to have any specific patterns. As we did not want to confront the respondent by asking them directly if they were doing any illegal fishing themselves, we asked them if they were aware of any illegal fishing in their area. In Napantao 27.3 % answered yes, in Marayag 22% and in Punta 18.5%. Figure 1 shows which type of illegal method were mentioned most often. The two most frequently mentioned methods are tubli (root poison) and hooka in the evenings and nights (compressor fishing)³. Not only destructive fishing methods are illegal, but also fishing in sanctuaries. Areas where most illegal fishing occurs according to the Municipalities:

Liloan	- Molo Polo (destructive fishing)	San Francisco	- Napantao (fishing in sanctuary)
Pintuyan	- Manglit (fishing in sanctuary)	San Ricardo	- Timba/ Benit (fishing in sanctuary)

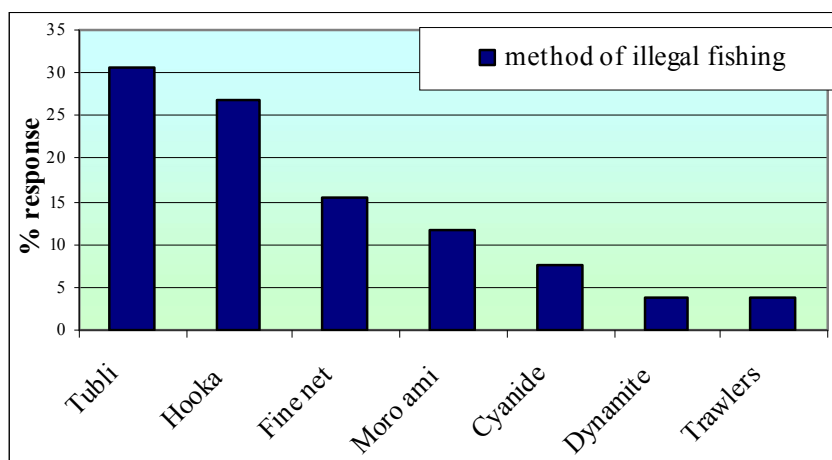


Figure 2. Illegal Fishing Methods practised on Panaon Island

³ Table 2 in the Appendix shows the different methods, locations and times of illegal fishing

The people in Marayag and Punta openly say that illegal fishing occurs in their own barangay. However from the respondents in Napantao who admit that illegal fishing is still practiced, only two mentioned it happening in Napantao. The rest say that it happens in neighbouring barangays. They do consider it a problem that affects the area. Although dynamite fishing has ceased, other forms of illegal fishing are reported. Double netting is one of the major forms of illegal fishing (although it is unclear whether double netting is already considered an illegal fishing method, as other respondents said it was legal). They also declared that illegal fishing mainly occurs during the fiesta and holidays as the bantay dagat (sea patrol) are away and will not monitor the reef.

Since far less people in Napantao than other barangays say that illegal fishing actually occurs in their own barangay, it raises the question whether the presence of the sanctuary and therefore constant monitoring from the bantay dagat prevents illegal fishing in general.

In Punta they explained that most illegal fishing occurs between 8 and 10pm (before the moon rises) and early in the morning. Most illegal fishermen say that they are fishing for own consumption, however the police think it is mainly for selling. Fishermen also claim that they do not know where the sanctuaries are due to the lack of demarcations.

When we asked **why** people were still practicing illegal fishing 36.9 % would not comment about that. The most frequently mentioned reasons are: More catch (15.6 %), followed by laziness (9%), direct need (6.6%) and insufficient catch otherwise (6.6%)⁴.

4.3 Law enforcement

Officially illegal fishing is punished with a PHP 500 fine for the first offence or with community service within the Municipality and the gear is confiscated. The second offence costs PHP 1500 and the third offence costs PHP 2500. Sometimes the illegal fishermen will have to spend time in jail if they are unable to pay the fine with the duration dependent on the offence and the Municipality.

The police force of several Municipalities stressed that they experience great difficulty in providing effective law enforcement. This is mainly due to lack of resources, knowledge, organisational structure and communication.

Lack of resources and knowledge:

- Although officially the police are available 24 hours a day, there is no constant monitoring in place. The police only intervene when illegal fishing is reported. This is mainly because they do not have the capacity to patrol regularly due to lack of funds and resources. In some cases, the police force has paid for the boat fuel personally. Also in several cases the patrol boats do not operate and can be under repair for long time periods.
- The police are present to make arrests, but are not fully trained in coastal law. More training is needed, but the problem is that the staff changes regularly so that recently trained police may be moved away from the area and the new staff require training, which is expensive and inefficient. An option would be to regulate the staff turnover differently or to have the permanent staff in place who are trained as trainers.
- The low pay for coastal law enforcement officers makes them vulnerable to bribes.
- One respondent also stated that it is very difficult to identify illegally caught fish at the local markets—there is no means to determine the fishing method used e.g. whether the fish was poisoned - so there is often no evidence to file any case.

⁴ Table 3 in the Appendix gives more details on other statements.

Lack of structure and communication:

- Reporting illegal fishing usually happens through text messaging with mobile phones, either directly from individuals or from the Bantay Dagat. However, in San Ricardo people actually have to take a motorbike to inform the police. This is very inefficient enabling the illegal fishermen to leave the area and making travel costs for individuals reporting infringements too high.
- In San Ricardo, the barangay can also apprehend the illegal fishermen themselves, and a penalty of PHP 200 is administered, which is then given to the Municipality.
- In Liloan 30% of the penalty goes to the police force as a reward.
- In San Ricardo, the police department has no communication with other municipalities. Even if invited to meetings, they often have no funds to attend.

5. Perceptions of coastal resources

5.1 Perception of local resources harvest and seafood availability

It is difficult to determine the actual fish stocks in the area since neither the Municipal nor the Provincial Government keep detailed catch records. CCC recently initiated a fish catch monitoring system for a number of coastal communities on Panoan Island. However we also wanted to indirectly assess status of marine resources by determining the perception of the local communities towards their local marine resources. Specifically we asked three questions: Compared to 10 years ago

1. Do you think the fish are smaller, larger or the same length?
2. Does your household catch /collect more, less or the same amount?
3. Are there more, less or the same amount of people using the same resources as your household?

More detailed data regarding changing harvesting perceptions is available from CCC further to a research project conducted by MSc student, Thomas Chaigneau.

When talking about the size of the fish, there is a significant difference between Marayag and the other two barangays (Figure 3). In Marayag 78.9% of respondents think that the fish are getting smaller compared to 41.7% in Punta and 40% in Napantao. Both Punta and Napantao show a higher percentage than Marayag (Figure 3) of the perception that fish are the same size as 10 years ago or are larger. Punta is only a few kilometres from Napantao and these results may be attributed to the sanctuary (MPA) at the latter and the spill-over effect of fish moving out of the protected area. Marayag is located more than 5 kilometres away from the MPA at Napantao and is therefore unlikely to benefit from this spill-over effect of adult fish. The overall trend, though, is that in every Barangay the fish are the same size or smaller than those caught 10 years ago. These opinions also seem related to the age of fishers. People between 18-29 are more likely to find the size of the fish unchanged whereas people between 30 and 59 think more often than other age groups that the fish are smaller.

Figure 4 clearly illustrate that people in Marayag also experience a strong decrease in the size of the catch. It is quite surprising that people in Napantao experience a smaller catch than people from Punta, as we would expect the size of the catch in Napantao to be the same or higher if the MPA is effective.

Figure 5 may help to explain this observation. The number of fishermen in Napantao has increased (60% of the population experience more users) while the amount of fishermen in Punta has drastically decreased. This coincides with statements from the focus groups where respondents confirmed that due to the relocation many fishermen changed occupation as they were too far from the coast or have lost their fishing gear in landslides and can not afford to replace it.

Another reason might also be that people in Punta experience some spill-over of adult fish from the sanctuary at Napantao without having a restriction on fishing location, while people from Napantao feel restricted because they have less fishing area than before the sanctuary was designated. This does not necessarily mean

that their catch is actually smaller than that of Punta. These results should also be compared with results from fish catch monitoring to evaluate if the perceptions correspond with the actual data.

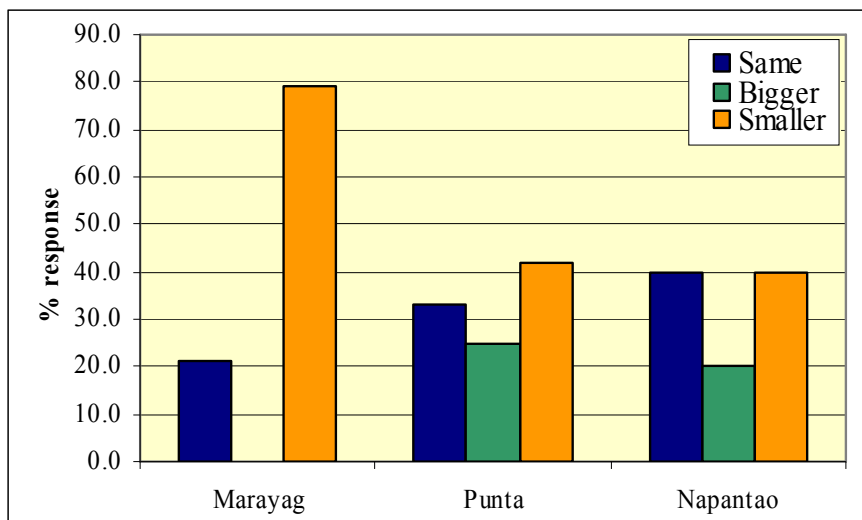


Figure 3. Perceived Change in the Size (length) of Fish caught

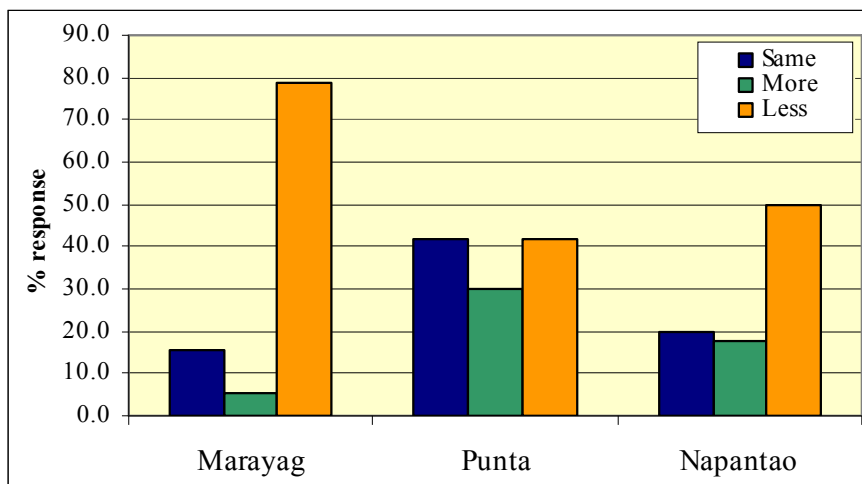


Figure 4. Perceived Change in the Size of the Catch

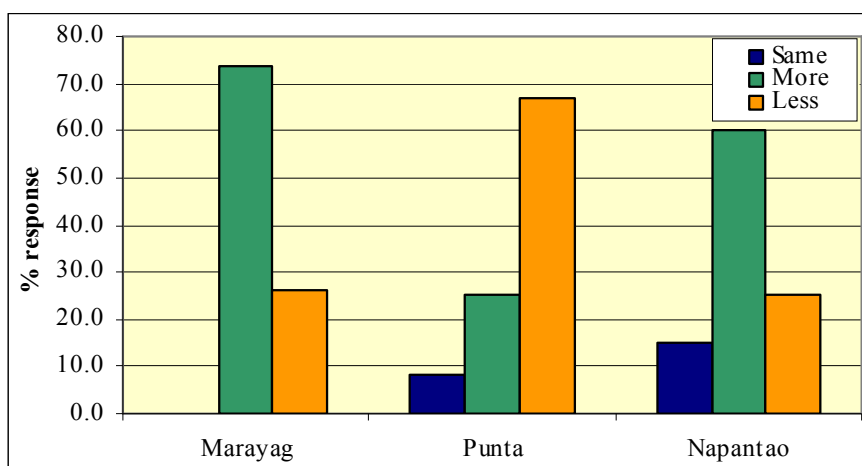


Figure 5. Perceived Change in the Number of Fishers

According to the survey in Punta, people's perceptions on their fish catch (Fig. 4) seem to be more divided than in other barangays. However, during the discussion groups, there was an evident agreement that most fishermen have experienced a decrease in both the size of the fish and the catch.

Age also seems to influence the way people rate the size of their catch. There is a significant relationship (Cramer's V: 0.519, Sign: <0.001) between the age groups and their answer to Question 2. People in the categories '18-20' (100%) and 'over 60' (33.3%) think more often than other categories (30-44:14.3% and 45-59:6.3%) that the catch is the same size as 10 years ago. 44.4% of the people over 60 even state that the size is larger than 10 years ago. Respondents in age category 30-44 and 45-59 strongly think that the size of the catch has decreased over the last ten years.

In Anislagon, respondents also confirmed that although their fishing materials are more 'high tech.' and are more efficient in terms of catching fish, they have experienced a diminishing trend in fish catch over the last 10 years, and also the catch is now very unpredictable. For example, some seasonal fish supplies have been very erratic and even absent in some years.

As discussed previously, there is still a high level of fishing in the three Barangays, nevertheless, fishing is not in the top 5 income sources for any of these Barangays. We were interested to see whether fishing nowadays is mainly a subsistence practice or an economically viable occupation, and we asked the local communities what they do with their catch. In Napantao, 50% of the households catch fish solely for personal consumption. The other 50% use the catch mainly for personal consumption but will sell the surplus when possible. Marayag has a similar distribution (38.9% and 44.4% respectively). In Punta, on the other hand, 91.5% of the catch is for personal consumption and sale. Marayag is the only Barangay where some fishermen exclusively catch fish to sell.

5.2 Monetary values from marine resources

For those fishers that do sell some of their catch, the majority of the households sell their fish in their own Barangay, to neighbours and family. Between 20% and 27% sell their catch in other Barangays, which is often in San Francisco. Only one person from Napantao sold fish in another Municipality.

In Anislagon, only the larger fish like goatfish, trevally and jacks are sold, within the community from house to house. Only squid is sold to other Barangays. Fish for personal consumption are the smaller fish such as angelfish and Damselfish.

Although the income generated from selling fish is not influenced by the fishers' age, it is highly dependent on the barangay that people live in (Cramer's V: 0.639, Sign: <0.001), as indicated in Figures 6 and 7. The majority of the households from Napantao (73%) earn less than PHP 500 per month from fishing, which is a higher share than in the other two barangays. However, 27% earns more than PHP 2000, which shows a significant gap within the barangay's income. On the contrary, the income in Punta seems fairly equally divided, but no households earn more than PHP 1500 per month from fishing. Marayag, however, appears to earn more income from fishing than the other two barangays, with less than 30% earning under PHP 1500 per month.

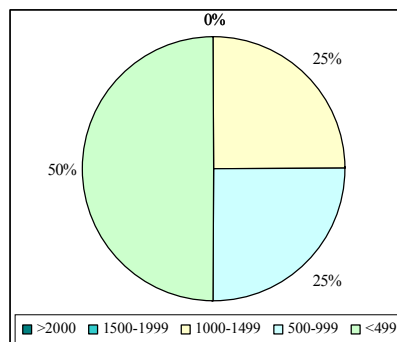


Figure 6 Income from fishing in Napantao (in PHP per month)

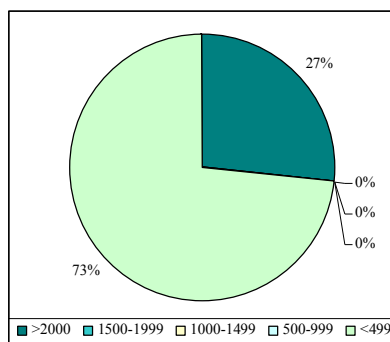


Figure 7 Income from fishing in Punta (in PHP per month)

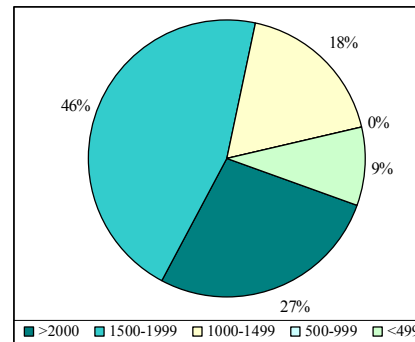
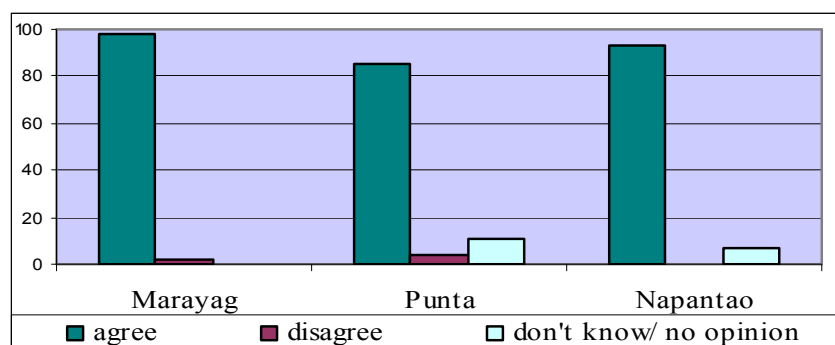


Figure 8 Income from fishing in Marayag (in PHP per month)

5.3 Perception on non-market and non-use value of coastal resources

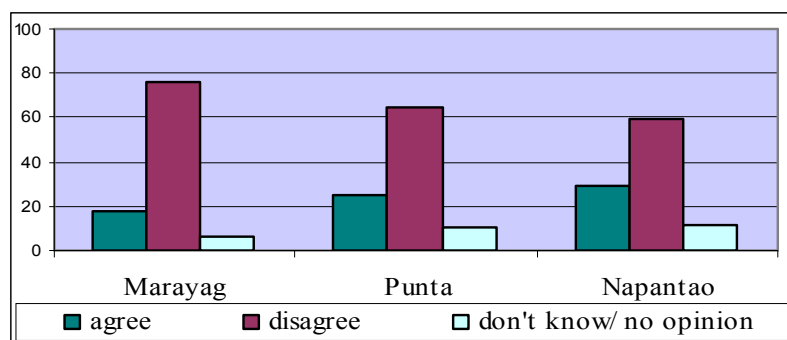
To understand how local communities perceive natural resources besides from being a source of food or income, we introduced a few statements to them and asked if they agreed, disagreed or had no opinion/ don't know.

Figure 9 Statement 1 - The reefs are important to protect the land from storm waves



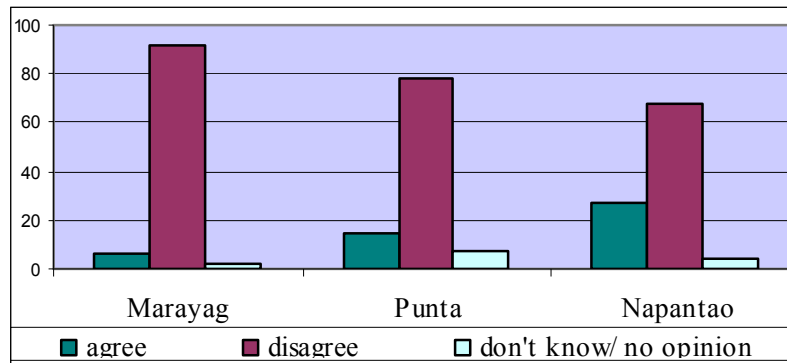
All barangays show strong agreement with this statement, with Napantao and Marayag over 90%. In Punta and Marayag about 3% disagrees and in Punta just over 10% say they do not know.

Figure 10 Statement 2 - Coral reefs are only important if you fish or dive



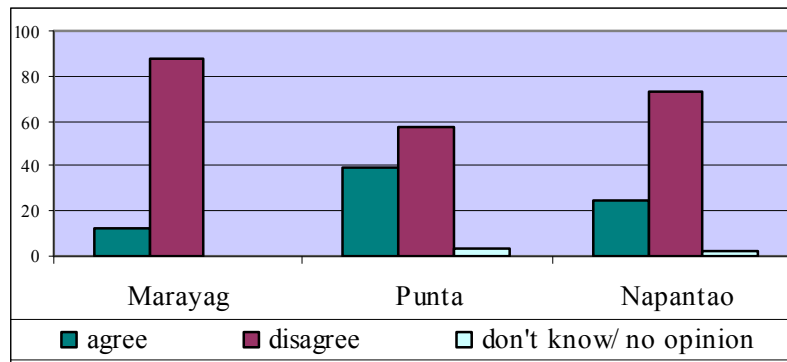
The opinions on this statement are more divided than for the first statement. Although the majority disagrees with this statement and explained that coral reefs have more value to people than just for fishing or diving, in Napantao and Punta, between 25% and 30% disagree.

Figure 11 Statement 3 - Sea grass beds have no value to people



Again the majority of the population of the three barangays disagrees and stressed how important sea grass beds are to people and fish. In Napantao however almost 30% agrees that sea grass beds have no value to people. This might be due to the fact that they have little sea grass area in the barangay and therefore do not experience the benefits of sea grass.

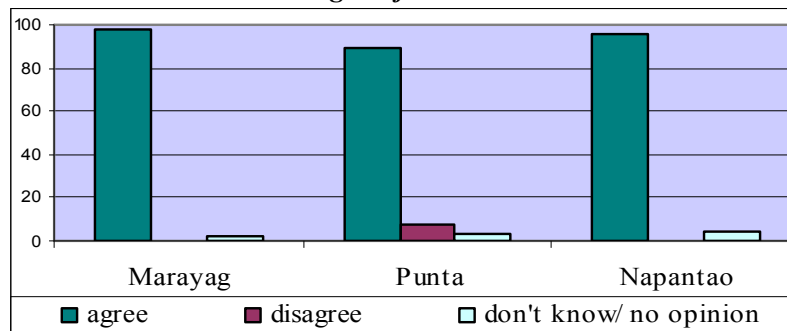
Figure 12 Statement 4 - The sea is only important for fishing



The opinions on this statement are divided especially in Punta. The barangays with the most fishermen and directly on the seafront, seem to disagree with that statement most.

They explained that the sea has other values than just for fishing. Although only one respondent from the interviewed households mentioned gleaning, several respondents stressed that gleaning is one of the other important activities related to the sea. They also acknowledge the recreational value of the sea.

Figure 13 Statement 5 - Fish sanctuaries are good for local communities



It is obvious from Figure 13 that all three barangays have an extremely positive view towards MPA. Napantao has had their MPA for the last 12 years, and this would imply that they are content with the MPA. Punta and Marayag do not have an MPA

yet but the barangay captains have approached CCC and showed interest in installing an MPA in their barangay. The local population seems to agree with that in both barangays, which is a good start to avoid any conflicts. However we realised that even though people have heard about MPA's, they do not always know what it involves. They know it can bring them bigger and more fish, but they do not always realise that it is a permanent no-fishing zone and the reason why. More education days could be provided especially in Punta and Marayag (Punta has already requested more information).

5.4 Level of understanding of environmental and social sustainability

We also wanted to know how the local communities think that their actions impact natural resources. We first asked them if they thought that their fishing had any impact on the coastal resources. They had the option between; 'yes positively', 'yes negatively', 'no' or 'I don't know'. Of the 51 fishermen, 62.7% answered 'no', 29.4 % answered 'yes negatively', 5 % 'don't know' and 2% thought that fishing has positive impact on the coastal resources. Most of the fishermen stressed that since they do not use destructive fishing methods, they do not have any impact on the coastal resources. It is interesting to know that the majority of the fishermen and their households only relate negative impact to illegal/destructive fishing methods. They do not connect their own actions to environmental aspects. This varies slightly per barangay. While in Marayag and Napantao, fishermen recognise more often that their fishing can have negative effects (31.6% and 35% respectively, compared to only 16.7% in Punta), most households in Punta (83.3%) think that their actions have no impact.

Age however does not seem to have any influence on their opinion. All the age categories show similar response

We also gave the households a few statements regarding the sustainability of the resources and food security.

Figure 14 Statement 6-We need to protect the land and the marine areas sea or they will not provide for us in income for our children and their children

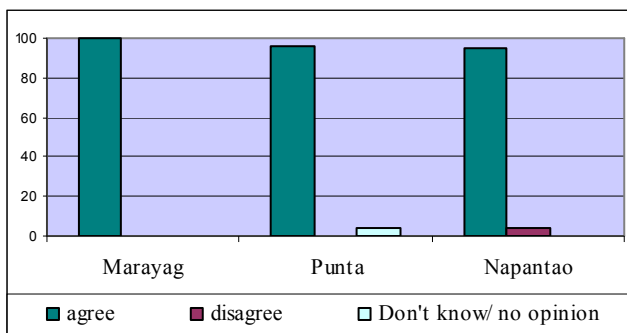
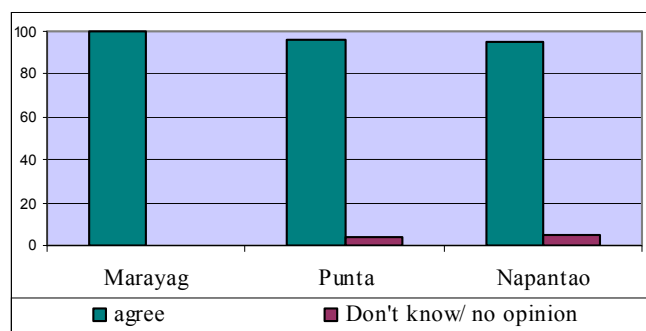
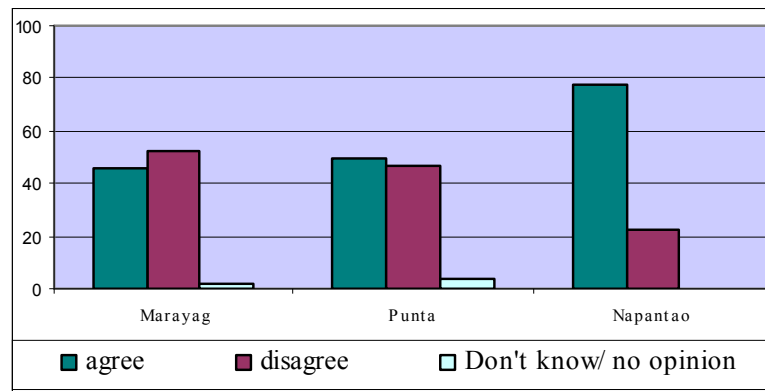


Figure 15 Statement 7-We should manage the future to ensure that there is food and



There is an overwhelming recognition that coastal resources have to be protected for future needs and that humans (local communities) are responsible for it. However, when asked how, respondents are unsure. Some have heard that it is not good to fish the small fish, however as mentioned above they do not connect the current fishing to the future provision of food. The people that do understand that with unsustainable fishing at the present, there will be less food and income for the future generations, say that there's little they can do since they have to fish to provide for their family. This shows that not only lecture about coral reefs and MPA's are needed but general information about sustainable fishing. People would definitely be receptive to information regarding gear restriction and the limitation in fishing certain types of fish. Also additional livelihoods such as community-based tourism would offer an alternative source of income, which should relieve the pressure on fishing.

Figure 16 Statement 8 - We do not have to worry about the marine resources, God will take care of it for us



Although the answers on the previous statements show that people in general are worried about fishing in the future, the response to this statement confirms that people are unaware of the direct impact of their usage of coastal resources and how to preserve coastal resources. Especially in Napantao, there is an overwhelming agreement that people do not have to take care of coastal resources personally; it is all on God's hands. Maybe supplementary lectures could be given to church groups, priests and pastors (especially since the church is an important source of information in Napantao, see § 3.4, p.6).

5.5 Level of scientific knowledge

Figure 17 Statement 8 - Corals are not important for the fish

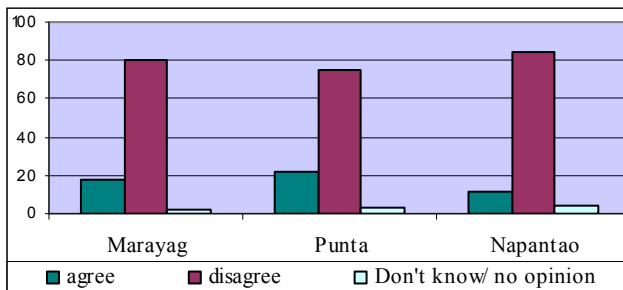
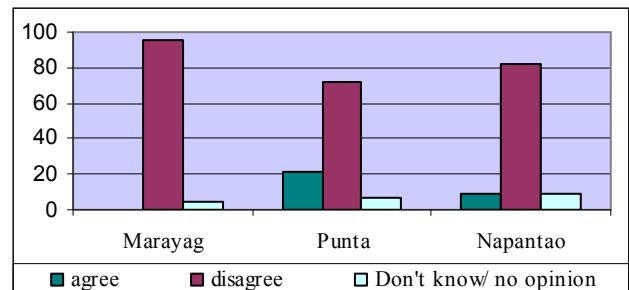
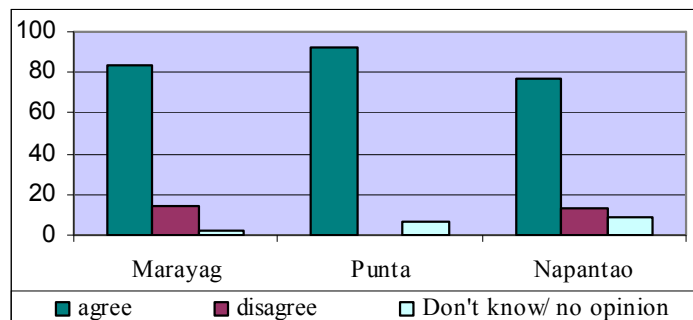


Figure 18 Statement 9 - It is better for the fish if there is no coral



The response to the above statements shows that the majority of the local communities are aware that corals are important for the fish and in turn important for fishing. However, in Marayag and Punta still around 20% thinks that corals have no value to the fish and some say that it would be easier to fish if there were no corals. Several people said "if they were no corals, at least we wouldn't damage them with fishing!"

Figure 19 Statement 10 - Corals are a type of rocks where fish live



Although the majority is aware that healthy coral reefs are connected to healthy fish stocks, a significant majority in every barangay does not know what corals are and their purpose. They agree that corals are rocks where fish live in. Even in Napantao where several information days have been given, the majority still thinks that corals are rocks. This definitely shows that more information needs to be given to the barangays. Maybe CCC orientation lectures should be given to more specific groups inside the barangays and at different locations, in order to reach all the population. For example, in Napantao, most orientation days have been given in the barangay auditorium, which are always attended by the same people. These are people that are in general already very much involved with the communities. In order to reach more people, we could give lectures per purok instead.

6 Assessment of current MPA's and potential for new MPA's in Panaon Island

6.1 Satisfaction with MPA

Napantao is the only barangay with an MPA that could be included in the survey. Since the MPA has been present for 12 years, we asked the people if the MPA has had any impacts for their households and if it did, which changes they experienced. To our surprise 72.7% answered that the MPA had no impact for their households and only 27.3%, especially people over 60 (40% compared to around 20-25% in other age groups), said they noticed some difference. Nevertheless, they could not exactly point out what the impacts are. In further discussions most said that the most important change was that they could not fish anymore in the traditional fishing grounds and had the feeling that because of that they caught less fish. Some also mentioned that the MPA attracts divers outside the MPA. They have the feeling that divers diving outside the sanctuary scare the fish away and are therefore not always happy with divers. In one of the focus groups they explained that when the MPA was promoted, many promises were made by the municipality and the barangay, but they have hardly seen any material improvements (projects). Furthermore tourism is only small and the money goes to the barangay but not the community.

Only a few mentioned during focus groups that the MPA was good for the barangay since they receive money from the divers, however nobody could give any examples of where the money had been spent on for the community.

There is an obvious lack of transparency regarding the benefits of the MPA and the local community does not experience any direct benefits. The direct benefits 'promised' at first such as bigger fish, more catch and economical benefits from tourism are not visible to the local community. In previous chapter, they obviously experience less fish and smaller fish and they do not see any direct income from the MPA. This could be a reason why some people do not want to keep the MPA. When asked whether people would like to keep the MPA 22.7% said they didn't want the MPA to stay, especially in the age group between 45 and 59. Of the people that do not want to keep the MPA far more people are fisherman than not (35% compared to 12.5%). Even though many do not notice any direct benefits from the MPA, the majority still wants to keep the MPA. They say that neighbouring barangays envy the MPA and they are happy because their Barangay is more popular with the MPA.

6.2 Efficiency of MPA management

The fact that the community does not experience growth in fish size or catch shows that the efficiency of the MPA is not optimal. However, this may be due to the high consumer growth which would balance out the real benefits of the MPA. Furthermore, this is based on the perception of the local people and they might actually have bigger fish and more catch than neighbouring barangays that do not have an MPA. By recording the fish catch in several surrounding barangays, the efficiency of the MPA could become a lot clearer.

We also asked the respondents if they knew of any fishing in the sanctuary (even though we regularly see fishermen fish in the sanctuary) and why people were fishing there. 36.4% of the respondents admitted that there was still fishing going on in the MPA, however 86% of them would not give a reason why. Of the

people that did give us the reason, they said that there was more fish inside and not enough catch outside due to the reduced fishing ground. The fishermen that we spoke to on several occasions stress that the fishing in the sanctuary is not done by fishermen from Napantao but from other barangays. Therefore they want to reinstall the buoys as they are getting frustrated with the fact that they cannot fish there but other fishermen do and do not get apprehended (which will be discussed in chapter 7). One of the focus groups came up with the following suggestion for better management:

- Privatisation
- Handing management over to the municipality (like in Son-ok)

It is also remarkable that when we mention illegal fishing, people only think of illegal fishing methods, but do not connect it to fishing in the sanctuary. Although they know fishing is not allowed in the MPA, they do not always regard it as illegal fishing.

In Anislagon, the MPA was set up in 2005 by the regional BFAR. It was not a municipal or barangay initiative at first. The community received some information/ lectures and was asked to vote but only a small majority voted for the sanctuary, which could explain the current resistance. The respondents of the group all support the sanctuary, however since the new barangay officials are not really interested, the MPA, is not monitored or implemented. During Habagat last year (2007), all the buoys were destroyed/lost and there is still no initiative from the barangay to replace the buoys.

During the day, they think that the sanctuary is reasonably well managed. They can see a lot more fish near the shore, the fish are not afraid of humans, and the spill-over is visible. However, there is no bantay dagat and they cannot afford to pay proper guards. The women seem to be guarding the sanctuary themselves. If fishermen fish in the sanctuary, they shout at them, but nothing official is done. Besides, most of the fishing in the sanctuary is done at night, when it cannot be monitored.

They say that it is everybody's responsibility to monitor the sanctuary, and hereby confirm that there is no structure. Even if fishermen are caught in the sanctuary, no fines are ever issued. People fishing in the sanctuary are mainly from Liloan.

6.3 Interest in new MPA

In the table below are the areas where the municipalities or the barangays have shown interest to develop MPA's and tourism.

Table 12 Current MPA's and potential for new MPA on Panaon Island

Municipality	Barangay with existing MPA to be assessed	Success	Barangays with potential / interest
Liloan	Tabugon	Little	-
Liloan	-	-	Molo Polo - Tagbac Beach (Sogod Bay side)
Liloan	-	-	Molo Polo- Biloomb Beach (Cabalian Bay side)
Liloan	-	-	Anilao
Liloan	-	-	Gud-An
Liloan	-	-	Catig
San Francisco	Napantao	Medium	-
San Francisco	Anislagon	Little	-
San Francisco	-	-	Sta Paz Sur
San Francisco	-	-	Punta
San Francisco	-	-	Tuno
San Francisco	-	-	Marayag
San Francisco	-	-	Cuasi
Pintuyan	Son-ok	Good	-

Pintuyan	Manglit	Little	-
Pintuyan	Catbawan	Little	-
Pintuyan	Balonbalon	n/a	Balonbalon
Pintuyan	-	-	Cogon
Pintuyan	-	-	Badiang
San Ricardo	Timba/ Benit	Little	-
San Ricardo	Esperanza II	n/a	-

The main problem with creating new MPA's in San Ricardo, is that a large part of the municipality has no road access and people can only travel by boat. An MPA would restrict these people's access/transport (also these communities are difficult to access for education/training). It would be an idea to do the same as in Limasawa and have strips that are especially dedicated for boat traffic.

During open days and on other occasions we were approached by several barangay captains, including from Punta and Marayag because they are interested in installing an MPA in their barangay. Therefore we also asked the rest of the communities during the survey if they were interested as well. The majority of Marayag (98%) and Punta (78.6%) are interested in installing an MPA. However, focus group discussions demonstrated that many don't actually know what an MPA is or what it involves. Many are confused with open and close season reserves. Punta especially requested for more information once we have been able to determine whether the reef in the barangay is suitable for an MPA.

Punta used to have a reserve in 2001/2002 with open and closing season. This was a test rather than an established Sanctuary. It seems that the experiment only lasted for 8/9 months. They did notice an increase of fish after the closing season but the effects soon vanished as soon as the fishing started again. They are interested in a permanent MPA but pointed out the following issues:

- The barangay is relatively far from the coast and therefore the implementation would be very difficult, since there would be no one to guard the sanctuary.
- At the moment, guarding is voluntary. If it has to be constant, it is not possible on voluntary basis. Who would provide funding?
- The lack of manpower is also a reason. They only have 3 tanods and 2 FLEET guards.
- Also, when noticing illegal fishing, they have no idea who to contact, which is a major problem.

7 Governance

7.1 Involvement and empowerment in decision-making process

In each barangay around 60% of the community attends barangay meeting between 1 to 4 times a year, the official assemblies. Slightly more people in Marayag do not attend any meetings at all than in Napantao or Punta and in Napantao more people attend meetings monthly. There seem to be a slightly stronger involvement in decision making at barangay level in Napantao. Additionally, it appears that women in general are more involved with the barangay than the men.

People however are not as much involved with the municipal. Between 75% and 94% say they never attend municipal assemblies, with Marayag being the least involved. In Napantao about 14% attends municipal meetings between 1 and 4 times a year and 11% in Punta attend municipal meetings monthly.

We also asked the respondent if they felt they had any power in the barangay. There seem to be a significant relationship between the barangay and the feeling of empowerment (Cramer' V: 0.446, Sign: 0.000). Whereas in Napantao and Marayag around 80% of the population say to have no power in the barangay, only 32% in Punta agrees. A lot more people in Punta feel empowered than in other barangays (68% compared 18% and 20%).

During a focus group discussion people in Napantao explained that the decision to open an MPA was approved by the majority of the community during the municipal public hearing (which is where they had the chance to oppose). However, they do recognize that many people put their hands up (agreed) without really caring what it involved. On the other hand some fishermen explain that during the information seminars before the opening of the MPA, they were never told that the MPA would be permanent, and would have never agreed to it if they had known in advance.

7.2 Awareness of regulations for coastal use

Over 80 % in each barangay admits to be aware of laws and regulations regarding the use of coastal resources.

The most common answers are

1. Illegal fishing methods
2. No fishing in the sanctuary
3. Destructive fishing methods
4. Endangered species
5. No fishing of small fish

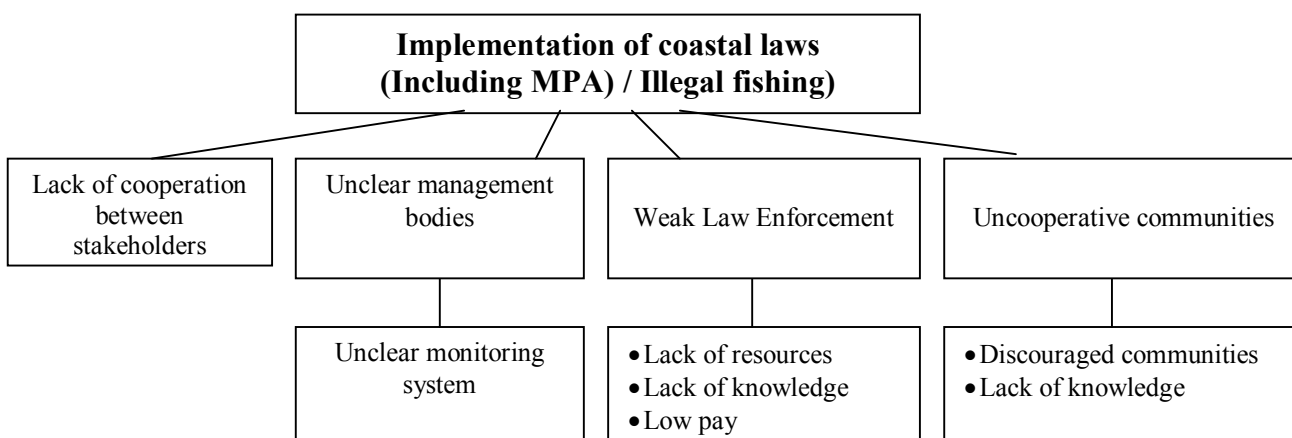
There is a strong relationship between their response and the barangay they live in (Cramers' V: 0.687, Sign: 0.000). Napantao overwhelmingly say that people are not allowed to fish in the sanctuary, while the other two barangays mainly mention the use of illegal and destructive fishing methods.

7.3 Management marine resources and MPA

Around Panaon Island there are 8 existing MPA's, of which only 2 seem reasonably successful.

Liloan	-	Tabugon
San Francisco	-	Napantao (quite successful – but needs improvement)
	-	Anislagon
Pintuyan	-	Son-ok (successful)
	-	Manglit / Cadbawan
	-	<i>Balonbalon (is currently only abalone culture, but is designated as MPA)</i>
San Ricardo	-	Timba/ Benit
	-	<i>Esperanza II (waiting for ordinance)</i>

Key informants confirmed that most of the MPA's face similar issues and problems (see problem tree below).



Management

Most of the MPA's, except for Son-ok, experience poor management. The most common reasons are:

- Conflict in management between barangays when the sanctuary is located within two barangays (in Pintuyan and San Ricardo).
- Inactive Barangay Fisheries Management Council (BFMC)
- No management committee or oversight committees (no platform for stakeholders to discuss issues/problems regularly).
- Fishermen are often not organised.
- Lack of People's Organisations

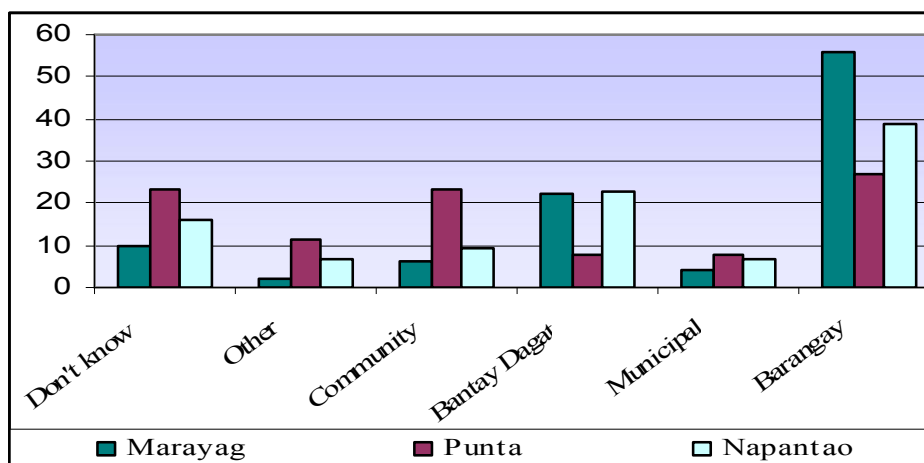
Monitoring

- The main problem with monitoring the MPA's (and thus people fishing in the MPA) is a lack of resources. Municipalities lack data on the coral reefs and therefore cannot assess the MPA or evaluate the condition of the reef to create new MPA's.
- Also they cannot approve ordinances for new MPA's, as they don't know if the coral is good enough for creating a new MPA and tourism/ diving destinations.
- The problem for the barangay is often that the setting up of the MPA is very expensive. For example the rope for the buoys (Payao) is too expensive. Illegal fishermen also often cut the ropes.
- It is mainly the Bantay Dagat that monitors the coastal use and the police are only there to arrest the illegal fishermen. Penalties are normally issued by the municipality. However in Pintuyan, (I believe also in San Francisco) if any violation occurs, they cannot always identify the boats, as they do not have a registration number.
- Also the communication between the municipal police forces and the barangays is not always efficient. Often the police have no direct phone number and reports of illegal fishing can be done with several people, which create confusion in the local communities.
- Individuals at barangay level can also inform the police or the barangay or the municipality when witnessing illegal fishing. However some people are discouraged since very little has been done about people fishing in the sanctuaries (they often escape the penalties, or no report was filed).

We asked the people in each Barangay, who they thought was managing the coastal resources.

There are a lot of mixed thoughts about who manages coastal resources (see Figure 18), which confirms the information from the key informants about unclear management bodies. In Napantao and Marayag a large share of the population think it is up to the barangay to manage coastal resources, followed by the bantay dagat. In Punta however more people admit that they do not know and it is not the bantay dagat but the community and the fishermen that are considered responsible for the management of the coastal resources

Figure 19 Manager(s) of Coastal Resources



We also asked the local communities what they would like to change about the local management if they could. Marayag mainly said that they would not change anything because the current management is good (34%) whereas in Punta and Napantao only between 7% and 9% agreed with that. In Marayag only 12% said they would like to see stricter implementation of the laws, which in Punta was a lot stronger with 21%. In both barangays around 10% said they would like to stop illegal fishing.

In Napantao there is no clear view. Some mention stricter implementation of laws and no fishing in the sanctuary, others would like to see the revenue of the sanctuary back in the community or prohibit foreign fishermen, but the biggest majority has no comment.

It was obvious during both the surveys as the discussion groups that people are aware of illegal fishing, but only few want or dare to denounce it.

8 Alternative livelihood development – tourism

8.1 Potential tourism

In previous studies, Community-based tourism has shown great potential as a significant alternative livelihood strategy and we wanted to look at the potentials to develop community-based tourism in the area.

The potential tourism is mainly focussed on diving. At the moment, though, there is no (or very little) accommodation on Panaon Island. The divers stay on the boat and the only revenue comes from the divers' fee, which is rarely visible to the people that have had to stop fishing in the sanctuary. To develop tourism, it is important to get the divers on the island. Developing tourism can be quite expensive for a barangay or a municipality on its own. Better results can be obtained if the municipalities, and the barangays within, work together instead of competing, as they may have different things to offer. It also creates an opportunity for upland barangays to be involved.

The municipality of Liloan would like to develop some ecotourism in Molo Polo (Biloon beach resort, mini-resort, San Roque, - Tagbac Beach resort), mainly focussing on divers. They would like to involve the upland barangay as well for home stays and manufacturing of souvenirs.

In Pintuyan, the tourism is mainly based on the whale shark tours in Son-ok. There is currently a plan to develop an eco-park with 6 cottages, an information/ education / training centre where the PO will be based, with a catering facility for visitors.

Other places of interest in Pintuyan are the 5 waterfalls (spread over 4.5 km) in Cadbawan and trek in the mountains.

In San Francisco, we included tourism in the survey and asked people if they had experience in tourism, whether they thought tourism would be good for their households (and why) and if they would like to be involved (and how).

Most people in the three barangays said that they do not experience any tourism at all. Some people in Punta (25%) and Napantao (18%) said they did but they meant CCC volunteers. Most people though, think that tourism could be good for their households (Marayag; 66%, Punta; 71.4%, Napantao; 75%). Especially people in the age category 45-59 think that tourism would be beneficial (89.5%), while the other age categories, especially between 18-29, are far more reserved.

Whether respondents thought that tourism would be good or not, most of them could not give an actually reason why it would be positive or negative to their households. We listed down the most frequent answers we received.

Table 13 Expected impacts from tourism by the local communities

Negative reasons	Positive reasons
They bring trouble	More jobs
Too old	More income

Tourist have different ways	More sales
No attractions	Protection of ocean / resources
-	It can bring development
-	Better education, more jobs, more income
-	Livelihood improvement

People that did not expect tourism to be beneficial to their households mainly seem to struggle with the culture difference, which came solely from men.

People who do expect tourism to be beneficial to their households, mainly mentioned increase in job opportunities, increase in income, more education (improvement in schools as well as through trainings), livelihood improvement and development, but also that tourism would help and advise local communities how to protect their resources.

We also asked people if they would like to be involved in tourism. Napantao has the highest 'yes' response with 68.9%, followed closely by Punta (66.7%) and Marayag (58%). Again the age category 45-69 is the most interested to be involved followed (78.1%) by people between 30-44 (68.3%). However, the majority of the people between 18-29 are not interested (61.5% say they do not wish to be involved in tourism). People over 60 are often not interested to be involved as they think they are too old or they say they are too shy to speak English.

It is interesting and slightly unexpected that the younger generations are the ones least interested in the development of tourism, something that has to be acknowledged if tourism development occurs.

San Ricardo wants to concentrate solely on the MPA Esperanza for the moment.

8.2 Top destinations and activities in San Francisco

As the local communities know their surroundings better than anyone else, we asked them which areas in their surroundings would be good attractions to tourists. Below is the top 5 list.

Table 14 Top destinations in San Francisco as indicated by the respondents in each barangay

	Napantao	Punta	Marayag
1	Napantao sanctuary	Napantao sanctuary	Taglinao Falls
2	Beach	Hanging vegetable gardens	Beach
3	Jubilee area	Punta old site	Marayag coral reef
4	Taglinao falls	Point of Punta	Cuasi reef
5	Farm and catabao / ilihan point	Taglinao Falls	Tanid - park development

Another potential is for Anislagon to develop the tablia sales. Tablia are cacao pastilles. Davao delivers raw cacao, which they treat into small tablets for hot chocolate, which is then sold in small sari-sari stores. They wanted to create their own brand, but have no finance to start this.

In Punta, before the landslide, the women also did mat weaving, crocket and hat making, but most of the materials are buried under the mud and there is no finance to buy new materials. With some help from the municipal, they could become the providers for souvenirs.

It would also be essential to identify home-stay facilities, around the island at 'strategic places' so visitors can travel around Panaon Island step by step. Some households have the facilities ready and only need some advice on how to host a home-stay and on budgeting.

9 Conclusions and recommendations

The objective of this study was to gather insights on the local livelihoods, the local patterns of marine resources use, the local perspectives towards coastal resources, the current management and efficiency of coastal resources management (including MPA's) and to assess the livelihood diversification opportunities, especially towards community-based eco-tourism.

9.1 Livelihoods: assets and strategies

The first aspects that we wanted to determine are the local livelihoods. The interviews, focus groups and surveys have revealed that the livelihoods between the barangays around Panaon Island are quite similar. Coastal and upland barangays show some differences, but we concentrated mainly on coastal barangays. The coastal barangays show some differences as well. We concentrated mainly on the barangays Napantao, (Anislagon), Punta and Marayag. Punta shows slightly more difference since it has been relocated and is now a blend between a coastal and an upland barangay.

Marayag and Napantao are the most populated barangays of the four. The household size in each barangay is pretty similar and seems to decrease compared to a few years ago. It appears that in these barangays, like in many other rural areas, the young population (18-30) is leaving to work in Manila, Cebu or abroad.

The presence and access to physical assets is varied. Access to water, electricity and education are reasonably good comparing to the rest of the province. However, the health facilities and waste management (and infrastructure) is lacking and people stress that these issues need urgent attention.

The barangays appear to have a similar occupational structure; however men in Napantao have on average a better income than in the other barangays. Napantao on the other hand has the highest income gap between genders. The main livelihoods for the men are farming (copra, rice and root vegetable), fishing and carpentry. The women are firstly housewives but often have a secondary occupation in retail, livestock raising and gardening/ small-scale farming.

Fishing is still very important in the region, nevertheless is it primarily for own consumption and people only sell the surplus (the bigger fish), except in a few cases where fishing is the main income. Respondents pointed out that the selling of fish mainly occurs in the barangay rather than on local markets.

The barangays show issues concerning their management and organisation, especially when introducing new livelihoods opportunities. It appears that they find it very difficult to sustain any new form of livelihood. This maybe caused by the reasonably low social involvement of some of the communities (except Punta where the social participation is the highest).

9.2 Patterns of marine resource use

The second question we wanted to answer is: What are the current patterns of marine resources use? In all the barangay just under half of the population is fishing. The three barangays show somewhat different patterns regarding the fishing methods and fishing schedules. Napantao appears to be using essentially hook on line fishing in the morning while the people of Marayag merely fish in the evenings and use net and spear fishing a lot more. Punta on the hand does not show any specific pattern. All three barangays however agree that the high season is between November and May with December and January being the peak.

The fish caught per barangay is very similar; the majority is reef fish. However the average size of the catch and the average amount of time spent fishing is quite different between the three barangays. This should definitely be further assessed when monitoring the fish catch. Therefore, it would be interesting to have the fish catch monitoring extended to all the coastal barangays of San Francisco and maybe Panaon Island if possible.

Maybe if CCC could gather the heads of the fisheries department of each municipality, together with the Provincial Environmental and Natural Resource Management Officer (PENRMO), an organised monitoring system could be put in place all over the island. This would be a great complement to the underwater surveys

and would provide the municipalities and the province with statistical data, which they are currently seriously lacking. It would also provide better and clearer discussion points for focus group discussions. The MPA network would be a great forum to discuss such issues.

Illegal fishing is still present in the area. Although there is no more destructive fishing such as cyanide and dynamite fishing, illegal fishing still occurs frequently in the form of hooka, tubli, fine nets and moro ami. People clearly did not like to talk about this issue. Even though some people had a clear opinion and would tell us all about illegal fishing, this was only a minority. In general people know friends and neighbours that might practice illegal fishing and do not want to denounce them. Also people seemed quite uncertain about illegal fishing methods. Everybody knows that it is illegal to practice cyanide, dynamite and hooka, but they are unclear about the other methods. Key informants also explained that regulations may differ per barangay (informally) which makes it only more ambiguous for the local fishermen.

More information should be provided to the local fishermen, but first the regulations should be harmonised between the municipalities and barangays.

Fishing in MPA's, although illegal, is not always considered as illegal fishing and people often turn a blind eye to it. Fishermen often use the excuse that they do not know exactly where the MPA's are since in many cases there are no market buoys.

The law enforcement officers stress that they face great difficulties in implementing the coastal laws as well. The problems are due to the lack of resources, knowledge, communication and structure.

By harmonising practices between every municipality of Panaon Island and creating a law enforcement network (which could be part of the MPA network), it would be easier to implement law enforcement over the region of Panaon Island. The law enforcement staff could be trained together to employ the same practices and prevent illegal fishermen from using the excuse that practices are different in other municipalities. It might also be easier to find budget for the law enforcement as a group instead of having funding per municipality, which appears to be a problem at the moment.

9.3 Perceptions of coastal resources

Our third focus was on the local perspectives towards coastal resources. There is a strong perception that the size of the fish and the catch is decreasing with Marayag having the most negative perceptions even though they catch more than the other barangays. Except for Punta, the barangays also think that the amount of consumers (fishermen) has increased, which puts even more pressure on the coastal resources. These, however, are only perceptions. It would be good to see if the fish catch recording validates these observations.

We looked at the monetary and non-monetary values of coastal resources. There is evident difference between the barangays in the amount of income that is generated from fishing, with Marayag earning the most from fishing.

People are aware that resources are at risk but do not really know what to do about it and often just hope for the best. The majority does not connect their own practices with the sustainability of the local coastal resources. People need a lot more education, not only on sanctuaries, but also on their role in the coastal ecosystem and the impacts every activity has on resources.

The majority of the respondents agree that sanctuaries are good for their community, but they are not really familiar with the basic concepts and practices of MPA's.

At the moment the lectures are often given through the barangays, but as Napantao shows, it primarily reaches people that are already strongly involved with the community. Schools are definitely a good source since family appeared to be one of the main sources of information on coastal practices. Maybe lectures could be distributed slightly differently. It would be an idea to divide the lectures per puroks or other groups such as fishermen or the church.

9.4 Assessment of current MPA's and potential for new MPA's in Panaon Island

We also looked at the current management and efficiency of coastal resources management, including Marine Protected Areas in general. Additionally, we conducted a case study in Napantao. Of all the MPA's around Panaon Island, only Son-ok appears to be quite successful. Most MPA's face similar issues largely related to the implementation. The most important problems are lack of management, structure, oversight committees and unclear governing bodies and monitoring systems.

In Napantao, the majority says that the MPA has not changed anything in their livelihoods and they do not see any benefits coming from the MPA. The implementation again appears to be a problem and fishermen are often discouraged that people do not get fined when not fishing. However the local community is still very positive towards the MPA, but their motives are often unclear. The creation of the oversight committee is a good step forward, however it still needs strengthening.

Punta and Marayag have shown great interest at barangay level as well as at community level to introduce new MPA's in their barangays. Once baseline surveys have been conducted and it has been determined whether the area is suitable for MPA's it is important to give a few orientation lectures and conduct some more focus group discussions. It would be worth introducing the concept of fish catch recording at the same time.

An MPA network would help harmonise practices between municipalities and would offer more structure around the island.

9.5 Governance

What is the current management and efficiency of coastal resources management, by whom and how is access to marine resources mediated?

People are reasonably involved with the decision-making process at barangay level but far less at municipal level. Nonetheless, many feel they have no power in the barangay.

Most people are aware of some coastal laws, especially regarding some methods of illegal fishing such as cyanide and dynamite fishing, however there are unclear about many other methods of fishing. Is fine net fishing illegal? Is double net fishing illegal? Are fish cage allowed in some fish sanctuaries?

It also seems unclear at municipal, barangay level and community level who is responsible for which activities of the implementation of coastal laws. There seem to be some overlap between various bodies (such as the bantay dagat and FLET), which creates even more confusion and sometimes conflicts.

Some people of the community also stress that they are unhappy about the management of coastal resources but many did not dare to criticize it in public. The answers that we did manage to get were mainly about stricter implementation of the laws and stop illegal fishing.

Again, structure, organisation and communication seem to be lacking and need to be improved in order to improve the management of coastal resources.

9.6 Alternative livelihoods

Sustainable tourism can become a significant strategy for the local communities as well as for the municipality to create more employment, more income and in the long term to improve infrastructure, health care, education and physical assets. Until recently, there were no concrete plans or projects scheduled for tourism development in San Francisco either at provincial or municipal level.

The potentials for tourism development are mainly based on dive tourism. Currently, the only tourists visiting Panaon Island come for the diving in Napantao and the whale shark watching tour in Son-ok (Pintuyan) or San Ricardo. Since there is no (or very little) accommodation on Panaon Island, the visitors mainly come from the other side of Sogod Bay or Bohol and Cebu. They come with their own boat, make one dive in the morning, have their lunch on the boat and make a second dive in the afternoon without ever actually setting foot on Panaon Island.

In Napantao the only revenue comes from the divers' fee, of which 40% is attributed to the barangay, 40% to the municipality and 20% to the Bantay Dagat. The local fishing communities, that have had to cease fishing in the sanctuary, do not get a direct compensation and therefore may lack incentive to comply with the regulations of the sanctuary.

In order for the local communities to benefit from tourism directly, and not just through the barangay, it is necessary for tourists and local communities to have more contact with each other and to get the divers on the island. In Son-ok the MPA is now managed by the Fisher folks People's Organisation and under supervision of the municipality. The income from the divers' fees is redistributed amongst the community.

Surveys, interviews and focus group discussions have brought to light that local communities would definitely be interested in developing tourism but lack significant knowledge, skills and financial means to attract tourists to their own benefit. In Napantao we initiated a new program in collaboration with the LGU, TESDA and DTI to develop some community-based tourism. The project should be extended over the island in the future.

Strengthening People's Organisations is crucial if the local communities want to have sustainable progress and good management of the new tourism development as well as of the MPA.

Appendix

Table 1 Highest earning occupations per barangay

	Napantao	Punta	Marayag
1	Rice farming (land cultivation)	Cashier	Teacher
2	Van renting	Accountancy	Factory
3	Pension	Gov't employee	Pension
4	Transport	Money from relatives away	Carpenter
5	Money from relatives away (remittances)	Coconetting	Construction
6	Farm labour	Livestock raising	Government
7	Carpentry	Renting land	Land cultivation
8	Retail	Retail	Transport
9	Fishing	Land cultivation - copra	Fishing
10	Farming	Copra	Amakan making

Table 2 Patterns of illegal fishing

Method of illegal fishing	Time of day	Location
Cyanide from Surigao	Early morning	Other barangay than Napantao
Cyanide from Surigao	Evening	Pong-on to Napantao
Dynamite	Afternoon	
Fine net	Night	Napantao
Fine net	Night	Other barangay than Napantao
Fine net	All day	
Hooka	Evening	Marayag
Hooka	Evening	Marayag
Hooka	Evening	Marayag
Hooka	Evening	Marayag
Hooka		Napantao
Hooka	Night	Other barangay than Napantao
Hooka	Night time	Punta
Moro ami	Day	Marayag
Moro ami	Day	Marayag
Small net fishing	Sunday morning	Punta
Stone + net fishing	Night time	Punta
Trawlers	Night	Other barangay than Napantao
Tubli	Day	Marayag
Tubli	Morning	Marayag
Tubli	Morning and afternoon	Marayag
Tubli	Morning and afternoon	Marayag
Tubli	Night	Marayag
Tubli	Night and day	Punta
Tubli	Night and day	Punta
Tubli	Sunday morning	Punta

Table 3 Reasons for illegal fishing

Reason	Percent
No comment	36.9
More catch	15.6
Laziness	9
Direct need	6.6
Less fish, insufficient catch	6.6

Don't know	5.7
Lack of knowledge	3.3
More catch, more money	3.3
Don't know	2.5
Easy catch	1.6
Hardship	1.6
Selfish people	1.6
Destroy the sea	0.8
Doesn't look in future	0.8
Don't care about the environment	0.8
Don't understand the law	0.8
Greed	0.8
Quick catch	0.8
Secure catch	0.8
Total	100

Table 4 Type of fish caught per fishing method - Napantao

Hook and line	Nukos	Squid
Hook and line	Saminan	Trevally/jack
Hook and line	Saminan	Trevally/jack
Hook and line	Labayan	Wrasse
Hook and line	Labayan	Wrasse
Net fishing	Tugnos	Anchovies
Net fishing	Solid	Fuseliars
Spear fishing	Pata	Damsels
Spear fishing	Lapu lapu	Grouper
Spear fishing	Lapu lapu	Grouper
Spear fishing	Saminan	Jack
Spear fishing	Mangsi	Mackerel
Spear fishing	Mol mol	Parrot
Spear fishing	Mol mol	Parrot
Spear fishing	Mol mol	Parrot
Spear fishing	Kitong	Rabbit fish
Spear fishing	Kitong	Rabbit fish
Spear fishing	Nukos	Squid
Spear fishing	Sowahan	Surgeon
Spear fishing	Labayan	Wrasse

Activities	Type/ Family/ Species Visayan	Type/ Family/ Species English
Gleaning	Kinhason	Shells
Hook and line	Mabgas	Anchovies
Hook and line	Pangalwan	Barracuda
Hook and line	Salinggokod	Bream
Hook and line	Tuwas	Bream
Hook and line	Salingukod	Bream
Hook and line	Manglo	Bullseye
Hook and line	Pata	Damsels
Hook and line	Pata	Damsels
Hook and line	Pata	Damsels
Hook and line	Solid	Fuseliers
Hook and line	Dano	Fuseliers
Hook and line	Solid	Fuseliers
Hook and line	Solid	Fuseliers
Hook and line	Baghak	Grouper
Hook and line	Lapu lapu	Grouper
Hook and line	Lapu lapu	Grouper
Hook and line	Saminan	Jack
Hook and line	Turiki	Lizard fish
Hook and line	Tarique	Lizard fish
Hook and line	Mangsi	Mackerel
Hook and line	Bangus	Milk fish
Hook and line	Cugita	Octopus
Hook and line	Mol mol	Parrot
Hook and line	Mol mol	Parrot
Hook and line	Salindato	Rainbow runners
Hook and line	Gangis	Reef fish
Hook and line	Tigi	Reef fish
Hook and line	Lambo	Reef fish
Hook and line	Lanian	Reef fish
Hook and line	Tadi	Reef fish
Hook and line	Lambo	Reef fish
Hook and line	Sagid	Reef fish
Hook and line	Budloy	Scad
Hook and line	Bat-og	Seapike
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid
Hook and line	Nukos	Squid

**Table 5 Type of fish caught per fishing method
- Marayag**

Activities	Type/ Family/ Species Visayan	Type/ Family/ Species English
Fish trap		reef fish
Hook and line	pata	damsel
Hook and line	bukid	fuselier
Hook and line	mangsi	mackerel
Hook and line	mangsi	mackerel
Hook and line		reef fish
Hook and line		reef fish
Hook and line	gangis	reef fish
Hook and line		reef fish
Hook and line	budloy	scad
Hook and line	bat-og	seapike
Hook and line	Bat-og	seapike
Hook and line	bat-og	seapike
Hook and line	nukos	squid
Hook and line	nukos	squid
Net fishing	bolinao	anchovy
Net fishing	bolinao	anchovy
Net fishing	kubutan	cuttle fish
Net fishing	pata	damsel
Net fishing	lapu lapu	grouper
Net fishing	lapu lapu	grouper
Net fishing	turiki	lizard fish
Net fishing	salinyasi	mackerel
Net fishing		reef fish
Net fishing		reef fish
Net fishing	tulingan	skipjack
Net fishing	lipti	sweetlip
Net fishing	lipti	sweetlip
Net fishing	labaynan	wrasse
Spear fishing	bakasi	eel
Spear fishing	bagawan	fuselier
Spear fishing	pugapo	grouper
Spear fishing	salinyasi	mackerel
Spear fishing	mol-mol	parrot
Spear fishing	mol-mol	parrot
Spear fishing	tagutungan	porcupine fish
Spear fishing	lanukon	reef fish
Spear fishing	hutik	reef fish
Spear fishing	lanukon	reef fish
Spear fishing	budloy	scad
Spear fishing	katambak	snapper
Spear fishing	katambak	snapper
Spear fishing	baga	soldier fish
Spear fishing	lipti	sweetlip
Squidjiggs	nukos	squid

**Table 6 Type of fish caught per fishing method
- Punta**

Activities	Type/ Family/ Species Visayan	Type/ Family/ Species English
Buso / hooka		reef fish
Hook and line	pata	damsels
Hook and line	pata	damsels
Hook and line	timbang	goat fish
Hook and line	Lapu lapu	grouper
Hook and line	Baho	Mackerel
Hook and line	dagnig	Mackerel
Hook and line	mol mol	parrot fish
Hook and line	mol mol	parrot fish
Hook and line	dangit	rabbit fish
Hook and line	lambo	reef fish
Hook and line	potek	reef fish
Hook and line	habgaon	reef fish
Hook and line	suga	soldier fish
Hook and line	nukos	squid
Hook and line	nukos	squid
Hook and line	saminan	trevally/jack
Light fishing	tugnos	anchovies
Light fishing	bulinao	anchovies
Net fishing	solid	fuseliers
Net fishing	solid	fuseliers
Net fishing	solid	fuseliers
Net fishing	salignasi	Mackerel
Net fishing	Salindato	rainbow runners
Net fishing	Salindato	rainbow runners
Net fishing	gabon	reef fish
Net fishing	Bulis	tuna
Spear fishing	Ilak	drummer
Spear fishing	Lapu lapu	grouper