

# Saving Visayas: Issues, Initiatives and Innovations in Environmental Management

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## Saving Visayas

The Visayas group of islands located at the heart of the Philippines, was defined by political geography in three clusters: Eastern Visayas with the provinces of Biliran, Eastern Samar, Northern Leyte, Northern Samar, Southern Leyte, Western Samar; Central Visayas composed of Bohol, Cebu, Negros Oriental and Siquijor; and Western Visayas which includes Aklan, Antique, Capiz, Guimaras, Iloilo and Negros Occidental. These provinces are located in the islands of Samar, Negros, Panay, Leyte, Cebu, Bohol, Siquijor, Guimaras.

Though some of these islands are among the largest in the Philippines, the Visayan islands are technically small islands — many with access to coastal and lowland resources but with minimal high mountain peaks. The highest peaks of these group of islands can be located in Panay (the Baloy-Madiaas Mountain Range) and Canlaon in Negros. Cebu has mountains no higher than 2000 ft, Samar has irregular mounds of hills, while Bohol and Guimaras are basically hilly in some parts. Visayas boasts of centers for trade and industry (e.g. Cebu, Iloilo, Negros Occidental) and rich coastal resources (e.g. Visayan and Bohol seas), world-class beach resorts (e.g. Boracay and Panglao islands) and ecotourism areas (e.g. Bohol, Dumaguete, Guimaras and Aklan in Panay island) Except for Cebu, many of the smaller islands depend on coastal resources while the larger islands (e.g. Negros and Panay) lead in agricultural production.

## Monitoring the state of the environment

### *Pressure on Fisheries Resources*

The foremost challenge in assessing the state of the environment is the access to official government data needed to establish upland, lowland and fisheries environmental trends within the 1990-2004 time frame. The fisheries sector has the most comprehensive data based on fisheries production, but the data set does not provide an analysis vis a vis supply. Alternative data sources indicate that as population



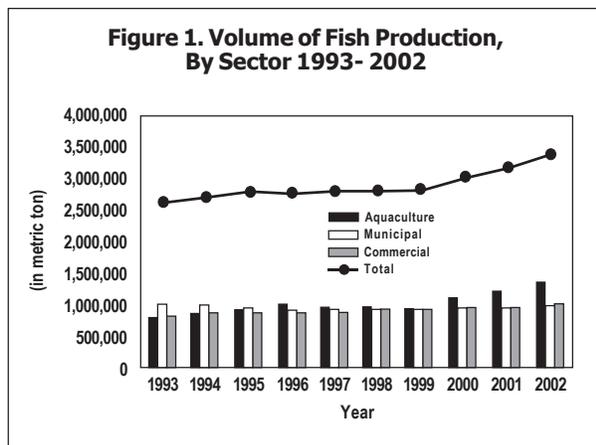
growth soars, attempts at increasing fisheries production drive fisheries resources to a rapid decline.

The waters surrounding the Visayas host abundant marine resources—but droves of small and commercial fishers are threatening the sustainability of sea resources owing to over-and irresponsible fishing. Even at the present state of exploitation and open access fishing, the Visayas seas are among those with highest fish yields. The Bureau of Fisheries and Aquatic Resources tables<sup>1</sup> on the next page show this.

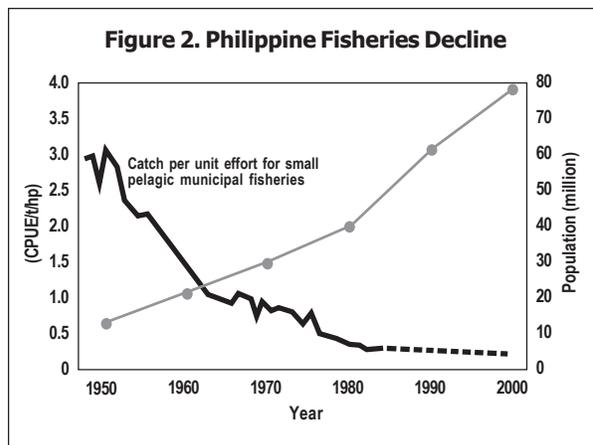
Assessment in 2002 put Regions VI and VIII among the top three in municipal fisheries production and Region VI among the highest in commercial fisheries production. Yet, the productive yields

<sup>1</sup> Department of Agriculture BFAR, Commercial and Municipal Fisheries by Major Fishing Grounds, [www.bfar.da.gov.ph](http://www.bfar.da.gov.ph) accessed on 28 January 2005

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Source: Bureau of Fisheries and Aquatic Resources<sup>2</sup>



Source: FISH Project<sup>3</sup>

**Table 1. Average percentage share of Marine Municipal Fisheries Production by Major Fishing Grounds, 1992-1995 (in MT)**

Fishing Ground	Total	% to Total
1. Visayan Sea	92,885	11.50
2. Bohol Sea	84,305	10.44
3. East Sulu Sea	78,491	9.72
4. Moro Gulf	74,765	9.26
5. Guimaras Strait	55,106	6.82
6. South Sulu Sea	44,000	5.45
7. West Palawan Waters	38,444	4.76
8. Lamon Bay	37,138	4.60
9. Leyte Gulf	36,587	4.53
10. Samar Sea	35,622	4.41
11. Davao Gulf	28,365	3.51
12. Cuyo Pass	27,253	3.37
13. Tayabas Bay	22,500	2.79
14. Others	152,063	18.83
<b>Total</b>	<b>807,524</b>	<b>100.00</b>

**Table 2. Average percentage share of total commercial fish Production by Major Fishing Grounds, 1992-1995 (in MT)**

Fishing Ground	Total	% to Total
1. West Palawan Waters	158,220	18.71
2. South Sulu Sea	149,243	17.65
3. Visayan Sea	137,942	16.32
4. Moro Gulf	98,050	11.60
5. Lamon Bay	41,901	4.96
6. Bohol Sea	34,263	4.05
7. East Sulu Sea	29,071	3.44
8. International Waters	25,558	3.02
9. Leyte Gulf Samar Sea	23,385	2.77
10. Guimaras Strait	23,382	2.77
11. Manila Bay	21,899	2.59
12. Tayabas Bay	19,826	2.35
13. Sibuyan Bay	15,434	1.83
14. Others	67,272	7.96
<b>Total</b>	<b>845,446</b>	<b>100.0</b>

**Table 3. Total Fish Production (Metric Tons)<sup>5</sup>**

Region	1997	1998	1999	2000	2001	2002 (Jan-Mar)	2003 (Jan-Mar)
VI	320,961	309,174	337,070	356,998.2	357,596	81,385.3	<b>81,255.6</b>
VII	153,970	152,332	159,243	164,545	191,531	51,853.3	<b>51,080.9</b>
VIII	<b>73,707</b>	<b>72,312</b>	<b>76,200</b>	<b>78,728</b>	<b>91,318</b>	<b>24,126.7</b>	<b>28,698.3</b>

cannot hide the issues confronting the seas of Visayas and its coastal communities. Many of the islands are in the list of priority areas for marine biodiversity conservation<sup>4</sup> because of threats to the diverse marine resources. Among these sites are the Apo, Sumilon, Panglao-Balicasag, Pamilacan, Bais, Mactan, Olango Islands in Central Visayas; Taklong Island in Western Visayas; and Guiuan, Rapurapu and Polilio in Eastern Visayas.

A study on the status and trends of fisheries in Central Visayas<sup>6</sup> puts a different light on the produc-

<sup>2</sup> BFAR (2004), Fisheries Profile, Department of Agriculture: Bureau of Fisheries and Aquatic Resources from [www.bfar.gov.ph](http://www.bfar.gov.ph).

<sup>3</sup> Dalzell P., P. Corpuz, R. Ganaden and D. Pauly, 1987. Estimation of Maximum Sustainable Yield and Maximum Economic Rent from the Philippine Small Pelagic Fisheries: BFAR Tech Pap. Ser. 10(3): 23 p.

<sup>4</sup> Alino and Uychiaoco 1995 in Uychiaoco, Arceo, Alino, Cheung, et al. in Marine Protected Areas in Southeast Asia: Philippines, [www.arbc.org.ph/BISS/MarinePA/ph1.htm](http://www.arbc.org.ph/BISS/MarinePA/ph1.htm) accessed on 5 February 2005.

<sup>5</sup> Bureau of Agricultural Statistics, Fisheries Statistics of the Philippines (1997-2001), Philippines: Department of Agriculture, 2003.

<sup>6</sup> Green, S., Flores, J., Dizon-Corales, J., Martinez, R., Nunal D. R., Armada, N., White, A. (2004). The Fisheries of Central Visayas, Philippines: Status and Trends. Cebu City: Coastal Resource Management Project of the Department of Environment and Natural Resources and the Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, 159p.

tion rates from the area. Over the last four decades, the catch per unit effort decreased among municipal fishers across time while commercial fishers account for about 60 percent of all landed fish in the region. This is viewed as an indication of weak coastal law enforcement in municipal waters. Overfishing (e.g. economic, ecological, growth, recruitment) has been identified since the 1980s. Ecosystem change is manifested by a shift in the quality of fish catch (from demersals to coastal pelagics and from shrimp-dominant to squid-dominant catch) in the region. The absence of clear political boundaries, illegal fishing in municipal waters, over efficient fishing gear and degraded habitat were cited as worsening the state of the fishery ecosystem in Central Visayas.

### Extent of deforestation

Accessing upland data set was difficult. Only forestry data for 1960s-1989 and 2003 were available in the regional offices of the Visayas. The 2003 data are still under validation. Thus, any data from the time frame of interest are but projections. Attempts at extracting data from the national database on forestry were limited by current changes in data management in DENR's forestry website.

The extent of forest destruction in the Philippines in general is alarming as the table below shows. However, the 1988 Haribon-generated image (based on NAMRIA, 1988 references) and the TREES-generated image of the deforestation rate in the Philippines presented below, will highlight the extent of deforestation in the Visayas. The area, thus, is an identified site of endangered species because of its threatened ecosystem.

### Agricultural productivity and biodiversity loss

The drive for agricultural productivity in the Philippines came with poverty alleviation measures to ensure food security through modernization. Among the major producers of palay in the country are from Western Visayas. The yield in that region is indicated below.

The high yields, however, mask the biodiversity loss, raised by civil society organizations and

**Table 4. Trail of Forest Destruction in the Philippines<sup>7</sup>**

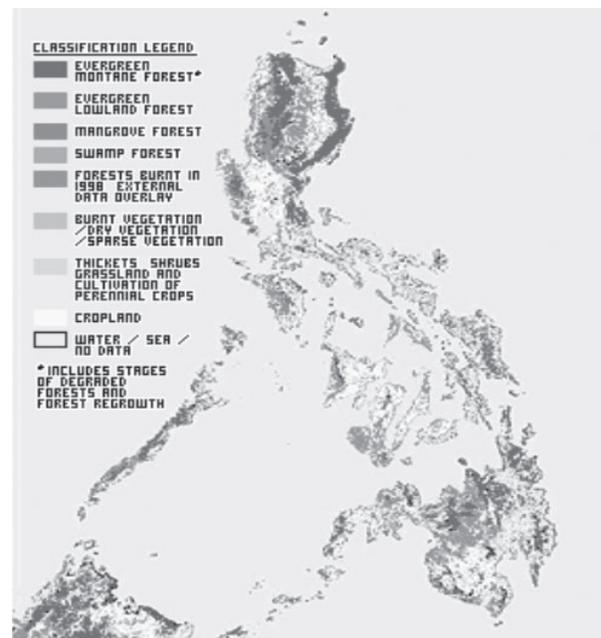
Year	Remaining forest cover (Millions of hectares)
1575	27.5
1920	18.7
1934	17
1967	10.4
1972	10.1
1980	17.4
1987	6.7
1995	5.4

**Figure 4. Extent of Deforestation in the Philippines**



Source: Haribon, 2005<sup>8</sup>

**Figure 5. Forest Cover Map of the Philippines**



Source: Stibig, et. al., 2002<sup>9</sup>

<sup>7</sup> Bantayan, Nathaniel, Geomatics-Assisted Impact Assessment of Land-use Change on the Biodiversity of Mt. Makiling, Philippines, paper presented at the 22nd Asian Conference on Remote Sensing, Singapore, 2001.

<sup>8</sup> Generated from NAMRIA, 1988 references accessed from Haribon Foundation for the Conservation of Natural Resources, 2005, www.haribon.org.ph .

<sup>9</sup> Stibig, H.J., Beuchle, R. and Javier, P. 2002. TREES Publication Series, D:N:3, EUR 20123 EN European Commission, Luxembourg

**Table 5. Production(in Metric Tons) Region VI<sup>10</sup>**

	1990	1995	1998	1999	2000	2001	2002
Palay	886,732	1,291,275	1,044,462	1,531,728	1,608,337	1,589,531	1,732,602
Irrigated	450,499	747,646	630,250	922,355	976,772	945,759	990,945
Rainfed	436,233	543,629	414,212	609,373	631,565	643,772	741,657
Corn	34,353	57,600	77,619	68,510	80,340	75,540	87,065
White	8,027	18,547	28,429	27,512	36,042	31,765	34,588
Yellow	26,326	39,053	49,190	40,998	44,298	43,775	52,477

farming communities. Identified as a primary threat is the government program promoting a limited set of crop varieties (e.g. hybrid rice, Btcorn) to promote agricultural productivity. Disaggregated data on land area planted to crop varieties, however, have yet to be comprehensively generated.

This paper attempts to give readers snapshots of the current environmental state of the Visayas and the initiatives to secure its natural resources. Below are case studies of coastal, lowland and upland areas.

### **Threatened Fishery Ecosystem and Coastal Resource Management**

Initiatives at securing the coastal and fishery resources have been a long struggle for many communities, local government units and concerned sectors. Issues and attempts at coastal resource management in the Visayan waters and islands are found below.

#### **The Visayan Sea**

Angel Alcalá, former secretary of the Department of Environment and Natural Resources (DENR) and well-respected academic, has aptly summarized the problem of one of the largest fishing grounds of the Visayas, the Visayan sea (enclosed by Panay, Negros, Cebu and Masbate islands). In his research on Negros and Northeastern Panay in 2004, Mr. Alcalá notes : "The Visayan Sea was once a very fishery-productive inland sea of the Philippines. But 50-60 years ago, the sea was heavily fished by trawlers with the approval of the BFAR. The Visayan Sea also hosts some of the terrestrial species endemic to central Philippines, indicating its evolutionary importance... The overexploited more valuable fish species have been replaced by the less nutritious species of squids and cuttlefish, following the known trend in other similar depleted areas in the Philippines. There are no visible conservation measures, except for the 30,000-hectare Maka Reef complex off Sagay City, where reef and seagrass species are protected from fishing. Destructive fishing methods such as blast-fishing and compressor-fishing plus cyanide, are still used by fishers.

The provisions of the law governing the extent of the fished area for noncommercial fishers are not implemented, in effect allowing commercial fishers access to areas reserved for poor, small-scale fishers. Complaints of non-commercial fishers have not been given attention by local authorities." He notes that a challenge to the fishery colleges and universities in Negros and Iloilo is information and education on fishery conservation. Furthermore, "the coastal areas of these islands are teeming with people, apparently with a high birth rate to judge from the number of children. Most of the people, with the possible exception of the fish traders, are poor and live a hand-to-mouth existence. This high population of permanent and temporary residents has probably more than doubled during the last 10-15 years. Lastly, local governments have failed to realize the potential for tourism of some of the unique geological features of certain islands (example caves) and have failed to implement measures to conserve them."<sup>11</sup>

#### *Multiple Attempts at Coastal Resource Management in the Visayan Sea*

In 2002, there was an initiative to address the issues of depleted resources, habitat degradation, unsustainable resource use patterns and resource use conflict and poverty among the people in the Visayan Sea areas. The initiative includes Masbate of Region V, Iloilo and Negros Occidental of Region VI and Cebu and Negros Oriental of Region VII. Among those involved in this foreign-funded undertaking are local government units, BFAR's Western Visayas office, and the academe. The 8-year project has and will continue to provide alternative income-generating opportunities, encourage and facilitate networking among stakeholders, implement an improved Coastal Resources Management and Monitoring project, facilitate the formulation of a Joint Management Plan (JMP), and set up an information base for resource management and

<sup>10</sup> Bureau of Agricultural Statistics, Region VI.

<sup>11</sup> Angel Alcalá, Visayan Sea, Malaya: Environment, Philippines, 15 May 2004, [www.malaya.com.ph/may15/envi1.htm](http://www.malaya.com.ph/may15/envi1.htm) accessed on 20 January 2005.

monitoring.<sup>12</sup> There have already been initiatives by the local government units and concerned sectors at managing coastal resources. An example of these is the NIACDEV or the Northern Iloilo Alliance for Coastal Development is an attempt at inter-municipal governance of municipal waters in seven municipalities in Northeastern Panay.

### Bohol Sea

Bohol Sea is also a primary fishery resource area for many Visayans. At 29,000 square kilometers, it stretches from Sulu Sea to the Pacific Ocean and is surrounded by southeast Mindanao, Negros, Bohol and Leyte. It is one of the highest yielding for municipal and commercial fisheries in the Philippines.

Knowing the value of the sea has led concerned sectors to work towards a more sustained volume and diversity of fish catch in the area. A primary strategy was the protection of marine reserves or no-take zones for marine exploitation. According to data gathered by the Silliman University Angelo King Center for Environment and Management, there are approximately 30 marine reserves in the area, eight of which are in the Visayas. Of these, the Apo Island Marine Reserve is the oldest. These protected areas were products of joint collaboration among local government units, academe, line agencies like BFAR, non-government organizations, organized fish wardens and peoples' organizations.<sup>13</sup>

#### *Multiple Attempts at Coastal Resource Management in the Bohol Sea*

Though the success of these protected areas is debatable, the experiences of Apo Island in Negros Oriental and Selinog Island in Dapitan indicate an increase in fishery yield and biodiversity in marine resources in the area, which also enhances the fishery catch in adjacent nonreserve areas. Effective partnerships among stakeholders and the strong involvement of communities are cited as success factors. Lack of enforcement facilities and weak political will and lack of support from local government officials were primary reasons for failure of law enforcement in the marine reserves. To address the problems, an association of marine protected area managers was organized in 2003 known as the name Hugpong Tagdumala sa Sangtuaryo sang Kadagatan sa Bohol (HUTASAKAB).<sup>14</sup>

Other attempts at conservation in the area include the coastal resource management and wildlife protection/conservation at Tahong-tahong



islet in Talibon, Bohol; the sustainable coastal area development (SCAD) in Barili, Cebu; the creation of resource management councils in Samar; Fishery Integrated Resource Management for Economic Development (FIRMED) in Daram Island, Samar; the Fishery Sector Program in Carigara, Leyte. These are but a few of the many initiatives in the area. Following are specific examples of these initiatives.

#### *Bohol: PROCESS-Bohol CBCRM Experience*

The island province of Bohol is located in the heart of Central Visayas, approximately 556 nautical miles south of Manila and about 40 nautical miles southeast of Mactan Island of Cebu Province. Bohol is the tenth largest province, with a total land area of 411,726 hectares – 78 percent of which is classified as alienable and disposable (A&D) lands. It has 48 municipalities, 30 of them coastal; the rest are interior towns.

Based on the 2000 NSO survey, Bohol had a total population of 1.137 million, making it among top 20 most populous provinces. The population increased by almost 3 percent annually.

Bohol has a total of 314 coastal barangays, 45 of which are urbanized. The coastal barangays constitute roughly 25 percent of Bohol's population. The island province was also endorsed by various entities as one of the best tourist destinations. In 2003, the Department of Tourism and the Philippine Travel Tour Association recognized Bohol as the leading tourism destination, citing its ecology, culture, heritage and agriculture as major attrac-

<sup>12</sup> GTZ, Visayan Coastal Resources and Fisheries Management Project, [www2.gtz.de/Philippines/projects/VisSea.html](http://www2.gtz.de/Philippines/projects/VisSea.html), accessed on 30 January 2005.

<sup>13</sup> Indab and Suarez-Aspilla 2004, Community-based Protected Areas in the Bohol (Mindanao) Sea, Philippines, NAGA Worldfish Center Quarterly, Vol 27 No. 1 and 2 Jan-Jun 2004.

<sup>14</sup> Ibid.



tions. Department of Tourism data show tourist arrivals increasing by 16 percent in 2001 and 2002. Domestic tourists accounted for more than 80 percent arrivals.

### 1. Challenges to Coastal Resources

In year 2000, the provincial coastal databank<sup>15</sup> recorded a total of 5,127 registered municipal fishers among the coastal towns' combined population of 258,017. A total of 6,404 fishing boats were registered by Municipal LGU (MLGUs) – approximately half of them are motorized.

One major problem in the island was the proliferation of illegal fishing and extraction of marine resources. Rampant illegal fishing in the municipal waters of Bohol destroyed the marine habitat and shrank aquatic resources. With coastal population rising, more and more people turned to the sea for their food requirements and livelihood.

To have enough catch to bring to market, some marginal fishers resort to prohibited methods of fishing and gleaning despite their life-threatening and life-long effects. Illegal fishing through the use of cyanide and other noxious substances was widespread in the northern part of the province, specifically in the municipal waters of Getafe and Talibon. The fish aggregation devices were widely used off the shores of western Bohol, specifically within the stretch of Loon to Inabanga. Use of fine mesh nets, coral extraction, commercial fishing and other banned methods were uncontrollable. Illegal sand extraction was also rampant in various coastal areas.<sup>16</sup>

The absence of other livelihood options left local communities with no choice but go on with their illegal fishing and marine resource extraction just to earn a meager amount for livelihood. Undelineated municipal waters, not standardized nor harmonized CRM ordinances; and, lack of

political will of local chief executives to resolve the existing coastal environment issues, all contributed to the failure of the LGUs' initiatives on marine ecosystem conservation.

Large commercial fishers from neighboring islands, particularly from Misamis Occidental, Dumaguete and Cebu, infiltrated the Bohol municipal waters and harvested Bohol's fishes and other marine resources. The capture and slaughter of marine mammals and manta rays were once ordinary activities in Pamilacan Island.

The significant and distressing result of all these damaging activities: the daily fish catch of a marginal fisher of approximately 8 kilos per day in 1970 decreased to a meager 2 kilos per day in year 2000.<sup>17</sup> If unresolved, fish supply is expected to continuously decline until none is left even for a family's own consumption.

### 2. Attempts at Community-Based Coastal Resource Management

#### 2.1 Learning to work together: Exploring the Multi-stakeholder Approach

Three years after the environmental summit, all coastal stakeholders pooled their resources for a province-wide Coastal Law Enforcement Summit. In May 2000, the local chief executives, members of legislative bodies, judiciary, law enforcement agencies, peoples organizations (POs), business sector and academe; and representatives of the national, provincial and nongovernment organizations, convened with the objective of resolving the rampant problem of illegal fishing in the municipal waters of Bohol. Mapping of illegal fishing and other related issues were made. Consequently, stakeholders found out that a single strategic plan is inappropriate and ineffective to other coastal areas owing to variations in existing species of marine resources, types of illegal fishing activities in the area, and other factors. The summit also resulted in the organization of three congressional district Coastal Law Enforcement Councils (CLECs). For each council, a multi-sectoral Composite Law Enforcement Team (CLET) was formed to conduct seaborne patrol operations in their areas of jurisdiction.

To support the lower LGUs, barangay fish wardens were re-organized, organized or strengthened. Municipal coastal database recorded 899 deputized municipal fish wardens in 1999. The

<sup>15</sup> Bohol Island: Its Coastal Environment Profile

<sup>16</sup> BEMO, Municipal Coastal Database 2000

<sup>17</sup> Bohol Island: Its Coastal Environment Profile

number increased by 11 percent during the initial year of coastal law enforcement intensification, but decreased by 27 percent by year 2002 (Table 6).

**Table 6. Population of Fish Warden at Coastal Municipalities**

Number of Fish Wardens		Percentage of increase/ decrease
1999	899	
2000	1015	+11
2002	665	-27

## 2.2 Attempts at Environmental Protection and Biodiversity Conservation

From year 1995 to 2001, at least 102 fish sanctuaries and marine protected areas (MPAs) were recorded, although there was no clear record as to whether they were still operational as of the last MCD update in year 2000. Of the total number, approximately 50 percent were located off coast of rural barangays.

The Fishery Development Program (FDP) of PROCESS-Bohol started assisting the LGUs in setting up MPAs in 2002. Technical assistance was extended - from the initial consultation phase to the periodic monitoring and evaluation of aquatic resources. Eleven MPAs are now operational, 10 of which undergo periodic monitoring of PROCESS-Bohol, Inc. and the Committee on Monitoring & Evaluation (M & E) of the local MPA Management Councils. The remainder was just newly installed.

## 2.3 Municipal Water Delineation

In 2003, the NAMRIA held mapping workshops with the chief executives of Bohol's 47 coastal towns and one city to clearly delineate the municipal waters of adjoining municipalities. Majority of the boundaries were clarified and legally settled within the LGU level while five towns remained in dispute. To settle the disputes, the NAMRIA scheduled site visits to the areas to show the concerned LGUs their exact municipal water boundaries using the Global Positioning System (GPS) and, at the same time, check the authenticity of the documents presented by LGU claimants as proof of their jurisdiction.

## 2.4 Strengthening Fisheries and Aquatic Resource Management Councils (FARMCs)

Pursuant to Chapter 3 of the Implementing Rules and Regulations of Republic Act 8550, otherwise known as the Philippine Fisheries Code of 1998, the Fisheries and Aquatic Resource Management Councils (FARMCs) at the provincial, municipal

and barangay (optional) levels should have been organized. PROCESS-Bohol, Inc. in coordination with concerned LGUs, strengthened the MFARMCs of its eight assisted MLGUs and their component BFARMCs through the conduct of training, workshops seminars and meetings.

## 2.5 Crafting a Coastal Resource Management Plan

CRM planning is a participatory process of planning, implementing, and monitoring sustainable uses of coastal resources through collective action and sound decision-making. The CRM planning is supposed to generate a Municipal CRM Plan. The municipalities of Albur, Anda, Buenavista, Calape, Candijay, Clarin, Dimiao, Garcia-Hernandez, Guindulman, Getafe, Inabanga, Jagna, Loay, Loon, Mabini, Maribojoc, Pres. Garcia, Talibon, Tubigon, Ubay, Valencia and Tagbilaran City in Bohol have already formulated, adopted and implemented their respective CRM Plans.

Provincial and Regional Validation Teams of CRM projects monitor compliance with the plans. As soon as the validation complete, the coastal town is awarded with a CRM Certification. Once an area is CRM-certified, more prospective development partners are projected to invest. The towns of Jetafe and Inabanga are now already CRM-Certified; Albur, Maribojoc and Guindulman are still under validation.

## 2.6 Community Organizing

From 1999 to 2002, 54 CRM organizations were organized in the entire province of Bohol-this 31 percent rural communities along the coast.<sup>18</sup> These CRM organizations were organized and managed by POs and NGOs with assistance from the DENR, BFAR, other line agencies and other nongovernment agencies.

NGOs, like PROCESS-Bohol, facilitated the links between the assisted POs and the micro-lending project of the Department of Social Welfare and Development (DSWD)'s Self-Employment Assistance Program. Likewise, organizations were assisted in the installation of fish cages, encouraged to adopt the more economical and environment-friendly method of swine raising, and were provided technical assistance on the management of their respective finances, bookkeeping and program monitoring and evaluation.

## 2.7 Community-Based Sustainable Tourism

The "Community Life Tour" offered by three PROCESS-assisted POs features breathtaking

<sup>18</sup> BEMO, Municipal Coastal Database 2000

views and diverse natural resources of the province, especially those found along the coasts and other bodies of water, the unique traditions and skills of the Boholanos, and, their culinary expertise in preparing fresh seafood recipes. All located within Maribojoc Bay area, the three POs—SAVIMA, UBCA and DEA—accept guests interested to be part of a local community and experience a simple Boholano day. The tour includes homestay, boardwalk journey, river cruise, bird watching and other sidelights like hands-on lessons in handicraft making. Local and foreign visitors may take part in the province's reforestation project by purchasing mangrove seedlings from nurseries and avail themselves of the Community Life Tour package for minimal fees.

### **Negros Oriental: seeing the fruits of and issues in marine resource management**

Major coastal areas of Negros Oriental can be found in the municipalities of Manjuyod, Tanjay, Amlan, San Jose, Sibulan, Bacong, Dawin and the cities of Bais and Dumaguete. Negros Oriental is, likewise, a coastal area teeming with abundant resources under pressure from economic and population demands. Stretched in a 300-kilometer coastline, Negros Oriental has 186 kilometers of coral area. Its major fishing grounds, the Northern Sulu Sea and Tanon Strait, yield, skipjack, yellow-fin tuna, mackerel, scud, slipmouth and anchovies year-round. However, the reefs of Negros Oriental suffer from overfishing.<sup>19</sup> Major issues common to most of these areas include "overfishing, beach and shoreline erosion, siltation, mangrove over-harvesting, encroachment by fishers of other municipalities, lack of security of tenure on land and/or home lot" lack of alternative livelihood and improper waste management.<sup>20</sup> Innovations in marine resource management by the academe and local government units prevented the rapid depletion of fishery resources in their waters.

#### *1. Apo Island*

Since the formalization of the marine reserve in 1985 spearheaded by Silliman University, Apo has grown as a model for community-based resource management, not only in the Philippines, but throughout Southeast Asia. It is also considered the oldest marine reserve in the Philippines. Several factors contributed to the development of

Apo island (i.e. political support from the municipality, the small human population). Highly commendable is the leadership of the community that has taken responsibility in managing its marine resources.

The Marine Management Committee (MMC) remains an active and strong people's organization. It is very effective in enforcing the provisions of the reserve and maintaining the sanctuary. The user's fees collected for the island are used for the upkeep of the sanctuary, education, medicine, and emergency needs of the community. The provisions of the reserve are enforced by the MMC, Banty Dagat, and the Barangay Officials with full support from the community. The plan to regulate tourism activities and financial support must be implemented to continue the training of the community on alternative livelihood (e.g. basket and hat weaving, t-shirt printing, etc..)

#### *2. Bais Bay*

Bais Bay is the richest fishery area in Negros Oriental. It has about 200 hectares of mangrove area and high yields of rabbitfish, shellfish, shrimps and crabs. Siltation from soil erosion of bare mountains surrounding the bay, overexploitation of fishery resource, mangrove degradation, and pollution from agricultural and milling activities around the Bay are among the main issues in coastal resource management.

Coastal resource management (CRM) in Bais Bay was initiated by the Silliman University Marine Laboratory. Management areas consist of the Mangrove Wildlife Sanctuary and the proposed fish sanctuaries. Offshore guardhouses and patrol bancas are among the available facilities. Re-planted mangrove trees, occupying a few hundreds of square meters, are now bearing fruit. Since 1995, the mayors of the Municipality of Manjuyod and Bais City have been active in the protection of marine resources. However, a land dispute between the two mayors over Campuyo reef and its vicinities and disagreement among the communities on the size of the fish sanctuary at Tagay point have led to the suspension of the legal establishment of the fish sanctuaries in the two sites. It is crucial to define the marine-protected area boundaries and install marker bouys and to enact ordinances to legalize the establishment of the marine-protected area.

#### **Panay**

Panay, surrounded by waters (e.g. Visayan Sea, Panay Gulf, Iloilo Strait, Batan Bay, Sapijan Bay)

<sup>19</sup> Ablong and Waltemath, Establishment of Marine Reserves in Negros Oriental, Phil:CVRP

<sup>20</sup> Coastal Resources of Negros Oriental in [http://oneocean.org/download/20010825/negros\\_profil/chapter2b.pdf](http://oneocean.org/download/20010825/negros_profil/chapter2b.pdf) accessed on 2 February 2005.

was once abundant in fishery resource until irresponsible fishing methods, encroachment of commercial fishing vessels in inshore seas, overfishing, pollution of the sea resulting from industrial and household waste, along with the disposal of waste and oil residues from ships and the failure to properly manage abundant fishery resource, threatened the main source of livelihood for many. Siltation due to erosion from denuded uplands as well as wastes from expanding fishponds for aquaculture had adverse effects on coastal resources. Fisherfolk observed that catch as well as variety and average size of fish caught were decreasing.<sup>21</sup> Such observation, though drawn from 22 coastal communities in Southern Iloilo, reflects of the state of coastal communities in many parts of the island. Thus, like the islands of Bohol and Negros, concerned sectors have made attempts to secure the sustainability of the coastal and fishery resources.

### 1. Community-based resource management

The experience of the Southeast Asia Fisheries Development Council in Malalison island in Antique in the island of Panay is one of the most CBCRM experience in the Visayas. In the said CBRM initiative "the people of Malalison were able to organize themselves to assign and protect a marine reserve in their area. This was in answer to their desire to implement a territorial use rights ordinance that they worked out to be passed by the local government and village councils. In addition, this move supported a previous deployment by Aquaculture Department of the Southeast Asian Fisheries Development (SEAFDEC/AQD) researchers of concrete artificial reef habitats in the area. To date, a total ban on fishing of any kind has been successfully enforced in the reserve."<sup>22</sup> Currently, "SEAFDEC/AQD researchers are carrying out a community-based coastal fishery resources management and mangrove-friendly aquaculture project in collaboration with the local governments of Ibayay municipality and its adjacent Tangalan town, in Aklan province in the Philippines. Two nongovernment organizations, Process Foundation and USWAG, are also helping SEAFDEC/AQD in the community organizing aspect of the project."<sup>23</sup> An FRMP (Fisheries Resource Management Project) is being undertaken in Sapijan Bay involving the municipalities of Ivisan and Sapijan of Capiz and Batan of Aklan province, the BFAR Region VI and the UPV Foundation, Inc.



### 2. Saving Boracay

Boracay Island, in the municipality of Malay in the province of Aklan, is a prime tourist destination, drawing tourists to its four-kilometer white beach. There are 1,259 business establishments, one golf course and several inland resorts on the island.<sup>24</sup> Intensive pressure on the coastal resources of the islands and pollution from various tourism and household activities contributed to the degradation of the island's waters. The Western Visayas office of the DENR noted that the island receives tourists and building structures beyond its carrying capacity. A massive algae bloom during the peak tourist season led to the revival of DENR's monthly monitoring of Boracay's water quality. A DENR study also monitors the effectiveness of the environmental management programs and the centralized waste treatment facility in operation in Boracay.<sup>25</sup>

## The Lowlands of Visayas

### *Challenges in Biodiversity Conservation in the Lowlands of Visayas*

The lowlands of Panay and Negros have been a major source of agricultural products in the Visayas. Western Visayas a main contributor to the 6.1 metric tons of rice produced in 2004.<sup>26</sup> The

<sup>21</sup> Tietze, U. 2000. Socioeconomic and Occupational Characteristics of Coastal Fishing Communities in Tietze U., Groenewold, Marcoux A., 2000. Demographic Change in Coastal Fishing Communities and Its Implications for the Coastal Environment, FAO Fisheries Technical Paper 403, (Rome: FAO).

<sup>22</sup> SEAFDEC, SEAFDEC/AQD bares research findings on social technologies for sustainable coastal resource management, [www.seafdec.org.ph/study2.html](http://www.seafdec.org.ph/study2.html), accessed on 3 February 2005.

<sup>23</sup> Ibid.

<sup>24</sup> DOT VI, Boracay Island List of Establishments, Iloilo City: DOT %, 2003.

<sup>25</sup> DENR VI Environment Management Bureau, Coastal Water Monitoring: Boracay Island Coastal Waters in the State of the Brown Environment Report, (Iloilo City: DENR), pp. 22-26.

<sup>26</sup> Department of Agriculture Bureau of Agricultural Statistics, July 2004.

Philippine government launched a Hybrid Rice Commercialization Program (HRCP) aimed at increasing productivity in rice farming, self-sufficiency and facilitate poverty alleviation. The program components are "seed production, procurement and distribution, seed subsidy to farmers, intensive promotions, training, and technical assistance to both hybrid seed and commercial rice growers".<sup>27</sup>

Iloilo in Panay was a target area for hybrid rice production under the Ginintuang Masaganang Ani program of the government. Though Iloilo recorded one of the highest rice yields in the Philippines, the hybrid rice program cannot entirely claim credit for it (see Table 9<sup>28</sup>.) However, the diversity of rice and corn traditionally planted has been threatened in Iloilo and across the Visayas with the government's intensive campaign and support services for the use of hybrid rice varieties for the planting of Bt corn. The program, thus, entices farmers to hybrid rice and Bt corn production while relegating the diverse rice and corn varieties into nonuse.

**Table 9. Hybrid Rice Commercialization Program Assistance Provided in Region VI CY 2003**

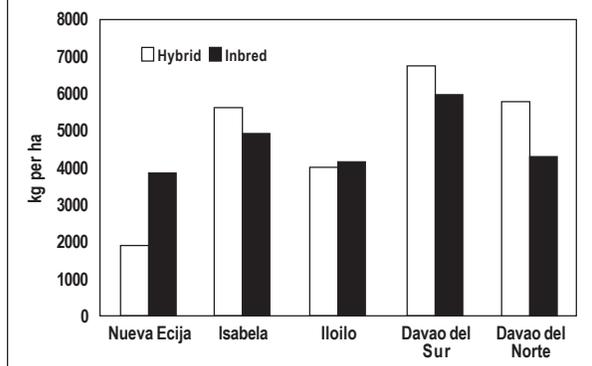
Province	No. of Bags Distributed	Area Planted (ha.)	No. of Farmers Served
Aklan	158	71	71
Antique	377	228	228
Capiz	301	239	239
Guimaras	141	134	134
Iloilo	2,133	2,024	2,024
Negros Occ.	414	346	346
<b>TOTAL</b>	<b>3,524</b>	<b>3,041</b>	<b>3,041</b>

Source: GMA Rice Program

Nongovernment organizations have launched biodiversity conservation initiatives for rice and corn in Bohol, Cebu, Negros and Iloilo. SEARICE (the Southeast Asia Initiatives of Community Empowerment), for instance, encouraged farmers to breed the seeds they plant (through participatory plant breeding), established seed banks, encouraged a community seed registry system, and facilitated seed exchange among farmers—all in the hope of enabling the continued use of diverse rice and corn varieties for this and succeeding generations. Bohol Network for Farmers Rights (BNFR) argued for biosafety and sought a ban on products with genetically modified organisms (GMOs) and secure Bohol crops from GMO contamination.

SOCIAL WATCH PHILIPPINES

**Figure 6. Yield Performance of Hybrid and Inbred Rice Across Locations WS 2002**



There is, however, a much severe threat in biodiversity conservation these days: The province of Iloilo, for instance, recorded a declining plantation in irrigated agricultural lands since 1998. Massive migration to, population increase and urbanization in Iloilo led to the rapid conversion of agricultural lands into residential and commercial use. Though there have been policies to prevent these, there is a growing real estate development in Iloilo that now clears, encroaches and changes the landscape of agricultural areas of rural areas on the fringes of Jaro and Mandurriao and the municipalities of Leganes, Zarraga, Dumangas, and Oton, among others.

### Urbanization and environmental management in Cebu

Cebu City, is a major industrial and urban location. It has a land area of 5,000 square kilometers with a 330-square kilometer city area housing most of its population (about 88 percent) near the coastal area.

The heavy influx of intra-provincial migrants, rise of informal settlements and growth in the informal economy along with land conversion, land reclamation, infrastructure development<sup>29</sup> and the passage of City Ordinance 1780 declaring a 200-meter commercial strip zone at both sides of the highway have presented Cebu City with numerous environmental challenges.<sup>30</sup>

<sup>27</sup> Bordey, et.al.. 2004. Socioeconomic Evaluation of Hybrid Rice Production in the Philippines presented at the 4th International Crop

<sup>28</sup> Bordey, et. al 2004. Socioeconomic Evaluation of Hybrid Rice Production in the Philippines, 4th International Science Crop Congress.

<sup>29</sup> Etimadi, Felisa, 2000. Civil Society Participation in City Governance in Cebu City, Environment and Urbanization, Volume 12 No. 1, April 2000 p. 58.

<sup>30</sup> Cebu United for Sustainable Water, Metro Cebu Environment Management Board, DENR and the Soil and Water Conservation Foundation reference material on Not for Sale: Lands in Protected Areas

The latter will deprive Cebuanos of forest cover it needs to secure water supply and prevent landslides.

Cebu City water demand is approximately 234,000 per day supporting a population of about 1.3 million and a rising number of industries. Domestic and industrial consumption of water is dependent on groundwater from the coastal limestone aquifer and alluvial water-bearing formation in Cebu's river delta of five rivers: Kotkot, Butuanon, Cansaga, Mananga, and Pangdan. The Cities of Cebu and Madaue have poor water quality due to domestic and industrial pollutants.<sup>31</sup> Most common of the latter is the discharge of industrial waste into rivers and channels (e.g. the FMC Marine Colloids' waste discharge into Mactan Channel).<sup>32</sup>

The growing population of Metro Cebu cities has also resulted in large amounts of waste which the local government units found difficult to dispose of. Cebu City produces 500-520 tons of waste daily.<sup>33</sup> In 2004, the Integrated Bar of the Philippines and DENR VII threatened to sue the Metro Cebu cities for failing to comply with the Solid Waste Management Act of 2001 by burning garbage in open dump sites and for failing to segregate garbage. The cost of managing solid waste has always been an issue, an impediment aggressively working towards a cleaner environment.<sup>34</sup>

Initiatives have been undertaken by stakeholders including local government units, nongovernment organizations, academic communities, and community stakeholders in partnership donor agencies to correct the degradation of Cebu's environment. A common treatment facility for waste water from small and medium-range industries is being initiated through the establishment of the Cebu Central Treatment Facility, Inc.—a private enterprise with most clients as stockholders. An attempt to save one of its rivers from pollution and degradation is awaiting its implementation through the Butuanon River Watershed Management Project. But while there may be constraints in waste and water management for the local government units, nongovernment

organizations like CLEAR in Cebu City have been initiating river water quality monitoring, a massive river clean-up in Metro Cebu areas, and helped introduce clean production techniques to Cebu's industries. Cebu City also has an Environmental Quality Control Council for Metro Cebu. It is a multisectoral organization aimed at protecting Cebu from industrial pollution.

### The uplands of Visayas

Many of the Visayan islands are characterized by lowlying and hilly areas. But two islands, Panay and Negros, have mountain peaks that have sheltered diverse flora and fauna and indigenous peoples. The following case studies present challenges faced by the mountains of Negros Island and Panay.

### Deforestation in Negros Oriental

The onset of American colonial rule ushered in further industrial growth. The grant of logging concessions in Negros was a direct result of the industrial activity in the island that in turn led to the growth of the population with the onset of development. Development came in the form of infrastructure projects – schools, hospitals, clinics and other business establishments, especially the expansion of plantations supported by subsidies from the US government. After World War II (WWII), logging on the island increased under combined foreign and Filipino ownership. By 1970, the population had risen to 2 million and stood over 3 million by 1998.

Figure 7. Map of Negros Island



<sup>31</sup> PCEEM Project Inception Report 1998 in Metro Cebu Environmental Improvement Project.2003.

<sup>32</sup> Gaylican, Christine, 2003. US Firm's Subsidiary Defies DENR on Waste Discharge, CebuDaily News, 20 June 2003.

<sup>33</sup> Gadin, Benilda. NGO Activities in the Improvement of River Quality and Environmental Education. Proceedings of the Kitakyushu Initiative Seminar on Public Participation, Kitakyushu, Japan, 21-21 January 2004.

<sup>34</sup> Versoza, R. and Campana, G, 2004. IBP, DENR may sue Metro Cebu cities

This result in a density of 220 per square kilometer, twice that of France and nearly eight times that of the US in that year (1998).

As a result of colonial administration and population growth, old-growth forest cover declined from 90 percent in the 1700's to 60 percent by the end of WWII. The last remnants of the old-growth forests below 3,000 feet were cleared by the middle of 1970. By that year it had declined to around 8 percent, 6 percent by 1984, and less than 4 percent by in 1992. In Oriental Negros, the total forestland is believed to be only 5 percent (27,011 ha.) of the total land area of the province (540,230 ha.)

These forests are now reduced to small patches of montane and mossy rain forest near the mountain tops; an old-growth lowland forest exists only as a few thin ribbons between forests and cleared lowlands. These patches and ribbons of forest now serve as diminutive islands of natural rain-forest habitat delimited by a throng of impoverished masses. Illegal logging is a threat. From January to December 2004 a total of 27.71 cubic meters of forests products such as wooden logs and timber were confiscated by Provincial Environmental and Natural Resources Office (PENRO) officials. The catch amounted to P352,556.40.

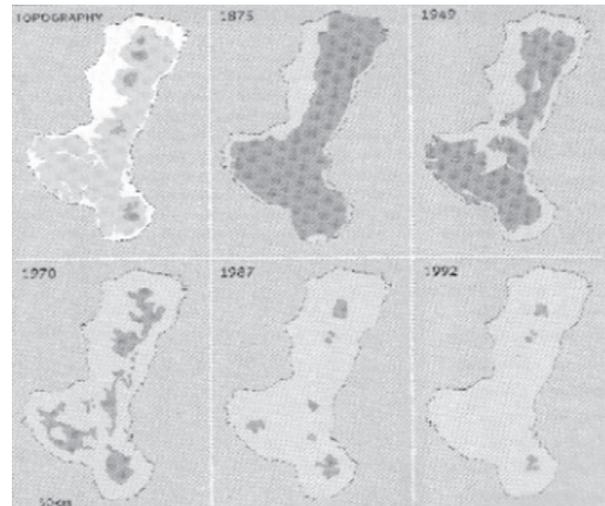
The areas of Amlan, Pamplona, Mabinay, Sibulan, Bacong, Sta. Catalina, Bayawan City, Tanjay City and Dumaguete City are identified with recorded illegal logging. The province covered around 80 percent of the natural forests in the early 1900's and at present it has alarmingly dropped to 5-6 percent. Officials warn a possible repeat of the scenario in the Quezon and Aurora provinces if such issues are not addressed. The current thrust to address this problem is to enforce existing laws to the fullest with the cooperation from both the private and public sectors.

### 1. Securing the Forest Reserve

The Mount Talinis Twin Lakes Forest Reserve has been recognized as an important but endangered ecosystem. The reserve is within the confines of the 133,000-hectare Philippine National Oil Company (PNOC) geothermal reserve. The Twin Lakes area is home to two watersheds, Mt. Talinis and Lake Balinsasayao, which help supply Negros with water. It is also the largest contiguous forest in southern Negros Oriental (1,692 hectares) with high biodiversity<sup>36</sup> and endemism ratings<sup>37</sup> and rich mineral deposits. The latter is a major reason to target the area for mining.

In year 2000, Proclamation 414 declared

**Figure 8. Deforestation in Negros 1875-1992<sup>35</sup>**



8,000 hectares of the Twin Lakes area as protected. It is now called the Balinsasayao Twin Lakes Natural Park. The declaration does not include the Mt. Talinis area. In 2004 House Bill 1462 attempted to further reduce the protected area to 3,749 hectares. Although the proposed bill did not prosper because of resistance from civil society sectors in Negros Oriental, the threat to the forest reserve still looms.

Concerned sectors in Negros Oriental are calling for the creation of a multistakeholder Protected Area Management Board. Attempts to curb *kaingin* and small-scale illegal logging have also been initiated by partners of the Foundation for Philippine Environment (FPE), CenTrop and TMF in Negros Oriental, through environment-friendly alternative livelihood projects (e.g. sustainable agriculture, organic fertilizer production and duck and vegetable-raising. People's Organizations (POs) linked with the CenTrop and TMF have been learning wildlife biomonitoring skills and have participated in ethnobiological survey and monitoring of the Twin Lakes area. In the process, members of the POs begin to appreciate the value of wildlife protection.

### Cebu: protected areas needing protection

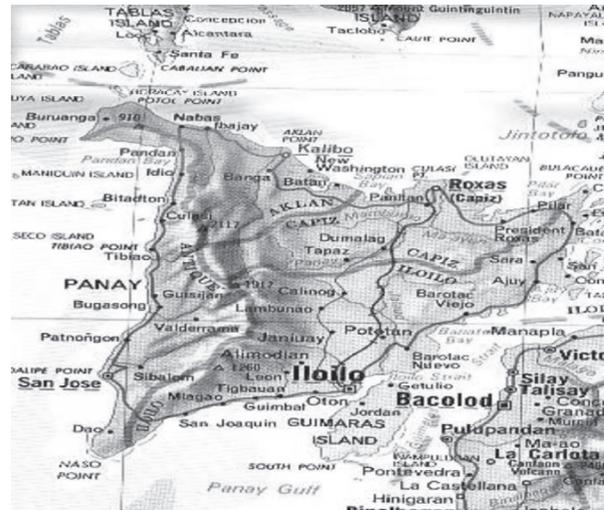
Cebu has five protected areas: Mananga Watershed Forest Reserve, Kot-kot Lusaran

<sup>36</sup> Heideman, P.D., L.R. Heaney, R.L. Thomas and K.R. Erickson. 1987. Patterns of faunal diversity and species abundance of non-volant mammals on Negros Island, Philippines. *Journal of Mammalogy* 68:884-888.

<sup>37</sup> Heaney, L.R., P.D. Heideman, and K.M. Mudar. 1981. Ecological notes on mammals in the Lake Balinsasayao region, Negros Oriental, Philippines. *Silliman Journal* 28:122-131.



Figure 9. Map of Panay



Watershed, Central Cebu National Park, Sudlon National Park, and Buhisan Watershed forest reserve. All of these protected areas cut across Cebu City. The passage of City Ordinance 1780 declaring a 200-meter commercial strip zone on both sides of the highway has given rise to land acquisition and land speculation in The uplands of Cebu. Because there are claimants – carrying tax declarations and even titles as proof of ownership – to portions of the protected area, the forests are under threat of being transformed into housing, commercial and industrial project sites. While protected areas are not to be sold, donated, exchanged or inherited, many of the claimants assert prior rights to the property which is recognized by law — a major cause of concern for those seeking to secure the protected areas.<sup>38</sup>

### The uplands of Panay: issues of utilization and resistance

Panay island (see map<sup>39</sup>) has an area approximately 11,520 square kilometers and lies between latitude 11° 55' and 10° 24' N and longitude 121° 24' and 123° 9' E. It is bounded on the north by the Sibuyan Sea, on the west by Cuyo East Pass and on the south by the Sulu Sea. Panay is the sixth largest island in the Philippine archipelago and is home to four provinces of Region VI, namely, Iloilo, Capiz, Aklan and Antique.

#### 1. Forest Cover and Wildlife

Panay retains approximately 9% of the original, primary forest covering as much as 103,000 hectares on two mountain landscapes. A rare, low-elevation forest tract on ca. 7,000 hect-

ares, much of which is rugged, karst topography, is in the Northwest Panay peninsula; it is a mixture of primary, secondary and selectively logged forest with identifiable pockets and corridors suitable for ecological restoration. The remaining 95,000 hectares of primary forest is largely montane and is contained within the Central Panay Mountains at elevations above 1,000 meters, although fingers of quality forest survive at lower elevations in valleys and recent field surveys have identified limestone forest at a lower elevation in the northern reaches of the range. Primary forest in Central Panay is fragmented into separate tracts, some or all of which a suitable for corridor developments.

Panay is part of the West-Central Visayas, or the Greater Negros-Panay biogeographic region, and ranks among the highest conservation priorities in the world when considering levels of faunal-floral endemism and degree of threat.<sup>40</sup> Panay wildlife includes 189 species of birds, 42 species of mammals, and 39 species of herpetofauna. Changes in and intensification of upland use put the wildlife under intense pressure. among the affected ones, the Writhed-billed or Visayan wrinkled hornbill (*Aceros waldeni*), the Visayan warty pig (*Sus cebifrons*), and the Visayan spotted deer (*Cervus alfredi*).

The rapid denudation of forest cover and rising upland use is alarming. Iloilo, for instance

<sup>38</sup> Cebu United for Sustainable Water, Metro Cebu Environment Management Board, DENR and the Soil and Water Conservation Foundation reference material on Not for Sale: Lands in Protected Areas

<sup>39</sup> RandMcNally Map of the Visayan Islands, [www.isis.csuhayward.edu/cesmith/vittmus/Philippines/Islands/VisayasTopo.htm](http://www.isis.csuhayward.edu/cesmith/vittmus/Philippines/Islands/VisayasTopo.htm), accessed on 28 January 2005.

<sup>40</sup> Oliver and Heaney (1997)

**Table 10. Land Use Cover of Forest Land by Province in Region VI (in hectares)<sup>41</sup>**

Province	Total Forestland	Mossy	Virgin/Old Growth	Residual	Brushland	Mangrove	Other Land Use
Aklan	74,994.00	6,378.00	2,851.00	18,981.00	25,733.00	417.00	20,634.00
Antique	11,8635.00	13,199.50	1,650.00	14,131.08	30,274.79	532.00	58,847.63
Capiz	103,951.00	1,525.00	1,892.00	10,678.00	49,241.50	26.00	40,588.50
Iloilo	114,083.00	3,790.88	7,016.00	5,225.80	25,819.60	700.44	71,530.28
Guimaras	2,836.11	0	0	449.58	1,307.04	0	1,079.49
Negros Occidental	25,2221.38	0	10,885.50	23,210.00	64,061.56	1,761.37	152,302.95
<b>TOTAL</b>	<b>666,720.49</b>	<b>24,893.38</b>	<b>24,294.5</b>	<b>72,675.46</b>	<b>19,6437.49</b>	<b>3,436.81</b>	<b>344,982.85</b>

Source: LEP-FMS, DENR Region VI

only has a 7 percent forest cover although it may claim about 18379 hectares of upland reforested area.<sup>42</sup> Trends in land use of Iloilo province indicate increasing illegal extraction of sand and gravel and declining plantation of once-irrigated land and increase in cultivation in non-irrigated lands. While the province has yet to ascertain the cause of this trend, it is apparent that rapid and extensive land conversion for residential use in once productive agricultural plains have pushed many farmers to cultivate uplands, clearing areas covered with trees for cash crop cultivation. This unabated trend of illegal logging, agricultural intensification in and migration to, and continued unregulated access to and use of minor forest products have a severe impact on biodiversity and the communities dependent on upland resources.

## 2. Water Resources from the Uplands

A major concern for many stakeholders looking into development changes in the uplands is the access, use and control of water resources. Water resources from the uplands do not only provide for the basic survival needs of humans, but are essential for agriculture and industrial processing and production. The latter two have increased consumption levels of water twice as fast as the population rate. Thus, there is a recognized need to manage water systems in Panay.

It has been found that water from the uplands also carries domestic waste and run-off from agricultural fields, and affects not only lowland users of water resources but also the coastal resources. Panay River — a major river in Panay — for instance, originates from the mountain ranges of Mt. Igabon and Mt. Binilangan and cuts across the basin in a northeasterly direction traversing several municipalities of Capiz. DENR VI reports that the river receives domestic waste, piggery waste and agricultural run-off coming from the populated area it traverses. And this same river is the source of Roxas City's drinking water supply managed by the

Roxas City Water District.<sup>43</sup>

## 3. Mineral Resources, Infrastructure Development and Upland Communities

The current conditions for the upland communities are far from stable, aggressive modes of development initiatives are threatening to displace or overwhelm untenured communities. There are mining claims cover large sections of the mountain range in Central Panay, the entire Buruanga Peninsula and Northeastern Panay. An assessment of the mineral resources of Iloilo in 2003, for instance, yielded a range of metallic and nonmetallic mineral commodities that can be tapped. Among these are manganese, clay (e.g. ball, white, red-burning), guano, limestone, phosphate rock and basalt/lava flow.<sup>44</sup> In Iloilo alone in 2004, the province received 143 applications. Of these, 103 permits have been issued.<sup>45</sup> Moreover, in Central Panay, proposed infrastructures in the form of roads and military installations either adjacent to or overlapping with both indigenous peoples (IP's) ancestral domains and primary forest, each and collectively represent major threats to the stability and integrity of the uplands in human and environmental terms.

A population of approximately 25,000 indigenous peoples (IPs) resides in the uplands of the Central Panay Mountains. Under the broad cultural and ethnic titling of Bukidnon, these people have undergone some diversification and tribal factionalism among the group, which now occupy different areas across the range. Nevertheless, as a whole, Bukidnon possesses distinct cultural orientations,

<sup>41</sup> Based on Land Evaluation Party data as of January 2000 and drawn from DENR VI on January 2005.

<sup>42</sup> Provincial Planning and Development Office, 2004. Annual Development Plan CY 2004 Province of Iloilo. (Iloilo: Provincial Government of Iloilo), p. iv and p. 10.

<sup>43</sup> Environmental Management Bureau DENR-VI, 2003. State of the Brown Environment Report, (Iloilo City: DENR VI), Chapter 3 p. 15.

<sup>44</sup> MGB-DENR 6, 2003. Mineral Resources CY 2003. (Iloilo City: DENR VI).

<sup>45</sup> Monitoring and Evaluation Section, Provincial Planning and Development Office, 2004. 2003 Annual Accomplishment Report, (Iloilo: Province of Iloilo), p.16.

rituals and worldviews that indicate a common identity and lineage, qualities that separate them from the upland communities deriving from the lowlands during the past century. One feature of the Bukidnon society is a worldview that obligates Man to co-exist with nature rather than to dominate it. Such views, which are characteristic of many IP's, are favorable to biodiversity conservation and the concepts of sustainable development and could be incorporated into the strategic environmental management of the Central Panay mountains.

The demand for resources to support lowland development, migration into the uplands and the presence of settled communities on the periphery of ancestral lands/primary forest have severe consequences on biodiversity and accelerate the erosion of cultural values inherent in Bukidnon societies.

#### 4. Power and Upland Resources

New threats to the use of freshwater resources have also proven to be a challenge to water management. In Panay, the putting up of coal-fired power plants in Northern Iloilo has been perceived to heavily impact on upland resources. "The islands of Panay and Guimaras make up the Panay grid that connects Negros, Cebu and Leyte grids to form the Visayas power grid. These main grids have varying generation capacities and power consumption needs. The biggest excess energy generated comes from the island of Leyte." The excess makes up for the "deficiency in all other islands combined."<sup>46</sup> The grid allows for power sharing that channels excess power generated from Leyte to Cebu, that of Cebu channeled to Negros while the latter's excess is channeled to Panay. A scenario of power shortage raised by the Department of Energy (DOE) led to the assertive lobbying for the approval of proposals to put up independent power projects. Among these are proposals to build a 100-MW coal-fired power plant in the region.<sup>47</sup> Among the target zones are municipalities in Northern Iloilo.

It is perceived by some members of non-government coalitions (e.g. Responsible Ilonggos for

Sustainable Energy, RISE) perceived the increasing pressure to push for the coal-fired power projects is not meant to address power shortage in the region —since there is none to speak of. The Visayas Grid has a 457-MW surplus of dependable capacities. (See Table of Power Sector Situation)<sup>48</sup> Instead, the assertive stance of putting up the coal-fired power plant may be closely related to the perceived power needs of mining operations that may soon be under way in the in target areas of Panay. The coal-fired power plants are to be put up in Northern Iloilo where most of the mining applications have targeted.

Furthermore, RISE asserts that the coal-fired power plants are not compatible with the approved land-use plans. The target sites have been "zonified as agricultural, tourism and ecologically-protected areas". Moreover, the process required to run the plant demands quarrying of massive quantities of limestone which may damage watersheds and endanger the livelihood of affected communities. It is also perceived that the power plants will "compete with local communities in the use of freshwater resources which is estimated at 1000m per day per 100-MW plant".<sup>49</sup>

#### 5. Attempts at Upland Resource Management

Concerns, such as those mentioned above, have led to attempts by government, non government and people's organizations to initiate various attempts at managing of upland resources. Community-based attempts stir from the traditional reforestation programs. The government, through DENR, has pursued a community-based forestry management program. The summary of CBFMA

<sup>46</sup> Suruelo, Ian. Pany –at the tail – end: Issues truggles and campaigns on the power sector in the Island of Panay, Philippines in South Asia-Pacific and the Freedom from Debt Coalition-Philippines (2004). Peoples' Resistance and Alternatives to Privatization of Water and Power Services, (Quzon city: Jubilee South and Freedom from Debt Coalition), p. 180.

<sup>47</sup> Ibid., p. 182.

<sup>48</sup> Responsible Ilonggos for Sustainable Energy (RISE), (2005). P. 6.

<sup>49</sup> Ibid., pp 7-9.

<sup>50</sup> Ibid., p 6.

**Table 11. Power Sector Situation per Transmission Grid in 2004<sup>50</sup>**

Power Transmission Grids	Installed Capacity (MW)	Depend. Capacity (MW)	Peak Demand (MW)	Unutilized Electricity (Dep.-Peak)
Luzon	12377	11086	6728	4358
Visayas	1721	1520	1063	457
Mindanao	1665	1402	1278	124
<b>Total</b>	<b>15763</b>	<b>14008</b>	<b>9060</b>	<b>4939</b>

Source: DOE Visayas Power Development Plan 2005 to 2014

**Table 12. Summary of CBFMA Issuance, Region VI (CY 2004)<sup>51</sup>**

Province	CBFM Potential Area (has)	No. of Potential POS	Total No. of Beneficiaries	CBFMA Awarded			Total No. of Tenured PO's			% Utilization
				No.	Area (has)	No. of Beneficiaries	Association/ Cooperatives	Federation	Total	
AKLAN	10,915.31	60	2,704	23	5,816.44	2019	25	2	27	52
ANTIQUE	15,593.96	102	2,398	15	3,744.55	844	15	0	15	24
CAPIZ	11,373.00	67	1,399	9	1,063.55	679	9	1	10	18
ILOILO	25,287.11	163	4,453	19	8,582.90	2829	32	3	35	34
GUIMARAS	1,130.31	23	530	17	763.45	530	17	1	18	68
NEGROS OCCIDENTAL	52,200.16	107	2656	21	19,654.95	1995	22	1	23	38
<b>Total</b>	<b>116,499.85</b>	<b>522</b>	<b>14,140</b>	<b>104</b>	<b>39,625.84</b>	<b>8,896</b>	<b>120</b>	<b>8</b>	<b>128</b>	<b>35</b>

Source: DENR Region VI

issuances for the region in 2004 is on Table 12.

A multistakeholder approach to the management of the Magapa-Suage River in Central Iloilo has also been initiated by the Panay Rural Development Center, Inc. (PRDCI). What started as an attempt to manage watershed resources with a catchment area of about 9,000 hectares<sup>52</sup> evolved into a water resource-management initiative from the uplands to the communities and municipalities where the river runs through. Together with people's organizations in eight municipalities and local government units, organizations of farmers, women and youth have worked together to ensure not only a multistakeholder approach but also an intergenerational and gender-sensitive one to the communal-management, access and utilization of resources from the Magapa-Suage River area. Among their specific initiatives are curriculum development, reforestation, river clean-up, and sustainable agriculture.

Moreover, groups like Green Forum-Western Visayas have been enabling the indigenous peoples to map out their resources and help them in their struggle to claim their rights to land, environment and culture. Using skills in computer technology and mapping techniques, participatory processes of mapping out upland landscape and resources have been utilized to help the IP's in their claim over their ancestral domain, specifically, for on-ground delineation of ancestral domains for tenurial processing.

On the other hand, in the attempt to address clean energy options for sustainable development, Responsible Ilonggos for Sustainable Energy (RISE), a coalition of more than 50 groups in Panay, opposed the application for coal-fired power plants

in Northern Iloilo, lobbied against the approval of the proposals in target local government units, held community meetings to raise awareness on the impact of coal-fired power plants, and called for a congressional investigation on the proposals to put up these plants. Among RISE's major concerns are the impact of the coal-fired power plants on the resource base of Northern Iloilo and its health and environment impact on host communities.

### Conclusion

The snapshots of the state of the environment in the Visayas reveal the fragile state of its ecosystems due to overuse and the demands of a growing population, abuse, unregulated human activities in all ecosystems, lack of concern for the environment, and weak political will of local and national government officials, among others. Environmental programs of local and national government units and agencies and even NGOs and academe depend mostly on external funding. Yet, noteworthy are the unrelenting initiatives from people's organizations, civil society organizations, academe and some local government units to explore innovative explorations into coastal resource management that draw from the social capital, passion and local resources of communities. Without doubt, the Visayas islands, though productive, will drive their resources to the point of degradation if unregulated and unchecked. Yet, there is hope in the resistance of many to give up their rights to a sustainable environment.

<sup>51</sup> DENR Region 6 (2004), Summary of CBFMA Issuance, p1.

<sup>52</sup> Villano, Pestano, Reynaldo, Gascon (1997). An Assessment of the Upper Suage River Watershed for a Community-Led Resource Management, (Iloilo City: Panay Rural Development Center, Inc.