Biodiversity Monitoring System:
Supplementary Manual on Coral Reef Monitoring

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Preface

The BMS was designed to be a minimum starting point for monitoring NIPAS sites given the limited resources of field offices during that time. The data collected using the methods in the BMS are highly susceptible to observer bias, making it difficult to compare data across sites and even across time for one site. The authors themselves acknowledge the need for the manual to evolve as greater financial resources and capability become available.

The NORDECO-DENR Biodiversity Monitoring System (BMS) was critically assessed by the Foundation for the Philippine Environment (FPE) and its Experts Advisory Panel in 2003 and was documented in their final report entitled "Enriching the BMS" (FPE 2003). Recognizing the strengths of the BMS, FPE used this system as the basis for establishing their Biodiversity Monitoring and Evaluation (BIOME) system for the FPE-CBRM project sites. In their review they used various manuals such as the Coral Reef Monitoring for Management (CRMM, Uychiaoco et al. 2001) and the Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia (SocMon SEA, Bunce and Pomeroy 2003) for improving the methods in the BMS. They recognized the bias of the BMS in monitoring terrestrial ecosystems and suggested the use of the CRMM to improve the monitoring of Marine Protected Areas (MPAs). They also acknowledged the importance of stakeholder participation and monitoring socioeconomic indicators to ensure a sustainable and adaptive management process. However, recommendations from the study focused primarily on terrestrial ecosystems and socioeconomic monitoring components.

It is to address these gaps of the BMS that this manual was created. Ensuring regular monitoring and reporting of basic marine protected area biophysical, socioeconomic, and governance indicators following standard methods of collection would be a great achievement and a significant step towards national conservation and sustainable use of marine resources.

While this manual contains descriptions of methods and guides to monitoring MPAs and analyzing and interpreting data, it is merely a supplementary manual and is intended to be used in conjunction with the latest version of the BMS.

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Annexes

1. Introduction

Objectives. This manual aims to make the current marine monitoring techniques in the Biodiversity Monitoring System more compatible with globally accepted methods. It provides a brief overview of methods for measuring various biophysical, socioeconomic, and governance indicators for use in effective management of marine protected areas (MPA). It also serves as a guide for analyzing and interpreting collected data for proper management of MPAs.

Intended users. Although this manual was designed to complement the BMS and therefore intended for use in NIPAS sites by PA staff, the methods and framework are general enough for application to other marine protected areas.

Supporting manuals. Methods presented here were adapted from the following:

Indicator groups (MPA component)	References	Referred in this manual as:
General	Pomeroy et al. 2004: "How is your MPA doing?"	IUCN-MPA Effectiveness
Biophysical (resources)	Uychiaoco et al. 2001: "Coral Reef Monitoring for Management"	CRMM
Socioeconomic (users)	Bunce and Pomeroy 2003: "Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia"	SocMon SEA
Governance (managers)	CCEF 2004: "MPA Report Guide (NIPAS)"	MPA Report Guide

2. Marine Protected Area (MPA) Monitoring

Generally, marine protected areas (MPAs) are monitored to (1) identify problems in the system, (2) focus limited management resources for greatest impact on identified issues, and/or (3) assess the impacts of management activities. It entails evaluating not only the state of the resource but those of other components of the MPA as well (i.e., the users and the managers).

Proper and effective management interventions are based on a clear understanding of the problems. By determining and addressing root causes, managers can achieve greater impact for their efforts. However, in order to get a good picture of what is happening to the various components of a highly dynamic system such as a coral reef and adjacent coastal communities it is necessary to have dependable indicators to measure change.

A lot of money has been invested on management activities that were not as effective because of misinformation. Determining the state and trends of both the resource and the users as accurately as possible is crucial to successful management. Although hundreds of biophysical, socioeconomic, and governance indicators abound, having the right mix of a few indicators can be sufficient for detecting medium to broad scale changes in the components of the MPA.

Figure 1 shows how biophysical, socioeconomic, and governance indicators can be used to help improve management responses. Data collected from biophysical monitoring can be used to determine undesirable trends in the resource that may be related to pressures imposed by users. Users, in turn, are affected by socioeconomic pressures. Hence, management responses can involve a collection of direct and indirect interventions depending on whether they are targeting the resource or the users.

Figure 1. Why Monitor?

Biophysical, socioeconomic, and management indicators provide answers to the questions "what", "why", and "how", respectively, and can be used to identify causes of resource degradation and/or possible courses of action. In turn, some socioeconomic indicators can be used to assess the effectiveness of already implemented management responses.
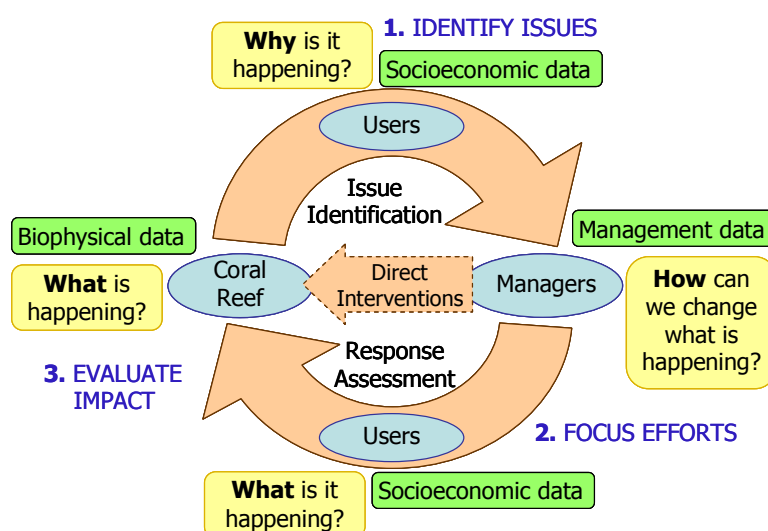
Table 1. Biophysical, Socioeconomic, and Governance Indicators for MPAs

CATEGORIES	BIOPHYSICAL	
	BENTHIC COMMUNITY	**FISHES**
References other than the BMS	Uychiaoco et al. 2001	Uychiaoco et al. 2001
Methods	• Manta tow • Snorkel survey • Point intercept transect	• Fish visual census
Output(s)	spatial distribution & extent of coastal resources and infrastructures; % cover of each benthic lifeform (see below); avg. counts of invertebrates within a 5-m width from the transect	frequency-distribution of high-value fish families
Basic data requirement	• map of key coastal resources and infrastructures / communities • % live hard coral • % soft coral • % dead coral • % other animals • % algae • % seagrass • % abiotic (rubble/rock/sand/silt) • obvious signs of disturbances	• butterflyfishes * • groupers • snappers • sweetlips, grunts • emperors • jacks, trevallies • fusiliers • coral breams • goatfishes • triggerfishes • angelfishes • wrasses • parrotfishes • surgeonfishes • rabbitfishes • rudderfishes • damselfishes • fairy basslets • moorish idol • sharks * • rays • sea turtles * • cardinal fish • filefish • soldierfish • flutemouth
Other useful data (collect if there are sufficient resources)	• live hard coral broken down to lifeforms • algae broken down to turf, fleshy, • abiotic broken down to rubble, rock, • % sponges • Invertebrate counts (e.g., *Diadema* urchins*, crown-of-thorns starfish*, triton shell*, lobster*, sea cucumber*, banded coral shrimp, giant clam, etc.)	• butterflyfish species • fish identification to the genus or species level

* Indicators in the Biodiversity Monitoring System (ver. February 2001)

SOCIOECONOMICS	GOVERNANCE
Bunce & Pomeroy 2003; Uychiaoco et al. 2001; BMS 2001	**CCEF 2004; Bunce & Pomeroy 2003**
Focus group discussions Secondary data collection Key informant / household interviews Fisheries survey	MPA management rating system
catch per unit effort; demographics; attitudes & perceptions; stakeholder participation	review of management plan; list of management activities; legislations and enforcement levels; financial sustainability; strengths and capability of management bodies
• resource uses * • # of households / barangay • # of fishers or fishing households • types and # of gears / fisher * • average time per fishing trip * • average catch per fishing trip per kind of fish * • fishing seasons • coastal population • population growth rate • estimated # of illegal fishers or catch from illegal fishing * • total coastal area extent of various infrastructures and communities • number & diversity of markets * • prices of coastal products per fishing gear or aquaculture methods • number & extent of aquaculture structures • willingness of people to stop illegal fishing or regulate fishing • level of awareness on use of illegal fishing methods * • distance of infrastructures & communities from the coast • perceived threats of stakeholders to coral reefs * • number of people with knowledge of pertinent local and national laws • number of people actively involved in management activities • number of outside fishers in the area	• number of protected area staff • number of staff involved in marine monitoring • number & types of assisting organizations • capacity of managing body • various management plans in effect • stages of management plans • legislations pertaining to coral reef use and fishing • degree of patrolling & apprehensions • state of supplementary livelihood programs • effectiveness and reach of information campaigns • revenue generating mechanisms • net annual MPA income
• migration rate • age • gender • education • literacy • ethnicity • religion • language • material style of life	

3. Selecting and Establishing Coral Reef Monitoring Sites

Selecting coral reef monitoring sites that are representative of the whole ecosystem ensures an accurate depiction of the status of the system with the least effort. Having permanent monitoring sites allow greater consistency in temporal data and increases the possibility of detecting non-random changes in the resource state thus guiding management more appropriately.

To select a coral reef monitoring site, the entire area must be rapidly surveyed using manta tow to get a broad picture of the spatial arrangement and state of habitats and resources. For assessing marine protected areas, Uychiaoco and colleagues (2001) recommend establishing at least five monitoring sites per management zone.

Once sites have been identified, transect paths must be permanently marked to ensure that transects can be laid as close as possible to the same position every time. This can be done using 1ft x 1ft x 3in concrete blocks with a hole at the center for inserting steel rods that will be hammered into the reef. These should be placed at least every 10m or less depending on the typical visibility in the survey site. Bear in mind that the goal of marking transects is to be able to return to them and survey the same path without consuming too much time locating them in the future. You should not be the only one who knows where the sites are located even if you already have GPS coordinates for each one. It is best to share the knowledge to others so as not to 'loose' these permanent sites. Revisiting monitoring sites with the same boat crew can greatly reduce the time needed to locate these sites in the future.

See the Coral Reef Monitoring for Management (Uychiaoco et al. 2001) for further details on this topic and on creating monitoring programs in general.

4. MPA Coral Reef Monitoring Methods

Several coral reef monitoring manuals have been developed to serve as guides for MPA managers and researchers alike. Depending on the detail of data desired, coral reef monitoring methods range from simple observations to transect-based surveys to detailed block counts (Pomeroy et al. 2004).

Despite the proliferation of increasingly technology-based monitoring methods, most of the basic data required for addressing general coastal resource use issues are obtainable using simple methods.

The basic indicators required for understanding most of the common coastal resource problems such as overfishing, illegal fishing, and domestic and industrial pollution are summarized in the previous pages (Table 1).

The following sections briefly describe the recommended methods for monitoring which extends those in the BMS. The biophysical methods in this manual are refinements of the Transect Swim in the BMS while interviews complement the focus group discussions for gathering socioeconomic data. The main references for each method are given after the description together with the location (i.e., the annexes) of pertinent forms in this manual.

4.1. Biophysical

Transect-based methods are considered standard methods for measuring the relative abundance of fish or percentage cover of benthic components. Reef monitoring methods are oftentimes conducted using SCUBA gears. However, good snorkelers can also monitor reef communities without sacrificing too much detail although this is more physically tiring.

4.1.1. Overview of benthic habitats: Manta Tow and Coastal Mapping

BMS Methods Used or Modified: Transect swim, Photo documentation and Field diary

Description:

The manta tow technique is used to rapidly assess the state of the benthic community and to map shallow habitats near the coast. It is oftentimes used to select sites of interest which will be surveyed with more detail and regularity.

Aside from the boat driver, two other persons are required to conduct a manta tow: a snorkeler and an observer. The snorkeler is towed at a constant speed across a pre-selected route, usually along the reef perimeter or a depth contour, for 2-minute time periods. During each tow, the snorkeler estimates the percentage cover of pre-selected benthic lifeforms and records his observations after each tow. Meanwhile, the observer keeps watch of the time, looks out for the snorkeler's safety, and notes down on a map the structures (e.g., factories, ports, communities, etc.) and resources (e.g. mangroves) along the coast. Photographing coastal areas can also be done by the observer to improve documentation.

Main Reference: Uychiaoco et al. 2001, pp. 19 to 25
Forms: see Annex 1

4.1.2. Detailed survey of benthos: Snorkel Survey / Point Intercept Transect

BMS Methods Used or Modified: Transect Swim

Description:

The reef benthic community is composed of corals, algae, and other invertebrates. A healthy reef is usually associated with a high live coral cover, low algae cover, and low abundance of recently-dead coral.

Below are two options for monitoring reef benthic communities using either snorkel or SCUBA gears.

Snorkel survey

Snorkel survey involves a snorkeler swimming over a pre-laid 50-m transect line marked every 5 meter interval. The transect line should be laid on a constant depth contour, preferably at 6 meters or 20 feet. The snorkeler starts at one end and estimates the % cover of each benthic lifeform within an imaginary 5x5 meter quadrat centered on the transect line and within the first 5 meter interval. He/She repeats this for each 5-m interval until he/she reaches

the other end of the line. Each transect is thus divided into 10 quadrats with % cover estimates in each quadrat summing up to a total of 100%. The average % cover of each lifeform in a whole transect can be computed by adding up the % cover for that lifeform in all 10 quadrats and dividing by 10.

Occurrence of key invertebrates within each imaginary quadrat can also be noted down (e.g., triton, giant clams, crown-of-thorns, sea urchins, etc.).

Main Reference: Uychiaoco et al. 2001, pp. 26 to 30
Forms: see Annex 1

Point Intercept Transect

The Point-Intercept-Transect (PIT) is a simple method for monitoring benthic communities that requires the use of SCUBA. A transect is laid on a constant depth contour such as 6 meters. Starting at one end of the line, the observer identifies and tallies the lifeform directly beneath each 0.25m interval or point until the other end of the line. The percentage cover for each lifeform is obtained by dividing the total number points where the lifeform was found by the total number of points observed (i.e., 50m ÷ 0.25m = 200 points).

Occurrence of key invertebrates within 2½ meters on both sides of the transect can also be taken.

Main Reference: Uychiaoco et al. 2001, pp. 31 to 37 (examples of lifeforms in pp. 29-30)
Forms: see Annex 1

4.1.3. Survey of coral reef fish families: Fish Visual Census

BMS Methods Used or Modified: Transect Swim

Description:

Fish visual census (FVC) is the identification and counting of fishes observed within 5 meters of both sides of a 50-meter transect line. Generally, for purposes of MPA management, it is sufficient to identify fishes to the family-level and to use size ranges instead of actual individual size estimates.

FVC can be conducted either through SCUBA diving or snorkeling. Buddy system should be employed with each person taking one side of the transect. Similar to the benthic monitoring methods, a 50-meter transect line, marked every 5 meter interval, is laid across a constant depth contour of 5 to 6 meters. Since fishes are easily disturbed, they should be allowed to settle for about 10 to 15 minutes after laying the transect. Two observers are required to survey each side of the transect line. Starting at one end of the line, both observers record the counts of fish per family per size class within each 5x5 meter area adjacent to the transect line. They then move to the next 5-meter mark and do the same thing until they finish the length of the transect. Each transect covers an area of 500m^2 (50m x 10m width).

In cases where only one observer is available for the FVC, this method can be done for only one 5-meter side of the 50-meter transect and fish abundance estimates are averaged over 250m^2 only (50m x 5m width).

Main Reference: Uychiaoco et al. 2001, pp. 39 to 49
Forms: see Annex 1

4.1.4.   Monitoring Fish Catch

BMS Methods Used or Modified: Field diary and Focus group discussion

Description:

Fisheries indicators are among the indicators most relevant to local community stakeholders.

Total fishing effort for an area may be estimated by asking key informants to enumerate all fishing gears used in the area and to estimate the total number of fishers using each gear. On the other hand, if many non-residents exploit the area, total fishing effort may be estimated by directly observing and mapping the number of fishers using each gear type during peak fishing hours of the day.

Catch per unit effort can be estimated by distributing forms to a representative sample of fishers for them to fill-up on their own or by interviewing them. Among the data that should be collected are fish catch, fishing gear, fishing duration or units of gear used, the location of fishing grounds and fishing income and expenses. The catch per unit effort (CPUE) for a gear can be estimated from these data by dividing the sample catch (i.e., total kilograms caught with the gear by all respondents) by the sample effort (i.e., total person-hours or units of gear for all respondents). Total fisheries production may be estimated by multiplying the estimated total effort by the catch per unit effort for each gear type.

Main Reference: Uychiaoco et al. 2001, pp. 57 to 65
Forms: see Annex 1

4.2. Socioeconomic and Governance

Socioeconomic indicators provide insights into the level of human pressures exerted on the resource and at the same time, qualitatively measure the effectiveness of indirect management initiatives. Governance indicators, on the other hand, identify strengths and weaknesses of the current legal and institutional framework for managing the MPA and the users. Both groups of indicators are collected through research and various types of interviews.

4.2.1. Secondary Data and Focus Group Discussion

BMS Methods Used or Modified: Focus group discussion

Description:

Secondary data and focus group discussions (FGDs) are simple means of getting the big picture of stakeholder and community health. Secondary data (such as management plans, municipal profiles, ordinances, logbooks, previous assessments, etc.) should be exhaustively consulted prior to gathering new information. The Biodiversity Monitoring System sufficiently covers the details of conducting FGDs. Indicators can be easily incorporated in FGDs and community demographics can be taken from the latest censuses.

Main Reference: NORDECO and DENR 2001, pp. 12 to 16 and Annex 4
Forms: see Annex 2

4.2.2. Key Informant / Household Interview

BMS Methods Used or Modified: none

Description:

Interviews require more resources than FGDs but, when properly conducted, they can yield a lot of valuable information on the attitude and perception of the stakeholders in addition to supporting the findings from the FGDs.

Some general data can be obtained by interviewing a few key informants or individuals who have the authority, experience, or knowledge to provide insights or information into the characteristics of the larger population or a particular group. Key informants include officials in public or private groups, religious and political leaders, and elders among others. The greater the number of key informants interviewed, the more reliable the results. As a rule of thumb, a good gauge for determining that enough interviews have been conducted is when additional interviews begin to yield very similar responses.

If more detail is desired, such as obtaining the frequency distribution of highly-varied attitudes and perceptions of individuals, highly structured and closed ended household interviews can be carried out. Questionnaires for household interviews are composed of specific questions with limited answers such as yes/no or multiple choice, thus, allowing for statistical analysis. Although household interviews are easier to accomplish than key

informant interviews, it is difficult to determine whether respondents' answers represent their perspectives or what they think the interviewers would like to hear.

Main Reference: Bunce and Pomeroy 2003
Forms: see Annex 2

5. Integrating Results for Management

Monitoring is only a part of the MPA management cycle. For monitoring data to be of any significance, it must be properly analyzed, interpreted, and applied to the current management plan to increase the plan's efficiency. In addition, monitoring data should be regularly reported back to the community to increase stakeholder participation thus ensuring a more sustainable management process.

5.1. Summarizing Resource, Community, and Management Status and Trends

Monitoring data can be summarized using the forms in the Annexes. Form 4C of the CRMM (see Annex 1) summarizes data for benthos and fish transect monitoring while Form 6D summarizes fish catch monitoring data. Form 7 provides an easy way of determining trends in various biophysical and socioeconomic indicators.

The Coastal Conservation and Education Foundation, Inc.'s (CCEF) MPA Report Guide for NIPAS sites (2004) can be used to summarize pertinent MPA management data collected from research and interviews (Annex 3).

5.2. Guide to Decision-Makers / Suggested Management Options

The "MPA Data Analysis Guide for Managers" sums up the relationships between the biophysical, socioeconomic, and governance indicators, grouped according to the geographical scale of coral reef disturbances (see Table 2), through a state-pressure-response system. It shows undesirable trends in the resource (*state*) alongside socioeconomic indicators which most likely cause these resource changes (*pressures*). Governance indicators (*responses*) are rated according to their effectiveness. As the geographic scale of the disturbances being addressed increases, so does the legal and institutional framework for managing the MPA. This means that if, for example, domestic and industrial pollution is a big issue for an MPA, management structures and activities designed to address small scale issues need to be expanded to incorporate pertinent agencies, private stakeholders, and organizations.

The guide works like a medical book which outlines symptoms for a disease. The trends in biophysical indicators are symptoms of bigger problems which are characterized by socioeconomic indicators. Governance indicators show the state of current responses to the socioeconomic problems. Moving the opposite direction (i.e., "Governance Responses" to "Resource State"), one can assess the effectiveness of current management initiatives. Desirable or undesirable trends in biophysical and socioeconomic indicators can partially be credited to successful or faulty management, respectively.

Extreme care should be exercised in interpreting seemingly related trends. Analyzing trends require a lot of data before concluding any cause-and-effect relationships. One should give

more attention to consistent trends rather than erratic ones since these are relatively more reliable and could provide stronger bases for management action.

Actual trends observed can be placed in the blank form provided (Annex 4). At the back, a map of the MPA and the surrounding coast should be drawn showing the location and spatial extent of resources, uses, and users as well as pressures along the coast and labeled properly.

This one page summary can be sent back to the DENR-PAWB main office annually to

Strategies for addressing certain issues in MPA management are summarized in the Coral Reef Monitoring for Management (Uychiaoco et al. 2001, pp. 76-77).

Table 2. Coral reef disturbances grouped in relative geographical scales

Scale	Man-made / Natural	Disturbances
Small	Man-made	Destructive fishing practices Overfishing / overharvesting Mariculture pollution
Medium	Man-made to natural	Domestic pollution Agricultural pollution Deforestation / siltation Shipping / ports Coastal infrastructure development Industrial / mining pollution
Large	Natural	Mass deaths (e.g., diseases) Infestations Mass bleaching Storm damage

MPA Data Analysis Guide for Managers

GEOGRAPHIC SCALE	RESOURCE STATE	SOCIO-ECONOMIC PRESSURES	GOVERNANCE/MANAGEMENT RESPONSES				
			Indicators	Effectivity Levels (increasing →)			
				core group	organization	coastal community	general public
SMALL	low numbers of high-value fishes and invertebrates; small sizes of fishes and invertebrates; low CPUE; low value of fisheries goods	high numbers of fishers; intensive types of fishing gear; level of awareness & knowledge regarding overfishing; low household income	reach of info campaigns regarding fisheries	core group	organization	coastal community	general public
	lots of algae and algal feeders	high coastal population; large household size; extent of aquaculture operations and pollution; prices of aquaculture products	fisher association, FARMC	formed	recognized	active	capable
	lots of rubble and/or dead coral	use of destructive fishing methods; level of awareness & knowledge regarding negative effects of destructive fishing	fisheries management plan / fisheries registration and licensing system	drafted	adopted	budget available	updated
			enforcement / penalty system	signs & markers	enforcers visible	reduced	stopped
MEDIUM	amount of soft substrate; low visibility; algal feeders/detritivores if there are fish/invertebrates	amount of coastal infrastructure (including ports, tourism and settlements); distance of infrastructures from shoreline	reach of info campaigns re: physical damage & pollution	core group	organization	coastal community	general public
	high algae, low coral cover; solid wastes, presence of pollutants	pollution sources/amount of industrial facilities, mining operations, agricultural lands, deforested areas, silt/soil erosion, domestic wastes/sewage)	municipal/city management body, PAMB (including representatives of industries)	formed	recognized	active	capable
		level of awareness & knowledge regarding source(s) of pollution & its negative effects	water pollution management plan, solid waste management plan, oil spill preparedness	drafted	adopted	budget available	updated
		agricultural practices, prices of agricultural products and services	enforcement	signs & markers	enforcers visible	reduced	stopped
LARGE	lots of rubble, bleached and/or dead coral	output of greenhouse gases (use of energy, deforestation, etc.)	reach of info campaigns re: climate change	core group	organization	coastal community	general public
	lots of crown-of-throns, urchins, algae and/or other imbalances in community structure	level of awareness & knowledge regarding climate change	provincial mgt body, national mgt body	formed	recognized	active	capable
	lots of recently-dead organisms		air pollution mgt plan	drafted	adopted	budget available	updated
			enforcement	signs & markers	enforcers visible	reduced	stopped

MERF and DENR

6. References

Bunce, L and B Pomeroy. 2003. Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia (SocMon SEA). WCPA/NOAA/SEAFDEC/WorldFish Center/GCRMN, 82pp.

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NORDECO and DENR. 2001. Biodiversity Monitoring System Manual for Protected Areas. Second edition. DENR, Manila, and NORDECO, Copenhagen, iii + 75pp.

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Uychiaoco, A.J., S.J. Green, M.T. dela Cruz, P.A. Gaite, H.O. Arceo, P.M. Aliño, and A.T. White. 2001. Coral Reef Monitoring for Management. University of the Philippines Marine Science Institute, United Nations Development Programme Global Environment Facility-Small Grants Program, Guiuan Development Foundation, Inc., Voluntary Service Overseas, University of the Philippines Center for Integration and Development Studies, Coastal Resource Management Project, and Fisheries Resource Management Project. 110 pp.

WWF Philippines. KKP Conservation Management Capability Checklist. Unpublished.

Annex 1.

Biophysical Monitoring Forms

(Selected forms adopted from the *Coral reef Monitoring for Management)*

SURVEY SITE DESCRIPTION AND DETAILS FORM

Form 2A

Site Name:	Municipality & Province:				
Reason for choosing to monitor this site:	Overall Documentor:				
Transect No.	[ ]	[ ]	[ ]	[ ]	[ ]
Fish abundance observers					
Benthic lifeforms observers					
Start date (mo/day/year)					
Start time (am/pm)					
Latitude (e.g. 9°23.012')					
Longitude (e.g. 112°34.781')					
Transect orientation (e.g. N, NE, …)					
Depth (in m)					
Reef zone (e.g. fore slope, flat, etc.)					
Is the site sheltered or exposed?					
Approx. steepness of site (angle of slope)					
Topographic compexity (in m)					
Horizontal visibility (in m by transect line)					
Vertical visibility (in m by secchi depth)					
End date (mo/day/year)					
End time (am/pm)					
Weather:	Sunny [ ] Cloudy [ ] Rainy [ ] Windy [ ]				
Temperature:	Air [ ] Water surface [ ] 3-m depth [ ] 10-m depth [ ]				

Sketch map of reef and coastline showing transect locations and other features
Coordinates from map [ ]   or GPS [ ] If GPS, specify map datum:

HUMAN ACTIVITIES & NATURAL DISTURBANCES FORM — Form 2B

A. FISHING	% or #	Notes
# fishing boats observed w/in 500 m		
# aquarium fishers w/in 500 m		
# invertebrate gleaners w/in 500 m		
# blasts heard during the dive		
% area used for mariculture w/in 500 m		
B. POLLUTION	**% or #**	**Notes**
Distance to nearest pop. center (in km)		
Population of pop. center (in thousands)		
# factories per km of adjacent coast		
Distance to nearest river (in km)		
% farmed area of coastline		
% forested area of coastline		
# mines within sight		
# items of floating trash observed		
# items of trash observed underwater		
# fish nets left as trash		
C. OTHER STRESSES & THREATS	**% or #**	**Notes**
# boats anchoring within 500 m		
# divers observed within 500 m		
# dive shops within 10 km		
Years since last typhoon (>100 kph)		
# large ships within sight		
% of coast built-up with structures		
Years since last mass bleaching		
% bleached coral area		
% diseased coral area		

MANAGEMENT OF AREA	Is this a legally protected area?
Name of Marine Protected Area:	Organization responsible:
Describe restrictions herein:	
Ordinance no. & year:	Start date of protection by law:
Date boundaries were marked:	Date patrols/enforcement began:
Coordinates of protected area boundaries:	

MANTA TOW DATA FORM										Form 3

Site Name: _____ **No.:** _____ **Municipality & Province:** _____

Date (month/day/year): _____ **Time:** _____ **Observer:** _____ **Timer/Mapper:** _____

Tow No.	Start Time	Location		Depth (m)	Estimate % substrate cover					Notes (e.g. crown-of-thorns starfish, *Diadema* urchins, algae, etc.)
		Latitude & Longitude/Compass Bearing/Landmarks			Hard Coral	Soft Coral	Dead Coral	DC w/ Algae	Sand/ Silt	
		Start	End							
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

BENTHIC LIFEFORMS & INVERTEBRATES DATA FORM — Form 4A

Site Name:		Municipality & Province:			
Transect No.: Scuba: Snorkel:		Coordinates:			
Date (mo/day/yr):		Benthos observer: Invertebrates observer:			
Horizontal water visibility (m):		Depth (m):	Reef zone:	Topography:	Slope:
Habitat notes:					

BENTHIC LIFEFORMS		Tally number of points or est. % occupied by each lifeform e.g. IIII~II~II~II~ or 12%+34%+22%+…	Total Count	% Cover
coral	**HC** live hard coral			
	SC soft coral			
dead coral	**DC** white dead coral			
	DCA dead coral w/ algae			
other animals	**SP** sponges			
	OT other animals			
plants	**TA** turf algae			
	MA fleshy macroalgae			
	CA coralline algae			
	SG seagrass			
non-living	**R** rubble			
	RCK rock			
	S / SI sand/silt			
TOTAL				100%

INVERTEBRATES	# within 5-m width	Causes of coral damage:
Diadema urchins; *tuyom*		Put x if found on corals. Circle the box of the dominant cause
Pencil urchin		
Crown-of-thorns starfish; *dap-ag*		☐ sediment ☐ seaweed overgrowth
Giant clam; *taklobo*		☐ blasting patterns ☐ coral-eating snails
Triton shell; *tambuli*		☐ anchor damage ☐ crown-of-thorns starfish
Lobster; *banagan*		☐ other breakage ☐ plastics
Sea cucumber; *balat*		☐ bleaching ☐ other trash
Banded coral shrimp		☐ black band disease ☐ other causes (specify):
others		☐ white band disease _____
		☐ other coral disease _____

BENTHIC LIFEFORMS & INVERTEBRATES DATA FORM WITH CORAL LIFE FORMS

Form 4B

Site Name:		Municipality & Province:			
Transect No.: Scuba: Snorkel:		Coordinates:			
Date (mo/day/yr):		Observers:			
Horizontal water visibility (m):		Depth (m):	Reef zone:	Topography:	Slope:
Habitat notes:					

BENTHIC LIFEFORMS		Tally number of points or est. % occupied by each lifeform e.g. ~~~ or 12%+34%+22%+...	Total Count	% Cover
coral	**HC** live hard coral			
	branching (CB)			
	massive (CM)			
	flat/encrusting (CE)			
	foliose/cup (CF)			
	SC soft coral			
dead coral	**DC** white dead coral			
	DCA dead coral w/ algae			
other animals	**SP** sponges			
	OT other animals			
plants	**TA** turf algae			
	MA fleshy macroalgae			
	CA coralline algae			
	SG seagrass			
non-living	**R** rubble			
	RCK rock and block			
	S / SI sand/silt			
TOTAL				

INVERTEBRATES	# within 5-m width	Causes of coral damage:
Diadema urchins; *tuyom*		Put x if found on corals. Circle the box of the dominant cause
Pencil urchin		
Crown-of-thorns starfish; *dap-ag*		☐ sediment ☐ seaweed overgrowth
Giant clam; *taklobo*		☐ blasting patterns ☐ coral-eating snails
Triton shell; *tambuli*		☐ anchor damage ☐ crown-of-thorns starfish
Lobster; *banagan*		☐ other breakage ☐ plastics
Sea cucumber; *balat*		☐ bleaching ☐ other trash
Banded coral shrimp		☐ black band disease ☐ other causes (specify):
others		☐ white band disease _____
		☐ other coral disease _____

DATA SUMMARY FORM																				Form 4C					
Site Name:															Municipality & Province:											
Zone/Sector																										
Month & year																										
Transect #																										
Types/groups	Sub-total										Total	Avg.	Sub-total												Total	Avg.

FISH ABUNDANCE DATA FORM — Form 5A

Site Name:		Municipality & Province:			
Transect No.:	Depth (m):	Coordinates:			
Date (mo/day/yr):	Time:	Left observer:		Right observer:	
Habitat notes:		Horizontal visibility (m):	Angle of slope:	Transect orientation:	

FAMILY	Species	Record number of fishes per size class			
		1-10 cm	11-20 cm	21-30 cm	specify sizes for >30 cm
<EPINEPHELINAE>* groupers; *lapu-lapu*					
	Barramundi cod; *señorita*				
<LUTJANIDAE>* snappers; *maya-maya*					
<HAEMULIDAE>* sweetlips; grunts; *lipti*					
<LETHRINIDAE>* emperors; *katambak*					
CARANGIDAE* jacks; trevallies; *talakitok*					
CAESIONIDAE* fusiliers; *dalagang-bukid; solid*					
NEMIPTERIDAE* coral breams; *silay*					
MULLIDAE* goatfishes; *timbongan*					
BALISTIDAE triggerfishes; *pakol*					
CHAETODONTIDAE butterflyfishes; *alibangbang*					
POMACANTHIDAE angelfishes; *adlo*					
LABRIDAE wrasses; *labayan*					
	Humphead wrasse; *mameng*				
[SCARIDAE]* parrotfishes; *molmol*					
	Bumphead parrotfish; *taungan*				
[ACANTHURIDAE]* surgeonfish; *indangan*					
[SIGANIDAE]* rabbitfishes; *kitong, danggit*					
[KYPHOSIDAE]* rudderfishes; *ilak*					
POMACENTRIDAE damselfishes; *palata*					
ANTHIINAE fairy basslets; *bilong-bilong*					
Zanclus cornutus Moorish idol; *sanggowanding*					
sharks					
rays					
sea turtles					
others: e.g. tunas					

Legend: <fishes> = major reef carnivores; [fishes] = major reef herbivores, **fishes** = fishes which are indicators of hard corals, * = fishery target families

GEAR SURVEY FORM

Form 6A

Site Name:

Municipality & Province:

Date (month/day/year):

Type of fishing gear	# of persons in village using gear type	# of motor boats using gear type	Typical # of persons per boat	Months when gear is typically used	Hours when gear is typically used	Fishing grounds (use grid letter in map)	Where is catch sold (which market)	Type(s) of fish usually caught	# of persons from whom information was collected

FISH CATCH MONITORING FORM FOR DATA COLLECTION TEAMS | Form 6B

Name:

Village/Barangay:

Collect catch data once per week. Be sure to record the trip even if nothing was caught (record '0' in the weight).

Type of fishing gear	# of fishers in boat	Fishing ground (use grid letter in the map)	Time and date of departure	Time and date of arrival	Number of gear units	Use one line per kind of fish. Use more than one line per fishing trip if needed.	
						Kind of fish caught	Weight (kg)

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FISH CATCH MONITORING FORM FOR INDIVIDUAL FISHERS — Form 6C

Site/Village/Barangay:

Month & Year/Buwan at Taon:

List down at least 5 fishing days per month (e.g. once per week). Be sure to record the trip even if nothing was caught (record '0' in the weight). Magtala ng hindi bababa sa limang araw ng pangingisda sa bawat buwan. Siguraduhin na magtala pa rin kahit walang nahuli sa paglaot [magtala pa rin ng '0' sa timbang (kilos)].

	Record catch per fishing trip				
	1	2	3	4	5
Date & time of leaving / Petsa at oras ng paglabas					
Fishing gear / Uri ng pamamalakaya					
# of fishers in boat / Bilang ng tao sa bangka					
Fishing ground (use grid letter on map) / Lugar na pinangisdaan					
Weather condition, tide, and sea state / Kumusta ang panahon, hunas/taob, at alon					
Date & time of return / Petsa at oras ng pagbalik					

CATCH / Huli	Kinds of fish caught / Mga uri ng nahuli	Weight / Timbang	Weight / Timbang	Weight / Timbang	Weight / Timbang	Weight / Timbang
TOTAL CATCH (kilograms) / Pangkalahatang huli (kilos)						

Circle each date that you went out to fish. *Bilugan ang bawat petsa na ikaw ay nangisda.*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

FISH CATCH MONITORING SUMMARY FORM

Form 6D

Site Name:

Zone/Sector:

Month & Year:

Municipality & Province:

Fishing Gear	Total kg	Total gear unit-days or fishing-hours	kg/ unit effort	Total kg	Total gear unit-days or fishing-hours	kg/ unit effort	Total kg	Total gear unit-days or fishing-hours	kg/ unit effort	Total kg	Total gear unit-days or fishing-hours	kg/ unit effort	Total kg	Total gear unit-days or fishing-hours	kg/ unit effort

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CORRELATION TABLE			Form 7								
Site Name:			Municipality & Province:								
Period covered (mo/day/yr):			Zone/Sector:								
INDICATORS	**units**	potential problem if…	**Year I**			**Year II**			**Year III**			**Trend observed**
			a	b	c	a	b	c	a	b	c	
FISH (Carangidae+Caesionidae)	average count	decrease										
FISH (Lutj+Leth+SEpin+Haem)	average count	decrease										
LOBSTER	average count	decrease										
GIANT CLAMS	average count	decrease										
TRITON	average count	decrease										
CROWN-OF-THORNS	average count	increase										
OVERHARVESTING/OVERFISHING	no. of fishers obs.	increase										
CORALS (Hard & Soft)	average % cover	decrease										
FISH (Chaetodontidae)	average count	decrease										
DEAD CORAL (w/ or w/o ALGAE)	average % cover	increase										
RUBBLE	average % cover	increase										
DESTRUCTIVE FISHING	evidence of blasts	increase										
ANCHOR DAMAGE	overturned corals	present										
STORMS	no. of strong ones	high										
TOURISM	no. of resorts	>med or inc.										
ALGAE (turf+macroalgae)	average % cover	increase										
FISH (Balistidae+Tetradontidae)	average count	decrease										
FISH (Scar+Acan+Kyph)	average count	decrease										
URCHINS	average count	large change										
ALGAL OVERGROWTH	occurrence	common										
AGRICULTURAL/FARMED AREA	% of coastline	> low or inc.										
POPULATION		high										
TRASH/GARBAGE (total)	no. observed	present										
MARICULTURE	% area	high										
SAND/SILT	average % cover	increase										
RIVER	distance	near										
VISIBILITY (horizontal & vertical)	in meters	decrease										
FORESTED AREA	% of coastline	decrease										
COASTAL STRUCTURES BUILT-UP	% of coastline	> low or inc.										
SHIPPING	no. of large ships	> 3-5										
MINING POLLUTION	no. observed	present										
INDUSTRIAL POLLUTION	no. of factories	> low or inc.										
MASS BLEACHING	% cover	> 20%										
DISEASED CORALS	% cover	> 20%										
FISH KILLS & other mass deaths		present										
Crown-of-thorns, algae, urchins,…	average count	rapid inc.										
OTHER REMARKS:												

Annex 2.

Examples of Socioeconomic Questionnaires

(Adopted from the *SocMon SEA*)

Key Informant Interview / Secondary Source Guide

COMMUNITY-LEVEL DEMOGRAPHICS

KS1. Study Area What are the boundaries of the study area? Note on base map.

KS2. Population: How many people live in the study area? _____

KS3. Number of households : How many households are in the study area?

_____

KS4. Migration rate: What was the net increase or decrease in people moving

into and out of the study area in the last year?_____

(note + or – to reflect moving in or out)

KS5. Age: What percent of the people in the study area are currently: _____0-18; _____19-30; _____31-50; _____ over 50 ?

KS6. Gender: What percentage of the population is male? _____ female? _____

KS7. Education: What is the average number of years of education of people over 16 years old in the study area? _____

KS8. Literacy: What percentage of population is literate (can read and write)? _____

KS9. Ethnicity: What is the ethnic make-up of the study area (percent of each major ethnic group in the study area):

(write-in) _____; (write-in) _____; (write-in) _____

KS10. Religion: What is the religious make-up of the study area (percent of each major religious group in the study area):

(write-in) _____; (write-in) _____; (write-in) _____

KS11. Language: What are the major languages spoken in the study area (percent of each major language in the study area):

(write-in) _____; (write-in) _____; (write-in) _____

KS12. Occupation: Complete the fllowing table
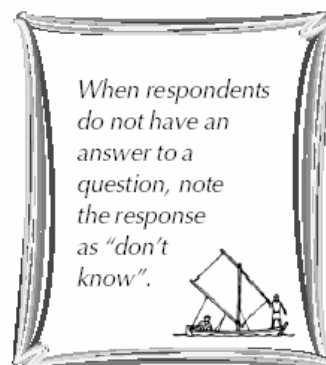
Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation
1.			
2.			
3.			
4.			
5.			

> When respondents do not have an answer to a question, note the response as "don't know".

COMMUNITY INFRASTRUCTURE

KS13. Community Infrastructure: Circle which services exist in the study area:

schools, resident doctors, resident nurses, hospitals, medical clinics, electricity, telephone, internet access, radios, televisions, newspapers, sewage treatment plant, ice plant, hard top road access, water supply to homes, banking/credit union services, rotating credit associations, guesthouses/hotels/inns, restaurants

COASTAL AND MARINE ACTIVITIES

KS14–23. Activities, Goods and Services, Types of Use, Value of Goods and Services, Goods and Services Market Orientation, Use Patterns, Levels of Impact, Types of Impact, Level of Use by Outsiders, Household Use:

Complete the following table (see *Appendix A* for examples of how to complete the table):

Coastal and Marine Activities	Coastal and Marine Goods and Services	Types of Use (primary)	Value of Goods and Services	Goods and Services Market Orientation (primary)	Use Patterns	Level of Impact	Types of Impact (primary)	Level of Use by Outsiders	House-hold Use (primary)

KS24. Stakeholders:

Complete the following table:

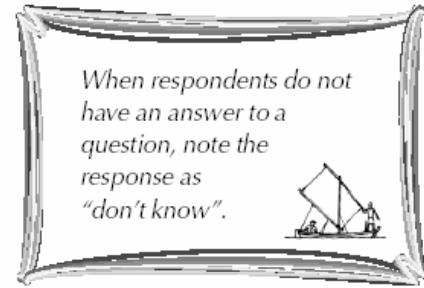| Coastal Activity*	Stakeholder Group 1	Stakeholder Group 2	Stakeholder Group 3
develop list according to activities identified in Activities (KS14)			

G O V E R N A N C E

KS25–29. Management Body, Management Plan, Enabling Legislation, Resource Allocations, Formal Tenure and Rules:

Complete the following table (see *Appendix A, KS25-29* for examples of how to complete the table):

Coastal Activity*	Management Body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure Arrangements (Yes/No)	Relevant Rules and Regulations (Yes/No)
develop list according to activities identified in Activities (KS14)							

KS30. Informal Tenure and Rules, Customs and Traditions:

Complete the following table:

Coastal Activity*	Customs and Traditions	Informal Tenure Arrangements	Informal Rules
develop list according to activities identified in Activities (KS14)			

KS31: Stakeholder Participation:

Complete the following table:

Stakeholder Group*	Stakeholder Participation (Yes/No)
*develop list according to stakeholder groups identified in Stakeholders (KS24)	

KS32: Stakeholder and Community Organizations:

Complete the following table:

Community Organization	Formal or Informal	Main Functions	Influence (on coastal management; community issues; both; none)

HOUSEHOLD INTERVIEW GUIDE

HOUSEHOLD DEMOGRAPHICS

When respondents do not have an answer to a question, note the response as "don't know".

H1-8. Age, Gender, Ethnicity, Education, Religion, Language, Occupation, Household Size:

Household Members*	Age	Gender	Education Level Completed (only ask if >16 yr)	Religion	Ethnicity	Language	Primary Occupation	Secondary Occupation

*identify all living in house by name or role (e.g. grandmother)

H9. Household Income:

What is your household's most important source of income? _____

What is your household's second most important source of income? _____

COASTAL AND MARINE ACTIVITIES

H10–14: Household Activities, Household Goods and Services, Types of Household Uses, Household Market Orientation, Household Uses:

(see *Appendix A, H10-14* for examples of how to complete the table)

Coastal and Marine Activities	Coastal and Marine Goods and Services	Types of Household Uses	Household Market Orientation	Household Uses
1				
2				
3				

ATTITUDES AND PERCEPTIONS

H15. Non-market and Non-use Values:

Indicate degree of agreement with the following statements using the scale: agree strongly (5); agree (4); neither agree nor disagree (3); disagree (2); disagree strongly (1).

_____ a)   The reefs are important for protecting land from storm waves. (indirect non-market value)

_____ b)   In the long-run fishing would be better if we cleared the coral. (indirect non-market value)

_____ c)   Unless mangroves are protected we will not have any fish to catch. (indirect non-market value)

_____ d)   Coral reefs are only important if you fish or dive. (existence non-use value)

_____ e)   I want future generations to enjoy the mangroves and coral reefs. (bequest non-use value)

_____ f)   Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow. (existence value)

_____ g)   We should restrict development in some coastal areas so that future generations will be able to have natural environments. (bequest value)

_____ h)   Seagrass beds have no value to people. (existence value)

H16. Perceptions of Resource Conditions:

How would you describe current coastal resource conditions on a scale from very good (5), good (4), not good not bad (3), bad (2) to very bad (1) (edit list of resources to reflect site resources):
Mangroves _____; Coral reefs _____; Fresh water _____; Upland forests _____

H17. Perceived Threats: What are the top 5 major threats to the health of coastal resources?

1. _____; 2. _____; 3. _____; 4. _____; 5._____

H18. Awareness of Rules and Regulations:

Are there rules and regulations related to   (yes or no) (develop list of activities according to *activities [KS14]*:
fishing _____; mangrove use; _____; aquaculture _____; hotel development; _____; residential development _____; watersports _____; marine transportation _____ .

H19. Compliance:

On a scale of 1 to 5 (1=no compliance, 5=full compliance), to what extent do people comply with coastal management rules and regulations? _____

H20. Enforcement:

On a scale of 1 to 5 (1=no enforcement, 5=full enforcement), to what extent are the rules and regulations enforced? _____

H21. Participation in Decision-making:

On a scale of 1 to 5 (1=no participation, 5=fully active participation), to what extent do you participate in coastal management decision-making? _____

H22. Membership in Stakeholder Organizations:

Is someone from your household a member of a stakeholder organization? _____

Which organization? _____

H23. Perceived Coastal Management Problems:

Aside from threats, what do you see as the two major problems facing coastal management in the community?

1. _____; 2. _____

H24. Perceived Coastal Management Solutions:

What do you see as solutions to these problems? 1. _____; 2. _____

H25. Perceived Community Problems:

What are the two major problems facing the community? 1. _____; 2. _____

H26. Successes in Coastal Management:

What two things do you think have worked well for coastal management in the community?

1. _____; 2. _____

H27. Challenges in Ccoastal Management:

What two things do you think have not worked well for coastal management in the community?

1. _____; 2. _____

MATERIAL STYLE OF LIFE

H28. Material Style of Life:

For each house note:

type of roof: tile _____ tin _____ wood _____ thatch _____

type of outside structural walls: tiled _____ brick/concrete _____ wood _____ thatch/bamboo _____

windows: glass _____ wooden _____ open _____ none _____

floors: tile _____ wooden _____ cement _____ thatch/bamboo _____ dirt _____

SAMPLE HOUSEHOLD QUESTIONNAIRE 1

HOUSEHOLD INTERVIEWS ON AWARENESS AND ACCEPTANCE OF
A MARINE SANCTUARY IN BARANGAY SINANDIGAN, PUERTO GALERA

INTEGRATED QUESTIONNAIRE

INTRODUCTION:

Good afternoon. I am_____, and we would like to request a few minutes of your time this afternoon. We have been requested by WWF to conduct a survey of households here in Brgy. Sinandingan to determine people's perceptions and attitudes towards CRM.

I. Existing Use:

1. What are the existing coastal and marine resources in your area?

   _____

   _____

2. What are the types of uses/activities occurring within the Sinandigan Bay?

   ____ Fishing (specify methods)   ____Fry gathering
   ____ Boating   ____snorkeling
   ____ scuba diving   ____Others (specify) _____
   ____Shell gathering

3. what are the activities that you yourself are performing?

   ____ Fishing (specify methods)   ____Fry gathering
   ____ Boating   ____snorkeling
   ____ scuba diving   ____Others (specify) _____
   ____Shell gathering

4. If you are extracting any of the coastal and marine resources in your area, how do you use the resources?

   ___ Own consumption
   ___ For sale, specify market _____

5. What do you think are the current threats to your coastal and marine resources?

   _____

   _____

II. Attitudes and Perceptions

1. Do you know what a marine sanctuary is?   Yes   No
   If yes, what is it?

   _____Breeding place for fish   _____no fishing activity
   _____for preservation of marine organisms _____ a strict reservation
   _____for preservation of marine habitat   _____Tourism site
   _____no human allowed   _____Others, specify_____

MERF and DENR

2. What is your source of information on what a Marine Sanctuary is?
_____ Newspaper   _____ Political leaders   _____ Academe
_____ Posters, IEC materials _____ Government   _____ NGO
_____ Radio   _____ Meetings and trainings _____ Others
_____ Books   _____ Neighbors

3. Do you want to have a marine sanctuary in your area?
_____YES, Why? _____
Where do you want to establish it? _____
How big is the area you suggest? _____ hectares
How should it be zoned?_____

_____NO, why? _____

4. What do you think are the benefits from the establishment of a marine sanctuary?
___ improving the fishery yield   ___ conservation of religious and cultural sites
___ protection from illegal activities   ___ conservation of marine resources
___ enhancement of local and national income ___ others (please specify) _____
___ provision of opportunities for educational and scientific studies

5. Who do you think will benefit from the establishment of MS?
___ LGUs   ___ POs
___ Fisherfolks of Sinandigan ___ Resort Owners/Operators
___ Academe   ___ General Public
___ NGOs   ___ Others (please specify)

6. What do you think are costs?

7. In your opinion, which activities should be allowed or disallowed within Sinandigan Bay if established as MS?

	Allowed	Disallowed
Hook and line		
Gill net fishing		
Spear gun fishing		
Trawl fishing		
Commercial fishing		
Snorkeling		
Scuba diving		
Bio prospecting		
Conservation of biological diversity		
Research and studies		
Others		

8. Who should be allowed?
_____ within the barangay   _____ within the municipality   _____ anyone

9. How should they be regulated?

_____Permitting system   _____imposition of user's fee   _____open and close season
_____others (specify)_____

10. Who should manage the sanctuary?
  ___ barangay   ___ provincial government
  ___ municipal mayor   ___ NGOs
  ___ National government agency (e.g. DENR) ___ academe
  ___ people's organization/cooperative
  ___ others (please specify)_____

III. Demographic Profile

Name of Respondent (Optional): _____.
Age: _____
Gender:_____
Education Level:_____
Religion:_____
Ethnicity:_____
Language:_____
Primary Occupation:_____
Secondary Occupation:_____
Household Size :_____
  A. Male:___ B. Female:__
Monthly household income:_____

Thank you very much for your time!

Name of interviewer: _____
Time: _____
Place: _____

SAMPLE HOUSEHOLD QUESTIONNAIRE 2

PALAUI ISLAND PROTECTED LANDSCAPE AND SEASCAPE
Socio-Economic Monitoring of Coral Reefs
August 20, 2005

SURVEY QUESTIONNAIRE FOR HOUSEHOLD INTERVIEWS

I. HOUSEHOLD DEMOGRAPHICS

1. What is your name? (OPTIONAL) _____
2. Where do you live? _____
3. What year did you start living on the island? _____
4. How old are you? _____
5. Gender:
   D Male   D Female
6. What is your ethnicity? _____
7. What is your highest educational attainment?

   Elementary

   High School

   College

   Graduate Level

8. No. of household members? _____
9. What is your main occupation? _____
   Secondary occupation? _____
10. How many income earners are there in your household? _____
11. What is your average monthly income? _____
    Average household income? _____
12. Are you a member of any organization? _____

II.   MATERIAL STYLE OF LIFE

1.   What housing materials are you using?

Material	Source (bought or extracted)	Price if Purchased

2.   Do you own any electronic appliances? (e.g. celphone, karaoke, TV, etc.)

   i.
   ii.
   iii.
   iv.
   v.

3.   Do you have your own generator? If not, how much are you paying for electricity a month?
   _____

4.   What is your energy source for cooking?

   Charcoal

   Firewood

   LPG

   Kerosene

5.   Source of water?

   Communal Well

   Spring

   Individual faucet

III. ATTITUDES AND PERCEPTIONS

1. Are you aware of the status of Palaui Island as a protected area?

☐   YES   ☐   NO

2. What are your perceived benefits from declaring the PI as protected?

  i.
 ii.
iii.

3. What are the costs to you as a result of PI being protected?

  i.
 ii.
iii.

4. Do you agree with the proclamation of PI as a PA? ☐ YES   ☐ NO
    Why or why not?

_____

_____

5. What is your perception of the state of the coastal resources of PI (quality and quantity)?

Resource	Rating				
	Excellent	Good	Fair	Poor	Very Poor
Coral Reefs					
Fish					
Seagrass					
Shells					
Cucumber					
Lobsters					
Crabs					
Shrimps					
Sea Urchins					
Seaweeds					
Beach area					
Mangroves					
Water quality					

6. What do you perceive as the major threats to the PA?

  i.
 ii.
iii.

7. Are you aware of the PAMB and its functions?

☐   YES   ☐   NO

8. Aside from the PAMB, who do you think should be part of protection efforts for the PA?

   LGU

MERF and DENR

NGOs

POs

PNP

Community residents

Others, please specify _____

9. Are you aware of the rules and regulations being implemented in the PA?

☐   YES   ☐   NO

10. If yes, which rules are you aware of?

_____
_____
_____

11. Do you agree with the current structure and rules?   ☐ YES ☐   NO
Why or why not? _____
           _____

12. Do you think people are complying with the PA rules?

☐   YES   ☐   NO

13. Do you think the PAMB is enforcing the rules sufficiently?

☐   YES   ☐   NO

14. Do you think the PAMB is consulting the PA residents enough?
☐   YES   ☐   NO

If not, would you rather be consulted more often?
☐   YES   ☐   NO

15. What are your suggestions to improve protection efforts?

i.
ii.
iii.
iv.

16. What are your suggestions to improve the standard of living of PA residents?

i.
ii.
iii.
iv.

IV. COASTAL AND MARINE ACTIVITIES

A. Fishing: PEAK

Species	No. of Kilos/catch	No. of kilos sold	Price per kilo sold	No. of times/wk	Distance traveled per trip	Gear Used	Boat Used

Fishing: LEAN

Species	No. of Kilos/catch	No. of kilos sold sold	Price per kilo sold	No. of times/wk	Distance traveled per trip	Gear Used	Boat Used

Annex 2-4. Sample Household Questionnaire # 2

B. FARMING

Crop	Land Area	Kilost Harvested	Cropping Season	No. of Kilos sold	Price per kilo	Inputs Used

C. SHELL GATHERING

Type	Use	Kilos Harvested	No. of times/mo.	Harvest Season	Price per kilo

D. EXTRACTION OR USE OF OTHER RESOURCES

Resource	Use (housing, medicinal, transport, recreation)	Quantity Harvested	Frequency of Harvest	Perceived Abundance	Substitute Resource

MERF and DENR

Annex 3.

**CCEF's MPA Report Guide
and
Management Rating System
for NIPAS sites (2004)**

MPA REPORT GUIDE

This **Marine Protected Area Report Guide** can assist in organizing information on individual MPAs and the environment that the MPA protects. If completed yearly, it will provide MPA managers, local government, non-government organizations, academe or other interested parties with information on the status and quality of management, the status and quality of the environment and benefits being derived from the MPA. It will also provide feedback on how the MPA is rated compared to other MPAs and on how to improve management of the MPA.

I. BASIC DESCRIPTION

Please attach MPA related ordinances (e.g. establishment, user-fees) and other relevant documents (e.g. MPA management plan, biophysical survey reports, maps) if available.

MPA Name : _____

Region : _____   Province: _____

Municipality: _____

Barangay: _____

MPA size (ha) : _____

Habitat/ecosystem(s) within MPA :
        [ ] Coral reef   [ ] Soft bottom
        [ ] Mangrove   [ ] Rocky intertidal
        [ ] Seagrass bed   [ ] Open water
        [ ] Macro-algal bed

Type of coral reef :
        [ ] Fringing   [ ] Shoal
        [ ] Patch   [ ] Barrier
        [ ] Atoll

Boundary coordinates:

Point	Latitude	Longitude
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

Type of datum:

        [ ] Luzon, Philippines   [ ] PRS92
        [ ] Mindanao, Philippines   [ ] WGS84
        [ ] Geodetic Survey

Year legally established as MPA: _____

Proclamation number and title: _____

Other laws affecting the area: _____

Year field management began: _____

International category:

MPA establishment history/Reason for establishment:

Reference/Source of information, affiliation/institution:

Date accomplished:

II. GENERAL STATUS

Year of Survey: _____

MANAGEMENT

Managing organization*:

_____

PA support staff:

   PASU : _____

   Technical staff : _____

                                    _____

                                    _____

   Ranger : _____

Assisting organization (s)**:

Write the name of organization and indicate type according to the classifications provided. (Select letter type for **each** organization)
[a] Government agency   [f] NGO
[b] Barangay government   [g] Dive shop/Resort owner
[c] Municipal government   [h] Development project
[d] Provincial government   [i] Others, specify:_____
[e] PO

1. _____ ____

2. _____ ____

3. _____ ____

4. _____ ____

5. _____ ____

6. _____ ____

7. _____ ____

8. _____ ____

9. _____ ____

10. _____ ____

Mooring/anchor buoys? :   [ ] Yes   [ ] No   if yes, how many _____

Marker buoys? :   [ ] Yes   [ ] No   if yes, how many _____

Signs posted? :   [ ] Yes   [ ] No   if yes, how many: _____ In front of guardhouse

                                                           _____ Boundary borders

                                                           _____ Along the beach

                                                           _____ Road leading to MPA

                                                           _____Along the main road

* - Organization (usually local PO) directly managing the MPA

** - Organization or agency providing support or technical assistance for effective management of the MPA

Management plan approved?:   [ ] Yes   [ ] No

If yes, specify duration of plan: [ ] 1 year   [ ] 2 years   [ ] 3 years

                                            [ ] 4 years   [ ] 5 years   [ ] Others, specify: _____

Year management plan was implemented: _____

Management zones:	Size (Ha)	Restrictions
[ ] Strict protection zone	_____	_____
[ ] Sustainable use zone	_____	_____
[ ] Restoration zone	_____	_____
[ ] Habitat management zone	_____	_____
[ ] Multiple-use zone	_____	_____
[ ] Buffer zone	_____	_____
[ ] Cultural zone	_____	_____
[ ] Recreational zone	_____	_____
[ ] Special use zone	_____	_____
[ ] Others, _____	_____	_____

FINANCIAL MANAGEMENT

With revenue generation?   [ ] Yes   [ ] No

Type of revenue generation   Guidelines

[ ] User fee   _____

[ ] Others _____   _____

Indicate means of collection:

[ ] Ticket System   [ ] Pay upon entrance   [ ] Donation at site   [ ] Others, specify: _____

Who manages the funds?

[ ] PAMB   [ ] Provincial LGU   [ ] Municipal LGU   [ ] Barangay LGU

[ ] Others, specify: _____

How much is the estimated annual gross income of the MPA?   Ph₱ _____

How much was spent on annual MPA management/operations?   Ph₱ _____

Expenditures covered what items?	Cost (Ph₱)
[ ] Trainings / seminars / meetings	_____
[ ] IEC/Promotions	_____
[ ] Honorarium/salary	_____
[ ] Enforcement support (e.g. buoys, billboard, guardhouse, pumpboat)	_____
[ ] Repair and maintenance	_____
[ ] Materials and supplies (e.g. office supplies, gasoline)	_____
[ ] Communication equipment	_____
[ ] Monitoring and research	_____
[ ] Others, specify: _____	_____

Sharing scheme:	Beneficiary:	Percentage share:
	_____	_____
	_____	_____
	_____	_____
	_____	_____

OTHER ECONOMIC BENEFITS
Livelihood created as a result of the MPA
_____
_____

Supplemental or alternative livelihood program implemented:
_____
_____
_____

ENFORCEMENT
With penalty imposed?　　　[　] Yes　　　　[　] No　　　Estimated annual collection : PhP_____

Violation committed	Case filed	Penalty imposed	Case resolved (yes/no)

Effectiveness of management in relation to objectives of the MPA*: _____
_____

[　] 0 – Non-existing　　　[　] 1 – Poor　　　　[　] 2 – Average　　[　] 3 – Good　　　[　] 4 – Excellent

Level of community participation and role in management**: _____
_____
_____

[　] 0 – Non-existing/passive　　　　[　] 1 – Partial　　　　[　] 2 – Active

Priorities and issues for improved management:　　[　] Budget
(Choose top 3 answers)　　　　　　　　　　　　[　] Law enforcement
　　　　　　　　　　　　　　　　　　　　　　[　] Participation of LGUs and NGAs
　　　　　　　　　　　　　　　　　　　　　　[　] Resource use conflict
　　　　　　　　　　　　　　　　　　　　　　[　] Politics
　　　　　　　　　　　　　　　　　　　　　　[　] Capacity development
　　　　　　　　　　　　　　　　　　　　　　[　] IEC for stakeholders
　　　　　　　　　　　　　　　　　　　　　　[　] Others, specify: _____

Reference/Source of information, affiliation/institution:

Date Accomplished:

* Non-existing – No management effort observed
　Poor – Management effort is minimal. So much more is needed to prevent damage and exploitation
　Average – There exist management activities although more effort is still needed
　Good – Management is active and protection is achieved
　Excellent – Mgmt activities exceed normal expectations; habitat protection and marine-life preservation is assured

** Non-existing/passive – No participation in mgmt either due to absence of mobilization or lack of interest
　Partial – Community involvement is moderate, although more support is expected
　Active – The community plays a very active role in the whole process of mgmt; empowered and confident in support of the MPA

Annex 4.

Data Integration and Analysis Form

Annual Coral Reef Monitoring Data Sheet for NIPAS Sites

Region & MPA Name: _____

Prepared by: _____

Monitoring Year: _____

GEOGRAPHIC SCALE	RESOURCE STATE	SOCIO-ECONOMIC PRESSURES	GOVERNANCE/MANAGEMENT RESPONSES	
			Indicators	Effectivity Levels
SMALL				
MEDIUM				
LARGE				

* Use the manta tow generated map (at the back) to detect broad changes in the spatial distribution of the resource & users

Coastal Map for NIPAS Marine Monitoring

Mapped by: _____

Drawn by: _____

MPA Name & Location: _____

Month & Year: _____

** Please **draw a map** showing the current location of **coastal resources** (e.g., reefs, seagrasses, sand, etc.) and its various **uses**, the **users** (i.e., communities / settlements), **coastal infrastructures** (e.g., fish ponds / cages, ports, factories, powerplants, etc.), **inland resources and users** (i.e., streams, forests, grasslands, agricultural areas), and **inland infrastructures** (e.g., mining areas, logging areas, etc.); **label** appropriately and provide a **legend** of symbols used;