

Directory of MARINE RESERVES in the Visayas, Philippines



Angel C. Alcala, Abner A. Bucol and Portia Nillos-Kleiven

Photos by Jasper Maypa & Kathryn Rosell

Directory of
MARINE RESERVES
in the
Visayas, Philippines

Angel C. Alcala, Abner A. Bucol
and Portia Nillos-Kleiven

Directory of Marine Reserves in the Visayas, Philippines

This book describes as fully as possible each of the 564 no-take marine reserves in the Visayas. It also evaluates the functionality of these marine reserves based primarily on fish biomass and coral/seagrass/mangrove cover within their boundaries. It is designed as a quick reference book to a wide range of readers.



Published by **Foundation for the Philippine Environment** and **Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM)**

Printed by **Silliman Press**, Dumaguete City 6200,
Philippines

ISBN 978-971-94409-0-1

For bibliographic purposes, this book should be cited as:

Alcala, A.C., A.A. Bucol and P. Nillos-Kleiven (2008)
Directory of Marine Reserves in the Visayas, Philippines. Foundation for the Philippine Environment and Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM). Dumaguete City, Philippines. 178 pp., 10 Figs.

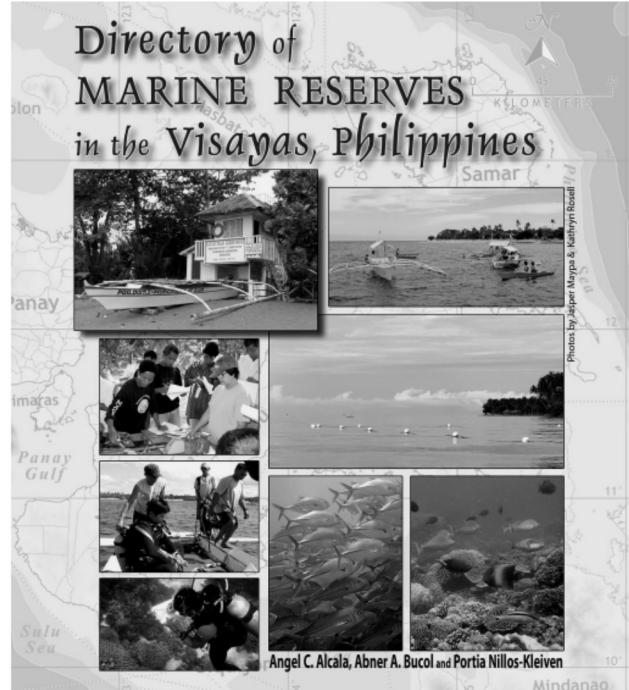
The research for this publication was supported by the **Technical Cooperation Council of the Philippines (TCCP)**, Department of Foreign Affairs through the **Ocean Friends Foundation, Inc.** The publication cost was made possible through a grant from the **Foundation for the Philippine Environment (FPE)**. The opinions and facts presented herein are those of the authors and do not necessarily reflect the views of **TCCP** and **FPE**. This book may be cited in other publications as long as proper acknowledgement is made.

Layout by: **Jasper Leif P. Maypa**

Editor: **Celia E. Accedo**

Philippine Copyright © 2008 by the **Foundation for the Philippine Environment, Silliman University - Angelo King Center for Research & Environmental Management (SUAKCREM)** and the **Technical Cooperation Council of the Philippines (TCCP)**, Department of Foreign Affairs.

Reproduction of this publication without any prior written permission from the authors and publishers is prohibited.



Cover: Photos taken from marine reserves around the Bohol Sea. (Clockwise from top left) Guardhouse of Poblacion I Marine Sanctuary in Dauin, Negros Oriental; tourist boats and shell vendors at Balicasag Island, Bohol; buoys showing the boundary of Bahura Marine Sanctuary in Dauin; coral reef in Masaplod Sur Marine Sanctuary, Dauin; jacks in Apo Island Marine Sanctuary; coral research in Apo Island (K Rosell); biophysical survey in Tubod, Siquijor; fish catch monitoring training at Masaplod Norte Marine Sanctuary in Dauin. (Photos by Jasper Maypa)

Table of Contents

Acknowledgements	<i>iv</i>
Foreword	<i>v</i>
Acronyms and Abbreviations	<i>vi</i>
Introduction	<i>1</i>
How to use this book	<i>3</i>
Explanation of table entries describing the marine reserves	<i>3</i>
Methods	<i>6</i>
Results	<i>8</i>
Bohol & associated islands	<i>11</i>
Cebu & associated islands	<i>57</i>
Leyte & associated islands	<i>89</i>
Negros & associated islands	<i>111</i>
Panay & associated islands	<i>127</i>
Samar & associated islands	<i>147</i>
Siquijor & associated islands	<i>165</i>
List of functional marine reserves in the Visayas	<i>171</i>
Concluding Remarks	<i>174</i>
References	<i>175</i>

Acknowledgements

The research for this book was funded by the Technical Cooperation Council of the Philippines, Department of Foreign Affairs, which hopes to contribute to the drafting of legislation on the National Marine Policy. We are grateful for the support. We also thank the governors, mayors and other local government officials of the provinces, towns and cities in the Visayas, the DENR and BFAR officials, the NGOs (CCEF, Project Seahorse Foundation, Hayuma Foundation, BANGON, Law of Nature Foundation, among others) and POs, and our colleagues in the academe for making available to us information about the marine reserves listed in this book.

We thank Jasper Leif P. Maypa for the layout and preparation of the illustrations, Edna Sabater

and Albert Sequito for verifying the information on marine reserves on Panay, Samar and Leyte Islands through visits they made to these islands during the months of August through November, 2008. Brian Stockwell of SUAKCREM also provided data on some marine reserves. Additional information on the marine reserves of Negros Oriental were provided by Joan Binondo, Manric and Anabele Barillo of the Environment and Natural Resources (ENRD), Office of the Governor, Negros Oriental. The authors visited the marine reserves on Bohol, Cebu, Negros and Siquijor. Ms. Rebecca Weeks, a graduate student at James Cook University, Australia, provided the basemap used in generating Figure1 and Figures 4 to10.

Foreword

This Directory of Marine Protected Areas in the Philippines was conceived for a medium- to long-term practical purpose. The medium-term goal is to encourage better management of these MPAs, as well as promote the establishment of new ones. The long-term goal is to create a national policy underpinning and environment for seamless regional ocean governance for maritime Southeast Asia. The Philippines is the principal stakeholder in this regard.

This is no fancy, altruistic, academic goal. Ocean governance is most critical for the Philippines as an archipelagic State, as we have nine times more water jurisdictions than land. In this regard, effective ocean governance for the country compels a regional breadth because of the inherent connectivity of the oceans. Southeast Asia, the Philippines in particular, is the locus of the highest marine biodiversity in the world, as well as the spawning and breeding area for important fish species and endangered marine mammals. The waters in and around the country is criss-crossed by domestic, international and regional shipping with consequent danger of pollution arising from shipping activities and accidents. Pollution risks also arise from land-based sources, whether as run-offs from agriculture or directly from coastal communities.

The proliferation of marine protected areas in the Visayas region is a good starting point for establishing a holistic regional ocean governance mechanism centered on the Philippines, the maritime heartland of Southeast Asia. In the near future, it is hoped to complete the Directory with succeeding volumes for the Mindanao and Luzon regions. The dissemination of best practices and the current status of our MPAs to the public domain has important applications in policy-making from the grassroots level to the highest levels of government.

Amb. Alberto A. Encomienda

Chair-Alternate

Technical Cooperation Council of the Philippines
Department of Foreign Affairs

This is where the Technical Cooperation Council of the Philippines (TCCP) partnership comes in. The TCCP role is connected with the United Nations General Assembly program on Technical Cooperation among Developing Countries (TCDC), which is a mutual and self-help economic assistance arrangement among developing countries in favor of the least developed among them, especially island developing countries. The economic development thrust and sharing of individual expertise among developing countries is the country's contribution, with ocean governance as the central thrust starting with Coastal Resource Management (CRM). This Directory forms part of materials on community-based CRM to share expertise with regional countries and island developing countries.

But the vision and mission does not stop there, most especially in the practical implementation aspect. The Directory and its further development and evolution is intended to form part of a tapestry of data requirements towards declaring the entire archipelago as a Particularly Sensitive Sea Area (PSSA) and Marine Environment High Risk Areas (MEHRA) under the International Maritime Organization. The foregoing are two mechanisms that address marine environment protection arising from shipping activities, with implications on the rules on transit passage and navigation of vessels within our archipelagic waters and control of vessel-sourced pollution. This indeed would be a quantum leap towards the long-term goal of continuing ocean governance for our archipelagic state that is strategically located in the maritime heartland of Southeast Asia.

Acronyms and Abbreviations

ARD-GOLD	Associates in Rural Development/Governance on Local Democracy	GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Development Service)
BANGON	Bohol Alliance of Non-Government Organizations Network	JICA	Japan International Cooperation Agency
BEMO	Bohol Environmental Management Office	LGU	Local Government Unit
BFARMC	Barangay Fisheries and Aquatic Resource Management Council	LIPASECU	Libertad-Pandan-Sebaste-Culasi
BIDEF	Bohol Integrated Development Foundation	LHC	Live hard coral
BMTP	Bohol Marine Triangle Project	LNF	Law of Nature Foundation
CBCRM	Community-based Coastal Resource Management	MAO	Municipal Agriculturist Office
CBRMP	Community-based Resource Management Project	MBEMO	Maribojoc Bay Executive Management Office
CCC	Coral Cay Conservation	MFARMC	Municipal Fisheries and Aquatic Resource Management Council
CCEF	Coastal Conservation & Education Foundation	MMC	Marine Management Committee
CDF	Coastal Dynamics Foundation	MSN	Marine Protected Areas Support Network
CEMRINO	Coastal Environment Management and Research in Negros Oriental	PAMB	Protected Area Management Board
CENRO	Community Environment and Natural Resources Office	PhilDHRRRA	Philippine Partnership for the Development of Human Resources in Rural Areas
CRMO	Coastal Resource Management Office	PhilReefs	Coral Reef Information Network of the Philippines
CRMP	Coastal Resource Management Project	PROCESS-BOHOL	Participatory, Research, Organization of Communities and Education towards Struggle for Self-Reliance-Bohol
CVRP	Central Visayas Regional Project	PRRCFI	Philippine Reef and Rainforest Conservation Foundation, Inc.
CVSCAFT	Central Visayas State College of Agriculture, Forestry and Technology	PMPATS	Provincial Marine Protected Area Technical Support Staff
DA-BFAR	Department of Agriculture-Bureau of Fisheries & Aquatic Resources	PO	People's Organization
DIMRS	Danjugan Island Marine Reserves and Sanctuaries	PSF	Project Seahorse Foundation
DENR	Department of Environment and Natural Resources	SEAFDEC	Southeast Asian Fisheries Development Center
ECOGOV	EcoGovernance Project (USAID)	SMISLE	Small Islands Agricultural Support Services Programme
ENRD	Environment and Natural Resources Division (Office of the Governor, Negros Oriental)	SUAKCREM	Silliman University-Angelo King Center for Research & Environmental Management
FA	Fisherfolk/Fishermen's Association	SCFHPI	St. Catherine Family Helper Project Inc.
FARMC	Fisheries & Aquatic Resources Management Council	SUML	Silliman University Marine Laboratory
FISH Project	Fisheries Improved for Sustainable Harvest Project	SYMCOR	Synergetic Management of Coastal Resources
FPE	Foundation for the Philippine Environment	TMF	Ting Matiao Foundation Inc.
FTC	Feed the Children International	UPMSI	University of the Philippines- Marine Science Institute
FRMP	Fisheries Resource Management Project	UPV	University of the Philippines-Visayas
GDFI	Guiuan Development Foundation Inc.	USAID	United States Agency for International Development
		VSO	Voluntary Service Overseas
		VSSq	Visayan Sea Squadron

Introduction

It is now common knowledge that marine ecosystems in many areas of the world have become degraded and that marine resources such as fish and shellfish have been depleted. This is particularly true of coral reefs (e.g. Buddemeier et al. 2004). The degradation of the oceans' health has reduced their capacity to perform their natural functions and to provide ecosystem services to humankind. The establishment of marine reserves is considered by many resource biologists as a viable and practical solution to the problem of marine resource degradation.

"Marine reserves are defined as ocean areas that are permanently and fully protected from human activities that remove animals and plants and alter habitats..." (PISCO 2007, Lubchenco et al., 2003). Many recent authors use the term "no-take marine reserves" to emphasize the fact that no removal or alteration of any part of the environment and of any animal or plant species is allowed inside the marine reserves. In most functional and successful marine reserves, only non-extractive monitoring to evaluate the effectiveness of marine reserves is allowed, as extraction of resources from no-take marine reserves is inconsistent with the objectives of marine reserve establishment.

Marine reserves are not equivalent to marine protected areas (MPAs) because some MPAs do allow fishing or removal of certain marine organisms and parts of the environment. Some areas designated as "fish sanctuaries" give some people the impression that only fish is protected from fishing in such "sanctuaries," while other species and even non-living materials can be removed. Our experience, however, has been that prohibiting the removal of some species but allowing some exceptions is confusing to people. We, therefore, prefer to use the term "marine reserves" to denote fully protected sea areas.

Most marine reserves in the country are coral reefs, but some consist of varying proportions of coral reef, mangrove and seagrass. Few are primarily

mangrove. Some marine reserves are located on small islands, while others are situated along the coastline of larger islands.

The national legal frameworks for marine reserves in the Philippines are the Local Government Code of 1991, the National Integrated Protected Areas Systems Act or NIPAS Act of 1992, and the Fishery Code of 1998. At the local levels, municipal and provincial ordinances provide additional management provisions suited to local situations. The implementers or managers of marine reserves as part of coastal resource management (CRM) are the local governments units (LGUs), the Department of Environment and Natural Resources (DENR), the Bureau of Fisheries and Aquatic Resources (BFAR), Non-government Organizations (NGOs), and People Organizations (POs), often working under co-management arrangements with one another. Sometimes people from academic institutions assist them by offering technical advice or by serving as members of the management boards [e.g. Protected Areas Management Board (PAMB)] for marine reserves under the DENR.

The history of marine reserves in the Philippines has been discussed by Alcala (2001). He noted that several hundreds of marine reserves of various sizes have been established throughout the country since the establishment of the Sumilon Marine Reserve in the Central Visayas in 1974 (e.g. Russ & Alcala, 1994). However, despite the many reports, books, scientific papers and popular publications that have been written in the past 33 years, it is not known how many and which of these reserves have functioned according to expectations. This book is an attempt to provide information to answer these questions.

This Directory aims to describe as fully as possible the features of each of the marine reserves in the Visayas as of 2008. These marine reserves are found on the islands of Bohol, Cebu, Leyte, Negros, Panay, Samar, and Siquijor (**Figure 1**). It is hoped that the next volumes will deal with the marine

reserves on Luzon, Mindanao, Mindoro, Palawan, Masbate and Romblon.

This Directory provides information about specific marine reserves, such as history of establishment, support provided to ensure sustained protection, condition of the marine biodiversity inside and outside the reserves, abundance and

biomass of fish and other associated marine species, and fishery production outside the reserve boundaries. It also discusses the problems in management, potential hazards such as oil spills, apprehensions of violators and fines meted, number and quality of published reports, etc. The livelihood activities going on in the vicinity of marine reserves

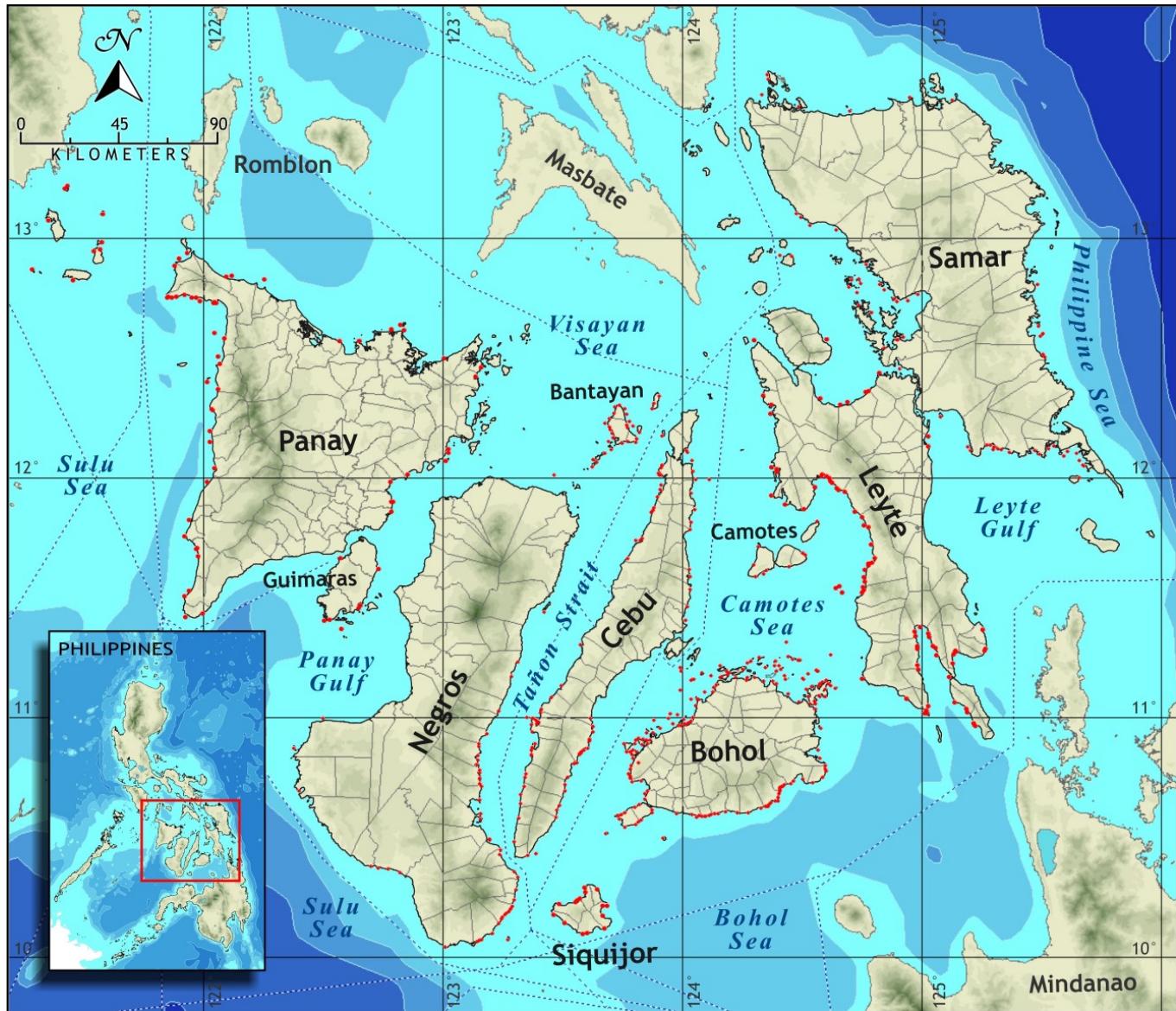


Figure 1. Map of the Visayas, Philippines, with marine reserves indicated as red dots and shipping lanes as dotted lines between and around islands.

are also noted to give some indication of the role of reserves in reducing poverty in coastal areas.

This Directory is offered as a reference book and guide in providing information and technical assistance to a wide range of interested persons and organizations such as marine scientists, government officials, environmentalists, academics, maritime authorities, fishing communities, tourism officials, shipping companies, research organizations and non-government organizations. It will be of special interest to coastal LGUs managing and maintaining marine reserves and may be used as basic reference material for evaluating the impact of marine reserves

on the socioeconomic life of primary stakeholders. It may also be used as a guide for development planning, marine conservation campaigns, prevention of oil spills, establishing network of marine reserves, etc.

It is hoped that this book would challenge the reserve managers to improve the quality of their marine reserves and develop expertise in coastal resource management (CRM) for sharing with other island and coastal developing countries and archipelagic States under the United Nations Technical and Economic Cooperation among Developing Countries (TCDC-ECDC).

How to use this book

The information presented in this Directory is organized first by major island groups, in alphabetical order. Small islands associated with a larger island are listed under the heading of the major island (e.g. Guimaras marine reserves are found under Panay Island; Bantayan Island marine reserves are listed under Cebu marine reserves).

Marine reserves on each major island group are listed under provinces when necessary (e.g. Negros

Oriental and Negros Occidental for Negros Island). Marine reserves in each island are numbered with regard to location. To find a particular marine reserve, the reader can use the map provided for each section. A list of functional marine reserves is provided as a guide for locating the functional marine reserves in a municipality.

Explanation of table entries describing the marine reserves

Name of Marine Reserve

The name of a reserve indicated in the ordinance or resolution creating it is adopted as its official name. In a few cases, the popular name of the reserve is enclosed in parentheses.

Year Established

The year of establishment refers to the year when protection was initiated. Because some reserves have been established more than once, the year(s) of re-establishment is/are enclosed in parentheses.

Location

The location of a reserve follows the order of locality/barangay, municipality/city and province.

Coordinates

The geographic coordinates (WGS84 map datum) are given for the purpose of general location but should not be interpreted as part of the delineation of the reserve.

Sea

The term “sea” as used in this Directory refers to the specific body of water where reserves are

located and may appear on charts and maps as seas, gulfs, straits, bays, etc.

Area

The areas covered by reserves are expressed in hectares. In some cases where legal documents are not available, the estimates of areas given by reserve managers are indicated.

Habitat

The types of habitats found within the reserve are specified such as coral reef, seagrass, algal bed, soft bottom, sand, rocky intertidal and deep water.

Established by

The name of the organization(s) spearheading the establishment (or re-establishment) of each marine reserve is given. For reserves established through a regional or national project/program of government, the project's name [e.g. Central Visayas Regional Project (CVRP)] is adopted.

Current Manager

The organization responsible for maintaining the reserve is indicated, usually in acronyms, but sometimes the complete name of the organization is given.

Delineation

Delineation indicates whether or not the reserve is clearly delineated by markers (usually buoys), which are crucial to maintaining a no-take zone.

Management Plan

Management plans for specific periods of time formulated by reserve managers are indicated.

Legal Bases

Supporting ordinances and/or resolutions declaring each reserve as no-take zones are given, especially for LGU-declared reserves. Presidential Decrees/Proclamations are indicated for National Integrated Protected Areas System (NIPAS) sites. In some reserves municipal ordinances have undergone

revisions/amendments and thus appear twice or more times.

Infrastructure

Infrastructures such as guardhouses, markers (buoys or poles), patrol boats, and signboards indicated under this heading are assumed to exist at the time of the survey.

Income Source

Incomes generated by reserves, such as diving fees from tourism and alternative livelihood outside of reserves, are indicated. When the income generated is significant, the details are given under the "Remarks/Assessment" heading.

Monitoring & Evaluation

As much as possible, the monitoring and evaluation conducted by various organizations and research institutions (in acronyms) are indicated.

Reports

Available reports on the monitoring & evaluation activities are given, usually in author-year format (e.g. PhilReefs, 2008)

Regular Patrol

When patrolling is a regular occurrence, the specific organization (e.g. *Bantay dagat*) involved is mentioned. Unless otherwise indicated, these monitoring activities are specific to the reserve.

Violations

Apprehended violations are indicated as "Apprehended" and violations occurring within the reserve are highlighted under current management issues and problems.

Fish Biomass/Density

Data on fish biomass and density are mainly based on available reports, both published and unpublished. Unless specified, they represent the total biomass and density. When both are available, fish biomass is prioritized. Biomass is expressed in terms of kilograms per hectare (kg/ha), while density is expressed in number of individuals/ha. Other units (e.g. kg/500m², tons/km², individuals/m², etc.)

are converted to kg/ha and individuals/ha. Fish biomass is rated as **Very Low** (<100 kg/ha), **Low** (100-380 kg/ha), **Medium** (>380-750 kg/ha), **High** (>750-1,500 kg/ha) and **Very High** (>1,500 kg/ha). Density is also rated as **Very Low** (<5000 individuals/ha), **Low** (5,000-20,000 individuals/ha), **Medium** (>20,000-30,000 individuals/ha), **High** (>30,000-100,000 individuals/ha), and **Very High** (>100,000 individuals/ha). When target density is given, it is multiplied by ten (10) to approximate the total density. This classification scheme was developed using SUAKCREM's data from underwater visual census of protected and unprotected coral reefs in the central Philippines.

In cases where reports are unavailable, a rapid resource assessment (timed-swim survey) by technical assistants who visited these reserves are utilized. In this method, the observer haphazardly traverses the surface of the reserve, passing over the shallow and deeper portions, by swimming or by using a small outrigger canoe. Approximately every two minutes, the observer stops and records the fish species found and indicates the number of individuals under the following total lengths: 1-10cm, 11-20cm, 21-30cm, and above 30cm. The frequency of each size range will then be used to estimate for the fish biomass in the reserve as Low, Medium, High, and Very High. The percent cover of live hard coral is also estimated here.

Coral Cover

The coral cover expressed in percent (%) is chosen to represent the condition of the coral cover in the marine reserve. Generally, coral cover refers to mean live hard coral (LHC). The classification in the Coastal Conservation and Education Foundation (CCEF) Database is adopted: Poor (<25%), Fair (25-49%), Good (50-75%), and Excellent (>75%).

Funding & Source

The source of funds for maintenance of marine reserves, including replacement of marker buoys, repair of patrol boats, and allowance for fish wardens/Bantay dagat, etc., is specified.

Current Management Issues/Problems

This entry summarizes the primary problems and issues faced by marine reserve managers.

Past Problems Solved

The problems occurring in previous years are also highlighted along with the solution(s) to serve as guide for reserve managers.

Remarks/Assessment

Any information that cannot be classified under the above-mentioned headings is mentioned here, including approximate distance to shipping lanes, significant observations made by field assistants, details on high tourism income, etc. Our judgment on whether a reserve is "Functional," "Non-functional" or "Paper Reserve" is indicated here.

Methods

Books, scientific papers and unpublished reports that contain descriptions or accounts of marine reserves were reviewed for data and information on specific marine reserves in the Visayas. Four technical assistants gathered information not included in the publications reviewed and verified some published data through interviews with managers of marine reserves during the field visits to most of the marine reserves in August through November 2008. Information gathered from these field visits was sent back to the local governments in the Visayas regions for comments and corrections. To determine the coordinates of the marine reserves, the GPS (Garmin GPS 72) was used. MapWindow GIS was utilized in generating maps. For a few marine reserves that were not visited due to their relative inaccessibility and bad weather conditions, the coordinates given in publications were adopted.

White *et al.* (2006) classified marine reserves according to certain levels based on management criteria that did not include the biophysical effects of protection and management. In contrast, we believe that these effects, which are the ultimate outcomes of good management, are very important. In this book we have determined whether or not marine reserves established three or more years ago have performed their function of improving marine biodiversity and generating more fish, especially target (food) species, within their boundaries. We have used the indicators that have a direct impact on the management of marine reserves and the biophysical indicators (mainly fish and corals) to determine whether a marine reserve is Functional or not. These indicators are the following:

1. Good protection status in terms of existence of guards and a regular patrolling regime, buoys and signs, and patrol boat;

2. Sustained funding support by local government units;
3. Management by a local government unit or by a local government unit in partnership with people's organizations, NGOs or some other community-based associations;
4. At least a "Medium" fish biomass (at least ca 200 kg/ha) and high fish density and biodiversity;
5. At least a "Fair" live hard coral (LHC)/ seagrass/mangrove cover (ca 25% and above); and
6. Catch per unit effort (CPUE) of at least 1.0 kg/person/hour for hook-and-line fishing outside the reserve (if available).

Indicators 1, 2, and 3 are major requirements for establishing successful community-based marine reserves. They serve as management indicators that are prerequisites for the attainment of the functional status of marine reserves. Indicators 4 and 5 are the expected consequences of good protection and management of marine reserves. They are based on our research findings on fully protected and functional marine reserves in the central Philippines (Abesamis *et al.* 2006; Russ *et al.* 2005). Indicators 4 and 5 are considered important because marine reserves must show improvement in the quality of the marine environment and marine resources if they are to benefit the country.

At present, Indicator 6 is true only of two marine reserves (Sumilon Island and Apo Island) for which there exists evidence for fish export to surrounding areas. This indicator has not been used to determine the functional status of the Visayan marine reserves, but it is included in this book to emphasize that spillover is one of the ultimate tests for functional marine reserves in the Philippine context.

A marine reserve is rated according to the absence or presence of the indicators listed above. For purposes of rating the marine reserves, these indicators are grouped into two weighted categories: management indicators (60%) and biophysical indicators (40%), which are the outcomes of good management. A score (1 point each) is given for the presence of a management body, funding, guardhouse, patrol boat, buoys, and signboards, or a maximum of 6 points for management. For the biophysical outcomes, 2 points each are given for meeting the minimum categories "medium" for fish biomass and "fair" for coral cover, or a total of 4 points. Combining the two categories of indicators (management and biophysical outcomes), the maximum score for a **Functional** marine reserve is 10 points. A reserve is considered Functional if it garners 6 points or higher in this rating system, **Non-Functional** if it scores 1-5 points, and "**Paper Reserve**" if it has 0 points. Under this scoring system, it is possible for a relatively new marine reserve to be rated Functional for having a perfect score of 6 points because of good management. Since the biological indicators take at least 3 years to manifest, younger reserves (3 years and younger) are classified as "**Newly Established**" and not rated as Functional or Non-Functional.

The presence of a legal instrument for management, while important for the long-term funding sustainability of a reserve, was not used as an indicator because many reserves exist only on paper (thus the term "**Paper Reserve**"), meaning that they were declared as reserves under the law, but had absolutely no management and therefore non-

functional. On the other hand, quite a number of reserves were functioning very well despite the lack of a legal basis. These reserves had management bodies, improved biodiversity, and usually in the process of being declared as marine reserves.

Based on research data from a number of marine reserves, 3-5 years are needed for the biophysical indicators to become evident. Some food (target) fishes such as scarids and caesionids recover quickly with full protection in marine reserves, doubling in biomass in two to three years, but others such as acanthurids, serranids and lutjanids take a much longer time to double in biomass (Russ & Alcala 1996, 2003; Russ *et al.* 2005). Unprotected coral reef areas in the central Philippines have fish biomass of <100 kg/ha (SUAKCREM unpublished data), which double to about 200 kg/ha in 3-5 years. Thus, marine reserves that are fully protected for 3-5 years are expected to have a fish biomass of approximately 200 kg/ha. The significance of fully protected marine reserves lies in the positive net export of adult fish from no-take marine reserves to fished areas. There is currently little data on this export. But Abesamis *et al.* (2006) reported that Apo Island Marine Reserve (18.00 ha) with a biomass of 1500-1600 kg/ha exports ca 1.5 tons of fish annually to the surrounding fishing area. This estimate is expected to be revised as more research data on fish export or spillover from marine reserves become available.

Spillover

Some reserves are near (1-2 km away) shipping lanes and are therefore vulnerable to oil spills and other navigation-related hazards (**Figure 1**).

Results

The information on 564 no-take marine reserves in the Visayas region is presented in 9 tables. These reserves occupy a total sea area of 16,452.75 ha (excluding 63 of the 564 reserves that have unknown areas but estimated, based on average, to occupy a total area of 2,086 ha) or 2.93% of the total estimated area of coral reefs in the Visayas (**Table 1**). The Visayas contains approximately 526,400 ha (5,264 km²) of coral reefs (Alcala, Gomez & Yap, 1987), while the whole Philippines has an estimated reef area of 27,000 km² (excluding the Kalayaan reefs) (Biña et al., 1978).

Large protected areas, such as the Tañon Strait Protected Landscape and Seascapes, the Guiuan Protected Landscape and Seascapes, the Biri-LAROSA Protected Landscape and Seascapes, and the Alburquerque-Loay-Loboc Protected Landscape and Seascapes are not included in the computation of the total sea area occupied by reserves because a huge portion of their area are not fully protected. However, the *core areas* of NIPAS sites (Apo Island, Sagay Marine Reserve, and Taklong Island Marine Reserve) are included because they are fully protected and these sites were originally community-based reserves to begin with. It should be noted that under NIPAS, the areas surrounding the no-take zones are also protected from resource-destructive activities other than fishing, such as those around Apo Island.

Table 1. Areas of marine reserves in the Visayas by island (excluding protected landscapes and seascapes).

Island	No-take marine reserve area (ha)
Bohol	2,574.63
Cebu	1,965.59
Leyte	1,305.80
Negros	2,005.00
Panay	5,226.92
Samar	3,186.65
Siquijor	188.16
Total	16,452.75

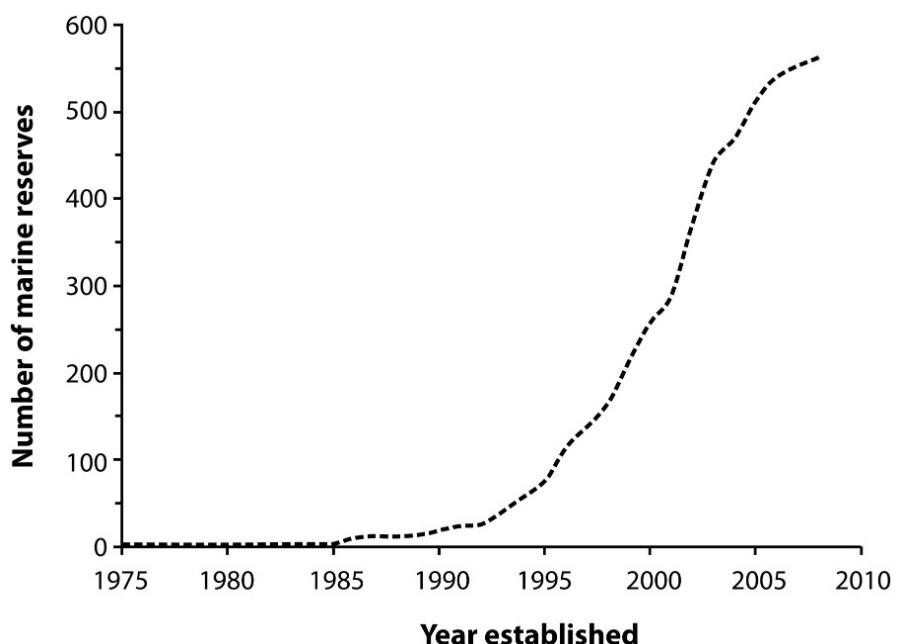


Figure 2. Cumulative number of marine reserves in the Visayas, Philippines from 1975-2008.

Data compiled from the literature and the field survey show that the number of marine reserves in the Philippines increased slowly from 1974 to 1992 but increased rapidly from 1992 to 2005, and still continued to increase in number but at a slower rate thereafter. The growth in number is depicted as resembling a sigmoid curve (**Figure 2**).

From a few marine reserves established by local government units and the national government in the mid-1970s and 1980s, the number increased dramatically in the 1990s. The exponential growth from 1985 to 2005 is probably due to the positive influence of Sumilon and Apo marine reserves, both of which have been visited by many local government officials interested in knowing first-hand how community-based marine reserves work. The early 1990s also saw the increasing public awareness of the deteriorating conditions of marine ecosystems through the efforts of NGOs and some academic institutions. The Local Government Code of 1991 and the Fisheries Code of 1998 most probably served as catalysts for local government units (LGUs) to take the lead in establishing marine reserves.

Based on available data from the past three years, however, it seems that the trend is slowing down. Forty marine reserves were established in 2006-2008, compared to 177 marine reserves set up in 2000-2002. But the establishment of marine reserves continues. As of late 2008, more marine reserves were being proposed in Negros Oriental, Siquijor, Samar, Leyte, Cebu and Bohol (pers observ). It is hoped that the trend will continue, as there is a need for more protection of marine

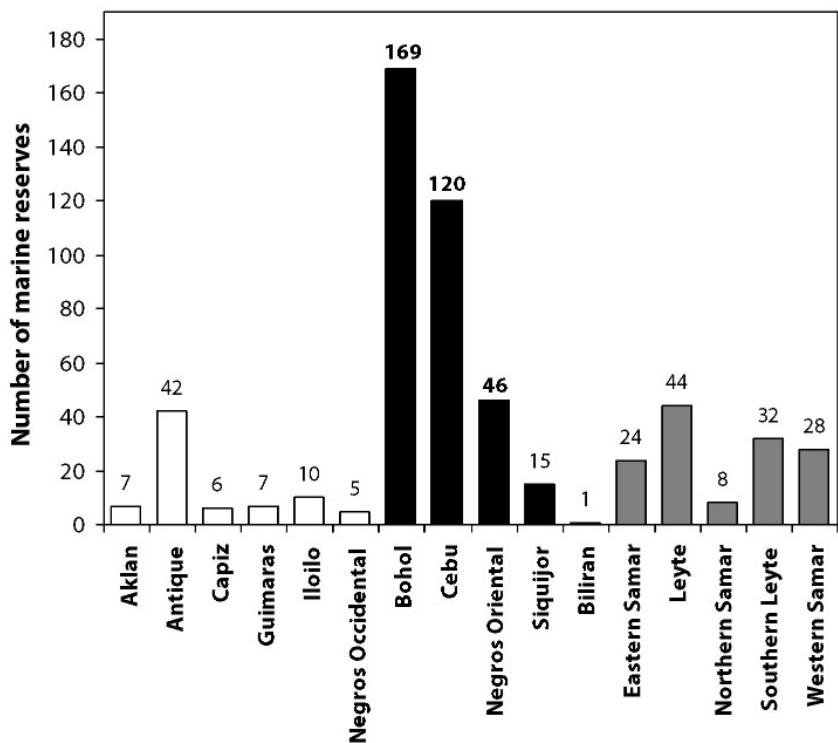


Figure 3. Number of marine reserves by province. Region VI (white); Region VII (black); Region VIII (grey).

ecosystems not only in the Visayas but also in the entire country.

Among the provinces, Bohol has the highest number (169) of marine reserves, followed by Cebu (120), Negros Oriental (46). All of these marine reserves are in Region VII. The large number of marine reserves in Region VII could be due to the presence of many environmental NGOs and academic institutions involved in marine environmental protection as well as several internationally-funded projects providing technical assistance in ecological governance in the area. However, most of these reserves are small (less than five hectares in size), a common trend among community-based marine reserves. The number of marine reserves in the rest of the Visayan provinces is shown in **Figure 3**.

Based on the criteria outlined earlier, one-third of reserves in the whole Visayas (187 out of 564 or

33.16%) are functional (see Table 2 below). It is interesting to note that generally, the islands in Region VII (Bohol, Cebu, Siquijor and Negros) ranked the highest among the whole Visayas in terms of number of marine reserves established. In terms of

functionality, Region VII was also in the lead, with Negros having the highest rating of functional reserves (50.98%), followed by Cebu (50%) and Siquijor (46.67%).

Table 2. Summary of functional status of marine reserves per major island group

Island	Functional	Non-Functional	Paper Reserves	Newly Established	Total	% Functional
Bohol	62	92	3	12	169	36.69
Cebu	60	40	0	20	120	50.00
Leyte	10	42	6	19	77	12.99
Negros	26	14	1	10	51	50.98
Panay	19	27	22	4	72	26.39
Samar	6	23	11	20	60	10.00
Siquijor	7	5	0	3	15	46.67
Total	190	243	43	88	564	33.69

Bohol and Associated Islands

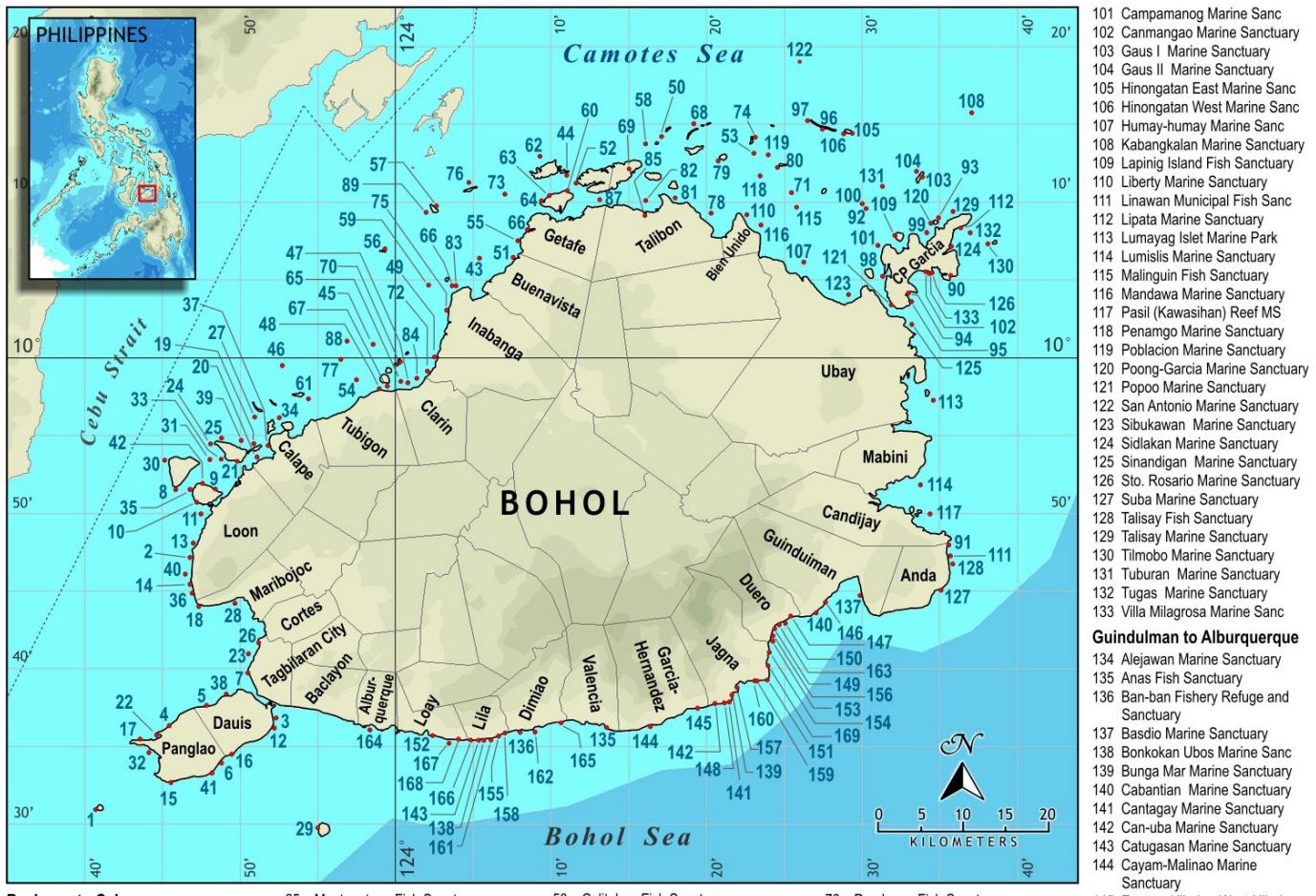
On Bohol (and associated small islands) there are 169 marine reserves occupying a total sea area of some 2,575 ha (**Figure 4, Table 3**), excluding the large Alburquerque-Loboc-Loay Protected Land-

scape and Seascape managed by the DENR-PAMB. These reserves are mostly coral reefs, but few include seagrass beds and mangroves. Their individual areas range from 1 ha to 200 ha, but mostly around 10-20 ha. The Alburquerque-Loboc-Loay Protected Landscape and Seascape, with an area of 1,164 ha managed and protected by the Department of Environment and Natural Resources (DENR) was not included in the computation of total area. About 48 (28.24%) of these reserves may be vulnerable to oil spill due to their proximity to shipping lanes.

Marine Reserve QUICK STATISTICS		BOHOL
Total number		169*
Total area (ha)		2,574.63*
Number of functional reserves		62 (36.69%)
Total area actively protected (ha)		916.96
Total number of coastal towns		29
Number of towns with reserve(s)		28
Average size (ha)		18.26
Minimum size (ha)		1.00
Maximum size (ha)		200.00

* excluding the Alburquerque-Loboc-Loay Protected Landscape and Seascape, which is a national protected area under the jurisdiction of the Department of Environment and Natural Resources.

Majority of the marine reserves/protected areas in Bohol are co-managed by the community, the LGUs (barangay and municipal level), NGOs, and POs. Bohol is the province with the most number of marine reserves (169) in the whole Visayas, despite the fact that it is not the biggest island.



Baclayon to Calape

- 1 Balicasag Island Fish Sanctuary
 - 2 Basdagu Fish Refuge and Sanctuary
 - 3 Biking Marine Sanctuary
 - 4 Bil-isan Fish Sanctuary
 - 5 Bingag Marine Sanctuary
 - 6 Boldog Fish Sanctuary
 - 7 Bool Fish Sanctuary
 - 8 Cabacagan Fish Sanctuary
 - 9 Calayungan Norte Shell Garden & FS
 - 10 Calayungan Sur Fish Sanctuary
 - 11 Canhagdon Occidental Fish Refuge and Seagrass Sanctuary
 - 12 Catarman Marine Sanctuary
 - 13 Cogon Norte Shell Garden and Fish Refuge and Sanctuary
 - 14 Quasi Fish Refuge and Sanctuary
 - 15 Danao Fish Sanctuary
 - 16 Dao-San Isidro Marine Sanctuary
 - 17 Doljo Fish Sanctuary
 - 18 Guiwanon Punta Cruz MS
 - 19 Lawis Fish Sanctuary
 - 20 Liboron Seagrass Sanctuary
 - 21 Lombok-Kahaya Fish Sanctuary
 - 22 Looc Marine Sanctuary
 - 23 Mabaw Marine Sanctuary
 - 24 Madanqq Fish Sanctuary

Tubigon to Talibon

- | | | | | | | | |
|---------------------------|-----------------------------------|----|---|---------------------------|-------------------------------------|-----|---|
| 25 | Magtongtong Fish Sanctuary | 50 | Calitaban Fish Sanctuary | 76 | Pandanon Fish Sanctuary | 145 | Eastern Ulbujan-West Ulbujan Marine Sanctuary |
| 26 | Manga Marine Sanctuary | 51 | Campao Occidental Fish Sanctuary | 77 | Panggapasan Fish Sanctuary | 146 | Guinacot Marine Sanctuary |
| 27 | Mantatao Marine Sanctuary | 52 | Carlawron Marine Refuge & Sanc | 78 | Poblacion Marine Sanctuary | 147 | Guinsularan Marine Sanctua |
| 28 | Maraag Marine Sanctuary | 53 | Catabat Fish Sanctuary | 79 | Sag Fish Sanctuary | 148 | Ipli Marine Sanctuary |
| 29 | Pamilacan Island Fish Sanctuary | 54 | Centro Marine Sanctuary | 80 | Sagasa Marine Sanctuary | 149 | Itum Marine Sanctuary |
| 30 | Pantudlan Fish Sanctuary | 55 | Corte-Baud Marine Sanctuary | 81 | San Francisco Fish Sanctuary | 150 | Langkis Marine Sanctuary |
| 31 | Pig-ot Marine Sanctuary | 56 | Cuamuing Marine Sanctuary | 82 | Sto. Niño Fish Sanctuary | 151 | Larapan Marine Sanctuary |
| 32 | Poblacion Marine Sanctuary | 57 | Eastern Cabul-an Marine Sanctuary | 83 | Sto. Niño Seagrass Sanctuary | 152 | Las Salinas Sur Marine Sanc |
| 33 | Pondol Is. Fish Sanctuary | 58 | Guindacpan Marine Sanctuary | 84 | Tanagaran Seagrass and Shell Garden | 153 | Madua Norte Marine Sanctua |
| 34 | San Isidro Marine Sanctuary | 59 | Hambongan Marine Sanctuary | 85 | Tanghaligue Marine Sanctuary | 154 | Madua Sur Marine Sanctuary |
| 35 | Sondol Fish Sanctuary | 60 | Handumon Marine Sanctuary | 86 | Tugas Marine Sanctuary | 155 | Malinao East Marine Sanctua |
| 36 | Song-on Fish Refuge and Sanctuary | 61 | Haayaan, Inanuran and Budlaan FS | 87 | Tulang Marine Sanctuary | 156 | Mawi Marine Sanctuary |
| 37 | Sta. Cruz Seagrass Sanctuary | 62 | Jagolao Seagrass Sanctuary | 88 | Ubay Marine Sanctuary | 157 | Naatang Marine Sanctuary |
| 38 | Tabalong Marine Sanctuary | 63 | Jandayan Norte Marine Sanctuary | 89 | Western Cabul-an Marine Sanctuary | 158 | Nagsulay Marine Sanctuary |
| 39 | Talisay Marine Sanctuary | 64 | Jandayan Sur Marine Refuge and
Sanctuary | Bien Unido to Anda | | 159 | Nausok Marine Sanctuary |
| 40 | Tangnan Marine Sanctuary | 65 | Lajog Marine Sanctuary | 90 | Aguining Fish Sanctuary | 160 | Pangdan Marine Sanctuary |
| 41 | Tawala Marine Sanctuary | 66 | Lewis Seagrass Sanctuary | 91 | Badiang Fish Sanctuary | 161 | Poblacion Fish Sanctua |
| 42 | Ubayon Marine Sanctuary | 67 | Macaaas Marine Sanctuary | 92 | Bantigue Marine Sanctuary | 162 | Pulang Yuta Marine Sanctua |
| Tubigon to Talibon | | 68 | Mahaba Marine Sanctuary | 93 | Bantiguan Marine Sanctuary | 163 | San Antonio Marine Sanctua |
| 43 | Asinan Reef Fish Sanctuary | 69 | Mahanay Marine Sanctuary | 94 | Basiason Marine Sanctuary | 164 | Sta. Felomina (Sta. Fe) MS |
| 44 | Banacon Island Marine Sanctuary | 70 | Majigpit Marine Sanctuary | 95 | Baud Marine Sanctuary | 165 | Taongon-Cananadam MS |
| 45 | Batasan Island Marine Sanctuary | 71 | Maomaouan Marine Sanctuary | 96 | Bilangbilangan East Marine Sanc | 166 | Taug-Tiguis Marine Sanctua |
| 46 | Bilang-bilangan Fish Sanctuary | 72 | Nahawan Seagrass Sanctuary | 97 | Bilangbilangan West Marine Sanc | 167 | Tayong Occidental MS |
| 47 | Bonbon Seagrass Sanctuary | 73 | Nasinguin Marine Sanctuary | 98 | Bogo Marine Sanctuary | 168 | Tayong Oriental Marine Sanc |
| 48 | Cabulijan Marine Sanctuary | 74 | Nocnocoan Marine Sanctuary | 99 | Bonbonon Marine Sanctuary | 169 | Tubod Mar Marine Sanctuary |
| 49 | Cagawasan Seagrass Sanctuary | 75 | Ondol Seagrass Sanctuary | 100 | Butan Marine Sanctuary | | |

Figure 4. Map of the marine reserves of Bohol and associated islands.

Table 3. The marine reserves of Bohol and associated islands

Name of Marine Reserve	001 Balicasag Island Marine Reserve	002 Basdagu Fish Refuge & Sanctuary	003 Biking Marine Sanctuary	004 Bil-isan Fish Sanctuary
Year Established	1986 (1998)	2002	2005 (2008)	1998
Location	Poblacion, Panglao, Bohol	Basdagu, Loon, Bohol	Biking, Dauis, Bohol	Bil-isan, Panglao, Bohol
Coordinates	9.51407°N 123.67792°E	9.78503°N 123.77993°E	9.61335°N 123.87178°E	9.60484°N 123.757449°E
Sea	Bohol Sea	Cebu Strait	Bohol Sea	Bohol Sea
Area (ha)	3.4383	10.00	To be re-established	7.758
Habitat	Coral reef	Coral reef (fringing), seagrass, mangrove	Coral reef, seagrass algal bed, open water	Coral reef, seagrass algal bed, rocky intertidal
Established by	SUML, BMTP, BEMO, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	MLGU, BLGU, BMT, SUML	Bil-isan Fishermen Association, Brgy. , Mun. Prov., Governments
Current Manager	BFARMC, PTA, BIUPOP	Basdagu Coastal Development Association (BACODA)	Barangay government	Bil-isan Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	2000-2010	2008-2009	Approved in 2003 (renewable after 5 years)
Legal Bases	Mun. Ord. No. 08 Series 1998	Mun. Ord. No. 02-007 Series 2002	Mun. Ord. No. 07 Series 2005	Mun. Ord. No. 08 Series 1998
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys, sign board, guardhouse, patrol boat
Income Source	Tourism (U.S. \$ 100,000-200,000 per year goes to PTA; Alcala A. interview with PTA 2004)	Tourism	None	None
Monitoring/Evaluation	SUML, BMTP	MENRO, PO	BMTP	BMTP
Reports	See White <i>et al.</i> (1999); also Abesamis <i>et al.</i> (2006)	Unpublished reports	Calumpong (2004)	Calumpong (2004)
Regular Patrol	Phil. Coast Guard	Bantay dagat, PO	Officials; bantay dagat	Brgy officials; bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Very High ¹ (2,360 kg/ha; 1,940 ± 236 kg/ha target)	High ³ (69,460 indiv/ha)	Low ⁵	Medium ⁴
Coral Cover	Fair ¹ (34.44%); but Low ² (20-25%) in 2005 & 2006 surveys	Poor ³ (18.06%)	Poor ⁵	Fair ⁴
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, PO and NGOs
Current Management Issues/Problems	Coral damage from divers (see B. Stockwell in SUAKCREM newsletter 2008); collection of ornamental shells allowed in the reserve (Abesamis <i>et al.</i> 2006)	None	Lack of CRM awareness; encroachment	Uncooperative PO members; lack of support from MLGU
Past Problems Solved	Lack of CRM awareness solved through meetings & discussions on the importance of MPAs	Minor problems within the PO resolved through meetings	Uncooperative PO members educated on importance of MPAs	Encroachment solved by presence of Bantay dagat/PO members in the vicinity
Remarks/ Assessment	Functional	Functional	Newly established; mgt. revived 09/2008	Functional; managed almost entirely by volunteer members

¹ Calumpong 2004² SUAKCREM unpublished data³ BFAR 2004 survey⁴ Estimated using timed-swim survey⁵ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	005 Bingag Marine Sanctuary	006 Bolod Fish Sanctuary	007 Bool Fish Sanctuary	008 Cabacongan Fish Sanctuary
Year Established	2003	1998	2000	1997
Location	Bingag, Dauis, Bohol	Bolod, Panglao, Bohol	Bool, Tagbilaran City, Bohol	Cabacongan, Cabilao, Loon, Bohol
Coordinates	9.627203°N, 123.797905°E	9.564955°N 123.813553°E	9.6617°N 123.8417°E	9.86453°N 123.76235°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Cebu Strait
Area (ha)	6.70	5.42	22.20	11.80
Habitat	Coral reef (fringing/barrier), seagrass, algal bed, open water	Coral reef (fringing), seagrass beds	Coral reef	Coral reef, seagrass, mangrove
Established by	BMT, PROCESS-BOHOL, MLGU	LGU	MLGU, PROCESS	BFAR, DENR, BEMO, CRMP, LGU, BIDEF
Current Manager	Bingag-Dapdap FA	LGU, BIDEF, Bolod Brgy. Government	MLGU	NAGMACA, UP MSI, VSO,
Delineation	Clear	Clear	Clear	Clear
Management Plan	2008-2009	Renewable every five years	--	200-2010
Legal Bases	Mun. Ord. No. 07 Series 2005	Mun. Ord. No. 02, Series 2005; Mun. Ord. No. 8-1998	Mun. Ord. No. C-075 Series 2000	Mun. Ord No. 7 Series 1997; Mun. Ord. No. 02-007 Series 2002
Infrastructure	Marker buoys, guard house, patrol boats	Marker buoys	Marker buoys	Buoys, signboard, guardhouse
Income Source	Tourism (user's fees), penalties from violators	--	None	--
Monitoring/Evaluation	PROCESS, BMT, MPA Management Team	BMTP	MBEMO	UP-MSI, VSO, BIDEF, DENR/USERIES AID, CRMP
Reports	Unpublished reports (MBEMO)	Reboton in in Aliño et al (2002)	Unpublished reports	Unpublished report (Uychiaoco et al. (2000)
Regular Patrol	Bingag-Dapdap Fishermen Association	PO, Fish Wardens	Bantay dagat	--
Violations	Apprehended, penalty imposed	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low to medium ¹	Low ³ (76 ± 12 kg/ha)	Low ⁴	High ⁵ (5,000 individuals/ha, target fish in 2001)
Coral Cover	Poor ² (18.0-23.05%)	Poor ³ (13.67%)	Poor ⁴	Good ⁵ (72%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Growth of the alga <i>Padina</i> on branching corals, probably due to high nutrient level	--	Encroachment	Illegal entry of fishers in sanctuary; stealing and burning of patrol boats
Past Problems Solved	Illegal fishing; intrusions by Badjaos solved by regular patrolling	--	None	Lack of CRM awareness solved through IEC and meetings
Remarks/Assessment	Functional; awarded as Best MPA in the Maribojoc Bay by the Maribojoc Bay Executive Management Office (MBEMO) in 2007	Non-functional	Non-functional	Functional

¹Estimated using timed-swim survey ²MBEMO 2007 unpublished data ³Calumpong 2004 ⁴CCEF MPA Database ⁵PhilReefs (2003)

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	009 Calayungan Norte Shell Garden and Fish Sanctuary	010 Calayungan Sur Fish Sanctuary	011 Canhagdon Occidental Fish Refuge and Seagrass Sanctuary	012 Catarman Marine Sanctuary
Year Established	2002	1997	2000	1997
Location	Calayungan, Loon, Bohol	Calayungan, Loon, Bohol	Canhagdon Occ., Loon, Bohol	Catarman, Dauis, Bohol
Coordinates	9.8500°N 123.8000°E	9.8500°N 123.8000°E	9.83171°N 123.79140°E	9.62472°N 123.90222°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Bohol Sea
Area (ha)	6.57	10.00	8.91	7.73
Habitat	Coral reef, seagrass	Coral reef, seagrass, mangrove	Seagrass, coral reef	Coral reef
Established by	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BMTP, MLGU
Current Manager	CASFA	CASFA	Canhagdan Occ. Fisherfolk Association	BLGU, Kapunungan sa mga Mananagat sa Catarman (KMC)
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000-2010	2000-2010	2000-2010	2008-2009
Legal Bases	Mun. Ord. No. 02-011 Series 2002	Mun. Ord. No. 02-007 Series 2002	Mun. Ord. No. 01 – 007 Series 2001	Mun. Ord. No. 07 Series 2005
Infrastructure	--	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats
Income Source	None	None	None	None
Monitoring/Evaluation	LGU (MENRO), PO	LGU (MENRO), PO	LGU (MENRO), PO	MPA Mgt. Team
Reports	Unpublished report	Unpublished report	Unpublished	Unpublished reports
Regular Patrol	PO	PO	PO, Bantay dagat	PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ¹	Low ¹	Low ²
Coral Cover	Poor ¹	Poor ¹	Poor ¹	Poor to Fair ²
Funding & Source	Reserve operation, LGU (20% IRA)	Reserve operation, LGU (20% IRA)	Reserve operation, LGU	Reserve operation, LGU (CRM budget)
Current Management Issues/Problems	Encroachment	Lack of PO cooperation	Sanctuary violations	Management conflict between the PO and the Brgy. Council.
Past Problems Solved	--	Intrusions of commercial fishers minimized by monitoring and patrolling	Intrusions of commercial fishing vessels solved by patrolling and monitoring	None
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Functional; increase fish catch years after reserve was established

¹ CCEF MPA Database² Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	013 Cogon Norte Shell Garden and Fish Refuge and Sanctuary	014 Cuasi Fish Refuge and Sanctuary	015 Danao Fish Sanctuary	016 Dao-San Isidro Marine Sanctuary
Year Established	1997	2001	1998	2002
Location	Cogon Norte, Loon, Bohol	Cuasi, Loon, Bohol	Danao, Panglao, Bohol	San Isidro, Dausi, Bohol
Coordinates	9.80089°N 123.78435°E	9.7586°N 123.7846°E	9.54780°N 123.76530°E	9.67333°N 123.93167°E
Sea	Cebu Strait	Cebu Strait	Bohol Sea	Bohol Sea
Area (ha)	6.61	10.00	8.07	11.00
Habitat	Mangrove, seagrass, coral reef	Coral reef with seagrass beds	Fringing coral reef, seagrass algal beds	Coral reef, seagrass, macro-algal beds
Established by	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BMTP, LGU	BMTP, MLGU, PROCESS-BOHOL
Current Manager	Cogon Norte Mangrove Planters Association (CONOMPA)	Cuasi Fish Association (CUFA)	Danao United FA	LGU, PROCESS-BOHOL, BLGU, DAFFA, SIPFO
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000	200-2010	--	--
Legal Bases	Mun. Ord. No. 002 Series 2000	Mun. Ord. No. 004 Series 2001	Mun. Ord. No. No. 8 Series 1998	Mun. Ord. No. 07 Series 2005
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Anchoring buoys only	Buoys, signboard, guardhouse
Income Source	--	None	Tourism	None
Monitoring/Evaluation	LGU (MENRO), PO	LGU (MENRO), PO	MPA Monitoring Team	MPA Monitoring Team
Reports	--	Unpublished reports	Reboton in Aliño et al. (2002)	BMT Project reports
Regular Patrol	Brgy officials; bantay dagat	Brgy officials; bantay dagat	PO	Brgy officials; bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ² (15,760 indiv/ha)	High ³ (6,460 indiv/ha target)	Very low ⁴ (76 kg/ha target)
Coral Cover	Poor ¹	Poor ² (11.43%)	Fair ⁴ (38%)	Fair ⁴ (28.58%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, NGOs	Reserve operation, LGU
Current Management Issues/Problems	--	Negative attitude among PO members changed through regular meetings	--	Separation of management between Dao and San Isidro
Past Problems Solved	--	Internal problems in PO solved through a series of meetings	--	None
Remarks/Assessment	Non-functional	Functional	Non-functional; Panglao Island covered by the Proc. 2151/ December 29, 1981 (Ong et al. 1997)	Functional

¹CCEF MPA Database²CUFA-BFAR-TA survey³ CCEF MPA Database⁴ Calumpong 2004

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	017 Doljo Fish Sanctuary	018 Guiwanon-Punta Cruz Marine Sanctuary	019 Lawis Fish Sanctuary	020 Liboron Seagrass Sanctuary
Year Established	1998 (1995)	2007	2003	1996
Location	Dolio, Panglao, Bohol	Punta Cruz, Maribojoc, Bohol	Lawis, Calape, Bohol	Liboron, Calape, Bohol
Coordinates	9.5911°N 123.7336°E	9.73254°N 123.78923°E	9.90695°N 123.84827°E	9.89250°N 123.85200°E
Sea	Bohol Sea	Bohol Sea	Cebu Strait	Cebu Strait
Area (ha)	7.71	10.05	9.90	22.00
Habitat	Coral reef, seagrass, open-water	Coral reef, seagrass, algal bed	Coral reef, seagrass, algal beds, openwater, rocky intertidal	Coral reef (fringing, patch, shoal), mangrove, seagrass, softbottom
Established by	BMTP, MLGU, PROCESS-BOHOL	MLGU, BIDEF, PO	CBRMP, BIDEF	LGUs, CBRMP, DENR, BFAR
Current Manager	BLGU	PO	Lawis Fishermen and Farmers Assn.	Liboron Farmers and Fishermen's Association (LFFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	Renewable after 5 years	2005-2010	2005-2010
Legal Bases	Mun. Ord. No. 08 Series 1998	Mun. Ord. (not indicated)	Mun. Ord. No. 08 Series 2003	Mun. Ord. No. 11 Series 2003
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat
Income Source	Not indicated	Tourism	Tourism	None
Monitoring/Evaluation	MPA Monitoring Team	MPA Monitoring Team, MBEMO	BFAR	BFAR (no reports submitted)
Reports	Reboton in Aliño et al (2002); Calumpong (2004)	Unpublished reports	None	None
Regular Patrol	Brgy officials; bantay dagat	Bantay dagat	PO	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (408 kg/ha target fish)	Very Low ³ (1,560 individuals/ha)	High ⁴	Low ²
Coral Cover	Fair ² (28-31%)	Fair ³ (37.5%)	Fair ³ (40.31%)	Poor ²
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation: LGU	Reserve operation: MLGU
Current Management Issues/Problems	None	Encroachment; Illegal fishing	None	Barangay officials' lack of commitment to support reserve maintenance and development
Past Problems Solved	None	Blast fishing solved through enforcement and alternative livelihood	--	None
Remarks/Assessment	Functional	Functional	Functional	Non-functional

¹Calumpong 2004 ²CCEF MPA Database ³MBEMO 2008 unpublished report ⁴Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	021 Lomboy-Kahayag Fish Sanctuary	022 Looc Marine Sanctuary	023 Mabaw Marine Sanctuary	024 Madangog Fish Sanctuary
Year Established	1999	2003	--	2003
Location	Lomboy-Kahayag, Calape, Bohol	Looc, Panglao, Bohol	Tagbilaran, Bohol	Madangog, Calape, Bohol
Coordinates	9.89038°N 123.82328°E	9.5968°N 123.7478°E	9.68169°N 123.84281°E	9.90695°N 123.80206°E
Sea	Cebu Strait	Bohol Sea	Bohol Sea	Cebu Strait
Area (ha)	43.28	2.513	2.00	10.45
Habitat	Coral reef (patch), seagrass	Seagrass beds (shallow/turbid)	Coral reef	Coral reef, algal bed, rocky intertidal, sandy substratum
Established by	DENR-CEP, CBRMP, LGU, BFAR, PO	Fishermen Association, Brgy., Mun., Prov., Governments	MLGU	CBRMP, LGU, BFAR, DENR, PO
Current Manager	Lomboy Farmers, Fishers and Carpenters Association (LFFCA), UP-MSI	Brgy, Municipal, Provincial Govts., Looc Fishermen Association	MLGU	MAMLA, Brgy. and Mun. Govt.
Delineation	Clear	Clear	Clear	Clear
Management Plan	2005-2020	Approved in 2003	--	2005-2010
Legal Bases	Mun. Ord. No. 14 Series 2003; Mun. Ord. No. 11 Series 1995 amended 2001; R.A. 7686	Mun. Ord. No. 8 Series 1998	--	Mun. Ord. No. 10 Series 2003
Infrastructure	Buoys, guardhouse, patrol boat	Marker buoys, signboard, guardhouse	--	Guardhouse, signboard, patrol boat, concrete posts delineating the boundaries
Income Source	None	Alternative livelihood (seaweed farming)	Tourism	Tourism (user's fees)
Monitoring/Evaluation	Brgy officials, LCFFA, BIDEF, UP-MSI	BMTP	MBEMO	None
Reports	Published reports	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	Fish wardens	Fish wardens	Bantay dagat	PO, Fish wardens
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (167.8 kg/ha`)	Very Low ³	Low ⁴	Medium ³
Coral Cover	Poor ² (22.28%)	Poor ³	Good ⁴ (50.15%)	Poor ³ (8.125%)
Funding & Source	Reserve operation, MLGU	Reserve operation, LGU & NGOs	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lost buoys not replaced; no patrol boat; lack of awareness and community support; increasing population; lots of fish cages in nearby areas in Calape Bay	Encroachment	--	Lost buoys not replaced
Past Problems Solved	Fish corrals removed	--	None	Encroachment solved by patrolling
Remarks/Assessment	Non-functional	Non-functional	Non-functional; very close to shipping lanes going to and from the Pier of Tagbilaran	Functional

¹CBRMP-Calape unpublished data ²Corrales 2005 unpublished report ³Estimated using timed-swim survey ⁴MBEMO 2007 unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	025 Magtongtong Fish Sanctuary	026 Manga Marine Sanctuary	027 Mantatao Marine Sanctuary	028 Maraag Marine Sanctuary
Year Established	1996	1997 (2001)	2003	2002
Location	Magtongtong, Calape, Bohol	Manga, Tagbilaran City	Mantatao, Calape, Bohol	Bood & Lagtongan, Maribojoc, Bohol
Coordinates	9.91090°N 123.81570°E	9.6934°N 123.8534°E	9.93610°N 123.84950°E	9.73582°N 123.82804°E
Sea	Cebu Strait	Bohol Sea	Cebu Strait	Bohol Sea
Area (ha)	18.26	15.45	30.39	12.26
Habitat	Coral reef (patch) with muddy substrate; mangrove	Coral reef, soft bottom	Coral reef, seagrass, algal beds, rocky intertidal	Coral reef (patch), seagrass, algal beds, soft bottom
Established by	DENR	MLGU, PROCESS	Mantatao Fishermen's Association (MAFA)	BFAR, DENR, PROCESS-BOHOL
Current Manager	BLGU, DENR, Magtongtong Farmers and Fishermen's Assn.	Manga Brgy. Govt.	MAFA, Brgy. & Municipal governments	Hugpong sa mga Gagmayng Mananagat sa Bohol (HUGAMABO), Dipatlong Mangrove Planters Association (DIMAPA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	2005-2010	--	--	2002-2007
Legal Bases	Mun. Ord. No. 96-05 Series 1996; Prov. Res. No. 497 Series 1996; Mun. Ord. No. 15 Series 2003; R.A. 7586	City Ord. No. C-088 Series 2001	Brgy. Ord., Mun. Ord. No. 13 Series 2003	Mun. Ord. No. 37 Series 2002; Mun. Ord. No. 39 Series 2001
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys, signboard, mooring buoys
Income Source	Tourism (diver's fee)	None	None	Tourism, alternative livelihood
Monitoring/Evaluation	BFAR	MBEMO	None	Monitoring team (LGU, MBEMO, PROCESS-BOHOL)
Reports	None	Unpublished report	None	Community feedback thru meeting
Regular Patrol	Bantay dagat, PO	BLGU	Brgy. Officials	Bantay dagat
Violations	Apprehended	Apprehended	Not apprehended	Apprehended
Fish Biomass/Density	High ¹	Low ²	Low ³	Low ⁴ (12,840 individuals/ha)
Coral Cover	Poor ¹ (16.43%)	Poor ²	Poor ³	Fair ⁴ (39.5% in 2008; 30.8% in 2007; 43.0% in 2006)
Funding & Source	Reserve operation, LGU	Reserve operation, BLGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Stealing of marker buoys; illegal/destructive fishing practices	--	Rampant poaching and blast fishing; residents not supportive to CRM; increasing population	Encroachment by fishers from other municipalities
Past Problems Solved	--	--	None	Blast fishing solved by strict implementation, apprehensions, and alternative livelihood projects
Remarks/Assessment	Functional	Non-functional	Non-functional	Functional

¹ Estimated using timed-swim survey ² CCEF MPA Database ³ CBCRMP-Calape unpublished data ⁴ MBEMO 2006-2008 unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	029 Pamilacan Island Fish Sanctuary	030 Pantudlan Fish Sanctuary	031 Pig-ot Marine Sanctuary	032 Poblacion Marine Sanctuary
Year Established	1986	1999	2000	1986
Location	Pamilacan, Baclayon, Bohol	Pantudlan, Loon, Bohol	Pig-ot, Loon, Bohol	Poblacion, Panglao, Bohol
Coordinates	9.58361°N 123.91720°E	9.88946°N 123.75314°E	9.89028°N 123.80147°E	9.58330°N 123.7117°E
Sea	Bohol Sea	Cebu Strait	Cebu Strait	Bohol Sea
Area (ha)	11.90	10.00	10.32	12.10
Habitat	Coral reef (fringing)	Coral reef (fringing), seagrass beds	Coral reef (fringing)	Seagrass bed with patches of corals
Established by	MCDP-SU, BMT	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	LGU
Current Manager	Brgy Council, PIDWWO, Bantay dagat	PO, MLGU	Nagkahiusang Katawhan sa Pig-ot (NAGKAPI)	BLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	Not indicated	--	2000-2010	--
Legal Bases	Mun. Ord. No. 1 Series 1994	Mun. Ord. No. 005 Series 1999	Mun. Ord. No. 004 Series 2001	Mun. Ord.(specific number not obtained)
Infrastructure	Marker buoys, signboard	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats	Buoys, signboard
Income Source	Tourism	None	Alternative livelihood	--
Monitoring/Evaluation	BMTP	LGU (MENRO), PO	LGU (MENRO), PO	BMTP, BANGON, MBEMO
Reports	With published reports	Unpublished report	Unpublished reports	--
Regular Patrol	Bantay dagat	PO members	PO	Unpublished reports
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹	High ⁴	Low ⁵ (18,860 indiv/ha)	Very Low ⁴
Coral Cover	Poor ² (20.83%, 2004) Fair ³ (33%, 2003)	Good ³ (54.5%, deep)	Poor ⁵	Poor ⁴
Funding & Source	Reserve operation, LGU, NGOs	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU & NGOs
Current Management Issues/Problems	Lack of long-term management plan and capacity building training to empower local community; lack of alternative livelihood	--	--	Lack of strong support from LGU due to political conflict
Past Problems Solved	--	--	Uncooperative PO members solved through meetings	--
Remarks/Assessment	Functional; annual tourism benefits estimated to be US\$ 14,722.00 (ca. Php 794,988.00; given US\$1.00 = PhP 54.00 in 2004) directly from boat operators (Samonte-Tan et al. 2007)	Functional	Functional	Non-functional

¹B. Stockwell in Calumpong 2004

²Calumpong 2004

³CCEF MPA Database

⁴Estimated using timed-swim survey

⁵2004 NAGKAPI-BFAR survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	033 Pondol Marine Sanctuary	034 San Isidro Marine Sanctuary	035 Sondol Fish Sanctuary	036 Song-On Fish Refuge and Sanctuary
Year Established	2003		1999	1999
Location	Pondol, Loon, Bohol	Calape, Bohol	Sondol, Loon, Bohol	Song-on, Loon, Bohol
Coordinates	9.89028°N 123.80147°E	9.93530°N 123.87540°E	9.850°N 123.800°E	9.74940°N 123.78720°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	16.00	51.56	10.00	15.99
Habitat	Coral reef	Coral reef with macro-algal and seagrass beds, and soft bottom	Coral reef (fringing)	Coral reef (fringing) with seagrass beds
Established by	Kapunungan Para sa Kauswagan sa Pondol (KPKP)	CBRMP, MLGU	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	BFAR, DENR, BEMO, CRMP, LGU, BIDEF
Current Manager	KPKP	Kapunungan sa Maningisa sa San Isidro	Integrated Sondolanon Association (ISDA)	Song-on Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000-2010	2005-2010	2000-2010	2005-2010
Legal Bases	Mun. Ord. (number not specified)	Mun. Ord. No. 12 Series 2003	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 011 Series 1999; Mun. Ord. No. 02-007 Series 2002
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard, guardhouse, patrol boats	Marker buoys, signboard, guardhouse, patrol boats
Income Source	Alternative livelihood	None	Alternative livelihood	Tourism, alternative livelihood
Monitoring/Evaluation	BFAR	None	LGU (MENRO), PO	LGU (MENRO), PO
Reports	Unpublished reports	None	Unpublished reports	Unpublished reports
Regular Patrol	KPKP members	Bantay dagat, PO	Bantay dagat	PO and Brgy.
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (27,580 indiv/ha)	Low ²	Low ²	Medium ¹ (20,140 indiv/ha)
Coral Cover	Poor ¹ (15.66%)	Poor ³	Poor ³	Poor ¹ (18.06%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	None	Weak PO management	None
Past Problems Solved	--	None	Intrusion of commercial fishing vessels solved by patrolling and monitoring	Negative attitude of PO members changed by meetings and consultations
Remarks/Assessment	Functional	Non-functional	Functional	Functional

¹ BFAR survey ² Estimated using timed-swim survey ³ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	037 Sta. Cruz Seagrass Sanctuary	038 Tabalong Marine Sanctuary	039 Talisay Fish Sanctuary	040 Tangnan Marine Sanctuary
Year Established	2003	2003	2003	2000
Location	Sta. Cruz, Calape, Bohol	Tabalong, Dauis, Bohol	Talisay, Calape, Bohol	Tangnan, Loon, Bohol
Coordinates	9.9055°N 123.8638°E	9.6378°N 123.8178°E	9.9104°N 123.8349°E	9.83628°N 123.91286°E
Sea	Cebu Strait	Bohol Sea	Cebu Strait	Cebu Strait
Area (ha)	67.72	15.50	17.45	13.42
Habitat	Coral reef, seagrass, macro-algal bed, mangrove, rocky intertidal, soft bottom	Coral reef, seagrass, algal bed, deep water	Coral reef (patchy), seagrass beds, rocky intertidal	Coral reef
Established by	Sta. Cruz FA, CBRMP, BFAR, DENR, LGU	BMT, PROCESS, MLGU	NGMMT	BFAR, DENR, BEMO, CRMP, LGU, BIDEF
Current Manager	Sta. Cruz FA	MLGU	Nagkahiusang Gagmayng Mananagat ug Mag-uuma sa Talisay, Brgy. and Mun. Governments	Tangnan Fishermen Association
Delineation	Clear	--	Clear	Clear
Management Plan	2005-2010	2008-2009	2005-2010	2000-2010
Legal Bases	Mun. Ord. No. 7 Series 2003	Mun. Ord. No. 07 Series 2005	Mun. Ord. No. 09 Series 2003	Mun. Ord. No. 01-005 Series 2001
Infrastructure	Markers (bamboo poles), patrol boat	Marker buoys, guardhouse, patrol boats	Marker buoys, mooring buoys, signboard	Marker buoys, guardhouse, patrol boats
Income Source	Tourism, alternative livelihood	None	None	Alternative livelihood
Monitoring/Evaluation	BFAR	MPA Mgt. Team	None	LGU (MENRO), PO
Reports	None	Calumpong (2004)	None	Unpublished
Regular Patrol	PO, Bantay dagat	Bantay dagat, PO	Bantay dagat, PO	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Very Low ² (18.0 ± 5.0 kg/ha)	Low ¹	Medium ³ (25,680 indiv/ha)
Coral Cover	Poor ¹	Fair ² (31.17%)	Poor ¹	Poor ⁴ (7.53%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	Lack of reserve delineation	--	Uncooperative members
Past Problems Solved	--	Mismanagement by previous brgy officials	--	Minor management problems solved through a series of meetings
Remarks/Assessment	Non-functional	Functional; Ca 5 km from shipping lanes	Non-functional	Functional

¹ Estimated using timed-swim survey ² Calumpong 2004 ³ BFAR unpublished report ⁴ TA-BFAR

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	041 Tawala Marine Sanctuary	042 Ubayon Marine Sanctuary	043 Asinan Reef Fish Sanctuary	044 Banacon Island Marine Sanctuary
Year Established	1998	2000	2000	2002
Location	Tawala, Panglao, Bohol	Ubayon, Loon, Bohol	Asinan, Buenavista, Bohol	Banacon Is., Getafe, Bohol
Coordinates	9.55080°N 123.77610°E	9.86511°N 123.79317°E	10.105972°N 124.090833°E	10.1948°N 124.183966°E
Sea	Bohol Sea	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	3.18	9.30	55.00	50.00
Habitat	Coral reef (fringing) with seagrass beds	Seagrass	Coral reef (fringing)	Coral reef, open water, rocky intertidal
Established by	BMT	BFAR, DENR, BEMO, CRMP, LGU, BIDEF	Project Seahorse Foundation-Haribon Foundation, CBRMP, Nagkakaisang mga Mangingisda ng Asinan (NAMASIN)	CBRMP, Banacon Fisherfolks and Mangrove Planters Association (BAFMAPA)
Current Manager	BMTP, BANGON	Ubayon Seagrass Association	NAMASIN	BAFMAPA
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	2000-2010	2000-2010	2003-2008
Legal Bases	Mun. Ord. No. 8 Series 1998	Mun. Ord. No. 01 – 006 Series 2001	Mun. Ord. No. C-004 Series 2002	Mun. Ord. No. 8 Series 2002
Infrastructure	Marker buoys, signboard	Marker buoys, signboard, guardhouse, patrol boats	Marker buoys, signboard, guardhouse, patrol boat	Buoys, signboard, guardhouse
Income Source	Tourism	Alternative livelihood	None	None
Monitoring/Evaluation	SUAKCREM	LGU (MENRO), PO	--	--
Reports	Unpublished reports	Unpublished	CRMS (2007), Samoilys <i>et al.</i> (2007)	Reboton in Aliño <i>et al.</i> (2002); Community feedback (video showing)
Regular Patrol	Brgy. Officials, Bantay dagat	PO	Brgy officials; bantay dagat	BFAR, LGU
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹	Low ¹	High ²	--
Coral Cover	Good ² (68.4%), Poor ³ (11.7%)	Poor ¹	Good ³ (63.21%)	Poor ⁴ (10.14%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of strong support from MLGU	Uncooperative members	Illegal fishing, lack of garbage disposal and toilets in houses	Maintenance / replacement of marker buoys
Past Problems Solved	--	Lack of CRM awareness solved through meetings	Inadequate financial support solved through assistance from MLGU	None
Remarks/ Assessment	Functional	Functional	Functional	Non-functional

¹ Estimated using timed-swim survey

² CCEF MPA Database

³ CRMS 2007

⁴ Reboton & Luchavez in PhilReefs (2002)

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	045 Batasan Island Marine Sanctuary	046 Bilang-bilangan Fish Sanctuary	047 Bonbon Seagrass Sanctuary	048 Cabulijan Marine Sanctuary
Year Established	1999	1999	2002	2002
Location	Batasan, Tubigon, Bohol	Bilang-bilangan, Tubigon, Bohol	Bonbon, Clarin, Bohol	Cabulijan, Tubigon, Bohol
Coordinates	10.01410°N 123.97658°E	9.98820°N 123.87830°E	9.9725°N 124.0133°E	9.96670°N 123.98333°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	21.00	10.50	9.45	15.00
Habitat	Coral reef (offshore) mangroves (30 ha.) surround the island	Coral reef, seagrass, mangrove	Seagrass bed, soft bottom	Coral reef, seagrass
Established by	Project Seahorse Foundation-Haribon Foundation, CRMP-DENR; UBFA; KAKBA	Project Seahorse Foundation-Haribon Foundation, CBCRMP	JICA, ATI, CRM-Clarin	Feed the Children (FTC)
Current Manager	United Batasan Fishermen Association (UBFA)	Project Seahorse Foundation, KAMANASABI, LGU	Bonbon Fishermen's Association	Cabulijan Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	Approved 1999	--	Renewable every 5 years	--
Legal Bases	Mun. Ord. No. 2000-07-167 (Tubigon CRM Code Series 2000; brgy Ord. No.1 Series 1999; Mun. Ord. No. 97-99	Brgy. Ord. No.1 Series 1999; Mun. Ord. No. 1 Series 1999; Tubigon CRM Code 2000-07-167 Series 2000	Mun. Ord. (not specified)	Mun. Ord. No. 2000-07-167 (Tubigon CRM Code of 2000)
Infrastructure	Guardhouse, signboard	Marker buoys, signboard, guardhouse	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats
Income Source	Tourism (user's fee)	Tourism (user's fee)	None	Tourism
Monitoring/Evaluation	Project Seahorse Foundation-Haribon Foundation, ReefCheck	Project Seahorse Foundation-Haribon Foundation	CVSCAFT	FTC, LGU
Reports	Samoilys <i>et al.</i> (2007)	Samoilys <i>et al.</i> (2007)	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat	PO, Brgy, municipal gov.	LGU (Seaborne Patrol)	Bantay dagat, Po
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	High ³	Low ¹	Low ¹
Coral Cover	Fair ² (36%)	Good ³ (70%); Fair ⁴ (41%)	Poor ¹	Poor ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of alternative livelihood, garbage disposal, and education	Encroachment; budget for enforcement	Lack financial support for infrastructure rehabilitation	Encroachment
Past Problems Solved	Harvest of dead corals, sand, rocks, and shells for construction solved by apprehension	Blast fishing solved through enforcement	Illegal fishing activities solved through enforcement	--
Remarks/ Assessment	Functional	Functional; Ca 6 km from shipping lane	Non-functional	Non-functional

¹CCEF MPA Database²Haribon Foundation (2005)³ReefCheck 2007

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	049 Cagawasan Seagrass Sanctuary	050 Calituban Fish Sanctuary	051 Campao Occidental Marine Sanctuary	052 Canlawron Marine Refuge and Sanctuary
Year Established	2000	--	2002	2005
Location	Cagawasan, Inabanga, Bohol	Calituban Islet, Talibon, Bohol	Campao Occidental, Getafe, Bohol	Canlawron, Alumar, Getafe, Bohol
Coordinates	10.00000°N 124.04250°E	10.23614°N 124.39111°E	10.10700°N 124.12620°E	10.18647°N 124.19395°E
Sea	Cebu Strait	Danajon Bank	Cebu Strait	Cebu Strait
Area (ha)	21.00	--	20.00	10.00
Habitat	Seagrass beds, rocky intertidal, shoal coral reef	Coral reef	Coral reef	Coral reef
Established by	MLGU	FISH Project, Project Seahorse Foundation	CBRMP-GRACE	Project Seahorse Foundation
Current Manager	Cagawasan Mangrove Planters Association (CAMPA)	MLGU, PO	Campao Occidental Fishermen's Association (COFA)	MLGU
Delineation	Clear	Not clear	Clear	--
Management Plan	--	--	2003-2008	--
Legal Bases	Mun. Ord. No. 00-21 Series 2000	--	Mun. Ord. No. 08 Series 2002	Mun. Ord. No. 08 Series 2002
Infrastructure	Marker buoys, signboard, guardhouse	--	Marker buoys, signboard	--
Income Source	None	--	Alternative livelihood	--
Monitoring/Evaluation	--	--	BFAR, LGU, Project Seahorse Foundation, Marine Sanctuary Monitoring Team	Project Seahorse Foundation
Reports	--	--	Unpublished reports	Unpublished reports
Regular Patrol	Brgy officials; bantay dagat	--	PO, MLGU	Bantay dagat
Violations	Apprehended	--	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	High ² (57,580 individuals/ha)	Low ¹	Low ³
Coral Cover	Poor ¹	Fair ² (42.53%)	Poor ¹	Poor ³ (19%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Illegal fishers from other barangays, lack of budget, political problems	--	Lack of maintenance for marker buoys; encroachment	--
Past Problems Solved	None	--	Minor problems within management solved through meetings/assemblies	--
Remarks/ Assessment	Non-functional	Non-functional	Non-functional	Newly established

¹ CCEF MPA Database² Reboton & Luchavez in PhilReefs (2002)³ Panes *et al.* (2006)

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	053 Cataban Fish Sanctuary	054 Centro Marine Sanctuary	055 Corte-Baud Marine Sanctuary	056 Cuaming Fish Sanctuary
Year Established	1996	2005	2002	1999
Location	Cataban Islet, Talibon, Bohol	Poblacion, Tubigon, Bohol	Corte-Baud, Getafe, Bohol	Cuaming, Inabanga, Bohol
Coordinates	10.23536°N 124.39111°E	9.97584°N 123.95817°E	10.12430°N 124.13090°E	10.11631°N 123.9886°E
Sea	Danajon Bank	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	4.00	19.00	10.00	14.25
Habitat	Coral reef	Coral reef, seagrass	Coral reef (patch), open water, rocky intertidal	Coral reef (patch), rocky intertidal
Established by	FISH Project, Project Seahorse Foundation	Feed the Children (FTC)	Corte-Baud Rehabilitation Project for Progress, CBRMP	MLGU, CBRMP
Current Manager	KAMADA	Centro Fishermen Association	Corte-Baud Fishermen's Association, Brgy and Mun. Governments	Nagkahiusang Pundok nga Mag-amping sa Kalikupan (NPMK)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	Approved 2004 (inclusive years not indicated)	--
Legal Bases	Mun. Ord. No. 96-54 Series 1996	Mun. Ord. No. 2000-07-167 (Tubigon CRM Code of 2000)	Mun. Ord. No. 08 Series 2002	Mun. Ord. No. 00-02 Series 2000
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard	Marker buoys, signboard, guardhouse
Income Source	None	Tourism	None	None
Monitoring/Evaluation	FISH Project, Project Seahorse Foundation	FTC, LGU	MLGU	MLGU
Reports	Unpublished reports	Unpublished reports	--	Unpublished report
Regular Patrol	PO	Bantay dagat, PO	Bantay dagat	Bantay dagat
Violations	None	Apprehended (penalty imposed)	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Low ²	--	High ⁴
Coral Cover	Fair ¹	Poor ²	Poor ³	Good ⁴ (53.05%)
Funding & Source	Reserve operation, FISH Project, Project Seahorse Foundation	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	Encroachment	--	--
Past Problems Solved	--	None	--	--
Remarks/Assessment	Functional	Newly established; Ca 200-300m from the pier of Tubigon	Non-functional	Functional

¹ Estimated using timed-swim survey² Fishery Technician of Tubigon³ CCEF MPA Database⁴ CRMS 2007 unpublished report

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	057 Eastern Cabul-an Marine Sanctuary	058 Guindacpan Marine Sanctuary	059 Hambongan Marine Sanctuary	060 Handumon (Liba-ong) Marine Sanctuary
Year Established	2000	1998	1999	1998
Location	Eastern Cabul-an, Buenavista, Bohol	Guindacpan, Talibon, Bohol	Hambongan, Inabanga, Bohol	Handumon, Jandayan Is., Getafe, Bohol
Coordinates	10.16206°N 124.04429°E	10.21679°N 124.26848°E	10.07699°N 124.03526°E	10.1720°N 124.1765°E
Sea	Cebu Strait	Danajon Bank	Cebu Strait	Cebu Strait
Area (ha)	50,00	6,50	14.10	50,00
Habitat	Coral reef	Coral reef (patchy), seagrass beds, rocky intertidal	Coral reef (patch), rocky intertidal	Coral reef (fringing), seagrass, mangrove
Established by	MLGU	CVRP, MLGU	CBRMP-IRRDP	Project Seahorse Foundation-Haribon Foundation, MLGU
Current Manager	Eastern Cabul-an Fishermen Association	Nagkahiusang Gagmayng Mananagat ug Mag-uuma sa Talibon, NGMMT Brgy. & Mun. Governments	MLGU, BFAR, CBRMP, Haribon	KANAGMALUHAN, Project Seahorse Foundation
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000-2010	Approved in 2003	--	2007-2009
Legal Bases	Mun. Ord. (not specified)	Mun. Ord. No. 09 Series 2003	Mun. Ord. No. 02 Series 2000	Mun. Ord. No. 04 Series 1998; brgy.Res. 07 Series 1995; Mun. Ord. 15 Series 1995
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, mooring buoys, signboard	Marker buoys, signboard, guardhouse	Buoys, signboard, guardhouse
Income Source	None	None	--	Alternative livelihood
Monitoring/Evaluation	None	FISH Project	CRMS (2007)	Project Seahorse Foundation-Haribon Foundation; Participatory Marine Sanctuary Monitoring Team
Reports	Community feedback only	Unpublished reports	Reports in PhilReefs 2004 & Haribon 2005	Unpublished reports
Regular Patrol	PO	Bantay dagat, PO	Brgy officials; bantay dagat	PO with support from PNP
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹	Low ² (180 kg/ha)	High ⁴	High ⁵
Coral Cover	Fair ¹ (41.05%)	Fair ³ (33.51%)	Good ⁴ (69.34%)	Good ⁵ (48.48 - 66.63%)
Funding & Source	Reserve operation, LGU	Reserve operation, MLGU	Reserve operation, LGU	Reserve operation (2% of earnings from PO; supplemented by brgy. and Municipal LGUs)
Current Management Issues/Problems	Illegal fishing activities	Illegal fishing	Lack of financial support; weak law enforcement	Improper waste disposal, inadequate law enforcement
Past Problems Solved	None	--	--	Illegal fishing minimized through environmental education.
Remarks/Assessment	Functional	Functional	Functional	Functional; 2007 Most Outstanding MPA Finalist (PAMS 2008; Miclat, Gonzales and Aliño 2008)

¹ CRMS 2007² Christie et al. (2006)³ Reboton & Luchavez in PhilReefs (2002)⁴ CRMS 2007⁵ LGU unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	061 Hayaan, Inanuran and Budlaan Fish Sanctuary	062 Jagoliao Seagrass Sanctuary	063 Jandayan Norte Marine Sanctuary	064 Jandayan Sur Marine Sanctuary
Year Established	1999	1999	2002	2002
Location	Pandan, Matabao, Panaytayon Tubigon, Bohol	Jagoliao, Getafe, Bohol	Jandayan Norte, Getafe, Bohol	Jandayan Sur, Getafe, Bohol
Coordinates	9.9550°N 123.9067°E	10.2115°N 124.1567°E	10.1732°N 124.1652°E	10.1676°N 124.1566°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	200.00	10.50	25.21	4.65
Habitat	Coral reef	Seagrass	Coral reef (fringing)	Coral reef (fringing)
Established by	Panaytayon, Matabao, Pandan Mgt Council, Feed the Children Foundation (FTC)	MLGU	MLGU	MLGU-Getafe
Current Manager	Panaytayon, Matabao, Pandan Mgt Council	KAYAMANAN	Brgy. Government	Brgy. Council
Delineation	Previously delineated	Not delineated by buoys	Clear	Clear
Management Plan	Approved in 1999	2003-2008	Approved 2002	203-2008
Legal Bases	Mun. Ord; Joint Resolution of PMP Management Council, Municipal Resolution 99-101 Series 1999, Tubigon CRM Code 2000-07-167	Mun. Ord. No. 08 Series 2002; Mun. Ord. No. 11 Series 2004; Mun. Ord. No. 08 Series 2003	Brgy. Res. No. 18 Series 2002; Mun. Ord. No. 08 Series 2002	Brgy. Res. No. 36-1999; Mun. Ord. No. 08 Series 2002
Infrastructure	Marker buoys, guardhouse, patrol boats	Guardhouse, patrol boat	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, signboard, patrol boats
Income Source	Tourism	None	None	None
Monitoring/ Evaluation	FTC	None	Project Seahorse Foundation	BFAR, LGU, Project Seahorse Foundation
Reports	Unpublished reports, community presentation	None	Unpublished report	Unpublished reports
Regular Patrol	Brgy officials; bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ²	Low ²	Medium ²
Coral Cover	Poor ¹ (19.13%)	Poor ² (0.1%)	Poor ²	Poor ²
Funding & Source	Currently none	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Conflict in management of the three barangays leading to collapse in protection	Boundaries not delineated by buoys	--	Encroachment
Past Problems Solved	None	None	--	Lack of CRM awareness solved through assemblies/meetings
Remarks/ Assessment	Non-functional; fished out due to management conflict between three barangays	Non-functional	Non-functional	Functional

¹Reboton & Luchavez in PhilReefs (2002)²CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	065 Lajog Marine Sanctuary	066 Lawis Seagrass Sanctuary	067 Macaas Marine Sanctuary	068 Mahaba Marine Sanctuary
Year Established	1999	2000	1999	--
Location	Lajog, Clarin, Bohol	Lawis, Inabanga, Bohol	Cabgan Islet, Macaas, Tubigon, Bohol	Talibon, Bohol
Coordinates	9.97410°N 124.00630°E	10.0760°N 124.0610°E	9.96850°N 123.99119°E	10.24992°N 124.32003°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Danajon Bank
Area (ha)	11.96	10.00	12.70	--
Habitat	Coral reef (fringing)	Seagrass	Coral reef with muddy-sandy substrate	Coral reef, seagrass
Established by	CRMP, DENR, LGU	MLGU	Project Seahorse Foundation-Haribon Foundation, CRMP	MLGU
Current Manager	LABUKA Fishermen Association, CRMP, DENR	MLGU	MFA	MLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000-2005 (Management plan approved: 2002)	--	Approved in 1999 (inclusive years not indicated)	Not specified
Legal Bases	Mun. Ord. No. 8 Series 2002	Mun. Ord.(specific number not obtained)	Tubigon CRM Code 07-167 Series 2000; brgy Res. 01 Series 1999; Mun.Res. 99-101 Series 1999	Mun. Ord.(specific number not obtained)
Infrastructure	None	Markers	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats
Income Source	None	None	Alternative livelihood (grouper culture)	None
Monitoring/Evaluation	CVSCAFT	MLGU	No recent monitoring done except the Project Seahorse Foundation-Haribon Foundation, CRMP	FISH Project, LGU
Reports	Unpublished reports	--	Unpublished reports	Unpublished reports
Regular Patrol	LGU (Seaborne Patrol)	Bantay dagat	LGU, Brgy	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended (penalty imposed)	Apprehended
Fish Biomass/Density	Low ¹	Low ²	Low ²	--
Coral Cover	Poor ¹	Poor ²	Poor ² (ca 14%)	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU & PO	Reserve operation, LGU
Current Management Issues/Problems	Lack of buoys, patrol boats, guardhouse	--	Siltation due to run-off; aquaculture (grouper) located inside the reserve	Encroachment
Past Problems Solved	--	--	Illegal fishing solved by strict implementation by Bantay dagat	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional; reserve and surrounding areas always turbid due to proximity to mangrove swamp and river	Non-functional

¹ CCEF MPA Database² Based on timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	069 Mahanay Marine Sanctuary	070 Majigpit Marine Sanctuary	071 Maomaowan Marine Sanctuary	072 Nahawan Seagrass Sanctuary
Year Established	--	2002	--	1999 (2001)
Location	Talibon, Bohol	Majigpit Islet, Clarin, Bohol	Maomawuan, Talibon, Bohol	Nahawan, Clarin, Bohol
Coordinates	10.20188°N 124.25091°E	9.9947°N 124.0047°E	10.17670°N 124.42500°E	10.00278°N 124.05000°E
Sea	Danajon Bank	Cebu Strait	Camotes Sea (Danajon Bank)	Cebu Strait
Area (ha)	Not indicated	22.6125	13.00	15.8303
Habitat	Coral reef	Coral reef, sandy bottom, seagrass, open water	Coral reef, open water, seagrass bed	Soft bottom, seagrass
Established by	Brgy council	MLGU	MLGU	JICA, ATI, LGU
Current Manager	Fisherfolk Association	Mun. Government of Clarin	Maomaowan Fishermen Association	MLGU
Delineation	--	Clear	Clear	Clear
Management Plan	--	Approved in 2001	--	--
Legal Bases	Mun. Ord. No.(not specified)	Mun. Ord. (not specified)	Mun. Ord.(specific number not obtained)	Mun. Ord. No. 08 Series 2002
Infrastructure	Marker buoys	Marker buoys	Marker buoys	Marker buoys, mooring buoys, signboard
Income Source	None	None	None	None
Monitoring/Evaluation	FISH Project	CVSCAFT	MLGU	CVSCAFT
Reports	Unpublished reports	Unpublished reports	No report available	Unpublished report
Regular Patrol	Bantay dagat, PO	LGU (Seaborne Patrol)	Bantay dagat	LGU (Seaborne Patrol)
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	--	Low ¹	Low ²	Low ³
Coral Cover	--	Fair ¹ (32.8%)	Poor ²	Poor ³
Funding & Source	None (voluntary only)	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	Lack financial support for rehabilitation of infrastructure	--	Sanctuary violations; lack of support from fishers
Past Problems Solved	--	Illegal fishing activities solved through enforcement	--	None
Remarks/Assessment	Non-functional	Non-functional; the only reserve in Clarin with coral reef; coral cover and fish density greater outside	Non-functional	Non-functional

¹ CVSCAFT 2006 unpublished report² CCEF MPA Database³ Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	073 Nasinguin Marine Sanctuary	074 Nocnocan Marine Sanctuary	075 Ondol Seagrass Sanctuary	076 Pandanon Marine Sanctuary
Year Established	2002	--	2000	2002
Location	Nasingin Is., Getafe, Bohol	Talibon, Bohol	Ondol, Inabanga, Bohol	Getafe, Bohol
Coordinates	10.17452°N 124.11732°E	10.24798°N 124.39898°E	10.0500°N 124.0550°E	10.18430°N 124.07610°E
Sea	Danajon Bank	Danajon Bank	Cebu Strait	Cebu Strait
Area (ha)	30.00	--	2.00	20.00
Habitat	Coral reef, algal bed, deepwater	Coral reef	Seagrass beds	Coral reef (fringing), seagrass bed
Established by	LGU, Project Seahorse Foundation	FISH Project	MLGU and partner institutions	LGU, Project Seahorse Foundation
Current Manager	PO	MLGU	MLGU and partner institutions	Pandanon Mananagat-Sanktwareyo Organization (PAMASO)
Delineation	Clear	Clear	Clear	Clear
Management Plan	2003-2008	--	--	2003-2008
Legal Bases	Mun. Ord. No. 08 Series 2002	Mun. Ord. (specific number not obtained)	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 08 Series 2002
Infrastructure	Marker buoys, guardhouse, signboard	Marker buoys, guardhouse, patrol boats	Marker buoys	Marker buoys, guardhouse
Income Source	None	None	Not indicated	Tourism and research fees
Monitoring/Evaluation	Project Seahorse Foundation	FISH Project	MLGU	LGU, Project Seahorse Foundation
Reports	Unpublished reports	Unpublished reports	Unpublished report	Presented through assembly meetings
Regular Patrol	Bantay dagat, PO	Bantay dagat, PO	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended (penalty imposed)
Fish Biomass/Density	Low ¹	Low ¹	Low ¹	Low ¹
Coral Cover	Poor ¹	Poor ¹	Poor ¹	Poor ¹
Funding & Source	Reserve operation, LGU, NGOs	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU, Project Seahorse Foundation
Current Management Issues/Problems	Encroachment; no replacement for lost buoys	--	--	Encroachment; no replacement for marker buoys
Past Problems Solved	None	Reserve operation; FISH Project	--	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	077 Pangapan Island Fish Sanctuary	078 Poblacion Fish Sanctuary	079 Sag Fish Sanctuary	080 Sagasa Marine Sanctuary
Year Established	1998	--	--	2002
Location	Pangapanan, Tubigon, Bohol	Poblacion, Talibon, Bohol	Sag Islet, Talibon, Bohol	Sagasa, Bien Unido, Bohol
Coordinates	9.9834°N 123.9400°E	10.19444°N 124.38333°E	10.20958°N 124.34622°E	10.2033°N 124.4100°E
Sea	Cebu Strait	Danajon Bank	Danajon Bank	Camotes Sea (Danajon Bank)
Area (ha)	6.75	Not indicated	Not indicated	15.00
Habitat	Coral reef, openwater, rocky intertidal, seagrass beds	Soft bottom	Coral reef, seagrass	Coral reef, seagrass
Established by	MLGU	Barangay Council	Project Seahorse Foundation, FISH Project	--
Current Manager	United Batasan Fisher's Association (UBFA)	Fisherfolk Association	MLGU, PO	Sagasa Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	Approved 1998	--	--	--
Legal Bases	Mun. Ord. No. 02 Series 1998	Mun. Ord. (not specified)	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 02 Series 2002
Infrastructure	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard
Income Source	Tourism	None	None	None
Monitoring/Evaluation	FTC, Reef Check	--	FISH Project	MLGU
Reports	Unpublished reports (ReefCheck 2007)	--	Unpublished reports	--
Regular Patrol	Bantay dagat, PO	PO	Bantay dagat	Bantay dagat
Violations	Apprehended (penalty imposed)	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	--	--	Low ¹
Coral Cover	Poor ² (18.4%)	--	--	Poor ³
Funding & Source	Reserve operation, LGU	Reserve operation, BLGU	None (voluntary only)	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	--	--	--
Past Problems Solved	None	--	--	--
Remarks/ Assessment	Functional; LGU initiated culture of grouper near the reserve, which reportedly export juveniles	Non-functional	Non-functional	Non-functional

¹ Estimated using timed-swim survey ² ReefCheck 2007 ³ BEMO file

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	081 San Francisco Fish Sanctuary	082 Sto. Niño Fish Sanctuary	083 Sto. Niño Seagrass Sanctuary	084 Tangaran Seagrass and Shell Garden
Year Established	1996	2001	2000	2001
Location	San Francisco, Talibon, Bohol	Talibon, Bohol	Sto. Niño, Inabanga, Bohol	Tangaran, Clarin, Bohol
Coordinates	10.16794°N 124.31723°E	10.16745°N 134.26880°E	10.0761°N 124.0654°E	9.97695°N 124.02322°E
Sea	Camotes Sea (Danajon Bank)	Danajon Bank	Cebu Strait	Cebu Strait
Area (ha)	7.8	12.0	10.10	13.0
Habitat	Coral reef, macro-algal bed, sandy bottom, seagrass bed	Coral reef	Seagrass beds	Seagrass bed
Established by	FISH Project, Project Seahorse Foundation	Project Seahorse Foundation, FISH Project	MLGU	Mun. Government of Clarin
Current Manager	MLGU, PO	Fisherfolk Association	SURP	PO
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 15 Series 1996	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 21 Series 2000	Mun. Ord. No. 001
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys	Marker buoys, patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	BEMO	Project Seahorse Foundation, FISH Project	--	CVSCAFT
Reports	Unpublished reports	Unpublished data	--	--
Regular Patrol	Bantay dagat, PO	Bantay dagat	Bantay dagat	LGU (Seaborne Patrol)
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	--	Low ²	Low ²	Low ²
Coral Cover	Poor ¹	Poor ²	Poor ¹	Poor ²
Funding & Source	Reserve operation, BEMO/Patrolling voluntary	None	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	--	--	Lack of financial support for rehabilitation of infrastructure
Past Problems Solved	--	--	--	Illegal fishing activities solved through enforcement
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ CCEF MPA Database² Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	085 Tanghaligue Marine Sanctuary	086 Tugas Marine Sanctuary	087 Tulang Marine Fish Sanctuary	088 Ubay Marine Protected Area
Year Established	2000	2002	2003	2006
Location	Tanghaligue, Talibon, Bohol	Tugas, Getafe, Bohol	Tulang, Getafe, Bohol	Ubay, Tubigon, Bohol
Coordinates	10.15216°N 124.26756°E	10.1364°N 124.1413°E	10.44722°N 124.61111°E	10.01730°N 123.94833°E
Sea	Camotes Sea (Danajon Bank)	Cebu Strait	Danajon Bank	Cebu Strait
Area (ha)	43.90	10.00	35.00	27.50
Habitat	Coral reef (patch), Seagrass, algal beds, rocky intertidal, sandy bottom	Coral reef (patch), rocky intertidal, open water	Coral reef	Coral reef
Established by	--	CBRMP-GRACE, Banag-banak Fishermen Association	MLGU	Feed the Children (FTC)
Current Manager	MLGU, PO	Banag-banak Fishermen's Association	PO	Panaghugpong sa mga Mananagat sa Ubay (PAMU)
Delineation	None	Clear	Clear	Not delineated by buoys
Management Plan	--	2003-2008	--	--
Legal Bases	Mun. Ord. No. 91 Series 2000	Mun. Ord. No. 8 Series 2002	Mun. Ord. No. 16 Series 2003	Mun. Ord. No. 2000-07-167 Series 2000
Infrastructure	None	Marker buoys, signboard, mooring buoys	Marker buoys, patrol boat	Marker buoys, guardhouse, patrol boats
Income Source	None	None	None	Tourism (user's fee)
Monitoring/Evaluation	None	BFAR & LGU	BFAR & LGU	FTC, LGU (ocular survey only)
Reports	Unpublished reports	Unpublished reports	Unpublished reports	Unpublished
Regular Patrol	Bantay dagat, PO	Bantay dagat	Bantay dagat	Bargy, PO, Bantay dagat
Violations	Apprehended	None	None	Apprehended (penalty imposed)
Fish Biomass/Density	Low ¹	Low	--	Very Low ¹
Coral Cover	Poor ¹	Poor (CCEF MPA Database)	Poor ¹	Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	Marker buoys need replacement	Replacement of lost buoys	Encroachment
Past Problems Solved	--	--	None	None
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Newly established; apparent coral rubbles indicates blast fishing prior to establishment

¹ Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	089 Western Cabul-an Marine Sanctuary	090 Aguining Fish Sanctuary	091 Badiang Fish Sanctuary	092 Bantigue Marine Sanctuary
Year Established	2000	1986 (1993)	1999	1993
Location	Cabul-an Is., Buenavista, Bohol	Aguining, Carlos P. Garcia, Bohol	Anda, Bohol	Bantigue Is., Butaw, Carlos P. Garcia, Bohol
Coordinates	10.15510°N 124.03335°E	10.0874°N 124.5950°E	9.79886°N 124.59330°E	10.159061°N 124.504519°E
Sea	Cebu Strait	Camotes Sea	Bohol Sea	Camotes Sea
Area (ha)	50.00	52.00	--	--
Habitat	Coral reef, deep water	Coral reef (narrow, fringing) with seagrass beds	Coral reef	Coral reef
Established by	LGU	CVRP, LGU	MLGU	MLGU
Current Manager	Western Cabul-an Fishermen Association	Aguining Fishermen Cooperative (AFCO)	MLGU	MLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	2000-2010	2005-2009	--	--
Legal Bases	Mun. Ord. (not specified)	Mun. Ord. C-001 No.5 Series 1986	Mun. Ord. (specific number not obtained)	Mun. Ord. No C-004 Series 2006; Mun. Ord. No. 10-054 Series 2005
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard, guardhouse	Marker buoys	Marker buoys
Income Source	None	Tourism	None	--
Monitoring/Evaluation	--	No copy of previous monitoring done by CVRP and BFAR	MLGU	MLGU, FISH Project
Reports	None	Haribon 1997 (unpublished) & 2001; Reboton & Luchavez 2002; Reboton in Aliño et al (2002)	--	Unpublished reports
Regular Patrol	LGU, PO	Bantay dagat, fisherfolk, Brgy. Guards (tanod), AFCO	Bantay dagat	Bantay dagat, PO
Violations	None	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Medium ⁴ (21,940 ± 6,320 indiv/ha)	--	Low ⁶ (236 kg/ha)
Coral Cover	Poor ² (10.63%); Poor ³ (5.24%)	Fair ⁵ (34.583%)	--	Fair ⁷ (39.88%)
Funding & Source	Reserve operation, LGU	Reserve operation, MLGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Insufficient fund for operation.	Lack of cooperation between LGU and Brgy. Bantay dagat patrol officers lack honorarium; no buoys, guardhouse and other facilities	Encroachment	--
Past Problems Solved	Intrusions solved by patrolling	Blast fishing and other illegal activities minimized through enforcement	--	--
Remarks/Assessment	Non-functional	Functional; No guards visible but resort owners and residents report violators	Non-functional	Non-functional

¹ Estimated using timed-swim survey ²Reboton & Luchavez in PhilReefs (2002) ³ CRMS 2007 ⁴ Haribon Foundation (2005)

⁵ MLGU unpublished data ⁶ FISH Project 2005 ⁷ LGU unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	093 Bantiguan Marine Sanctuary	094 Basiao Marine Sanctuary	095 Baud Marine Sanctuary	096 Bilang-bilangan East Marine Sanctuary
Year Established	2003 (2004)	2002 (2004)	1993 (2004)	2002
Location	Carlos P. Garcia, Bohol	Carlos P. Garcia, Bohol	Carlos P. Garcia, Bohol	Bilang-bilangan East, Bien Unido, Bohol
Coordinates	10.14923°N 124.58258°E	10.06844°N 124.55050°E	10.05961°N 124.55344°E	10.2450°N 124.4583°E
Sea	Camotes Sea	Bohol Sea	Camotes Sea	Camotes Sea (Danajon Bank)
Area (ha)	--	--	--	25.00
Habitat	Coral reef	Coral reef	Coral reef, mangrove, seagrass	Coral reef (patch), openwater, seagrass, rocky intertidal
Established by	--	CVRP, SMISLE	Baud Fisherfolk Association, Baud Women Organization	FISH Project, Project Seahorse Foundation
Current Manager	--	PO	Baud Fisherfolk Association, Baud Women Organization	Bilang-bilangan East Fishermen Association (BEFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	Approved in 2002
Legal Bases	Mun. Ord. No. 06 Series 2000; Mun. Ord. No. 09-041 Series 2004	Mun. Ord. No C-004 Series 2006; Mun. Ord. No. 10-058 Series 2005	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. 02 Series 2002
Infrastructure	Marker buoys	Marker buoys	Marker buoys	Marker buoys, signboard
Income Source	--	None	None	None
Monitoring/Evaluation	MLGU, FISH Project	FISH Project	FISH Project	Fish Project, Project Seahorse Foundation
Reports	FISH Project	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat, PO	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	--	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Very low ² (80 kg/ha)	--	Low ¹
Coral Cover	Poor ¹	Poor ³ (8.2143%)	Poor ³ (6.3846%)	Poor ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	Weak implementation	Weak implementation	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹CCEF MPA Database²Christie *et al.* (2006)³LGU unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	097 Bilang-bilangan West Marine Sanctuary	098 Bogo Marine Sanctuary	099 Bonbonon Marine Sanctuary	100 Butan Marine Sanctuary
Year Established	2002	2006	2006	1993
Location	Bilang-bilangan West, Bien Unido, Bohol	Carlos P. Garcia, Bohol	Bonbonon, Carlos P. Garcia, Bohol	Carlos P. Garcia, Bohol
Coordinates	10.2533°N 124.4416°E	10.28781°N 124.72819°E	10.1331°N 124.56971°E	10.16469°N 124.50042°E
Sea	Camotes Sea (Danajon Bank)	Danajon Bank	Danajon Bank	Danajon Bank
Area (ha)	30,00	--	Not indicated in ordinance	--
Habitat	Coral reef (patch), seagrass, rocky intertidal	Coral reef	Coral reef	Coral reef
Established by	FISH Project, Project Seahorse Foundation	MLGU	--	MLGU
Current Manager	--	MLGU	--	MLGU
Delineation	Clear	Not clear	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. C-004 Series 2006	--
Infrastructure	Marker buoys	None	--	--
Income Source	None	None	--	--
Monitoring/Evaluation	Fish Project, Project Seahorse Foundation	--	--	--
Reports	Unpublished reports	--	--	--
Regular Patrol	Bantay dagat	Bantay dagat	--	--
Violations	Apprehended	--	--	--
Fish Biomass/Density	Low ¹	--	--	--
Coral Cover	Poor ¹	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Non-functional	Newly established	Newly established	Paper reserve

¹ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	101 Campamanog Marine Sanctuary	102 Canmangao Fish Sanctuary	103 Gaus I Marine Sanctuary	104 Gaus II Marine Sanctuary
Year Established	1993	1993	1993	1993
Location	Carlos P. Garcia, Bohol	Carlos P. Garcia, Bohol	Gaus Is., Carlos P. Garcia, Bohol	Gaus Is., Carlos P. Garcia, Bohol
Coordinates	10.11934°N 124.51723°E	10.09132°N 124.56869°E	10.19319°N 124.56473°E	10.19908°N 124.55885°E
Sea	Camotes Sea (Canigao Channel)	Danajon Bank	Danajon Bank	Danajon Bank
Area (ha)	--	Not indicated	Not indicated in ordinance	Not indicated
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	MLGU	MLGU	MLGU	MLGU
Current Manager	MLGU	MLGU	MLGU	MLGU
Delineation	Not clear	Not clear	Not clear	Not clear
Management Plan	--	--	--	--
Legal Bases	--	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. C-004 Series 2006
Infrastructure	--	--	--	--
Income Source	--	--	None	None
Monitoring/Evaluation	--	--	MLGU	MLGU
Reports	--	--	--	--
Regular Patrol	--	--	--	Bantay dagat
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	Reserve operation, LGU	--	--	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	--	--	None
Past Problems Solved	--	--	--	None
Remarks/Assessment	Non-functional	Paper reserve	Paper reserve	Non-functional

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	105 Hinongatan East Marine Sanctuary	106 Hinongatan West Marine Sanctuary	107 Humay-humay Marine Sanctuary	108 Kabangkalan Marine Sanctuary
Year Established	2002	2002	--	1993
Location	Hinongatan East, Bien Unido, Bohol	Hinongatan West, Bien Unido, Bohol	Ubay, Bohol	Carlos P. Garcia, Bohol
Coordinates	10.2416°N 124.4850°E	10.2416°N 124.4850°E	10.101416°N 124.438138°E	10.26169°N 124.61792°E
Sea	Camotes Sea (Danajon Bank)	Camotes Sea (Danajon Bank)	Camotes Sea	Camotes Sea
Area (ha)	20.00	20.00	71.20	Not indicated
Habitat	Coral reef, open water, rocky intertidal	Coral reef, open water, rocky intertidal	Coral reef, seagrass	Coral reef
Established by	BUIMDP, CBRMP	BUIMDP, CBRMP	FISH Project	MLGU
Current Manager	Hinongatan East Fishermen's Association	Hinongatan West Sanctuary Fishermen's Association	Humay-humay Fisherfolk Association	MLGU
Delineation	Clear	Clear	Clear	Not clear
Management Plan	--	--	2006-2009	--
Legal Bases	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. 07 Series 2006	Mun. Ord. No. C-004 Series 2006
Infrastructure	Marker buoys	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats	--
Income Source	None	None	Alternative livelihood	--
Monitoring/Evaluation	FISH Project	FISH Project	FISH Project	MLGU
Reports	Unpublished reports	Unpublished reports	Unpublished reports	--
Regular Patrol	Bantay dagat	Bantay dagat	PO	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (620 kg/ha)	Medium ¹ (622 kg/ha)	--	--
Coral Cover	Poor ¹	Poor ¹	Poor ²	--
Funding & Source	Reserve operation, LGU, NGOs	Reserve operation, LGU, NGOs	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	None	None	Encroachment
Past Problems Solved	None	None	Intrusions solved by enforcement.	None
Remarks/Assessment	Non-functional	Functional	Newly established; not yet surveyed formally due to poor water clarity	Non-functional

¹Christie et al. (2006)²CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	109 Lapinig Island (Poong-Gamay) Fish Sanctuary	110 Liberty Marine Sanctuary	111 Linawan Municipal Fish Sanctuary	112 Lipata Marine Sanctuary
Year Established	1986 (1993)	2002	1999	--
Location	Poong Gamay Islet, Lapinin, Carlos P. Garcia, Bohol	Liberty, Bien Unido, Bohol	Linawan, Anda, Bohol	Carlos P. Garcia, Bohol
Coordinates	10.13063°N 124.53636°E	10.15229°N 124.37676°E	9.78672°N 124.59514°E	10.18083°N 124.67694°E
Sea	Camotes Sea (Danajon Bank)	Camotes Sea (Danajon Bank)	Bohol Sea	Camotes Sea
Area (ha)	60.00	8.00	8.00	--
Habitat	Predominantly coral reef with seagrasses and soft/muddy bottom; patches of mangroves	Seagrass, soft bottom, open water	Coral reef	Coral reef
Established by	CVRP, DA-SIP, SMISLE	MLGU	MLGU	MLGU
Current Manager	Lapinig Reserve Association	Liberty Marine Sanctuary Fishermen Association	MLGU	MLGU
Delineation	Clear	--	Clear	Not clear
Management Plan	--	--	None	--
Legal Bases	Mun. Ord. No. C-004, Series 2006; Mun. Ord. No. 5 Series 1986; Mun. Ord. C-002, Series 1986; Mun. Ord. No. 06 Series 2000	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. 07-12-99	Mun. Ord. No.C-004 Series 2008
Infrastructure	Marker buoys (replaced by bamboo poles in 2001)	Marker buoys, signboard	Marker buoys	--
Income Source	None	None	None	None
Monitoring/Evaluation	--	MLGU	MLGU	MLGU
Reports	Unpublished reports; Haribon (2005)	--	--	--
Regular Patrol	Sanctuary caretaker/fish warden	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Low ²	--	--
Coral Cover	Fair ¹ (37.2%)	Poor ²	--	--
Funding & Source	Reserve operation and Php 2,000.00 per month for caretaker from municipal office	Reserve operation, LGU	Reserve operation, MLGU	Reserve operation, MLGU
Current Management Issues/Problems	Lack of new marker buoys; No regular monitoring of the sanctuary; Increasing population of the island.	--	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Functional	Non-functional	Non-functional	Newly established

¹LGU 2008 unpublished data ²CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	113 Lumayag Islet Marine Park	114 Lumislis Marine Sanctuary	115 Malinguin Marine Sanctuary	116 Mandawa Marine Sanctuary
Year Established	1989	--	2002	2002
Location	Baybayon, Mabini, Bohol	Concepcion, Mabini, Bohol	Malinguin, Bien Unido, Bohol	Mandawa, Bien Unido, Bohol
Coordinates	9.9400°N 124.5700°E	9.8633°N 124.5633°E	10.16170°N 124.44170°E	10.1416°N 124.3916°E
Sea	Bohol Sea	Bohol Sea	Camotes Sea (Danajon Bank)	Camotes Sea (Danajon Bank)
Area (ha)	26.50	2.00	20.00	20.00
Habitat	Coral reef (patch), seagrass, macro-algal beds, open water	Coral reef (patch), seagrass, soft bottom, rocky intertidal	Coral reef, open water, rocky intertidal	Seagrass, open water
Established by	MLGU	DENR-CEP	BUIMDP, CBRMP	BUIMDP, CBRMP
Current Manager	Environmental Legal Assistance Center – Bohol, Mun. Govt.	Kapunungan Gagmay'ng Mananagat sa Banlas	Malingin Fishermen Association (MAFA)	Mandawa Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	Approved in 2001	--	--
Legal Bases	Mun. Ord. No. 03-1997; Mun. Ord. No. 7-1989; Mun. Ord No. 02-1995	Mun. Ord. No. 03 Series 1997	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. 02 Series 2002
Infrastructure	Marker buoys	--	Buoys, signboard	Buoys, signboard
Income Source	None	None	None	None
Monitoring/Evaluation	MLGU	MLGU	--	--
Reports	--	--	--	--
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	--	--	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	--	Low ¹	Low ¹
Coral Cover	Poor ¹	Poor ¹	Poor ¹	Poor ¹
Funding & Source	--	--	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	117 Pasil (Kawasihan) Reef Marine Sanctuary	118 Penamgo Marine Sanctuary	119 Poblacion Marine Sanctuary	120 Poong-Garcia Marine Sanctuary
Year Established	2001	2000	1986	1986 (2006)
Location	Panas, Candijay, Bohol	Bien Unido, Bohol	Poblacion, Bien Unido, Bohol	Carlos P. Garcia
Coordinates	9.96389°N 124.63444°E	10.19390°N 124.39130°E	10.21667°N 124.40000°E	10.14300°N 124.57400°E
Sea	Bohol Sea	Camotes Sea (Danajon Bank)	Camotes Sea (Danajon Bank)	Camotes Sea
Area (ha)	18.00	37.80	24.00	--
Habitat	Coral reef (fringing) with seagrass, sandy-silty substrates	Fringing coral reef with sandy bottom and seagrass beds	Seagrass, soft-bottom, open water	Coral reef
Established by	PROCESS-BOHOL	Nagkahiusang Gagmayng Mananagat sa Pinamgo (NAGAMAPI)	LGU	CVRP, SMISLE
Current Manager	MLGU, Panas Brgy Govt.	NAGAMAPI, Brgy. Government	Bien Unido Poblacion Sanctuary Fishermen Association	Lapinig Reserve Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 09 Series 2001	No. 02 Series 2002	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. C-004 Series 2006 (Fisheries and Coastal Resource Mgt. Code)
Infrastructure	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats
Income Source	--	None	None	None
Monitoring/Evaluation	PROCESS-BOHOL, PCPFA	--	FISH Project	--
Reports	Tuyogon in SU-CCHED (2007)	Reboton & Luchavez in PhilReefs (2002)	--	--
Regular Patrol	Bantay dagat		PO	Bantay dagat
Violations	Apprehended (penalty imposed)	Apprehended	Apprehended	--
Fish Biomass/Density	Low ¹	Very Low ² (2,200 indiv/ha)	--	--
Coral Cover	Poor ⁴ (18.0% in 2003); Fair ⁴ (38.4% in 2005)	Fair ² (39.9%)	Poor ²	Fair ³ (37.2%)
Funding & Source	Marine Reserve Establishment and operation; LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of LGU support, strict implementation, and budget	--	--	--
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Functional; increasing biomass trend but no pelagic species inside the reserve	Non-functional	Non-functional	Functional

¹Estimated using timed swim ²CCEF MPA Database ³MAO Unpublished data ⁴Tuyogon 2007

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	121 Popoo (Datag) Marine Sanctuary	122 San Antonio Marine Sanctuary	123 Sibukawan Marine Sanctuary	124 Sidlakan Marine Sanctuary
Year Established	2003	2002	2002	2004
Location	Popoo, Carlos P. Garcia, Bohol	Sagasa, Bien Unido, Bohol	Sibukawan, Ubay, Bohol	Saguese, Carlos P. Garcia, Bohol
Coordinates	10.05638°N 124.53148°E	10.31667°N 124.43333°E	10.06694°N 124.48583°E	10.11833°N 124.59576°E
Sea	Camotes Sea	Camotes Sea (Danajon Bank)	Camotes Sea	Danajon Bank
Area (ha)	--	15.00	34.00	--
Habitat	Coral reef, seagrass bed	Coral reef (patch), seagrass	Mangroves, algal bed	Coral reef
Established by	Brgy. Council	CBRMP	--	KAGAWASA
Current Manager	Hiniusang Kusog sa Maguumaya ug Mananagat (HIKOMASAP)	Sagasa Fishermen Association	Currently none (see remarks)	KAGAWASA
Delineation	--	Clear	Clear	Clear
Management Plan	--	--	2006-2009	--
Legal Bases	Mun. Ord. No. C-004 Series 2006; Mun. Ord. No. 10-057 Series 2005	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. 07 Series 2006	Mun. Ord. No. 06 Series 2000; Mun. Ord. No. 09-041 Series 2004
Infrastructure	--	Marker buoys, signboard	Marker buoys, guardhouse	--
Income Source	None	None	None	None
Monitoring/Evaluation	FISH Project	MLGU	None	FISH Project
Reports	Unpublished reports	Unpublished report	None	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	None	Bantay dagat
Violations	--	Apprehended	Currently not apprehended	Apprehended
Fish Biomass/Density	--	Low ⁴	Low ⁴	Low ⁴
Coral Cover	Poor ¹ (13.08%)	Poor ²	Poor ⁴	Poor ¹ (2.5%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	None	Reserve operation, LGU
Current Management Issues/Problems	--	--	Lack of managing body	--
Past Problems Solved	--	--	Boundary dispute solved by LGU intervention	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ MAO Unpublished data² CCEF MPA Database³ MAO Unpublished data⁴ Estimated from timed-swim

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	125 Sinandigan Marine Sanctuary	126 Sto. Rosario Fish Sanctuary	127 Suba Fish Sanctuary	128 Talisay Fish Sanctuary
Year Established	--	1993	--	--
Location	Sinandigan, Ubay, Bohol	Carlos P. Garcia, Bohol	Anda, Bohol	Anda, Bohol
Coordinates	10.05000°N 124.58333°E	10.08800°N 124.57400°E	9.75010°N 124.5849°E	9.77842°N 124.59770°E
Sea	Danajon Bank	Camotes Sea	Bohol Sea	Bohol Sea
Area (ha)	51.00	Not indicated in ordinance	Not indicated	--
Habitat	Coral reef, seagrass, mangroves	Coral reef	Coral reef	Coral reef
Established by	Project Seahorse Foundation	MLGU	MLGU	MLGU
Current Manager	KAGAMASI	MLGU	MLGU	MLGU
Delineation	Clear	--	Clear	Clear
Management Plan	2006-2009	--	--	--
Legal Bases	Mun. Ord. No. 07 Series 2006	Mun. Ord. No. C-004 Series 2006	Mun. Ord.(specific number not obtained)	Mun. Ord.(specific number not obtained)
Infrastructure	Marker buoys, guardhouse, patrol boat	--	Marker buoys	Marker buoys
Income Source	None	--	None	None
Monitoring/Evaluation	Project Seahorse Foundation and Brgy monitoring team	--	MLGU	MLGU
Reports	Through brgy assemblies/meetings only	--	No available report	--
Regular Patrol	Bantay dagat	--	Bantay dagat	Bantay dagat
Violations	Apprehended	--	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	--	--	--
Coral Cover	Poor ¹	--	--	--
Funding & Source	None	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	--	--	--
Past Problems Solved	None	--	--	--
Remarks/Assessment	Functional	Non-functional	Non-functional	Non-functional

¹Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	129 Talisay Fish Sanctuary	130 Tilmobo Marine Sanctuary	131 Tuburan Marine Sanctuary	132 Tugas Marine Sanctuary
Year Established	2006	--	--	--
Location	Carlos P. Garcia, Bohol	Tilmobo Islet, Carlos P. Garcia, Bohol	Tuburan, Bien Unido, Bohol	Tugas, Carlos P. Garcia, Bohol
Coordinates	10.15600°N 124.59800°E	10.12166°N 124.63500°E	10.18333°N 124.52222°E	10.13330°N 124.61667°E
Sea	Camotes Sea	Bohol Sea	Camotes Sea (Danajon Bank)	Bohol Sea
Area (ha)	Not indicated	No technical description	12.50	Not indicated
Habitat	Coral reef	Coral reef	Coral reef (Barrier type) with seagrass beds and sandy bottom	Coral reef
Established by	MLGU	MLGU	Bien Unido Integrated Marine Development Project (BUIMDP) under the CBRMP	MLGU, FISH Project
Current Manager	MLGU	MLGU	Tuburan Sanctuary Fishermen Association (TUSFA), Brgy. And Municipal governments	--
Delineation	Not clear	Only few buoys left	Clear	Clear
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. C-004 Series 2006	Mun. Ord. No. 02 Series 2002	Mun. Ord. No. C-004 Series 2006
Infrastructure	Not indicated	None	Marker buoys, signboard	Marker buoys
Income Source	None	Tourism	None	Not indicated
Monitoring/Evaluation	MLGU	None	MLGU	FISH Project
Reports	No report available	None	--	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	--	--	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	--	Low ¹	Low ¹
Coral Cover	Poor ¹	--	Poor ²	Poor ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Newly established	Newly established; not fully implemented; close to commercial shipping lanes	Non-functional	Newly established

¹Estimated using timed-swim survey² CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	133 Villa Milagrosa Marine Sanctuary	134 Alejawan Marine Sanctuary	135 Anas Fish Sanctuary	136 Ban-ban Fishery Refuge and Sanctuary
Year Established	1993	1999	2003	2001
Location	Villa Milagrosa, Carlos P. Garcia, Bohol	Alejawan, Duero, Bohol	Anas, Valencia, Bohol	Ban-ban, Dimiao, Bohol
Coordinates	10.09000°N 124.57300°E	9.6833°N 124.4016°E	9.6030°N 124.2269°E	9.5983°N 124.1334°E
Sea	Camotes Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	--	10.67	15.62	9.03
Habitat	Coral reef	Coral reef (patch/offshore), seagrass bed	Coral reef (fringing) with seagrass, algal beds, rocky intertidal, openwater	Coral reef, seagrass, rocky intertidal
Established by	MLGU	CBRMP	MLGU	LGU, BFAR, CRMO, BEMO, PROCESS-BOHOL
Current Manager	MLGU	Alejawan Fishermen Association (ALFA), DuGJan MPA Network	Valencia Fishermen's Association (VAFA)	Ban-ban Fisherfolk Association, Brgy. And Municipal governments
Delineation	Not clear	Clear	Clear	Clear
Management Plan	None	--	--	--
Legal Bases	Mun. Ord. No. 004 Series 2006	Mun. Ord. No. 2 Series 2003	Mun. Ord. No. 86 Series 2003	Mun. Ord. No. 8 Series 2001
Infrastructure	None	Marker buoys, sign board, mooring buoys	Marker buoys, signboard, mooring buoys, guardhouse	Marker buoys, mooring buoys, signboard
Income Source	None	None	None	None
Monitoring/Evaluation	MLGU	MLGU, PO	BFAR, DENR, DA, BEMO, CRMP	MLGU
Reports	--	None	None	--
Regular Patrol	Bantay dagat	Bantay dagat, PO	Bantay dagat, PO	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	High ²	Low ³	Low ³
Coral Cover	Poor ¹	Good ² (56%)	Poor ³	Poor ³
Funding & Source	Reserve operation, LGU	Reserve operation, MLGU	Reserve operation, MLGU	Reserve operation, LGU
Current Management Issues/Problems	--	--	Lack of patrolling equipment; accumulation of solid wastes and sewage including waste from livestocks	Encroachment
Past Problems Solved	--	--	--	--
Remarks/Assessment	Non-functional	Functional	Non-functional	Non-functional

¹Estimated using timed-swim survey ²MLGU unpublished data ³CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	137 Basdio Marine Sanctuary	138 Bonkukan Ubos Marine Sanctuary	139 Bunga Mar Marine Sanctuary	140 Cabantian Marine Sanctuary
Year Established	2002	2001	1998	2003
Location	Basdio, Guindulman, Bohol	Bonkukan Ubos, Lila, Bohol	Bunga Mar, Jagna, Bohol	Cabantian, Guindulman, Bohol
Coordinates	9.74467°N 124.49848°E	9.5900°N 124.0950°E	9.62950°N 124.35280°E	9.7283°N 124.4550°E
Sea	Bohol Sea	Bohol	Bohol Sea	Bohol Sea
Area (ha)	18.04	1.00	3.79	22.22
Habitat	Coral reef (fringing), rocky intertidal	Coral reef (patch), seagrass	Coral reef, seagrass, algal beds	Coral reef (fringing), rocky intertidal
Established by	ARD-GOLD, CRMP and the Bohol Environment Management Office (BEMO)	BFARMC, LGU	--	CRM technical working group, Brgy. Government
Current Manager	Basdio Farmers and Fishermen's Association (BFFA), Basdio Brgy. Council	MLGU	LGU, BIDEF, Bunga Mar Fishermen's Association	Cabantian Fishermen's Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	2006-2011	2008-209	--	2006-2011
Legal Bases	Mun. Ord. No. 02 Series 2008; brgy. Res. No. 12-176 Series 2001	Mun. Ord. No. C-001 Series 2001	Mun. Ord. No 9-09-2007; Mun. Ord. No. 6-09 Series 2001	Mun. Ord. No.02, Series 2008; Mun. Ord. No. 09-179 Series 2003; Mun. Res. No. 09-179, Series 2003; brgy. Res. No. 08, Series 2003
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard, patrol boat	Marker buoys	Marker buoys, mooring buoys, signboard
Income Source	Tourism, alternative livelihood	None	--	Tourism (diving fees), alternative livelihood
Monitoring/Evaluation	MLGU, PO	MLGU /PO	MLGU	MLGU, PO
Reports	Unpublished reports	Unpublished reports	--	Unpublished reports
Regular Patrol	PO	Bantay dagat, PO	Brgy officials; bantay dagat	PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Medium ¹	High ²	Low ¹
Coral Cover	Good ¹ (51.57% in 2008)	Fair ¹ (51%)	Poor ²	Fair ¹ (46.57%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lost buoys not replaced.	Lack of CRM awareness	--	Weak PO Management; Intrusions by fishers from other municipalities
Past Problems Solved	None	Encroachment and illegal fishing solved by patrolling	--	None
Remarks/Assessment	Functional	Functional; any form of gillnetting using scaring device(s) banned in the municipal waters	Non-functional	Functional

¹LGU unpublished data²CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	141 Cantagay Marine Sanctuary	142 Canuba Marine Sanctuary	143 Catugasan Marine Sanctuary	144 Cayam-Malinao Marine Sanctuary
Year Established	2002	2002	2001	2001
Location	Cantagay, Jagna, Bohol	Can-uba, Jagna, Bohol	Catugasan, Lila, Bohol	Garcia-Hernandez, Bohol
Coordinates	9.63020°N 124.35820°E	9.62815°N 124.34332°E	9.59000°N 124.0900°E	9.60398°N 124.27319°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	16.21	7.483	1.00	33.00
Habitat	Coral reef	Coral reef	Coral reef (patch)	Coral reef
Established by	EcoGov, BEMO, BFAR	EcoGov, BEMO, BFAR	MLGU	CRMP, BEMO, DENR, DA-BFAR, MLGU
Current Manager	Cantagay Fishermen's Association	MFARMC, DuGJan MPA Network	Catugasan Fishermen Association	MLGU, PO
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	2008-2012	--	renewable every 5 years
Legal Bases	Mun. Ord. No 9-09-2007; Mun. Ord. No. 6-09-2001	Mun. Ord. No 9-09-2007	Mun. Ord. No. C-001 Series 2001	Mun. Ord. (specific number not obtained)
Infrastructure	Marker buoys, patrol boats	Marker buoys, patrol boats	Marker buoys, signboard, patrol boats	Marker buoys
Income Source	Tourism (diving fee)	Tourism	--	None
Monitoring/Evaluation	SUAKCREM, MLGU	BFAR	MLGU	BEMO, BFAR (no reports submitted to MLGU)
Reports	Unpublished reports; community feedback only	Unpublished report	Unpublished reports	None
Regular Patrol	Bantay dagat; PO	PO, Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (628 kg/ha in 2007)	Low ²	Low ⁴	--
Coral Cover	Fair ¹ (27.3% in reef flat, 35% in reef slope as of 2007)	Fair ³ (29.37%)	Fair ⁴ (33%)	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Illegal fishing activities near the sanctuary; encroachment	Illegal fishing activities; Encroachment	Intrusions	Sanctuary violations
Past Problems Solved	--	None	--	Indifferent stakeholders motivated through IEC
Remarks/Assessment	Functional	Functional	Functional	Non-functional

¹ Stockwell & Abesamis 2008 unpublished report² Estimated using timed-swim survey³ BFAR unpublished report⁴ LGU 2007 unpublished data

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	145 East Ulbujan-West Ulbujan Marine Sanctuary	146 Guinacot Marine Sanctuary	147 Guinsularan Marine Sanctuary	148 Ipil Marine Sanctuary
Year Established	2001	2002	2003	2002
Location	East Ulbujan, West Ulbujan, Garcia Hernandez, Bohol	Guinacot, Guindulman, Bohol	Guinsularan, Duero, Bohol	Ipil, Jagna, Bohol
Coordinates	9.623316°N 124.324500°E	9.7377°N 124.4616°E	9.7222°N 124.4246°E	9.6295°N 124.3528°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	10.00	13.70	4.09	6.65
Habitat	Coral reef	Coral reef (fringing/offshore/shoal), seagrass, soft bottom	Coral reef (patch), open water, rocky intertidal	Coral reef (fringing), macro-algal beds
Established by	CRMP, BEMO, DENR, DA-BFAR	CRMP	CBRMP	EcoGov, BEMO, BFAR
Current Manager	MLGU-CRM, PO	Guinacot Community Resource Management Organization	Guinsularan Fishermen Association (GUINFA)	Brgy. Municipal, Prov. Governments
Delineation	Clear	Clear	Clear	Clear
Management Plan	Renewed every 5 years	2006-2011	--	2008-2012
Legal Bases	Res. No. 002 Series 2003	Mun. Ord. No. 02, Series 2008; Mun. Res. No. 9 Series 2003	Mun. Ord. No. 02 Series 2003	Mun. Ord. No 9-09-2007; Mun. Ord. No. 6-09 Series 2001
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, mooring buoys, signboard	Marker buoys, sign board, mooring buoys	Marker buoys, patrol boats
Income Source	None	Tourism (diving fees), alternative livelihood	None	Tourism (diving fee)
Monitoring/Evaluation	BEMO, BFAR, PO	MLGU, PO	MLGU, PO	BFAR
Reports	No existing reports	Unpublished reports	Unpublished reports	Unpublished report
Regular Patrol	Fish wardens, PO	PO, Brgy.	Bantay dagat	PO, Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ²	Low ²	Low ³
Coral Cover	Poor ¹	Fair ² (49.66%)	Poor ² (4%)	Fair ³ (34.19%)
Funding & Source	Reserve operation, LGU	Reserve operation, MLGU, BLGU	Reserve operation, MLGU	Reserve operation, LGU
Current Management Issues/Problems	Sanctuary violations	None	Illegal fishing	--
Past Problems Solved	Lack of CRM awareness solved through advocacy; a Bantay dagat who apprehended a commercial fishing vessel was shot	Lack of CRM awareness solved through IEC and meetings	--	--
Remarks/Assessment	Non-functional	Functional	Non-functional	Functional

¹ CCEF MPA Database² LGU 2008 unpublished data³ BFAR unpublished report

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	149 Itum Marine Sanctuary	150 Langkis Marine Sanctuary	151 Larapan Marine Sanctuary	152 Las Salinas Sur Marine Sanctuary
Year Established	2003	1999	2002	2003
Location	Itim, Duero, Bohol	Langkis, Duero, Bohol	Larapan, Jagna, Bohol	Las Salinas, Loay, Bohol
Coordinates	9.7133°N 124.4119°E	9.72814°N 124.54222°E	9.65359°N 124.39860°E	9.59449°N 124.03974°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	9.73	21.79	8.24	Not indicated
Habitat	Coral reef (offshore/patch)	Coral reef (offshore)	Coral reef, seagrass, macro-algal beds, open water	Coral reef
Established by	CBRMP	CBRMP	EcoGov, BEMO, BFAR	LGU, BFAR, BEMO, DENR, PROCESS
Current Manager	Blackstone United Fishermen Association (BUFA)	Barangay Langkis Fishermen Association (BLFA)	MFARMC, DugJan MPA Netwrok, Larapan Fishermen's Association, Brgy. Govt.	Las Salinas Sur Fishermen Association
Delineation	Clear	Clear	Clear	Not clear
Management Plan	--	--	2008-2012	2001-2005 (currently being revised)
Legal Bases	Mun. Ord. No. 02 Series 2003	Mun. Ord. No. 02 Series 2003	Mun. Ord. No 9-09-2007; Mun. Ord. No. 6-09 Series 2001	Mun. Ordinance (not specified)
Infrastructure	Marker buoys, signboard, mooring buoys	Marking buoys, mooring buoys, signboard	Marker buoys, signboard	Patrol boat
Income Source	None	None	Tourism	None
Monitoring/Evaluation	MLGU	MLGU, PO	BFAR, LGU	MLGU
Reports	Not indicated	Unpublished reports	Unpublished reports; feedback in community through media	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat, PO	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	High ¹	Low ² (446 kg/ha)	Low ⁴
Coral Cover	Fair ¹ (35%)	Fair ¹ (50%)	Fair ³ (35.28%)	Poor ⁴
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, Aid from Govt., NGOs	Reserve operation, LGU
Current Management Issues/Problems	--	--	Illegal fishing activities; encroachment	Sanctuary violations
Past Problems Solved	--	--	None	--
Remarks/Assessment	Functional	Functional	Functional	Non-functional

¹ LGU 2008 unpublished data ² Stockwell and Abesamis 2008 unpublished report ³ BFAR unpublished report ⁴ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	153 Madua Norte Marine Sanctuary	154 Madua Sur Marine Sanctuary	155 Malinao Marine Sanctuary	156 Mawi Marine Sanctuary
Year Established	1999	1999	2000	2003
Location	Madua Norte, Duero, Bohol	Madua Sur, Duero, Bohol	Malinao East, Lila, Bohol	Mawi, Duero, Bohol
Coordinates	9.70109°N 124.40488°E	9.69500°N 124.40500°E	9.59384°N 124.11100°E	9.70903°N 124.40655°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	3.47	3.97	1.0	21.56
Habitat	Coral reef, seagrass	Coral reef (shoal), seagrass	Coral reef, seagrass, openwater	Coral reef, seagrass bed, rocky intertidal
Established by	CBRMP	CBRMP	MLGU	CBRMP
Current Manager	Madua Norte FA (MASFA)	Madua Sur Fishermen Association (MASFA)	BFARMC, Brgy. Lila government	Kapunungan sa mga Nagpakabanang Katawhan sa Mawi (KAWA-MAWI)
Delineation	Clear	Clear	Clear	Clear
Management Plan	2006-2010	2006-2010	--	2006-2010
Legal Bases	Mun. Ord. No. 02 Series 2003	Mun. Ord. No. 02 Series 2003	Mun. Ord. No. C-001 Series 2001	Mun. Ord. No. 02 Series 2003
Infrastructure	Marker buoys, guardhouse, signboard, patrol boats	Marker buoys, guardhouse, signboard, patrol boats	Marker buoys, signboard	Marker buoys, guardhouse, patrol boats
Income Source	Alternative livelihood	Alternative livelihood	None	Tourism
Monitoring/Evaluation	DuGJan MPA Network and local monitoring team	DuGJan MPA Network and local monitoring team	SUAKCREM	DuGJan MPA Network, MPA Monitoring Team
Reports	Unpublished reports, community feedback through assemblies	Unpublished reports, community feedback through assemblies	Stockwell & Abesamis (2008)	Through barangay assemblies
Regular Patrol	--	--	Bantay dagat	Bantay dagat, PO
Violations	Apprehended	--	Apprehended	Apprehended
Fish Biomass/Density	High ¹	Medium ¹	Low ² (350 kg/ha in 2007)	Medium ¹
Coral Cover	Fair ¹ (46%)	Fair ¹ (27%)	Fair ² (27.3% in reef flat, 29.7 in reef slope as of 2007)	Fair ¹ (54%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Minor management disagreements	Minor management disagreements	None	--
Past Problems Solved	Lack of CRM awareness solved through IEC	Lack of CRM awareness solved through IEC	--	--
Remarks/Assessment	Functional	Functional	Functional	Functional

¹ LGU 2008 unpublished data ² Stockwell & Abesamis 2008 unpublished report

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	157 Naatang Marine Sanctuary	158 Nagsulay Marine Sanctuary	159 Nausok Marine Sanctuary	160 Pangdan Marine Sanctuary
Year Established	2002	1999	2002	2001
Location	Naatang, Jagna, Bohol	Nagsulay, Lila, Bohol	Nausok, Jagna, Bohol	Pangdan, Jagna, Bohol
Coordinates	9.64509°N 124.36687°E	9.59680°N 124.11777°E	9.65303°N 124.39093°E	9.65311°N 124.38500°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	5.8074	1.00	3.635	16.50
Habitat	Coral reef	Coral reef, macro-algal bed	Coral reef, macro-algal beds	Coral reef with algal beds, open water
Established by	EcoGov, BEMO, BFAR	MLGU	EcoGov., BEMO, BFAR	MLGU
Current Manager	MFARMC, DugJan MPA Network	MLGU	MFARMC, DugJan MPA Network	MFARMC, DuGJan MPA Network, Pangdan Marine Sanctuary Assoc.
Delineation	Clear	Clear	Clear	Clear
Management Plan	2008-2012	--	2008-2012	2008-2012
Legal Bases	Mun. Ord. No. 9-09-2007	Mun. Ord. No. 001	Mun. Ord. No. 9-09-2007	Mun. Ord. No. 9-09-2007
Infrastructure	Marker buoys, patrol boats	Marker buoys, patrol boats	Marker buoys, patrol boats	Marker buoys, patrol boats
Income Source	Tourism (diving fee)	None	Tourism	Tourism
Monitoring/Evaluation	BFAR	MLGU	BFAR	BFAR
Reports	Unpublished reports	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat, PO	Bantay dagat, PO	Bantay dagat	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹	Medium ²	Low ⁴ (254 kg/ha)	Low ²
Coral Cover	Fair ¹ (41.14%)	Fair ³ (38%)	Fair ¹ (48.33%)	Fair ¹ (41.82%)
Funding & Source	Reserve operation, Aid from Govt and NGOs	Reserve operation, LGU	Reserve operation, LGU, NGOs	Reserve operation, Aid from government and NGOs
Current Management Issues/Problems	Illegal fishing activities; encroachment	None	Illegal fishing activities, encroachment	Illegal fishing activities; encroachment
Past Problems Solved	None	None	None	None
Remarks/Assessment	Functional	Functional	Functional	Functional. Data from CCEF (2007 online database)

¹ BFAR unpublished report² Estimated using timed-swim survey³ MAO-Lila 2007 unpublished data⁴ Stockwell & Abesamis 2008

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	161 Poblacion Marine Sanctuary	162 Pulang Yuta Marine Sanctuary	163 San Antonio Marine Sanctuary	164 Sta. Filomena (Sta. Fe) Marine Sanctuary
Year Established	2001	2001	2003	2001
Location	Poblacion, Lila, Bohol	Pulang Yuta, Dimiao, Bohol	San Antonio, Duero, Bohol	Sta. Filomena, Alburquerque, Bohol
Coordinates	9.59000°N 124.10000°E	9.59820°N 124.14980°E	9.71470°N 124.41830°E	9.6007°N 123.9727°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	1.00	18.55	2.82	11.5251
Habitat	Coral reef (offshore), seagrass, macro-algal beds	Coral reef (patch), seagrass beds	Coral reef (patchy)	Coral reef (offshore), open water, mangrove, seagrass, algal beds
Established by	BFAR	MLGU	CBRMP	CRMP, PROCESS-BOHOL, Fishermen Association
Current Manager	Brgy and Mun. Governments	Pulang Yuta Fishermen's Association	Barangay San Antonio Concerned Citizen Fishermen Association (BSACCFA)	Marine Sanctuary Management Board
Delineation	Clear	Clear	Clear	Clear
Management Plan	2008-2009	Approved in 2002	--	Renewable every 5 years
Legal Bases	Mun. Ord. No. C-001 Series 2001	Mun. Ord. No. 08 Series 2001	Mun. Ord. No. 02 Series 2003	Mun. Ord. No. 05 Series 2002; Mun. Ord. No. 6 Series 2001
Infrastructure	Marker buoys, patrol boats	Marker buoys, signboard, mooring buoys	Marker buoys, mooring buoys, signboard	Marker buoys, signboard, guardhouse, patrol boats
Income Source	None	None	None	None
Monitoring/Evaluation	BIOME (participated by MLGU/BLGU/PO)	MLGU	DuGJan MPA Network, MPA Monitoring Team	PROCESS-BOHOL
Reports	Unpublished reports	Unpublished report	Unpublished reports	Unpublished
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat (hired by LGU as casual employees)
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (234 kg/ha)	Very Low ² (1,956 indiv/ha)	Low ³	Very Low ² (2,480 indiv/ha)
Coral Cover	Poor ¹ (21.3% reef flat, 14.7% reef slope in 2007)	Poor ² (10%)	Poor ² (23.55% in 2008)	Poor ² (15% in 2005)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU (municipal & brgy)
Current Management Issues/Problems	Intrusions	--	Encroachment	Compressor fishing
Past Problems Solved	--	--	--	Encroachment minimized through 24 hours patrolling by Bantay dagat
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Functional

¹ Stockwell & Abesamis 2008 ² BEMO ³ Estimated using timed-swim survey

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	165 Taongon-Canandam Fishery Refuge and Sanctuary	166 Taug-Tiguis Marine Sanctuary	167 Tayong Occidental Marine Sanctuary	168 Tayong Oriental Marine Sanctuary
Year Established	1999	2000	2003	2003
Location	Taongon/Can-andam, Dimiao, Bohol	Taug and Tiguis, Lila, Bohol	Tayong Occidental, Loay, Bohol	Tayong, Oriental, Loay, Bohol
Coordinates	9.6079°N 124.1774°E	9.58984°N 124.08110°E	9.5860°N 124.0572°E	9.5903°N 124.0675°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	26.5967	18.00	24.00	18.00
Habitat	Coral reef (fringing) with seagrass beds and mangroves	Coral reef (patch), seagrass beds	Coral reef, seagrass, algal beds, rocky intertidal	Coral reef (offshore) with seagrass beds, rocky intertidal, open water
Established by	MLGU	MLGU, PROCESS	MLGU	--
Current Manager	Taongon Can-adam Fisherfolk Association	BFARMC, Municipal government	Tayong Oriental Fishers and Fish Sanctuary Organization (TOFFSO)	TOFFSO
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	Approved 2001	Approved in 2003
Legal Bases	Mun. Ord. No. 08 Series 2001; Mun. Res. No. 77 Series 2001	Mun. Ord. No. C-001 Series 2001	Mun. Ord. No. 04 Series 2001	Mun. Ord. No. 04 Series 2002
Infrastructure	Marker buoys, mooring buoys, signboard	Marker buoys, patrol boat	Marker buoys, mooring buoys, signboard	Marker buoys, mooring buoys, signboard
Income Source	None	None	None	None
Monitoring/Evaluation	--	SUAKCREM (2007 survey); MLGU, PO	MLGU	MLGU
Reports	--	See Stockwell & Abesamis (2008)	Presented during meetings and assemblies	Presented during meetings and assemblies
Regular Patrol	Bantay dagat, PO	Bantay dagat	Bantay dagat, PO	Bantay dagat, PO
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Medium ² (456 kg/ha)	Low ¹	Low ¹
Coral Cover	Fair ² (38.6% in 2003)	Poor ¹	Poor ³	Poor ³
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU (20% from IRA)
Current Management Issues/Problems	--	--	Encroachment	Intrusions
Past Problems Solved	--	--	--	Conflicts between managers solved by consultations and dialogues
Remarks/ Assessment	Functional	Functional	Non-functional	Non-functional

¹Estimated using timed-swim survey ² Stockwell & Abesamis 2008 ³ CCEF MPA Database

Table 3. The marine reserves of Bohol and associated islands, continued

Name of Marine Reserve	169 Tubod Mar Marine Sanctuary	Alburquerque-Loay-Loboc Protected Landscape and Seascapes
Year Established	2002	2000
Location	Tubod Mar, Jagna, Bohol	Albuquerque, Loay, Loboc, Bohol
Coordinates	9.66859°N 124.40387°E	9.6778°N 123.9358°E
Sea	Bohol Sea	Bohol Sea
Area (ha)	26.22	1,164.16
Habitat	Coral reef (fringing), rocky intertidal, open water	Coral reef (narrow, fringing), seagrass, mangrove
Established by	EcoGov, BEMO, BFAR	DENR
Current Manager	MFARMC, DuGJan MPA Network, Tubod Mar Fishermen's Association	PAMB
Delineation	Clear	Not applicable
Management Plan	2008-2012	--
Legal Bases	Mun. Ord. No. 9-09-2007; Mun. Ord. No. 6-09 Series 2001	Pres. Proc. No. 293; DENR Administrative Order No. 93-02
Infrastructure	Marker buoys, patrol boats	--
Income Source	Tourism	--
Monitoring/Evaluation	BFAR	PAMB
Reports	Unpublished reports	None
Regular Patrol	Bantay dagat	--
Violations	Apprehended	--
Fish Biomass/Density	Low ¹	--
Coral Cover	Poor ²	--
Funding & Source	Reserve operation, Aid from Govt. and NGOs	DENR
Current Management Issues/Problems	Illegal fishing activities; Encroachment	--
Past Problems Solved	--	--
Remarks/ Assessment	Non-functional	Paper reserve

¹Estimated using timed-swim survey ² CCEF Database

Balicasag Island Fish Sanctuary



School of the Seas and Hilantagaan Daku Fish Sanctuary



Sumilon Island Fish Sanctuary

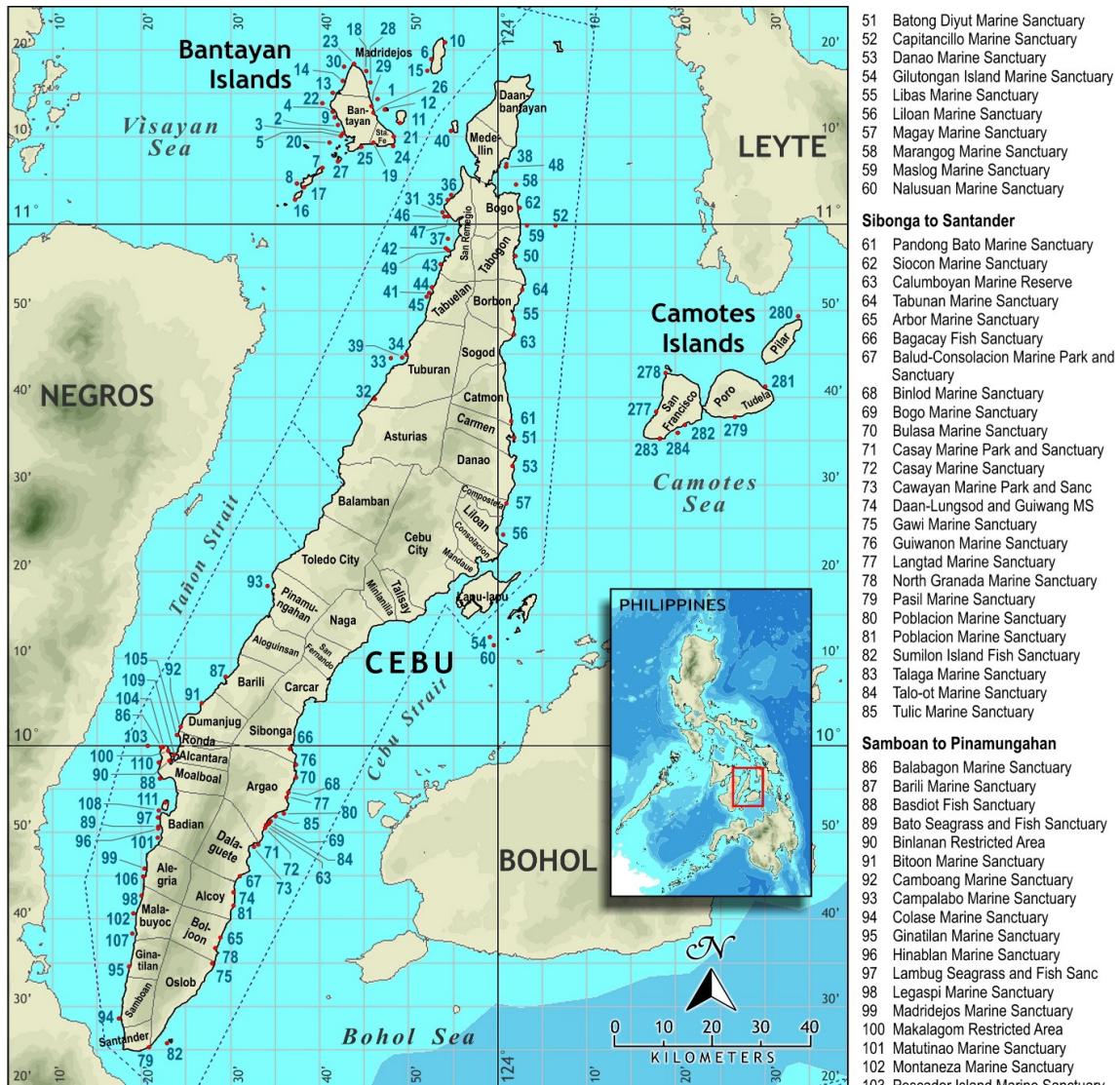
Photos taken from the marine reserves around Bohol and Cebu (*photos by J Maypa*).

Cebu and Associated Islands

Cebu Island and associated islands have 120 marine reserves with an aggregate area of 1,965.59 ha excluding the Tañon Strait Protected Landscape & Seascape, which is not fully protected and therefore not included in the analysis (**Figure 5, Table 4**). Of this number, 60 (50%) are functional.

On the basis of proximity to shipping lanes, at least 12 (10%) reserves are considered directly vulnerable to oil spills. These reserves are located about 1 to 10 km away from shipping lanes.

Marine Reserve QUICK STATISTICS	CEBU
Total number	120
Total area (ha)	1,965.59
Number of functional reserves	60 (50%)
Total area actively protected (ha)	1,040.00
Total number of coastal towns	53
Number of towns with reserve(s)	39
Average size (ha)	16.38
Minimum size (ha)	1.37
Maximum size (ha)	83.00



Bantayan Island Group

- 1 Atop-atop Marine Sanctuary
- 2 Baigad Marine Sanctuary
- 3 Bantigue Marine Sanctuary
- 4 Baod Marine Sanctuary
- 5 Binaoab Marine Sanctuary
- 6 Bitoon Marine Sanctuary
- 7 Botigues Marine Sanctuary
- 8 Doong Marine Sanctuary
- 9 Guianwan Marine Sanctuary
- 10 Hagdan Marine Sanctuary
- 11 Hilangtaaan Daku Fish Sanctuary
- 12 Hilangtaaan Diyut Islet Marine Sanc
- 13 Kabac Marine Sanctuary
- 14 Kaong-kod Marine Sanctuary
- 15 Langub Marine Sanctuary
- 16 Lipayran Marine Sanctuary
- 17 Luyong-baybay Marine Sanctuary

Tuburan to Medellin

- 31 Anapog Marine Sanctuary
- 32 Antipolo Marine Reserve
- 33 Apalan Marine Reserve with FS

Bogo to Cordova

- 34 Bagasawe Fish Sanctuary
- 35 Bancasan Marine and Fish Sanctuary
- 36 Biasong Marine Fish Sanctuary
- 37 Busogon Fish Sanctuary
- 38 Canhabagat Marine Park
- 39 Daan Lungsod Marine Sanctuary
- 40 Gibitgil Marine Sanctuary
- 41 Guianwan Marine Sanctuary
- 42 Kinawayan Fish Sanctuary
- 43 Luyang Fish Sanctuary
- 44 Olivia Marine Sanctuary
- 45 Poblacion Marine Sanctuary
- 46 Tambongan Fish Sanctuary
- 47 Tambongan Seagrass Sanctuary
- 48 Tindog Marine Sanctuary
- 49 Victoria Fish & Seagrass Sanctuary
- 50 Alang-alng Marine Sanctuary

Figure 5. Map of the marine reserves of Cebu and associated islands.

Table 4. The marine reserves of Cebu and associated islands

Name of Marine Reserve	001 Atop-atop Marine Sanctuary	002 Baigad Marine Sanctuary	003 Bantigue Marine Sanctuary	004 Baod Marine Sanctuary
Year Established	1996	2006	1999	2002
Location	Atop-atop, Bantayan, Cebu	Bantayan, Cebu	Bantigue, Bantayan, Cebu	Bantayan, Cebu
Coordinates	11.23611°N 123.77758°E	11.18656°N 123.70347°E	10.16670°N 124.17080°E	11.211240°N 123.693750°E
Sea	Visayan Sea (Tañon Strait)	Tañon Strait	Visayan Sea (Tañon Strait)	Tañon Strait
Area (ha)	35.00	5.01	10.00	20.00
Habitat	Coral reef (patch), Sandy area, Seagrass bed	Coral reef	Coral reef (fringing), Seagrass bed	Coral reef
Established by	University of San Carlos - Marine Biology Section (USC-MBS), LGU	MLGU	MLGU	MLGU
Current Manager	Nagpakabanang Mananagat sa Atop-atop (NAMATO)	BLGU	Barangay Council of Bantigue	MLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	Approved in 1996	None	None	None
Legal Bases	Mun. Ord. No. 11 Series 1996; Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 08-1999 (to be amended)
Infrastructure	Marker buoys, guardhouse, patrol boat	None	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	MLGU & BFAR in 2001	None	LGU & BFAR in 2001	None recently
Reports	Unpublished reports	None	Unpublished reports	None
Regular Patrol	Fish wardens, Brgy officials	Fish wardens; brgy officials	Fish wardens; brgy officials	Fish wardens; brgy officials
Violations	Apprehended	--	Apprehended	--
Fish Biomass/Density	Low ¹ (11,576 indiv/ha)	Low ²	Very Low ¹ (3,090 indiv/ha)	Low ⁴
Coral Cover	Fair ¹ (32.33%)	Poor ³	Poor (18.30%) ⁴ ; Poor ³ (19%)	Poor ⁴
Funding & Source	Reserve operation, LGU	Reserve operation, BLGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	--	--	Weak enforcement
Past Problems Solved	--	--	--	--
Remarks/Assessment	Functional; formerly part of Bantayan Integrated Seapark Development Project (BIISDP)	Newly established	Non-functional	Non-functional

¹ PCRA result ² CCEF MPA Database ³ Estimated using timed-swim survey ⁴ LNF & VSSq

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	005 Binaobao Marine Sanctuary	006 Bitoon Marine Sanctuary	007 Botigues Marine Sanctuary	008 Doong Marine Sanctuary
Year Established	2003	1997	1999	1999
Location	Bantayan, Cebu	Bitoon, Dumanjug, Cebu	Botigues, Bantayan, Cebu	Bantayan, Cebu
Coordinates	11.16630°N 123.70800°E	10.0831°N 123.4498°E	11.1042°N 123.6917°E	11.6271°N 123.0753°E
Sea	Visayan Sea	Tañon Strait	Visayan Sea	Visayan Sea
Area (ha)	4.064	28.00	5.00	10.00
Habitat	Coral reef	Coral reef (patch/fringing), Mangrove, Seagrass bed	Seagrass beds	Coral reef (patch/fringing), seagrass beds
Established by	MLGU	MLGU	MLGU	MLGU
Current Manager	BLGU	San Vicente Bantay dagat Association (SVBDA)	Botigues Fishermen's Association (BFA)	Doong Fishermen's Association (DOFA)
Delineation	Not clear	Clear	Not clear	Clear
Management Plan	--	--	None	Approved in 1999
Legal Bases	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 5 Series 1997	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 08-1999 (to be amended)
Infrastructure	None	Marker buoys, signboard, guardhouse	Patrol boat	Marker buoys, signboard, patrol boat
Income Source	None	None	None	None
Monitoring/ Evaluation	None	--	LGU & BFAR in 2001	LGU & BFAR in 2001
Reports	None	--	Unpublished report	Unpublished report
Regular Patrol	BLGU	--	Fisherfolks	Fish wardens; brgy officials
Violations	Not apprehended	--	--	Apprehended
Fish Biomass/Density	Low ¹	Low ¹	Very Low ³ (3,940 indiv/ha)	Low ³ (6,036 indiv/ha)
Coral Cover	Poor ¹	Poor ²	Fair ³ (49%) but currently not protected	Poor ³ (19.59%)
Funding & Source	Reserve operation, BLGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of financial support; weak management	--	--	Weak implementation
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Non-functional	Non-functional	Non-functional	Functional

¹Estimated using timed-swim survey ²CCEF MPA Database ³PCRA result

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	009 Guiwanon Marine Sanctuary	010 Hagdan Marine Sanctuary	011 Hilantagaan Daku Fish Sanctuary	012 Hilantagaan Diyut Islet Marine Sanctuary
Year Established	2000	2008	1998 (2001)	2006
Location	Guiwanon, Bantayan, Cebu	Sta. Fe, Cebu	Sitio Dakong Baybay, Hilantagaan, Sta. Fe, Cebu	Hilantagaan, Sta. Fe, Cebu
Coordinates	11.20108°N 123.69666°E	11.34299°N 123.90231°E	11.19020°N 123.82020°E	11.34531°N 123.83139°E
Sea	Visayan sea	Visayan Sea	Visayan Sea	Visayan Sea
Area (ha)	20.00	6.00	10.00	15.00
Habitat	Coral reef	Coral reef	Coral reef (patch), seagrass beds	Coral reef, seagrass, algal bed
Established by	SMISLE, MLGU	LGU & LNF	USC, DA, SMISLE	CCEF, MLGU, BLGU
Current Manager	BLGU	BLGU	Dakongbaybay Fishermen's and Farmers Association (DBFFA)	BLGU /MLGU
Delineation	Clear	Not clear	Clear	Clear
Management Plan	None	None	None	None
Legal Bases	Mun. Ord. No. 08, Series 1999 (to be amended)	No specific ordinance	Resolution No. 75 Series 2000; Presidential Proclamation No. 1234 - Tañon Strait Protected Seascape	None
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys	Marker buoys	Marker buoys, guardhouse
Income Source	None	None	Tourism	Tourism
Monitoring/Evaluation	None	CDF, LNF	SUAKCREM, CDF	Brgy council
Reports	None	Unpublished report by CDF	Jadloc <i>et al.</i> in SUAKCREM Newsletter (2008)	Unpublished, feedback to community
Regular Patrol	Fish wardens; brgy officials	BLGU	Fish wardens; brgy officials	Barangay council
Violations	Apprehended	--	Penalty not imposed (CCEF Database)	Apprehended
Fish Biomass/Density	--	--	High ²	Medium ³
Coral Cover	--	Poor ¹ (24.1%)	Fair ² (52.67% in 2007); Good ¹ (65% in 2008)	Fair ¹ (40.6%)
Funding & Source	Reserve operation, BLGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, Barangay council
Current Management Issues/Problems	--	Weak support from the municipal government.	Recent encroachment due to weak management	Encroachment
Past Problems Solved	--	--	--	--
Remarks/Assessment	Non-functional	Newly established	Functional	Newly established

¹CDF 2008

²Jadloc & Candido (2008)

³Estimated using timed-swim survey

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	013 Kabac Marine Sanctuary	014 Kaong-kod Marine Sanctuary	015 Langub Marine Sanctuary	016 Lipayran Marine Sanctuary
Year Established	2006	1996	2007	2006
Location	Bantayan, Cebu	Madridejos, Cebu	Sta. Fe, Cebu	Bantayan, Cebu
Coordinates	11.37500°N 123.78889°E	11.27122°N 123.71309°E	11.29008°N 123.87141°E	11.04481°N 123.62240°E
Sea	Visayan Sea	Visayan Sea	Visayan Sea	Visayan Sea
Area (ha)	20.48	10.00	15.00	13.44
Habitat	Seagrass	Coral reef	Coral reef	Coral reef
Established by	SMISLE, MLGU	CRMO-BFAR, GDS, MLGU	MLGU & LNF	MLGU & ELAC
Current Manager	BLGU	Kaong-kod Fishermen's and Farmers Association (KAFFA)	BLGU	BLGU
Delineation	Clear	Clear	Clear	Not clear
Management Plan	None	--	None	None
Legal Bases	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 007 Series 1996	None	Mun. Ord. No. 08-1999 (to be amended)
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys	None	None
Income Source	None	None	None	None
Monitoring/Evaluation	None	None	CDF, LNF	None
Reports	No available report	None	Unpublished report	None
Regular Patrol	Fish wardens; brgy officials	Brgy officials	BLGU	None
Violations	Apprehended	Apprehended	--	None
Fish Biomass/Density	Low ¹	Low ²	Low ¹	Low ¹
Coral Cover	Poor ² (4%)	Fair ² (40%)	Fair ³ (38.8%)	Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation	--	--
Current Management Issues/Problems	--	Political faction within LGU (CCEF)	--	Weak management
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Newly established	Non-functional	Newly established	Newly established

¹Estimated using timed-swim survey ²LNF & VSSq ³CDF 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	017 Luyong-baybay Marine Sanctuary	018 Malbago Fish Sanctuary	019 Maricaban Marine Sanctuary	020 Obo-ob Marine Sanctuary
Year Established	1999	2002	2002	2004
Location	Luyong Baybay, Bantayan, Cebu	Malbago, Madridejos, Cebu	Sta. Fe, Cebu	Bantayan, Cebu
Coordinates	11.06666°N 123.63958°E	11.28985°N 123.75709°E	11.15181°N 123.76986°E	11.1533°N 123.688780 E
Sea	Visayan Sea	Visayan Sea	Tañon Strait	Visayan Sea
Area (ha)	10.00	18.00	15.00	20.48
Habitat	Coral reef (fringing)	Coral reef	Coral reef, seagrass, algal bed	Coral reef
Established by	Brgy Council, EU-SMISLE	Malbago Small Fishermen's and Farmers Association (MALSFFA)	MLGU	MLGU
Current Manager	Barangay Council of Luyong-baybay	MALSFFA	Barangay Council	BLGU
Delineation	Clear	Clear	Not clear	Clear
Management Plan	None	--	None	None
Legal Bases	Mun. Ord. No. 08 Series 1999	Mun. Ord. No. 001 Series 2002	None	Mun. Ord. No. 08-1999 (to be amended)
Infrastructure	None	Marker buoys, signboard, guardhouse	Patrol boat	Marker buoys, guardhouse (temporary), patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	LGU & BFAR in 2001	None	Law of Nature Foundation, Coastal Dynamics Foundation	None
Reports	None	None	Unpublished reports	None
Regular Patrol	None	BLGU	Barangay police (tanods)	Fish wardens; brgy officials
Violations	None	Not specified	Apprehended	None
Fish Biomass/Density	Low ¹ (5,200 indiv/ha)	Low ²	Low ²	None
Coral Cover	Poor ¹ (10.50%)	Poor ² (27%)	Poor ³ (11.9%)	None
Funding & Source	Reserve operation, LGU	Not specified	Reserve operation, BLGU	Reserve operation, MLGU
Current Management Issues/Problems	Weak implementation	Weak management	Lack of funds for reserve operation	Weak management
Past Problems Solved	None	--	None	--
Remarks/ Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ PCRA result ² LNF & VSSq ³ CDF 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	021 Ocoy Marine Reserve	022 Patao Marine Sanctuary	023 Poblacion Fish Sanctuary	024 Poblacion Marine Sanctuary
Year Established	2004	1999	2003	2007
Location	Santa Fe, Bantayan Is., Cebu	Patao, Bantayan, Cebu	Poblacion, Madridejos, Cebu	Poblacion, Sta. Fe, Cebu
Coordinates	11.27500°N 123.83333°E	11.22933°N 123.67527°E	11.30380°N 123.7343°E	11.14733°N 123.80533°E
Sea	Visayan Sea	Visayan Sea	Visayan Sea	Tañon Strait
Area (ha)	15.00	10.00	6.00	23.00
Habitat	Predominantly sandy, patchy coral reef, seagrass	Coral reef (patch), seagrass beds	Coral reef (fringing/patch), soft bottom, seagrass bed	Coral reef
Established by	Law of Nature Foundation (LNF)	LGU, BFAR	FARMC, LGU	MLGU
Current Manager	Law of Nature Foundation (LNF)	Patao Small Fishermen's Association (PASFA)	Poblacion Fishermen's Association	BLGU
Delineation	Clear	Clear	Clear	Not clear
Management Plan	2004-present	Approved in 1998	None	--
Legal Bases	Mun. Ord. No. 02-2004	Mun. Ord. No. 08 Series 1999	Mun. Ord. No. 01 Series 2003	None
Infrastructure	Marker buoys, guardhouse (temporary), patrol boat	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys	None
Income Source	None	None	None	None
Monitoring/Evaluation	SUAKCREM, Coastal Dynamics Foundation, Durham University	LGU & BFAR in 2001	None	CDF
Reports	Unpublished reports	None	None	Unpublished report
Regular Patrol	LNF (guarded by its caretaker)	Fish wardens; brgy officials	Barangay officials	BLGU
Violations	Apprehended	Apprehended	Apprehended	--
Fish Biomass/Density	Medium ¹	Low ¹	Low ¹	Low ⁴
Coral Cover	Poor ² (11.33% in 2007)	Poor ³	Poor ³	Poor ⁴ (5.6%)
Funding & Source	Reserve operation maintained by LNF	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	Encroachment	Weak implementation	Lack of specific legal framework
Past Problems Solved	Threats of demolition by activists solved by filing formal court case and also through education	--	--	--
Remarks/Assessment	Functional	Non-functional	Non-functional	Newly established

¹ Estimated using timed-swim survey ² Jadloc & Candido (2008) ³ CCEF MPA Database ⁴ CDF 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	025 Pooc Marine Sanctuary	026 Sillion Marine Sanctuary	027 Sulangan (Panitugan) Marine Sanctuary	028 Talangnan Fish Sanctuary
Year Established	2000	1996 (2006)	1996	1998
Location	Pooc, Santa Fe, Cebu	Bantayan, Cebu	Sitio Panitugan, Sulangan, Bantayan, Cebu	Talangnan, Madridejos, Cebu
Coordinates	11.14464°N 123.74702°E	11.20901°N 123.77075°E	11.11723°N 123.70265°E	11.26749°N 123.76379°E
Sea	Tañon Strait	Visayan Sea	Tañon Strait	Visayan Sea
Area (ha)	15.00	15.36	20.00	14.00
Habitat	Coral reef (patch/fringing), seagrass beds	Coral reef	Coral reef (patch), seagrass	Predominantly seagrass beds
Established by	EU-SMISLE, LGU, BFAR	USC-Biology Section	SMISLE, BFAR, Barangay local government	SMISLE, MLGU
Current Manager	Pooc Fishermen's Association (PFA)	Nagpakabanang Mananagat sa Sillion (NAMASI)	MLGU, Panitugan Fishermen's and Farmers Association (PAFFA)	Talangan Small Fishermen's Association (TASFA)
Delineation	Not clear	Clear	Clear	Clear
Management Plan	None	Approved in 1996	Approved in 1998	--
Legal Bases	None	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 08 Series 1999; Mun. Ord. No. 07 Series 1996	Municipal Ord. (not indicated); brgy. Res. No. 039-2000
Infrastructure	Signboard, guardhouse	Marker buoys, guardhouse	Bamboo poles served as markers, signboard, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats
Income Source	Tourism	None	Not indicated	None
Monitoring/Evaluation	Law of Nature Foundation, Coastal Dynamics Foundation	LGU & BFAR in 2001	DENR	None
Reports	Unpublished reports	Unpublished report	Not yet presented to the community	None
Regular Patrol	Brgy officials	Fish wardens; brgy officials	Fish wardens; brgy officials	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Low ³ (7,700 indiv/ha)	Very High ³ (264,790 indiv/ha)	Low ¹
Coral Cover	Poor ² (22.2%)	Fair ³ (38.41%)	Fair ³ (38.41%); but Good ⁴ (60%)	Poor ⁵
Funding & Source	Reserve operation, Brgy government & Congressional Dev. Fund.	Reserve operation, LGU	Reserve operation	Reserve operation, LGU
Current Management Issues/Problems	Sanctuary violations. Still being fished, using fish traps inside Marine Reserve	Encroachment	Lack of funds for guardhouse and regular patrol; sanctuary violations	Lack of funds for sanctuary guards
Past Problems Solved	--	--	Blast fishing solved through apprehension	Sanctuary violations minimized through apprehensions
Remarks/Assessment	Functional	Functional; formerly part of Bantayan Integrated Seapark Development Project	Functional	Non-functional

¹Estimated using timed-swim survey²CDF 2008³PCRA result⁴Haribon Foundation (2005)⁵CCEF MPA Database

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	029 Tamiao Marine Sanctuary	030 Tarong Fish Sanctuary Marine Park and Fishery Reserve	031 Anapog Marine Sanctuary	032 Antipolo Marine Reserve
Year Established	1996	2003	2002	2001
Location	Tamiao, Bantayan, Cebu	Madridejos, Cebu	San Remegio, Cebu	Antipolo, Tuburan, Cebu
Coordinates	11.22248°N 123.76661°E	11.29680°N 123.71511°E	11.03833°N 123.90972°E	10.6675°N 123.7622°E
Sea	Visayan Sea	Visayan Sea	Tañon Strait	Tañon Strait
Area (ha)	20.00	15.00	10.00	40.00
Habitat	Coral reef	Coral reef (fringing), seagrass bed	Coral reef	Coral reef (fringing), seagrass, algal bed, mangrove
Established by	USC, MLGU	MLGU	MLGU	CBCRMP
Current Manager	Nagpakabanang Mananagat sa Tamiao (NAMATA)	Kauswagan Tarong Marginal Fishermen's Association (KATAMFA)	MLGU	Antipolo Fisherfolks Association (AFA)
Delineation	Clear	Clear	Not clear	Clear
Management Plan	Approved in 1996	None	--	--
Legal Bases	Mun. Ord. No. 08-1999 (to be amended)	Mun. Ord. No. 01 Series 2003	Mun. Ord. No. 32-2002	Mun. Ord. No. 41 Series 2001; Pres. Proc. No. 1234 - Tañon Strait Protected Seascape
Infrastructure	Marker buoys, guardhouse	Marker buoys	None	Marker buoys, signboard, guardhouse
Income Source	None	None	None	Tourism
Monitoring/Evaluation	LGU & BFAR in 2001	None	BFAR	CBCRMP
Reports	Unpublished report (outdated)	None	Unpublished report	Unpublished report
Regular Patrol	Fish wardens; brgy officials	BLGU	None	Bantay dagat
Violations	--	--	None	Apprehended
Fish Biomass/Density	Low ¹ (5,560 individuals/ha)	Low ²	Very Low ⁴ (2,130 indiv/ha)	Low ³
Coral Cover	Fair ¹ (28.08%)	Poor ³	Poor to Fair ²	Poor ³
Funding & Source	Reserve operation, LGU	Reserve operation: LGU	Reserve operation, LGU (allocation only due to weak support from community)	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	Encroachment	Community not supportive to the reserve	Sanctuary violations
Past Problems Solved	--	--	--	--
Remarks/Assessment	Functional; formerly part of Bantayan Integrated Seapark Development Project	Non-functional	Non-functional	Non-functional

¹ PCRA result

² Estimated using timed-swim survey

³ CCEF MPA Database

⁴ Unpublished data from MAO

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	033 Apalan Marine Reserve with Fish Sanctuary	034 Bagasawe Fish Sanctuary	035 Bancasan Marine and Fish Sanctuary	036 Biasong Marine Fish Sanctuary
Year Established	2000	1999	2002	1996
Location	Apalan, Tuburan, Cebu	Bagasawe, Tuburan, Cebu	Bancasan, San Remegio, Cebu	Biasong, Maño, San Remigio, Cebu
Coordinates	10.7492°N 123.8248°E	10.7596°N 123.8272°E	11.14083°N 123.98167°E	11.05383°N 123.91431°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	30.00	40.00	15.24	18.00
Habitat	Coral reef (fringing), seagrass, algal bed, mangrove	Coral reef (fringing/patch), seagrass beds	Coral reef (patch), seagrass, macroalgal beds	Coral reef (fringing), seagrass
Established by	CBCRMP, LGU, PO	CBRMP, DA	LGU, CBRMP, Aboitiz Group Foundation, Inc.	MLGU
Current Manager	Apalan Fisherfolks Association (APFA)	MLGU	Bancasan Fishermen's and Farmers Association	Biasong FA
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	Mun. Ord. No. 32-2002
Legal Bases	Mun. Ord. (not specified)	Mun Ord. (not specified); Mun. Fisheries Ord. No. 041-1999; Pres. Proc. No. 1234	Mun. Ord. No. 32 Series 2002	Mun. Ord. o.10 Series 1996
Infrastructure	Marker buoys, signboard	Marker buoys	Marker buoys, signboard	Mooring buoys, marker buoys, guardhouse, patrol boats
Income Source	Not data	None	None	None
Monitoring/Evaluation	CCEF	CCEF	None	BFAR-CRMS
Reports	Unpublished report	Unpublished reports	BFAR-CRMS	Unpublished report (terminal report)
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Fish wardens
Violations	Apprehended	--	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ¹	Very low (190 individuals/ha)	Low ³
Coral Cover	Poor ¹	Poor ¹	Poor ² (11.19%)	Poor ¹ (2001 survey)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, MLGU
Current Management Issues/Problems	--	--	--	Issuance of PAMB in Tañon Strait
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹CCEF MPA Database²MAO, Unpublished³Estimated using timed-swim survey

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	037 Busogon Fish Sanctuary	038 Canhabagat Marine Park	039 Daan Lungsod Marine Sanctuary	040 Gigitngil Marine Sanctuary
Year Established	2003	2003	2000	2004
Location	Busogon, San Remegio, Cebu	Canhabagat, Medellin, Cebu	Tuburan, Cebu	Medellin, Cebu
Coordinates	10.9696°N 123.9092°E	11.11345°N 124.01716°E	10.7407°N 123.8227°E	11.17473°N 123.91356°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Visayan Sea
Area (ha)	32.00	28.00	15.48	4.50
Habitat	Coral reef	Coral reef, seagrass, macro-algal beds, soft bottom, open water	Coral reef (patch), seagrass bed, mangrove	Coral reef, seagrass
Established by	MLGU	MLGU, JICA	CBRMP	MLGU
Current Manager	Busogon Fishermen's and Farmers Association	Bantay dagat Commission	Daan Lungsod Fisherfolk Association (DALFA)	Barangay council
Delineation	Clear	Clear	Clear	Not clear
Management Plan	2002-2012	2003-present	--	None
Legal Bases	Mun. Ord. No. 44 Series 2003	Mun. Ord. No. 090 Series 2003	Mun. Ord. (not specified)	Mun. Ord. (specific number not obtained)
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, sign board, mooring buoys, patrol boat	Marker buoys, signboard	None
Income Source	None	None	--	None
Monitoring/Evaluation	CRMS, BFAR	LGU, Bantay dagat	--	None
Reports	Unpublished reports	No available report	Unpublished report	None
Regular Patrol	--	Bantay dagat	Bantay dagat	BLGU
Violations	Apprehended	Apprehended	Apprehended	--
Fish Biomass/Density	High ¹ (31,980 indiv/ha)	Low ²	Low ²	Low ²
Coral Cover	Fair ¹ (29.38%)	Poor ³	Poor ³	Poor ²
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	No financial mechanism in place (CCEF Database)	Reserve operation, LGU
Current Management Issues/Problems	Issuance of PAMB	Bantay dagat members not focused on patrolling (work with aquaculture as their alternative livelihood)	--	Conflict between managers
Past Problems Solved	--	None	--	--
Remarks/Assessment	Functional	Non-functional	Non-functional	Non-functional

¹CRMS 2007 ²Estimated using timed-swim survey ³CCEF MPA Database

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	041 Guiwanon Marine Sanctuary	042 Kinawahan Fish Sanctuary	043 Luyang Marine Sanctuary	044 Olivo Marine Sanctuary
Year Established	2000	2003	2003	2000
Location	Poblacion, Tabuelan, Cebu	San Remigio, Cebu	Luyang, San Remigio, Cebu	Olivo, Tabuelan, Cebu
Coordinates	10.85800°N 123.86800°E	10.9515°N 123.9052°E	10.92110°N 123.89350°E	10.87708°N 123.87797°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	12.00	27.00	23.00	12.00
Habitat	Coral reef	Coral reef (fringing), seagrass beds	Coral reef	Mainly seagrass
Established by	MLGU	FARMC, PO	FARMC	LGU, GDS
Current Manager	Poblacion Fishermen's Association (PFA)	Kinawahan Young Fishermen's Association	Luyang Community Based Resource Management Association (LCBRMA)	Olivo Fishermen's Association (OFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	2002-2012	2002-2012	--
Legal Bases	Mun. Ord. No. 006 Series 2000	Mun. Ord. No. 45 Series 2003	Mun. Ord. No.47 Series 2003	Mun. Ord. (not specified in CCEF)
Infrastructure	Marker buoys	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat, signboard
Income Source	None	None	None	Tourism
Monitoring/Evaluation	CCEF	BFAR-CRMS	BFAR-CRMS	None
Reports	Unpublished report	Unpublished reports	Unpublished reports	None
Regular Patrol	MLGU	Bantay dagat	Bantay dagat	None
Violations	Apprehended (penalty imposed)	Apprehended	Apprehended	None
Fish Biomass/Density	Low ¹	Medium ³ (6,540 indiv/ha)	Medium ³ (11,260 indiv/ha)	Low ¹
Coral Cover	Poor ²	Good ³ (57.81%)	Fair ³ (34.0%)	Poor ²
Funding & Source	No sustainable funding mechanism in place (CCEF MPA Database)	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU (20% Dev. Fund)
Current Management Issues/Problems	Encroachment due to weak enforcement; lack of funds	Issuance of Tañon Strait Protected Landscape & Seascape	Issuance of Tañon Strait Protected Landscape & Seascape	Lack of strong support from the police force in terms of visibility of personnel and apprehensions
Past Problems Solved	None	Encroachment solved through apprehension	--	Conflicts solved through amicable settlement
Remarks/ Assessment	Non-functional	Functional	Functional	Non-functional

¹Estimated using timed-swim survey²CCEF MPA Database³CRMS 2007

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	045 Poblacion Marine Sanctuary	046 Tambongon Fish Sanctuary	047 Tambongon Seagrass Sanctuary	048 Tindog Marine Sanctuary
Year Established	2000	2003	2003	1993
Location	Poblacion, Tabuelan, Cebu	Tambongon, San Remigio, Cebu	Tambongon, San Remigio, Cebu	Tindog, Medellin, Cebu
Coordinates	10.85800°N 123.86800°E	11.01258°N 123.90028°E	11.01197°N 123.90855°E	11.10638°N 124.01777°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Visayan Sea
Area (ha)	4.00	32.00	5.00	30.00
Habitat	Seagrass	Coral reef, seagrass bed, mangrove	Seagrass bed	Coral reef, seagrass
Established by	MLGU-Tabuelan	MLGU	MLGU	MLGU
Current Manager	Poblacion (Tabuelan) Fishermen Association	Tambongon United Fishermen's and Farmers Association (TUFFA)	Tambongon United Fishermen's and Farmers Association (TUFFA)	Brgy. Council, Bantay dagat
Delineation	Clear	Clear	Clear	Not clear
Management Plan	None	2002-2012	2002-2012	1993 to present
Legal Bases	Mun. Ord. No. 01 Series 2000	Mun. Ord. No. 43 Series 2003	Mun. Ord. No. 43 Series 2003	Mun. Ord. (not specified)
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	None
Income Source	None	Tourism	None	None
Monitoring/Evaluation	None	BFAR-CRMS	BFAR-CRMS	None
Reports	None	See unpublished report on CBRMP	See unpublished report on CBRMP	None
Regular Patrol	None	Bantay dagat	Bantay dagat	Bantay dagat
Violations	None	Apprehended	Apprehended	--
Fish Biomass/Density	Low ¹	High ³ (50,526 indiv/ha)	--	Low ¹
Coral Cover	Poor ²	Poor ³ (20.04%)	--	Poor ¹
Funding & Source	Reserve operation, LGU (20% Dev. Fund)	Reserve operation, MLGU	Reserve operation, LGU	Reserve operation, MLGU
Current Management Issues/Problems	Lack of strong/firm support from the police force in apprehending violators	Creation of PAMB for the Tañon Strait Protected landscape & seascape	Creation of PAMB for the Tañon Strait Protected Landscape & Seascape	Lack of patrol boat
Past Problems Solved	Conflicts solved through amicable settlement	--	--	Lack of support from the local government
Remarks/ Assessment	Non-functional	Functional	Non-functional	Non-functional

¹Estimated using timed-swim survey²CCEF MPA Database³CRMS 2007

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	049 Victoria Fish and Seagrass Sanctuary	050 Alang-alang Marine Sanctuary	051 Batong Diyut Marine Sanctuary	052 Capitancillo Marine Sanctuary
Year Established	2003	2003	1997	2004
Location	Victoria, San Remigio, Cebu	Alang-alang, Tabugon, Cebu	Carmen, Cebu	Bogo, Cebu
Coordinates	10.94712°N 123.90868°E	10.9272°N 124.0325°E	10.72778°N 124.06842°E	10.99373°N 124.10865°E
Sea	Tañon Strait	Camotes Sea	Camotes Sea	Visayan Sea
Area (ha)	53.00	10.00	31.98	22.00
Habitat	Coral reef (fringing), seagrass	Coral reef (fringing), soft bottom	Coral reef, seagrass, algal bed	Coral reef, seagrass
Established by	MLGU	CRMP	CAFWA, MLGU	Bogo City Bantay dagat Organization
Current Manager	Victoria Community Based Resource Management Association (VCBRMA)	Alang-alang Marine Sanctuary Mgt. Committee	CAFWA, MLGU	Bogo City Bantay dagat Organization
Delineation	Clear	Clear	Clear	Clear
Management Plan	2002-2012	--	None	--
Legal Bases	Mun. Ord. No. 46 Series 2003	Mun. Ord. (not specified)	Mun. Ord. No. 05-2006	Mun. Ord. (not specified)
Infrastructure	Marker buoys, signboard, guardhouse, patrol boat	Marker buoys, mooring buoys	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats
Income Source	None	None	None	Tourism
Monitoring/Evaluation	BFAR-CRMS	DA-BFAR	EcoGov	Bantay dagat
Reports	Unpublished report	Unpublished report	Unpublished reports	Through assembly meeting
Regular Patrol	Bantay dagat	Bantay dagat	CAFWA	Bantay dagat
Violations	Apprehended	Penalty not imposed	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (4,140 indiv/ha)	Medium ²	High ²	--
Coral Cover	Fair ¹ (35.55%)	Poor ³	Fair ² (ca 40-50%)	Fair ⁴ (28%)
Funding & Source	Reserve operation, LGU	No sustainable funding mechanisms in place	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	Irregular guarding of the reserve	Encroachment	Encroachment
Past Problems Solved	None	Restructuring of management committees	--	--
Remarks/Assessment	Functional	Non-functional	Functional	Functional

¹ CRMS 2007

² Estimated using timed-swim survey

³ CCEF Database

⁴ Stockwell 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	053 Danao Marine Sanctuary	054 Gilutongan Island Marine Sanctuary	055 Libas Marine Sanctuary	056 Liloan Marine Sanctuary
Year Established	2007	1991 (1997)	2004	2000
Location	Guinsay, Danao City, Cebu	Gilutongan, Cordova, Cebu	Libas, Borbon, Cebu	Liloan, Cebu
Coordinates	10.55528°N 124.13889°E	10.20783°N 123.98756°E	10.81621°N 124.03338°E	10.40494°N 124.01174°E
Sea	Camotes Sea	Cebu Strait	Camotes Sea	Camotes Sea
Area (ha)	40.00	14.89	10.595	25.00
Habitat	Soft bottom with patches of algae, deepwater	Coral reef (fringing)	Coral reef with mixed seagrass	Coral reef, soft bottom
Established by	MLGU, EcoGov	LGU, CRMP	DENR, BFAR, CRMP, Cebu SEEDS Project	MLGU
Current Manager	CRM Board and Libon Fishermen Association	Barangay Fisheries and Aquatic Resource Management Council (BFARMC) / LGU	LGU (MPDC)	MLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	2007 to present	None	None	2000 to present
Legal Bases	City Ord. No. 43-06	Mun. Ord. No. 003-1999	Mun. Ord. No. 01 Series 2004	Mun. Ord. No. 200-01
Infrastructure	Marker buoys, guardhouse, patrol boat, signages	Marker buoys, signboard, guardhouse	Marker buoys, patrol boats	Marker buoys, guardhouse, patrol boat
Income Source	None	Tourism	None	Tourism
Monitoring/Evaluation	CRMB Monitoring Committee	None recently	None	MLGU (using Reef Check method)
Reports	EcoGov unpublished report; not available to community	--	None	Unpublished reports
Regular Patrol	Bantay dagat	--	Bantay dagat	--
Violations	Apprehended	Apprehended	Apprehended	--
Fish Biomass/Density	Very Low ¹	High ² (37,970 indiv/ha; higher in buffer than in core zone)	Low ¹	Very Low ¹ (1,812 indiv/ha in 2005)
Coral Cover	Poor ¹	Fair ¹ (37%); Fair ³ (28% in 2001); Poor ²	Fair ⁴ (28%)	Good ¹ (51.69% in 2005)
Funding & Source	Reserve operation, LGU	Reserve operation, under a private corporation	Reserve operation, LGU (20% fund)	Reserve operation, LGU
Current Management Issues/Problems	Siltation due to proximity to rivers and densely populated village	Core zone reduced for tourism, buffer zone rented by Hei Yang Sports Inc.; Subject to shipping and coastal construction stresses due to its proximity to Metro Cebu; overcrowding of tourists inside the sanctuary; blast fishing in nearby islands	Sedimentation problem due to reclamation project in Sogod town	Political instability
Past Problems Solved	Encroachment solved through regular patrolling	--	--	--
Remarks/Assessment	Newly established	Functional	Functional	Functional

¹Estimated using timed-swim survey ² CCEF MPA Database ³ Arceo *et al.* in PhilReefs (2003) ⁴ Stockwell 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	057 Magay Marine Sanctuary	058 Marangog Marine Sanctuary	059 Maslog Marine Sanctuary	060 Nalusuan Marine Sanctuary
Year Established	2005 (2007)	2006	2003	2002
Location	Compostela, Cebu	Marangog, Bogo, Cebu	Maslog, Tabogon, Cebu	Gilutongan, Cordova, Cebu
Coordinates	10.46306°N 124.01755°E	11.07235°N 124.03649°E	10.99436°N 124.05447°E	10.18623°N 123.99565°E
Sea	Camotes Sea	Tañon Strait	Camotes Sea	Cebu Strait
Area (ha)	18.50	2.00	10.00	83.00
Habitat	Coral reef, seagrass, algal bed, deepwater	Coral reef	Coral reef, seagrass	Coral reef (fringing), seagrass
Established by	MLGU	Bogo City Bantay dagat Organization	CRMP	--
Current Manager	MLGU	Bogo City Bantay dagat Organization	Maslog Marine Sanctuary Management Committee	Mendoza-Cañete (MenCa) Development Corporation
Delineation	Not clear	Clear	Clear	Clear
Management Plan	--	--	2003-2007	--
Legal Bases	Mun. Ord. No. 08 Series 2005	Mun. Ord. (not specified)	Mun. Ord.(not specified)	Mun. Ord. No. 06 Series 2002
Infrastructure	Marker buoys, patrol boat	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boat	Marker buoys, signboard, guardhouse
Income Source	None	Tourism	None	Tourism
Monitoring/Evaluation	BFAR	Bantay dagat	DA-BFAR	CCEF
Reports	Unpublished reports	Through assembly meeting	Unpublished reports	Apistar <i>et al.</i> (2007)
Regular Patrol	Bantay dagat	MLGU	Bantay dagat	MLGU
Violations	None	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Medium ¹	Low ¹	High ²
Coral Cover	Fair ¹	Fair ¹	Poor ¹	Fair ² (34.3 ± 12.6%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU (20% Dev. Fund)	Reserve operation, from tourism revenues
Current Management Issues/Problems	Sanctuary violations; delayed financial support due to some unsettled technicalities	Encroachment	Irregular guarding of the reserve	Sanctuary violations
Past Problems Solved	Not answered by the respondent due to lack of information	--	Restructuring of management committees	--
Remarks/Assessment	Newly established	Newly established	Non-functional	Functional

¹Estimated using timed-swim survey ²Apistar *et al.* (2006)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	061 Pandong Bato Marine Sanctuary	062 Siocon Marine Sanctuary	063 Calumbuyan (Sogod) Marine Reserve	064 Tabunan Marine Sanctuary
Year Established	1997	2003	1996	2004
Location	Puente, Carmen, Cebu	Siocon, Bogo, Cebu	Sogod, Cebu	Tabunan, Borbon, Cebu
Coordinates	10.61902°N 124.02669°E	11.0290°N 124.0418°E	10.78694°N 124.03149°E	10.87000°N 124.04812°E
Sea	Camotes Sea	Camotes Sea	Camotes Sea	Camotes Sea
Area (ha)	19.8	13.00	18.00	10.31
Habitat	Coral reef, seagrass, algal bed	Macro-algal beds, seagrass, mangrove	Coral reef	Coral reef with seagrass patches
Established by	Carmen Fish Warden Association, MLGU	MFARMC, MLGU	Alegre Beach Resort	DENR, BFAR, CRMP and Cebu Seeds Project
Current Manager	Environmental guards, CAFWA	Barangay Fisheries and Aquatic Resource Management Council (BFARMC)	Alegre Beach Resort	MLGU (MPDC)
Delineation	Clear	Clear	Clear	Clear
Management Plan	2006-present	--	--	--
Legal Bases	Mun. Ord. No. 6-2006; Res. No. 2006-195	Mun. Ord. (not specified)	None	Mun. Ord. No. 01 Series 2004; Res. No. 01 Series 2004
Infrastructure	Marker buoys, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, patrol boats,	Marker buoys, guardhouse, patrol boat
Income Source	None	None	Tourism	None
Monitoring/Evaluation	MLGU, CAFWA with assistance from EcoGov	None	Alegre Beach Resort	None
Reports	Unpublished reports	None	Cited in scientific articles	None
Regular Patrol	CAFWA	Bantay dagat	Alegre Beach Resort	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended by Alegre Resort's guards	Apprehended
Fish Biomass/Density	Medium ¹	Medium ¹	High ¹	Low ¹
Coral Cover	Fair ¹	Poor ²	Fair ³ (46.8%); Fair ⁴ (43%); presumed declining due to sedimentation problem	Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, Alegre Beach Resort	Reserve operation, LGU
Current Management Issues/Problems	Proliferation of fish cage operators	Encroachment	Conflict between resort owners nearby due to siltation brought about by reclamation.	Illegal fishers from other municipalities.
Past Problems Solved	Illegal fishing activities controlled through apprehensions by Bantay dagat	--	--	Intrusion of commercial fishers near the sanctuary solved by day and night patrolling
Remarks/Assessment	Functional	Functional	Functional; Also known as Alegre Reserve (Russ <i>et al.</i> 2005) in some literature	Functional

¹Estimated using timed-swim survey²CCEF MPA Database³Russ *et al.* (2005)⁴Stockwell 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	065 Arbor Marine Sanctuary	066 Bagacay Fish Sanctuary	067 Balud-Consolacion Marine Park and Sanctuary	068 Binlod Marine Sanctuary
Year Established	2001	2000	2002	2003
Location	Arbor, Boljoon, Cebu	Bagacay, Sibonga, Cebu	Balud and Consolacion, Dalaguete, Cebu	Binlod, Argao, Cebu
Coordinates	9.6343°N 123.4839°E	10.06667°N 123.70000°E	9.7507°N 123.5212°E	9.9120°N 123.6098°E
Sea	Bohol Sea	Cebu Strait	Bohol Sea	Cebu Strait
Area (ha)	8.99	24.00	12.00	12.00
Habitat	Coral reef (fringing), seagrass	Coral reef (fringing), seagrass, macroalgal beds	Coral reef (fringing), Mangrove, Seagrass bed	Coral reef
Established by	LGU, CRMP	CBRMP	DA-MAO, LGU	Samahang Mangingisa sa Binlod (SMB)
Current Manager	Municipal Fisheries and Aquatic Resource Management Council (MFARMC)	Bagacay Rural Workers Association (BARUWA)	Balud Resource Management Organization (BARMO), Dalaguete Coastal Police	Binlod Multi-purpose Cooperative
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	Approved in 2002	With MPA Mgt. Plan, inclusive years not specified	--
Legal Bases	Mun. Ord. No. No. 04 Series 2001	Mun. Ord. No. 11 Series 2000	Mun. Ord. No. 70 Series 2002	Mun. Ord. No. 65-2003; R.A. No. 7160; R.A. No. 8550
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, signboard	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat
Income Source	Tourism	Tourism	None	Tourism
Monitoring/Evaluation	Participated by community members	CCEF, BFAR	Monitoring Team (represented by FARMC, Coastal Police, PO)	BFAR, CCEF
Reports	See PhilReefs (2005)	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	Sea Wardens Association, MFARMC	Bantay dagat	Coastal Police	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹ (3,180 indiv/ha)	Medium ² (14,440±6,320 indiv/ha); High ³ (37,760 indiv/ha)	Medium ² (24,274 indiv/ha)	Low ³ (5,690 indiv/ha)
Coral Cover	Good ¹ (47.8-53.7%)	Fair ² (46.3±13.6%); Good ³ (62.89%)	Fair ² (31.6% cover in 2007)	Fair ³ (48.62%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU with counter part from Brgy.	Reserve operation, LGU
Current Management Issues/Problems	Illegal fishing	--	Sanctuary violations	Lost buoys not replaced due to financial constraint; lack of IEC materials
Past Problems Solved	--	--	Lack of equipment and guardhouse provided by LGU	--
Remarks/Assessment	Functional. High percentage of dead corals attributed to El Niño bleaching in 1998	Functional	Functional	Functional

¹ PhilReefs (2003)² Raymundo 2008³ CRMS 2007

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	069 Bogo Marine Sanctuary	070 Bulasa Marine Sanctuary	071 Casay Marine Park and Sanctuary	072 Casay Marine Sanctuary
Year Established	2003	2003	2002	2003
Location	Bogo, Argao, Cebu	Bulasa, Argao, Cebu	Casay, Dalaguete, Cebu	Casay, Argao, Cebu
Coordinates	9.85720°N 123.5747°E	9.94030°N 123.62190°E	9.8121°N 123.5554°E	9.8328°N 123.5678°E
Sea	Cebu Strait	Cebu Strait	Cebu Strait	Cebu Strait
Area (ha)	12.00	11.98	5.00	11.00
Habitat	Coral reef (fringing), Mangrove, Seagrass bed	Coral reef (fringing), seagrass	Coral reef (fringing), seagrass, algal beds	Coral reef (fringing), seagrass, soft bottom
Established by	CBRMP, BOFA	Bulasa Fishermen and Farmers Association (BUFFA), MLGU	Kapunungan sa mga Mananagat sa Casay (KASAMACA)	LGU
Current Manager	Bogo Fishermen's Association (BOFA)	BUFFA	Kapunungan sa mga Mananagat sa Casay (KASAMACA)	Casay Fishermen's Association (CAFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	None
Legal Bases	Mun. Ord. No. 65-2003	Mun. Ord. No. 65 Series 2003	Mun. Ord. No. 75 Series 2002	Mun. Ord. No. 65 Series 2003
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, mooring buoys, signboard, guardhouse, patrol boat (for entire municipality)	Marker buoys, Sign board
Income Source	Tourism	Tourism	None	Tourism
Monitoring/Evaluation	BFAR, CCEF	BFAR, CCEF	CCEF, FARMC, PO	BFAR, CCEF
Reports	Unpublished reports	Unpublished reports	Unpublished reports (e.g. Raymundo 2008)	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Coastal Police	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (29,140 indiv/ha)	High ¹ (40,600 indiv/ha)	Medium ² (25,666 indiv/ha)	High ¹ (69,920 indiv/ha)
Coral Cover	Good ¹ (55.32%)	Fair ¹ (46.94%)	Fair ² (43% cover)	Excellent ¹ (94.44%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU with counterpart from barangay	Reserve operation, LGU
Current Management Issues/Problems	Lost buoys not replaced due to financial constraint; lack of IEC materials	Lost buoys not replaced due to financial constraint; lack of IEC materials	Sanctuary violations	Lost marker buoys not replaced; financial constraint; lack of IEC materials
Past Problems Solved	--	--	Lack of equipment solved by LGU	Political issues/problems solved through focused group discussion.
Remarks/Assessment	Functional	Functional	Functional	Functional

¹ CRMS 2007 ² Raymundo 2008

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	073 Cawayan Marine Park and Sanctuary	074 Daan-Lungsod and Guiwang Marine Sanctuary	075 Gawi Marine Sanctuary	076 Guiwanon Marine Sanctuary
Year Established	2006	2002	2003	2003
Location	Dalaguete, Cebu	Daan-Lungsod and Guiwang, Alcoy, Cebu	Oslob, Cebu	Guiwanon, Argao, Cebu
Coordinates	9.80793°N 123.54700°E	10.42170°N 123.50440°E	9.5848°N 123.4687°E	9.96110°N 123.62560°E
Sea	Cebu Strait (partly Bohol sea)	Bohol Sea	Bohol Sea	Cebu Strait
Area (ha)	10.00	22.71	13.00	12.00
Habitat	Coral reef	Coral reef (barrier)	Coral reef (fringing) with seagrass beds	Coral reef (fringing), seagrass, soft bottom
Established by	Sta. Monica Fishermen Association	CRMP, CCEF, LGU	MLGU	MLGU, CBRMP
Current Manager	Sta. Monica Fishermen Association	Daan-Lungsod and Alcoy Fishermen's Association (DAFA), GUFOG, AKO	Gawi barangay council	Guiwanon Fishers and Farmers Association (GUFFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	None	--
Legal Bases	Res. No. 186-2006; Mun. Ord. No. 2006-145	Mun. Ord. 2002-12 and 2002-18; Mun. Ord. No. 19 Series 2002	Mun. Ord. No. 19 Series 2003	Mun. Ord. No. 65 Series 2003
Infrastructure	Marker buoys, guardhouse, patrol boat, signboard	Marker buoys	Marker buoys, mooring buoys, sign board	Marker buoys
Income Source	None	None	--	Tourism
Monitoring/Evaluation	Monitoring Team (comprised of PO members, FARMC, Coastal Police, CCEF)	Monitoring Committee of MLGU	CCEF	CCEF, CBRMS
Reports	Unpublished reports (e.g. Raymundo 2008)	See PhilReefs (2005)	Unpublished report	Unpublished report
Regular Patrol	Coastal Police	Members of AKO	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	--	High ¹	Medium ³ (25,854 indiv/ha)	High ⁴ (59,920 indiv/ha)
Coral Cover	--	Good ² (62.3% in 2003); Fair ¹ (26.4-33.8%)	Good ³ (53%)	Excellent ⁴ (82.90 %)
Funding & Source	Reserve operation, LGU	Reserve operation (including honoraria for guards); LGU	Reserve operation, LGU	No sustainable funding mechanism in place (CCEF MPA Database)
Current Management Issues/Problems	Sanctuary violations	Illegal fishing, sand extraction, construction within foreshore areas, pollution due to dolomite mining, and upland run-off (PhilReefs 2005)	--	--
Past Problems Solved	Lack of guardhouse and equipment provided by LGU	--	--	--
Remarks/Assessment	Newly established	Functional	Functional	Functional

¹ PhilReefs (2003) ² CCEF Database ³ Apistar *et al.* (2006) ⁴ CRMS 2007

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	077 Langtad Marine Sanctuary	078 North Granada Marine Sanctuary	079 Pasil Marine Sanctuary	080 Poblacion Marine Sanctuary
Year Established	2003	2001	2002	2003
Location	Langtad, Argao, Cebu	Granada, Boljoon, Cebu	Santander, Cebu	Poblacion, Argao, Cebu
Coordinates	9.9011°N 123.6070°E	9.6138°N 123.4750°E	9.4257°N 123.3512°E	9.8717°N 123.6020°E
Sea	Cebu Strait	Bohol Sea	Bohol Sea	Cebu Strait
Area (ha)	12.00	9.35	10.45	12.00
Habitat	Coral reef (fringing), seagrass beds, soft bottom, mangrove	Coral reef (fringing), seagrass	Coral reef (fringing)	Coral reef (fringing), macro-algal bed
Established by	CBRMP, DENR, DILG, PO	LGU, CRMP	Municipal government; brgy council	Poblacion Fishermen's Association (POFA)
Current Manager	Langtad Fishermen's Association (LAFA)	Municipal Fisheries and Aquatic Resource Management Council (MFARMC)	Pasil Fisherfolk's Association (PASAFA)	POFA
Delineation	Clear	Clear	Clear	Clear
Management Plan	Not indicated	--	--	--
Legal Bases	Mun. Ord. No. 65 Series 2003; Res. No. 29	Mun. Ord. No. 04 Series 2001	Mun. Ord. No. 27 Series 2002	Mun. Ord. No. 65 Series 2003
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys	Marker buoys	Buoys, signboard
Income Source	Tourism	--	--	Tourism
Monitoring/ Evaluation	BFAR, CCEF	CCEF	CCEF	BFAR, CCEF
Reports	Unpublished reports	Unpublished report	Unpublished report	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (26,250 indiv/ha)	Medium ² (53,160 indiv/ha)	Very High ⁴ (146,373 indiv/ha)	Medium ¹ (33,756 indiv/ha)
Coral Cover	Good ¹ (55.38%)	Fair ³ (29.8% in 2003)	Fair ⁴ (46%)	Fair ¹ (26.20%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lost marker buoys not replaced; financial constraint; lack of IEC materials	Lack of alternative livelihood and weak enforcement of marine sanctuary policies	Encroachment	Lost marker buoys not replaced; financial constraint; lack of IEC materials
Past Problems Solved	--	--	--	None
Remarks/ Assessment	Functional	Functional	Functional	Functional

¹CRMS 2007 ² PhilReefs (2005) ³CCEF MPA Database ⁴Diaz et al. (2008)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	081 Poblacion Marine Sanctuary	082 Sumilon Island Fish Sanctuary	083 Talaga Marine Sanctuary	084 Talo-ot Marine Sanctuary
Year Established	2002	1974 (1980)	2003	2003
Location	Poblacion, Alcoy, Cebu	Mainit, Sumilon Is., Oslob, Cebu	Talaga, Argao, Cebu	Talo-ot, Argao, Cebu
Coordinates	9.69621°N 123.50810°E	9.43249°N 123.38522°E	9.84894°N 123.57026°E	9.8572°N 123.5747°E
Sea	Bohol Sea	Bohol Sea	Cebu Strait	Cebu Strait
Area (ha)	6.00	40.00	12.00	12.00
Habitat	Coral reef (fringing), seagrass, rocky intertidal	Coral reef	Coral reef (atoll), seagrass bed	Coral reef, rocky intertidal, seagrass bed
Established by	MLGU	SUML in 1974, BFAR in 1980, German Development Service (GDS) and Community Development outreach Project in 1994; Oslob Fishermen's Association, Brgy. Bancogon	MLGU	LGU
Current Manager	Alcoy Kingfisher Organization (AKO)	MLGU; Oslob Fishermen Association; Mainit-Tanawan Fishermen Organization; Sumilon Blue Water Resort	Talaga Fishermen's Association (TAFA)	Nagkahiusang Mananagat sa Talo-ot (NAGMATA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	Not specified	--	--	--
Legal Bases	Mun. Ord. No. 12 Series 2002	BFAR-FAO 123 of 1980, Mun. Ord. (not specified)	Mun. Ord. No. 65 Series 2003	Mun. Ord. No. 65 Series 2003
Infrastructure	Marker buoys, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat f
Income Source	None	Tourism	Tourism	Tourism
Monitoring/Evaluation	Monitoring Committee of MLGU	SUAKCREM; CCEF	BFAR, CCEF	BFAR, CCEF
Reports	PhilReefs (2005)	Several published articles in journals (see Alcala 1991, 1998; Alcala et al. 2005; Russ & Alcala 1999; Russ et al. 2005; White et al. 2007)	Unpublished reports	Unpublished reports
Regular Patrol	Members of AKO	--	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (14,480 indiv/ha)	Medium ³ (25,854 indiv/ha)	Very Low ⁵ (4,700 indiv/ha)	High ⁵ (1245.5 individuals/500m ²)
Coral Cover	Fair ² (42.4% in 2002)	Fair (48%) ³ , Fair ⁴ (34.0%)	Good ⁵ (55.94%)	Good ⁵ (59.24%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	Coral damage due to ropes of large fish traps and boat anchorage; accumulation of litter from visitors; hook-and-line fishing within the reserve	Lost marker buoys not replaced; financial constraint; lack of IEC materials	Lost marker buoys not replaced; financial constraint; lack of IEC materials
Past Problems Solved	--	Unsupportive local politicians (Russ & Alcala 1999)	--	--
Remarks/Assessment	Functional	Functional	Functional	Functional

¹ PhilReefs (2005) ² CCEF MPA Database ³ Apistar et al. (2006) ⁴ Russ et al. (2005) ⁵ CRMS 2007

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	085 Tulic Marine Sanctuary	086 Balabagon Marine Sanctuary	087 Barili Marine Sanctuary	088 Basdiot Fish Sanctuary
Year Established	2003	2007	2001	1987
Location	Tulic, Argao, Cebu	Balabagon, Moalboal, Cebu	Japitan and Candugay, Barili, Cebu	Basdiot, Moalboal, Cebu
Coordinates	9.8650°N 123.5872°E	9.99392°N 123.37460°E	10.13283°N 123.49447°E	9.9388°N 123.3715°E
Sea	Cebu Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	10.99	3.50	16.00	4.17
Habitat	Coral reef (patch), macro-algal bed, mangrove, seagrass, rocky intertidal	Coral reef	Coral reef, mangrove, open water, rocky intertidal, seagrass bed	Coral reef (fringing)
Established by	MLGU, CBRMP	CCEF	San Rafael Cabacungan (SANRACA) Fisherfolk Resource Management Multi-Purpose Cooperative (SFRMMPC)	CVRP, CRMP
Current Manager	Kapunungan sa Mananagat sa Tulic (KAMATU)	Balabagon Fishermen Organization	SANRACA	Basdiot Fishermen's Association (BFA)
Delineation	Not clear	Clear	Clear	Clear
Management Plan	None	None	--	2002 to present
Legal Bases	Mun. Ord. No. 65 Series 2003	Barangay, Municipal Ordinances (not specified)	Mun. Ord. No. 01 Series 2001; Pres. Proc. No. 1234 - Tañon Strait Protected Seascapes; Mun. Ord. No. 02-1995	Brgy Ord.; Mun. Ord. No. 9A Series 1998
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boats	Marker buoys, signboard, guardhouse	Marker buoys, sign board, guardhouse, patrol boat
Income Source	Tourism	Tourism and alternative livelihood	Tourism	Tourism
Monitoring/Evaluation	CCEF, BFAR	CCEF	CCEF, PO members	CCEF
Reports	Unpublished reports	Unpublished, feedback to community	Unpublished report	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (19,580 indiv/ha)	--	High ²	High ³
Coral Cover	Poor ¹ (21.54%)	--	Fair ² (44.46%)	Good ⁴ (69.2% in 2003), Poor ⁵ (17.94% in 1995)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU (Fishery Devt. Fund & CRM Fund)	Reserve operation, LGU	Reserve operation, LGU (Fishery/CRM Development fund)
Current Management Issues/Problems	Lost buoys not replaced	Weak Fisherfolk Association	--	Weak fisherfolk Association; lack of regular monthly meetings and logistics
Past Problems Solved	--	Illegal fishing solved through patrolling and apprehensions	--	Lack of regular guard and incentives provided by LGU.
Remarks/Assessment	Functional	Newly established	Functional	Functional

¹ CRMS 2007 ² MLGU-SANRACA 2007 ³ Estimated using timed-swim survey ⁴ CCEF MPA Database ⁵ Reboton in Aliño et al. (2002)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	089 Bato Seagrass and Marine Sanctuary	090 Binlanan Restricted Area	091 Bitoon Marine Sanctuary	092 Camboang Marine Sanctuary
Year Established	2003	2002	1997	1997
Location	Bato, Badian, Cebu	Polo, Alcantara, Cebu	Bitoon, Dumanjug, Cebu	Camboang, Dumanjug, Cebu
Coordinates	9.8456°N 123.3690°E	9.9728°N 123.3892°E	10.0831°N 123.4498°E	10.0363°N 123.4098°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	25.00	1.37	28.00	5.00
Habitat	Coral reef (patch), Mangrove, Rocky intertidal, Seagrass bed, Soft bottom	Soft bottom	Coral reef (patch/fringing), Mangrove, Seagrass bed	Coral reef
Established by	CBCRMP, CRMP	Nagkahiusang Mananagat sa Polo (Fishermen's Association), BFAR, CRMP	MLGU	MLGU
Current Manager	Bato Fishermen's Association (BFA)	Nagkahiusang Mananagat sa Polo	San Vicente Bantay dagat Association (SVBDA)	Camboang Fishermen's Association (CFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 9 Series 2003; Pres. Proc. No. 1234 - Tañon Strait Protected Seascape	Mun. Ord. No. 07-2002	Mun. Ord. No. 5 Series 1997	Mun. Ord. No. 05 Series 1997
Infrastructure	Marker buoys, mooring buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys
Income Source	Tourism	None	None	--
Monitoring/Evaluation	BAFA, CCEF	BFAR-CRMS	--	--
Reports	Unpublished reports	Unpublished reports	--	--
Regular Patrol	Bantay dagat	Bantay dagat	--	--
Violations	Apprehended	Apprehended	--	--
Fish Biomass/Density	Medium ¹ (2,210 indiv/ha target)	Low ²	Low ²	Low ²
Coral Cover	Good ¹ (58.4±7.5%)	Poor ³	Poor ³	Poor ³
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Tañon Strait PAMB vs. LGU-Badian territorial jurisdiction conflict; lack of coastal tourism product development and promotion	Encroachment.	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Functional	Non-functional	Non-functional	Non-functional

¹ Delizo et al. (2007)² Estimated using timed-swim survey³ CCEF MPA Database

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	093 Campalabo Marine Reserve/Sanctuary	094 Colase Marine Sanctuary	095 Ginatilan Marine Sanctuary	096 Hinablan Marine Sanctuary
Year Established	2002	2002	2006	2003
Location	Campalabo, Pinamungahan, Cebu	Colase, Samboan, Cebu	Poblacion, Ginatilan, Cebu	Hinablan, Badian, Cebu
Coordinates	10.08333°N 123.21667°E	9.48064°N 123.29481°E	9.58061°N 123.31394°E	9.84210°N 123.37100°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	11.00	16.00	12.01	12.00
Habitat	Coral reef (fringing)	Coral reef	Coral reef	Coral reef (barrier), open water, rocky intertidal
Established by	MLGU	Baryuhanong Nagpakabana sa Colase (BANAC), MLGU, CCEF	Municipal Fisheries and Aquatic Resource Management Council (MFARMC)	CBRMP
Current Manager	Pinamungajan Fish Warden's Association	Colase Fishermen's Association	Municipal Fisheries and Aquatic Resource Management Council (MFARMC)	Nagpakabanang Mananagat sa Hinablan (NAMAHIN)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	2002-2005	--
Legal Bases	Mun. Ord. (no specific number not obtained)	Mun. Ord. (not specified)	Mun. Ord. No. 001 Series 2006	Mun. Ord. No. 9 Series 2003
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat, signboard	Marker buoys, guardhouse, signboard, patrol boat	Marker buoys, guardhouse, patrol boat
Income Source	None	Tourism	None	None
Monitoring/Evaluation	CCEF	CCEF, LGU	CCEF	CCEF
Reports	Unpublished report	Both published and unpublished reports	Unpublished report	Unpublished report
Regular Patrol	Fish wardens	PO	MLGU	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended (penalty imposed)	Apprehended
Fish Biomass/Density	Low to medium ¹	High ¹	Low ¹	Low ⁴ (12,000 individuals/ha)
Coral Cover	Poor ²	Fair ³ (44%)	Poor to Fair ¹	Good ⁴ (55.9±2.3%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment	Localized conflict between managers	--	--
Past Problems Solved	--	Encroachment solved though apprehension	--	--
Remarks/Assessment	Functional	Functional	Newly established	Functional

¹Estimated using timed-swim survey ² CCEF MPA Database ³ Diaz et al. (2008) ⁴ Delizo et al. (2007)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	097 Lambug Seagrass and Fish Sanctuary	098 Legaspi Marine Sanctuary	099 Madridejos Marine Sanctuary	100 Makalagom Restricted Area
Year Established	2004	2001	1987(2001)	2002
Location	Badian, Cebu	Legaspi, Alegria, Cebu	Madridejos, Alegria, Cebu	Makalagom, Alcantara, Cebu
Coordinates	9.863027°N 123.36897°E	9.7145°N 123.3372°E	9.76627°N 123.34380°E	9.99030°N 123.38770°E
Sea	Tañon Strait	Tañon Strait	Visayan Sea	Tañon Strait
Area (ha)	25.00	10.35	10.78	6.00
Habitat	Coral reef (patch), seagrass, soft bottom	Coral reef, seagrass, soft bottom, rocky intertidal, open water	Coral reef (fringing)	Coral reef (barrier), seagrass, open water
Established by	CBRMP	Legaspi Fishermen Association	MLGU	Polo-Poblacion-Palanas Fishermen Association (PolPoFA)
Current Manager	Nagkahiusang Mananagat sa Lambug (NAGMALAMBU)	Legaspi Fisherfolks Association (LEFA)	Madridejos Small Fishermen's Association (MASFA)	Polo-Poblacion-Palanas Fishermen Association (PolPoFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	Not indicated	Approved in 2001 (inclusive years not specified)	--	--
Legal Bases	Mun. Ord. No.05-2006; Mun. Ord. No. 09 Series 2003	Mun. Ord. No.1 Series 2002	Mun. Res. No. 154 Series 2003 amending Mun. Ord. No. 5 Series 1994	Mun. Ord. No. 06 Series 2002
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, signboard, patrol boat (recently damaged)	Marker buoys, Sign board, guardhouse, patrol boat	Marker buoys, patrol boats
Income Source	None	Tourism	Tourism	None
Monitoring/Evaluation	NAGMALAMBU, CCEF	CCEF	CCEF	Fisherfolk members
Reports	Unpublished reports (see CCEF and CBRMP reports 2007)	Unpublished reports	Unpublished reports	None
Regular Patrol	None	Bantay dagat	Bantay dagat (voluntary)	Fisherfolk members
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (8,000 individuals/ha)	High ² (22,646 individuals/ha in 2007)	Low ³	Low ³
Coral Cover	Fair ¹ (47.5±0.8%)	Poor ² (21.3% in 2007)	Poor ⁴	Poor ⁴
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU (20% Development fund)	Reserve operation, LGU
Current Management Issues/Problems	Tañon Strait PAMB vs. LGU-Badian territorial jurisdiction conflict	Locals hesitant to cooperate due to presence of commercial fishers "kub-kub" in municipal water and lack of alternative livelihood.	Locals hesitant to cooperate due to presence of commercial fishers "kub-kub" in municipal water and lack of alternative livelihood.	Damaged coral reef; resentment from fishers
Past Problems Solved	--	None	--	Conflict between Alcantara and Moal-boal LGUs in municipal water delineation solved through dialogues
Remarks/Assessment	Functional	Functional	Functional	Non-functional

¹ Delizo et al. (2007) ² CCEF Unpublished report ³ Estimated using timed-swim survey ⁴ CCEF MPA Database

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	101 Matutinao Fish Sanctuary	102 Montañeza Marine Sanctuary	103 Pescador Island Marine Park with Sanctuary	104 Saavedra Fish Sanctuary
Year Established	2004	2007	1995	1987(1994)
Location	Matutinao, Badian, Cebu	Montañeza, Malabuyoc, Cebu	Basdiot, Moalboal, Cebu	Saavedra, Moalboal, Cebu
Coordinates	9.84870°N 123.36640°E	9.68001°N 123.32330°E	9.96422°N 123.44122°E	9.99905°N 123.37710°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	15.00	6.30	4.00	8.13
Habitat	Coral reef (patch), rocky intertidal, seagrass, soft bottom	Coral reef	Coral reef (pinnacle type)	Coral reef (fringing)
Established by	CBRMP, CRMP	CCEF, LGU	CCEF	CRMP, GDS, CCEF
Current Manager	Pundok sa Mananagat nga Nagpakabana (PUMANA)	Gagmayng Mananagat sa Enamlang	Panagsama Beach Foundation, Inc.	Saavedra Fishermen's Association (SFA)
Delineation	Clear	Clear	Clear	Clear
Management Plan	None	None	2001 to present	2002 to present
Legal Bases	Mun. Ord. No. 09 Series 2003	Mun. Ord.(not specified)	Mun. Ord. No. 76 Series 1996; Pres. Proc. No. 1234	Mun. Ord. No. 9A Series 1994
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys	Patrol boat (used in monitoring and collecting diving fees)	Marker buoys, signboard
Income Source	None	None	Tourism	Tourism and alternative livelihood
Monitoring/Evaluation	PUMANA, CCEF	CCEF	None	CCEF
Reports	Unpublished reports	Unpublished reports	None	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	None	Apprehended	None	Apprehended
Fish Biomass/Density	Low ¹ (9,000 individuals/ha)	Low ² (6,620±2,148 indiv/ha)	Medium ³	Low ⁵ (6,034 indiv/ha)
Coral Cover	Poor ¹ (24.9±2.4%)	Fair ² (44%)	Good ⁴ (61.2% live coral cover)	Fair ⁵ (38.8 %)
Funding & Source	Reserve operation, LGU-Badian	Reserve operation, LGU	Reserve operation, LGU (Fishery Development & CRM Funds	Reserve operation, Fishery Development & CRM Fund
Current Management Issues/Problems	Tañon Strait PAMB vs. LGU-Badian territorial jurisdiction conflict.	Lack of guardhouse	Lack of collection of user's fee system and regular guards.	Weak PO; Lack of Monitoring and evaluation
Past Problems Solved	--	--	Illegal fishing activities and intrusion of commercial fishing minimized through the creation of municipal coastal law enforcement team	Lack of guards solved by creation of PO guards on duty
Remarks/Assessment	Functional	Newly established	Functional	Functional

¹ Delizo et al. (2007) ² CCEF 2006 ³ Estimated using timed-swim survey ⁴ CCEF MPA Database ⁵ Lozada et al. (2007)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	105 Sta. Cruz Marine Sanctuary	106 Sta. Filomena Marine Sanctuary	107 Sto. Niño-Looc Marine Sanctuary	108 Sunken Island Marine Sanctuary
Year Established	2002	2001	1996	2004
Location	Ronda, Cebu	Sta. Filomena, Alegria, Cebu	Sto. Niño & Looc, Malabuyoc, Cebu	Badian, Cebu
Coordinates	10.02194°N 123.40447°E	9.75069°N 123.34097°E	9.64237°N 123.32119°E	9.87758°N 123.37015°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	12.01	6.00	14.00	--
Habitat	Coral reef (fringing) with seagrass beds and mangroves	Coral reef (fringing)	Coral reef (fringing), seagrass/macro-algal beds	Coral reef
Established by	CVRP, CRMP	CRMP, MLGU	Parish Priest of Malabuyoc with assistance from GDS	LGU-Badian
Current Manager	Baha-baha Fishermen's Association	Sta. Filomena Fishermen's Association (SAFFA)	Nagkahi-usang Mananagat sa Talangnan (NAGMATA)	LGU-Badian
Delineation	Clear	Clear	Clear	Not clear
Management Plan	--	--	--	None
Legal Bases	Mun. Ord. No. 89 Series 2002	Mun. Ord. No. 5 Series 1994	Mun. Ord. No. 01 Series 1998	Mun. Ord. No. 05-2006
Infrastructure	Buoys, signboard	Marker buoys, guardhouse, patrol boat	Buoys, signboard, guardhouse	None
Income Source	None	Tourism	Tourism	Tourism
Monitoring/Evaluation	None	CCEF	CCEF	None
Reports	None	Unpublished reports; community feedback	Unpublished reports	None
Regular Patrol	None	Bantay dagat (voluntary)	Bantay dagat	None
Violations	Not apprehended	Apprehended	--	Apprehended
Fish Biomass/Density	--	High ² (72,126 individuals/ha)	Low ³ (7,520±502 individuals/ha in 2006)	--
Coral Cover	Poor ¹ (24.63%)	Good ³ (63.7% in 2008)	Fair ³ (42% in 2006)	--
Funding & Source	Currently none	Reserve operation, LGU (20%) development fund	Reserve operation, LGU (20% Dev. Fund)	Reserve operation, LGU
Current Management Issues/Problems	Community not supportive	Locals hesitant to cooperate due to presence of commercial fishers "kub-kub" in municipal water and lack of alternative livelihood	Lack of guardhouse; sanctuary violations at especially at night	Tañon Strait territorial jurisdiction conflict between PAMB and Badian-LGU
Past Problems Solved	--	None	Poor cooperation of some fishers.	None
Remarks/Assessment	Non-functional	Functional	Functional	Non-functional

¹ Reboton & Luchavez in PhilReefs (2003)

² Estimated using timed-swim survey

³ CCEF Unpublished report

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	109 Talaongan Marine Sanctuary	110 Tabule Marine Sanctuary	111 Zaragosa Fish Sanctuary	112 Consuelo Marine Sanctuary
Year Established	2008	2006	1987(1990)	2004
Location	Talaongan, Alcantara, Cebu	Moal-boal, Cebu	Zaragosa, Badian, Cebu	Consuelo, San Francisco, Cebu
Coordinates	9.98339°N 123.39771°E	10.00047°N 123.38117°E	9.89295°N 123.38161°E	10.63847°N 124.29738°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Camotes Sea
Area (ha)	3.00	5.00	9.60	38.6
Habitat	Coral reef, seagrass	Coral reef	Coral reef with wide and moderately dense seagrass bed	Coral reef, seagrass, algal bed
Established by	PolPoFA	CCEF, CRMP	CVRP, Zaragosa-Badian Island Multi-Purpose Cooperative (formerly Zaragosa-Badian Small Fishermen Association Inc.)	CUFFA, IMA, EcoGov
Current Manager	PolPoFA	Tabule Fishermen Association	Zaragosa-Badian Island Multi-Purpose Cooperative/ DENR/ TDC	Barangay (multi-sectoral)
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	2004-2014
Legal Bases	Municipal Ordinance (not specified)	Mun. Ord. (not specified)	Mun. Ord. No.05 Series 2006; Mun. Ord. No. 1-89 Series 1987; Mun. Res. No. 110 Series 1987	Mun. Ord. No. 2004-022; Res. No. 2004-057
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat
Income Source	None	Tourism	Tourism	None
Monitoring/Evaluation	PolPoFA	CCEF monitoring team	DENR, TDC, GDSP (results not provided to the community)	EcoGov
Reports	None	No report available; feedback to the community	With Published reports	Unpublished report (not available)
Regular Patrol	Bantay dagat	Bantay dagat	Z-BIMPCI	Brgy officials
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	--	High ² (85,360 individuals/ha); Very High ³ (105,440±23,460 indiv/ha)	Low ¹
Coral Cover	Poor ¹	--	Good ² (60.0 ±7.1% cover)	Poor ¹
Funding & Source	Reserve operation, LGU	Reserve operation, Fishery Development & CRM Funds	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of education among fishers.	Weak PO; Lack of regular guards	Sustainability of support infrastructures; conflict on territorial jurisdiction between Tañon Strait PAMB and LGU-Badian	Poaching; Political factions
Past Problems Solved	None	Lack of incentives for guards	Fishing intrusion solved by presence of guards	None
Remarks/Assessment	Newly established	Newly established	Functional; community reports of shark and dolphin sightings (Haribon 2005)	Non-functional

¹Estimated using timed-swim survey ² Delizo *et al.* (2007) ³ Haribon Foundation (2005)

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	113 Esperanza Marine Sanctuary	114 Libertad Marine Sanctuary	115 Pilar Municipal Marine Park	114 Puertobello Marine Sanctuary
Year Established	2008	2002	2007	2005
Location	San Francisco, Camotes Island, Cebu	Poro, Camotes, Cebu	Pilar, Ponson Is., Cebu	Puertobello, Tudela, Camotes Is., Cebu
Coordinates	10.71205°N 124.43694°E	10.62839°N 124.44394°E	10.8209°N 124.56274°E	10.68733°N 123.49577°E
Sea	Camotes Sea	Camotes Sea	Camotes Sea	Camotes Sea
Area (ha)	5.50	--	--	39.10
Habitat	Coral reef, seagrass, algal bed, deep water	Coral reef	Coral reef	Coral reef
Established by	Brgy., EcoGov., Plan International	MLGU, EcoGov	EcoGov, MLGU	EcoGov, Plan International
Current Manager	Barangay (multi-sectoral)	MLGU	MLGU	Barangay government
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	2004-2009
Legal Bases	Mun. Ord. (specific number not obtained)	Municipal Ordinance	Mun. Ord. (not specified)	Mun. Ord. & Mun. Res. (not specified)
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys	Marker buoys	Marker buoys, guardhouse, patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	--	EcoGov	EcoGov	EcoGov, LGU & Local Monitoring Team
Reports	EcoGov	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	None	Apprehended
Fish Biomass/Density	High ¹	Medium ¹	--	--
Coral Cover	Fair ¹	Fair ¹	--	--
Funding & Source	Reserve operation, MLGU	Reserve operation, MLGU	--	Reserve operation, LGU
Current Management Issues/Problems	Weak implementation	--	None	Political problems; encroachment of local fishers; weak management body; lack of financial assistance
Past Problems Solved	--	--	None	Enforcement problems solved by giving incentives to guards
Remarks/ Assessment	Newly established	Functional	Newly established	Newly established

¹Estimated using timed-swim survey

Table 4. The marine reserves of Cebu and associated islands, continued

Name of Marine Reserve	117 San Isidro Marine Sanctuary	118 Santiago Marine Sanctuary	119 Unidos Marine Sanctuary	120 Villahermosa Marine Sanctuary
Year Established	2006	2006	2007	2004
Location	San Isidro, San Francisco, Camotes Is., Cebu	Santiago, San Francisco, Camotes Is., Cebu	Unidos, San Francisco, Camotes Is., Cebu	Villahermosa, Tudela, Camotes, Cebu
Coordinates	10.61402°N 124.34958°E	10.58644°N 124.30380°E	10.59938°N 124.33725°E	10.66933°N 124.51983°E
Sea	Camotes Sea	Camotes Sea	Camotes Sea	Camotes Sea
Area (ha)	35.00	18.00	12.00	61.00
Habitat	Coral reef (patchy), seagrass, algal bed, deep water	Coral reef, seagrass, algal bed	Coral reef, seagrass, algal bed	Coral reef
Established by	Brgy government with assistance from EcoGov and Plan International	Brgy government with assistance from EcoGov and Plan International	Barangay council, EcoGov., Plan International	EcoGov & Plan International
Current Manager	Barangay (multi-sectoral)	Barangay (multi-sectoral)	Barangay (multi-sectoral)	Hinugpong Kusog sa Villahermosa Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	2006-2016	2006-2016	2007-2017	--
Legal Bases	Res. No. 096-2006; Mun. Ord. No. 2006-042	Res. No. 099-2006; Mun. Ord. No. 2006-043	Mun. Ord. (not specified)	Mun.Res. & Ord. (not specified)
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys, patrol boat, signboard	Marker buoys, guardhouse
Income Source	None	None	None	None
Monitoring/Evaluation	EcoGov	EcoGov	EcoGov	EcoGov, MLGU & local monitoring team
Reports	None	None	None	Unpublished report
Regular Patrol	Fish wardens	Fish wardens	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹	High ¹	Recently established	--
Coral Cover	Good ¹ (40-55%)	Fair ¹ (40%)	Recently established	--
Funding & Source	Reserve operation, MLGU (CRM Budget)	Reserve operation, MLGU (CRM Budget)	Reserve operation, MLGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of education on CRM among fisherfolks; sanctuary violations	Lack of education on CRM among fisherfolks; sanctuary violations	Encroachment	Political problem; encroachment of local fishers; lack of financial assistance
Past Problems Solved	Illegal fishing activities solved through apprehensions and community-based campaign	Illegal fishing activities solved through apprehensions and community-based campaign	Not indicated (MPA recently established)	None
Remarks/Assessment	Newly established	Newly established	Newly established	Non-functional

¹ Estimated using timed-swim survey

Leyte and Associated Islands

The number of reserves in Leyte and its associated islands is 77, with an estimated total area of 1,305.79 ha (**Figure 6, Table 5**). From the 12,500 ha of Cuatro Islas Protected Landscape and Seascape, only 17 ha are included in the computation of the total area, which is the area of Tres Islas Marine Sanctuary. Only 65 reserves were subjected

to analysis and 11 reserves (14.28% covering an area of 153.61 ha) can be considered functional.

The sizes of the Leyte reserves range from one ha to 78 ha. At least 21 reserves (38.18% of the total reserves) are vulnerable to oil spill due to their proximity to shipping lanes.

Marine Reserve QUICK STATISTICS	LEYTE	SOUTHERN LEYTE	BILIRAN	Total
Total number	44	32	1	77
Total area (ha)	763.51	332.07	210.22	1305.8
Number of functional reserves	6 (13.64%)	5(15.63%)	0	11(14.29%)
Total area actively protected (ha)	98.28	55.33	0	153.61
Total number of coastal towns	31	19	7	57
Number of towns with reserve(s)	16	14	1	31
Average size (ha)	27.27	11.45	210.22	23.07
Minimum size (ha)	1.00	1.00	210.22	1.00
Maximum size (ha)	222.00	133.98	210.22	222.00

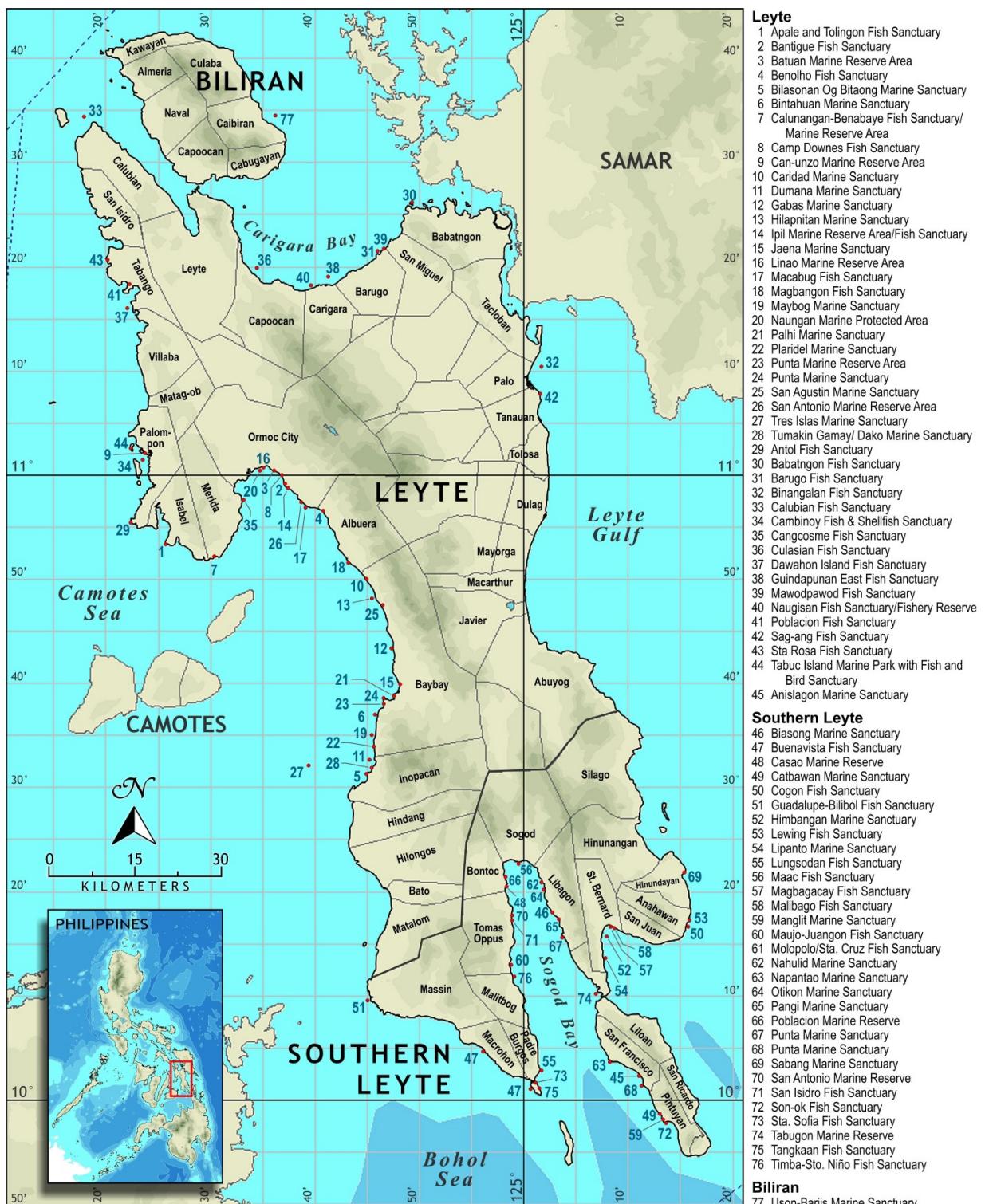


Figure 6. Map of the marine reserves of Leyte and associated islands.

Table 5. The marine reserves of Leyte and associated islands

Name of Marine Reserve	001 Apale and Tolingon Fish Sanctuary	002 Bantigue Fish Sanctuary	003 Batuan Marine Reserve Area	004 Benolho Fish Sanctuary
Year Established	1999	2005	2003	1993
Location	Apale and Tolingon, Isabel, Leyte	Bantigue, Ormoc, Leyte	Batuan, Ormoc, Leyte	Albuera, Leyte
Coordinates	10.88842°N 124.42874°E	10.98513°N 124.61955°E	11.00611°N 124.60241°E	10.94138°N 124.67916°E
Sea	Ormoc Bay	Ormoc Bay	Ormoc Bay	Ormoc Bay
Area (ha)	26.50	20.60	7.71	15.00
Habitat	Coral reef, seagrass	Seagrass	Coral reef	Coral reef with concrete blocks AR
Established by	LGU-DA	FRMP	MLGU	Brgy. Association of Fishermen LABRADOR
Current Manager	Municipal Fish Sanctuary Management Council with an appointed Fish Sanctuary Administrator	Brgy Council assisted by LGU. One Job Order personnel is assigned.	MLGU	BFARMC
Delineation	Few markers are left; destroyed by typhoon	Clear	--	None
Management Plan	1999 to present	--	--	2004 – 2006 CRM Plan
Legal Bases	Mun. Ord. No. 05 Series 1999 adapted in Mun. Ord. No. 0907–02 Series 2007	Mun. Ord. No. 05 Series 2003	Res. No. 024 Series 2003	Mun. Ord. No. 2003-18
Infrastructure	Marker buoys, guardhouse/tower, 2 patrol boats	Marker buoys	None	Guardhouse and patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	Office of Provincial Agriculture (OPA), RRA 1998 BFAR, 1999/2000/2004	None	None	UPVFI (2003)
Reports	Gomez <i>et al.</i> 1974 OPA-RRA 1998	None	None	Post Resource & Social Assessment of Ormoc Bay, UPVFI (2003)
Regular Patrol	Bantay dagat	Municipal waters only conducted by FLET	--	Patrolling throughout municipal waters only
Violations	Entry into the sanctuary (apprehended)	None	--	None
Fish Biomass/Density	Low ¹ (10,000 individuals/ha)	--	--	Low ²
Coral Cover	Fair ¹ (29.6%;)	--	--	Poor ²
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	--	Reserve operation, LGU
Current Management Issues/Problems	Insufficient budget; weak enforcement	Low implementation; needs to increase IEC	--	Illegal fishing especially gillnetting near the reserve
Past Problems Solved	Dynamite fishing solved through apprehension	Use of fine mesh nets near the reserve	--	Use of dynamite and poison such as "Tubli" for fishing
Remarks/Assessment	Functional	Newly established	Paper reserve	Non-functional; bantay dagat have no regular honorarium but get incentive of 20% from penalties collected from violators

¹ OPA-RRA, 1998 ² UPVFI (2003)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	005 Bilasonan Og Bitaon Marine Sanctuary	006 Bintahuan Marine Sanctuary	007 Calunangan-Benabaye Fish Sanctuary/ Marine Reserve Area	008 Camp Downes Fish Sanctuary
Year Established	1996	--	--	2005
Location	Maljo & Esperanza, Inopacan Leyte	Baybay, Leyte	Calunangan and Benabaye, Merida, Leyte	Camp Downes, Ormoc, Leyte
Coordinates	10.51991°N 124.74994°E	10.61649°N 124.76301°E	10.89000°N 124.56389°E	10.99518°N 124.61738°E
Sea	Camotes Sea	Camotes Sea	Ormoc Bay	Ormoc Bay
Area (ha)	18.50	--	11.04	26.48
Habitat	Coral reef, seagrass	Coral reef	Coral reef, SG	Coral reef
Established by	PhilDHRRA	MLGU	LABRADOR; LGU-FRMP	LGU-FRMP
Current Manager	Nagpakabanang Mananagat sa Esperanza (NAMES)	MLGU	Brgy Council	Brgy. Council
Delineation	Clear	--	None	Clear
Management Plan	--	--	With Mgt. Plan, inclusive years not specified	--
Legal Bases	Mun. Res. No. 134 Series 1996	Mun. Ord. (not specified)	Mun Fisheries Ord. No. 02 Series 2003	Mun. Ord. No. 01 Series 2003
Infrastructure	Marker buoys (replaced by bamboo poles)	Marker buoys	Guardhouse	Marker buoys, guardhouse and patrol boats
Income Source	None	None	None	None
Monitoring/ Evaluation	ViSCA-GTZ	See PhilReefs (2003)	UPV Foundation in 1992; UPV-Cebu 2002, LABRADOR 2004	LGU-City Agricultural Services Office (CASO)
Reports	Unpublished report	Only indicated in PhilReefs (2003)	UPV-Cebu (refer to photo of the report)	Only powerpoint copy
Regular Patrol	Bantay dagat	Patrolling throughout municipal waters only	None	Daily, municipal waters
Violations	--	Apprehended	None	--
Fish Biomass/Density	--	--	Low ³	--
Coral Cover	Fair ¹ (38.9%)	Good ² (c. 60%)	Calunangan: Poor ⁴ (13.09% 1992; 16.85% 2002) Benabaye: Fair ⁴ (35% 1992; 31.40% 2002)	Fair ⁵ (37%)
Funding & Source	Reserve operation, LGU, NGO	Reserve operation, LGU	Reserve operation, LGU counterpart with Brgy.	Reserve operation, LGU, Brgy. Council and World Vision
Current Management Issues/Problems	Ratification of the law prohibiting fishing 3 km from the coast to the sanctuary (Haribon 2005).	--	Commercial fishing; lack of budget; lost buoys not replaced	Low community cooperation; insufficient IEC
Past Problems Solved	--	--	Encroachment	Blast fishing; low acceptance among community
Remarks/ Assessment	Non-functional	Non-functional	Non-functional; bantay dagat is non-functional at present and voluntary basis only	Newly established; bantay dagat receives Php1500 monthly honorarium

¹ Haribon Foundation (2005)

² PhilReefs (2003)

³ UPV-Cebu 2002, unpublished

⁴ Estimated using timed-swim survey

⁵ CASO unpublished data

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	009 Can-unzo Marine Reserve Area	010 Caridad Fish Sanctuary	011 Dumana Marine Sanctuary	012 Gabas Marine Sanctuary
Year Established	1998	--	1996	--
Location	Merida, Leyte	Caridad, Baybay, Leyte	Tahud, Inopacan, Leyte	Gabas, Baybay, Leyte
Coordinates	10.95830°N 124.55415°E	10.83333°N 124.75000°E	10.54233°N 124.75533°E	10.77025°N 124.84464°E
Sea	Ormoc Bay	Camotes Sea	Camotes Sea	Camotes Sea
Area (ha)	4.50	--	13.50	--
Habitat	Coral reef, Seagrass	Coral reef	Coral reef	Coral Reef
Established by	LABRADOR; LGU-FRMP	LGU	PhilDHERRA	LGU
Current Manager	Brgy Council	LGU	Nagkahiusang Mananagat sa Tahud, Leyte State Univ. / NGO	LGU
Delineation	None	Clear	Clear	Clear
Management Plan	--	--	--	--
Legal Bases	Mun Fisheries Ord. No. 02 Series 2003	Mun. Ord. (specific number not obtained)	Mun. Res. No. 134, Series 1996	Mun. Ord. (no specific not available)
Infrastructure	None	Marker buoys	Buoys, patrol boats, guardhouse	Marker buoys
Income Source	None	--	None	None
Monitoring/Evaluation	Evaluated by UPV Foundation in 1992; UPV-Cebu 2002, LABRADOR 2004,	PhilReefs (2003)	No regular monitoring/evaluation	--
Reports	UPV-Cebu (refer to photo of the report)	PhilReefs (2003)	Unpublished report in 1998 VisCA-GTZ	See PhilReefs (2003)
Regular Patrol	None	--	PO, Bantay dagat, PNP, Brgy officials	--
Violations	None	--	Apprehended	--
Fish Biomass/Density	Low ¹	--	Low ² (dominated by Pomacentrids in 1998)	--
Coral Cover	Fair ³ (43.38% in 1992); Poor ³ (3.25% in 2002)	Good ² (ca 65%)	Fair ² (28.68% in 1998)	Fair ⁴ (35%)
Funding & Source	Reserve operation, LGU counterpart with Brgy.	--	Reserve operation, LGU	--
Current Management Issues/Problems	Commercial fishing; rehab of markers; budget constraint	--	Weak patrolling; lack of honorarium for fish wardens	--
Past Problems Solved	Encroachment	--	--	--
Remarks/Assessment	Non-functional	Non-functional	Functional	Non-functional

¹ UPV-Cebu 2002, unpublished data ² Haribon Foundation (2005) ³ PhilReefs (2003) ⁴ Estimated using timed-swim survey

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	013 Hilapitan Marine Sanctuary	014 Ibil Marine Reserve Area/Fish Sanctuary	015 Jaena Marine Sanctuary	016 Linao Marine Reserve Area
Year Established	--	2005	--	2006
Location	Baybay, Leyte	Ibil, Ormoc, Leyte	Baybay, Leyte	Linao, Ormoc, Leyte
Coordinates	10.80206°N 124.75741°E	10.97875°N 124.62441°E	10.66409°N 124.80262°E	11.01183°N 124.58531°E
Sea	Camotes Sea	Ormoc Bay	Camotes Sea	Ormoc Bay
Area (ha)	--	70.20	--	--
Habitat	Coral reef	Coral Reef	Coral reef	Seagrass
Established by	MLGU	FRMP	MLGU	FRMP
Current Manager	MLGU	Brgy Council, LGU	MLGU	Brgy Council assisted by LGU. One Job Order personnel is assigned.
Delineation	--	Clear	Clear	Clear
Management Plan	--	None	--	None
Legal Bases	Mun. Ord.(specific number not obtained)	Mun. Ord. No. 03-01	Mun. Ord.(specific number not obtained)	Mun. Ord.(specific number not obtained)
Infrastructure	Marker buoys	Marker buoys, temporary guardhouse and patrol boat	Marker buoys	Marker buoys
Income Source	None	None	None	None
Monitoring/Evaluation	See PhilReefs (2003)	Yearly conducted by LGU-City Agricultural Services Office (CASO)	See PhilReefs (2003)	None
Reports	Only PhilReefs (2003) available	Unpublished report	Only PhilReefs (2003) available	None
Regular Patrol	--	Municipal waters only	--	Municipal waters only conducted by FLET
Violations	--	--	--	None
Fish Biomass/Density	High ¹	Low ¹	--	--
Coral Cover	Good ² (65%)	Poor ³ (5%)	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	Improve IEC and management of MRA/FS	--	Weak implementation
Past Problems Solved	--	Illegal fishing	--	Illegal fishing
Remarks/Assessment	Functional	Newly established; bantay dagat receives Php1500 monthly honorarium	Non-functional	Newly established

¹ Estimated using timed-swim survey ² PhilReefs (2003) ³ CASO

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	017 Macabug Fish Sanctuary	018 Magbangon (Tinagan) Fish Sanctuary	019 Maybog Marine Sanctuary	020 Naungan Marine Protected Area
Year Established	2001	1995	--	2004
Location	Ormoc City, Leyte	Sitio Magbangon, Tinag-an, Albuera, Leyte	Baybay, Leyte	Naungan, Ormoc, Leyte
Coordinates	10.94756°N 124.65147°E	10.85876°N 124.71987°E	10.58333°N 124.75833°E	11.005305°N 124.579220°E
Sea	Ormoc Bay	Ormoc Bay	Camotes Sea	Ormoc Bay
Area (ha)	20.00	7.70	--	--
Habitat	Coral reef	Coral reef	Coral reef	Seagrass, mangroves
Established by	FRMP	PO/ Fisherfolk Association assisted by LGU	LGU	FRMP; LGU
Current Manager	Brgy Council assisted by LGU. One Job Order personnel is assigned.	BFARMC; brgy Council	LGU	Brgy. Council
Delineation	Clear	None. Washed off during typhoon	--	Clear
Management Plan	With Mgt. Plan (no copy available)	With Mgt. Plan (no copy available)	--	None
Legal Bases	Legal documents not found	Brgy. Ord. No. 01-02 Series 1998 approved by Res.No. 01 Series 2003	--	Brgy. Ord. No. 03 Series 2001
Infrastructure	Marker buoys and guardhouse	Guardhouse donated by World Vision and DA. Two units of patrol boats	--	Marker buoys
Income Source	None	None	--	None
Monitoring/Evaluation	LGU-City Agricultural Services Office (CASO)	PhD student from Stanford University (Malin Pinsky) conducted a survey in Sept 2008.	MLGU	LGU-City Agricultural Services Office (CASO)
Reports	Unpublished report	None	PhilReefs (2003)	No copy available at CASO
Regular Patrol	Municipal waters only	Brgy tanods	--	Daily, municipal waters
Violations	None	Apprehended; penalty imposed	--	Encroachment
Fish Biomass/Density	Medium ¹	--	--	--
Coral Cover	Fair ² (43%)	--	Fair ³ (35%)	--
Funding & Source	Reserve operation, LGU	--	--	Reserve operation, LGU
Current Management Issues/Problems	Necessity for better management of MRA and strict implementation of fishery regulations. Increase in IEC	Illegal fishing especially gill netting.	--	Low community cooperation and IEC
Past Problems Solved	Dynamite fishing	Use of noxious substances in fishing near the reserve.	--	Dynamite fishing
Remarks/Assessment	Non-functional; bantay dagat receives Php1500 monthly honorarium	Non-functional; bantay dagat lacks regular honorarium	Non-functional	Non-functional; bantay dagat receives Php1500 monthly honorarium

¹ Estimated using timed-swim survey ² CASO ³ PhilReefs (2003)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	021 Palhi Marine Sanctuary	022 Plaridel Marine Sanctuary	023 Punta Marine Reserve	024 Punta Marine Sanctuary	025 San Agustin Marine Sanctuary
Year Established	--	2005	2005	--	--
Location	Palhi, Baybay, Leyte	Plaridel, Baybay, Leyte	Punta, Ormoc, Leyte	Punta, Baybay, Leyte	San Agustin, Baybay, Leyte
Coordinates	10.645375°N 124.792990°E	10.63325°N 124.77683°E	10.63325°N 124.77683°E	10.64180°N 124.777425°E	10.79166°N 124.77500°E
Sea	Camotes Sea	Camotes Sea	Ormoc Bay	Camotes Sea	Camotes Sea
Area (ha)	--	--	--	--	--
Habitat	Coral reef	Coral reef	Seagrass	Coral reef	Coral reef
Established by	LGU	FRMP	FRMP	LGU	LGU
Current Manager	LGU	Brgy Council assisted by LGU.	Brgy Council assisted by LGU, One Job Order personnel is assigned.	LGU	LGU
Delineation	--	--	Clear	--	--
Management Plan	--	--	None	--	--
Legal Bases	Mun. Ord.(specific number not obtained)	Mun. Ord.(specific number not obtained)	Res. No. 28 Series 2003	Mun. Ord.(specific number not obtained)	--
Infrastructure	--	--	Buoys	--	Marker buoys
Income Source	--	--	None	--	--
Monitoring/Evaluation	MLGU	MLGU	None	MLGU	MLGU
Reports	PhilReefs (2003)	PhilReefs (2003)	None	PhilReefs (2003)	PhilReefs (2003)
Regular Patrol	--	--	FLET	--	--
Violations	--	--	None	--	--
Fish Biomass/Density	--	--	--	--	--
Coral Cover	Fair ¹ (48%)	Good ¹ (55%)	--	Good ¹ (60%)	Good ¹ (60%)
Funding & Source	--	--	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	--	Weak implementation	--	--
Past Problems Solved	--	--	Illegal fishing	--	--
Remarks/ Assessment	Non-functional	Newly established	Newly established	Non-functional	Non-functional; formerly with Good (ca 70%) coral cover

¹ PhilReefs (2003)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	026 San Antonio Marine Reserve Area	027 Tres Islas Marine Sanctuary	028 Tumakin Gamay Og Tumakin Dako Marine Sanctuary	029 Antol Fish Sanctuary
Year Established	2004	1994	1996	2006
Location	San Antonio, Ormoc, Leyte	Apid, Digyo and Mahaba, Inopacan, Leyte	Conalum, Inopacan, Leyte	Buenavista, Palompon, Leyte
Coordinates	10.95569°N 124.64515°E	Apid: 10.5379°N, 124.6415°E Digyo: 10.5479°N, 124.6555°E Mahaba: 10.5194°N, 124.6688°E	10.53028°N 124.75808°E	10.92352°N 124.37300°E
Sea	Ormoc Bay	Camotes Sea	Camotes Sea	Camotes Sea
Area (ha)	--	17.00	14.80	17.00
Habitat	Seagrass	Coral reef	Coral reef, sandy bottom	Coral reef
Established by	FRMP	GASAKA, ViSCA-GTZ	PhilDHRRA	LGU
Current Manager	Brgy Council assisted by LGU. One Job Order personnel is assigned.	BARAKUDA	KALMANAC	LGU
Delineation	Clear	Clear	Clear	--
Management Plan	None	--	--	--
Legal Bases	Mun. Ord.(specific number not obtained)	Mun. Ord. No. 63 Series 1994; brgy. Res. No. 01 Series 1994; brgy. Ord. No. 09 Series 1994	Mun. Res. No. 134 Series 1996	Mun. Ord. No. 1 S 2006; Res. No. 15 S 2006
Infrastructure	Marker buoys	Bantay dagat Center, buoys, signboard, guardhouse	Marker buoys, guardhouse, patrol boat	--
Income Source	None	None	--	--
Monitoring/Evaluation	None	ViSCA-GTZ	CERD, VISCA-GTZ	--
Reports	None	Benliro <i>et al.</i> (1999) Cesar <i>et al.</i> (2003) Schoppe (1998)	--	--
Regular Patrol	Municipal waters only conducted by FLET	BARAKUDA members as fish wardens	Bantay dagat, PO, Brgy officers	--
Violations	None	Apprehended	Apprehended	--
Fish Biomass/Density	--	--	Medium ³	--
Coral Cover	--	Apid: Poor ² (5-20%); Mahaba: Good ² (20-60%); Digyo: Fair ² (20-40%)	Fair ² (35% in 1998)	--
Funding & Source	Reserve operation, LGU	--	Reserve operation, LGU, PhilDHRRA	--
Current Management Issues/Problems	Weak implementation	Intentional cutting of marker buoys; inefficient patrolling; sanctuary violations; coral damage due to <i>A. planci</i> .	Lack of honorarium for fish wardens	--
Past Problems Solved	Illegal fishing	--	--	--
Remarks/Assessment	Non-functional	Functional	Functional	Newly established

¹ PhilReefs (2003)

² Haribon Foundation (2005)

³ Estimated using timed-swim survey

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	030 Babatngon Fish Sanctuary	031 Barugo Fish Sanctuary	032 Binangalan Fish Sanctuary	033 Calubian Fish Sanctuary
Year Established	1991(1993)	1991	2006	1997
Location	Calawangan Island, Puro Guti, Babatngon, Leyte	Jalaba Point & Balud, Barugo, Leyte	Palo, Leyte	Caruyucan, Calubian, Leyte
Coordinates	11.54167°N 124.87917°E	11.35839°N 124.76599°E	11.171660°N 125.028333°E	11.572630°N 124.298050°E
Sea	Samar Sea	Carigara Bay	San Pedro Bay	Biliran Strait
Area (ha)	24.00	19.00	19.20	5.28
Habitat	Coral reef, Seagrass, Mangroves	Coral Reef	Coral reef	Coral reef
Established by	BFARMC, Fishery enforcement team	BFAR Region 8 and LGU	BFAR	LGU
Current Manager	LGU	LGU	LGU	Brgy. Association of fisherfolk
Delineation	None	None	None at present. Markers were washed away due to strong current	Clear
Management Plan	1993 to present	None	None	None
Legal Bases	FAO 179 Series 1991 FAO 180 Series 1991	Res. No. 19 Series 1991	Mun. Ord. No. 2006-08	Mun. Res. No. 04 Series 1997
Infrastructure	Guardhouse and 2 units of patrol boats	None	Patrol boats	Marker buoys and guardhouse
Income Source	None	None	None	None
Monitoring/Evaluation	Twice a month conducted by BFAR-R8 upon request and DA-Province. LSU conducted survey in 2007.	None	Evaluated by BFAR, Leyte State Univ., Visayas State Univ. and UP-Tacloban.	BFAR 8
Reports	--	--	Songalia (2008) Survey of Coral reef community structure in Brgy. Salvacion, Palo, Leyte. Thesis.	No report available in MA Office
Regular Patrol	None	Bantay dagat (whole municipal water)	Patrolling throughout municipal waters only	None
Violations	None	Several illegal activities	Dynamite fishing	None
Fish Biomass/Density	--	None	--	--
Coral Cover	--	None	Excellent ¹ (79%)	--
Funding & Source	Reserve operation, LGU with assistance from BFAR-R8.	None at present. LGU is in the process of rehabilitating the sanctuary	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of financial support	Weak implementation	Lack of monitoring & evaluation	Encroachment; spearfishing and sometimes compressor fishing
Past Problems Solved	Illegal fishing activities solved by apprehension	Commercial fishing near the reserve	Dynamite and Danish seine fishing rampant	Illegal fishing activities; weak enforcement
Remarks/ Assessment	Non-functional; Implementation continues	Paper reserve; sanctuary abandoned for 8 years	Newly established; artificial reef installed near the reserve in 1992	Non-functional

¹ Estimated using timed-swim survey

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	034 Cambinoy Fish and Shell Sanctuary	035 Cangcosme Fish Sanctuary	036 Culasian Fish Sanctuary	037 Dawahon Island Fish Sanctuary
Year Established	2003	--	1991	1999 (2007)
Location	Cambinoy, Palompon, Leyte	Palompon, Leyte	Capoocan, Leyte	Campokpok, Tabango, Leyte
Coordinates	11.033740°N 124.395325°E	11.03744°N 124.50325°E	11.33062°N 124.57451°E	11.265340°N 124.367408°E
Sea	Camotes Sea	Camotes Sea	Carigara Bay	Visayan Sea
Area (ha)	Area not specified	--	88.50	Area not specified
Habitat	Coral reef	Seagrass	Coral Reef	Coral Reef
Established by	LGU collaboration with PO	PO	LGU; CARE Phils.	LGU
Current Manager	PO	PO, LGU	LGU	LGU – CRM Office
Delineation	Clear	Clear	None; used to have marker buoys	None
Management Plan	None	None	None	None
Legal Bases	Ord. No. 4 Series 2006 enacted thru Resolution No. 15 Series 2006	Mun. Ord. (copy not obtained)	Mun. Ord. No. 259 Series 1991	Brgy. Res. No. 99-013; Mun. Ord. No. 2007 – 01
Infrastructure	Marker buoys, guardhouse and patrol boats	Marker buoys, guardhouse and patrol boats	Markers made of bamboo, Guardhouse/Center, 2 units of patrol boat	Patrol boats only
Income Source	None	Tourism	None	Tourism
Monitoring/Evaluation	None	None	BFAR	Evaluated by DA-Province, August 24 – 25, 2000
Reports	None	None	Alan White, RRA, Aug 1990 BFAR – M.E. Llana, et.al. (1991)	Unpublished, Jose Ramos (OPA-Leyte)
Regular Patrol	Bantay dagat	Bantay dagat	Fish wardens	Municipal waters only
Violations	Illegal entry and fishing	--	Illegal entry, apprehended	None
Fish Biomass/Density	--	--	Low ²	--
Coral Cover	--	--	Poor ¹ (17.1%)	Good (63.26%) ³
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	No baseline data. Encroachment	No baseline data and regular monitoring.	Intrusion of the declared protected area	--
Past Problems Solved	--	--	Conflict among fisherfolk organizations; illegal entry and activities	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional; low on fish abundance but diversity is relatively good ²	Non-functional; sanctuary under rehabilitation

¹ White et al., 1999

² Estimated using timed-swim survey

³ Jose Ramos, 2000

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	038 Guindapunan East Fish Sanctuary	039 Mawodpawod Fish Sanctuary	040 Naugisan Fish Sanctuary/ Fish Reserve	041 Poblacion Fish Sanctuary
Year Established	1994	--	1994	2008
Location	Carigara, Leyte	San Miguel, Leyte	Naugisan, Carigara, Leyte	Poblacion, Tabango, Leyte
Coordinates	11.31598°N 124.68790°E	11.36077°N 124.77627°E	11.30303°N 124.66057°E	11.30431°N 124.79299°E
Sea	Carigara Bay	Carigara Bay	Carigara Bay	Camotes Sea
Area (ha)	1.00	18.00	1.00	--
Habitat	Soft bottom	Coral reef, sandy	AR from concrete blocks and tires	Coral reef
Established by	BFAR; LGU; Labrador (NGO) helped during the FSP-Fishery Special Project	BFAR and LGU	BFAR; LGU; Labrador (NGO) helped during the FSP-Fishery Special Proj	LGU
Current Manager	None	LGU	Inactive; Naugisan AR Mgt. Committee in the resolution	Brgy. Council
Delineation	None	None	None	Clear
Management Plan	None but a CRM Plan was approved under Resolution No. 03-197	None	None, but a CRM Plan was approved under Resolution No. 03-197	Claimed to have a plan but no documents obtained
Legal Bases	Brgy. Res. No. 41 Series 1994 amended by SB Resolution No. 71 Series 1995	No Municipal Resolution or ordinance. Regional BFAR declared it as FS but no move to adopt the declaration at the municipal level	Brgy. Res. No. 18 Series 1994 amended by SB Res. No. 72 Series 1995	Mun. Ord.(specific number not obtained)
Infrastructure	None	None	None	Buoys, guardhouse and patrol boats
Income Source	None	None	None	None
Monitoring/Evaluation	None	BFAR	None	DA-Province
Reports	None	BFAR Region 8 but no report was given to the municipality	None	No copy at MA office
Regular Patrol	None but with 1 patrol boat.	None	None	Municipal waters only conducted by FLET
Violations	None	--	--	None
Fish Biomass/Density	None	--	--	--
Coral Cover	None	--	--	--
Funding & Source	None	None	--	None
Current Management Issues/Problems	Weak enforcement; lack of honoraria for Bantay dagat. No budget for fuel	Weak enforcement	--	--
Past Problems Solved	--	Dynamite fishing solved through enforcement	Illegal activities such as dynamite fishing and Danish seine near the reserve	--
Remarks/Assessment	Paper reserve; presence of illegal activities such as dynamite fishing	Paper reserve; mangrove forest along the coast of Carigara Bay only found here. turtles nest in the area	Paper reserve	Newly established

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	042 Sag-ang Fish Sanctuary	043 Sta. Rosa Fish Sanctuary	044 Tabuc Island Marine Park with Fish and Bird Sanctuary	045 Anislagon Fish Sanctuary
Year Established	Between 1999 - 2004; Inactive at present	1997	1996	2005
Location	Sta. Cruz, Tanauan, Leyte	Sta. Rosa, Tabango, Leyte	Palompon, Leyte	San Francisco, Southern Leyte
Coordinates	11.12821°N 125.02714°E	11.34305°N 124.33666°E	11.04206°N 124.37299°E	10.03700°N 125.15800°E
Sea	Leyte Gulf	Visayan Sea	Camotes Sea	Bohol Sea
Area (ha)	25.00	30.00	222.00	1.905
Habitat	Artificial Reef	Cora; Reef, Fringing mangroves	Coral reef (fringing), mangrove, seagrass bed	Coral reef, Seagrass
Established by	LGU-FRMP	LGU	CRMP, BFAR	Brgy
Current Manager	No specific managers but under LGU	Fishermen Association; brgy. Council	LGU	Brgy. Council
Delineation	None	Few markers are left. Buoys destroyed during typhoon Frank	--	Clear
Management Plan	1999 – 2004	Only those stipulated in the resolution	--	--
Legal Bases	Mun. Ord. No. 05 Series 2005	Res. No.02 Series 1997	Mun. Ord. No. 228 Series 1995	Brgy. Res. No. 001 Series 2005
Infrastructure	None	Buoys, guardhouse and patrol boat	--	Buoys
Income Source	None	None	--	None
Monitoring/Evaluation	Evaluation	Evaluated by DA-Province	--	Coral Cay Conservation
Reports	UP Visayas during FRMP	No reports available	--	CCC
Regular Patrol	Bantay dagat	Bantay dagat; entire municipality not specific to the reserve	--	None
Violations	--	None	Penalty not imposed (CCEF MPA Database)	Illegal fishing using compressor
Fish Biomass/Density	None	--	--	--
Coral Cover	None	--	Poor ¹	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU counterpart with BFAR (for marker buoys)	No sustainable financing mechanisms in place	Reserve operation, LGU
Current Management Issues/Problems	Weak implementation	Weak enforcement; lack of funds	--	Weak enforcement.
Past Problems Solved	None	Budget constraint for maintenance	--	Illegal fishing solved through apprehension.
Remarks/Assessment	Non-functional	Non-functional; no specific Bantay dagat personnel assigned to the sanctuary; FLET conducts patrolling	Paper reserve	Newly established

¹ CCEF MPA Database

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	046 Biasong Marine Sanctuary	047 Buenavista Fish Sanctuary	048 Casao Marine Reserve	049 Catbawan Marine Sanctuary
Year Established	1990- 2000	2005	1995	1996
Location	Libagon, Southern Leyte	Padre Burgos, Southern Leyte	Bontoc, Southern Leyte	Pintuyan, Southern Leyte
Coordinates	10.29844°N 125.04595°E	10.016633°N 125.011700°E	10.31600°N 124.98900°E	9.97598°N 125.21670°E
Sea	Sogod Bay	Bohol Sea	Sogod Bay	Sogod Bay
Area (ha)	10.00	15.00	133.98	10.00
Habitat	Coral reef (patchy)	Coral reef	Coral reef	Coral reef
Established by	FSP-CRM Project 1994 of DA assisted by MPYA (an NGO)	Brgy council	LGU	LGU-FSP; brgy
Current Manager	Brgy. Council	PO assisted by the Brgy. Council	Brgy. Council	Brgy. Council
Delineation	None	Clear	None	Bamboo poles
Management Plan	None	None	None	Incorporated in the ordinance
Legal Bases	Brgy. Ord. No. 02 Series 2002	Res. No. 045 Series 2005 Ord. No. 2005-005	Mun. Ord. (specific number not obtained)	Brgy. Ord. No. 01 Series 1995
Infrastructure	Guardhouse	Marker buoys, patrol boat and guardhouse	None	Marker Buoys and guardhouse
Income Source	None	Tourism	None	Tourism but collection of fees is not very strict
Monitoring/Evaluation	Not indicated	Coral Cay Conservation from 2005-2008	Evaluated by BFAR-Province in 1997	--
Reports	Descriptive report by Arnaiz & Bag-ao (2006); SUML-Sogod Bay Assessment, Barillo et al. 2007 in SU CHED ZRC 2007	With reports	None	Alcala (2002)
Regular Patrol	None	With regular patrol	None	--
Violations	None	None	None	--
Fish Biomass/Density	Low ¹ (188.9 kg/ha)	--	--	Very low ¹ (34.6±9 kg/ha)
Coral Cover	Poor ¹ (<25%)	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU, GTZ-PENRMO and FOBI (Federation of Omega Beneficiaries, Inc.)	Reserve operation, LGU. Bantay dagat patrols on voluntary basis	Reserve operation, LGU
Current Management Issues/Problems	No markers; budget for maintenance; equipment for patrolling	Weak enforcement; illegal fishing	Lack of enforcement equipments	Weak implementation, enforcement and protection
Past Problems Solved	Illegal fishing solved through apprehension	Rampant use of noxious substances in fishing	Fishery coordinator interviewed assumed office only this year	--
Remarks/Assessment	Non-functional	Newly established; Municipal Protected Area Oversight Committee (MPAOC) was created in 2007	Non-functional	Non-functional

¹ Barillo et al. (2006)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	050 Cogon Fish Sanctuary	051 Guadalupe-Bilbil Fish Sanctuary	052 Himbangsan Marine Sanctuary	053 Lewing Fish Sanctuary
Year Established	1999 (2005)	1995	1999-2001	2005
Location	Anahawan, Southern Leyte	Maasin, Southern Leyte	Himbangan, St. Bernard, Southern Leyte	Anahawan, Southern Leyte
Coordinates	10.27607°N 125.26244°E	10.15917°N 124.75162°E	10.26148°N 125.13164°E	10.35278°N 125.40611°E
Sea	Surigao Strait	Canigao Channel; Bohol Sea	Cabalian Bay/Leyte Gulf	Surigao Strait
Area (ha)	10.00	7.50	--	6.40
Habitat	Coral reef, seagrass	Coral reef, seagrass	Coral reef	Coral reef, seagrass
Established by	LGU with assistance from Province	LGU	LGU	LGU with assistance from Province
Current Manager	LGU with M/BFARMC and FS Management Council	LGU counter part with barangay	LGU	LGU with M/BFARMC
Delineation	Clear	Clear	--	Clear
Management Plan	Incorporated in the resolution	2005 – 2009	--	Incorporated in the resolution
Legal Bases	Mun. Ord. No. 2005-02	Mun. Ord. No. 95-111	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 2005-02
Infrastructure	Marker buoys and guardhouse	Buoys, guardhouse (funded by GTZ), patrol boat	--	Marker buoys and guardhouse
Income Source	None	None	--	None
Monitoring/Evaluation	LSU-REA, 2003-2004	DA-Province; BFAR in 2004 or 2005; VSU in collaboration with University of Rhode Island	--	None-
Reports	Cesar <i>et al.</i> (2003)	Gonzales, Baston (BFAR)	PhilReefs (2003)	None
Regular Patrol	With regular patrol	Municipal waters only	--	Fisherfolk Association
Violations	--	None	--	Spear fishing with compressor (but outside the Marine Reserve)
Fish Biomass/Density	Low ²	--	--	--
Coral Cover	Good ² (64.58% in 2002); Good ² (69.33% in 2003)	--	Poor ³ (18.25% in 1999)	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Compressor fishing; fisherfolk want regulated fishing within the sanctuary	Low support from communities; encroachment; maintenance of marker buoys	Decline of coral cover due to siltation	Compressor fishing; fisherfolk want regulated fishing within the sanctuary
Past Problems Solved	Complacency in management after change in political administration	Dynamite and compressor fishing	--	Complacency in management after change in political administration
Remarks/Assessment	Functional	Non-functional	Non-functional	Newly established

¹ Alcala (2002) ² Estimated using timed-swim survey

³ PhilReefs (2003)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	054 Lipanto Marine Sanctuary	055 Lungsodan Fish Sanctuary	056 Maac Fish Sanctuary	057 Magbagacay Fish Sanctuary
Year Established	1997	2005	2006	2003
Location	Lipanto, St. Bernard, Southern Leyte	Padre Burgos, Southern Leyte	Sogod, Southern Leyte	St. Bernard, Southern Leyte
Coordinates	10.22590°N 125.13082°E	10.04800°N 125.03800°E	10.36300°N 125.98300°E	10.24300°N 125.15200°E
Sea	Cabalian Bay/Leyte Gulf	Bohol Sea	Sogod Bay	Cabalian Bay
Area (ha)	3.50	4.00	8.75	1.00
Habitat	Coral reef, seagrass	Coral reef	Coral reef, seagrass	Coral reef, seagrass
Established by	LIP	Brgy. Council	LGU	LGU and Brgy
Current Manager	Brgy. Council; LINAMA – Lipantohanong Nagkahiusang Mananagat	PO and Brgy. Council	LGU	Brgy. Council; MASFA – Magbagacay Small Fisherfolks Association
Delineation	None	Clear	None	--
Management Plan	None	Incorporated in the ordinance	None	Incorporated in the ordinance
Legal Bases	Mun. Ord. No. 02 – 98	Res.No. 045 Series 2005 Ord. No. 2005-005	Res. No. 244-A-s,2004; Mun. Ord. No. 2004-79	Res. No. 026 Series 2003
Infrastructure	Guardhouse	Marker buoys, patrol boat and guardhouse	Guardhouse and patrol boat	--
Income Source	None but open for ecotourism	Tourism	None	--
Monitoring/Evaluation	Leyte State Univ. and other agencies from 1997-1998; 2000; 2003-2004. RANA Consulting did a detailed assessment in 1991	Coral Cay Conservation from 2005-2008	BFAR-Region prior to establishment	--
Reports	Cesar <i>et al.</i> (2003 and 2004)	--	No copy available	--
Regular Patrol	None	Bantay dagat	FLET	--
Violations	None	None	Apprehended	--
Fish Biomass/Density	Medium ¹	--	--	--
Coral Cover	Good ¹ (57.33%)	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU, GTZ-PENRMO and FOBI (Federation of Omega Beneficiaries, Inc.)	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	Weak enforcement	Political intervention on apprehended violators.	--
Past Problems Solved	--	--	Cyanide poisoning solved through patrolling.	--
Remarks/Assessment	Functional	Newly established	Newly established	Non-functional

¹ Cesar *et al.* (2004)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	058 Malibago Fish Sanctuary	059 Manglit Marine Sanctuary	060 Maujo-Juangon Fish Sanctuary	061 Molopolo/Sta.Cruz Fish Sanctuary
Year Established	2003	1995	1998	1996
Location	St. Bernard, Southern Leyte	Pintuyan, Southern Leyte	Malitbog, Southern Leyte	Macrohon, Southern Leyte
Coordinates	10.24900°N 125.13900°E	9.96759°N 125.22164°E	10.21644°N 124.98042°E	10.07641°N 124.9342°E
Sea	Cabalian Bay	Sogod Bay	Sogod Bay	Bohol Sea
Area (ha)	1.00	5.90	1.00	--
Habitat	Seagrass	Coral reef	Coral reef	Coral reef, Mangrove
Established by	Leyte Island Program (LIP)	LGU	Fisheries Sector Program; EDF (Economic Development Foundation) partnership with LGU	LGU
Current Manager	Brgy. Council (Inactive); MALUFA – Malibago United Fisheries Association	Brgy. Council, BFAR, CRMP, KASAKA	Fish Sanctuary management council	LGU with assistance from the two barangays
Delineation	None	--	None	Clear
Management Plan	None	--	Incorporated in the ordinance	None
Legal Bases	Brgy. Res. No. 02 Series 2003	Mun. Ord.(specific number not obtained)	Resolution No. 96-059	Mun. Ord.(specific number not obtained)
Infrastructure	None	--	Patrol boat	Marker buoys and patrol boat. Watch tower to be erected funded by GTZ
Income Source	None	--	None	None
Monitoring/Evaluation	None	--	SU-Sogod Bay Assessment	Coral Cay Conservation approx. in 2006, VISCA
Reports	None	Alcala (2002)	Unpublished reports	No copy available
Regular Patrol	None	--	Municipal waters only	Municipal waters only
Violations	None	--	None	None. Patrolling recently resumed
Fish Biomass/Density	--	Low ¹ (109.4 ±39.6 kg/ha)	Low ¹ (109.4 ±46.4 kg/ha)	--
Coral Cover	--	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of cooperation of Brgy government; weak enforcement	--	Sanctuary violations	Sanctuary violations
Past Problems Solved	Use of fine mesh nets	--	Low acceptance of the concept of a sanctuary	Patrolling and implementation were less effective
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ Alcala (2002)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	062 Nahulid Marine Sanctuary	063 Napantao Marine Sanctuary	064 Otikon Marine Sanctuary	065 Pangl Marine Sanctuary
Year Established	2001	1996	1994	2008
Location	Libagon, Southern Leyte	San Francisco, Southern Leyte	Libagon, Southern Leyte	Libagon, Southern Leyte
Coordinates	10.30600°N 124.02800°E	10.10100°N 125.23686°E	10.28200°N 125.03400°E	1025600°N 125.04200°E
Sea	Sogod Bay	Bohol Sea (Sogod Bay)	Sogod Bay	Sogod Bay
Area (ha)	3.20	10.00	10.00	8.60
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU thru FSP-CRM Project and CRM Project of Plan Int'l	LGU	FSP-CRM Project 1994 of DA	LGU
Current Manager	Brgy. Council	LGU	Brgy. Council	Brgy. Council
Delineation	Bamboo poles	Clear	Few markers left	None
Management Plan	None	None	None	None
Legal Bases	Brgy. Ord. No. 02 Series 2002	Mun. Ord. No. 2001-120	Brgy. Ord. No. 02 Series 1994	Brgy. Ord. No. 09 Series 2008
Infrastructure	Marker Buoys, guardhouse	Marker buoys, patrol boat, guardhouse	Marker buoys	None
Income Source	None	None	None	None
Monitoring/Evaluation	SUML-Sogod Bay Assessment	SU-Sogod Bay Assessment	SUML-Sogod Bay Assessment	None
Reports	SUML data	Alcala (2002)	SUML data	None
Regular Patrol	None	Brgy council	None	None
Violations	None	None	None	None
Fish Biomass/Density	--	Low ¹ (236.6 ±82.6 kg/ha)	--	--
Coral Cover	--	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Sanctuary violations; weak enforcement	Infestation of <i>A.planici</i>	Lack of markers and other enforcement equipment.	--
Past Problems Solved	Illegal fishing solved through apprehension.	Marker buoys stolen.	Illegal fishing	--
Remarks/Assessment	Non-functional	Functional	Non-functional	Newly established

¹ Alcala (2002)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	066 Poblacion Marine Reserve	067 Punta Marine Sanctuary	068 Punta Marine Reserve	069 Sabang Fish Sanctuary
Year Established	1995	2006	1997	2000 (2007)
Location	Bontoc, Southern Leyte	Libagon, Southern Leyte	San Francisco, Southern Leyte	Hinundayan, Southern Leyte
Coordinates	10.33900°N 124.98100°E	10.25891°N 125.06113°E	10.02124°N 125.18780°E	10.36333°N 125.25500°E
Sea	Sogod Bay	Sogod Bay	Bohol Sea	Surigao Strait
Area (ha)	11.00	2.00	--	18.83
Habitat	Coral reef	Coral reef	Coral reef	Coral reef, seagrass, algal bed
Established by	LGU	LGU	Brgy and LGU	Brgy. Council assisted by LGU
Current Manager	Brgy. Council	Brgy. Council	Brgy Council	Fishery Management Council
Delineation	None	None	None	Clear
Management Plan	None	Incorporated in the ordinance. CRM Plan 2008 – 2010	None	Incorporated in the resolution
Legal Bases	Mun. Ord.(specific number not obtained)	Brgy. Ord. No. 02 Series 2006	Mun. Ord.(specific number not obtained)	Resolution No. 01-2000
Infrastructure	None	None	None	Buoys, guardhouse, patrol boats
Income Source	None	None	None	None but there is a proposal to collect fees
Monitoring/Evaluation	Evaluated by BFAR and DA-Province	DA-Province	CCC	Julius Alpino, 2006
Reports	None	No copy available	CCC	Julius Alpino, 2006
Regular Patrol	None	None but MFLET is organized	None	Bantay dagat
Violations	None	None	None	Spear fishing with compressor
Fish Biomass/Density	--	--	--	Low ¹ (15,000 indiv/ha)
Coral Cover	--	--	--	Excellent ¹ (84.1%)
Funding & Source	Reserve operation, LGU (Bantay dagat patrols on voluntary basis)	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	No patrol boat, livelihood, budget. Low support of LGU on Bantay dagat. Low implementation of fishery regulations	Sometimes there is encroachment. Low budget for maintenance.	--	Budget constraint. Strengthen protection and cooperation of the community
Past Problems Solved	--	Illegal fishing; use of fine mesh nets	--	Inactive community motivated through efficient management
Remarks/ Assessment	Non-functional	Newly established	Non-functional	Newly established

¹ Alpino, 2006

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	070 San Antonio Marine Reserve	071 San Isidro Fish Sanctuary	072 Son-ok Fish Sanctuary	073 Sta. Sofia Fish Sanctuary
Year Established	1996	2004	1999-2001	2005
Location	Tomas Oppus, Southern Leyte	Tomas Oppus, Southern Leyte	Sonok, Pintuyan, Southern Leyte	Padre Burgos, Southern Leyte
Coordinates	10.29591°N 124.9821°E	10.28800°N 124.99100°E	9.99248°N 125.20658°E	10.02617°N 125.02017°E
Sea	Bohol Sea (Sogod Bay)	Sogod Bay	Bohol Sea (Sogod Bay)	Bohol Sea
Area (ha)	13.00	4.50	--	4.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	Brgy Council
Current Manager	LGU	LGU	LGU	PO assisted by the brgy. Council
Delineation	Clear	Not clear	Clear	Clear
Management Plan	None	None	--	None
Legal Bases	Res. No. 115 Series 2001 Mun. Ord. No. 2001-120	Brgy. Ord. No. 01 Series 2004	Mun. Ord.(specific number not obtained)	Resolution No. 045 S 2005 Mun. Ord. No. 2005-005
Infrastructure	Marker buoys, patrol boat and guardhouse	Patrol boat only	Marker buoys	Marker buoys, patrol boat and guardhouse
Income Source	None	None	--	Tourism
Monitoring/Evaluation	SU-Sogod Bay Assessment	None	--	Coral Cay Conservation from 2005-2008
Reports	Alcala (2002); Barillo et al (2007)	None	Alcala (2002)	Unpublished report
Regular Patrol	--	Municipal waters only	--	None
Violations	--	None	--	None
Fish Biomass/Density	Low ¹ (257.8 kg/ha)	--	Medium ² (225.6 ±90.2 kg/ha)	--
Coral Cover	Fair ¹ (43.33% in 10m deep)	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	LGU, GTZ and FOBI (Federation of Omega Beneficiaries, Inc.).
Current Management Issues/Problems	--	No markers. Crown-of-thorns infestation but they conduct regular clean up.	--	Outdated fishery regulations. Encroachment. Illegal anchorage.
Past Problems Solved	--	Stolen buoys replaced	--	Weak enforcement and protection; use of <i>tubli</i> and cyanide
Remarks/Assessment	Functional	Non-functional	Non-functional	Newly established; Municipal Protected Area Oversight Committee (MPAOC) created in 2007

¹ Barillo et al. (2007)² Alcala (2002)

Table 5. The marine reserves of Leyte and associated islands, continued

Name of Marine Reserve	074 Tabugon Marine Reserve	075 Tangkaan Fish Sanctuary	076 Timba-Sto. Niño Fish Sanctuary	077 Uson-Bariis Marine Sanctuary
Year Established	1996	2005	1996	2008
Location	Lilo-an, Southern Leyte	Padre Burgos, Southern Leyte	Malitbog, Southern Leyte	Uson and Bariis, Caibiran, Biliran
Coordinates	10.16919°N 125.11470°E	10.0172667°N 125.0245000°E	10.19700°N 124.99600°E	11.57500°N 124.60300°E
Sea	Bohol Sea (Sogod Bay)	Bohol Sea	Sogod Bay	Visayan Sea
Area (ha)	10.00	6.00	1.00	210.22
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	BFAR-FSP; SU	Brgy. Council	Fisheries Sector Program; EDF (Economic Development Foundation) partnership with LGU	MLGU
Current Manager	LGU	PO, FOBI	Fish Sanctuary management council	MLGU
Delineation	Clear	Clear	None	--
Management Plan	Incorporated in the ordinance	2005 – present	Incorporated in the ordinance	--
Legal Bases	Mun. Ord. No. 2001-120 Brgy. Res. No. 02 Series 1993	Res. No. 045 Series 2005 Ord. No. 2005-005	Res. No. 96-189-A	Mun. Ord. No. (specific number not obtained)
Infrastructure	Marker buoys and guardhouse	Marker buoys, patrol boat and guardhouse	Guardhouse and patrol boat	--
Income Source	None	Tourism	None	--
Monitoring/Evaluation	SU-Sogod Bay Assessment	Coral Cay Conservation 2005-2008	SU-Sogod Bay Assessment	--
Reports	--	Reef & Leaf 2008	Unpublished report	--
Regular Patrol	--	None (formerly Bantay dagat)	Municipal waters only	--
Violations	--	Apprehended	None	--
Fish Biomass/Density	Very low ¹ (41.8 ±6.2 kg/ha)	--	--	--
Coral Cover	--	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	--
Current Management Issues/Problems	Very low participation, awareness and cooperation from the community. Encroachment.	Weak enforcement	Sanctuary violations.	Destroyed buoys due to typhoon
Past Problems Solved	None	Use of illegal fishing minimized through apprehension in the past years	Lack of support from the community	--
Remarks/Assessment	Non-functional; two caretakers assigned in the reserve; FLET reorganized; active MFARMC with MAFC	Newly established; Municipal Protected Area Oversight Committee (MPAOC) created in 2007	Non-functional	Newly established

¹ Alcala, 2002



Sta. Sofia Fish Sanctuary



Buenavista Fish Sanctuary



Napantao Marine Sanctuary



Apo Island Marine Sanctuary



Masaplod Sur Marine Sanctuary

Photos taken from the marine reserves around Southern Leyte and Negros Oriental (*photos J Maypa*).

Negros and Associated Islands

Negros Island has currently 51 marine reserves, 46 of them are found in Negros Oriental province and only 5 in Negros Occidental (**Figure 7** and **Table 6**). The total sea area occupied by these 51 marine reserves is 2,005.0 ha, of which 592 ha is part of Sagay Marine Reserve. Out of the 51 marine reserves, only 47 (aging three years and above) were subjected to the criteria. There are 32 (62.74%) reserves considered functional on both provinces of Negros combined, covering 1,140.97 ha.

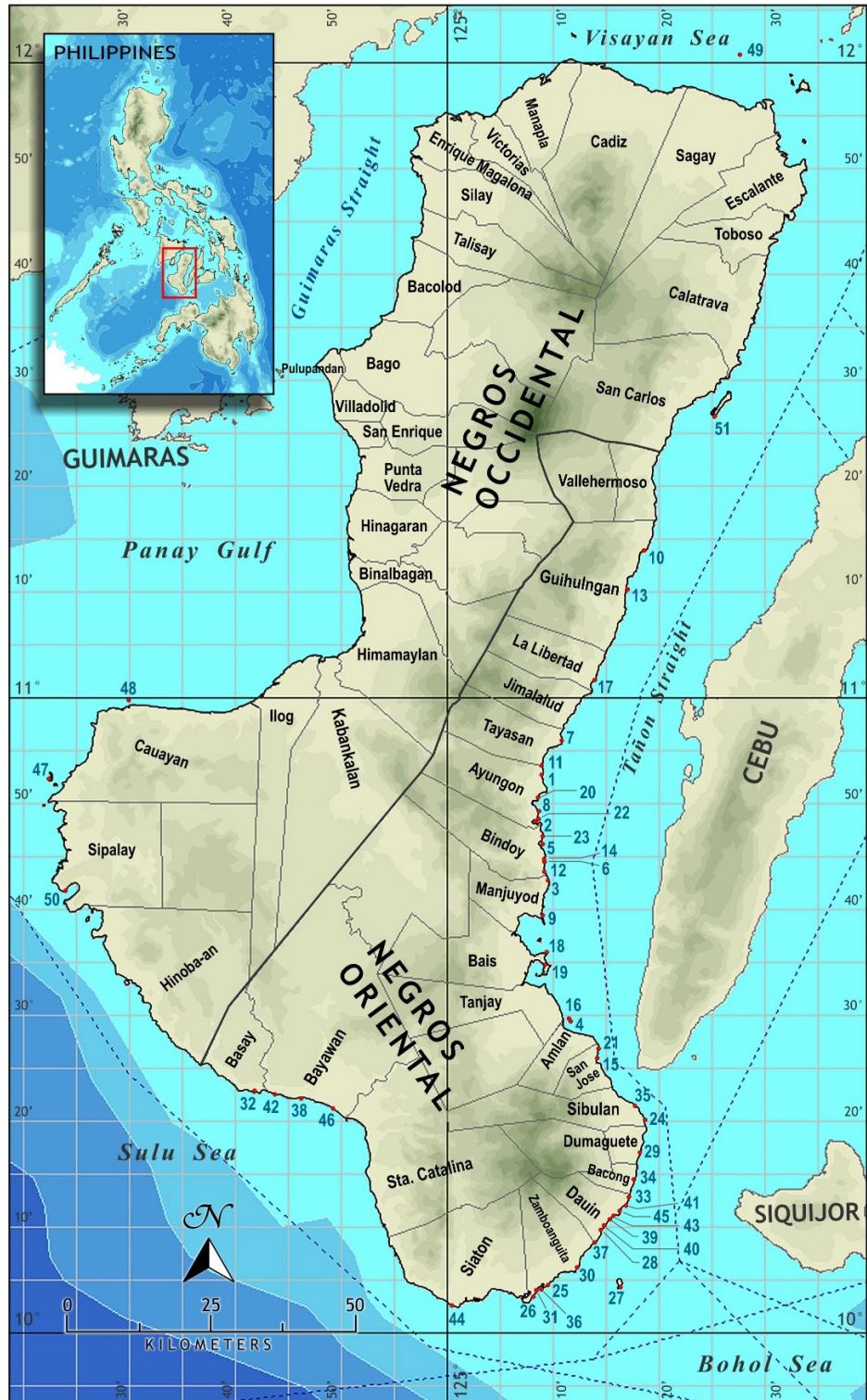
The 46 marine reserves in Negros Oriental cover a sea area of 775.4 ha (including the 250-ha mangrove reserve in Talabong Islet in Bais Bay,

Negros Oriental). Three reserves intended to protect and preserve the windowpane oyster (*Placuna placenta*) have been established in Bayawan City.

In Negros Occidental, only 5 reserves exist, with a total area of 1,229.59 ha. Three or 60% of these can be considered functional, covering a total area of 760.40 ha. This area is almost as large as the protected reef area in Negros Oriental, but most of this area is in the Sagay Marine Reserve.

Considering vulnerability to oil spill, at least 17(34.69%) reserves on Negros Island are at risk owing to their proximity to sea lanes.

Marine Reserve QUICK STATISTICS	NEGROS ORIENTAL	NEGROS OCCIDENTAL	Total
Total number	46	5	51
Total area (ha)	775.41	1229.59	2,005.00
Number of functional reserves	24 (52.17%)	3 (60.00%)	27 (52.94%)
Total area actively protected (ha)	322.19	760.40	1082.59
Total number of coastal towns	21	25	46
Number of towns with reserve(s)	18	4	22
Average size (ha)	16.86	245.91	39.31
Minimum size (ha)	0.30	18.20	0.30
Maximum size (ha)	250.00	800.00	800.00



Guihuligan - San Jose

- 1 Anibong Marine Sanctuary
- 2 Awaan Marine Sanctuary
- 3 Balaas Marine Reserve
- 4 Bio-os Marine Reserve
- 5 Bolisong Marine Sanctuary
- 6 Cabugan Marine Reserve
- 7 Cabulutan Marine Sanctuary
- 8 Calag-calag Fish Sanctuary
- 9 Campuyo Marine Sanctuary
- 10 Hilaitan Marine Reserve
- 11 Iniban Marine Reserve
- 12 Malaga Marine Reserve
- 13 Malusay Marine Reserve
- 14 Pangalaycayan Marine Sanctuary
- 15 Poblacion Marine Reserve
- 16 Polo Marine Reserve
- 17 San Jose Marine Reserve
- 18 Sanlangan Marine Sanctuary
- 19 Talabong Mangrove Forest
- 20 Tampocon I Marine Sanctuary
- 21 Tandayag Marine Reserve
- 22 Tiguib Marine Reserve
- 23 Tinaogan Marine Reserve

Sibulan - Basay

- 24 Agan-an Marine Reserve
- 25 Andulay Marine Reserve
- 26 Antulang (Dive Hub) Marine Reserve
- 27 Apo Island Marine Sanctuary
- 28 Bahura Marine Sanctuary
- 29 Banilad Marine Reserve
- 30 Basak Marine Sanctuary
- 31 Bonbonon Marine Sanctuary
- 32 Bongalonan Marine Sanctuary
- 33 Bulak Marine Sanctuary
- 34 Buntis Marine Sanctuary
- 35 Cangmatig Marine Reserve
- 36 Lutoban Marine Sanctuary
- 37 Maayong Tubig Marine Sanctuary
- 38 Malabugas Lampirong Reserve
- 39 Masaplod Norte Marine Sanctuary
- 40 Masaplod Sur Marine Sanctuary
- 41 North Lipayo Marine Sanctuary
- 42 Pagatban Lampirong Reserve
- 43 Poblacion District 1 MS
- 44 Salag Marine Reserve
- 45 South Lipayo Marine Sanctuary
- 46 Villareal Lampirong Reserve

NEGROS OCCIDENTAL

- 47 Danjugan Island Marine Reserve & Sanctuaries
- 48 Hulao-hulao Fish Sanctuary
- 49 Sagay Protected Seascape
- 50 Sipalay Marine Reserve
- 51 Sipaway/ Refugio Island MS

Figure 7. Map of the marine reserves of Negros and associated islands.

Table 6. The marine reserves of Negros and associated islands

Name of Marine Reserve	001 Anibong Marine Sanctuary	002 Awaan Marine Sanctuary	003 Balaas Marine Reserve	004 Bio-os Marine Reserve
Year Established	2005	2005	2002	1999
Location	Anibong, Ayungan, Negros Oriental	Awaan, Ayungan, Negros Oriental	Manjuyod, Negros Oriental	Bio-os, Amlan, Negros Oriental
Coordinates	9.87872°N 123.14962°E	9.80410°N 123.13936°E	9.71218°N 123.15910°E	9.48821°N 123.19519°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	7.14	16.00	6.00	8.87
Habitat	Coral reef	Coral reef	Coral reef (narrow/fringing)	Coral reef
Established by	CBRMP	CBRMP	MLGU, ENRD	SCFPHI, CRMP, LGU, MAO
Current Manager	Anibong Fishermen Association (AFA)	AWA (Awaan Management Association)	Balaas Bantay dagat	Takot Diot Marine Sanctuary Management Body
Delineation	Clear	Not clear	Not clear	Not clearly delineated by buoys
Management Plan	Incorporated in the Municipal MPA Mgt. Plan	None	None	Draft only
Legal Bases	Mun. Ord. No. 10 & 11 Series 2005	Mun. Ord. No. 10 & 11 Series 2005	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 21 Series 1999
Infrastructure	Guardhouse, marker buoys and patrol boat	Guardhouse, marker buoys and patrol boat	Marker buoys (very few)	Marker buoys, guardhouse, patrol boats
Income Source	Alternative livelihood	Alternative livelihood	None	None
Monitoring/Evaluation	BFAR	BFAR	MENRO	MENRO, ENRD, SUAKCREM
Reports	Unpublished reports	Unpublished reports	Unpublished reports	Unpublished reports
Regular Patrol	AFA	None	BLGU	Not specified
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ¹	Medium ¹	Medium ² (532 kg/ha in 2007)
Coral Cover	Fair ¹	Poor to Fair ¹	Good ¹ (50%)	Good ² (52.8% in 2007)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU funds, voluntary
Current Management Issues/Problems	Sanctuary violations	Sanctuary violations	Difficulty in placing marker buoys due to its narrow reef flat and proximity to wall (Barillo pers.comm.); lack of guardhouse	Marker buoys intentionally destroyed by violators
Past Problems Solved	Lack of enforcement effort solved (not specified how)	Lack of enforcement effort solved (not specified how)	Lost marker buoys difficult to replace due to steepness of slope	Sanctuary violations minimized through enforcement and patrolling
Remarks/Assessment	Newly established	Newly established	Functional	Functional

¹ Estimated using timed-swim survey ² B. Stockwell unpublished data

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	005 Bolisong Marine Sanctuary	006 Cabugan Marine Reserve	007 Cabulotan Marine Reserve	008 Calag-calag Fish Sanctuary
Year Established	1987(1995)	1993 (2002)	1993	1988
Location	Bolisong, Manjuyod, Negros Oriental	Cabugan, Bindoy, Negros Oriental	Cabulotan, Tayasan, Negros Oriental	Calag-calag, Ayungon, Negros Oriental
Coordinates	9.76958°N 123.15055°E	9.74487°N 123.15245°E	9.93179°N 123.18188°E	9.82133°N 123.14491°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	10.00	6.90	15.00	14.15
Habitat	Coral reef (fringing), seagrass bed	Coral reef (fringing)	Coral reef	Coral reef
Established by	CVRP, MLGU	GTZ/CBRMP	LGU-Tayasan	CVRP/CEP, LGU, BFAR
Current Manager	Bolisong Fisherfolk Association	Cabugan Fishermen's Association Incorporated (CAFAI)	MLGU, Cabulotan Fishermen Association	Calagcalag Bakawan and Fishermen's Association (CABFA)
Delineation	Not clear	Clear	Not clear	Clear
Management Plan	2007-2012	2007-2012	None	--
Legal Bases	Mun. Ord. No. 003 Series 1995	Mun. Res. No. 47 Series 1993; Mun. Ord. No. 01	Mun. Ord. No. 05 Series 1993	Mun. Ord. No. 01 Series 1991; Mun. Res. No. 01 Series 1991; Mun. Res. No.137 Series 1989
Infrastructure	None	Marker buoys, guardhouse, signboard	None	Marker buoys, patrol boats, guardhouse, light house
Income Source	None	None	None	Alternative livelihood
Monitoring/Evaluation	Bantay dagat, MENRO	BFAR, LGU	LGU, MAO, ENRD	SU, CVRP, ICLARM, GDS
Reports	Unpublished reports	Unpublished reports; community feedbacking through assemblies	Unpublished report	Raymundo <i>et al.</i> in PhilReefs 2004; No results provided to CABAFA (Haribon 2005)
Regular Patrol	Bantay dagat	Bantay dagat	MLGU-hired guard	CABAFA, Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Medium ¹	Medium ¹	High ¹
Coral Cover	Fair ¹	Fair ¹	Good ² (58.75%)	Fair ² (31%) Good ³ (60.34% in 1999)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Encroachment; destroyed marker buoys not replaced	Destroyed marker buoys, which resulted to encroachment	Resistance of some fishermen for the expansion of the declared reserve	Conflict between two POs (CAFA and CABAF), lack of government support. Lack of support from Mun and Brgy. LGU in terms of enforcement
Past Problems Solved	Illegal fishing within the reserve solved through regular patrolling	Replacement of marker buoys	Illegal fishing activities inside the reserve solved by regular patrolling	Regular Patrolling in the MPA
Remarks/Assessment	Functional	Functional	Functional	Functional; revised ordinance for the establishment incorporated in MPA ordinance No. 10 and 11 Series 2005

¹ Estimated using timed-swim survey ² Raymundo *et al.* in PhilReefs (2004) ³ Haribon Foundation (2005)

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	009 Campuyo Marine Sanctuary	010 Hilaitan Marine Reserve	011 Iniban Marine Reserve	012 Malaga Marine Reserve
Year Established	1994	1996	1996	1996 (2002)
Location	Campuyo, Manjuyod, Negros Oriental	Hilaitan, Guihulngan, Negros Oriental	Iniban, Ayungon, Negros Oriental	Malaga, Bindoy, Negros Oriental
Coordinates	9.65557°N 123.15034°E	10.23083°N 123.31087°E	9.89094°N 123.14998°E	9.72593°N 123.15383°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	14.50	6.00	27.86	10.00
Habitat	Coral reef (fringing)	Coral reef (offshore/shoal)	Coral reef (fringing)	Coral reef
Established by	LGU, SUML, ENRD	MLGU	LGU	Malaga United Fisherfolks Association (MUFA), LGU
Current Manager	Campuyo Fishermen's Organization (CFO)	HIFI-MPC & Bantay dagat	Iniban Fisherfolk Association (IFA)	MUFA
Delineation	Clear	Clear	Not clear	Clear
Management Plan	2007-2012	--	--	2007-2012
Legal Bases	Mun. Ord. No. 04 Series 1994	Mun. Ord. No. 21 Series 1996	Mun. Ord. No. 229 Series 1996; brgy. Ord. No. 09, Series 1996	Mun. Ord. No. 02 Series 1996
Infrastructure	Marker buoys, guardhouse, patrol boat	Signboard	Marker buoys, sign board, guardhouse	Marker buoys, signboard, patrol boat
Income Source	None	--	Alternative livelihood	None
Monitoring/Evaluation	BFAR, LGU	ENRD	BFAR	BFAR, LGU
Reports	See White et al. (2002)	--	Unpublished report (CENRO file)	Unpublished reports
Regular Patrol	Bantay dagat, PO	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	No information available	Apprehended	Apprehended
Fish Biomass/Density	Low ¹	Low ¹	High ¹	Low ⁴
Coral Cover	Fair ² (31.9% in 2002)	Poor ³	Fair ¹	Poor ⁴
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU, with support from DENR, BFAR,	Reserve operation, LGU
Current Management Issues/Problems	Encroachment due to absence of buoys	Weak management	Illegal fishing; lack of boundary markers, no regular patrol schedule; Siltation and pesticide run-off (PAMS 2008)	Sanctuary violations
Past Problems Solved	Compressor fishing within the reserve solved through apprehension	None	Livelihood support	Lost marker buoys replaced.
Remarks/Assessment	Functional	Non-functional	Functional; one of the Most Outstanding Finalists (PAMS 2008)	Non-functional

¹ Estimated using timed-swim survey ² White et al. (2002) ³ CCEF MPA Database ⁴ Jadloc & Candido (2008)

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	013 Malusay Marine Reserve	014 Pangalaycayan Marine Sanctuary	015 Poblacion Marine Reserve	016 Polo Marine Reserve
Year Established	1996	2003	1994	1998
Location	Malusay, Guihulngan, Negros Oriental	Pangalaycayan, Bindoy, Negros Oriental	Poblacion, San Jose, Negros Oriental	Polo, Tanjay, Negros Oriental
Coordinates	9.19113°N 123.28395°E	9.7253°N 123.15383°E	9.43086°N 123.23586°E	9.49350°N 123.1923°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	6.00	10.00	5.00	2.00
Habitat	Coral reef	Coral reef	Coral reef, macro-algal bed	Coral reef (shoal), mangrove, seagrass bed
Established by	PPDO-RMD, GDS	LGU, PO	LGU	LGU
Current Manager	MAFILPI Kapunungan sa Gagmayng Mananagat sa Pangalaycayan (KAGAMPA)	LUFA	TRFO	
Delineation	Clear	Clear	Clear	Not clear
Management Plan	None	2007-2012	--	None
Legal Bases	Mun. Ord. No. 20 Series 1996	Mun. Ord. (not specified)	Mun. Ord. No. 01 Series 1994	Mun. Ord. No. 02 Series 1998
Infrastructure	Marker buoys, guardhouse, patrol boat	Marker buoys, guardhouse, patrol boat	Marker buoys	None
Income Source	None	None	--	None
Monitoring/Evaluation	SUAKCREM	BFAR, LGU	None	None
Reports	Unpublished report	Unpublished reports; presented through community meetings	None	None
Regular Patrol	Bantay dagat	Po members	None	None
Violations	Apprehended	Apprehended	Not apprehended	Not apprehended
Fish Biomass/Density	Low ¹ (160 kg/ha)	Low ²	Low ²	Low ²
Coral Cover	High ¹ (65%)	Poor ²	Poor ²	Poor ²
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	None	None
Current Management Issues/Problems	Low biomass of fish due to poaching	Illegal fishing activities within the reserve	Weak management	Weak management
Past Problems Solved	--	Encroachment solved through replacement of permanent marker buoys	None	None
Remarks/ Assessment	Functional	Non-functional	Non-functional	Paper reserve

¹ Jadloc & Candido (2008) ² Estimated using timed-swim survey

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	017 San Jose Marine Reserve	018 Sanlangan Marine Sanctuary	019 Talabong Mangrove Forest	020 Tampocon I Marine Sanctuary
Year Established	1996	1994	1986	2005
Location	San Jose, La Libertad, Negros Oriental	Sanlangan, Okiot, Bais, Negros Oriental	Bais Bay, Negros Oriental	Tampocon, Ayungan, Negros Oriental
Coordinates	10.02611°N 123.231710°E	9.59794°N 123.15708°E	9.57752°N 123.15466°E	9.84311°N 123.14300°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	10.00	1.00	250.00	17.00
Habitat	Coral reef	Coral reef	Mangrove	Coral reef and seagrass
Established by	Baryuhanong Ugmad Gambahay sa Yanong Mangingisda (BUGSAY)	LGU	LGU, Bureau of Forest Development	CBRMP
Current Manager	BUGSAY	LGU	LGU	KASAMATA
Delineation	Clear	Not clear	Clear	Not clear
Management Plan	2004-2006	None	--	Incorporated in Mun. Mtg. Plan
Legal Bases	Mun. Ord. No. 01	Mun. Res. No. 164, 1994	MOA between BFD & Bais LGU	Mun. Ord. No. 10 & 11 Series 2005
Infrastructure	Marker buoys, guardhouse, patrol boat	None	Boardwalks	Guardhouse, patrol boat
Income Source	None	None	Tourism	Alternative livelihood
Monitoring/Evaluation	BUGSAY, LGU	None	--	BFAR
Reports	Results feedback to community through meetings	None	--	Unpublished report
Regular Patrol	BUGSAY members	None	Bantay dagat/Forest Guards	KASAMATA
Violations	Apprehended	Not apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹	Low ¹	Low ¹	Low ¹
Coral Cover	Fair ¹	Poor ¹	(High mangrove cover)	Poor to Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, BLGU
Current Management Issues/Problems	Conflict with resort owners and fish corral operators	Weak implementation	Threatened by pollution from the pulp and paper mills at Bais Sugar Central (Haribon Foundation and P.M. Magsalay)	Encroachment; repair of support infrastructures
Past Problems Solved	Conflict in the delineation of boundaries solved through dialogues.	None	--	Implementation of ordinance.
Remarks/Assessment	Functional	Non-functional	Non-functional	Newly established

¹ Estimated using timed-swim survey

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	021 Tandayag Marine Reserve	022 Tiguib Marine Reserve	023 Tinaogan Marine Reserve	024 Agan-an Marine Reserve
Year Established	1996	2005	1996	1999
Location	Tandayag, Amlan, Negros Oriental	Ayungon, Negros Oriental	Tinaogan, Bindoy, Negros Oriental	Agan-an, Sibulan, Negros Oriental
Coordinates	9.44718°N 123.23873°E	9.80503°N 123.14216°E	9.77984°N 123.15055°E	9.33406°N 123.31151°E
Sea	Tañon Strait	Tañon Strait	Tañon Strait	Tañon Strait
Area (ha)	6.00	15.14	25.30	6.00
Habitat	Coral reef	Coral reef, seagrass	Coral reef	Coral reef (fringing) seagrass bed
Established by	MAO, LGU, CRMP/TMF	CBRMP	ENRD/CVRP	CRMP
Current Manager	Tandayag Marine Sanctuary Management Body	Tiguib Fishermen Association (TIFA)	Tinaogan Fisherfolk Multi-purpose Cooperative (TIFIMPCO)	ASFA
Delineation	Clear	Clear	Clear	Clear
Management Plan	Still in draft form	Incorporated in Mun. MPA Mgt. Plan.	2007-2012	--
Legal Bases	Mun. Ord. No. 02	Mun. Ord. No. 10 & 11 Series 2005	Mun. Ord. No. 01-2007; Mun. Res. No. 96-72	Mun. Ord. No. 10 Series 1999
Infrastructure	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, patrol boats	Marker buoys, guardhouse, signboard	Marker buoys, signboard, guardhouse
Income Source	None	Alternative livelihood	None	None
Monitoring/ Evaluation	MENRO, ENRD, SUAKCREM	BFAR	BFAR, MENRO	ENRD, US Peace Corps, LGU
Reports	Unpublished reports	Unpublished report (CENRO file)	Unpublished report	Unpublished reports
Regular Patrol	Not specified	Occasional patrolling only	Bantay dagat	--
Violations	Apprehended	Apprehended	Apprehended	None
Fish Biomass/Density	High ¹ (846 kg/ha in 2007)	Low ³	Low ³	Low ⁴ (291.4 kg/ha in 2002)
Coral Cover	Fair ² (40%)	Good ³	Fair ³	Fair ⁵ (35.35% in 2008)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Marker buoys need to be fixed	Weak enforcement	Poaching solved through apprehension	Disturbances from boats
Past Problems Solved	Spearfishing inside the reserve solved through enforcement	Lack of CRM awareness and community participation solved through IEC	Use of illegal fishing gears within MPA solved through patrolling and replacement of marker buoys	Illegal anchoring of boats solved through enforcement
Remarks/ Assessment	Functional	Newly established	Functional	Functional

¹ B. Stockwell unpublished data ² Jadloc & Candido (2008) ³ Estimated using timed-swim survey ⁴ SUAKCREM unpublished data

⁵ ENRD Unpublished report

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	025 Andulay Marine Reserve	026 Antulang (Dive Hub) Marine Reserve	027 Apo Island Marine Reserve	028 Bahura Marine Reserve
Year Established	1996	2007	1982 (1984)	2005
Location	Andulay, Siit, Siaton, Negros Oriental	Antulang, Si-it, Siaton, Negros Oriental	Apo, Dauin, Negros Oriental	Dauin, Negros Oriental
Coordinates	9.07470°N 123.16003°E	9.05811°N 123.13571°E	9.07304°N 123.27120°E	9.16187°N 123.24295°E
Sea	Sulu Sea	Sulu Sea	Bohol Sea	Bohol Sea
Area (ha)	6.40	0.33	15.00	4.21
Habitat	Coral reef (fringing)	Coral reef	Coral reef (fringing), seagrass bed	Coral reef
Established by	ENRD, CEMRINO, LGU	Dive Hub Philippines	SUML	MLGU
Current Manager	Andulay Fishermen Association	Dive Hub Philippines	PAMB	Maayong-Tubig Small Fisherfolks Multi-purpose Cooperative (MASFIMCO)
Delineation	To be re-established (ENRD)	Clear	Clear	Clear
Management Plan	On-process	--	With MPA Mgt. Plan	--
Legal Bases	Mun. Ord. No. 07, Series 1993	In process	Pres. Proc. No. 438, S-1994 pursuant to R.A. 7586 (NIPAS Act of 1992); MO No. 01, S-1986; MO No. 14, S-1986; MO No. 14 S-1998	Mun. Ord. No. 01 Series 2005
Infrastructure	None	Marker buoys, patrol boat	Marker buoys, signboard, guardhouse	Marker buoys
Income Source	Penalties from violators	None	Tourism	Tourism
Monitoring/Evaluation	LGU, DA, ENRD	SUAKCREM	SUAKCREM, SUML, CCEF	ENRD
Reports	Unpublished reports	Nillos-Kleiven & Stockwell (2009), report	Several articles published in international and local refereed journals	Unpublished reports
Regular Patrol	--	Local organization	PAMB, Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (582 kg/ha in 2008)	High ³ (990kg /ha)	Very High ⁴ (1,500 kg/ha)	Low ⁴
Coral Cover	Fair ² (44% in reef flat, 30% in slope)	Fair ³ (25% cover)	Good ⁵ (53.6 ±2.6%); Good ⁶ (63.33% in 2008)	Poor ⁴
Funding & Source	Reserve operation, Brgy funds	Private funding	Reserve operation, PAMB	Reserve operation, LGU
Current Management Issues/Problems	Marker buoys destroyed by intruders; no funding for Bantay dagat	Constant threat of illegal fishers from other areas in Siaton; lack of support from BLGU and LGU	More solid wastes and coral damage due to increasing number of tourists (Reboton & Calumpong 2003; PhilReefs 2004); sharing of fines from violators (Haribon 2005)	--
Past Problems Solved	Violations solved by apprehensions	--	Stakeholder conflicts	--
Remarks/Assessment	Functional	Newly Established	Functional; first community-based marine reserve in the Philippines; estimated tourism revenue: US\$193,138- US\$238,487 per year (Raymundo & White 2004)	Newly established

¹ B. Stockwell unpublished data ² Estimated using timed-swim survey ³Nillos-Kleiven & Stockwell (2009) ⁴ Abesamis et al. (2006)

⁵ Russ et al. (2005) ⁶ SUAKCREM unpublished data

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	029 Banilad Marine Reserve	030 Basak Marine Sanctuary	031 Bonbonon Marine Reserve	032 Bongalonan Marine Sanctuary
Year Established	2001	2006	1995	1985
Location	Banilad, Dumaguete, Negros Oriental	Basak, Zamboanguita, Negros Oriental	Bonbonon, Siaton, Negros Oriental	Bongalonan, Basay, Negros Oriental
Coordinates	9.28211°N 123.30355°E	9.10125°N 123.20400°E	9.06581°N 123.14201°E	9.37908°N 122.69677°E
Sea	Bohol Sea	Bohol Sea	Sulu Sea	Sulu Sea
Area (ha)	76.00	7.80	9.00	20.00
Habitat	Coral reef (fringing), seagrass, macroalgal bed, sandy substrate	Coral reef	Coral reef (fringing)	Coral reef
Established by	CRMP, SUML, COE-CRM, TMF	LGU	LGU, GDS	CVRP
Current Manager	LGU-Dumaguete	LGU	Tambobo Fisherfolk Association	Bongalonan FA
Delineation	Clear	Clear	Clear	Not clear
Management Plan	CRM Plan	2008-2012	None	None
Legal Bases	Brgy. Res.(no specific number available)	Mun. Ord. No. 11 Series 1999	Mun. Ord. No. 15 Series 1995	Mun. Ord. No. 01 Series 1985; Mun. Ord. No. 23 Series 1993
Infrastructure	Buoys, signs, guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys	Guardhouse, buoys
Income Source	--	Tourism (diving fees)	None	None
Monitoring/Evaluation	SUML, CRMP, LGU	SUAKCREM in 2007	ENRD, EcoGov (2008)	SUML, ENRD, SUAKCREM
Reports	Reboton in Aliño <i>et al.</i> 2002	See SUAKCREM Newsletter 2008	CEMRINO unpublished report (1997), EcoGov 2008 unpublished	Reboton in Aliño <i>et al.</i> (2002); Stockwell (2008) unpublished reports
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat (fish wardens)	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Poaching (apprehended)
Fish Biomass/Density	Medium ¹	Medium ¹	Low ³ (10,000 indiv/ha)	Low ⁴ (265 kg/ha in 2008) Low ⁴ (284 kg/ha target in 2002)
Coral Cover	Poor ² (20.13% in reef flat, 23.38% in slope)	Fair ¹ (44% in 2008)	Fair ³ (38%)	Fair ⁴ (25% cover in 2002); Good ⁵ (55.09% in 1997)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU, diving fees	Reserve operation, Brgy. IRA Fund	Reserve operation, LGU
Current Management Issues/Problems	None	None	Loss of marker buoys; encroachment of spear fishers using scuba; infestation of crown-of-thorns starfish	Ratification of the law prohibiting fishing 3km from the coast of the sanctuary (Haribon 2005)
Past Problems Solved	None	Lack of buoys and regular enforcement addressed through LGU funding	--	--
Remarks/Assessment	Functional; about 2 km from shipping lanes; a ship grounded in 2007	Newly established through EcoGov assistance	Non-functional; also known as Tambobo Marine Reserve	Functional; fish biomass declined

¹ Estimated using timed-swim survey ² Reboton in PhilReefs (2004) ³ Teves & Barillo in PhilReefs (2004) ⁴ B. Stockwell unpublished reports

⁵ Reboton in Aliño *et al.* (2002)

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	033 Bulak Marine Reserve	034 Buntis Marine Sanctuary	035 Cangmating Marine Reserve	036 Lutoban Marine Reserve
Year Established	2005	2000	1997	2002 (2008)
Location	Bulak, Dauin, Negros Oriental	Buntis, Bacong, Negros Oriental	Cangmating, Sibulan, Negros Oriental	Lutoban, Zamboanguita, Negros Oriental
Coordinates	9.21380°N 123.28683°E	9.24110°N 123.29500°E	9.35588°N 123.29536°E	9.06779°N 123.14963°E
Sea	Bohol Sea	Bohol Sea	Tañon Strait	Sulu Sea
Area (ha)	7.42	5.97	6.00	10.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	MLGU	LGU, CRMP, SUML	GDS, CEMRINO, PAO	MLGU
Current Manager	Bulak Bangus Fry Catchers Association (BBCFA)	Bantay dagat, Fisherfolk Association	Cangmating Fishermen Association, Cangmating Brgy. Council & Bantay dagat	MLGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	--	--	2008-2012
Legal Bases	Mun. Ord. No. 01 Series 2005	Mun. Ord. No. 16 Series 2000	Mun. Ord. No. 14 Series 1997	Brgy. Res. Dated 12-19-93
Infrastructure	Marker buoys	Guardhouse	--	Marker buoys, guardhouse, patrol boat
Income Source	Tourism	Tourism	None	Tourism
Monitoring/Evaluation	ENRD	None	ENRD, US Peace Corps, LGU	SUAKCREM
Reports	1 article in book; and unpublished reports	None	Unpublished reports, no community feedback	Unpublished report
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	None	Apprehended
Fish Biomass/Density	--	Low ¹	Very Low ³ (54 kg./ha)	Low ⁵ (304 kg/ha in 2008)
Coral Cover	--	Poor ² (9.00 %)	Poor ⁴ in shallow (17.59%); Fair ⁴ at 10m depth (46.54%)	Poor to Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	--	Stakeholder conflicts	Lack of buffer zones.	None
Past Problems Solved	--	None	Sanctuary violations solved through enforcement	Lack of buoys and regular enforcement addressed by LGU funding
Remarks/Assessment	Newly established	Non-functional	Non-functional	Functional

¹ Estimated using timed-swim survey ² PhilReefs (2004) ³ Stockwell & Alcala unpublished data ⁴ ENRD Unpublished data in 2008 survey⁵ B. Stockwell, unpublished data

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	037 Maayong Tubig Marine Reserve	038 Malabugas Lampirong Reserve	039 Masaplod Norte Marine Reserve	040 Masaplod Sur Marine Reserve
Year Established	2000	2003	1994 (1997)	2001
Location	Maayong Tubig, Dauin, Negros Oriental	Malabugas, Bayawan, Negros Oriental	Masaplod Norte, Dauin, Negros Oriental	Masaplod Sur, Dauin, Negros Oriental
Coordinates	9.14165°N 123.2322°E	9.36715°N 122.76948°E	9.17818°N 123.25624°E	9.16713°N 123.24734°E
Sea	Bohol Sea	Sulu Sea	Bohol Sea	Bohol Sea
Area (ha)	7.129	18.00	6.0	6.00
Habitat	Coral reef (fringing)	Soft bottom with sandy portion	Coral reef (fringing), seagrass bed	Coral reef
Established by	SYMCOR, ENRD, LGU	MLGU	LGU, CEMRINO	ENRD, LGU
Current Manager	MASFIMCO, MFARMC	MLGU, Banga Marginal Fishermen's Association (BMFA)	Masaplod Norte FA, ENRD	Bantay dagat, Brgy. Council, FA
Delineation	Clear	Not clear	Clear	Clear
Management Plan	On process (EcoGov)	--	On process (EcoGov)	On process (EcoGov)
Legal Bases	Mun. Ord. No. 02 Series 2000	Res. No. 663; City Ord. No. 40	Mun. Ord. No. 02 Series 2001; Mun. Ord. NO. 97-02 Series 1997	Mun. Ord. No. 02 Series 2000
Infrastructure	Marker buoys, signboard, patrol boat	Patrol boat	Marker buoys, guardhouse, signboard, patrol boat	Marker buoys, sign board, guardhouse
Income Source	Tourism	None	Tourism	Tourism
Monitoring/Evaluation	SUAKCREM, ENRD, LGU	None	SUAKCREM, ENRD	ENRD, LGU
Reports	Unpublished reports	None	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat	PO members	Bantay dagat, PO	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (534 kg/ha in 2007)	Low ³	High ¹ (1,734 kg/ha in 2007)	Very High ¹ (2,174 kg/ha in 2007)
Coral Cover	Poor ¹ (17.2% in 2007); Poor ² (<5% % slope)	Poor ³	Poor ¹ (23.4% in 2007) Poor ² (22% in slope)	Poor ² (12% % in slope)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	None	Siltation from Pagatban River.	Lack of patrolling equipments	None
Past Problems Solved	Illegal fishing inside the sanctuary solved by apprehension	Encroachment solved through apprehension.	Management conflicts due to politics	Poaching
Remarks/Assessment	Functional	Non-functional; Window pane clam declined due to siltation	Functional	Functional

¹ B. Stockwell unpublished data ² Stockwell & Inocencio 2005 ³ Estimated using timed-swim survey

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	041 North Lipayo Marine Reserve	042 Pagatban Lampirong Reserve	043 Poblacion District 1 Marine Reserve	044 Salag Marine Reserve
Year Established	2000 (2005)	2003	2000	2001
Location	Dauin, Negros Oriental	Pagatban, Bayawan, Negros Oriental	Poblacion I, Dauin, Negros Oriental	Salag, Siaton, Negros Oriental
Coordinates	9.27639°N 123.32278°E	9.37383°N 122.72797°E	9.18832°N 123.25838°E	9.04197°N 123.00922°E
Sea	Bohol Sea	Sulu Sea	Bohol Sea	Bohol Sea
Area (ha)	2.21	12.00	9.1779	10.00
Habitat	Coral reef	Soft bottom	Coral reef (fringing), seagrass bed	Coral reef
Established by	Dauin MLGU, ENRD	ENRD, BFAR, MLGU	LGU, ENRD	LGU
Current Manager	Lipayo Fishermen Association (LIFA)	MLGU, Pagatban Fisherfolk Association	Poblacion I United Fishermen's Association	PO
Delineation	Clear	Not clear	Clear	Clear
Management Plan	Pending, incorporated in the ordinance	None	On process (EcoGov)	None
Legal Bases	Mun. Ord. No. 02	Res. No. 663; City Ord. No. 40	Mun. Ord. No. 02 S 2000	Mun. Ord. No. 03 S 2001; Mun. Res. No. 10 Series 2001
Infrastructure	Marker buoys, guardhouse, patrol boats	None	Marker buoys, guardhouse, patrol boats	None
Income Source	Tourism	None	Tourism	None
Monitoring/Evaluation	MLGU	None	SUAKCREM, LGU, ENRD	ENRD
Reports	Unpublished reports	None	Unpublished reports	Unpublished reports
Regular Patrol	Bantay dagat	PO	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	High ¹ , Low ² (226 kg/ha)	Low ¹	High ³ (1,176 kg/ha in 2007)	Low ¹
Coral Cover	Good ¹	Poor ¹	Good ³ (67.3% in 2007)	Poor ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Observed coral rubbles due to feeding behavior of large trigger fishes (Balistidae)	Siltation due to its proximity from Pagatban River resulting to mortality of lampirong	None	Lack of marker buoys; irregular enforcement
Past Problems Solved	--	None	Sanctuary violations (poaching at night) solved through regular patrolling and apprehension	None
Remarks/Assessment	Functional	Non-functional	Functional	Non-functional

¹ Estimated using timed-swim survey² Stockwell & Inocencio 2005³ B. Stockwell unpublished data

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	045 South Lipayo Marine Sanctuary	046 Villareal Lampirong Reserve	047 Danjugan Island Marine Reserve and Sanctuaries	048 Hulao-hulao Fish Sanctuary
Year Established	2005	2003	2000	1996(2000)
Location	Dauin, Negros Oriental	Villareal, Basay, Negros Oriental	Bulata, Cauayan, Negros Occ.	Calliling, Cauayan, Negros Occ.
Coordinates	9.19113°N 123.27294°E	9.35270°N 122.81882°E	9.87130°N 122.37398°E	10.01614°N 122.49629°E
Sea	Bohol Sea	Sulu Sea	Sulu Sea	Sulu Sea
Area (ha)	8.20	30.00	102.40	18.196
Habitat	Coral reef	Soft bottom	Coral reef (fringing/patch), mangrove, seagrass bed	Coral reef
Established by	MLGU	MLGU	PRRCFI, CCC	Magsaysay Foundation
Current Manager	Lipayo Fishermen Association (LIFA)	MLGU	DIMRSM Board, PRRCFI	Calaogao Marginal Farmers and Fishermen's Assoc.
Delineation	Clear	Not clear	Clear	Not clear
Management Plan	--	--	--	2000-2005
Legal Bases	Mun. Ord.(specific number not obtained)	Res. No. 663; City Ord. No. 40	Mun. Ord. No. 52 Series 1999 (approved by the Provincial Board)	Mun. Ord. No.2000-58
Infrastructure	Marker buoys, patrol boat	Patrol boat (for the entire municipality)	Marker buoys, signboard	Patrol boat (only 1 for the entire municipal water)
Income Source	Tourism	None	Tourism	None
Monitoring/Evaluation	ENRD, SUAKCREM	None	PRRCFI, UP-MSI/AFMA-MFR, CCC	SUML in 2000; recently none
Reports	Unpublished reports	None	Published articles in refereed scientific journals	See Reboton in PhilReefs (2002)
Regular Patrol	Bantay dagat	None	DIMRS Staff, Bantay dagat	Patrolling done for the entire municipality not specifically in the reserve
Violations	Apprehended	Not applicable (see remarks)	No data	Apprehended
Fish Biomass/Density	Low ¹ (226 kg/ha target in 2005)	Low ²	Low ³ (335.4 kg/ha in 2001)	Low ²
Coral Cover	--	Poor ²	Fair ³ (25.86-36.00)	Poor ² Good ⁴ (61.88% in 2002)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, PRRCFI, MLGU (minimal funding)	Reserve operation, LGU
Current Management Issues/Problems	--	Widespread disappearance of window pane oyster <i>P. placenta</i> .	Financial support from MLGU is minimal.	Lack of budget, regular patrol, marker buoys, CRM plan
Past Problems Solved	--	None	Stakeholder conflicts	--
Remarks/ Assessment	Newly established	Non-functional; re-stocking of <i>P. placenta</i> failed (high mortality) probably due to siltation and effluents from sugar mill	Functional status postponed; Awarded Best Managed Reef for 2002 by PhilReefs, DA, and DENR; Coral bleaching recovery observed in 1998-2000 ²	Non-functional

¹ Stockwell & Inocencio 2005² Estimated using timed-swim survey³ PhilReefs (2004)⁴ Reboton in PhilReefs (2002)⁵ Stockwell et al., 2006

Table 6. The marine reserves of Negros and associated islands, continued

Name of Marine Reserve	049 Sagay Marine Reserve	050 Sipalay City Marine Reserve	051 Sipaway/ Refugio Island Marie Reserve
Year Established	1985	2004	2005
Location	Himoga-an, Old Sagay, Taba-o, Bulanona, Vito, and Molocaboc, Sagay, Negros Occidental	Brgy 4 & Maricalum, Sipalay, Negros Occidental	San Juan & Ermita, San Carlos, Negros Occidental
Coordinates	11.01084°N 123.46138°E	9.69483°N 122.39883°E	10.44214°N 123.42200°E
Sea	Sulu Sea	Sulu Sea	Tañon Strait
Area (ha)	32,000.00; three coral reefs ca 800	66.00	451.00
Habitat	Coral reef	Coral reef, seagrass	Coral reef
Established by	LGU, DENR	LGU-DED-PRRCFRI	--
Current Manager	PAMB-SMR	Sipalay Marine Protected Area Management Board	LGU, GENESYS Foundation Inc.
Delineation	Clear	Clear	--
Management Plan	--	2008-2012	--
Legal Bases	Republic Act No. 9106, Series 2001; NIPAS Act (R.A. 7586); Pre. Proc. No. 592 Series 1995; Mun. Ord. No. 02 Series 1983	City Ord. No. 2004-006	Mun. Ord. No. 29, Series 2005
Infrastructure	Concrete watch towers, motor boats, surveillance equipment	Marker buoys, guardhouse, patrol boats	Marker buoys
Income Source	Alternative livelihood	Tourism (diving fee)	None
Monitoring/Evaluation	SUAKCREM ⁵	Monitoring team	None
Reports	See Stockwell <i>et al.</i> (2006)	See Rebandomia (2008)	Reboton in PhilReefs (2005)
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat
Violations	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Medium ¹ (520 kg/ha Northwest 2005), High ¹ (980 kg/ha North East 2005)	Medium ² (average fish size 20 cm)	--
Coral Cover	Fair ¹ (27% , Northwest in 2005)	Good ³ (70% live coral)	Poor ⁴ (16.88% in Camotes Reef, 16.58% in San Juan Reef in 2002)
Funding & Source	Reserve operation, LGU, DENR	Reserve operation, LGU-SNDPC-OPA	Reserve operation, LGU
Current Management Issues/Problems	Destruction of reefs and overfishing by encroaching commercial fishers; intensified collection of invertebrates; conversion of habitats for aquaculture & mariculture ⁵	Fisherfolk Association not yet established; additional MPA	--
Past Problems Solved	Environmental awareness improved through informal discussions conducted in barangays ⁵	Lack of implementation of RA 8550 & City fishery ordinance resolved through regular meeting and alternative livelihood	--
Remarks/ Assessment	Functional; 2007 awardee (2 nd prize) as Outstanding MPA ⁵ ; 1997 Galing Pook Award; 2 nd Place as Best Aquatic Resources Management 2003 (PCAMPD)	Functional; infestation by crown-of-thorns starfish <i>A. planci</i> noted	Paper reserve

¹ Stockwell *et al.*, 2006² Estimated using timed-swim survey³Rebadomia 2008⁴ PhilReefs (2004)⁵(PAMS 2008).

Sagay Marine Reserve



Taklong Island National Marine Reserve



Photos taken from Sagay Marine Reserve (photos by B Stockwell) in Negros Occidental and Taklong Island National Marine Reserve (photos by J Guirjen) in Guimaras. In Taklong, a patch of mangrove died due to the recent oilspill (above right).

Panay and Associated Islands

There are 72 known marine reserves on Panay and associated islands, having a total area of ca 5,226.92 ha (**Figure 8** and **Table 7**) excluding the 1,143.43 ha area of the Taklong Island National Marine Reserve on Guimaras, a NIPAS declared reserve. On Panay, the majority of marine reserves (42) are in the province of Antique. The areas of these reserves range from one ha to 170 ha, but generally between 2 and 50 ha. The marine reserves in Antique are concentrated in the LIPASECU area (towns of Libertad, Pandan, Sebaste, and Culasi).

It should be noted that even Taklong Island National Marine Reserve failed to meet the criteria despite being a “National Marine Reserve.” Recently,

illegal activities such as blast fishing and construction of fish corral were reported in Taklong. The culprits were apprehended. The lack of permanent personnel to conduct regular patrolling could be the primary reason why illegal activities within this reserve have occurred.

There are 38 (55.07%) reserves considered vulnerable to oil spill. An oil spill (bunker fuel) occurred off southern Guimaras Island in August 2006, affecting 220 km of coastline with mangroves. The bunker oil spill did not show visual evidence that coral reefs in the area were affected (Alcala *et al.*, 2007).

Marine Reserve QUICK STATISTICS	AKLAN	ANTIQUE	CAPIZ	GUIMARAS	ILOILO	Total
Total number	7	42	6	7	10	72
Total area (ha)	625.50	1,387.76	1,040.00	1,653.43	520.23	5,226.92
Number of functional reserves	2 (28.57%)	15 (35.71%)	1 (16.67%)	1 (14.29%)	0	19 (26.39%)
Total area actively protected (ha)	400.00	547.83	50.00	50.00	0	1,047.83
Total number of coastal towns	10	15	7	5	18	55
Number of towns with reserve(s)	6	15	4	4	6	35
Average size (ha)	104.25	38.55	208.00	275.57	65.03	85.78
Minimum size (ha)	4.00	1.00	20.00	5.00	8.00	1.00
Maximum size (ha)	375.00	600.00	900.00	1,143.43	160.00	900.00

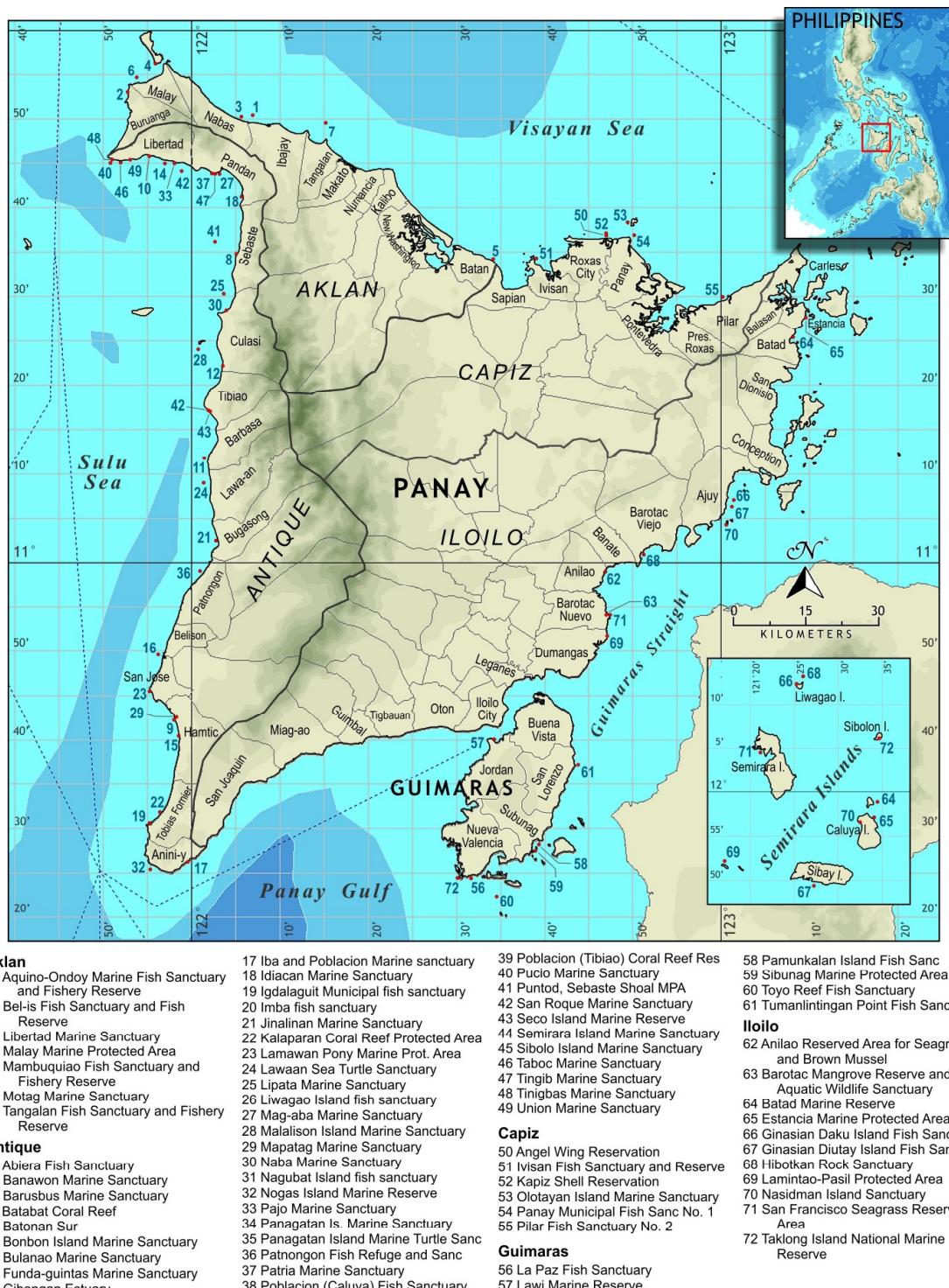


Figure 8. Map of the marine reserves of Panay and associated islands.

Table 7. The marine reserves of Panay and associated islands

Name of Marine Reserve	001 Aquino-Ondoy Marine Fish Sanctuary and Fishery Reserve	002 Bel-is Fish Sanctuary and Fishery Reserve	003 Libertad Marine Sanctuary	004 Malay Marine Protected Area (Tambisaan Reef)
Year Established	2006	2004	2006	2001
Location	Ibajay, Aklan	Buruanga, Aklan	Libertad, Nabas, Aklan	Manocmanoc, Malay, Aklan
Coordinates	11.84138°N 122.11722°E	11.88500°N 121.88083°E	11.83700°N 122.09500°E	11.93800°N 122.93400°E
Sea	Sibuyan Sea	Sibuyan Sea	Sibuyan Sea	Sibuyan Sea
Area (ha)	35.00	25.00	16.00	--
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU and MFARMC of Ibajay	LGU, OMA	Barangay, municipal LGU	Malay LGU
Current Manager	LGU	Brgy. LGU	Brgy, FARMC	--
Delineation	Existing, but no buoys	Clear	Clear	Not clear
Management Plan	None	None	--	None
Legal Bases	Mun. Res. No. 2006-005, Brgy. Ord. No. 2000-07	Mun. Ord. No. 05-08	Mun. Ord. No. 2006-09	Mun. Ord. No. 2001-139
Infrastructure	None	Marker buoys, guards, patrol boat	Patrol boat	--
Income Source	None	None	None	--
Monitoring/Evaluation	OPA-Fishery	LGU, province	Regular, by FARMC, LGU, MAO	--
Reports	Unpublished report	--	Published; available to community	--
Regular Patrol	No regular patrol	Bantay dagat	Bantay dagat	--
Violations	None	--	Warned only	--
Fish Biomass/Density	--	Good ¹	--	--
Coral Cover	Fair ¹ (40%)	Good ¹	Fair ¹ (40%)	Good ¹ (60%)
Funding & Source	None	Reserve operation, LGU	Reserve operation, LGU	--
Current Management Issues/Problems	No organization to manage, no management plan approved	--	Lack of funding for Bantay dagat	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Newly established	Functional	Newly established	Non-functional

¹ Municipal CEP Report

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	005 Mambuquiao Fish Sanctuary and Fishery Reserve	006 Motag Marine Sanctuary	007 Tangalan Fish Sanctuary and Fishery Reserve	008 Abiera Fish Sanctuary
Year Established	2001	2005	2003	1998
Location	Batan, Aklan	Motag, Malay, Aklan	Baybay, Tangalan, Aklan	Abiera, Sebaste, Antique
Coordinates	11.57000°N 122.57000°E	11.91211°N 121.89852°E	11.82682°N 122.25424°E	11.57910°N 122.0865°E
Sea	Sibuyan Sea	Sibuyan Sea	Sibuyan Sea	Sulu Sea
Area (ha)	170.50	4.00	375.00	2.95
Habitat	Coral reef	Coral reefs	Coral reef	Coral reef
Established by	DA, FRMP, BFAR	LGU	LGU	LGU, LIPASECU, M/BFARMC and Brgy. Council
Current Manager	LGU	LGU	LGU	LGU-MAO, BFARMC, LIPASECU
Delineation	Clear	Clear	Clear	Clear
Management Plan	None	--	--	Existing (inclusive years not specified)
Legal Bases	Mun. Ord. No. 2001-02	Mun. Ord. No. 2005-231	Mun. Ord. No. 2003-087	Mun. Ord. No. 2 Series 1998
Infrastructure	Marker buoys, Guard house, patrol boat	Marker buoys patrol boats	Marker buoys, patrol boats	Markers (bamboo poles)
Income Source	From penalties	--	None	None
Monitoring/Evaluation	BFAR	Bantay dagat/ MENRO	PROCESS Foundation	HAYUMA, LGU
Reports	None	Feedback to community	With unpublished reports	Feedback to the community through BFARMC
Regular Patrol	Bantay dagat	Bantay dagat	Bantay dagat	--
Violations	Apprehended	Commercial fishing boat apprehended	--	--
Fish Biomass/Density	--	--	Low ¹ (109.5 kg/ha)	High ² (1131.2 kg/ha)
Coral Cover	--	Good ¹ (60%)	Good ¹ (57.24%)	Fair ² (28%)
Funding & Source	Reserve operation, LGU	--	Reserve operation, LGU	Reserve operation, BLGU
Current Management Issues/Problems	None	Encroachment	--	Siltation; illegal fishing by neighboring barangays
Past Problems Solved	Illegal fishing eliminated through regular Bantay dagat patrols	--	--	--
Remarks/ Assessment	Non-functional	Newly established	Functional	Functional; markers were wiped out in typhoon Frank

¹ Municipal CEP Report

² Hayuma Foundation (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	009 Banawon Marine Sanctuary	010 Barusbus Marine Sanctuary	011 Batabat Coral Reef Reserve	012 Batanon Sur Fish Sanctuary
Year Established	1999	2000	1997	1996
Location	Hamtic, Antique	Libertad, Antique	Poblacion, Barbaza, Antique	Batonan Sur, Culasi, Antique
Coordinates	10.70246°N 121.96852°E	11.76277°N 121.92277°E	11.19526°N 122.02583°E	11.36768°N 122.06060°E
Sea	Sulu Sea	Sulu Sea	Sulu Sea	Sulu Sea
Area (ha)	1.95	1.00	33.47	3.868
Habitat	Coral reef	Coral reef	Coral reef	Coral reef (narrow & fringing)
Established by	LGU, BFARMC	LGU, BFARMC, LIPASECU Baywide Mgt. Council	LGU	LIPASECU, BRAFRMC, ANIAD
Current Manager	LGU	LGU, BFARMC	LGU	BASUFA, SEAFDEC, LGU
Delineation	Not clear	Not clear	Clear	Clear
Management Plan	None	2007-2011	None	1997 to present
Legal Bases	Mun. Ord. No. 01-1999 (null & void)	Brgy & Mun. Res. (specific number not obtained)	Mun. Ord. (specific number not obtained)	Mun. Res. No. 11 & 44, Series 1996; Mun. Ord. Nos. 07, 08, 09, & 10 Series 1996
Infrastructure	None	Guardhouse	Marker buoys, guardhouse, patrol boat	Marker buoys
Income Source	None	None	Alternative livelihood	Tourism
Monitoring/Evaluation	None	Hayuma Foundation, LIPASECU, LGU	HAYUMA	LIPASECU, Hayuma Foundation, SEAFDEC
Reports	None	Community feedbacking during assemblies	Unpublished reports	--
Regular Patrol	None	None	--	Fish Warden assigned by the Brgy & BASUFA
Violations	None	With violations	--	Not apprehended
Fish Biomass/Density	--	Low ¹ (191.96 kg/ha in 2003; 182.76 kg/ha in 2000)	High ²	Low ¹ (Pomacentridae 51%)
Coral Cover	--	Fair ¹ (43.21% in 2003); Good ¹ (51.00% in 2000)	Good ³ (74.0%)	Poor ⁴ (10% in 1997); Good ⁴ (51.7% in 2000, 21.73% massive)
Funding & Source	None	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Ratification of ordinance.	Limited budget on monitoring and maintenance of the MPAs	No management plan or monitoring, but a new municipal fisheries code reviewed (final reading)	Siltation, illegal fishing
Past Problems Solved	--	Sanctuary violations solved through involvement of PO members & barangay officials	Before established, coral reef greatly damage from illegal fishing	Encroachment solved through IEC & implementation of ordinances
Remarks/Assessment	Paper reserve; ordinance declared null and void due to high penalty on apprehension	Functional; decreasing trend in hard coral cover but sustained reef fish biomass (PhilReefs 2005)	Functional	Non-functional

¹ PhilReefs (2005)

² Estimated using timed-swim survey

³ Municipal database 2001

⁴ Haribon Foundation (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	013 Bonbon Island Marine Sanctuary	014 Bulanao Marine Sanctuary	015 Funda-guintas Marine Sanctuary	016 Gibongan Estuary
Year Established	2000	2003	1999	1992
Location	Caluya, Antique	Libertad, Antique	Hamtic, Antique	Salvacion, Mariadona, Belison, Antique
Coordinates	11.98010°N 121.57501°E	11.75030°N 121.95218°E	10.67185°N 121.97671°E	10.82433°N 121.93859°E
Sea	Sibuyan Sea	Sulu Sea	Sulu Sea	Sulu Sea
Area (ha)	18.00	--	3.65	--
Habitat	Coral reef	Coral reef	Coral reef	Soft bottom, estuary
Established by	LGU	LGU, BFARMC, LIPASECU Baywide Mgt. Council	LGU, BFARMC	LGU
Current Manager	LGU	LGU, BFARMC	LGU	--
Delineation	Not clear	Not clear	Not clear	Not clear
Management Plan	None	2007-2011	None	None
Legal Bases	--	Brgy & Mun. Res. (specific number not obtained)	Mun. Ord. No. 01-1999 (null & void)	Mun. Ord. (specific number not obtained)
Infrastructure	None	Guardhouse	None	--
Income Source	None	None	None	--
Monitoring/ Evaluation	None	Hayuma, LIPASECU, LGU	None	--
Reports	None	Community feedbacking during assemblies	None	--
Regular Patrol	None	None	None	--
Violations	None	With violations	None	--
Fish Biomass/Density	--	Medium ¹ (666.61 kg/ha in 2003)	--	--
Coral Cover	--	Fair ¹ (30.93% in 2003)	--	--
Funding & Source	None	Reserve operation, LGU	None	--
Current Management Issues/Problems	--	Limited budget on monitoring and maintenance of the MPAs	Ratification of ordinance	No management plan or monitoring as of the moment
Past Problems Solved	--	Sanctuary violations solved through involvement of PO members & barangay officials	None	Sand and gravel quarrying
Remarks/ Assessment	Paper reserve	Functional	Paper reserve	Paper reserve

¹ PhilReefs (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	017 Iba and Poblacion Marine Sanctuary	018 Idiacan Marine Sanctuary	019 Igdalaguit Municipal Fish Sanctuary	020 Imba Fish Sanctuary
Year Established	2001	1998	1997	1989
Location	Iba and Poblacion, Anini-y, Antique	Idiacan, Pandan, Antique	Igdalaguit, Tobias Fornier, Antique	Imba, Caluya, Antique
Coordinates	10.43406°N 121.99541°E	11.72980°N 122.05393°E	11.72980°N 122.05393°E	11.95055°N 121.5686°E
Sea	Sulu Sea	Sulu Sea	Sulu Sea	Sibuyan Sea
Area (ha)	--	2.00	2.00	30.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU, Brgy. Council	LGU	LGU
Current Manager	LGU, Barangay	LGU, Brgy. Council, LIPASECU	LGU-DA, COASTHAVEN	--
Delineation	Not clear	Clear	Clear	Not clear
Management Plan	None	None	None	None
Legal Bases	Mun. Res. (specific number not obtained)	Mun. Ord. No. 602-98	Mun. Ord. 97-09	None
Infrastructure	Patrol boat	Marker buoys	Buoys, patrol boat	None
Income Source	None	--	--	None
Monitoring/Evaluation	None	LGU, Brgy council, LIPASECU	LGU-DA	None
Reports	None	Available to the community	Unpublished reports	None
Regular Patrol	None	--	Bantay dagat	None
Violations	None	--	Apprehended	None
Fish Biomass/Density	None	--	Medium ¹	--
Coral Cover	--	--	Low ¹	--
Funding & Source	--	Reserve operation, LGU, Brgy. Council	Reserve operation, LGU	None
Current Management Issues/Problems	Sanctuary violations.	Illegal fishing, lack of funds.	--	--
Past Problems Solved	None	--	--	--
Remarks/Assessment	Non-functional; delineations set between borders of barangays which is very broad and inaccurate	Non-functional	Functional; lacks regular underwater monitoring and budget	Paper reserve as of August 2008; currently exists as an SB resolution

¹ Estimated using timed-swim survey

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	021 Jinalinan Marine Sanctuary	022 Kalaparan Coral Reef Protected Area	023 Lamawan Pony Marine Protected Area	024 Lawaan Marine Turtle Sanctuary
Year Established	2002	2002	2003	1998
Location	Jinalinan, Bugasong, Antique	Igdanlog-Arobo, Tobias Fornier, Antique	Funda-dalipe, San Jose de Buenavista, Antique	Candajug Bagonbayan, Lawaan, Antique
Coordinates	11.03919°N 122.04708°E	10.52742°N 121.941825°E	10.75583°N 121.9225°E	11.14840°N 122.02579°E
Sea	Sulu Sea	Sulu Sea	Sulu Sea	Sulu Sea
Area (ha)	1.01	60.00	6.5	1.00
Habitat	Coral reef	Coral reef	Coral reef	Beach
Established by	HAYUMA foundation, Loz Savior	LGU	Process Foundation Panay, COASTHAVEN	LGU
Current Manager	LGU	LGU, BFARMC	ABAGADAGATAN, Barangay council of Dalipe, LGU	LGU
Delineation	Not clear	Not clear	Clear	Not clear
Management Plan	None	None	Existing (inclusive years not indicated)	Existing (inclusive years not indicated)
Legal Bases	Mun. CRM Ord. No. 2002	Mun. Ord. 24-2002	Mun. Res. No. 77-2003	Mun. Res. No. 52-98
Infrastructure	None	None	Marker buoys, guardhouse, patrol boat	None
Income Source	None	None	Tourism	Tourism
Monitoring/Evaluation	None	None	Process, LGU, COASTHAVEN	DENR-PAWB/PAMB, LGU
Reports	None	None	Unpublished reports	None
Regular Patrol	None	None	ABADAGATAN	None
Violations	None	None	Past apprehensions on record	--
Fish Biomass/Density	--	--	Very Low ¹ (40 kg/ha)	Not applicable
Coral Cover	--	--	Fair ² (37%)	Not applicable
Funding & Source	None	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	No management scheme and monitoring as of this time, intrusion of CFU	--	Siltation and garbage due to the growing town of San Jose, net fishing within coral reef area destroying coral.	Lack of management scheme and monitoring; disturbance due to human settlement encroachment; not clearly delineated.
Past Problems Solved	--	--	Resolved through solid waste management program and protection of the areas	--
Remarks/Assessment	Paper reserve; ordinance was adopted from RA 8550	Non-functional	Functional	Non-functional

¹ CRM coordinator²MLGU unpublished data

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	025 Lipata Fish Sanctuary	026 Liwagao Island Fish Sanctuary	027 Mag-aba Marine Sanctuary	028 Malaison Island Marine Sanctuary
Year Established	1996	1994	1999	1991
Location	Lipata, Culasi, Antique	Liwagao Is. Caluya, Antique	Mag-aba, Pandan, Antique	Culasi, Antique, Panay
Coordinates	11.50463°N 122.06144°E	12.20388°N 121.42291°E	11.73092°N 122.04552°E	11.40055°N 122.01472°E
Sea	Sulu Sea	Sibuyan Sea	Sulu Sea	Sulu Sea
Area (ha)	4.0425	--	2.00	28.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	--	LGU, Brgy Council	MLGU
Current Manager	LGU, BFARMC	--	LGU, Brgy Council, LIPASECU	SEAFDEC
Delineation	Clear	Not clear	Not clear	Clear
Management Plan	1997 to present	--	None	--
Legal Bases	Brgy Ord. 11 Ser. 1996, Mun. Res. No. 375-96	SB Resolution (not specified)	Brgy and Mun. Res. (specific number not obtained)	Mun. Ord. No. 05-90
Infrastructure	Marker buoys, patrol boat	None	None	--
Income Source	Tourism	None	None	--
Monitoring/ Evaluation	LGU, LIPASECU	--	BFARMC	Hayuma Foundation, LIPASECU
Reports	Existing, available to the community	None	Reported during BFARMC meetings	Existing
Regular Patrol	Bantay dagat	None	Bantay dagat	--
Violations	Apprehended	None	Apprehended	--
Fish Biomass/Density	--	None	Low ² (125 kg/ha)	Medium ² (387.2 kg/ha)
Coral Cover	Good ¹ (31-50%)	None	Fair ² (29%)	Fair ² (35%)
Funding & Source	Reserve operation, LGU	None	Reserve operation, LGU, Brgy	--
Current Management Issues/Problems	Siltation, illegal fishing	None	Illegal fishing, lack of funds	--
Past Problems Solved	Encroachment solved through IEC & implementation of ordinances	None	Poaching solved through fines and IEC	--
Remarks/ Assessment	Functional but there are not enough buoys; currently there are one or two bamboo pole markers	Paper reserve as of August 2008; currently exists as an SB resolution	Non-functional	Non-functional; community- SEAFDEC cooperation is the factor promoting its sustainability ³ ; CPUE =224.4 kg/ha after two years of protection ⁴

¹ Estimated using timed-swim survey² Hayuma Foundation (2005)³ Alcala *et al.* 2006⁴ Primavera 2002

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	029 Mapatag Marine Sanctuary	030 Naba Marine Sanctuary	031 Nagubat Is. Fish Sanctuary	032 Nogas Island Fish Sanctuary
Year Established	1999	1997	1994	1993
Location	Mapatag, Hamtic, Antique	Naba, Culasi, Antique	Nagubat Is., Caluya, Antique	Anini-y, Antique
Coordinates	10.70695°N 121.97361°E	11.47355°N 122.06749°E	11.82253°N 121.45506°E	10.419566°N 121.923891°E
Sea	Sulu Sea	Sulu Sea	Sibuyan Sea	Sulu Sea
Area (ha)	1.75	2.70	--	35.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef, seagrass bed, mangrove
Established by	LGU, BFARMC	LGU	--	LGU Anini-y
Current Manager	LGU	LGU, BFARMC	--	DENR, Coastguard, LGU
Delineation	Not clear	Clear	--	Clear
Management Plan	None	1997 to present	--	Currently being made
Legal Bases	Mun. Ord. No. 01-1999 (null & void)	Brgy and Mun. Res. (specific number not obtained)	--	Brgy and Mun. Res. (specific number not obtained)
Infrastructure	None	Marker buoys, patrol boat	--	Patrol boats (currently being docked)
Income Source	None	Tourism	--	Tourism
Monitoring/Evaluation	None	LGU, LIPASECU	--	COASTHAVEN
Reports	None	Existing, available to the community	--	Published articles
Regular Patrol	None	Bantay dagat	--	Volunteers only
Violations	None	Apprehended	--	Apprehended
Fish Biomass/Density	--	--	--	Medium ¹
Coral Cover	--	--	--	Good ² (73.64%)
Funding & Source	None	Reserve operation, LGU	--	Reserve operation, MLGU
Current Management Issues/Problems	Ratification of ordinance.	Siltation, illegal fishing.	--	Overlapping of jurisdiction between three agencies (LGU, DENR, Coastguard).
Past Problems Solved	None	Encroachment solved through IEC & implementation of ordinances	--	Commercial and illegal fishing was controlled through regular patrols.
Remarks/Assessment	Paper reserve	Non-functional	Paper reserve	Functional; the reserve encompass whole island

¹ Estimated using timed-swim survey ² DENR signpost

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	033 Pajo Marine Sanctuary	034 Panagatan Islet Marine Sanctuary	035 Panagatan Island Marine Turtle Sanctuary	036 Patnongan Fish Refuge and Sanctuary
Year Established	2000	1994	1975	2005
Location	Libertad, Antique, Panay	Panagatan, Caluya, Antique	Sitio Panagatan, Harigue, Caluya, Antique	Igbararawan-Mabasa, Patnongan, Antique
Coordinates	11.75033°N 121.96900°E	12.21670°N 121.43300°E	11.86888°N 121.28611°E	10.98333°N 122.01666°E
Sea	Sulu Sea	Sibuyan Sea	Sibuyan Sea	Sulu Sea
Area (ha)	2.00	--	600.00	5.00
Habitat	Coral reef	Coral reef	Coral reef, sandy beach	Sand and rocks
Established by	LGU, BFARMC	LGU	National government	LGU
Current Manager	LGU, BFARMC	--	--	SAMASISIG
Delineation	Clear	--	--	Not clear
Management Plan	No existing	--	--	None
Legal Bases	Brgy and Mun. Res. (specific number not obtained)	--	--	Mun. Ord. No. 46-2005
Infrastructure	Marker buoys	--	--	Buoys (washed out), boat (out of operation since 2005)
Income Source	--	--	--	None
Monitoring/Evaluation	Hayuma, LIPASECU, LGU	--	--	None
Reports	Published articles	--	--	None
Regular Patrol	--	--	--	None
Violations	--	--	--	Apprehended
Fish Biomass/Density	Very Low ¹ (15.03 kg/ha in 2005)	--	--	Medium ³
Coral Cover	Good ² (65.89% in 2003, 51.70% in 2000); Fair ¹ (41% in 2005)	--	--	Low ³
Funding & Source	Reserve operation, MLGU	--	--	Reserve operation, LGU
Current Management Issues/Problems	Limited budget on monitoring and maintenance of the Marine Reserves	--	--	No maintenance due to low budget, no regular assessment
Past Problems Solved	--	--	--	--
Remarks/Assessment	Non-functional; increasing trend in coral cover but decreasing trend in reef associated fish biomass (PhilReefs 2005)	Paper reserve	Paper reserve	Newly established

¹ Hayuma Foundation (2005) ² PhilReefs (2005) ³ Estimated using timed-swim survey

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	037 Patria Marine Sanctuary	038 Poblacion Fish Sanctuary	039 Poblacion (Tibiao) Reef Reserve	040 Pucio Marine Sanctuary
Year Established	1997	1985	1993	1999
Location	Patria, Pandan, Antique	Poblacion, Caluya, Antique	Poblacion, Tibiao, Antique	Libertad, Antique
Coordinates	11.7300°N 122.0419°E	11.94250°N 121.54138°E	11.2852°N 122.03290°E	11.75177°N 121.84847°E
Sea	Sulu Sea	Sibuyan Sea	Sulu Sea	Sulu Sea
Area (ha)	3.00	25.00	5.00	3.00
Habitat	Coral Reef	Coral reef	Coral reef	Coral reef
Established by	LGU, Brgy. Council	LGU	LGU	LGU, BFARMC, LIPASECU Baywide Mgt. Council
Current Manager	LGU, Brgy. Council, LIPASECU	--	Brgy. Poblacion LGU	LGU, BFARMC
Delineation	Clear	--	Not clear	Not clear
Management Plan	None	--	None	2007-2011
Legal Bases	Mun. Ord. No. 07-99	--	Mun. Ord. (specific number not obtained)	Brgy & Mun. Res.(specific number not obtained)
Infrastructure	Marker buoys, patrol boat	--	--	Guardhouse
Income Source	None	--	--	None
Monitoring/ Evaluation	LGU, Brgy council, LIPASECU	--	--	Hayuma, LIPASECU, LGU
Reports	Existing, available to the community	--	--	Community feedbacking during assemblies
Regular Patrol	Bantay dagat	--	--	None
Violations	Apprehended	--	--	Apprehended
Fish Biomass/Density	Very Low ¹ (49.2 hg/ha)	--	--	Medium ² (438.53 kg/ha in 2000)
Coral Cover	Poor ¹ (15%)	--	--	Fair ² (36.48% in 2003)
Funding & Source	Reserve operation, LGU, Brgy	--	--	Reserve operation, LGU (very limited)
Current Management Issues/Problems	Illegal fishing; lack of funds	--	--	Limited budget on monitoring and maintenance of the reserve
Past Problems Solved	Poaching solved through fines and IEC	--	--	Sanctuary violations solved through involvement of PO members & barangay officials
Remarks/ Assessment	Non-functional	Paper reserve	Paper reserve	Functional

¹ Hayuma Foundation (2005) ² PhilReefs (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	041 Puntod Sebaste Shoal Marine Protected Area	042 San Roque Marine Sanctuary	043 Seco Island Marine Reserve	044 Semirara Island Marine Sanctuary
Year Established	1998	1999	1993	1998
Location	Sebaste, Antique	Libertad, Antique	Tibiao, Antique	Semirara, Caluya, Antique
Coordinates	11.602669°N 122.045616°E	11.73543°N 121.98383°E	11.28222°N 122.03666°E	12.07416°N 121.35361°E
Sea	Sulu Sea	Sulu Sea	Sulu Sea	Sibuyan Sea
Area (ha)	393.875	2.00	50.00	22.00
Habitat	Coral Reef	Coral reef	Coral reef, seagrass	Coral reef
Established by	LGU, LIPASECU, MFARMC and Brgy. Council	LGU, BFARMC, LIPASECU Baywide Mgt. Council	LGU	LGU
Current Manager	LGU-MAO, BFARMC, LIPASECU	LGU, BFARMC	BLGU	LGU
Delineation	Clear	Not clear	Not clear	None
Management Plan	None	2007-2011	Inclusive years not specified	--
Legal Bases	Mun. Ord. No. 4 Series 2000	Brgy & Mun. Resolution	Mun. Ord. No. 93-01	--
Infrastructure	Markers (replaced by bamboo poles)	Guardhouse	Marker buoys, guardhouse, patrol boats	--
Income Source	None	None	None	--
Monitoring/Evaluation	Hayuma Foundation	Hayuma, LIPASECU, LGU	HAYUMA	--
Reports	Existing, feedback to the community through BFARMC	Community feedbacking during assemblies	Unpublished report	--
Regular Patrol	Bantay dagat (voluntary)	None	None	--
Violations	Apprehended	Apprehended	--	--
Fish Biomass/Density	Medium ¹ (428 kg/ha)	High ² (867.95 kg/ha in 2003) Very High ² (2,249.56 kg/ha in 2000)	Medium ³	--
Coral Cover	Fair ¹ (25%)	Fair ² (35.03% in 2003, 43.08% in 2000)	Fair ⁴ (34.43%)	--
Funding & Source	Reserve operation, LGU Brgy. Council	Reserve operation, LGU	Reserve operation, LGU	--
Current Management Issues/Problems	Siltation, illegal fishing by neighboring barangays	--	Lack of coordination among the citizens	--
Past Problems Solved	Area too large to monitor reduced through municipal ordinance	--	--	--
Remarks/Assessment	Functional	Functional	Functional; Tibiao has CRM Plan with budget for management in 2005	Paper reserve

¹ Hayuma Foundation (2005) ² PhilReefs (2005) ³ Estimated using timed-swim survey ⁴ Municipal Coastal Database

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	045 Sibolo Island Marine Sanctuary	046 Taboc Marine Sanctuary	047 Tingib Marine Sanctuary	048 Tinigbas Marine Sanctuary
Year Established	1994	1999	1999	1999
Location	Caluya, Antique	Libertad, Antique	Tingib, Pandan, Antique	Libertad, Antique
Coordinates	12.10083°N 121.57888°E	11.75193°N 121.86843°E	11.73092°N 122.04552°E	11.75616°N 121.85239°E
Sea	Sibuyan Sea	Sulu Sea	Sulu Sea	Sulu Sea
Area (ha)	20.0	3.00	1.00	2.00
Habitat	Coral reef	Coral reef, seagrass, mangrove	Coral Reef	Coral reef
Established by	LGU	LGU, BFARMC	LGU, Brgy. Council	LGU, BFARMC, LIPASECU Baywide Mgt. Council
Current Manager	LGU	LGU, BFARMC	BFARMC	LGU, BFARMC
Delineation	None	Clear	Clear	Not clear
Management Plan	--	None	None	2007-2011
Legal Bases	--	Brgy. and Mun. Res. (specific number not obtained)	Brgy. and Mun. Res. (specific number not obtained)	Brgy. and Mun. Res. (specific number not obtained)
Infrastructure	--	Buoys	Marker buoys	Guardhouse
Income Source	--	Not indicated	None	None
Monitoring/Evaluation	--	Hayuma, LIPASECU, LGU	None	Hayuma, LIPASECU, LGU
Reports	--	Existing, available to the community	None	Community feedbacking during assemblies
Regular Patrol	--	--	Fish wardens	None
Violations	--	--	Apprehended	Apprehended
Fish Biomass/Density	--	High ¹ (761.71 kg/ha in 2003) Medium ¹ (602.52 kg/ha in 2000) High ¹ (800 kg/ha in 1997)	Medium ²	Low ³ (298 kg/ha)
Coral Cover	--	Fair ¹ (26.7% in 2003, 47.64% in 2000) Good ¹ (63% in 1997)	Good ²	Good ¹ (52.93% in 2003, 58.48% in 2000, 54.00% in 1997) Good ³ (68%)
Funding & Source	--	Reserve operation, LGU	Reserve operation, LGU (Brgy)	Reserve operation, LGU (limited)
Current Management Issues/Problems	--	--	Illegal fishing, lack of funds	Limited budget on monitoring and maintenance of the MPAs
Past Problems Solved	--	--	Poaching solved through fines and IEC	Sanctuary violations solved through involvement of PO members & barangay officials
Remarks/ Assessment	Paper reserve	Functional; decreasing trend in coral cover but sustained reef associated fish biomass (PhilReefs 2005)	Functional	Non-functional; sustained trend in coral cover but decreased reef associated fish biomass (PhilReefs 2005)

¹ PhilReefs (2005) ² Estimated using timed-swim survey ³ Hayuma Foundation (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	049 Union Marine Sanctuary	050 Angel Wing Reservation	051 Ivisan Municipal Fish Sanctuary	052 Kapiz Shell Reservation
Year Established	2003	2002	2002	2002
Location	Libertad, Antique	Punta Cogon, Roxas, City, Capiz	Ivisan, Capiz	Punta Cogon, Roxas City, Capiz
Coordinates	11.75594°N 121.88564°E	11.61292°N 122.78388°E	11.571000°N 122.65200°E	11.61744°N 122.78388°E
Sea	Sulu Sea	Sibuyan Sea	Sibuyan Sea	Sibuyan Sea
Area (ha)	--	35.00	--	35.00
Habitat	Coral reef	Bedrock, mud	--	Bedrock/mud
Established by	LGU, BFARMC, LIPASECU Baywide Mgt. Council	LGU	BFAR, LGU	LGU
Current Manager	LGU, BFARMC	LGU	LGU	LGU
Delineation	Not clear	--	Not clear	--
Management Plan	2007-2011	--	None	--
Legal Bases	Brgy. and Mun. Res. (specific number not obtained)	--	Mun. Ord. No. 04 Series 2002	--
Infrastructure	Guardhouse	--	Guardhouse, patrol boat	--
Income Source	None	--	Alternative livelihood	--
Monitoring/Evaluation	Hayuma, LIPASECU, LGU	--	Municipal fishery officer	--
Reports	Community feedbacking during assemblies	--	None published but available though IEC to community	--
Regular Patrol	None	--	Bantay dagat	--
Violations	Apprehended	--	Recent minor violations (hook & line and spearfishing inside)	--
Fish Biomass/Density	Medium ¹	--	--	--
Coral Cover	Good ² (49.02% in 2003)	--	--	--
Funding & Source	Reserve operation, LGU (limited)	--	Reserve operation, LGU	--
Current Management Issues/Problems	Limited budget on monitoring and maintenance of the Marine Reserves	--	Bantay dagat encounters with commercial fishing boat, case is still in the court	--
Past Problems Solved	Sanctuary violations solved through involvement of PO members & barangay officials	--	--	--
Remarks/Assessment	Functional	Paper reserve	Non-functional	Paper reserve

¹ Estimated using timed-swim survey ² PhilReefs (2005)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	053 Olotayan Marine Sanctuary	054 Panay Fishery Marine Reserve	055 Pilar Fish Sanctuary	056 La Paz Fish Sanctuary
Year Established	2002	2003	1998	1997
Location	Roxas City, Capiz	Panay, Capiz	Pilar, Capiz	Nueva Valencia, Guimaras
Coordinates	11.63886°N 122.82380°E	11.61510°N 122.83611°E	11.49700°N 123.00300°E	10.42021°N 122.49673°E
Sea	Sibuyan Sea	Sibuyan Sea	Sibuyan Sea	Sulu Sea
Area (ha)	50.00	900.00	20 has	--
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU of Roxas City	LGU	LGU	--
Current Manager	BFARMC	LGU	LGU	--
Delineation	Clear delineation, but markers recently lost	Not clear	--	--
Management Plan	None	None	--	--
Legal Bases	City Ord. No. 2007-016, amended from Ord. 104 Series 2002	Mun. Ord. No. 02 Series 2003	--	--
Infrastructure	Guardhouse	Patrol boat	--	--
Income Source	Tourism (private persons), being planned to be community-based	None	--	--
Monitoring/Evaluation	UPV	MENRO	--	--
Reports	Existing (UPV, PGI, GTZ)	None	--	--
Regular Patrol	Bantay dagat	Bantay dagat, MENRO, PNP	--	--
Violations	Recent encroachments apprehended	Apprehended	--	--
Fish Biomass/Density	Low ¹ (130 kg/ha)	--	--	--
Coral Cover	Good ¹ (60%)	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	--	--
Current Management Issues/Problems	Uncontrolled illegal fishing; bad local culture of asking for fish from commercial vessels makes solutions difficult	Financial constraints	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Functional	Non-functional	Paper reserve	Paper reserve

¹ Beldia et al. (2006)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	057 Lawi Marine Reserve	058 Pamunkalan Fish Sanctuary	059 Sibunag Marine Protected Area	060 Toyo Reef Fish Sanctuary
Year Established	1997	2004	2004	1995
Location	Sitio Lusay and Ave Maria Islet, Lawi, Jordan, Guimaras	Pamunkalan, Sibunag, Guimaras	Sibunag, Guimaras	Nueva Valencia, Guimaras
Coordinates	10.66511°N 122.57251°E	10.45600°N 122.64989°E	10.45598°N 122.64990°E	10.36839°N 122.57660°E
Sea	Guimaras Strait	Guimaras Strait	Guimaras Strait	Guimaras Strait
Area (ha)	50.00	5.00	25.00	400.00
Habitat	Coral reef	Coral reef	Coral reef, seagrass, algal bed, deep water	Coral reef, deep water
Established by	Small Islands Agricultural Support Services Program (SMISLE)	LGU	LGU, DA-BFAR RFOG, Save the Children Foundation	LGU, Nueva Valencia
Current Manager	Mun. Marine Reserve Mngt, Board	LGU	LGU-TWG	LGU Bantay dagat Program
Delineation	Clear	Clear	Not clear	Not clear
Management Plan	1997-2007	--	None	Under preparation
Legal Bases	Mun. Ord. No. 1997-06	--	Unclear, but technical description available	Mun. Ord. No. 4 Series 1998
Infrastructure	Buoys, guardhouse, patrol boat	--	Patrol boats	Patrol boat
Income Source	Donations	--	None	Tourism
Monitoring/Evaluation	LGU-BFAR	--	None	--
Reports	Existing, with Brgy. Dev. Council	--	No report available	--
Regular Patrol	Bantay dagat	--	Bantay dagat	Bantay dagat
Violations	Recent gillnet fishing inside	--	Apprehended	--
Fish Biomass/Density	Medium ¹	--	--	None
Coral Cover	Fair ¹	--	--	None
Funding & Source	Reserve operation, LGU	--	Reserve operation, LGU (20% of IRA)	Reserve operation, LGU
Current Management Issues/Problems	MMRMB currently not operational, insufficient funding for patrol operations	--	Lack of financial support to conduct assessment & training	No funding for marker buoys
Past Problems Solved	Illegal fishing and missing marker buoys resolved	--	Lack of funds for reserve establishment solved	Illegal fishing minimized through regular surveillance
Remarks/Assessment	Functional	Non-functional	Paper reserve	Non-functional

¹ Estimated using timed-swim survey

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	061 Tumalintangan Point Marine Sanctuary	062 Anilao Reserved Area for Seagrass and Brown Mussel	063 Barotac Mangrove Reserve & Aquatic Wildlife Sanctuary	064 Batad Marine Reserve
Year Established	1994	1997	1999	2001
Location	San Lorenzo, Guimaras	Bangula-um, Anilao, Iloilo	Barotac Nuevo, Iloilo	Batad, Iloilo
Coordinates	10.61700°N 122.73000°E	10.98223°N 122.78146°E	10.89890°N 122.78397°E	11.42200°N 123.13700°E
Sea	Guimaras Strait	Guimaras Strait	Guimaras Strait	Visayan Sea
Area (ha)	30.00	8.00	160.00	17.23
Habitat	Coral reef, deep water	Seagrass beds	Coral reef, seagrass, algal bed, deep water	Coral reef, seagrass
Established by	LGU, PAMB, and BFARMC	LGU, Brgy council, BBRMCI	LGU, BBRMCI	LGU
Current Manager	LGU, FARMC	BBRMCI	Banate Bay Resource Management Council, Inc. (BBRMCI)	LGU, BFARMC, MFARMC
Delineation	Not clear	Not clear	Not clear	Not clear
Management Plan	None	--	--	--
Legal Bases	Mun. Ord. No. 1994-094	Mun. Ord. (Specific number not obtained)	Mun. Ord. No. 001-1999	Mun. Ord. No. 03-27
Infrastructure	Patrol boat	Patrol boat (not maintained)	Patrol boat	Patrol boat
Income Source	None	Alternative livelihood	None	--
Monitoring/Evaluation	None	BBRMCI, FARMC	BBRMCI, LGU, NGAs	--
Reports	None	Feedback to community	Community feedback through meetings; published also in <i>Pagatpat</i> Newsletter of BBRMCI (1998- present)	--
Regular Patrol	Bantay dagat	Bantay dagat	With regular patrol	--
Violations	None	Apprehended	Violations occurring; apprehended	--
Fish Biomass/Density	None	--	--	High ¹
Coral Cover	None	--	--	--
Funding & Source	Reserve operation, LGU	Reserve operation, BBRMCI	Reserve operation, LGU	Bantay dagat allowance; fines; LGU
Current Management Issues/Problems	No marker buoys; No current funding and technical support	Lack of buoys	Encroachment of fishermen & commercial fishers	Lack of buoys, management plan, illegal fishing, funding for MPA operation
Past Problems Solved	--	--	Other problems solved through inter-agency cooperation and strengthening of local task force patrolling and surveillance	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ Estimated timed-swin (A. Sequito)

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	065 Estancia Marine Protected Area	066 Ginasian Daku Island Fish Sanctuary	067 Ginasian Diutay Island Fish Sanctuary	068 Hibotkan Rock Sanctuary
Year Established	2004	2004	2004	1995
Location	Estancia, Iloilo	Pili, Ajuy, Iloilo	Malayuan, Ajuy, Iloilo	Banate, Iloilo
Coordinates	11.45900°N 123.16100°E	11.11666°N 123.02388°E	11.10288°N 123.02147°E	11.01300°N 122.85400°E
Sea	Visayan Sea	Visayan Sea	Visayan Sea	Visayan Sea
Area (ha)	--	100.00	100.00	--
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	Pili Small Fisherfolks Association	PESCO Dev., GTZ	LGU, BBRMCI
Current Manager	LGU-MFARMC-Bantay dagat	Pili Small Fisherfolks Association	Pili Small Fisherfolks Association	BBRMCI
Delineation	Not clear	Not clear	Not clear	Not clear
Management Plan	--	2004-present	2004-present	--
Legal Bases	Mun. Ord. No. 012-2004	Mun. Ord. No. 2006-08	Mun. Ord. No. 2006-08	Mun. Ord.(specific number not obtained)
Infrastructure	Guardhouse, patrol boat	Buoys (lost), Guardhouse, patrol boats	Marker buoys (lost), Guardhouse, patrol boats	Patrol boat
Income Source	Alternative livelihood	Alternative livelihood	Alternative livelihood	None
Monitoring/Evaluation	MFARMC, BFAR regional office	DA, LGU	DA, LGU	BBRMCI
Reports	None	Feedback to community	Feedback to community	Community feedback only through meetings
Regular Patrol	--	With patrols but not specified	With patrols but not specified	With regular patrol but not specified
Violations	--	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	Reserve operation, LGU, MFARMC	Reserve operation, LGU, Prov. Government	Reserve operation, LGU, Prov. Government	Reserve operation, LGU (not allowance for patrols)
Current Management Issues/Problems	Lack of training or technical assistance for visual assessment	Marker buoys not replaced	Marker buoys not replaced	--
Past Problems Solved	--	--	--	Encroachment of illegal fishers solved by monitoring and patrolling
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

Table 7. The marine reserves of Panay and associated islands, continued

Name of Marine Reserve	069 Lamintao-Pasil Area Sanctuary	070 Nasidman Island Sanctuary	071 San Francisco Seagrass Reserve Area	Taklong Island National Marine Reserve (TINMAR)
Year Established	2004	2004	--	1990
Location	Lamintao, Talisay, Barotac Nuevo, Iloilo	Nasidman, Ajuy, Iloilo	San Francisco, Barotac Nuevo, Iloilo	Nueva Valencia, Guimaras
Coordinates	10.90000°N 122.93889°E	11.06765°N 123.01038°E	10.89949°N 122.79221°E	10.40000-10.43333°N 122.48333-122.51917°E
Sea	Visayan Sea	Visayan Sea	Guimaras Strait	Guimaras Strait
Area (ha)	25.00	100.00	10.00	1143.43
Habitat	Coral reef	Coral reef	Seagrass	Coral reef (fringing), mangroves, seagrass, algal bed, deep water
Established by	MLGU	Prov. Government	--	PAMB (Interim)
Current Manager	MLGU	Pili Small Fisherfolks Association	--	LACODA & SARCEPA
Delineation	--	Not clear	--	Not clear
Management Plan	--	2004-present	--	Integrated Protected Area Plan
Legal Bases	Mun. Res. No. 28; Mun. Ord. 02-98; Mun. Fisheries Ordinance 2004	Mun. Ord. No. 2006-08	--	Under NIPAS (R.A. 7586); Pres. Proc. No. 525 Series 1990
Infrastructure	--	Marker buoys (lost), Guardhouse, patrol boats	--	None
Income Source	--	Alternative livelihood	--	Tourism (entrance fees)
Monitoring/Evaluation	--	DA, LGU	--	Designated PASu (No support staff)
Reports	--	Feedback to community	--	At least five unpublished technical reports
Regular Patrol	--	With patrols but not specified	--	None
Violations	--	Apprehended	--	Fish corral construction (ordered to pull out; illegal fishing (blotted))
Fish Biomass/Density	--	--	--	Very Low ¹ (5.3 kg/500m ²)
Coral Cover	--	--	--	Poor ¹ (25%)
Funding & Source	--	Reserve operation, LGU, Prov. Government	--	Reserve operation, DENR (minimal)
Current Management Issues/Problems	--	Marker buoys not replaced	--	Lack of budget; permanent personnel for maintenance and protection of the area
Past Problems Solved	--	--	--	None
Remarks/Assessment	Paper reserve	Non-functional	Paper reserve	Non-functional

¹ Alcala et al. (2007)

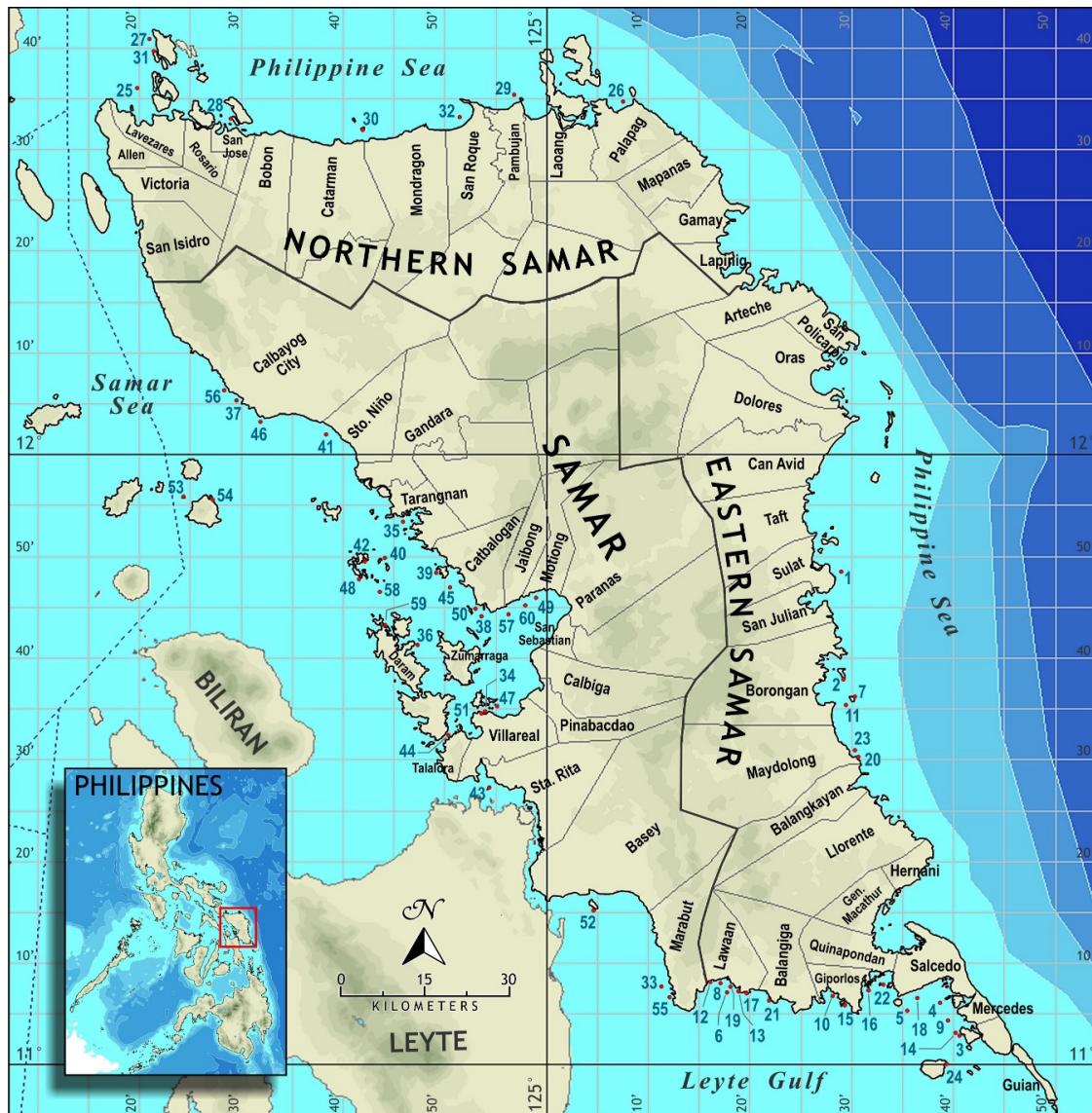
Samar

and Associated Islands

On the whole, Samar and its associated islands have 60 marine reserves, with a total sea area of 3,186.65 ha (**Figure 9, Table 8**). The sea areas occupied by the Guiuan Protected Landscape and Seascape (total area 60,448 ha) and the Biri-LAROSA Protected Landscape and Seascape (33,492 ha) were not included in the computation of the total area of the reserves, but the sea areas occupied by

marine reserves within these two Protected Seascapes and Landscapes were included. Of the 61 reserves, 59 were subjected to the criteria on functionality, having ages of at least three years. Only nine (15.25%) reserves with a total sea area of 1,554.15 ha can be considered functional. Individual reserve sizes range from 5 to 1,400 ha for the LGU-managed reserves on Samar Island.

Marine Reserve QUICK STATISTICS	SAMAR	EASTERN SAMAR	NORTHERN SAMAR	Total
Total number	28	24	8	60
Total area (ha)	771.62	604.32	1,810.71	3186.65
Number of functional reserves	0	6 (25%)	0	6 (10%)
Total area actively protected (ha)	0	167.47	0	167.47
Total number of coastal towns	17	21	17	55
Number of towns with reserve(s)	12	10	8	30
Average size (ha)	32.15	26.27	226.34	53.11
Minimum size (ha)	4.40	6.35	11.02	4.40
Maximum size (ha)	150.00	84.00	907.00	907.00



Eastern Samar

- 1 Anajao Island Fish Sanctuary
- 2 Ando Fish Sanctuary
- 3 Bagonbanwa Marine Reserve & Sanctuaries
- 4 Baol Island Marine Reserve
- 5 Binabasan Island Marine Sanctuary
- 6 Bolusao Fish Sanctuary
- 7 Borongan Fish Sanctuary
- 8 Canigar Is. Fish Sanctuary
- 9 Can-osod Fish Sanctuary
- 10 Cantumangpad Marine Sanctuary
- 11 Divinubo Fish Sanctuary
- 12 Guinob-an Marine Reserve and Fish Sanctuary
- 13 Lain Marine Reserve and Fish Sanc
- 14 Manapag Reef Marine Sanctuary
- 15 Mandalukon Marine Reserve
- 16 Mantampok Islet Fish Sanctuary
- 17 Maslog Fish Sanctuary

Northern Samar

- 18 Minonbonan Reef Sanctuary
- 19 Monbon Fish Sanctuary
- 20 Nabungsod Islad Marine Reserve
- 21 Paglalangan Pt to Locso-on Pt. Fish Sanctuary
- 22 Panaloytony Fish Sanctuary
- 23 Pasig Reef Fish Sanctuary
- 24 Puno Point Marine Reserve
- 25 Barobaybay Fish Sanctuary
- 26 Binay-Palihon Island Fish/Marine Sanc
- 27 Biri-Magtutuka Island Fish Sanctuary
- 28 Cabaungan Marine Reserve
- 29 Caohagan Island Fish Sanctuary
- 30 Hirapsan-Pallhon Islands Marine Fish Sanctuary
- 31 Pio del Pilar Fish Sanctuary
- 32 San Roque Fish Sanctuary

Samar

- 33 Badungbadong Fish Sanctuary
- 34 Banqui Marine Reserve Area
- 35 Baras Fish Sanctuary
- 36 Betaug Reef Fish Sanctuary
- 37 Biatongan Reef Fish Sanctuary
- 38 Bunuan Marine Protected Area & Fish Sanctuary
- 39 Cabugawan Marine Protected Area
- 40 Canhawan Fish Sanctuary
- 41 Cautod Fish Sanctuary
- 42 Cinco Marine Protected Area and Fish Sanctuary
- 43 Dabong Island Fish Sanctuary
- 44 Independencia Fish Sanctuary
- 45 Lutao Reef Marine Protected Area & Fish Sanctuary
- 46 Maguinoo Fish Sanctuary
- 47 Mahayag Marine Reserve Area

- 48 Monbon Marine Protected Area & Fish Sanctuary
- 49 Motlong Fish Sanctuary
- 50 Old Mahayag Marine Protected Area & Fish Sanctuary
- 51 Pacao Marine Reserve Area
- 52 Panonobulan Island Fish Sanctuary
- 53 Pilar Island Fish Sanctuary I
- 54 Pilar Island Fish Sanctuary II
- 55 Pinanalangga Fish Sanctuary
- 56 Puro Island Fish Sanctuary
- 57 Rama Marine Protected Area & Fish Sanctuary
- 58 Sampotan Islet Marine Protected Area
- 59 San Miguel Fish Sanctuary
- 60 Taisao Rocks Fish Sanctuary

Figure 9. Map of the marine reserves of Samar and associated islands.

Table 8. The marine reserves of Samar and associated islands

Name of Marine Reserve	001 Anajao Island Fish Sanctuary	002 Ando Fish Sanctuary	003 Bagongbanwa Marine Reserve and Sanctuary	004 Baol Island Marine Reserve
Year Established	1994	2002	1992	2006
Location	Sto. Niño, Sulat, Eastern Samar	Ando, Borongan, Eastern Samar	Bagongbanwa, Guiuan, Eastern Samar	Maliwaliw, Salcedo, Eastern Samar
Coordinates	11.80788°N 125.48225°E	11.63222°N 125.48638°E	11.04936°N 125.67484°E	11.10270°N 125.64372°E
Sea	Philippine Sea	Philippine Sea	Leyte Gulf	Leyte Gulf
Area (ha)	50.00	30.00	28.00	16.32
Habitat	Coral Reef with AR made of used tires	Coral reef	Coral Reef, Seagrass, Mangrove	Coral reef
Established by	LGU	BFAR; CBRMP	GDFI	GDFI
Current Manager	LGU	PO (Based at Brgy. Ando)	GDFI	Tripartite management of LGU, PO's and GDFI but not in place yet.
Delineation	None	None. Washed off during typhoon	Not clear	Not clear (some buoys lost by typhoon)
Management Plan	None	None. Only a CRM Plan (2006 – 2010) but not fully implemented	None	None
Legal Bases	None	Mun. Ord. No. 23 Series 2005	Mun. Ord. No. 02 Series 1998	Mun. Ord. No. 05-02 Series 2005 approved by Res.No. 162 Series 2005
Infrastructure	None	None	Concrete research and educational center. One patrol boat	None
Income Source	None	Tourism (cottage rental)	Donations from private donors	None
Monitoring/Evaluation	Evaluation done by BFAR Regional Office in 1993	BFAR in 2002	BFAR conducts a bi-annual monitoring; RRA conducted by Alcala <i>et al.</i> in 1993	PCRA (2008) conducted by PLAN Phils.
Reports	No copy obtained	Alpino <i>et al.</i> (undated report)	Kuhlmann, 2002; Alcala <i>et al.</i> (1993)	None
Regular Patrol	Only within municipal waters; Task-force KALIKASAN (Prov'l funds)	None	Bantay dagat	None
Violations	None	None	Poaching by sea cucumber collectors using compressor	None
Fish Biomass/Density	None	Medium ¹	Low ² (116 kg/ha)	--
Coral Cover	None	Fair ¹ (35 to 40%)	Fair ²	--
Funding & Source	None	Reserve operation, PO (not sustainable)	None	Reserve operation, LGU
Current Management Issues/Problems	Lacks budget for infrastructures and patrol boats; no organized PO's or other support organizations; illegal fishing activities	No budget; no compensation for Bantay dagat personnel; chlorine fishing rampant	--	Weak implementation
Past Problems Solved	No marker buoys since established; presence of dynamite fishing	Lack of CRM awareness solved through education	--	None; new reserve
Remarks/Assessment	Paper reserve	Non-functional	Functional	Newly established

¹ Estimated using timed-swim survey ² Kuhlmann (2002)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	005 Binabasalan Island Marine Sanctuary	006 Bolusao Fish Sanctuary	007 Borongan Fish Sanctuary	008 Canigaran Island Fish Sanctuary
Year Established	2006	2000	1997	1995
Location	Maliwaliw, Salcedo, Eastern Samar	Bolusao, Lauaan, Eastern Samar	Monbon Island, Borongan, Eastern Samar	Canigaran Islands, Mercedes, Eastern Samar
Coordinates	11.09103°N 125.59038°E	11.12000°N 125.29500°E	11.60300°N 125.50589°E	11.07310°N 125.65655°E
Sea	Leyte Gulf	Lauaan Bay/Leyte Gulf	Pacific Ocean	Leyte Gulf
Area (ha)	6.35	10.00	84.00	16.00
Habitat	Coral Reef	Coral reef (fringing) with mangroves and seagrass beds	Coral reef	Coral reef, seagrass, mangrove
Established by	GDFI	MLGU	Provincial Government (Provincial Agriculturist), LGU (MA Office) and Eastern Samar State College (ESSC)	Guian Development Foundation, Inc. (GDFI)
Current Manager	Tripartite management of LGU, PO's and GDFI but organizational structure is not yet in place	Bolusao Multi-Purpose Cooperative	Provincial and City Government of Borongan	Coastal Zone Management Council (CZMC), GDFI
Delineation	Not clear (some buoys lost by typhoon)	Clear	Present – bamboo marker	Clear
Management Plan	None	None	None	--
Legal Bases	Mun. Ord. No. 05-02 Series 2005 approved by Res. No. 162 Series 2005	Mun. Ord.(not specified)	Mun. Ord. No. 017 Series 1997	Mun. Ord. No. 11 Series 1995
Infrastructure	Multi-purpose hall, private boats for patrolling	--	Boundary markers, Guardhouse, patrol boat	Marker buoys
Income Source	None	None	Tourism (cottage rental)	None
Monitoring/Evaluation	PLAN, Phils (PCRA, 2008)	None	Eastern Samar State Univ. (ESSU) annually from 2000-2005.	GDFI
Reports	None	None	Alura <i>et al.</i> 2005	--
Regular Patrol	None	None	Only within municipal waters	CZMC
Violations	None	--	None	--
Fish Biomass/Density	--	--	Low ² (98 to 223 kg/ha from 2001-2005)	Low ³ (134 kg/ha)
Coral Cover	--	Poor ¹	Good ² (46.94 to 60.08% from 2001-2005)	Fair ³
Funding & Source	Reserve operation, LGU (including Bantay dagat salary)	Reserve operation, LGU	Reserve operation, City & Prov'l gov'ts fish warden (salary)	Reserve operation, LGU
Current Management Issues/Problems	Weak implementation; marker buoys not replaced	--	Financial constraints; sanctuary violations	No clear guidelines in enforcing the laws at the sanctuary; lack of patrol boat
Past Problems Solved	None; new reserve	--	--	--
Remarks/Assessment	Newly established	Non-functional	Non-functional	Non-functional

¹ CCEF MPA Database² Estimated using timed-swim survey³ Kuhlmann (2002)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	009 Can-osod Fish Sanctuary	010 Cantumangpad Marine Sanctuary	011 Divinubo Fish Sanctuary	012 Guinob-an Fish Sanctuary
Year Established	2002	1990's	2002	1994
Location	Betaog, Lawaan, Eastern Samar	Giporlos, Eastern Samar	Borongan, Eastern Samar	Guinob-an, Lawaan, Eastern Samar
Coordinates	11.13583°N 125.28500°E	11.11400°N 125.46900°E	11.59111°N 125.49083°E	11.13833°N 125.26833°E
Sea	Leyte Gulf	Leyte Gulf	Philippine Sea	Leyte Gulf
Area (ha)	34.00	17.72	32.00	10.14
Habitat	Coral Reef, Seagrass	Coral reef	Coral reef	Coral reef, seagrass
Established by	LGU-CBRMP	GDFI	BFAR, CBRMP	GDFI
Current Manager	PO	PO's of Brgy. Giga, Sitio Salvacion	PO	Brgy Guinob-an Multipurpose Cooperative, Lawaan Coastal Zone Management Council (CZMC)
Delineation	None	None	Not clear	Clear
Management Plan	None	None	None	--
Legal Bases	MFO No. 03 Series 2003	Mun. Ord. (Specific number not obtained)	Mun. Ord. No. 23 Series 2005	Brgy Ord. No. 01 Series 1994; Mun. Ord. Nos. 02 & 04 Series 1994
Infrastructure	Guardhouse	None	None	Buoys, signboard, guardhouse, patrol boat (owned by municipal)
Income Source	Tourism	None	Tourism	Alternative livelihood
Monitoring/Evaluation	LGU and BFAR in 2006	GDFI, LABRADOR (an NGO)	BFAR	GDFI
Reports	--	Kuhlmann (2002)	BFAR 2002 unpublished report	See De La Cruz and Cabansag (2005), Kuhlmann (1999)
Regular Patrol	None	None	None	Fish Warden assigned by the municipal government
Violations	None	Use of dynamite, cyanide and "tubli" for fishing.	--	--
Fish Biomass/Density	--	Very Low ² (27kg/ha)	--	Very Low ³ (25 kg/ha)
Coral Cover	Fair ¹ (30%)	Poor ²	--	Poor ⁴ (16%)
Funding & Source	None	Reserve operation, LGU	None	--
Current Management Issues/Problems	Maintenance of marker buoys; continue IEC	Zoning, delineation of boundaries, and lack of financial support, Illegal fishing activities	Lack of financial support	Lack of community support; growing population of the municipality; (PhilReefs 2004)
Past Problems Solved	Commercial, cyanide and dynamite fishing	None	Lack of CRM awareness solved gradually through education	--
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ MCD 2004 ² Kuhlmann (2002) ³ PhilReefs (2004) ⁴ Haribon Foundation (2005)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	013 Lain Marine Reserve and Fish Sanctuary	014 Manapag Reef Marine Sanctuary	015 Mandalukon Marine Reserve	016 Mantampok Islet Marine Sanctuary
Year Established	1994	2006	1995	2003
Location	Taguite, Lawaan, Eastern Samar	Trinidad, Guiuan, Eastern Samar	Coticot, Giporlos, Eastern Samar	Sto. Niño, Quinapondan, Eastern Samar
Coordinates	11.12222°N 125.31444°E	11.05333°N 125.67083°E	11.09910°N 125.48788°E	11.1239°N 125.52758°E
Sea	Leyte Gulf	Leyte Gulf	Leyte Gulf	Leyte Gulf
Area (ha)	12.00	13.7196	17.72	11.60
Habitat	Seagrass, mangrove, sandy bottom	Coral Reef	Coral reef, soft bottom	Coral reef, seagrass, mangrove
Established by	GDFI	Brgy. Council of Brgy. Trinidad, BFAR, MODE	GDFI	LGU
Current Manager	Taguite Multi-Purpose Cooperative, GDFI	Brgy. Council and PO (UMANGAT) of Brgy. Trinidad	Coticot Multipurpose Cooperative (CMC), GDFI	LGU
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	None	--	None
Legal Bases	Mun. Ord. No. 04 Series 1994; Mun. Ord. No. 02 Series 1996	Mun. Ord. No. 09 Series 2006	Mun. Ord. No. 13 Series 1995; Mun. Ord. No. 27 Series 1991; Mun. Res. Nos. 06 & 57 Series 1996	Mun. Ord. No. 97-01
Infrastructure	Marker buoys, signboard	Marker Buoys. Patrol boats (privately-owned)	Marker buoys, signboard	Buoys, guardhouse, patrol boat and signboards.
Income Source	--	None	--	None
Monitoring/Evaluation	GDFI, UP-Tacloban, TMC members	Evaluated by BFAR before established	GDFI	BFAR-Guiuan, GDFI survey in 2005, Kuhlmann 2002
Reports	Unpublished reports	No copy given to the LGU	No available report	Kuhlmann (2002)
Regular Patrol	Bantay dagat and PNP	Bantay dagat	Bantay dagat	Bantay dagat
Violations	--	None	None	Encroachment
Fish Biomass/Density	--	--	Very Low ² (90 kg/ha)	Low ² (18,000 indiv/ha)
Coral Cover	Poor ¹	--	Fair ²	Fair ² (48%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation; LGU
Current Management Issues/Problems	Sanctuary violations; marker buoys stolen.	Zoning, delineation, and financial constraints.	Lack of CRM awareness and community support. Commercial fishing vessels not apprehended.	Lack of patrolling equipment; encroachment and illegal fishing activities near the reserve.
Past Problems Solved	--	Dynamite fishing solved through apprehensions	--	Sanctuary violations solved through apprehensions
Remarks/Assessment	Non-functional	Newly established	Functional	Functional

¹ CCEF MPA Database² Kuhlmann (2002)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	017 Maslog Fish Sanctuary	018 Minonbonan Reef Marine Sanctuary	019 Monbon Fish Sanctuary	020 Nabungsod Island Marine Reserve
Year Established	2002	1996	1995	2000 – 2001
Location	Lawaan, Eastern Samar	Camanga, Salcedo, Eastern Samar	Brgys 2 & 6, Poblacion, Lawaan, Eastern Samar	Maydolong, Eastern Samar
Coordinates	11.11888°N 125.32805°E	11.10970°N 125.60658°E	11.12916°N 125.30083°E	11.50566°N 125.51055°E
Sea	Leyte Gulf	Leyte Gulf	Leyte Gulf	Philippine Sea
Area (ha)	25.40	19.20	44.10	30.00
Habitat	Coral reef, seagrass	Coral Reef, Mangrove, SG	Coral reef (fringing), mangrove	Coral Reef
Established by	GDFI	GDFI	GDFI	CBRMP
Current Manager	PO	PO's of Brgy. Camanga	Lawaan Association for Community Based Resource Management, GDFI	LGU; Citizen for Clean Coastal Environment Association (CCCEA)
Delineation	Not clear	Not clear	Clear	Clear
Management Plan	None	None	--	None
Legal Bases	Mun. Ord. No.03, Series 2003	Mun. Ord. No.04 Series 1996	Mun. Ord. No. 02 Series 1996; Mun. Ord. No. 04 Series 1994	Res. No. 022-07
Infrastructure	Guardhouse and patrol boat	Patrol boat	Marker buoys, signboard, guardhouse, patrol boat	Buoys, guardhouse, patrol boats (privately-owned)
Income Source	None	None	--	Tourism (cottage fees)
Monitoring/Evaluation	LGU and BFAR in 2006	Kuhlmann (2002); SU-IEMS 2007; GDFI, UP-Tacloban, TMC members	GDFI, UP-Tacloban, TMC members	ESSU, BFAR-R8 (2000)
Reports	No available report	(Kuhlman (2002) and some unpublished reports	Kuhlmann (1998, unpublished)	--
Regular Patrol	None	Bantay dagat, PNP, fish wardens	Bantay dagat (24 hours)	Bantay dagat
Violations	--	--	Apprehended	Illegal fishing such as use of poisonous substances.
Fish Biomass/Density	--	Low ² (196 kg/ha)	Very Low ³ (50 kg/ha)	--
Coral Cover	Fair ¹ (32.55%)	Fair ²	Poor ⁴ (14.8)	--
Funding & Source	None	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lost marker buoys not replaced	Political problems; Lack of maintenance for markers; Use of fine mesh nets Destructive extraction of abalone	Use of poisonous substances like cyanide, chlorine and "Tuba"	--
Past Problems Solved	Illegal fishing (not specified how these were solved)	Illegal fishing activities near the reserve	--	Rampant use of poisonous substances
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ MCD 2004 ² Kuhlmann (2002) ³ PhilReefs (2004)⁴ Haribon Foundation (2005)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	021 Paglalangnan Pt. to Locso-on Pt Fish Sanctuary	022 Panaloytoyon Fish and Marine Sanctuary	023 Pasig Reef Fish Sanctuary	024 Puno Point Marine Reserve
Year Established	2003.	2000-2001	2000 – 2001	1994
Location	Balangiga, Eastern Samar	Sta. Margarita, Quinapondan, Eastern Samar	Maydolong, Eastern Samar	Manicani, Guiuan, Eastern Samar
Coordinates	11.10614°N 125.36497°E	11.13300°N 125.55063°E	11.51583°N 125.50450°E	11.00245°N 125.65459°E
Sea	Leyte Gulf	Leyte Gulf	Philippine Sea	Leyte Gulf
Area (ha)	--	24.65	30.00	41.4
Habitat	Coral Reef, Mangroves	Coral reef, Sea grass and Mangrove	Coral Reef	Coral Reef
Established by	LGU-DA	LGU	Coastal association of fisherfolks	GDFI & LGU
Current Manager	LGU	LGU	LGU	LGU, Guiuan Coastal Zone Mgt Council
Delineation	None	Clear	None	None
Management Plan	None	None	None	None
Legal Bases	Mun. Ord. No. 2003-004	Mun. Ord. No. 94 – 04, Series 1994	No copy obtained from SB office; Ord. No. 004-06 (BFAR data)	No resolution because it is a private island owned by Ampalo family (accdg to SB Secretary Recty.)
Infrastructure	Patrol boats	Marker buoys, patrol boat, guardhouse	None	Guardhouse (floating raft), Patrol boat
Income Source	None	None	None	None
Monitoring/Evaluation	Surveyed by UP-Tacloban and GDFI.	GDFI, Kuhlmann 2002	Evaluated by BFAR-8	PCAMRD, BFAR, GDFI, SU-IEMS
Reports	--	Kuhlmann, 2002	--	Kuhlmann, 2002; GDFI, 1997
Regular Patrol	None	Bantay dagat	None	Bantay dagat
Violations	Hulbot-hulbot (Danish seine) locally known as "Liba-liba"	--	None	"Liba-liba" or baby trawl. Paraphernalia impounded.
Fish Biomass/Density	Very Low ¹ (47 kg/ha)	Very Low ¹ (71 kg/ha)	High ²	Very Low ¹ (77 kg/ha)
Coral Cover	Fair ¹	Poor ¹	Excellent ³ (85%)	Fair ¹
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	None	Reserve operation, LGU (including honoraria for Bantay dagat)
Current Management Issues/Problems	Danish seine and sometimes dynamite fishing.	Sanctuary violations due to lack of patrolling equipment	Rehabilitation of the reserve	Sanctuary violations
Past Problems Solved	Dynamite fishing rampant; illegal cutting of mangroves	Illegal fishing solved through apprehension	Dynamite fishing and use of poisonous substances solved through enforcement	--
Remarks/Assessment	Non-functional	Functional	Non-functional	Functional

¹ Kuhlmann (2002)² Estimated using timed-swim survey³ BFAR

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	025 Barobaybay Fish Sanctuary	026 Binay-Palihon Island Fish/Marine Sanctuary	027 Biri-Magtutuka Island Fish Sanctuary	028 Cabaungon Marine Reserve
Year Established	2004	2000	2002	2002
Location	Barobaybay, Lavezares, Northern Samar	Binay, Palapag, Northern Samar	Poblacion, Biri, Northern Samar	Cabaungon Island, San Jose, Northern Samar
Coordinates	12.60019°N 124.33147°E	12.57800°N 125.12600°E	12.68100°N 124.35400°E	12.54900°N 124.48500°E
Sea	San Bernardino Strait	Philippine Sea	San Bernardino Strait	Pacific Ocean
Area (ha)	36.00	25.00	16.69	420.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU-CBRMP	LGU and Tambuyog Development Center
Current Manager	Barobaybay Sanctuary Management Council	PO, CBRMP	LGU	LGU
Delineation	None	Not clear	None	None
Management Plan	None	1999 – present	None	None
Legal Bases	Res. No. 27, Series 2004	Res. No. 93-047 Administrative Ord. No. 04-93 Res. No. 94-005 amending No. 93-047 Ord. No.11 Series 2003	Mun. Ord. No. 02 Series 2005	Mun. Ord. No. 44 Series 2003
Infrastructure	None	Patrol boats	None	Patrol boats
Income Source	None	None	None	None
Monitoring/Evaluation	Trowell Dev't. Inc. (NGO) from 2002 -2007 BFAR – not regular	BFAR – 1998- rapid assessment	BFAR	Samar State University (SSU)
Reports	MAO & MPDC	--	--	SSU
Regular Patrol	None	Bantay dagat	None	Bantay dagat
Violations	Fine mesh nets; Pamu (apprehended)	Dynamite Fishing, Reported by a Brgy. Captain who was then killed by the illegal fishers – March 2008	--	Dynamite fishing (apprehended)
Fish Biomass/Density	--	--	--	Low ¹ (141 kg/ha in 2002)
Coral Cover	--	--	--	Good ¹ (63.2%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Sanctuary violations due to weak enforcement	No funding to continue the programs and support alternative livelihood	Weak implementation; lack of management plan	Lack of alternative livelihood; No regular guards
Past Problems Solved	Lack of community support	Dynamite Fishing; "Tuba"; resistance to establishment of the sanctuaries	Dynamite fishing; use of poison ("Tuba" extract used instead of cyanide) solved through apprehension	Illegal fishing like cyanide and blast fishing
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ Cebu et al. (2006)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	029 Caohagan Island Fish Sanctuary	030 Hirapsan-Palihon Marine Fish Sanctuary	032 Pio del Pilar Fish Sanctuary	033 San Roque Fish Sanctuary
Year Established	2002	2003	2002	2003
Location	Paninirongan, Tambujan, Northern Samar	Hirapsan-Palihon Islands, Mondragon Northern Samar	Pio del Pilar, Biri, Northern Samar	Laoangan, San Roque, Northern Samar
Coordinates	12.58900°N 124.94800°E	12.53083°N 124.69916°E	12.66200°N 124.35800°E	12.55222°N 124.85900°E
Sea	Pacific Ocean	Pacific Ocean	San Bernardino Strait	Pacific Ocean
Area (ha)	345.00	907.00	11.02	50.00
Habitat	Coral reef, seagrass	Coral reef	Coral reef	Sandy
Established by	BFAR-LGU	--	LGU-CBRMP	LGU – BFAR
Current Manager	LGU	--	LGU	PO's and LGU
Delineation	None	--	None	None
Management Plan	Approved in 2004 (inclusive years not specified)	--	None	None
Legal Bases	Mun. Ord.(specific number not obtained)	Mun. Ord.(specific number not obtained)	Mun. Ord. No. 02 Series 2005	Res.No. 01 Series 2003
Infrastructure	Guardhouse, patrol boats (3 units)	--	None	Floating Guardhouse, Patrol boats
Income Source	None	--	None	None
Monitoring/Evaluation	BFAR 2003 rapid assessment CRM Consultant-VSO 2005	CERD, BFAR	BFAR	None
Reports	Fennelly, S.D (unpublished data)	Unpublished reports	--	--
Regular Patrol	Bantay dagat	--	None	Bantay dagat
Violations	Not apprehended	--	--	None
Fish Biomass/Density	--	Medium ¹	--	--
Coral Cover	--	Good ¹ (50%)	--	--
Funding & Source	Reserve operation, LGU (formerly assisted by Trowel Foundation)	--	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lack of support from current political administration	Illegal fishing	No management plan; lack funds to continue or support projects started during CBRMP years	Lack of funding for maintenance of the sanctuary and support livelihood; delineation of the municipal waters
Past Problems Solved	Illegal fishing (<i>Hulbot-hulbot</i> , Dynamite and cyanide)	--	Dynamite fishing, "Tuba" (tuba extract used instead of cyanide)	Compressor and dynamite fishing
Remarks/Assessment	Non-functional	Non-functional	Non-functional	Non-functional

¹ PhilReefs (2004)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	033 Badung-badong Fish Sanctuary	034 Banquil Marine Reserve Area	035 Baras Fish Sanctuary	036 Betaug Reef Fish Sanctuary
Year Established	1992	1996	1996	1996
Location	Marabut, Western Samar	Banquil, Villareal, Western Samar	Tarangnan, Western Samar	Betaug, Daram, Western Samar
Coordinates	11.12833°N 125.18888°E	11.57833°N 124.89888°E	11.89000°N 124.76600°E	11.68848°N 124.78953°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	74.00	11.55	--	29.95
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	None
Legal Bases	Mun. Res. No. 49-A Series 1992	Mun. Ord. (specific number not obtained)	Mun. Res. No. 21 Series 1996	Mun. Ord. (specific number not obtained)
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	--	Plan Phils., Inc.
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	Low ¹ Caesoniidae (47.01%) Apogonidae (28.49%) Pomacentridae (19.57%)
Coral Cover	--	--	--	Fair ¹ (45%)
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	Lack of proper maintenance and support in the collaboration with the community (Plan Phils. Inc)
Remarks/Assessment	Paper reserve	Paper reserve	Paper reserve	Non-functional

¹ Cebu et al. (2006)

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	037 Biatongan Reef Fish Sanctuary	038 Bunuanan Marine Protected Area & Fish Sanctuary	039 Cabugawan Marine Protected Area	040 Canhawan Fish Sanctuary
Year Established	1996	2005	1996	2005
Location	Banti-Palopalo & Tinambacan, Calbayog, Western	Bunuanan, Catbalogan, Western Samar	Cabugawan, Catbalogan, Western Samar	Canhawan, Catbalogan, Western Samar
Coordinates	12.08833°N 124.49361°E	11.73400°N 124.89400°E	11.80724°N 124.82056°E	11.83053°N 124.73683°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	14.60	8.00	--	8.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	Sitio Cal-apog Fisherfolks Cooperative	Cabugawan Multi-purpose Cooperative and Fish Wardens Association	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 200-017	Mun. Ord. No. 200-017	Mun. Ord. No. 200-017
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	--	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Paper reserve	Paper reserve	Paper reserve	Paper reserve

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	041 Cautod Fish Sanctuary	042 Cinco Marine Protected Area & Fish Sanctuary	043 Dabong Island Fish Sanctuary	044 Independencia Fish Sanctuary
Year Established	2005	2005	2005	1998
Location	Cautod, Sta. Margarita, Western Samar	Cinco, Catbalogan, Western Samar	Sta. Margarita, Western Samar	Talalora, Western Samar
Coordinates	12.03333°N 124.64083°E	11.82611°N 124.70333°E	11.45527°N 124.90694°E	11.54083°N 124.83944°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	4,40	150.00	75.622	17.80
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 200-017	Mun. Ord. (specific number not obtained)	Mun. Ord. (specific number not obtained)
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	--	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Paper reserve	Paper reserve	Paper reserve	Paper reserve

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	045 Lutao Reef Marine Protected Area & Fish Sanctuary	046 Maguinoo Fish Sanctuary	047 Mahayag Marine Reserve Area	048 Monbon Marine Protected Area & Fish Sanctuary
Year Established	1996	--	2003	2005
Location	Catbalogan Western Samar	Maguinoo, Calbayog, Western Samar	Mahayag, Villareal, Western Samar	Monbon, Catbalogan, Western Samar
Coordinates	11.78335°N 124.84278°E	12.05400°N 124.53200°E	11.58888°N 124.92083°E	11.79665°N 124.69457°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	8.00	--	22.50	8.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	Payao Development Organization 2000 (PADEO)	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 200-017	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 108, Series 2003	Mun. Ord. No. 200-017
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/ Evaluation	--	--	--	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Paper reserve	Paper reserve	Paper reserve	Paper reserve

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	049 Motiong Fish Sanctuary	050 Old Mahayag Marine Protected Area & Fish Sanctuary	051 Pacao Marine Reserve Area	052 Panonobulon Island Fish Sanctuary
Year Established	1998	2005	--	--
Location	Poblacion, Motiong, Western Samar	Old Mahayag, Catbalogan, Western Samar	Pacao, Villareal, Western Samar	Panonobulon, Basey, Western Samar
Coordinates	11.76638°N 124.98305°E	11.74700°N 124.88400°E	11.57500°N 124.89416°E	11.2536°N 125.07747°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	16.00	8.00	36.08	--
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 200-017	Mun. Ord. (specific number not obtained)	Mun. Ord. (specific number not obtained)
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	--	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/Assessment	Paper reserve	Paper reserve	Paper reserve	Paper reserve

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	053 Pilar Island Fish Sanctuary No. 1	054 Pilar Island Fish Sanctuary No. 2	055 Pinalangga Fish Sanctuary	056 Puro Island Fish Sanctuary
Year Established	--	--	2001	1998
Location	Sto. Niño, Western Samar	Sto. Niño, Western Samar	Marabut, Western Samar	Malajog, Calbayog, Western Samar
Coordinates	11.93016°N 124.40700°E	11.92566°N 124.45566°E	11.11320°N 125.20071°E	12.10433°N 124.47300°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	54.00	25.00	10.00	8.73
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. (specific number not obtained)	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 2001-09	Mun. Ord. (specific number not obtained)
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	--	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	--	--
Coral Cover	--	--	--	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	--	--
Remarks/ Assessment	Paper reserve	Paper reserve	Paper reserve	Paper reserve

Table 8. The marine reserves of Samar and associated islands, continued

Name of Marine Reserve	057 Rama Marine Protected Area & Fish Sanctuary	058 Sampotan Islet Marine Protected Area	059 San Miguel Fish Sanctuary	060 Taisao Rocks Fish Sanctuary
Year Established	2005	2005	1991	--
Location	Rama, Catbalogan, Western Samar	Sierra Island, Catbalogan, Western Samar	San Miguel, Daram, Western Samar	Jiabong, Western Samar
Coordinates	11.73800°N 124.93800°E	11.77500°N 124.72667°E	11.71917°N 124.73657°E	11.75277°N 124.96555°E
Sea	Samar Sea	Samar Sea	Samar Sea	Samar Sea
Area (ha)	8.00	140.65	16.74	16.00
Habitat	Coral reef	Coral reef	Coral reef	Coral reef
Established by	LGU	LGU	LGU	LGU
Current Manager	LGU	LGU	LGU	LGU
Delineation	--	--	--	--
Management Plan	--	--	--	--
Legal Bases	Mun. Ord. No. 200-017	Mun. Ord. No. 200-017	Mun. Ord. No. 39 Series1991	Mun. Ord. (specific number not obtained)
Infrastructure	--	--	--	--
Income Source	--	--	--	--
Monitoring/Evaluation	--	--	Plan Phils., Inc.	--
Reports	--	--	--	--
Regular Patrol	--	--	--	--
Violations	--	--	--	--
Fish Biomass/Density	--	--	Low ¹	--
Coral Cover	--	--	Fair ¹ (34.17% live coral)	--
Funding & Source	--	--	--	--
Current Management Issues/Problems	--	--	--	--
Past Problems Solved	--	--	Lack of proper maintenance and support in collaboration with the community (Plan Phils. Inc)	--
Remarks/Assessment	Paper reserve	Paper reserve	Non-functional	Paper reserve

¹ Cebu et al. (2006)



Tulapos Marine Sanctuary

Photos taken from the marine reserves around Siquijor Island (*photos by J Maypa*).

**Paliton Marine
Sanctuary**

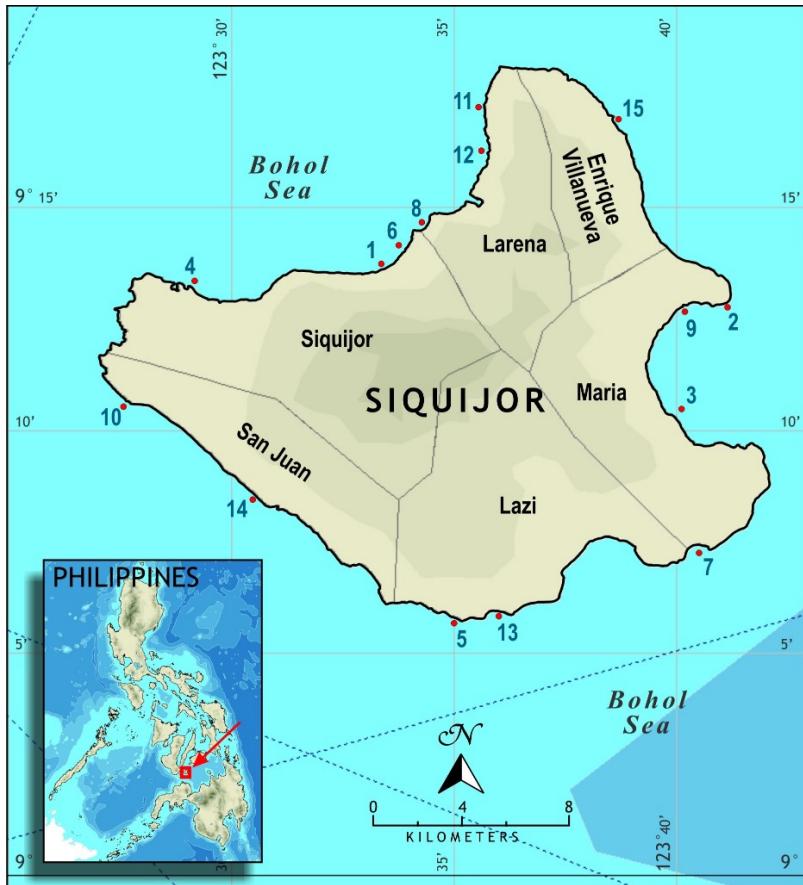
Siquijor and Associated Islands

There are 15 marine reserves on Siquijor Island covering about 188 ha (**Figure 10** and **Table 9**). With the exception of Luyang Mangrove Reserve, these are predominantly fringing coral reef with patches of seagrass-algal beds. The Provincial Marine Protected Areas Technical Support Group (PMPATS) of the Provincial Government conducts regular monitoring of these reserves.

Out of the 15 reserves, 12 were subjected to analysis while the other 3 (newly established) were treated separately. Only eight (66.67%) reserves, with an aggregate area of about 98.61 ha are considered functional. The rest are currently protected but have low biodiversity because they are either new or have ineffective protection. Among the 15 marine reserves, only

the Nonoc Marine Sanctuary is considered vulnerable to oil spill, as it is located ca 2 km from the wharf of Larena municipality.

Marine Reserve QUICK STATISTICS		SQUIJOR
Total number		15
Total area (ha)		188.16
Number of functional reserves		7 (46.67%)
Total area actively protected (ha)		95.29
Total number of coastal towns		6
Number of towns with reserve(s)		6
Average size (ha)		12.54
Minimum size (ha)		4.00
Maximum size (ha)		24.45



Siquijor

- | | |
|--------------------------------------|--|
| 1 Banban-Luyang Marine Sanctuary | 8 Nonoc Marine Sanctuary |
| 2 Bogo Marine Sanctuary | 9 Olang Marine Sanctuary |
| 3 Candaping B Marine Sanctuary | 10 Paliton Marine Protected Area |
| 4 Caticugan Fish Sanctuary | 11 Sandugan Marine Sanctuary |
| 5 Lalag-Bato Marine Reserve | 12 Taculing/Cangmalalag Marine Sanctuary |
| 6 Luyang Mangrove Reserve | 13 Talayong Marine Reserve |
| 7 Minalulan Shell and Fish Sanctuary | 14 Tubod Fish Sanctuary |
| | 15 Tulapos Marine Sanctuary |

Figure 10. Map of the marine reserves of Siquijor Island.

Table 9. The marine reserves of Siquijor Islands

Name of Marine Reserve	001 Banban-Luyang Marine Sanctuary	002 Bogo Marine Sanctuary	003 Candaping B Marine Sanctuary	004 Caticugan Marine Sanctuary
Year Established	2007	2007	1996 (2003)	1989 (2003)
Location	Banban/Luyang, Siquijor, Siquijor	Bogo, Maria, Siquijor	Candaping B, Maria, Siquijor	Caticugan, Siquijor, Siquijor
Coordinates	9.22713°N 123.55635°E	9.2138°N 123.6854°E	9.17748°N 123.67433°E	9.2220°N 123.4866°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	5.00	21.36	24.20	13.51
Habitat	Coral reef, seagrass	Coral reef, seagrass, mangrove	Coral reef dominated by massive corals	Coral reef, predominantly sandy
Established by	Banban-Luyang Fisherfolk Association, Brgy. Council	Bogo Fishermen Association /Brgy. Council	Brgy/LGU-MAO/CCEF	SIMCOR, LGU, BFAR, Caticugan Fishermen Association (CATIFA)
Current Manager	MMC	MMC	MMC	MMC, CATIFA
Delineation	Clear	Clear	Clear	Clear
Management Plan	--	1 year (not specified)	2003-2007	--
Legal Bases	Mun. Res. Concurring Joint Resolution establishing Marine Sanctuary in Banban-Luyang boundaries	Mun. Ord. (specific number not obtained)	Mun. Ord. No. 02A	Mun. Ord. No. 415 Series 2003
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse
Income Source	None	None	None	None
Monitoring/Evaluation	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF
Reports	Not indicated	Unpublished reports	Published reports	Unpublished report (See White <i>et al.</i> 2002)
Regular Patrol	Brgy officials; bantay dagat	Brgy officials; bantay dagat	Brgy officials; bantay dagat	Brgy officials; bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	--	Medium ¹ (24,700 indiv/ha)	Low ¹ (12,314 indiv/ha)	Low ² (10,800 indiv/ha)
Coral Cover	--	Fair ¹ (46%)	Fair ¹ (48.7%)	Poor ¹ (22.7%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU/Honorarium for guards; Private resort	Reserve operation, LGU
Current Management Issues/Problems	Poaching	Lack of access road; honorarium for wardens; and inadequate management	Inadequate patrolling; lack of commitment of Brgy officials and MMC	Poaching; poor facilities; uncooperative members
Past Problems Solved	None	None	None	Encroachment of fishers in sanctuary solved by 24hr presence of guards
Remarks/Assessment	Newly established; established in May 2007; located ca 100m from Luyang mangrove reserve	Newly established; needs regular patrolling and community education	Functional; Gillnetting and gathering of abalones near the reserve	Functional; fine mesh gillnet found near boundary

¹ Raymundo 2008² Estimated using timed-swim survey

Table 9. The marine reserves of Siquijor Islands, continued

Name of Marine Reserve	005 Lalag-Bato Marine Reserve	006 Luyang Mangrove Reserve	007 Minalulan Shell & Fish Sanctuary	008 Nonoc Marine Sanctuary
Year Established	2003	1997	2003	1996 (2003)
Location	Lower Cabangcalan, Lazi, Siquijor	Luyang, Siquijor, Siquijor	Minalulan, Maria, Siquijor	Nonoc, Larena, Siquijor
Coordinates	9.0966°N 123.5850°E	9.23616°N 123.56295°E	9.12046°N 123.67471°E	9.241516°N 123.573175°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	8.00	10.00	11.63	4.00
Habitat	Coral reef, macro-algal bed	Mangrove (predominantly <i>Sonneratia</i>)	Soft bottom (lagoon) with patches of massive corals in slopes	Coral reef (patchy)
Established by	Siquijor Coastal Resource Enhancement (SCORE)	SIMCOR, LGU, BFAR	LGU, CCEF	CVRP, DENR-CMMS, SCORE
Current Manager	MMC	MMC	MMC	MMC
Delineation	Clear	Not clear	Clear	Clear
Management Plan	2003-2007	--	2003-2007	3-years (see Brgy Res. No. 14, Series 2002)
Legal Bases	Mun. Ord. (not specified)	Mun. Ord. (not specified)	Brgy Res., Mun. Ord. No. 04 Series 2003	Mun. Ord. No. 18 Series 1996; Mun. Ord. No. 04 Series 2003
Infrastructure	Marker buoys, signboard, guardhouse	Signboard, guardhouse	Marker buoys (to be installed), signboard, guardhouse	Marker buoys, signboard, guardhouse
Income Source	None	Tourism (Entrance fee)	None	Alternative livelihood
Monitoring/Evaluation	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF
Reports	Unpublished reports	Unpublished reports	Unpublished reports	Published reports (see SU-CHED 2007)
Regular Patrol	Brgy officials; bantay dagat	Brgy officials; PO members	Brgy officials; bantay dagat	Brgy officials; bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (18,906 indiv/ha)	Low ²	Very Low ¹ (3,626 indiv/ha)	Low ³ (200.8 kg/ha target)
Coral Cover	Poor ¹ (19.3%)	Poor ² High ² (mangroves)	Fair ¹ (26.6%)	Poor ³ (15.83% slope; 12.17% flat)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Lost, damaged buoys not replaced	Videoke bars within the mangrove reserve.	Inadequate management, lack of financial support, some fishers non-cooperative	Lack of funding for guardhouse and personnel. Ca 2.22 km from domestic shipping lane.
Past Problems Solved	None	Resentments from residents solved through involvement in PO activities	None	Compressor spearfishing stopped by confiscation of boats and facilities.
Remarks/Assessment	Functional; previously known as Lower Cabangcalan Marine Reserve	Functional	Non-functional; managing body currently undergoing reorganization	Non-functional; no guards

¹ Raymundo 2008² Estimated using timed-swim survey³ M.L.R Alcala et al. (2006)

Table 9. The marine reserves of Siquijor Islands, continued

Name of Marine Reserve	009 Olang Marine Sanctuary	010 Paliton Marine Sanctuary	011 Sandugan Marine Sanctuary	012 Taculing/Cangmalalag Marine Sanctuary
Year Established	2003	2008	2003	1988 (2003)
Location	Olang, Maria, Siquijor	Paliton, San Juan, Siquijor	Sandugan, Larena, Siquijor	Taculing/Cangmalalag, Larena, Siquijor
Coordinates	9.21160°N 123.66890°E	9.17275°N 123.46134°E	9.28837°N 123.59189°E	9.2666°N 123.5966°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	21.00	6.50	9.95	13.38
Habitat	Coral reef, mangrove	Coral reef	Coral reef (fringing), with patches of mangrove, seagrass beds and soft bottom	Coral reef with reforested mangroves and seagrass beds
Established by	MMC	LGU, BFAR, CCEF, Sea-Ex, Paliton Fishermen Association	MMC	MMC (with assistance from SIMCOR)
Current Manager	Olang Fishermen Association	MLGU	Sandugan Fishermen Association	Taculing Fishermen Association
Delineation	Clear	Clear	Clear	Clear
Management Plan	2003-2007	--	--	--
Legal Bases	Mun. Ord. No. 02, Series 2002	Mun. Ord. (not specified)	Mun. Ord. No. 04 Series 2003	Mun. Ord. No. 28, Series 1998
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys (few), mooring buoys	Marker buoys, signboard, guardhouse	Marker buoys, signboard
Income Source	None	Diving fees (currently collected by Tubod FA)	--	--
Monitoring/Evaluation	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF
Reports	Unpublished reports	None	Unpublished reports (see White et al. 2002)	Unpublished reports
Regular Patrol	Brgy officials; bantay dagat	Brgy officials	Brgy officials; bantay dagat	Brgy officials; bantay dagat
Violations	Apprehended	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (2,914 indiv/ha)	Low ²	Medium ¹ (28,160 indiv/ha)	Low ²
Coral Cover	Poor ¹ (23.4)	Poor to Fair ²	Poor ¹ (17%)	Poor ¹ (8.1%)
Funding & Source	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU	Reserve operation, LGU
Current Management Issues/Problems	Poor condition of guardhouse, lack of CRM awareness among fisherfolks	Some fishers not supportive	Boundaries not delineated by buoys	No visible buoys in boundaries
Past Problems Solved	Illegal fishing solved by apprehensions and conduct of seminars	None	Illegal entry into the sanctuary	Illegal entry into the sanctuary
Remarks/Assessment	Non-functional; fishing area for <i>muro-ami</i>	Newly established; still fished and serve as dive site	Functional	Non-functional

¹ Raymundo 2008² Estimated using timed-swim survey

Table 9. The marine reserves of Siquijor Islands, continued

Name of Marine Reserve	013 Talayong Marine Sanctuary	014 Tubod Marine Sanctuary	015 Tulapos Marine Sanctuary
Year Established	2003	1987 (1996)	1987 (2002)
Location	Talayong, Lazi, Siquijor	Tubod, San Juan, Siquijor	Tulapos, Enrique Villanueva, Siquijor
Coordinates	9.10047°N 123.60186°E	9.14425°N 123.508138°E	9.28296°N 123.64383°E
Sea	Bohol Sea	Bohol Sea	Bohol Sea
Area (ha)	6.68	8.50	24.45
Habitat	Coral reef	Coral reef	Coral reef (fringing), with seagrass, algal bed and extensive mangrove
Established by	MMC, CCEF	Tubod Fishermen Assn., CVRP, LGU, BFAR, CCEF, SCORE	CVRP, TUFA, BFAR, DENR (1987); revived in 2002 by SCORE with CCEF
Current Manager	MMC	MMC	MMC
Delineation	Clear	Clear	Clear
Management Plan	2003-2007	--	2006-2008
Legal Bases	Mun. Ord. (not specified)	Mun. Ord. No. 7, Series 1989; Mun. Ord. No. 15, Series 1996	Mun. Ord. 11, Series 1987; Mun. Ord. No.1 amended by Mun. Ord. No. 5, Series 2002; Sangguniang Bayan Res. No. 27, Series 2002
Infrastructure	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse	Marker buoys, signboard, guardhouse
Income Source	--	Tourism (Revenue collected by the PO includes diving fee from other dive sites)	Tourism
Monitoring/Evaluation	PMPATS, CCEF	PMPATS, CCEF	PMPATS, CCEF
Reports	Unpublished reports	Unpublished reports (See White <i>et al.</i> 2002)	Published articles in a local journal (SSC) and cited in numerous books and international journals
Regular Patrol	Brgy officials; bantay dagat	Brgy officials; bantay dagat	Brgy officials; bantay dagat, PO members
Violations	Apprehended	Apprehended	Apprehended
Fish Biomass/Density	Low ¹ (11,474 indiv/ha)	High ² (493.6 kg/ha target)	High ² (1,087.7 kg/ha)
Coral Cover	Good ¹ (53.8)	Fair to Good ³ (22.7% in shallow and 55.1% in deep); in deeper areas outside Marine Reserve (41.83±5.07%) ²	Fair ¹ (21%); High mangrove cover
Funding & Source	Reserve operation, LGU	Reserve operation, LGU and PO	Reserve operation, LGU
Current Management Issues/Problems	Sanctuary violations initiated by managers; ca 16 km from domestic passenger and international cargo (limestone) shipping lane	Damaged buoys not replaced	Sanctuary violations; loss of buoys; lack of financial support; weak implementation of ordinance
Past Problems Solved	Fishing encroachment solved by apprehensions and by fines	Illegal entry of fishers solved by 24 hr presence of guards	Disagreement between two PO's in managing the reserve
Remarks/Assessment	Functional; spearfishing near or within	Functional; established in 1986, implemented only in 2004	Functional; oldest and the largest in the province; extensive mangroves and seagrasses

¹ Raymundo 2008 ² M.L.R Alcala *et al.* (2006) ³ CCEF 2002 survey

List of Functional Marine Reserves in the Visayas

Our preliminary evaluation shows that, of a total of 564 marine reserves confirmed to exist in the whole Visayas region (Central Visayas, Eastern Visayas, and Western Visayas), only 190 (33.69%) passed the criteria (see list in **Table 10**). For each island, the percentage of these functional marine reserves ranges from 10% to 50.98%, as indicated in Table 2. The following reserves are considered functional:

Table 10. List of Functional marine reserves in the Visayan provinces

Province	Municipality/City	Province	Municipality/City
AKLAN			
Bel-is Fish Sanctuary and Fish Reserve	Buruanga	BOHOL (continued)	Guindulman
Tangalan Fish Sanctuary and Fishery Reserve	Tangalan	Cabantian Marine Sanctuary	Jagna
ANTIQUE			
Abiera Fish Sanctuary	Sebaste	Canuba Marine Sanctuary	Jagna
Barusbus Marine Sanctuary	Libertad	Cataban Fish Sanctuary	Talibon
Batabat Coral Reef Reserve	Barbaza	Catarman Marine Sanctuary	Dauis
Bulanao Marine Sanctuary	Libertad	Catugasam Marine Sanctuary	Lila
Igdalaguit Municipal Fish Sanctuary	Tobias Fornier	Cuaming Fish Sanctuary	Inabanga
Lamawan Pony Marine Protected Area	San Jose de Buenavista	Cuasi Fish Refuge and Sanctuary	Loon
Lipata Fish Sanctuary	Culasi	Dao-San Isidro Marine Sanctuary	Dauis
Nogas Island Marine Reserve	Anini-y	Doljo Fish Sanctuary	Panglao
Pucio Marine Sanctuary	Libertad	Eastern Cabul-an Marine Sanctuary	Buenavista
Puntod Sebaste Shoal (Marine Protected Area)	Sebaste	Guinacot Marine Sanctuary	Guindulman
San Roque Marine Sanctuary	Libertad	Guindacpan Marine Sanctuary	Talibon
Seco Island Marine Reserve	Tibiao	Guiwanon-Punta Cruz Marine Sanctuary	Maribojoc
Taboc Marine Sanctuary	Libertad	Hambongan Marine Sanctuary	Inabanga
Tingib Marine Sanctuary	Pandan	Handumon Marine Sanctuary	Getafe
Union Marine Sanctuary	Libertad	Hinongatan West Marine Sanctuary	Bien Unido
BOHOL			
Aguining Fish Sanctuary	Carlos P. Garcia	Ipil Marine Sanctuary	Jagna
Alejawan Marine Sanctuary	Duero	Itum Marine Sanctuary	Duero
Asinan Reef Fish Sanctuary	Buenavista	Jandayan Sur Marine Sanctuary	Getafe
Balicasag Island Marine Reserve	Panglao	Langkis Marine Sanctuary	Duero
Basdacu Fish Refuge and Sanctuary	Loon	Lapinig Island Fish Sanctuary	Carlos P. Garcia
Basdio Marine Sanctuary	Guindulman	Larapan Marine Sanctuary	Jagna
Batasan Island Marine Sanctuary	Tubigon	Lawis Fish Sanctuary	Calape
Bilang-bilangan Fish Sanctuary	Tubigon	Madangog Fish Sanctuary	Calape
Bil-isan Fish Sanctuary	Panglao	Madua Norte Marine Sanctuary	Duero
Bingag Marine Sanctuary	Dauis	Madua Sur Marine Sanctuary	Duero
Bonkokan Ubos Marine Sanctuary	Lila	Magtongtong Fish Sanctuary	Calape
Cabacongan Fish Sanctuary	Loon	Malinao Marine Sanctuary	Lila
		Maraag Marine Sanctuary	Maribojoc
		Mawi Marine Sanctuary	Duero
		Naatang Marine Sanctuary	Jagna
		Nagsulay Marine Sanctuary	Lila
		Nausok Marine Sanctuary	Jagna
		Pamilacan Island Fish Sanctuary	Baclayon
		Pangdan Marine Sanctuary	Jagna

Table 10. List of Functional marine reserves in the Visayan provinces, continued

Province	Municipality/City	Province	Municipality/City
BOHOL (continued)		CEBU (continued)	
Pantudlan Fish Sanctuary	Loon	Hinablan Marine Sanctuary	Badian
Pasil (Kawasihan) Reef Marine Sanctuary	Candijay	Kinawahan Fish Sanctuary	San Remegio
Pig-ot Marine Sanctuary	Loon	Lambug Seagrass and Fish Sanctuary	Badian
Poong-Garcia Marine Sanctuary	Carlos P. Garcia	Langtad Marine Sanctuary	Argao
Sinandigan Marine Sanctuary	Ubay	Legaspi Marine Sanctuary	Alegria
Sondol Fish Sanctuary	Loon	Libas Marine Sanctuary	Borbon
Song-on Fish Refuge and Sanctuary	Loon	Libertad Marine Sanctuary	Poro
Sta. Filomena (Sta. Fe) Marine Sanctuary	Alburquerque	Liloan Marine Sanctuary	Liloan
Tabalong Marine Sanctuary	Dauis	Luyang Fish Sanctuary	San Remegio
Tangan Marine Sanctuary	Loon	Madridejos Marine Sanctuary	Alegria
Taongan-Canandam Marine Sanctuary	Dimiao	Matutinao Marine Sanctuary	Badian
Taug-Tiguis Marine Sanctuary	Lila	Nalusuan Marine Sanctuary	Cordova
Tawala Marine Sanctuary	Panglao	North Granada Marine Sanctuary	Boljoon
Ubayon Marine Sanctuary	Loon	Ocoy Marine Reserve (Jojo de la Victoria Memorial Reef)	Sta. Fe
CAPIZ		Pandong Bato Marine Sanctuary	Carmen
Olotayan Island Marine Sanctuary	Roxas City	Pasil Marine Sanctuary	Santander
CEBU		Pescador Island Marine Park with Sanctuary	Moalboal
Arbor Marine Sanctuary	Boljoon	Poblacion Marine Sanctuary	Argao
Atop-atop Marine Sanctuary	Bantayan	Poblacion Marine Sanctuary	Alcoy
Bagacay Fish Sanctuary	Sibonga	Pooc Marine Sanctuary	Sta. Fe
Balud-Consolacion Marine Park and Sanctuary	Dalaguete	Saavedra Fish Sanctuary	Moalboal
Barili Marine Sanctuary	Barili	Santiago Marine Sanctuary	San Francisco
Basdiot Fish Sanctuary	Moalboal	Sillion Marine Sanctuary	Bantayan
Bato Seagrass and Marine Sanctuary	San Remegio	Siocon Marine Sanctuary	Bogo
Batong Diyut Marine Sanctuary	Carmen	Calumbuyan (Sogod) Fish Sanctuary	Sogod
Binlod Marine Sanctuary	Argao	Sta. Filomena Marine Sanctuary	Alegria
Bogo Marine Sanctuary	Argao	Sto. Niño-Looc Marine Sanctuary	Malabuyoc
Bulasa Marine Sanctuary	Argao	Sulangan (Panitugan) Marine Sanctuary	Bantayan
Busogon Fish Sanctuary	San Remegio	Sumilon Island Fish Sanctuary	Oslob
Campalabo Marine Reserve/Sanctuary	Pinamungahan	Tabunan Marine Sanctuary	Borbon
Capitancillo Marine Sanctuary	Bogo	Talaga Marine Sanctuary	Argao
Casay Marine Park and Sanctuary	Dalaguete	Talo-ot Marine Sanctuary	Argao
Casay Marine Sanctuary	Argao	Tambongon Fish Sanctuary	San Remegio
Colase Marine Sanctuary	Samboan	Tamiao Marine Sanctuary	Bantayan
Daan-Lungsod and Guiwang Marine Sanctuary	Alcoy	Tulic Marine Sanctuary	Argao
Doong Marine Sanctuary	Bantayan	Victoria Fish and Seagrass Sanctuary	San Remegio
Gawi Marine Sanctuary	Oslob	Zaragosa Fish Sanctuary	Bantayan
Gilutongan Island Marine Sanctuary	Cordova		
Guiwanon Marine Sanctuary	Argao	EASTERN SAMAR	
Hilantagaan Daku Fish Sanctuary	Sta. Fe	Bagongbanwa Marine Reserve and Sanctuary	Guiuan
		Mandalukon Marine Reserve	Giporlos
		Mantampok Islet Fish Sanctuary	Quinapondan

Table 10. List of Functional marine reserves in the Visayan provinces, continued

Province	Municipality/City	Province	Municipality/City		
EASTERN SAMAR (continued)					
Monbon Fish Sanctuary	Lawaan	Campuyo Marine Sanctuary	Manjuyod		
Panaloytoyon Fish and Marine Sanctuary	Quinapondan	Iniban Marine Reserve	Ayungan		
Puno Point Marine Reserve	Guiuan	North Lipayo Marine Reserve	Dauin		
GUIMARAS					
Lawi Marine Reserve	Jordan	Lutoban Marine Reserve	Zamboanguita		
LEYTE					
Apale and Tolingon Fish Sanctuary	Isabel	Maayong Tubig Marine Reserve	Dauin		
Dumana Marine Sanctuary	Inopacan	Malusay Marine Reserve	Guihuligan		
Hilapnitan Marine Sanctuary	Baybay	Masaplod Norte Marine Reserve	Dauin		
Tres Islas Marine Sanctuary	Inopacan	Masaplod Sur Marine Reserve	Dauin		
Tumakin Gamay/ Dako Marine Sanctuary	Inopacan	Poblacion District 1 Marine Reserve	Dauin		
NEGROS OCCIDENTAL					
Danjungan Island Marine Reserve and Sanctuaries	Cauayan	San Jose Marine Reserve	San Jose		
Sagay Protected Seascape	Sagay	Tandayag Marine Reserve	Amlan		
Sipalay City Marine Reserve	Sipalay	Tinaogan Marine Reserve	Bindoy		
NEGROS ORIENTAL					
Agan-an Marine Reserve	Sibulan	Candaping B Marine Sanctuary	Maria		
Andulay Marine Reserve	Siaton	Caticugan Marine Sanctuary	Siquijor		
Apo Island Protected Landscape and Seascapes	Dauin	Lalag-Bato Marine Reserve	Lazi		
Balaas Marine Reserve	Manjuyod	Luyang Mangrove Reserve	Siquijor		
Banilad Marine Reserve	Dumaguete	Sandugan Marine Sanctuary	Larena		
Bio-os Marine Reserve	Amlan	Talayong Marine Sanctuary	Lazi		
Bolisong Marine Sanctuary	Manjuyod	Tubod Marine Sanctuary	San Juan		
Bongalonan Marine Sanctuary	Basay	Tulapos Marine Sanctuary	Enrique Villanueva		
Cabugan Marine Reserve	Bindoy				
Cabulotan Marine Reserve	Tayasan				
Calag-calag Fish Sanctuary	Manjuyod				
SIQUIJOR					
SOUTHERN LEYTE					
Cogon Fish Sanctuary		Anahawan			
Lipanto Marine Sanctuary		St. Bernard			
Napantao Marine Sanctuary		San Francisco			
Sabang Fish Sanctuary		Hinundayan			
San Antonio/ Tomas Oppus Marine Reserve		Tomas Oppus			

Concluding Remarks

The relatively low percentage of functional marine reserves in the Visayas does not mean that no-take marine reserves do not work as tools for biodiversity conservation and fishery management. What this indicates is that most of the marine reserves in the Visayan region have not been functioning, and there appear to be three main reasons for this finding. The first one is ineffective management and protection from poachers and other violators. Ineffective management is associated with lack of infrastructure such as marker buoys, guardhouse and signage, lack of regular patrols by members of the community, and laxity in the enforcement of reserve rules and regulations. Poor enforcement is in turn due to (1) the failure of managers to understand how reserves work, (2) their propensity to allow the influence of political considerations in the enforcement of rules and regulations governing reserves, and (3) their negligence. All these are traceable to lack of commitment of reserve managers and their staff to the cause of biodiversity conservation and management.

rotating system

In community-based management, one root cause of absence of commitment is lack of, or inadequate, community organization and information dissemination prior to and during reserve establishment. It is of interest to note that despite the many cases of successful marine reserves, many people still persist in ignoring valuable lessons from such reserves. When these people happen to be those who hold much influence on the management of marine reserves, such as local and national government officials, the negative consequences can be expected.

The second reason is failure to provide some funding support for basic expenditures and infra-

structure for managing reserves. Although there has been an increasing number of local government units that support marine reserves, in many cases the development funds of local government units are withheld from projects on environmental conservation, and NGOs and POs involved in reserve management are left on their own to find financial support from other sources. Considering that marine reserves are expected to provide food fish security, this lack of local government support is difficult to understand in the light of the mandate of these officials to improve the lives of their constituents.

The third major reason has to do with the combination of human failings and negative human behavior described above and the degradation of the environment or combination of these factors. The marine environment may have degraded even before protection, and continues to degrade because of lack of control of human activities beyond the borders of marine reserves, such as pollution and destructive fishing. The effects of El Niño and climate change may have also worsened the already bad situation to the point that the environment failed to recover. Many marine areas (coral reef and mangrove) apparently belong to this category as they have remained degraded for several decades despite some earlier attempts at protection.

Three things need to be done: (1) improve the management of existing marine reserves, (2) establish more marine reserves, including networks of marine reserves, and (3) control water pollution and sedimentation.

References

- Abesamis, R. A. and G.R. Russ (2005) Density-dependent spill-over from a marine reserve: Long-term evidence. *Ecological Applications* 15(5): 798-1812.
- Abesamis, R.A., G.R. Russ and A.C. Alcala (2006) Gradients of abundance of fish across no-take marine reserve boundaries: evidence from Philippine coral reefs. *Aquatic Conservation: Marine and Freshwater Ecosystem* 16: 349-371.
- Abesamis, R.A., A.C. Alcala and G.R. Russ (2006) How much does the fishery at Apo Island benefit from spillover? *Fishery Bulletin* 104: 360-375.
- Alcala, A.C. (1998) Community-based coastal resource management in the Philippines: a case study. *Ocean & Coastal Management* 38: 179-186.
- Alcala, A.C. (2001) Marine Reserves in the Philippines: Historical Development, Effects and Influence on Marine Conservation Policy. Bookmark. Makati City. 115p.
- Alcala, A.C. Comments and Recommendations for Improving Fish Data-Gathering in Sogod Bay. SUAKCREM. 2001 Unpublished report.
- Alcala, A.C. RSA Field Interventions and Monitoring & Evaluation. SUAKCREM 2002 Unpublished report.
- Alcala, A.C. and A.M. Cadeliña (2004) Securing Protected Areas in the Face of Global Change. Lessons Learned from the Philippine Marine Protected Areas: Apo-Dauin Field Learning Site. IUCN, Asia Programme and SUAKCREM, Dumaguete City, Philippines. 43p.
- Alcala, A. C. and G.R. Russ (1990) A direct test of the effects of protective management on abundance and yield of tropical marine resources. *J. Cons. int. Explor. Mer.* 46: 40-47.
- Alcala, A.C., I. Flores, C. Acedo and G. Gloria (eds.) (2006) Higher Education Research Papers. An Occasional Publication of the Commission on Higher Education.
- Alcala, A.C. and G.R. Russ (2006) No-take marine reserves and reef fisheries management in the Philippines: A new people power revolution. *Ambio* 35: 245-254.
- Alcala, A.C., G.R. Russ, A.P. Maypa and H.P. Calumpong (2005) A long term, spatially replicated, experimental test of the effect of marine reserves on local fish yields. *Canadian Journal of Fisheries and Aquatic Sciences* 62: 98-108.
- Alcala, A.C., G.R. Russ and P. Nillos (2006) Collaborative and community-based conservation of coral reefs, with reference to marine reserves in the Philippines (pp 392-418). In: Cote, M.I. and J.D. Reynolds (eds.) *Coral Reef Conservation*. Cambridge University Press, 568p.
- Alcala, A.C., B.L. Stockwell, H.P. Calumpong, M.J. Inocencio, C.R.L. Jadloc and M. Cerdania (2007) Survey of coral reefs in Southern Guimaras Island (Central Philippines) after the M/T Solar 1 Oil Spill on August 11, 2006. *UPV Journal of Natural Sciences* 12(2): 155-164.
- Alcala, M.L.R., A.B. Barillo, L.C. Alcala, R.E. Catid and P.N. Nillos (2007) Baseline Survey of three marine protected areas in the province of Siquijor, Philippines, with management recommendations. In: Alcala, A.C., I. Flores, C. Acedo and G. Gloria (eds.) (2006) Higher Education Research Papers. An Occasional Publication of the Commission on Higher Education, pp.55-65.
- Aliño, P.M., E.F.B. Miclat, C.L. Nañola, Jr., H.A. Roa-Quiaoit and R.T. Campos (eds.) PhilReefs (2002) *Atlas of Philippine Coral Reefs*. Goodwill Trading Co., Inc. (Goodwill Bookstore), Quezon City, Philippines.
- Alura, D.P., B.C. Bencion and E.O. Cabong. Resource Status of Borongan Fish Sanctuary. Eastern Samar State College. 2002 Unpublished report.
- Alura, D.P. and B.C. Bencion. Resource Status of Borongan Fish Sanctuary after seven years of implementation. 2005 Unpublished report.
- Apistar, D.A., R. Diaz, E. Lucas, D. Raymundo, A. Sabonsolin and S. Tesch. Summary Field Report: Reef Monitoring Survey in Gawi Marine Sanctuary and Sumilon Island Fish Sanctuary, Oslob, Cebu, Philippines, August 23, 2006. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City. 2006 Unpublished report.
- Apistar, D.A., R. Diaz, D. Delizo, E. Lucas, D. Raymundo, A. Sabonsolin and S. Tesch. Summary Field Report: Reef Monitoring Survey at Nalusuan Island Marine Sanctuary, Cordova, Cebu, Philippines, September 26, 2007. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City. 2007 Unpublished report, 42p.
- Beldia, N., A. Mequila, J. Asis and W. Campos. Reef sites in Roxas City revisited: Initial results. 2006 Unpublished report.
- Bureau of Fisheries and Aquatic Resources. Coastal Resource Assessment in Jagna, Bohol. 2002 Unpublished report.
- Biña, R.R., K. Carpenter, W. Zacher, R.S. Jara and J.B.R. Lim (1978) Coral reef mapping using landsat data: Follow-up studies. NRMC Research Monograph, No. 3. Series of 1978. Quezon City: Ministry of Natural Resources.
- Buddemeier, R., J.A. Kleypas and R.B. Aronson (2004) Coral Reefs and Global Climate Change. Pew Center on Global Climate Change, 42p.

- Calumpong, H.P. (ed.) The Bohol Marine Triangle: Vol. 2. Marine Protected Areas. Foundation for the Philippine Environment, #77 Matahimik St., Teachers' Village, Quezon City 1101, Philippines. Prepared by the Silliman University Marine Laboratory, Dumaguete City. 2004 Unpublished report.
- Cebu, E.H., R.C. Diocton, R. B. Celmar, R.T. Servero, Jr., E.T. Casiño, D.G. Taon and F.R. de Guzman. Rapid Community and Coastal Resources Assessment in Daram, Samar. 2006 Unpublished report submitted to Plan Philippines, Inc.
- Christie, P., N.B. Armada, A.T. White, A.M. Gulayan and H.H. de Dios (2006) Coastal Environmental and Fisheries Profile of Danajon Bank, Bohol, Philippines. Fisheries Improved for Sustainable Harvest (FISH) Project, Cebu City, Philippines. 63p.
- Coastal Conservation and Education Foundation (2008) Protected Coast, Reef, and Management: Local Government Declared MPAs (www.coast.ph).
- Coastal Dynamics Foundation. Report of the April 2008 Reef Surveys of Sta. Fe's Marine Protected Areas, Cebu, Philippines. 2008 Unpublished report, 19p.
- Coastal Resource Management Section. Terminal Monitoring of the Fish Sanctuaries under CBRMP-covered Municipalities. 2006 Unpublished report.
- Community-Based Resource Management Sub-Project Feasibility Study. Municipality of Calape, Bohol, to the Department of Finance-World Bank. Community-based Resource Management Project. 2001 Unpublished report.
- Corrales, J. D. Regulatory Framework from Fish Cage Operation in Calape Bay, Bohol: A Recommendation Based on Environmental and Culture Conditions. 2005 Unpublished report.
- CVSCAFT. Clarin Marine Protected Area Periodic Assessment Results for Majigpit Sanctuary. 2005 Unpublished report.
- Delizo, D., D. Apistar, R. Diaz, E. Lucas, D. Raymundo, A. Sabonsolin and S. Tesch. Summary Field Report: Municipality of Badian, Cebu, Philippines. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City. 2007 Unpublished report.
- Diaz, R., P. Lozada, E. Lucas, D. Raymundo and A. Sabonsolin. Summary Field Report: Reef Monitoring Survey at Colase Marine Sanctuary, Samboan, Cebu, Philippines, April 2008. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City. 2008 Unpublished report, 26p.
- Diaz, R., P. Lozada, E. Lucas, D. Raymundo and A. Sabonsolin. Summary Field Report: Reef Monitoring Survey at Pasil Marine Sanctuary, Santander, Cebu, Philippines, April 2008. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City. 2008 Unpublished report, 22p.
- FISH Project. Consolidated Report: Baseline assessment of the capture fisheries and marine protected areas (reef habitats) in the FISH Project's focal areas: Coron Bay, Danajon Bank, Lanuza Bay, and Tawi-tawi Bay. 2005 Unpublished report.
- Green, S.J., R.D. Alexander, A.M. Gulayan, C.C. Migrino III, J. Jarantilla-Paler and C.A. Courtney (2002) Bohol Island: Its Coastal Environmental Profile. Bohol Environmental Management Office, Bohol and Coastal Resource Management Project, Cebu City, Philippines, 174 p.
- Haribon Foundation (2005) Atlas of Community-Based Marine Protected Areas in the Philippines. Haribon Foundation for the Conservation of Natural Resources, Quezon City, and Pamana Ka Sa Pilipinas, Cebu City, Philippines. 533p.
- Hayuma Foundation. Biological monitoring survey for LIPASECU marine sanctuaries. 2005 Unpublished report.
- Indab, J.D and P.B. Suarez-Aspilla (2004) Community-based marine protected areas in the Bohol (Mindanao) Sea, Philippines NAGA, WorldFish Center Quarterly Vol. 27 (1 & 2):4-8.
- Jadloc, C.R.L. and A.E. Candido. Assessment of coral reefs in the Tañon Strait. Conducted on August 20-22, 2008. 2008 Unpublished preliminary report.
- Kuhlmann, K.J. (2002) Evaluations of marine reserves as basis to develop alternative livelihoods in coastal areas of the Philippines. Aquaculture International 10: 527-549.
- Lozada, P., R. Diaz, E. Lucas, D. Raymundo, A. Sabonsolin and S. Tesch. Summary Field Report: Municipality of Moalboal, Cebu, Philippines, 2007. The Coastal Conservation and Education Foundation, Inc. and the Local Governance for Coastal Management Project (LGCMP), Cebu City, 42p. 2007 Unpublished report.
- Lubchenco, J., S.R. Palumbi, S.D. Gaines and S. Andelman (2003) Plugging a hole in the ocean: The emerging science of marine reserves. Ecological Applications 13 (1) Supplement: S3-S7.
- Marcus, J., M. Samoilys, J. Meeuwig, Z. Villlongco and A.C.J. Vincent (2007) Benthic status of near-shore fishing grounds in the central Philippines and associated seahorse densities. Marine Pollution Bulletin 54:1483-1494.
- Maribojoc Bay Environmental Management Office. Marine Sanctuary Monitoring of fish biomass and coral cover in the Maribojoc Bay. 2006- 2008 Unpublished report.
- Miclat, R.I., R.O.M. Gonzales and P.M. Aliño (2008) Proceedings of the Coastal Zone Philippines 2: Sustainable

- Financing and Marine Protected Areas (MPA) Congress. MPA Support Network, Marine Environment & Resources Foundation, Inc. and the Marine Science Institute, University of the Philippines, 100p.
- Municipal Agriculture Office-Lila, Bohol (MAO-Lila) Data on fish biomass and coral cover of marine reserves in Lila, Bohol. 2007 Unpublished report.
- Municipal Local Government-San Rafael Cabacungan. Fish, coral and mangrove assessment in Barili Marine Sanctuary. 2007 Unpublished report.
- Nillos-Kleiven, P. and B. Stockwell. Fish and coral substrate trends in Dive Hub Sanctuary 2008-2009. SUAKCREM Technical Report. 2009 Unpublished report.
- Ong, P. S., L. E. Afuang and R. G. Rosell-Ambal (eds.) (2002) Philippine Biodiversity Conservation Priorities: A Second Iteration of the National Biodiversity Strategy and Action Plan. DENR – PAWB, Conservation International Philippines, Biodiversity Conservation Program UP Center for Integrative and Development Studies and Foundation for the Philippine Environment, Quezon City.
- Panes, H.M., A.M. Torrechilla and B. Cabrera. Canlawron Channel-Municipal Marine Nursery/Reserve Baseline Assessment. 2006 Unpublished report.
- Partnership for Interdisciplinary Studies of Coastal Oceans (2008) The Science of Marine Reserves (2nd Edition, Latin America and Caribbean). www.piscoweb.org, 22p.
- Philippine Association of Marine Science (2008) 2007 Outstanding MPA Awards and Recognition: Promoting Best MPA Support Network, Marine Environment & Natural Resources Foundation, Inc. and the Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines, 40p.
- PhilReefs (2003) Reefs Through Time: Workshop Proceedings. Second of the Atlas of Philippine Coral Reef Series. Coral Reef Information Network of the Philippines (PhilReefs) and the Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines and the Marine Parks Center, Tokyo, Japan, 197p.
- PhilReefs (2005) Reefs Through Time: 2004 Biennial Report on the Status of Philippine Coral Reefs. Coral Reef Information Network of the Philippines (PhilReefs) and the Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines, 248p.
- PhilReefs (2008) Reefs Through Time: 2008 Initiating the State of the Coasts Reports. Coral Reef Information Network of the Philippines (PhilReefs), MPA Support Network, Marine Environment & Resources Foundation, Inc. and the Marine Science Institute, University of the Philippines, Diliman, Quezon City.
- Primavera, Y. (2002) The coral reef fisheries of Malalison Island, West Central Philippines, two years after fish sanctuary protection. UPV Journal of Natural Sciences 7(1&2): 120-132.
- Raymundo, D.J.C. Biophysical Monitoring Surveys in Siquijor, Philippines. Coastal Conservation and Education Foundation, Inc. 2008 Unpublished report, 18p.
- Raymundo, D.J.C. 2007 Biophysical Monitoring Surveys in Southeast Cebu, Philippines. Coastal Conservation and Education Foundation, Inc. 2008 Unpublished report, 14p.
- Raymundo, D.J.C. Summary Field Report: 2006 Reef Monitoring Surveys in Sibonga, Cebu, Philippines. Coastal Conservation and Education Foundation, Inc. 2008 Unpublished report, 11p.
- Raymundo, L.J. and A.T. White (2004) 50 years of scientific contributions of the Apo Island experience: A review. Silliman Journal 45(2): 32-58.
- Rebadomia, J.C. Underwater and Progress Report of Sipalay Marine Protected Area. 2008 Unpublished report.
- Reboton, C.T. and H.P. Calumpong (2003) Coral damage caused by divers/snorkelers in Apo Island Marine Sanctuary, Dauin, Negros Oriental, Philippines. Philippine Scientist 40: 177-190.
- ReefCheck. Marine Protected Area (MPA) Report-Tubigon, Bohol. 2008 Unpublished report.
- Republic Act No. 9106. An Act for the Establishment and Management of Sagay Marine Reserve, Defining its Scope, Coverage and other Purposes. March 16, 2001.
- Russ, G.R. and A.C. Alcala (1994) Sumilon Island Reserve: 20 years of Hope and Frustration. NAGA, The ICLARM Quarterly, pp. 8-12.
- Russ, G.R. and A.C. Alcala (1996) Marine reserves: Rates and patterns of recovery and decline of large predatory fish. Ecological Applications 6(3):947-961.
- Russ, G.R. and A.C. Alcala (2003) Marine reserves: rates and patterns of recovery and decline of predatory fish, 1983-2000. Ecological Applications 13(6):1553-1565.
- Russ, G.R., B. Stockwell and A.C. Alcala (2005) Inferring vs. measuring rates of recovery in no-take marine reserves. Marine Ecology Progress Series 293:1-12.
- Samoilys, M.A., K.M. Martin-Smith, B.G. Giles, B. Cabrera, J.A. Anticamara, E.O. Brunio and A.C.J. Vincent (2007) Effectiveness of five small Philippines' coral reef reserves for fish populations depends on site-specific factors, particularly enforcement history. Biological Conservation 136:584-601.

- Samonte-Tan, G.P.B., A.T. White, M.A. Tercero, J. Diviva, E. Tabara and C. Caballes (2007) Economic valuation of coastal and marine resources: Bohol Marine Triangle, Philippines. *Coastal Management* 35:319–338.
- Solandt, J.C., J. Slater, M. Beger and A.R.H. Harborne. Danjugan Island, Negros Occidental, Philippines. *Reef Check Report 1997-1999*. PRRCFI and CCC. 2001 Unpublished report. 25p.
- Stockwell, B. Biophysical Assessment of Bongalonan Reserve, Basay, Negros Oriental: Ten Years of Protection. 2002 Unpublished report.
- Stockwell, B.L. and R.A. Abesamis. Report on the Initial Survey of Coral Reefs in Lila, Bohol. A Report Submitted to Lila Municipal Government. 2008 Unpublished report.
- Stockwell, B.L. and M.J. Inocencio. Biophysical Assessment of Poblacion I, Masaplod Norte, Masaplod Sur, and Maayong Tubig Marine Sanctuaries in Dauin, Negros Oriental: Present Situation and Trends. 2002 Unpublished report.
- Stockwell, B.L., M.J. Inocencio and A.G. Marañon, Jr. (2007) Biophysical Assessment of Carbin Reef, Sagay, Negros Occidental. in: Alcala, A.C., I. Flores, C. Acedo and G. Gloria (eds.) (2006) Higher Education Research Papers. An Occasional Publication of the Commission on Higher Education, pp.41-54.
- Tuyogon, T.C. (2007) Status of coral and reef fish resources of Pasil Reef Marine Sanctuary, Cogtong Bay, Bohol, Philippines. In: Alcala, A.C., I. Flores, C. Acedo and G. Gloria (eds.) (2006) Higher Education Research Papers. An Occasional Publication of the Commission on Higher Education, pp.93-98.
- University of the Philippines in the Visayas Foundation Inc. Post-Resource and Ecological Assessment of Ormoc Bay, Philippines. 2003 Unpublished report.
- UP-MSI, ABC, ARCBC, DENR, ASEAN (2002) Marine Protected Areas in Southeast Asia. ASEAN Regional Centre for Biodiversity Conservation, Department of Environment and Natural Resources, Los Baños, Philippines. 142 pp., 10 maps.
- Uychiaoco, A., H. Arceo, P. Gaite, S. Green and F. Castrence, Jr. Cabacongan Fish Sanctuary Report. 2000 Unpublished report.
- Uychiaoco, A.J., P.M. Aliño and A.T. White (2002) Marine Protected Areas in the Philippines: Towards harmonizing goals and strategies. Proceedings of IUCN/WCPA-EA-4 Taipei Conference, March 18-223, 2002, Taipei, Taiwan. pp. 255-260.
- Wamsley, S.F. and A.T. White (2003) Influence of social, management and enforcement factors on the long-term ecological effects of marine sanctuaries. *Environmental Conservation* 30:388-407.
- White, A.T., P.M. Aliño and A.T. Meneses (2006) Creating and managing marine protected areas in the Philippines. *Fisheries Improved for Sustainable Harvest Project*. Coastal Conservation and Education Foundation Inc., and University of the Philippines, Marine Science Institute. Cebu City, Philippines, 83p.
- White, A.T., P. Christie, J. Apurado, A.T. Meneses, M.F. Ovenden, S.C. Tesch and E.E. White. Summary Field Report: Coral Reef Monitoring in Cebu, Negros and Siquijor, Philippines. The Coastal Conservation and Education Foundation, Inc. and Coastal Resource Management Project, Cebu City. 2002 Unpublished report, 126p.
- White, A.T., P. Christie and M.F. Divinagracia. Summary Field Report: Coral Reef Surveys for Conservation in Southwest Bohol, Earthwatch Expedition to the Philippines, May 1-10 and 13-22, 1999. Coastal Resource Management Project and the Sulu Fund for Marine Conservation Foundation, Inc., Cebu City. 1999 Unpublished report, 79p.
- White, A.T., E.D. Gomez, A.C. Alcala and G.R. Russ (2007) Evolution and lessons from fisheries and coastal management in the Philippines, pp 88-111. In: T. McClanahan and J.C. Castilla (eds.) *Fisheries Management: Progress Toward Sustainability*. Oxford, U.K. Blackwell Publishing Ltd. 332p.
- White, A.T. and S.J. Green (undated) Successful Marine Protected areas require broad support: Philippine case. Power point presentation, 39p.
- White, A.T., B.L. Stockwell, A.T. Meneses, S.C. Tesch, M.F. Ovenden, E.E. White and J. Apurado. Summary Field Report "Saving Philippine Reefs", Coral Reef Monitoring Surveys for Conservation in Bohol and Siquijor, Philippines, Earthwatch Expedition to the Philippines. 2003 Unpublished report.
- Yambao, A.C., A.T. White, W.E. Ablong and M.R. Alcala (2001) Coastal Environmental Profile of Negros Oriental, Philippines. Coastal Resource Management Project, Cebu City, Philippines, 107p.