

**COASTAL ENVIRONMENTAL PROFILE**  
OF THE  
**MALALAG BAY AREA**  
**DAVAO DEL SUR, PHILIPPINES**

**IMELDA S. VALLE**  
**MA. CHONA B. CRISTOBAL**  
**ALAN T. WHITE**  
**EVELYN DEGUIT**

Coastal Resource Management Project

*of the*

Department of Environment and Natural Resources

*supported by the*

United States Agency for International Development

2000

## **Coastal Environmental Profile of the Malalag Bay Area, Davao del Sur, Philippines**

Imelda S. Valle, Ma. Chona B. Cristobal, Alan T. White and Evelyn T. Deguit

2000

PRINTED IN CEBU CITY, PHILIPPINES

**Citation:** Valle, I.S., M.C.B. Cristobal, A.T. White and E. Deguit. 2000. *Coastal Environmental Profile of the Malalag Bay Area, Davao del Sur, Philippines*. Coastal Resource Management Project, Cebu City, Philippines, 127 p.

This publication was made possible through support provided by the United States Agency for International Development (USAID) under the terms and conditions of Contract No. AID-492-C-00-96-00028-00 supporting the Coastal Resource Management Project (CRMP). The opinions expressed herein are those of the authors and do not necessarily reflect the views of the USAID. This publication may be reproduced or quoted in other publications as long as proper reference is made to the source.

**Production:** Letty Dizon copy-edited and Lume Inamac and Ida Juliano word-processed, did the layout, and designed the cover of this document.

**Cover Photos:** Front - A. White; Back - CRMP staff.

CRMP Document No. 23-CRM/2000

ISBN 971-92289-9-7

# ***CONTENTS***

<b>Tables and Figures</b>	v
<b>Foreword</b>	vii
<b>Preface</b>	viii
<b>Acknowledgments</b>	x
<b>Acronyms and Abbreviations</b>	xi
<b>Commonly Used Local Terms</b>	xii
<b>Glossary of Terms</b>	xiv
<b>Chapter 1</b>	
<b>Introduction</b>	1
<b>Chapter 2</b>	
<b>Physical Features</b>	7
Land Area	7
Topography	7
Hydrology	9
Soil	14
Land Uses	14
Climate	16
<b>Chapter 3</b>	
<b>Natural Resources</b>	17
Mineral Resources	17
Forest Resources	17
Coastal Resources	18
Hagonoy	20
Malalag	23
Padada	26
Sta. Maria	29
Sulop	32
<b>Chapter 4</b>	
<b>Sociopolitical Setting</b>	49
Political and Administrative Boundaries	49
Demography	51
Population Size, Density, Distribution, and Growth Rate	51
Households	52
Age and Gender Composition	52
Urban and Rural Distribution	52
Education	52
Labor, Employment, and Income	54
Religion	54
Dialects	56

Health, Sanitation, and Medical Care	56
Settlements	56
Roads, Transportation, Communication, and Other Related Infrastructure or Support Systems	59
Roads and Bridges	59
Transportation	59
Communication	59
Irrigation	60
Shore Protection Structure	60
Power Supply	60
Water Supply	60
Waste Disposal	61
<b>Chapter 5</b>	
<b>Economic Sectors</b>	63
Fisheries	63
Marine Fisheries	63
Capture Method	63
Number of Fishers	65
Catch per Unit Effort	65
Catch per Species (Weight) per Gear	68
Aquaculture	71
Industry	73
Agriculture	74
Food and Commercial Crops	74
Livestock and Poultry	77
Tourism	79
<b>Chapter 6</b>	
<b>Institutional and Legal Framework</b>	81
Philippine Coastal Management Laws	82
Coastal Management Ordinances in the MBA	82
Institutions Involved in Coastal Management	88
National Government	88
Local Government	89
Nongovernment Organizations and People's Organizations	98
Community Organizations	99
<b>Chapter 7</b>	
<b>Management Issues and Opportunities</b>	103
Environment	103
Economic	108
Political/Institutional	109
<b>References</b>	127

# ***TABLES and FIGURES***

## **Tables**

2.1	Land area distribution and coastline length of each municipality in the MBA	8
2.2	Water quality criteria for coastal and marine waters	11
2.3	Physical properties of the coastal waters of Davao del Sur	11
2.4	Chemical properties of the coastal waters of Davao del Sur	12
2.5	Biological properties of the coastal waters of Davao del Sur	12
2.6	Soil classification of the MBA by municipality	14
3.1	Mineral resources of the MBA	18
3.2	Certificate of Stewardship Contracts and corresponding area issued by the DENR under the Integrated Social Forestry Project in the MBA	19
3.3	Habitats in the MBA	19
3.4	Mangrove area surveyed by SUML in the MBA	35
3.5	Mangrove and associated species found in the MBA	36
3.6	Mean density of mangrove seedlings and saplings in the MBA	37
3.7	Seagrass species found in the MBA	38
3.8	Reef extent and other description of the stations in the MBA	39
3.9	Corals found in the MBA	40
3.10	Mean cover of benthic categories using random quadrat method in the MBA	41
3.11	Fishery resources in the MBA	42
3.12	Reef fish composition in the MBA	43
4.1	Population size, density, and growth rate of the MBA	51
4.2	Urban and rural population in the MBA	52
4.3	Summary of the ranges and averages of income obtained from different categories of livelihood in the MBA	55
4.4	Excrete disposal facilities by municipality in the MBA	57
4.5	Sources of household construction financing in the MBA	58
4.6	Access to potable water facilities by municipality in the MBA	61
4.7	Solid and liquid waste disposal facilities by municipality and by number of households in the MBA	61
5.1	Fishing gear used in the MBA	64
5.2	Fishing gear used in the MBA based on PCRA data in 1998	66
5.3	Number of municipal fishers and corresponding fish production in the MBA	66
5.4	Catch per unit effort and income per unit effort in the MBA, 1997	67
5.5	Summary of catch composition, biomass, and relative abundance per gear type in the MBA	69
5.6	Brackishwater resources data by municipality in the MBA	71
5.7	Freshwater resources data by municipality in the MBA	72
5.8	Major industries in the MBA	73
5.9	Food and commercial crops in the MBA in 1996	75

5.10	Livestock and poultry (number of heads) in the MBA	78
5.11	Existing tourist spots in the MBA	79
6.1	Summary of coastal and environmental management laws	83
6.2	Ordinances for coastal environmental protection and management in the MBA	85
6.3	Operating funds for CRM implementation in Malalag	87
6.4	Partial listing of NGOs and POs in the MBA	100
7.1	Major CRM issues and management options identified by the rapid resource appraisal of Davao Gulf	104
7.2	10-Year environmental management and protection program for the MBA	112
7.3	Municipal CRM plans (Year 2000-2004) in the MBA	115

## Figures

1.1	Malalag Bay with outlying municipalities	2
2.1	Proportion of non-coastal and coastal <i>barangay</i> land area per municipality	8
2.2	The circulation of Malalag Bay	10
2.3	Suitability of Malalag Bay for mariculture	10
2.4	Land classification of the MBA by municipality	15
3.1	Coastal resource map of the municipality of Hagonoy, Davao del Sur	21
3.2	Hagonoy transect diagram (Barangays Aplaya, Balutakay, Guihing, Leling, and Paligue)	22
3.3	Coastal resource map of the municipality of Malalag, Davao del Sur	24
3.4	Malalag transect diagram (Barangays Bagumbayan, Baybay, and Bulacan)	25
3.5	Coastal resource map of the municipality of Padada, Davao del Sur	27
3.6	Padada transect diagram (Barangays Palili, Piape, Punta Piape, and San Isidro)	28
3.7	Coastal resource map of the municipality of Sta. Maria, Davao del Sur	30
3.8	Sta. Maria transect diagram (Barangays Basiawan, Kisulad, Mamacao, Ogpao, San Agustin, Sto. Niño, Sto. Rosario, and Tanglad)	31
3.9	Coastal resource map of the Municipality of Sulop, Davao del Sur	33
3.10	Sulop transect diagram (Barangay Balasinon)	34
3.11	Mean benthic cover from coral reefs in five stations in the MBA	41
4.1	The MBA municipalities	50
4.2	MBA literacy rate	53
4.3	School distribution in the MBA	53
4.4	Total labor force and employment rate in the MBA	55
4.5	Housing units by municipality in the MBA	57
5.1	Number of municipal fishers and corresponding fish production in the MBA	67
5.2	Land use for food and commercial crops in the MBA	76
5.3	Food and commercial crops in the MBA	77
6.1	Environment and Natural Resources Office (ENRO) organizational structure	95
6.2	Proposed Provincial Coastal Resource Management Implementing Structure	96
6.3	Proposed Inter-Agency Coordinating Structure for Coastal Resource Management	97
6.4	Davao Gulf Management Board (DGMB) organizational structure	98

# ***FOREWORD***

The Philippines is endowed with a rich abundance of coastal natural resources along its 18,000 km of shoreline. Davao del Sur, with the longest shoreline in Region 11 stretching along 11 municipalities, is no exception. Davao del Sur has long depended on its fisheries, coral reefs, mangroves, beaches, coastal bays, and estuaries for aquaculture and other uses. From the upland to the seas of Davao del Sur, occupations in food security employ a large portion of the coastal population. But, unfortunately, trends in production are not good.

As in other coastal areas, the coastal resource base is being degraded through a variety of impacts from human folly. Fisheries are being depleted through excessive effort and use of destructive methods. Shoreline habitats are either being damaged or converted to alternative uses that no longer support viable fisheries as in the past. Equally, agriculture practices in coastal and upland areas are having many negative impacts on coastal resources and particularly water quality because of poor soil management practices, use of pesticides and other chemicals, and increasing deforestation. All these problems emphasize the need for integrated coastal management in Davao del Sur.

The first step towards a more integrated and comprehensive planning and management regime for coastal resources is to develop an information base that guides planning. The *Coastal Environmental Profile of the Malalag Bay Area* represents an important first step in the coastal management process. It can help guide long-term solutions to some of the coastal problems of the area and provide a set of baseline data upon which to measure changes in the environment in the present and the future. It can also be used to monitor the effectiveness of coastal projects.

This profile will assist in informing all the decision-makers and stakeholders in the areas about the need to protect and manage their coastal areas and resources. It contains much useful information and provides guidance on management policies. Let us use it wisely and develop much-needed coastal management plans for our province.

**ROGELIO E. LLANOS**  
*Governor*  
*Davao del Sur*

# ***PREFACE***

The *Coastal Environmental Profile of the Malalag Bay Area, Davao del Sur, Philippines* provides baseline information on the coastal environment of the Malalag Bay Area. It will assist with management planning at the municipal and *barangay* levels within the Malalag Bay Area for years to come. It is also useful as a guide for other coastal municipalities in Davao del Sur and Davao Gulf.

This profile is produced as part of the activities of the Coastal Resource Management Project (CRMP) in collaboration with the municipalities and province of Davao del Sur. The CRMP has worked in the area since 1996 to develop and encourage leaders among local communities, nongovernment organizations, and local government units to work for coastal resource management (CRM). CRM is the process of planning, implementing, and monitoring beneficial and sustainable uses of coastal resources through participation, collaboration, and sound decision-making. This is achieved by involving the affected community, resource users, local and regional government, nongovernment organizations, and the private sector. It aims to promote an integrated coastal management approach that focuses on sustainable coastal resource use and minimizes direct negative impacts on coastal resources from fishing, aquaculture, and other forms of development.

Malalag Bay typifies a once-rich ecosystem now ravaged by the misuse and abuse of the people who have lived from the bounty of the sea. The coastal habitats of Malalag Bay are characterized by a few patches of secondary growth of mangrove forest, some seagrass areas, and about 100 ha of coral reefs. This represents a significant decline over 50 years ago and hopefully sets the baseline on improvement for the area through improved protection and management.

The bay is considered a favorable site for port and industrial facilities as well as aquaculture development. This presents another challenge in that such development normally depletes the natural resource base through reclamation and pollution. CRM planning for Malalag Bay must consider the trade-offs between maintenance and improvement of its natural resource base of habitats and fisheries and shoreline development of aquaculture and industries. The bottom-line is that all development must be done in a manner that minimizes waste and pollution.

The integrated and participatory approach to coastal management for the profile area of Malalag Bay has proven successful in other areas of the Philippines. This approach depends on the dynamic action of community groups with local and national government agencies responsible for resource management. This participatory approach does not dictate to the people, but rather, equips them, who rely the most upon the coastal environment, with the necessary tools to make rational and sustainable decisions. The first step in this process is the development of baseline information for planning. This profile completes this step for the Malalag Bay Area.

# ***ACKNOWLEDGMENTS***

The preparation of this coastal environmental profile was made possible by the assistance and cooperation of many institutions and individuals inside and outside of the Malalag Bay Area. The following government organizations are thanked for contributing important data:

Municipalities of Hagonoy, Malalag, Padada, Santa Maria, and Sulop  
Provincial Planning and Development Office, Davao del Sur  
Office of the Provincial Agriculturist, Davao del Sur  
Environment and Natural Resources Office, Davao del Sur  
Bureau of Fisheries and Aquatic Resources, Region XI  
Department of Environment and Natural Resources, Region XI

The nongovernment organizations and academic institutions that assisted include:

International Marinelife Alliance  
Silliman University Marine Laboratory  
Mindanao State University  
Canadian International Development Agency  
Institute of Small Farms and Industries

Key individuals who have contributed to the completion of this profile at various stages along the way include:

Oscar Francisco, Fisheries and Coastal Management Consultant, Davao  
Melchor Maceda, Economic Development Foundation, Manila  
Johnette Delegero, Learning Area Coordinator, CRMP  
Rex Baleña, Ph.D., University of the Philippines in the Visayas, Iloilo

Finally, this profile could not have been completed without the commitment of Honorable Rogelio E. Llanos, Governor of Davao del Sur and all the municipal and *barangay* officials and employees within the Malalag Bay Area.

The Coastal Resource Management Project, implemented by the Department of Environment and Natural Resources and funded by the United States Agency for International Development, has published this document.

# ***ACRONYMS and ABBREVIATIONS***

BFAR	Bureau of Fisheries and Aquatic Resources
BFARMC	<i>Barangay</i> Fisheries and Aquatic Resources Management Council
CPUE	catch per unit effort
CRM	coastal resource management
CRMP	Coastal Resource Management Project
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DILG	Department of the Interior and Local Government
DOST	Department of Science and Technology
DOT	Department of Tourism
EIA	Environmental Impact Assessment
ENRO	Environment and Natural Resources Office(r)
EO	Executive Order
FARMC	Fisheries and Aquatic Resources Management Council
GT	gross ton
ha	hectare
HALT	Hillside Agricultural Land Technology
kg	kilogram
km	kilometer
km <sup>2</sup>	square kilometer
L	liter
LGU	local government unit
LOI	Letter of Instruction
mg	milligram
MGB	Mines and Geosciences Bureau
ml	milliliter
mm	millimeter
MSU	Mindanao State University
mt	metric ton
NEDA	National Economic and Development Authority
NGO	nongovernment organization
OPAG	Office of the Provincial Agriculturist
PCAMRD	Philippine Council for Aquatic and Marine Research and Development
PCRA	participatory coastal resource assessment
PD	Presidential Decree
PNP	Philippine National Police
PO	people's organization
PPDO	Provincial Planning and Development Office
ppt	parts per thousand
RA	Republic Act
SUML	Silliman University Marine Laboratory

# ***COMMONLY USED LOCAL TERMS***

<b>Local Terms</b>	<b>English Translation</b>	<b>Local Terms</b>	<b>English Translation</b>
<b>FISHING GEAR</b>			
<i>Baling</i>	Lift net	<i>Bolinao</i>	Anchovy
<i>Basnig</i>	Bag net	<i>Borot</i>	Scad
<i>Bubo (pangnokos)</i>	Squid trap	<i>Bugaong</i>	Therapon, tigerfish
<i>Bunsod</i>	Fish corral	<i>Bulan-bulan</i>	Flagtail
<i>Katay, palangre,</i> <i>pasol pambariles</i>	Long line	<i>Bulgan</i>	Big-eye
<i>Manubid, pamariles,</i> <i>pambaca, pamirit, subid,</i> <i>pangaraw, undak</i>	Single hook and line	<i>Butete</i>	Pufferfish
<i>Palangre/pamarilis, subid,</i> <i>panubid, pasol, undak</i>	Multiple hook and line	<i>Kabalyas</i>	Tuna and mackerel
<i>Palaran, panglambay,</i> <i>panglampornas, pamalo,</i> <i>pangtamban, pukot,</i> <i>pukot-doble, pukot-triple,</i> <i>pukot-paapong</i>	Gill net	<i>Kapal</i>	Damselfish
<i>Pamana, pana, pana-suga</i>	Spear gun	<i>Karaw</i>	Tuna and mackerel
<i>Pamante, pamo, pukot,</i> <i>pangnadhaw, patuloy,</i> <i>panggal</i>	Drift gill net	<i>Katambak</i>	Emperor bream
<i>Pamante triple, pamante-abay</i>	Bottom set gill net	<i>Kitong</i>	Rabbitfish
<i>Panggal</i>	Fish trap	<i>Dali-dali</i>	Flatfish
<i>Sudsud</i>	Scoop net	<i>Danggit</i>	Rabbitfish
		<i>Galunggong</i>	Scad
		<i>Ganting</i>	Squirelfish
		<i>Gapas</i>	Threadfin bream
		<i>Gisaw</i>	Mullet
		<i>Gonggong</i>	Therapon, tigerfish
		<i>Guno</i>	Silverside
		<i>Hinok</i>	Goatfish
		<i>Hilo</i>	Eel
		<i>Ibis</i>	Cardinalfish
		<i>Iho</i>	Shark
		<i>Ito</i>	Catfish
		<i>Labayan</i>	Wrasse
		<i>Lagaw</i>	Threadfin bream
		<i>Lalagan</i>	Snapper
		<i>Lapu-lapu</i>	Grouper
		<i>Latab</i>	Mojarra
		<i>Liplipan</i>	Billfish
		<i>Lipti</i>	Sweetlip and grunt
		<i>Mamsa</i>	Jack
		<i>Marang</i>	Billfish
		<i>Matambaka</i>	Scad
		<i>Maya-maya</i>	Snapper, seaperch
		<i>Mol-mol</i>	Parrotfish
		<i>Mongit</i>	Surgeonfish
		<i>Pagi</i>	Stingray
		<i>Palad-palad</i>	Flathead
		<i>Pandawan</i>	Dolphinfish
		<i>Pirit</i>	Tuna
		<i>Pugapo</i>	Grouper
		<i>Rompe-kandado</i>	Barracuda
		<i>Sagisi</i>	Threadfin bream
		<i>Salay-salay</i>	Crevalle, trevally
		<i>Salmon-salmon</i>	Scad and jack
		<i>Sapsap</i>	Slipmouth
<b>FISHES</b>			
<i>Alibangbang</i>	Butterflyfish		
<i>Aluman</i>	Snapper		
<i>Anduhaw</i>	Tuna		
<i>Aso-os</i>	Whiting		
<i>Badlon</i>	Jack, cavalla, crevalle		
<i>Bagis</i>	Surgeonfish		
<i>Balo</i>	Needlefish		
<i>Banak</i>	Mullet		
<i>Banghutin</i>	False whiting, blanquillo		
<i>Bangsi</i>	Flying fish		
<i>Bangus (semilya)</i>	Milkfish fry		
<i>Bantol</i>	Scorpionfish, turkeyfish, lionfish, stonefish		
<i>Barilason</i>	Jack, cavalla, crevalle, trevally, dart		
<i>Bariles</i>	Tuna and mackerel		
<i>Bilason</i>	Fusilier, bananafish		
<i>Bilong-bilong</i>	Moonfish		

**Local Terms****English Translation**

<i>Solid</i>	Fusilier
<i>Sunogan</i>	Flathead
<i>Talakitok</i>	Scad and jack
<i>Tamban</i>	Herring
<i>Tangigue</i>	Spanish mackerel
<i>Tanglaron</i>	Wrasse
<i>Timbungan</i>	Goatfish
<i>Tulingan</i>	Frigate tuna
<i>Ubod</i>	Moray eel

**MOLLUSKS**

<i>Aninikad</i>	Miter shell
<i>Bulatok</i>	
<i>Imbaw</i>	Venus shell
<i>Litob</i>	Bubble shell

**OTHER INVERTEBRATES**

<i>Alamang</i>	Small shrimp
<i>Alimango</i>	Mud/mangrove crab and blue crab
<i>Balat</i>	Sea cucumber
<i>Banagan</i>	Shovel-nosed, slipper lobster
<i>Kasag</i>	Mud/mangrove crab and blue crab
<i>Kubutan</i>	Cuttlefish
<i>Kugita</i>	Octopus
<i>Lambay</i>	Blue crab
<i>Lokon</i>	Penaeid shrimp
<i>Nokos</i>	Squid
<i>Pasayan</i>	Penaeid shrimp
<i>Tostos</i>	Squid
<i>Uyap</i>	Small shrimp

# ***GLOSSARY OF TERMS***

**Bag net.** A mobile impounding drag net; locally called *basnig*. This is a conical or cubical net operated with the aid of light on dark nights. A lifting motion effects the capture. Requires about 7 to 10 people.

**Bottom set gill net.** An entangling net which is locally called *pamante-triple* or *pamante-abay* or by the generic name for gill net (*pukot*). This net is anchored, weighed down, or attached to the bottom so that it is not free to move with the water current.

**Commercial fishing.** Fishing for commercial purposes in waters more than 15 km from the shoreline with the use of fishing boats of more than 3 GT.

**Drift gill net.** An entangling net commonly called *pamo*. It is also locally referred to as *pamante*, *patuloy*, *pangtamban*, or by the generic gill net name, *pukot*. When used at night, with light, it is also referred to as *panganduhaw*. This type of gill net is usually fixed to boats and is free to move with the wind or tide, and is used throughout the year.

**Fish cage.** Any method of culture of fish and aquatic resources in a fish enclosure which is either stationary or floating, made up of nettings or screens sewn or fastened together and installed in the water with opening or cover at the surface and held in place by wooden/bamboo post or various types of anchors and floats.

**Fish corral.** Locally known as *bunsod*, this is a guiding barrier constructed of bamboo and/or nets which are set by means of regularly-spaced stakes or posts in tidal waters or along the natural paths of fish into a desired area. Trapped fish may be collected daily during the morning, especially during the months of May to December.

**Fish pen.** An artificial enclosure constructed within a body of water for the culture of fish and aquatic resources made up of bamboo and other poles arranged in an enclosure with either fine bamboo materials, screen, or nylon netting to prevent escape of fish.

**Fish sanctuary.** A place set aside or an established fishery reserve or fish refuge and sanctuary where it shall be unlawful for any person, corporation, and cooperative to conduct any fishing operation or disturb, take, catch, destroy, or kill any marine organism within the designated body of water.

**Fish trap.** Locally called *panggal*, is a set trap or enticing device made of bamboo or rattan which is a regular, usually rectangular, receptacle preventing escape of fish by means of trap doors or tricky passageways. Trapped fish may be collected at regular intervals, in terms of days or weeks.

**Fishery.** The business of catching, taking, raising, culturing, handling, marketing, and processing of fish and other aquatic products. The fishing grounds, the right to fish, or take such products therefrom.

**Fishery reserve.** A designated area or areas in municipal waters or Philippine waters either by ordinance or proclamation as fishery reservation for the exclusive use of the government or of the inhabitants thereof or for the culture of fish and other aquatic animals for educational, scientific, and conservation purposes or fishing rights reserved for exclusive use of the government.

**Gill net.** Various sized entangling net in which capture of fish is by gilling effected by the actual meshes of the net. This is commonly referred to by locals as *pukot*, *palaran*, *pamalo*, *panglambay*, *panglampornas*, *pangtamban*, *pukot-doble*, *pukot-triple*, *pukot paapong* (with light).

**Lift net.** A mobile impounding net in which capture is effected by a vertical lifting motion of the gear. It is locally called *baling* usually used with petromax.

**Long line.** An extremely long line with a large series of baited hooks, either set or drifting, and requiring only periodic attention at more or less fixed time intervals. Generic local name is *pasol* (for line) with hook numbers ranging from 2 to 1,000 and hook sizes ranging from #12 to #17, #100 to #120, #565 to #579. Filament size varies from nylon #8 to #150. Other local names are *palangre*, *katay*, *pasol-pambariles*, *panubid*, *undak*.

**Multiple hook and line.** A collective name applied to all handlines with multiple hooks including set or drift long lines. Multiple handlines are composed of a single vertical line with a small series of barbed hooks attached to it by spreaders at regular intervals.

**Municipal waters.** Waters included between two lines drawn perpendicular to the general coastline from points where the boundary lines of the municipality or city touch the sea at low tide and a third line parallel with the general coastline and 15 km from it. It also includes streams, lakes, and tidal waters within the municipality, not being the subject of private ownership and not comprised within the national parks, public forests, timberlands, and forest reserves. However, where two municipalities are so situated on the opposite shores that there is less than 15 km of waters between them, the third line shall be equally distant from the opposite shores of the respective municipalities.

**Scoop net.** Also referred to as scoop seine which is basically a small purse seine employed as an accessory gear in hauling the catch direct from the large semicircular enclosure of deepwater fish corrals which may be devoid of a collecting pond or crib. It also refers to a fishing method wherein schools of fishes lured towards surface waters by light are scooped out of the water with a circular net. Locally called *sudsud* (with petromax).

**Single hook and line.** Also called simple handline or drop line. A single vertical line carrying one or two barbed, baited hooks and worked simply by dropping into the water and waiting for a fish to bite. Generic local name is *pasol* or *subid*. Also called by various names, most often after the most dominant species in the catch, such as *manubid-pamarilis*; *pambaca*; *pamirit*; *pangaraw*; *palutao (ulang)*; *pamalo*; *pamariles* (deep-sea fishing); *pamirit*; *pangtangigue*; *pawin*; *subid*; *undak* (with light). Hook sizes range from #06-#20 to #566-#571 while filament size varies from nylon #8 to #190.

**Spear gun.** Locally called *pana* or *pamana*, sometimes *pana-suga*. It constitutes a hand instrument provided with pointed, barbed, or barbless blades at the straight tip which are not detachable from the handle or shaft. It can be thrown by hand although sometimes shot from a gun or bowlike device. It is used at night or dawn, with a light source. Fishers may come in groups of two or three with one spear gun each.

**Squid trap.** Similar to fish traps with screen as siding and specifically targets squids by using squid-attracting baits.

