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

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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.

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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.

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ACRONYMS and ABBREVIATIONS

BFAR	Bureau of Fisheries and Aquatic Resources
BFARMC	*Barangay* 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^2	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

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

Local Terms	English Translation
Solid	Fusilier
Sunogan	Flathead
Talakitok	Scad and jack
Tamban	Herring
Tangigue	Spanish mackerel
Tanglaron	Wrasse
Timbungan	Goatfish
Tulingan	Frigate tuna
Ubod	Moray eel
MOLLUSKS	
Aninikad	Miter shell
Bulatok	
Imbaw	Venus shell
Litob	Bubble shell
OTHER INVERTEBRATES	
Alamang	Small shrimp
Alimango	Mud/mangrove crab and blue crab
Balat	Sea cucumber
Banagan	Shovel-nosed, slipper lobster
Kasag	Mud/mangrove crab and blue crab
Kubutan	Cuttlefish
Kugita	Octopus
Lambay	Blue crab
Lokon	Penaeid shrimp
Nokos	Squid
Pasayan	Penaeid shrimp
Tostos	Squid
Uyap	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. Variously 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.