Mangrove Management Handbook

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COASTAL RESOURCE MANAGEMENT PROJECT

of the

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

supported by the

UNITED STATES AGENCY
FOR INTERNATIONAL DEVELOPMENT
MANGROVE MANAGEMENT HANDBOOK

by

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2000
PRINTED IN MANILA, PHILIPPINES


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-492-0444-C-00-6028-00 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.

This was published in cooperation with the Fisheries Resource Management Project, which is implemented by the Department of Agriculture-Bureau of Fisheries and Aquatic Resources, and funded by the Asian Development Bank and Japan Bank for International Cooperation.


CRMP Document No. 15-CRM/2000

ISBN 971-91925-6-9
# Contents

List of tables ................................................................................. vii
List of figures and boxes............................................................ ix
List of acronyms........................................................................... xi
Foreword............................................................................................ xiii
Preface .......................................................................................... xv
Acknowledgments..................................................................... xvii
List of scientific names, local terms and glossary of technical terms ................................................................... xix

Chapter 1: The importance of mangroves

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>What is Mangrove?</td>
<td>1</td>
</tr>
<tr>
<td>ECOLOGICAL AND ECONOMIC BENEFITS/FUNCTIONS</td>
<td>1</td>
</tr>
<tr>
<td>THREATS</td>
<td>4</td>
</tr>
<tr>
<td>PROTECTION AND MANAGEMENT STRATEGIES</td>
<td>4</td>
</tr>
<tr>
<td>MANAGEMENT OPTIONS</td>
<td>4</td>
</tr>
</tbody>
</table>

Chapter 2: Mangrove nursery establishment and management

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>11</td>
</tr>
</tbody>
</table>
Chapter 3: Mangrove plantation establishment and management

INTRODUCTION ........................................................................................................................................................................... 25

IDENTIFYING THE PLANTATION MANAGEMENT OBJECTIVES ..................................................................................... 26

PLANTATION ESTABLISHMENT ................................................................................................................................................. 26

Site Identification and Selection .................................................................................................................................................. 26
Choice of Species ........................................................................................................................................................................ 29
Plantation Establishment Techniques ................................................................................................................................... 30
Planting ....................................................................................................................................................................................... 33
Care and Maintenance of Plantations .................................................................................................................................. 34
Maintenance Activities in Subsequent Years ............................................................................................................................ 36

MANAGEMENT OF PLANTATION AND NATURAL FOREST ............................................................................................... 37

Plantation Types ........................................................................................................................................................................ 37
Harvesting and Regeneration Systems and Enhancement Planting ...................................................................................... 38

Chapter 4: Community-Based Forest Management
Agreement: a land tenure instrument for mangroves

INTRODUCTION ........................................................................................................................................................................ 43

What is a Community-Based Forest Management Agreement? ................................................................. 43

THE BENEFITS OF THE CBFMA HOLDER ........................................................................................................ 45

CBFMA as a Land Tenure Instrument ........................................................................................................ 45
Livelihood Activities ........................................................................................................................................ 45
Benefits for the Surrounding Coastline ........................................................................................................ 46

GENERAL STEPS FOR CBFMA APPLICATION .................................................................................. 46

Work Requirements of the Mangrove Forest Stewards ........................................................................... 48
Gaining Support from Local Government Unit(s) .................................................................................. 49
Gaining Financial and Other Support from the Municipality .............................................................. 51

Chapter 5: Fishpond restoration

INTRODUCTION ........................................................................................................................................................................ 55

STEPS IN RESTORING FISHPONDS ........................................................................................................ 56

Locate All of the Fishponds ...................................................................................................................... 56
Sketch the General Shape of Each of the Ponds ...................................................................................... 58
Categorize ....................................................................................................................................................... 59
Report Illegal Fishponds .......................................................................................................................... 60
Develop a Restoration Plan ....................................................................................................................... 60

WHAT NEEDS TO BE DONE TO MODIFY PONDS .................................................................................. 63

Modifying Dikes ............................................................................................................................................... 63
Modifying the Pond Floor .......................................................................................................................... 65

MANGROVE-FRIENDLY AQUACULTURE AS MANAGEMENT OPTION .................................................. 66

Mudcrab Fattening .......................................................................................................................................... 67
Mudcrab Pen Culture ................................................................................................................................. 67

Chapter 6: Resource mapping of mangroves

INTRODUCTION ........................................................................................................................................................................ 69

WHY DO WE NEED MAPS? ........................................................................................................................... 70
List of tables

1.1 Threats to mangroves ............................................................................................................. 4
1.2 Mangrove protection and management strategies .......................................................... 5

2.1 Problems resulting from poor nursery selection ......................................................... 11
2.2 Formulas to determine nursery areas ........................................................................... 13
2.3 Best collection times for selected mangrove species .................................................. 18
2.4 Indicators of maturity for some species of mangrove fruit ........................................ 19
2.5 Bag sizes for various species ....................................................................................... 21
2.6 Typical hardening treatment .......................................................................................... 22
2.7 Damage and control measures for common pests and diseases found in mangrove nurseries ........................................................................................................ 23
2.8 Data that should be collected during nursery operations ............................................. 23

3.1 Typical zonation pattern of mangrove species and common names ................................ 27
3.2 Suggested soils for selected species of mangroves ...................................................... 30
3.3 Commercial uses of various mangrove species ........................................................ 31
3.4 Common species and recommended thinning rates ..................................................... 36

4.1 Legal instruments concerning Community-Based Forest Management Agreements .................................................. 44
4.2 Examples of actions the people’s organization can request from the barangay council and the Sangguniang Bayan ......................................................................................... 49
4.3 Outline of the barangay council presentation ................................................................ 50
4.4 Outline of the Sangguniang Bayan presentation .......................................................... 51
# List of figures and boxes

## FIGURES

1.1 Mangroves and their ecological and economic benefits. ................................................................. 2
1.2 Fish, crabs, shrimps and shellfish are nourished by mangrove leaf detritus. ............................................. 3

2.1 A typical nursery layout. .................................................................................................................. 14
2.2 Hardening bed. ............................................................................................................................... 16
2.3 Soil bagging under a shed. .......................................................................................................... 20
2.4 Germination of small to medium-size seeds. ............................................................................... 21
2.5 Germination of *bakauan* species (and other propagules) directly sown in plastic bag. ............ 21

3.1 Example sketch map. ................................................................................................................. 32
3.2 Undergrowth vegetation like the mangrove fern (*lagolok*), herbs and vines are removed to prepare the site for planting. .......................................................................................................................... 32
3.3 Direct planting of propagules (1/3 of length buried). .................................................................. 33
3.4 Field planting of potted seedlings (root collar at ground level). .................................................... 34
3.5 Potted bakauan seedlings. ........................................................................................................... 34
3.6 Barnacles encrusted on *bakauan* trunk.................................................................................... 36
3.7 Thinning operation in natural stand of *bakauan*. ................................................................... 37
3.8 One of the most successful and oldest production forests in the country located at Banacon, Getafe, Bohol. ......................................................................................................................................................... 38
3.9 Protection plantation established to protect causeway of Pangangan, Calape, Bohol. ............. 38
3.10 A firewood harvester with freshly cut wood. .............................................................................. 39
List of acronyms

AWP/RUP  Annual Work Plan/Resource Use Plan
ANR     Assisted Natural Regeneration
BFAR    Bureau of Fisheries and Aquatic Resources
CBFMA   Community-Based Forest Management Agreement
CDA     Cooperative Development Authority
CDF     Countryside Development Fund
CENRO   Community Environment and Natural Resources Office
CIDA    Canadian International Development Agency
CO      Community Organizer
CRMF    Community Resource Management Framework
CRMP    Coastal Resource Management Project
CSC     Certificate of Stewardship Contract
DA      Department of Agriculture
DAO     Department Administrative Order
DENR    Department of Environment and Natural Resources
DILG    Department of Interior and Local Government
DOLE    Department of Labor and Employment
EO      Executive Order
FLA     Fishpond Lease Agreement
GIS     Geographic Information System
GPS     Global Positioning System
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHW</td>
<td>Higher High Water</td>
</tr>
<tr>
<td>IRA</td>
<td>Internal Revenue Allotment</td>
</tr>
<tr>
<td>IRUP</td>
<td>Interim Resource Use Permit</td>
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<tr>
<td>ISFP</td>
<td>Integrated Social Forestry Program</td>
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<tr>
<td>LGU</td>
<td>Local Government Unit</td>
</tr>
<tr>
<td>LLW</td>
<td>Lower Low Water</td>
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<tr>
<td>MAO</td>
<td>Municipal Agricultural Officer/Municipal Agriculture Office</td>
</tr>
<tr>
<td>MC</td>
<td>Memorandum Circular</td>
</tr>
<tr>
<td>MFA</td>
<td>Mangrove-Friendly Aquaculture</td>
</tr>
<tr>
<td>MHHW</td>
<td>Mean Highest High Water</td>
</tr>
<tr>
<td>MLLW</td>
<td>Mean Lowest Low Water</td>
</tr>
<tr>
<td>MMC</td>
<td>Mangrove Management Component</td>
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<td>MPDC</td>
<td>Municipal Planning and Development Council</td>
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<tr>
<td>MSA</td>
<td>Mangrove Stewardship Agreement</td>
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<tr>
<td>NAMRIA</td>
<td>National Mapping and Resource Information Agency</td>
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<tr>
<td>NGO</td>
<td>Nongovernment Organization</td>
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<tr>
<td>PCRA</td>
<td>Participatory Coastal Resource Assessment</td>
</tr>
<tr>
<td>PENRO</td>
<td>Provincial Environment and Natural Resources Office</td>
</tr>
<tr>
<td>PO</td>
<td>People's Organization</td>
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<tr>
<td>PPDO</td>
<td>Provincial Planning and Development Officer</td>
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<tr>
<td>SB</td>
<td>Sangguniang Bayan</td>
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<tr>
<td>SEAFDEC</td>
<td>Southeast Asian Fisheries Development Center</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities and Exchange Commission</td>
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<tr>
<td>TWG</td>
<td>Technical Working Group</td>
</tr>
</tbody>
</table>
The Department of Environment and Natural Resources (DENR) takes pride in producing this Mangrove Management Handbook as the accepted Philippine government information guide to assist coastal communities in the rehabilitation, management, protection and maintenance of the mangrove forests of the country and the coastal environment as a whole. This handbook will strengthen our capability to enhance the mangrove forests, thereby contributing positively in the productivity and maintenance of coastal ecosystems. It clearly identifies the roles and responsibilities of the communities, the local government units, the field personnel of the department and the other partners in mangrove management and development.

The DENR enjoins all users of this handbook to work together for the sustainable management of our mangrove forest resources.

To this end, the DENR conveys gratitude and appreciation to the Coastal Resource Management Project and the unwavering support of the United States Agency for International Development, for without them this publication would not have been possible.
This Mangrove Management Handbook is comprised of six chapters packed full of useful information on how to protect and manage mangroves as a natural and productive resource. It is intended to help people anywhere who wish to become stewards of mangrove forest resources. People’s organizations, nongovernment organizations and local government are the primary audience but of course others can benefit from the information presented in this volume.

The mangrove forest resources of the Philippines have deteriorated significantly during the last 50 years. The country now has less than 120,000 hectares of mangroves remaining and much of that is only secondary growth and by no means pristine. The culprits in the decline of mangroves are many but the primary one is conversion to aquaculture ponds and more recently conversion to urban land reclamation and other land uses. If this trend continues, there will be virtually no mangroves left in the Philippines after another 50 years.

The natural ecological and economic benefits lost with mangrove loss are significant and non-retrievable. One hectare of healthy mangrove forest supports fisheries alone worth at least P20,000 (US$500) per year. In addition, there are values for wood, erosion control and waste absorption that vary from site to site but are minimally worth more than the fisheries value. This means that direct economic revenues from a healthy mangrove forest covering one hectare is conservatively P40,000 (US$1,000). It is difficult to find a natural system that produces this kind of revenue without any investment except protection, and that has practical and economic values at the same time. As we lose these benefits, we as a society, will pay many times more than the cost of this destruction.

This volume holds many answers about how we can protect and manage our mangroves and how we can increase the area of healthy mangrove forest in the country. These are simple procedures understandable by most people. The key is finding the will power to put them into practical use. Here, political and personal support will make the difference. Let us start saving our mangrove forests now!
Acknowledgments

The individuals and organizations who have contributed to the review and completion of this document include:

From the Coastal Resource Management Project (CRMP) Project Management Office, Department of Environment and Natural Resources, Region 7:

- Regional Executive Director Jeremias L. Dolino
- Regional Executive Director Augustus L. Momongan
- Regional Technical Director Florendo B. Barangan

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- Mr. Juanito R. Pua, Chief, Community-Based Forest Management Office, FMS

From the Bureau of Fisheries and Aquatic Resources (BFAR), Region 7:

- Regional Director Corazon Corrales
- Mr. Numeriano Candado, Chief, Licensing Section

Those providing editorial and overall support include:

- Dr. Catherine A. Courtney, Chief of Party, CRMP
- Dr. Alan T. White, Deputy Chief of Party, CRMP
- Ms. Evelyn Deguit, Community Development Advisor
- Mr. Stuart Green, Learning Area Coordinator for Bohol
- Ms. Rebeca P. Smith, Information, Education and Communication Coordinator, CRMP
- Mr. Thomas Bayer, Coordinator, Training Component, CRMP
- Mr. Ferdinand S. Esguerra, Communication Specialist, CRMP
- Dr. Leticia B. Dizon, Editor, CRMP

The Natural Resources Management Project for the following cross references of this publication:

- Guide to Developing and Implementing Community-Based Forest Management Agreement (CBFMA) Monitoring
- CBFMA Application Guide

We also thank numerous other individuals for their contribution to this handbook whose names we may have inadvertently missed.

THE AUTHORS
# List of scientific names, local terms and glossary of technical terms

<table>
<thead>
<tr>
<th>LOCAL NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Api-api</td>
<td>Avicennia officinalis</td>
</tr>
<tr>
<td>Bakauan babae</td>
<td>Rhizophora mucronata</td>
</tr>
<tr>
<td>Bakauan bato</td>
<td>Rhizophora stylosa</td>
</tr>
<tr>
<td>Bakauan lalaki</td>
<td>Rhizophora apiculata</td>
</tr>
<tr>
<td>Bakauan</td>
<td>Rhizophora spp.</td>
</tr>
<tr>
<td>Bungalon puti</td>
<td>Avicennia alba</td>
</tr>
<tr>
<td>Bungalon</td>
<td>Avicennia marina</td>
</tr>
<tr>
<td>Butain</td>
<td>Bruguierea gymnorrhiza</td>
</tr>
<tr>
<td>Buta-buta</td>
<td>Excoecaria agallocha</td>
</tr>
<tr>
<td>Diluario</td>
<td>Acanthus ebractatus</td>
</tr>
<tr>
<td>Dungan-lati</td>
<td>Heritiera littoralis</td>
</tr>
<tr>
<td>Kilasi</td>
<td>Lumnitzera racemosa</td>
</tr>
<tr>
<td>Lagolo</td>
<td>Acrostichum aureum</td>
</tr>
<tr>
<td>Langarai</td>
<td>Bruguierea parvisflora</td>
</tr>
<tr>
<td>Nilad</td>
<td>Scyphiphora hydrophyllacea</td>
</tr>
<tr>
<td>Nipa</td>
<td>Nypa fruticans</td>
</tr>
<tr>
<td>Pagatpat</td>
<td>Sonneratia alba (Gedabu)</td>
</tr>
<tr>
<td>Pagatpat baye</td>
<td>Sonneratia ovata</td>
</tr>
<tr>
<td>Peuda</td>
<td>Sonneratia caseolaris</td>
</tr>
<tr>
<td>Piapi</td>
<td>Avicennia lanata</td>
</tr>
<tr>
<td>Pototan lalaki</td>
<td>Bruguierea cylindrica</td>
</tr>
<tr>
<td>Pototan</td>
<td>Bruguierea sexangula</td>
</tr>
<tr>
<td>Saging-saging</td>
<td>Aegiceras corniculatum</td>
</tr>
<tr>
<td>Tabau</td>
<td>Lumnitzera littoria</td>
</tr>
<tr>
<td>Tabigi</td>
<td>Xylocarpus granatum</td>
</tr>
<tr>
<td>Tangal</td>
<td>Ceriops tagal</td>
</tr>
<tr>
<td>Tingloy</td>
<td>Acanthus ilicifolius</td>
</tr>
</tbody>
</table>

## LOCAL TERMS

- **Amatong**: Fish aggregating device made of piled logs/rocks that serve as a niche to marine life
- **Babalina**: Local wine made of coconut sap or juice fermented with tangal bark
- **Banca**: Dugout canoe/boat
- **Bantay-dagat**: Multisectoral team assigned to check illegal fishing
**Mangrove Management Handbook**

- **Bantay-bakauan**: Multisectoral team assigned to check illegal cutting of mangroves in the coastal area
- **Barangay**: Barangay
- **Dagami**: Rice stalk
- **Darak**: Rice hull
- **Kagawad**: Representative of the municipal council (Sangguniang Bayan)
- **Sangguniang Bayan**: Municipal council

### GLOSSARY OF TECHNICAL TERMS

- **Aquasilviculture**: Raising mudcrab/shrimp adjacent or under mangroves. Also known as silvofishery
- **Detritus**: Mangrove leaf particles coated with microorganism in the process of decomposition
- **Enhancement**: Rehabilitation by increasing the number of seedlings of planting desirable species
- **Hardening**: The conditioning of seedlings through gradual exposure to sunlight and controlled watering prior to outplanting
- **Groundtruthing**: Verifying map data on the ground
- **Propagules**: The germinating seeds of the Family Rhizophoraceae while still attached to the mother tree. Also known as viviparous seeds
- **Wildlings**: Propagules/seeds that germinate and grow naturally on the forest floor, the characteristic of which resembles that of the seedings/propagules being raised in the nursery. These are sometimes collected using spade (earth-balled or bare-root) and potted in the nursery
- **Pericarp**: The walls of ripened ovary of the fruit