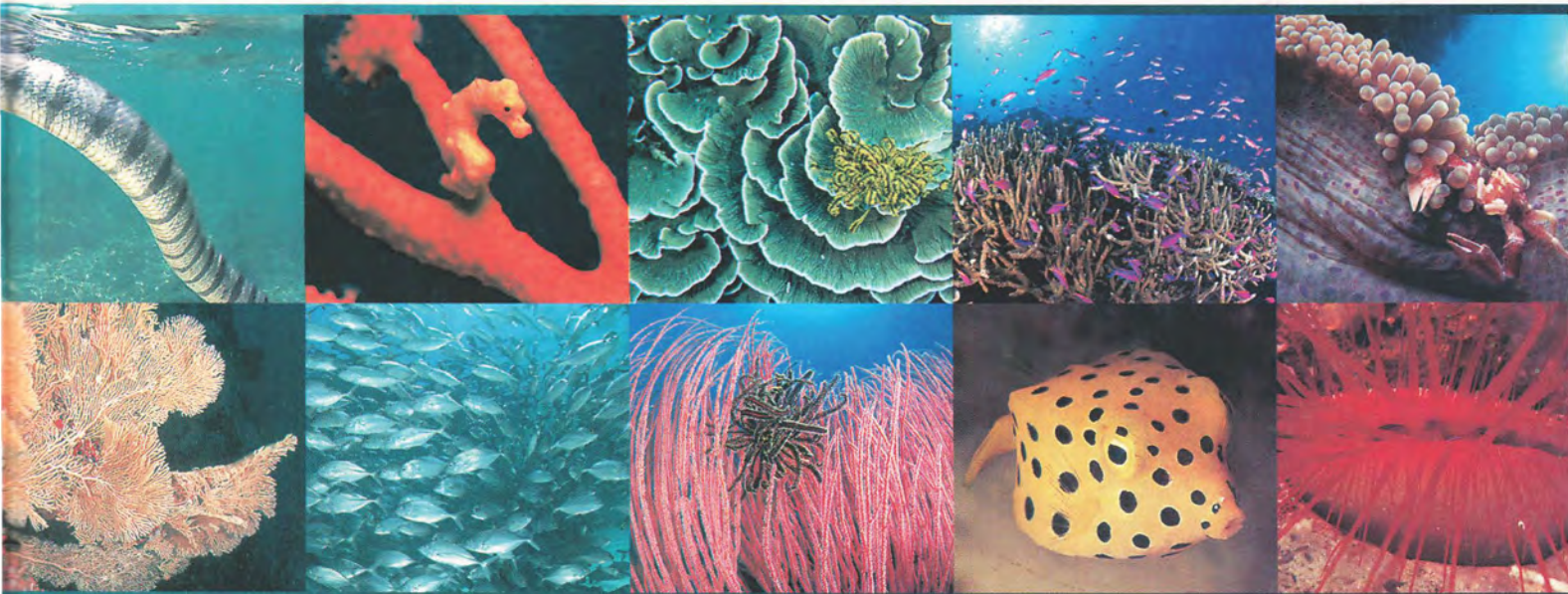


ATLAS *of* PHILIPPINE CORAL REEFS



Porfirio M. Aliño Evangeline F.B. Miclat
Cleto L. Nañola, Jr. Hilly Ann Roa-Quiaoit Reuben T. Campos
EDITORS

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Philippine Coral Reef
Information Network
(Philreefs)



The Marine Science Institute,
University of the Philippines



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Department of
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Natural Resources



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Initiative



WWF-Philippines



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Foreword

This Atlas of Philippine Coral Reefs comes more than two decades after the awakening consciousness on the part of several individuals and institutions in the Philippines that the coral reef resources of the country were under stress and that it was time to take action. The Marine Science Institute (MSI) of the University of the Philippines (at that time known as the Marine Sciences Center, MSC) was a fledgling research unit looking for relevance, if not survival. Resources for research were very limited and the number of researchers engaged in marine science could be counted with the fingers of one's hands. As chance would have it, there was a reported threat to the precious coral resources of the country and a directive was given by then President Ferdinand Marcos to the officials of the Department of Natural Resources (DNR), today known as the Department of Environment and Natural Resources (DENR), to take action. This came to the attention of the undersigned and the thought came to mind that this was an opportunity to propose an assessment of the reef resources of the Philippines. After some effort, a proposal entitled "Investigation of the coral reef resources of the Philippines" was drafted, submitted to the Ministry of National Resources (MNR), and approved.

The MSC was not big enough to cover the whole archipelago. Hence, it enlisted the collaboration of U.P. College Cebu and the Silliman University (SU). With three teams anchored by the Luzon team at the MSC, the first nationwide survey of coral resources was initiated, perhaps the first ever in the world. Without precedents and with no experience, the MSI came up with an adaptation of basic ecological survey techniques using a transect line and quadrats at regular intervals. The SU team led by Dr. Angel C. Alcala opted to use the quadrat without the transect. All results were integrated to give the percent live coral cover at the various sites surveyed, together with synoptic observations of the condition of the reefs.

The initial results were published in 1979 and the latest update and revision involving the undersigned was published in 1994, fifteen years later. These results have been adopted by government in its efforts to conserve reef resources, although often without acknowledgement of the source of the figures used. This is a vindication of the original resolve of the pioneers in coral reef resources research, Alcala and Gomez and their cohorts of assistants, who often worked against seeming indifference of many government bureaucrats who did not appreciate their work two decades ago. It is also gratifying to note that not a few of the original junior assistants have now become authorities of coral reef research on their own and have ably taken up the baton. Such is the rite of passage.

It is my sincere hope that this volume serves as an inspiration to the government and to the younger generations to continue the ever continuing struggle to conserve our valuable coral reef resources. It might even be said that what we started in the Philippines some two decades ago has been an inspiration to the international community as manifested by such global programs of action as the International Coral Reef Initiative (ICRI) and the Global Coral Reef Monitoring Network (GCRMN). This is not the end, this is just the beginning!

Edgardo D. Gomez
12 June 2002

Preface

The Atlas of Philippine Coral Reefs is part of a continuing series of updates on the state of reefs in the Philippines. It continues the general thematic approaches outlined in the three-volume Coral Reefs of the World by the United Nations Environment Program-International Union for Conservation of Nature (UNEP-IUCN). Various aspects from the reefs, which are featured in this volume, are described in a similar format, which provides it some degree of standardization. This is by no means comprehensive in describing all the reef locations throughout the country but only contains sample vignettes contributed by the partners of the Philippine Coral Reef Information Network (PhilReefs).

The attempt to strike a balance between the need to provide technically reliable information to inspire and educate, and the desire to keep the material reader-friendly to as many people as possible, was a daunting task. To broaden the accessibility of this atlas, most of the information can be viewed in cyberspace at <http://philreefs.org>.

Of the more than 50 reefs described here, updates of 11 out of the 20 reefs covered in the Coral Reefs of the World (UNEP/IUCN 1988) are featured in this volume. More provinces in the Philippines have been incorporated from the number of provinces analyzed by Gomez and co-workers (1992, 1994) resulting in a more even representation of samples in the Luzon, Visayas and Mindanao regions. Part of the purpose of this publication is to facilitate the documentation of the on-site reef condition so that monitoring and evaluation is fostered by the information made available. Instead of giving the reader one figure of the state of Philippine reefs, a diverse array of windows to the Philippine reefs is presented. This vista is not meant to confuse but to engender a respect for the dynamic state of the reefs and, consequently, inculcate an appreciation of the need for better understanding of the resources and the application of precautionary approach by managers.

The contribution by W.Y. Licuanan in this atlas provides good introduction for readers to put into context the ecology of coral reefs. J.W. McManus discusses the ecological significance of Philippine reefs to the world and puts the importance of maintaining the Philippine reefs in a global context. P.M. Aliño and E.F.B. Miclat discuss the Association of the South East Asian Nations (ASEAN) Coral Reef Partnership and show the vibrant state of reef research and management in the region where most diverse reefs and yet highest levels of threats and dependence are found. The review by A. Uychiaoco and co-workers of coral reefs and coastal zone management highlights the blossoming of the collaborative initiatives in community based resource management as one of the important mechanisms towards Integrated Coastal Management (ICM). From less than a handful of reefs investigated in the 1980's (e.g. Sumilon Is., Apo Is., Sagay, Sombrero, Apo Reef and Tubbataha Reef), which have established active management and legislation, this section documents the state of a lot more reefs with notes on the increasing initiatives on coastal management in the country.

It is hoped that the appended list of corals and associated reef fish species provides a glimpse of the beauty and diversity of the reefs in the Philippines. The nationwide initiative in the Marine Protected Areas (MPA) management has been boosted by the enactment of the legislation of the National Protected

Areas System (NIPAS) Act. Impetus from both the Department of Environment and Natural Resources (DENR) and non-government organizations (NGOs) made possible the establishment of significant representative sites in major biogeographic zones in the country as protected areas. The advent of the Fisheries Sector Program (FSP) of the Department of Agriculture (DA) – Bureau of Fisheries and Aquatic Resources (BFAR) also provided a boost in the establishment of clusters of fish sanctuaries in 12 major embayments in the country. The Fishery Resource Management Project, the second phase of FSP, plans to expand the effort to cover other areas of the country with emphasis on the actual implementation of fisheries resources management.

The United States Agency for International Development (USAID) – DENR Coastal Resource Management Project (CRMP) provides a good linkage between the fisheries sector, tourism sector, DENR and the various local government units. The establishment of the Coastal Environment Project (CEP) in the DENR in 1994 under Secretary Angel C. Alcala has also helped institutionalize marine environmental protection with emphasis on coral reefs in the DENR agenda (now elevated to the Coastal and Marine Management Office, CMMO). This growing consciousness has been transformed into diverse alternative actions related to the establishment of the multiple use protected areas in both island and contiguous ecosystems.

The buzz word of biodiversity conservation has taken great leaps from the romantic notion that dugongs and whales are purely awesome animals, to the conscientization that large ecosystems – as important habitats of these exotic large marine organisms – have to be managed. The model trans-boundary treaty between Malaysia and the Philippines on the protection of the Turtle Islands with large inputs from both government and an NGO, i.e. WWF-Philippines/Kabang Kalikasan ng Pilipinas (KKP) does not only protect the turtles but also the coral reefs and the indigenous island communities in the area. The urgent challenge for greater action permeates throughout this atlas. Conservation efforts like those for Apo Island in Negros Oriental are well grounded in local action through the participation of an empowered people in the management of coral reefs.

Porfirio M. Aliño

Acknowledgment

This coral reef directory would not have been produced were it not for the countless individuals and institutions that contributed to the production of this document. The members of the Philippine Coral Reef Information (Philreefs) Network (a directory is found in Appendix D) has been most instrumental in the initiation of this series. This book was undertaken through the Philreefs Network funded by the Department of Science and Technology – Philippine Council for Aquatic and Marine Research and Development (DOST-PCAMRD). Most contributions came especially from the Marine Science Institute of the University of the Philippines, the Silliman University through the Silliman Marine Laboratory and its director Dr. Hilconida Calumpong and the Mindanao State University at Naawan with the support of the project funded by Convention of International Trade on Endangered Species (CITES) coordinated under the Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR).

The encouragement on the importance of producing this publication by Mr. Lorenzo Tan and Romeo Trono of the WWF-Philippines/Kabang Kalikasan ng Pilipinas (KKP) and financial assistance for the cover lay out and design helped sustain our efforts. The intercession of Mr. Robert Jara of the Department of Environment and Natural Resources (DENR) as the Co-Director of the International Coral Reef Initiative (ICRI) secretariat facilitated the eventual leveraging for Goodwill Bookstore to publish this work. Ms. Evangeline F.B. Miclat of the Directorate of the Sulu-Sulawesi Marine Ecoregion Program, WWF, persistently plodded on with the technical editing of the manuscripts. Mr. Cleto L. Nañola Jr., Ms. Hilly Ann Roa-Quiaoit and Mr. Reuben Campos provided the PhilReefs secretariat support. Copy editing was made by Mr. Ramon I. Miclat, Ms. Rowena R. Campos and Mr. Melchor R. Deocadez. Various constructive reviews were provided by Dr. Hilconida Calumpong, Dr. Laura T. David, Dr. John W. McManus, Dr. Wilfredo Licuanan, Mr. Lambert Meñez, Mr. Ramon I. Miclat, Dr. Domingo Ochavillo, Dr. Andre Uychiaoco, Dr. Allan T. White, and Mr. Jason Young. Able technical assistance was provided by Mr. Manuel Cabarte, Mr. Rex Montebon, Ms. Catalina Rañola and Mr. Arvin Dantis.



Republic of the Philippines
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

MESSAGE

A substantial portion of the world's most valuable coral reefs is found in the Philippines, which is part of the 'coral triangle,' an area in the Indo-west Pacific region that contains the world's highest marine biodiversity.

More than 85% of Filipinos either dwell or depend on fisheries or its related industries for survival, and the country's fisheries sector depend largely on a healthy coral reef ecosystem.

But sadly, only about 5 percent of it are in excellent condition.

Over the years, scientists have warned us of the global threat to coral reefs from land-based pollution, poaching, dynamite blasting and cyanide fishing.

Even as recently as the 1980s, studies have shown a dwindling fish catch in shallow coastal waters by our municipal fishermen, from 20 kilograms to only about 2 kilograms in a day's work.

This *Atlas of Philippine Coral Reefs* outlines a comprehensive study of the archipelago's coral reefs for the last two decades, providing vital information and data.

By mapping out our coral reefs, assessing its present state and identifying the marine species that thrive in it, we will be able to come up with programs, including legal frameworks, to protect it.

This collective effort of government, through the Department of Environment and Natural Resources (DENR) in partnership with the International Coral Reef Initiative (ICRI) and other government agencies, the academe, non-governmental organizations (NGOs) and peoples organizations (POs), can help manage this fragile ecosystem.

Together, let us protect these 'forests of the sea.'



HEHERSON T. ALVAREZ
Secretary

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