

Community-based marine protected areas in the Bohol (Mindanao) Sea, Philippines

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Abstract

This paper discusses the status, direction and management issues in the marine protected areas (MPAs) of the Bohol (Mindanao) Sea, Philippines. The MPAs in the study area have increased through the years. Many of them were established and managed by the local government units (LGUs) in collaboration with national government agencies (NGAs), academic institutions, people's and non-governmental organizations (NGOs). Several management issues and problems were cited by the MPA managers such as insufficient funds and facilities, lack of support from NGAs/NGOs and lack of education among the people. Nevertheless, lessons for sustainability can be learned from the experience of some well-managed MPAs in the Bohol Sea. These include strong support from the political leadership, community participation and networking among the concerned sectors. Although the best practices are being followed in a number of MPAs in the Bohol Sea, success is still fragmented. The MPAs are currently managed independently although there are ongoing initiatives to network their efforts. However, it can be observed that, as a management tool, MPAs are gaining popularity and support, not only among the fisherfolk but also among local communities and LGUs in the Bohol Sea area.

Introduction

The Philippines has more than two decades of experience with community-based coastal resources management initiatives in which marine sanctuaries have played an important role (Crawford et al. 2000). A number of projects have been undertaken by government agencies, academic institutions, and non-government organizations, with marine sanctuary as either the main development effort or as a component of larger coastal management programs. At the turn of the millennium, there are now many marine reserves located in the different coastal regions of the country (Crawford et al. 2000).

In spite of the increase in the number of marine sanctuaries, not much has been written about them, particularly on how they are established, managed and monitored, or the issues/problems experienced by the day-to-day managers. This paper discusses the status, direction, and management issues of the marine protected areas of the Bohol

(Mindanao) Sea. It also presents some possible solutions to the issues from the perspective of the resource managers themselves.

Brief Background of Philippine Coastal Resources

The Philippines is one big coastal community of about 80 million people (NSO Quickstat 2003). The country's coastline stretches to more than 18 000 km and its coastal waters cover an area of 266 000 sq km. The coastline is one of the longest in the world and, in Asia, it is second only to that of Indonesia (Our Seas, Our Life 1998). Sixty per cent of the country's 78 provinces as well as the municipalities are situated in the coastal areas (La Viña 1999).

However, the current reality is a continued degradation of the coastal resources. It is estimated that in 1918 there were approximately 500 000 ha of mangroves in the Philippines. By the 1990s, about 60 per cent of these had been lost (La Viña 1999). The Philippines

has about 27 000 sq km of coral reefs, of which about 70 per cent were considered to be in poor or fair condition and only 5 per cent were in excellent condition by 1991 (Our Seas, Our Life 1998).

According to the Food and Agriculture Organization (FAO), unless coastal resource management efforts are undertaken urgently, the country's fish supply will drop to 940 000 t from the present level of 1.95 million t, and the per capita annual consumption of fish will plunge to 10.45 kg by 2010 when the population is expected to reach 94 million (Ferrer et al. 1996). The deteriorating condition of the coastal resources can be attributed to a number of factors, such as over-fishing, use of destructive fishing methods, pollution, conflicting government policies and non-enforcement of laws. A major cause is the open access policy that leads to what Garrett Hardin described as "The Tragedy of the Commons" (Hardin 1968). This is aggravated by the country's resource management system, generally considered to be centralized, top down and non-participatory (Sajise 1995).

Community-Based Coastal Resource Management

With the continuing deterioration of the country's coastal resources, it has been realized that it is not possible to attain sustainable development under a centralized and non-participatory system. Consequently, there has been a shift to policies and strategies that advocate resource management and conservation through community-based initiatives. Community-based approaches have been used in the management of agricultural resources in many parts of the world, but these initiatives were not applied to marine and coastal ecosystems until much later (Pomeroy 1994). In the Philippines, community-based management of coastal resources (CBCRM) started in the early 1980s (Pomeroy et al. 1999). CBCRM as an effective approach for sustainable management of coastal resources has gained popularity in the last two decades, especially among local government units (LGUs), people's organizations (POs), academic units, and finally in the government sector. The superiority of this approach is indicated by the fact that most successful programs on coastal resource management are community-based. CBCRM provides the resource users with a sense of ownership through full participation, cooperation and empowerment of the stakeholders. This is conducive to the proper management of coastal resources by local communities (Alcala in Ferrer et al. 1996).

Marine Reserves as Management Tools

Marine reserves, or no-take marine areas, are areas of the marine environment protected from various forms of human or extractive exploitation, especially fishing (Alcala 2001a). In this context, the term is synonymous with marine protected areas, marine harvest refugia, and marine sanctuaries. The marine areas outside of reserves are referred

to as non-reserves or fished areas, where fishers are allowed to fish using traditional, non-destructive fishing gear (Alcala 2001b). Marine protected areas as management tools are designed to help arrest the depletion of marine resources especially fish. They are established to protect fish and other marine organisms, increase fishery yields, allow build-up of fish biomass in the reserve, and reduce conflicts between groups of stakeholders in the fishery (Alcala 2001a).

According to some biologists, the idea of marine reserves can be traced back to the remote past (Alcala 2001a). Before the 1970s, marine parks were established for conservation purposes (Alcala 2001b). In 1987 there were only 19 parks and reserves in the Philippines, including the fish sanctuaries at Apo Island, Balicasag Island and Pamilacan Island, all in the central Philippines. In the late 1980s, fish sanctuaries were established in Luzon (San Salvador Island, Zambales) and in Misamis Occidental, northern Mindanao (Alcala 1988). During the 1990s, the number of marine reserves or marine protected areas increased, especially with the establishment of the Coastal Environment Program (CEP) of the DENR in 1993 (Alcala 2001b). In 2001, Alcala pointed out that based on a recent count, there are an estimated 500 marine reserves or marine protected areas in the Philippines. However, only about 10 per cent are properly managed and protected (Alcala 2001a). Although only a few of these reserves are truly effective, the concept is becoming popular, especially among local communities and many local government units, non-governmental organizations and academe.

Status of Marine Protected Areas in the Bohol Sea

The Bohol Sea covers 29 000 sq km, stretching from the Sulu Sea to the Pacific Ocean. It is surrounded by the islands of Mindanao (southeast), Negros, Bohol and

Leyte (northwest). It was formerly called the Mindanao Sea (Fig. 1).

The total number of marine protected areas in the Bohol Sea is hard to determine due to lack of information and the difficulty in defining the exact attributes of these reserves (Alcala 2001a). The Silliman University Angelo King Center for Research and Environmental Management reported that there are more than 30 marine reserves in the Bohol Sea at present, seven of which have been studied and monitored by the office for some years, the oldest for 27 years (Fig. 1). A Workshop on the Role of Marine Protected Areas and Coral Reef Related Research and the Conservation of Fisheries and Marine Biodiversity in the Bohol (Mindanao) Sea was held from May 28 to 30, 2003. Thirty resource managers representing 26 MPAs attended and shared their experiences.¹ Twenty-two of them came from Mindanao while eight were from the Visayas. They were mostly male, married and Roman Catholic in religious affiliation. In terms of age level, 19 participants were in the 31 to 50 years category, 10 were above 50 while only one was below 30 years of age. As regards educational attainment, five were college graduates, nine had some college education, five were high school graduates, six had some secondary education and five were elementary graduates. Most of the resource managers have lived in their respective barangays for more than 20 years and only a few had lived in other places for short periods. About 50 per cent of the participants were barangay captains (local officials) and a majority of participants were members and officers of local fishermen's groups and related people's organizations.

The area of the MPAs managed by the participants varied, with many in the 6-15 ha category. The smallest was less than one ha while the biggest was more than 20 ha. Most of the MPAs were of the coral reef type. Many of these MPAs were

¹ This Workshop was a joint effort of the Silliman University Angelo King Center for Environment and Management (SUAKCREM) through the Pew Fellowship in Marine Conservation granted to A.C. Alcala, G.R. Russ, the WorldFish Center, the Center for Ecological and Natural Science Research of the De La Salle University, the Institute of Fisheries Research and Development of the Mindanao State University at Naawan, and the School of Environment Science and Management of the University of the Philippines at Los Baños.

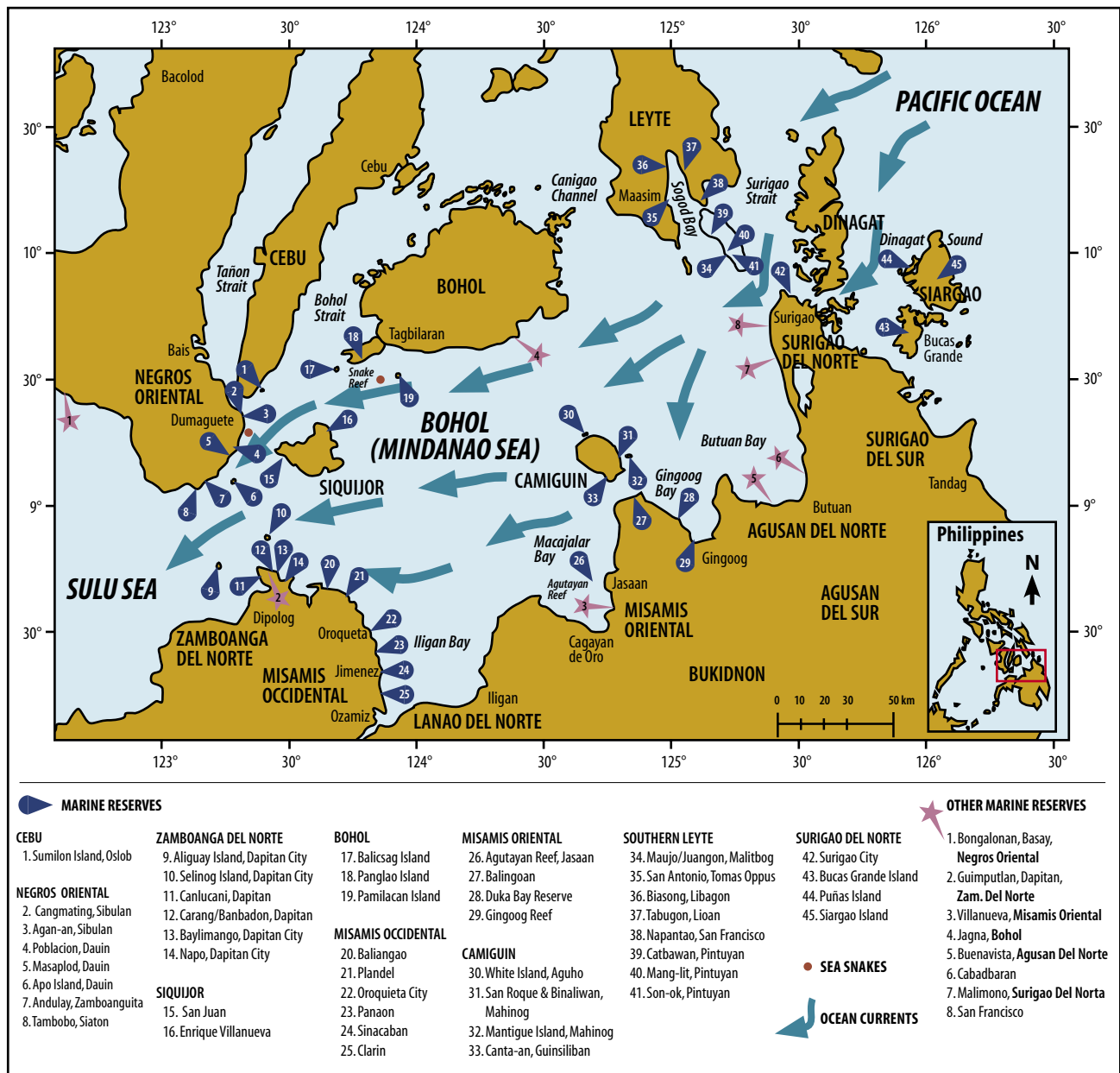


Fig. 1. Map of Bohol Sea showing some of the marine reserves of the area. (Source: SUAKCREM)

newly established - about 12 of them were created since 2000. Eight were established in the 1990s and three in the 1980s, with Apo Island Marine Reserve in Negros Oriental being the oldest.

The establishment and management of the MPAs was reported to be more of a joint endeavor involving their LGUs (particularly the barangays), line agencies like Bureau of Fisheries and

Aquatic Resources (BFAR), people's organizations, Bantay Dagat (local people deputized as fish wardens) and some non-governmental organizations (NGOs)/academic institutions like Silliman University. Prior to the establishment of the MPAs, they carried out surveys of the area, public consultations and enactment of an ordinance. In a number of cases there was opposition, not only from fellow fishermen but also from their local

barangay and municipal officials. However, in many cases the negative reactions turned into acceptance as people started to see the beneficial effects of the MPAs. Only a few of these MPAs had been regularly monitored and assessed due to lack of skills and resources available locally.² The managers of the MPAs that are protected and monitored, like Apo Island, attested to the increase in the fishery yield and improvement in the

² Monitoring is usually done by staff of NGOs/academic institutions like Silliman University, personnel of government agencies like BFAR and some trained local residents.

biodiversity of the marine resources in their coastal waters.

Many of the managers claimed that their MPAs were successful, based on their personal knowledge of the increase in the volume of fish catch and biodiversity. Some noted that due to inadequate enforcement facilities and lack of support from local officials they were unable to protect their MPAs from fishermen who violate the law. Two of the MPAs in the Bohol Sea that are considered to be successful are Apo Island Marine Reserve in Dauin, Negros Oriental and Selinog Island in Dapitan City, Zamboanga del Norte. In the case of Apo Island Marine Reserve, created in 1982, the fishers reported enhanced fishery catches from the adjacent non-reserve area as well. The reserve now brings more income to the local people from increased fishery yield and tourism. It was also observed that there have been significant improvements in both mean density and species richness of large predatory coral reef fishes during the period of reserve protection in both reserve and non-reserve areas in Apo Island (Russ and Alcala 1996). Apo Island Marine Reserve is the oldest MPA in the Philippines. As a model of marine conservation, it is essentially a partnership among the local community (Apo Island residents), local government units (Barangay Apo and Dauin town) and academic/non-governmental organizations (Silliman University Marine Laboratory) (Alcala 2001a).

The other well-managed MPA is Selinog Island, established in 2001 under the Pew Fellowship in Marine Conservation awarded to A.C. Alcala and G.R. Russ. This marine reserve was established after less than one year of collaborative effort by the local community (residents of Selinog Island and people's organizations), the local government units (Barangay Selinog and Dapitan City), and the academe/non-governmental organizations (Silliman University Angelo King Center for Research and Environmental Management) (Alcala 2001a). Selinog Island Marine Reserve is expected to follow the experience of Apo Island, which served as inspiration to the local community and the

LGUs to protect and manage their coral reef and fishery resources.

A number of success factors and lessons for sustainability can be learned from the experience of Apo Island and Selinog Island MPAs. These include: 1) strong support from the political leadership at the barangay and municipal levels; 2) active involvement of the community in the management of the MPA; 3) clear legal basis; 4) intensified information and education campaign; and 5) networking between LGUs, national government agencies (NGAs) and NGOs/academe.

In spite of the best practices being followed in a number of MPAs in the Bohol Sea, success is still fragmented. The MPAs are currently managed independently, although there are ongoing initiatives to network their efforts. There is no uniformity in the guidelines and rules in the establishment and management of these MPAs. However, it can be observed that, as a management tool, MPAs are gaining popularity and support, not only among the fisherfolk but also among local communities and local government units in the Bohol Sea area.

Management Issues and Proposed Solutions

A number of management issues were identified by the resource managers for the Bohol Sea MPAs. The following were considered to be the most common problems that managers experienced, ranked by them in order of importance:

1. Insufficient funds and facilities for enforcement;
2. Lack of support from NGOs/NGAs and municipal/barangay local government units;
3. Political intervention and threats;
4. Lack of information/education among the people;
5. Illegal fishing/commercial fishing;
6. Boundary disputes and incomplete implementation of the law on delineation of municipal waters;
7. Lack of skills among local people for resource assessment and monitoring;
8. Inactive Bantay Dagat;
9. Influx of tourists contributing to the

problem of waste disposal and coral reef destruction; and

10. Conflicting laws and agencies.

To address the management issues and problems identified, the following solutions were proposed by the resource managers:

1. Solicit financial assistance from line agencies, NGOs and funding institutions, which involves project proposals, enactment of ordinances allocating LGU funds for MPAs, fund-raising activities and implementation of a fee system.
2. Establish or restore good relations with local leaders (mayors, barangay captains, etc.) through improved communications, lobbying, and constant visits to show support of leadership. Representatives of NGAs, LGUs and NGOs should be invited to MPA-related activities, including assemblies and meetings.
3. Establish linkages with the National Federation of Fish Wardens and organizations of local fisherfolk.
4. Strengthen legal basis through enactment and implementation of ordinances that promote MPAs.
5. Promote community participation and intensify information campaigns at the local level through seminars, symposia, radio programs, brochures, posters and the holding of festivals and caravans.
6. Support representation of fisherfolk organizations in local special bodies (LGUs).
7. Write a position paper requesting National Mapping and Resource Information Authority (NAMRIA) to facilitate delineation of municipal waters, specifically in the Bohol Sea.

As regards the role of science and research in improving management of marine protected areas, the resource managers pointed out the need for researchers and research institutions to simplify their findings to be understood and used at the community level and ensure that they reach the communities. They also identified two areas where the researchers can assist them. One is an information and education campaign to increase awareness and support for MPAs and related issues among local people.

The other is in providing resources and technical skills for training, monitoring, resource assessment and reporting to the managers and local communities.

To be able to consolidate their efforts and work together in the implementation of the proposed solutions, the participants decided to form themselves into one organization known as the Hugpong Tagdumala sa Sangtuaryo sa Kadagatan sa Bohol (HUTASAKAB). This roughly translates to Association of MPA Resource Managers in the Bohol Sea. The birth of such an association was a historic event and welcomed with much enthusiasm by the resource managers and researchers (Annex 1). It is a major step towards the goal of forging a partnership between the resource managers and the other concerned sectors.

Future Direction

The vision is to make all marine protected areas in the Bohol Sea work and to create a fully functioning network of marine reserves in the area. To this end, efforts will be directed towards the implementation of a uniform set of principles and guidelines for a sound management of marine protected areas. Environment-friendly activities, including alternative livelihood projects that do not destroy the coastal environment, will be encouraged. Initiatives will be undertaken to strengthen local organizations and to promote capacity building in local communities. A network of linkages will be established, not only among resource managers but also with researchers/scientists and other coastal stakeholders. Ultimately, these will contribute to the attainment of the goal, not only of protecting the marine resources in the area for this generation and the next but also of improving the living conditions of the people in this area.

References

Alcala, A.C. 1988. Effects of marine reserves on coral fish abundances and yields of Philippine coral reefs. *Ambio* 17(3):194-199.

Alcala, A.C. 1997. Role of community-based fisheries management and

marine reserves in coastal fisheries. *Silliman Journal* 38:159-169.

Alcala, A.C. 2001a. Marine reserves in the Philippines: historical development, effects and influences on marine conservation policy. The Bookmark Inc., Makati City.

Alcala, A.C. 2001b. Marine reserves as tools for fishery management and biodiversity conservation: natural experiments in the central Philippines, 1974-2000. Paper presented at the UNEP Conference Blue Millenium: Managing Global Fisheries for Biodiversity, June 24-27, 2001. Victoria, BC, Canada.

Crawford, B., M. Balgos and C. Pagdilao. 2000. Community-based marine sanctuaries in the Philippines: A Report on focus group discussions. Coastal Management Report #2224. PCAMRD Book Series No. 30. Coastal Resource Center, University of Rhode Island, Narragansett, RI, USA, and Philippine Council for Aquatic and Marine Research and Development, Los Baños, Laguna, Philippines.

Ferrer, E.M., L.P. de la Cruz and M.A. Domingo. (eds). 1996. Seeds of hope. College of Social Work and Community Development, University of the Philippines, Quezon City, Philippines.

Hardin, G. 1968. The tragedy of the commons. *Science* 162:1243-1248.

La Viña, A.G.M. 1999. Management of fisheries, coastal resources and the coastal environments in the Philippines: policy, legal and institutional framework. PRIAP-ICLARM Work. Pap. Ser 5. NSO

Quickstat. July 2003. <http://www.census.gov.ph/data/quickstat/index.html>

Our Seas, Our Life 1998. USAID CRMP, Cebu City, Philippines.

Pomeroy, R. S. (ed.) 1994. Community management and common property of coastal fisheries in Asia and the Pacific: Concepts, Methods and Experiences. ICLARM Conf. Proc. 45, Manila.

Pomeroy, R.S., B.M. Katon, E. Genio and I. Harkes. 1999. Fisheries co-management in Asia: Phase I project report. ICLARM, Manila.

Russ, G.R. and A.C. Alcala. 1996. Do marine reserves export adult fish biomass? Evidence from Apo Island, Central Philippines. *Mar. Ecol. Prog. Ser.* 132:1-9.

Sajise, P.E. 1995. Community-based resource management in the Philippines: perspectives and experiences. Paper presented during the Training Course and Co-Management of Living Coastal Resources in ASEAN: Theory, Practice and Implication for Vietnam. Ministry of Fisheries, Hanoi, Vietnam.

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Annex 1. Officers of the HUTASAKAB

Name of Association: HUGPONG TAGDUMALA SA SANGTUARYO SA KADAGATAN SA BOHOL (HUTASAKAB)

President	MARIO T. PASCOBELLO (Negros Oriental)
Vice-President for Mindanao	EDNA C. ABAD (Zamboanga del Norte)
Vice-President for Visayas	CRISTITO G. JAMISOLA (Bohol)
Secretary	NARCISO T. ROMERO (Negros Oriental)
Treasurer	CESARIO O. ALCALA, Jr. (Siquijor)
PRO for Mindanao	CONSTANTINO M. RUIZ (Surigao del Norte)
PRO for Visayas	FERMIN B. ADIM (Southern Leyte)