

Biodiversity Mapping in the Island Barangay: The Case of Mantatao Island, Calape, Bohol, Philippines

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Abstract— *Island is a great repository of all biological diversity on Earth. It is considered as the main habitat for fishes and other aquatic organisms. The main purpose of the study was to present the island resources using a map. These resources were gathered using the Participatory Rural Appraisal (PRA) and actual survey plotted using the Global Positioning System (GPS) enhanced by Geographic Information System (GIS) technique through arc view. Data gathered during participatory appraisal were grouped using thematic analysis. Descriptive statistics were used such as arithmetic mean, frequency and percentages. Results showed that the habitat map which includes dry land/terrestrial, mangrove/mudflats, sea grass/coral reefs area, sandy beach/shoreline and marine protected areas such as marine sanctuary located. There were seven additional infrastructures found in the Island. Marine resources include squid, fish, seaweeds, sea birds, shell/clams and mangrove forest. The marine coastal zone resources displays were the places for traditional gleaning, fishing grounds, mangrove plantation area, fish port/fish landing, anchorages, mariculture zone (fish cages, fish pens), seaweeds farming, shellfish culture, fish drying area, light houses and garbage disposals area. These were represented by pictures. The six (6) marine resources were those commonly found in the island. The marine coastal zone resources displays were the places for traditional gleaning, fishing grounds, mangrove plantation area, fish port/fish landing, anchorages, mariculture zone (fish cages, fish pens), seaweeds farming, shellfish culture, fish drying area, light houses and garbage disposals area. The result implies that the island is very abundant in natural resources, it has a diverse ecosystem even there are issues observed like degradation of marine habitat/mangrove overharvesting, lack of alternative livelihood projects, high cost of fishing inputs/low prices of fishery products, poor sanitation facilities and declining fish catch. Furthermore, results shows that the island still needs for a call of conservation management for sustainability development.*

Keywords— *Biodiversity, conservation, islands, resource maps.*

I. INTRODUCTION

Islands are the earth's great repositories of biological diversity. Many islands are home to mangrove forest, breeding grounds, and nurseries for countless species of fish and living environment for fisher folks. Most of our fisher folks live in the islands for survival and they consider the islands as their community and major sources of income. On global basis, 75 percent of all recent animal extinction has occurred on islands. Their ecosystems are vulnerable to damage caused by human activities and introduced species. Fifty percent of the world's mangrove forests have already been destroyed due to unabated cutting of swamp trees for commercial firewood gathering. Islands also are particularly susceptible to the ill effects of global warming which is one of the problems that our country is facing today. The island community resource assessment is

one way to identify the knowledge, practices and attitudes of the residents can provide idea to minimize the present condition of global warming.

But due to the attitude of the human being, the existence of the natural resources is depleting. Some exploitation of natural resources is an essential condition of the human existence. This refers primarily to food production and necessities. However, the exploitation of nature is often done in an unsustainable way, which is causing increasing concern, as the depletion of natural resources from economic growth and population growth ultimately threatens human existence. Increase in sophistication of technology enables natural resources to be extracted quickly and efficiently. In the past, it could take long hours just to cut down one tree only using saws. Due to increased technology, it takes a machine in only a matter of minutes to cut down a tree. A rapidly increasing population leads to greater demand for natural resources hence this study was conducted for the basis of conservation and management of the resources.

II. OBJECTIVES

This study was conducted to assess the resources of the island barangay of Calape, Bohol in terms of the habitat, physical infrastructure, marine sources, coastal zonal uses and issues/problems found in the area.

III. METHODOLOGY

The method used in the study was the descriptive survey method. It involved the collection of data from the participants through the use of Participatory Rural Appraisal (PRA) as the main data gathering procedure. Content Analysis pertaining to the data gathered using participatory rural guidelines and methods was used. Supplementary information was obtained from formal interviews. Such method also provided the description, interpretation and analysis of situations and practices that occurred during the conduct of the study.

The research environment was the Mantatao Island. This is one of the 33 barangays in the municipality of Calape, Bohol. The island barangay is located in the northwestern part of the municipality and is 7.8 kilometers from the town hall. It is bounded by Bohol strait in the east, Calape seawater in the west, Bohol Strait in the north and Bohol Strait in the south. The place could be reached by any marine transportation. The research respondents in this study were the residents of Mantatao Island, Calape, Bohol. The data on this investigation were obtained from the participants during the appraisal. Purposive sampling in identifying the participants was used. The groups were represented by male and female and young and adult.

The research made use of the Participatory Rural Appraisal (PRA), a short-cut method of data collection as main device to gather data and information necessary to answer the problem of this study. The instrument was a well-adapted informal and flexible tool (IIRR, 1998). The information that was obtained during the PRA exercise was mainly of a qualitative in nature and was analyzed progressively throughout the exercise to increase the understanding of the phenomenon under study. The PRA was done in two (2) days to get the necessary data in the area. Permission was secured from the mayor, barangay officials and other local officials. The team researcher was composed of a PRA expert from the Non-government Organization (NGO), Department of Environment and Natural Resources (DENR), facilitator (4) and researcher (1).

Categorization (grouping) of data was done. The data was analyzed according to category. The category was inclusive and mutually exclusive. Data was coded according to inductive

category (open-ended questions) and deductive category (such as fisherfolks). Simple statistical techniques such as arithmetic mean, frequency and percentage were used. The mean is the arithmetic average of a set of values, or distribution and it is the set of values divided by their number.

IV. RESULTS AND DISCUSSION

Habitat

This includes dry land/terrestrial, mangrove/mudflats, seagrass/coral reefs area, sandy beach/shoreline and marine protected areas such as marine sanctuary located. Colors and pictures were used in the habitat map to facilitate further understanding. Brown represents dry land/terrestrial and green for mangroves. Sea grass and coral reefs areas were noted with light blue, yellow for sandy beaches and shoreline and dark blue for marine protected area.

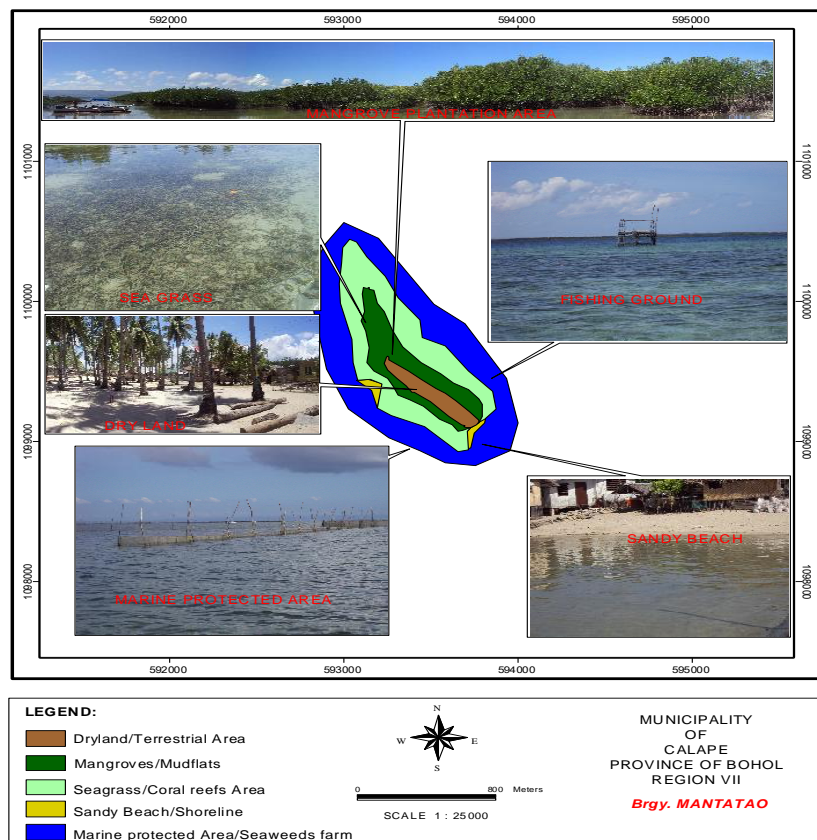


Fig. 1. Habitat Map of Mantatao Island

Infrastructure Map

The infrastructure which includes the landmarks in the community such as the households, barangay hall, day care center, primary health center, purok center, public elementary school, fish port, multipurpose center, electricity BOHECO generator, communal toilet, garbage disposal, rain collector,

open dug well, pathway, basketball court and catholic chapel. The physical infrastructures of the island were presented in the map with the use of pictures. There were seven (7) infrastructures found. These were the Bohol Electric Company (BOHECO) generator power house, catholic chapel, basketball court, health center, day care center and Mantatao Elementary School. The physical infrastructure found in the island. These

were the garbage disposal, communal toilet, rain collector water tank, open dug well, multipurpose hall, pathway, fish port, houses and the communal toilet used by the community residents.

Marine Resources

These include squid, fish, seaweeds, sea birds, shell/clams and mangrove forest. These were represented by pictures. The six (6) marine resources were those commonly found in the island.

Marine Coastal Resources Uses

The uses of marine coastal zone resources. Displayed were the places for traditional gleaning, fishing grounds, mangrove plantation area, fish port/fish landing, anchorages, mariculture zone (fish cages, fish pens), seaweeds farming, shellfish culture, fish drying area, light houses and garbage disposals area.

Issues/Problems

Key informants ranked the problems. First in rank was the degradation of marine habitat/mangrove overharvesting, followed by lack of alternative livelihood projects. Third was high cost of fishing inputs/low prices of fishery products. Rank fourth was poor sanitation facilities and the last in rank was declining fish catch.

Key informants perceived the degradation of marine habitat/mangrove overharvesting as ranked one. Mangroves were considered as land builders and home for fishes. This was also the reason why the declining fish catch ranked fifth. Fishing areas were overfished and there were indications that destruction of marine resources was occurring due to illegal forms of fishing such as blast fishing and cyanide poisoning. These factors greatly affect marine production in the area. Fisher folks feel this problem considering that fishing was the main source of income and when the habitat of the fish was degraded, fish catch decline.

Lack of alternative livelihood projects ranked second and was related to the issues on high cost of fishing inputs/low prices of fishery products which ranked third. These problems were attributed to the community residents' lack of capital for fishing operation and livelihood projects. Poor sanitation facilities ranked fourth. The health problems that contribute to poor sanitation were lack of sanitary toilets, lack of medicine supply, malnutrition, and improper waste disposal. Malnutrition could be attributed to lack of nutrient supplements in the food intake as a result to having a low income.

V. CONCLUSION

Resource mapping in the island barangay includes the infrastructure, habitat, marine resources, uses of the resources and issues concerning on the resources found in the area. Knowing the resources in the island made the community residents aware on what possible strategy that they need to undertake the conservation measure policies.

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