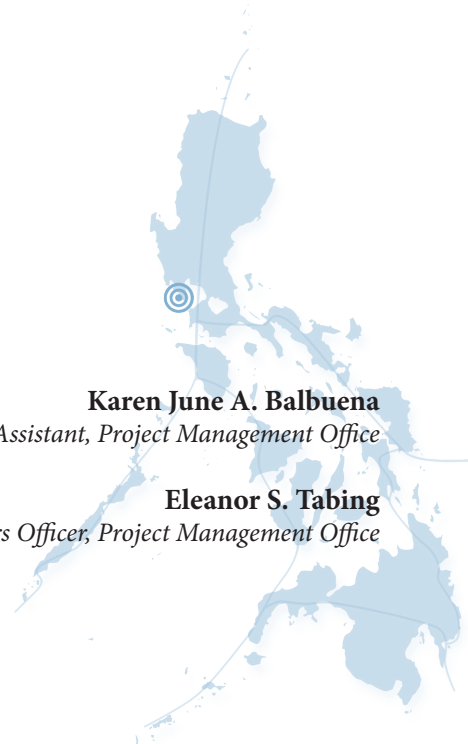


State of the Mangroves in BATAAN



Karen June A. Balbuena

Technical Assistant, Project Management Office

Eleanor S. Tabing

Community Affairs Officer, Project Management Office

I. INTRODUCTION

The Bataan peninsular province, which juts out of the mouth of Manila Bay, is a strategic maritime gateway to the political, social and economic center of the Philippines. The peninsula is located right in the middle of one of the Philippines' major economic growth triad namely: the Subic Bay Metropolitan Authority, the Clark Special Economic Zone (CSEZ), and Metro Manila. The province has the key ingredients to become the new frontier of socio economic growth in the 21st century.

The province of Bataan is a first class province comprised of the city of Balanga and 11 municipalities, eight of which (namely, Hermosa, Orani, Samal, Abucay, Orion, Pilar, Limay and Mariveles) lie in the northwestern portion of Manila Bay. The municipalities of Bagac and Morong, which are parts of SBMA reserves, face the South China Sea. Dinalupihan is the only municipality in the province without a coastline. Bataan as a whole has a total land area of 1,373 km² with a population of 687,482. Bataan has total municipal waters of 133,962 ha with 188.66 km of coastline. It has 79 coastal barangays as shown in **Appendix A**.

Importance of Mangroves

Mangroves provide nursery grounds for fish, prawns and crabs, and support fisheries functions in coastal waters. Almost every living thing needs a safe place when it is young, small and fragile. Like human babies, young fish, shrimps, crabs, and other marine animals need a place to grow, away from many predators. Only those young animals that find refuge survive to mature size. Larger fish may soon eat smaller fish or shrimp swimming in open waters. Many commercial marine species, such as milkfish and prawns, spend their early lives within the mangrove area, where they find food and protection from predators. Even juveniles of some deep-sea fishes spend some time in the mangrove area.

Mangroves are good nurseries because they provide hiding places for young animals. The arched-shaped roots of the *bakauan* mangroves and the finger-like roots of the *api-api* and *piapi* mangroves are good examples. These protective structures, along with the abundant food supply that comes from decayed mangrove leaves, makes mangrove areas very good nurseries for many important marine animals. For every hectare of mangrove cut down, there is a corresponding reduction in fish catch of around 1.08 tons per hectare per year.

Moreover, mangroves produce leaf litter and detrital matter, which are valuable sources of food for animals in estuaries and coastal waters. The leaves that fall from a mangrove tree break up and decompose into small pieces known as detritus. The detritus is broken down by bacteria, fungi and other microorganisms that nourish marine animals.

The leaves are a source of food for fish, shrimps and crabs and other marine animals. The detritus is covered with a large amount of small organisms, which take up the nutrients in the leaves. Individually, these organisms are too small to be of value to larger animal, but together they form a coating around leaf particles, which many different animals use as food. Leaves eaten by marine animals are not totally digested. They are excreted almost intact, again coated with organisms, and then eaten by marine animals. This process is repeated several times, so that one leaf can literally nourish a juvenile fish for much of its life in the mangrove.

In addition to this, mangroves provide protection for coastal areas and communities by buffering storm surges, waves, tidal currents and typhoons. The crown and stem of mangroves serve as physical barriers. Their specialized roots trap and hold sediments and siltation from the uplands. Further, mangroves promote clear water including the growth of corals and seagrasses. The prop roots and

pneumatophores of mangroves serve as hiding places for small fishes. The turbidity of the water in the mangrove area also provides effective cover for smaller fishes and shrimps.

Another significance of mangroves would be its production of organic biomass (carbon) and reduction of organic pollution. Mangroves contribute 1,800–4200 gC/m²/yr (approximating the contribution of the tropical rainforest and 10 times higher primary production in the open ocean).

Mangroves provide shelter for local and migratory wildlife and serve as roosting and foraging grounds, thus also serving as recreational grounds for bird and wildlife watchers. For instance, the Balanga Wetland and Nature Park in Barangay Tortugas, Balanga is well known for the presence of migratory birds during the months of September to March, and thus was declared as one of the Bird Watching Sites of the Philippines. Mangroves also provide access to highly diverse mangrove plants and animals and their adaptations, making them ideal field work/learning destinations for biology and ecology students and researchers.

Lastly, mangroves are good sources of wood, timber, nipa shingles for housing materials, firewood, charcoal, poles for fish traps, tannin, alcohol and medicine. Mangrove seeds and propagules can be harvested and sold. Fish, crustaceans and mollusks can also be harvested from mangroves. Aquaculture and commercial fisheries also depend on mangroves for juvenile and mature fish species.

II. STATUS OF MANGROVES IN BATAAN

At present (2014), Bataan has an estimated total mangrove area of 121.08 ha based on the ground truthing done by DENR Region III in 2012. With an additional area of about 30.9 ha in Orani that requires validation, the total mangrove area may be around 160.98 ha from Orani to Limay. Patches of Nipa and other riverine types of mangroves are also found in Mariveles to Morong.

Table 2: State of mangroves in Bataan (in hectares)

| Old Stand | Secondary Growth | Plantation |
|-----------|------------------|------------|
| no data | no data | 120.2 ha* |

*does not include private sector initiative and people's organization initiative under the UNDP, SGP project

Bataan's old stands can be found from Orani to Orion but there is no available data on the existing number of trees. **Figure 1** shows an example of old stands of mangroves in Bataan. The Provincial Environment and Natural Resources Office (PENRO) stated that the ground truthing of the old stands and the areas for validation will be included in their budget for next year (2015) and will be done during the second quarter.



Figure 1: Old stands of mangroves at Camachile, Orion, Bataan

The mangrove species recorded include nipa in the Family Arecaceae; *Avicennia*, *bungalon*, *api-api* in the Family Avicenniaceae; *saging-saging* in the family Myrsinaceae; *pototan*, *busain*, *pototan-lalaki*, *malatangal*, *tangal*, *bakauan lalaki*, *bakauan babae* and *bakauan bangkaw* in the Family Rhizophoraceae; and *pagatpat*, *pedada* and *Sonneratia* in the Family Sonneratiaceae.

Degradation of Mangrove Forests

In the 1980s, mangrove forests in the Province of Bataan declined due to conversion to aquaculture ponds. In the 1990s to early 2000s, the decline was due to the expansion of built up area or the proliferation of informal settlers in mangrove areas. But now these problems are being addressed by the joint effort of the different sectors like the LGUs; the national government agencies like DENR, BFAR, and DA; the academe; and the Provincial Government of Bataan through its Integrated Coastal Management Program together with the Bataan Coastal Care Foundation. Everyone joined hands through a massive IEC campaign in every municipality and Mangrove Planting and Rehabilitation Programs.

Threats to Mangrove Forests

The usual threat to mangrove forests in Bataan are land reclamation for various development initiatives, usually for housing projects; pollution and siltation; diseases, pests and fouling organisms such as barnacles, which envelope the stem of bakauan causing roots to rot; and typhoons that destroy most of our new plantations.



Figure 2: Mangrove cover in Barangay Tortugas before and after mangrove rehabilitation

III. MANGROVE PROTECTION AND MANAGEMENT

Bataan has no mangrove protected area at present. The national laws of BFAR and DENR on mangrove protection are being used by the local government units (LGUs) in managing the existing mangrove areas in every municipality through the Municipal Agricultural Office. The Fisheries and Aquatic Resources Management Council and the people's organization (PO) in every barangay are the ones managing the existing mangrove stands.

Mangrove Rehabilitation

The Bataan Integrated Coastal Management Program (BICMP) started its Mangrove Reforestation and Enhancement Planting in 2001. It is a multi-stakeholder partnership of the LGUs, POs, NGOs, private corporations, national government agencies, academe and the Bataan Coastal Care Foundation (BCCF). Recently, a total of 30.2 ha across 12 barangays under 4 municipalities were rehabilitated by almost 6,500 volunteers. **Figure 2** shows the mangrove cover in Brgy. Tortugas before and after the mangrove rehabilitation.

The BCCF together with the Provincial Government of Bataan shoulders the expenses for the seedlings/propagules and the fencing of identified sites. The LGU counterpart shoulders the snacks of the volunteers.

Other rehabilitation efforts have also been underway such as the DENR-PENRO Initiative, which started in 2007 resulting to 72 ha of mangrove plantations. Figure 3 shows some of the mangrove stands through the DENR PENRO Initiative. In addition to this would be the Private Sector Initiative which started in 2014 with approximately 9,000

planted seedlings and the POs Initiative with 250,000 planted propagules. **Appendix B** summarizes the mangrove rehabilitation initiatives for Bataan.

Monitoring and Evaluation

Monitoring system has not yet been established so the practice has been that the group/s that initiated the mangrove planting are also the ones to monitor it. The survival rate of the planted mangrove usually ranges from 60 to 70 %, excluding those damaged by typhoons.

Impacts of Mangrove Rehabilitation

Mangrove rehabilitation helps increase the catch of fisherfolk but most importantly it saves the lives of people in the coastal areas of Bataan during typhoons and storm surge. Mangroves protect most of our coastal communities. They also provide a source of livelihood for our POs, particularly the aquasilviculture project given by BFAR and some private companies.



Figure 3: DENR-PENRO Initiative (2007–2010)



IV. SUMMARY AND RECOMMENDATIONS

There are two main recommendations that the province would like to put forward. First is to conduct ground truthing for all the mangrove forests in the province with the Provincial Environment and Natural Resources Office (PENRO) of Bataan in 2015. Second is to have a Mangrove

Master Plan for the province that will serve as a guide for all those who want to contribute to the conservation and protection of the mangrove forests in the province of Bataan.

