Management Plan
for the Olango Wildlife Sanctuary (1992)

(This management plan is currently being updated)

Environment Agency of Japan
Department of Environment and Natural Resources
Acknowledgments

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INTRODUCTION

The Convention on Wetlands of International Importance Especially as Waterfowl Habitats (Ramsar Convention) defines wetlands as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salty, including areas of marine water, the depth of which at low tide does not exceed six (6) meters.

Wetlands are among the world’s most productive environments. They provide economic benefits to mankind through fishery production, maintenance of water tables for agriculture, water storage and flood control, shoreline stabilization, timber production, waste disposal, water purification and recreational opportunities. Wetlands also provide critical habitats for waterfowl and other birds as well as for countless mammal, reptile, amphibian, fish and invertebrate species, many of which are threatened with extinction.

Unfortunately, wetlands are among the world’s most threatened habitats due mainly to accelerated drainage, land reclamation, conversion to agriculture, conversion to fishponds or saltworks, pollution, and over-exploitation of wetland species.

Against this background, the Department of Environment and Natural Resources (DENR), through the Protected Areas and Wildlife Bureau (PAWB), and the Environment Agency of Japan, entered into a Memorandum of Agreement to establish a Wetland Conservation Program to ensure the protection and conservation of wetlands in the Philippines, especially those of international importance.

The formulation of a management plan for the Olango Wildlife Sanctuary has been identified as the primary activity in this joint undertaking between DENR and the EA of Japan.

The choice of the Olango Wildlife Sanctuary is based on the fact that it is one of the most important areas for migratory waterbirds in the Philippines. The high bird numbers indicate that the island is being utilized by migratory birds as staging or wintering ground. The intertidal flats serve as foraging grounds for the birds indicating the area’s high productivity. The higher ground among the mangrove stands within the Sanctuary also serves as a roosting site for the birds at high tide.

Several important migratory bird species use Olango as a feeding area. Among these are the Chinese Egret (Egretta eulophotes), Asian dowitcher (Limnodromus semipalmatus), Eastern Curlew (Numenius madagascariensis), and the Great Knot (Calidris tenuirostris).

It is worthwhile mentioning that the formulation of this management plan had the participation of a cross-section of relevant agencies and the affected inhabitants of the Sanctuary. Among these are the Asian Wetland Bureau Philippine Foundation, Inc. (AWBPFI), the Department of Agriculture (DA) as represented by the Bureau of Fisheries and Aquatic Resources (BFAR), the Philippine Tourism Authority (PTA), the National Economic and Development Authority (NEDA), the Department of Interior and Local Government (DILG) as represented by the local officials of Barangays Sabang, Sta. Rosa and Pangan-an, and the Department of Environment and Natural Resources (DENR).

This management plan is meant to serve only as a guide in the management and development of the Olango Wildlife Sanctuary.
CHAPTER I

1. General Information

1.1. Location

Olango Island is located east of Mactan Island in the province of Cebu, Philippines (Fig. 1). It lies between latitudes 10 deg., 13 minutes and 10 deg., 16 minutes North and between longitudes 124 deg., 2 minutes and 124 deg., 4 minutes East. The island is bordered by four bodies of water: the Cebu Strait in the south, Olango Channel in the east, Camotes Sea in the north, and Gilutongan Channel in the west (Fig. 1). Olango Island is part of the group of islands/islets known as the Olango Island group composed of Olango, Camungi, Pangang-an, Caoaghan, Gilutongan, and Sulpa.

The Olango Wildlife Sanctuary lies on the southern shores of Olango Island (Fig. 2).

1.2. Access

The province of Cebu can be reached from Manila via Mactan by airplane or via Cebu City by boat. From Mactan, Olango Island can be reached by taking private or public land transport to the motorboat docking station in Mabolo, Dapdap or Buot. From Mabolo, Dapdap or Buot, a motorboat leaves every hour for Poo, Sta. Rosa, and Baring, or Tingo, on Olango Island. The Olango Wildlife Sanctuary can be reached by tricycle or on foot.

Travel by public transport from Cebu City is by bus to the Lapu-Lapu City bus terminal, where tricycles can take Olango-bound passengers to the motorboat docking station in Mabolo, Dapdap or Buot.

The straight-line distance from Mabolo to Sta. Rosa proper in an east-southeast direction is approximately 5 km.
1.3. General Description

Olango Island, with an area of approximately 1.041 hectares, is 3 km across at its widest point and 7.5 km long. It is generally flat with no portions of the island reaching an elevation of more than 10 m ASL. Its rock base is coralline limestone and littoral flats with thin sand or silt substrate or exposed rock base. It extends up to the fringing foul ground where seagrasses, algae and coral polyps dominate. Mangrove forests and coconut groves also occur on the island.

The Olango Wildlife Sanctuary is approximately 1,120 hectares with a large intertidal area area, forming a veneer (to 20 cm deep) over a hard substrate of coralline limestone. The lower shore consists of soft sandy mud of up to 10 cm deep. The middle shore level is covered with shallower sand substrate while the upper shore level is also covered with sand but with mangrove shrubland and low woodland growths.

The reserve is protected on all sides from extreme weather conditions as it is practically enclosed by the island’s land mass with its arm-like projections which are ports of barangay Sabang in the east and barangay Poo in the west. Seaward, it is covered by the islets of Camungi, Caohagan, Pangan-an and Sulpa.

Presence of seawater is entirely dependent upon tidal fluctuations, thus water cover is not similar at all times. During low tides, the only watered zones are its natural flow channels which criss-cross the area, the pools made by the fish trap dikes and the dents and shallows within the mangroves. The most prominent of the channels infringe arc-like on the northern boundaries of the reserve, with entry points coming from the southern tips of barangays Sabang and Poo. There are dikes and diversion canals along the margins of the Sanctuary which are used to trap seawater from an abandoned saltwork while the entire area serve as gleaning grounds for the collection of crustaceans as food and seashells as sources of raw materials for the shellcraft industry, which is one of the main sources of livelihood for some of the islanders.

Bolinao Clay is generally a thin surface soil rich in organic matter, and has a large amount of iron and an excellent structure. The soil is considered thin and sometimes the subsoil is even missing with the limework immediately beneath. This means that surface soil is formed as fast as the limework is weathered and the plants can produce humus.

1.4. Land Tenure

Most of the areas are owned by the government while some few selected areas especially near fine beaches are privately owned. Table 1 shows Olango Island tenure by parcel in which the owner has the highest percentage of about 49.08% while the lessee and the cultivator has the lowest percentage of 1.09%.

The island with its surrounding marine environment is an established tourism and marine reserve mandated under P.D. 1801 and placed under the administrative jurisdiction of the Philippine Tourism Authority, a corporate arm of the Department of Tourism (DOT). However, the absence of an implementing guideline has inhibited PTA from assuming effective jurisdiction over the Island except in granting clearance for some development activities such as fishpond development.

Several forms of land uses were in existence when the proposal for the establishment of the Olango Wildlife Sanctuary was made. Some land uses are legitimate claims like approved leases for fishpond development, while others are uses related to marginal livelihood activities such as dikes for fishtraps, shell collection zones, gleaning grounds and flat zones for salt making. Other parts of the area, which are not covered by water, are planted with coconut and other agricultural crops.

One of the fishpond leases had been cancelled lately, while the clearance for the development of the last fishpond lease has been recalled by the DOT.
2. Physical Environment

2.1. Climate

The island has a hot and humid climate, with temperatures ranging from 26 deg. Centigrade to 33 deg. Centigrade. The rainy season is from June to January, with the heaviest rainfall in November and December. The dry season is from February to May.

The island is partly sheltered from the southeast monsoon by the islands of Bohol and Mactan. However, it is open to the northwest monsoon and cyclonic storms.

2.2. Hydrology

Fresh water wells are unsanitary open wells and restricted to the center of the island. Water from public wells is not enough to support the daily needs of the people, thus many residents settle for brackish water as drinking water. Those who can afford it, buy fresh water from vendors, while those who cannot walk to the source and carry water home. Residents in far-flung barangays and sitios, where daily water procurement is a burden, resort to harvesting rain water for storage and use.

2.3. Geology

Olango Island and the surrounding small islets are raised coral reefs nestled atop a bigger coral reef east of Mactan Island. The island is composed of two (2) lithologic units, the Plio-Pleistocene Carcar Formation and the Quarternary Alluvium, the youngest lithologic unit (Figure 2).

Carcar Formation is typically a porous coralline limestone. It is characterized by small sinkholes, pitted grooves and branching of pinnacles, which is suggestive of an in-situ deposition. It is composed mostly of shell, algae and other carbonate materials. Macro and micro fossils are abundant in this formation. The alluvium occupies mostly the coastal areas of the island. The so-called “tidal”, the 1,120 hectares wildlife sanctuary, is overlain by this formation. It is composed mostly of calcareous sand derived from the weathering of the limestone.

Table 1. Land tenure by parcel, Olango Island (n=273)

<table>
<thead>
<tr>
<th>Tenure Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Owner</td>
<td>49.08</td>
</tr>
<tr>
<td>2. Tenant</td>
<td>27.11</td>
</tr>
<tr>
<td>3. Part owner</td>
<td>20.15</td>
</tr>
<tr>
<td>4. Temporary ownership</td>
<td>1.47</td>
</tr>
<tr>
<td>5. Cultivators (2)</td>
<td>1.09</td>
</tr>
<tr>
<td>6. Lessee</td>
<td>1.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

(1) The farmer has received the land as a debt mortgage
(2) The farmer is a caretaker for an absentee owner, who may be a relative to whom he is not required to pay shares
(Source: Remedio and Olofson, 1988)
Megascopic examination of the sand samples shows that it consists of fine to coarse-grained sand mixed with shell fragments (Figure 2).

2.4. Soil/Substrates

Soils of Olango Island has not been classified. However, nearby Mactan Island, which has a similar Carcar limestone base has both blackish Farao Clay and reddish Bolinao Clay, and it is likely that Olango Island has at least one of these. When the stone floor of the reservation is exposed during low tide, islanders utilize it as a direct path from Poo to Pangan-an, and as they pass through, tracking soil and mud on their path, a reddish tint appears on the lime-white footpath which indicates that there is at least some Bolinao clay.

3. Biological Environment

3.1. Fauna

Olango Island is rich in faunal organisms. A total of 20 zoobenthic species were identified in the survey conducted by the DENR on the Wildlife Sanctuary (Table 2). Ophiuroids (brittle stars) are the most common followed by nerites (Nerita sp.). Annelids, on the other hand, have the highest density with Nerita sp. ranking second. Sponges, ophiuroids, and Echinotrix sp. weighed 471.50 grams, 180.52 grams, and 26.80 grams respectively, in terms of wet biomass. They were weighed from individuals counted from an area of approximately 1.0625 sq. m., 2.0625 sq. m, and 0.6250 sq. m., respectively.

In the nearby areas of the Sanctuary, in Talima and Poo, 22 species of echinoderms, 8 species of crustaceans and 74 species of mollusks were recorded by the USC Marine Biology Section (Appendix 1).

With this diversity of invertebrate species in Olango Island, the area is an ideal place for roosting and feeding of waterbirds, specifically the migratory species. The DENR and the AWB Philippines identified 42 species of waterfowl with an average of 10,956 individuals counted per year from 1987 to 1991, except 1988 (Table 3). Sixty percent (60%) of the counted waterbirds identified are observed yearly. The least observed (25%) and with only one individual seen are Gallinago megala, Fregata ariel, Egretta intermedia, Ixobrychus sinensis and Ixobrychus cinnamomeus. Ten percent (10%) of the 42 species are considered rare and threatened, namely: Limnodromus semipalmatus, Egretta eulophotes, Calidris tenuirostris, and Numenius madagascariensis. They are regular migrants of the island except for Egretta eulophotes.
Table 2. Population density and wet biomass of zoobenthic organisms collected in the seagrass bed south of Olango Island. (Area of core samples is 0.0625 sq. m.)

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of individuals counted</th>
<th>No. of core samples with individuals</th>
<th>Total area of core samples (sq m)</th>
<th>Estimated density</th>
<th>Wet biomass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slugs</td>
<td>12</td>
<td>4</td>
<td>0.2500</td>
<td>48</td>
<td>3.25</td>
</tr>
<tr>
<td>Sponges</td>
<td>22</td>
<td>17</td>
<td>1.0625</td>
<td>21</td>
<td>471.5</td>
</tr>
<tr>
<td>Polychaetes</td>
<td>8</td>
<td>8</td>
<td>0.5000</td>
<td>16</td>
<td>0.56</td>
</tr>
<tr>
<td>Hermit crabs</td>
<td>14</td>
<td>10</td>
<td>0.6250</td>
<td>22</td>
<td>3.32</td>
</tr>
<tr>
<td>Isopods</td>
<td>2</td>
<td>2</td>
<td>0.1250</td>
<td>16</td>
<td>0.17</td>
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<td>Crayfish</td>
<td>1</td>
<td>1</td>
<td>0.0625</td>
<td>16</td>
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<td>Annelids</td>
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<td>2</td>
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<td>56</td>
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<td>Holothuria sp.</td>
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<td>4</td>
<td>0.2500</td>
<td>16</td>
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<td>Ophiocoma sp.</td>
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<td>2.0625</td>
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<td>180.91</td>
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<td>Echinothrix sp.</td>
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<td>26.80</td>
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<td>Littorina sp.</td>
<td>6</td>
<td>5</td>
<td>0.3125</td>
<td>19</td>
<td>0.88</td>
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<tr>
<td>Phacoides sp.</td>
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<td>4</td>
<td>0.2500</td>
<td>16</td>
<td>0.50</td>
</tr>
<tr>
<td>Strombus sp.</td>
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<td>1</td>
<td>0.0625</td>
<td>16</td>
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<td>Tectus sp.</td>
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<td>1</td>
<td>0.0625</td>
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<td>0.25</td>
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<td>Cynatium sp.</td>
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<td>1</td>
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<td>Terebralia sp.</td>
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<td>Nessarius sp.</td>
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<td>2</td>
<td>0.1250</td>
<td>32</td>
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</tbody>
</table>
Table 3. Waterbirds identified in Olango Island with the number of individuals counted per year and their relative frequency of occurrence from 1987 to 1991, except 1988.

<table>
<thead>
<tr>
<th>Order/Family</th>
<th>Common name</th>
<th>Scientific name</th>
<th>Number of individuals counted</th>
<th>Relative frequency</th>
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<tbody>
<tr>
<td>Charadriiformes</td>
<td>Little Ringed Plover</td>
<td>Charadrius dubius</td>
<td>37</td>
<td>60</td>
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<td></td>
<td>Kentish Plover</td>
<td>Charadrius alexandrinus</td>
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<td>150</td>
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<td>Mongolian Plover</td>
<td>Charadrius mongolus</td>
<td>39</td>
<td>1940</td>
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<tr>
<td></td>
<td>Greater Sand Plover</td>
<td>Charadrius leschenaultii</td>
<td>2000</td>
<td>1100</td>
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<td></td>
<td>Gray Plover</td>
<td>Pluvialis squatarola</td>
<td>500</td>
<td>956</td>
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<tr>
<td>Scopidae</td>
<td>Great Knot</td>
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<td>Red Knot</td>
<td>Calidris canutus</td>
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<td>Sanderling</td>
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<td>Red-necked Stint</td>
<td>Calidris ruficollis</td>
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<td>3000</td>
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<td></td>
<td>Curlew Sandpiper</td>
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<td>Asiatic Dowitcher</td>
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<td>Common Redshank</td>
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<td></td>
<td>Sharp-tailed Sandpiper</td>
<td>Calidris acuminata</td>
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<tr>
<td>Black-headed Gull</td>
<td>Larus ridibundus</td>
<td></td>
<td>106</td>
<td>165</td>
</tr>
<tr>
<td>Gul-billed Tern</td>
<td>Sterna nilotica</td>
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<td>120</td>
<td>50</td>
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<tr>
<td>Little Tern</td>
<td>Sterna albinerons</td>
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<td>300</td>
<td>585</td>
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<tr>
<td>Common Tern</td>
<td>Sterna hirundo</td>
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<td>482</td>
<td>1072</td>
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<tr>
<td>Black-naped Tern</td>
<td>Sterna sumatranes</td>
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<tr>
<td>Whiskered Tern</td>
<td>Sterna hybridra</td>
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<td>536</td>
<td>155</td>
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<tr>
<td>White-winged Black Tern</td>
<td>Sterna leucopra</td>
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<tr>
<td>Pelecaniformes</td>
<td>Lesser Frigatebird</td>
<td>Fregata ariel</td>
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<tr>
<td>Ciconiiformes</td>
<td>Intermediate Egret</td>
<td>Egretta intermedia</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Little Egret</td>
<td>Egretta garzetta</td>
<td>79</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Striated Heron</td>
<td>Butorides striatus</td>
<td>6</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Yellow Bitter</td>
<td>Nycticorax pyrrhopterus</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chinese Egret</td>
<td>Egretta eulophotes</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Cinnamon Bitter</td>
<td>Egretta eulophotes</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Anseriformes</td>
<td>Garganey Teal</td>
<td>Anas querquedula</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Northern Shoveler</td>
<td>Anas clypeata</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

|                |                              |                       | 9,309 | 12,315 | 10,035 | 12,171 |

12 / Olango Island Wildlife Sanctuary Management Plan
AWB-Philippines reported that March and December are the peak months to observe waterbirds specifically waders which migrate between North Asia and Southeast Asia and Australia to overwinter. Olango Island also supports 38 species of other birds, of which 32% are endemic to the country (Appendix 2). Other wildlife in the area are some species of snakes, skinks, lizards and bats.

3.2. Flora

Olango Island has relatively few plant species and they are sparsely distributed. In the wildlife sanctuary, 27 mangrove and mangrove-associated species were identified by DENR and AWB-Philippines (Appendix 3). Rhizophora mucronata is the dominant species, followed by Avicennia alba and Sonneratia caseolaris. Osbornia octodonta is the most common at the waterbird roosting site, interspersed with Lumnitzera littorea and L. racemosa. Other plant species are scattered throughout the area.

The marine algae and seagrass species recorded in the sanctuary are shown in Appendix 4. Marine algae grow among the mangroves and in the rocky substrate on the intertidal and subtidal areas, while extensive seagrass cover occurs on the lower intertidal flats and on subtidal areas of the sanctuary boundary. The most commonly observed were Ulva sp., Enteromorpha sp., Cladophora sp., Bostrychia sp., Codium sp., and Gracilaria sp. for marine algae, and Enhalus sp., Halodule sp., and Thalassia sp. for the seagrasses.

In some parts of Olango Island, specifically in Talima and Poo, 89 species of algae and 8 species of seagrasses were identified (USC 1988) (Appendix 5).

4. Socio-economic Features

4.1. Population

Olango Island has a total human population of 20,439 with the inclusion of 3,792 households as of May 1990 (Table 4). The household structure is classified into single family, nuclear family, and extended family. The single and extended families ranked first and second, respectively, and the household average is approximately six.

4.2. Sex Ratio

Females outnumber males in three barangays, while there are more males than females in the other four barangays (USC, 1987). The overall sex ratio is 98.54 males to every 100 females (Table 5).

4.3. Age Dependency

Age dependency is defined as the ratio of persons 65 years old and above plus those 14 years and below to those aged between 14 years and 64 years multiplied by 100 (Table 6). The age dependency ratio in Olango is such that every 100 persons of working age must support 113.81 dependents.

4.4. Education

Educational attainment in Olango show a very low median year (Grade 3.34), an extremely low percentage of those technically or professionally trained (1.26%), and a high percentage of school-age youth not in school (75%) (Table 7).
4.5. Health

87.63% of the households recorded sickness of a household member in the 12 months prior to the survey (USC, 1987). The most common ailments were influenza (26.81%), respiratory diseases (20.96%), gastrointestinal diseases (15.46%), and unclassified ailments (12.37%).

On health care, 38.14% consulted a physician, 30.58% consulted no one, 13.06% consulted a folk healer, and 5.50% consulted both folk healer and physician.

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Total Population</th>
<th>Number of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baring</td>
<td>2,122</td>
<td>372</td>
</tr>
<tr>
<td>Caohagan</td>
<td>256</td>
<td>52</td>
</tr>
<tr>
<td>Pangan-an</td>
<td>1,263</td>
<td>174</td>
</tr>
<tr>
<td>Sabang</td>
<td>3,212</td>
<td>564</td>
</tr>
<tr>
<td>Sta. Rosa</td>
<td>4,090</td>
<td>787</td>
</tr>
<tr>
<td>Subabasbas</td>
<td>1,890</td>
<td>370</td>
</tr>
<tr>
<td>Talima</td>
<td>3,039</td>
<td>567</td>
</tr>
<tr>
<td>Tingo</td>
<td>2,266</td>
<td>401</td>
</tr>
<tr>
<td>Tunasay</td>
<td>1,331</td>
<td>252</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20,439</td>
<td>3,792</td>
</tr>
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</table>

(Source: AWB-Philippines, 1992)

<table>
<thead>
<tr>
<th>Barangays</th>
<th>Males in Sample Households</th>
<th>Females in Sample Households</th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baring</td>
<td>135</td>
<td>122</td>
<td>110.65</td>
</tr>
<tr>
<td>Cao-oy</td>
<td>46</td>
<td>42</td>
<td>109.52</td>
</tr>
<tr>
<td>Sabang</td>
<td>155</td>
<td>172</td>
<td>90.17</td>
</tr>
<tr>
<td>Sta. Rosa</td>
<td>180</td>
<td>184</td>
<td>97.83</td>
</tr>
<tr>
<td>Talima</td>
<td>126</td>
<td>104</td>
<td>121.16</td>
</tr>
<tr>
<td>Tingo</td>
<td>110</td>
<td>136</td>
<td>80.88</td>
</tr>
<tr>
<td>Tungusay</td>
<td>52</td>
<td>57</td>
<td>98.54</td>
</tr>
<tr>
<td>OLANGO ISLAND</td>
<td>304</td>
<td>817</td>
<td>98.54</td>
</tr>
</tbody>
</table>

(Source: Remedio and Olafson, 1988)
Table 6. Age Distribution and Age Dependency Ratios, Olango Island

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Age Interval (%)</th>
<th>Median Age</th>
<th>Age Dependency Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-6</td>
<td>0-14</td>
<td>15-64</td>
</tr>
<tr>
<td>Baring</td>
<td>17.90</td>
<td>42.41</td>
<td>52.92</td>
</tr>
<tr>
<td>Cao-oy</td>
<td>20.45</td>
<td>47.72</td>
<td>47.73</td>
</tr>
<tr>
<td>Sabang</td>
<td>27.38</td>
<td>50.77</td>
<td>46.77</td>
</tr>
<tr>
<td>Sta. Rosa</td>
<td>17.58</td>
<td>39.56</td>
<td>56.87</td>
</tr>
<tr>
<td>Talima</td>
<td>25.22</td>
<td>44.35</td>
<td>49.13</td>
</tr>
<tr>
<td>Tungasan</td>
<td>20.18</td>
<td>40.36</td>
<td>56.88</td>
</tr>
<tr>
<td>OLANGO ISLAND</td>
<td>21.04</td>
<td>44.07</td>
<td>52.56</td>
</tr>
</tbody>
</table>

(Source: Remedio and Olofson, 1988)

Table 7. Levels of Education, Olango Island

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Median years in education</th>
<th>% with technical/professional training</th>
<th>No. with college education</th>
<th>% of school-age not in school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baring</td>
<td>3.04</td>
<td>0.39</td>
<td>6</td>
<td>76.7</td>
</tr>
<tr>
<td>Cao-oy</td>
<td>3.00</td>
<td>1.14</td>
<td>--</td>
<td>82.7</td>
</tr>
<tr>
<td>Sabang</td>
<td>2.82</td>
<td>0.31</td>
<td>4</td>
<td>82.6</td>
</tr>
<tr>
<td>Sta. Rosa</td>
<td>3.64</td>
<td>3.02</td>
<td>6</td>
<td>74.0</td>
</tr>
<tr>
<td>Talima</td>
<td>3.35</td>
<td>1.30</td>
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<td>76.3</td>
</tr>
<tr>
<td>Tingo</td>
<td>4.19</td>
<td>1.63</td>
<td>7</td>
<td>79.4</td>
</tr>
<tr>
<td>Tungasan</td>
<td>2.87</td>
<td>0.92</td>
<td>--</td>
<td>86.0</td>
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<tr>
<td>OLANGO ISLAND</td>
<td>3.34</td>
<td>1.25</td>
<td>25</td>
<td>78.5</td>
</tr>
</tbody>
</table>

(Source: Remedio and Olofson, 1988)

4.6. Occupation

The major economic activities are fishing and farming, but some residents are involved in other forms of livelihood such as lantern making, shellcraft, trade in aquarium fish, weaving and selling mats, and livestock raising.

4.6.1. Fishing

Fishers go out fishing 28 times a month, or the equivalent of almost daily. In certain seasons, fishers have to go as far as Palawan as well as to nearby places such as Cordova, Caubian Island, Bohol and Camotes Island. Motorized boats, paddleboats, hook and line and fishing nets are the most reported fishing gears; the use of cyanide and dynamite for fishing has also been reported.
4.6.2. Farming

Cassava, which thrives in poor soil, and corn are given about equal importance as major crops. Other agricultural products are camote, banana and green vegetables such as malunggay, ampalaya and alugbati. Crop rotation (mainly for corn and cassava) is practiced on 58.24% of land.

4.7. Land Use

Most of the island's arable area is planted with coconut, corn, horse radish, giant ipil-ipil, and cassava; coastal areas are used for offshore fishing and harvesting of some edible seashells and seaweeds. Portions of the mangrove and adjacent intertidal areas are used as docking sites for outrigger boats.

4.8. Infrastructure

All barangays are connected by a dirt road network. Electricity is not available on the island, except in some households that have their own power generators.

5. Ecological Relationships and Implications for Management

The island is small, with limited physical resources in terms of tillable land, and majority of the inhabitants has to rely on the bounty provided by its marine resources. However, overextraction and unmanaged exploitation have led to the depletion of the most economically important fishes and some invertebrates which are sold as food, ornaments, or raw materials for the shellcraft industry. This has led to outward movement in collection, wherein fishermen have to travel as far as Palawan to gather aquarium fishes and rare shells, while those that remain have to make do with what is available using destructive collection techniques. Examples of these are the use of “sudsud” in collecting shells which destroys the seagrass beds and disturbs the substrates, the use of diluted cyanide in the collection of aquarium fishes, and the use of fine mesh nets in catching food fishes which further depletes its dwindling resources with consequent harmful environmental effects on the island’s ecology. Proper management and conservation measures have to be undertaken to re-establish the lost resources. The management plan for the Olango Wildlife Sanctuary should address these problems in its entirety. Unorganized conservation and management of resources can lead to failure in managing the area effectively.
Chapter II

1. Evaluation and Objectives

1.1. Historic

The place came into notice in the early 80s when an interwader program conducted a survey of known wetlands in the country. Migratory shorebirds and waders were observed in the area through vigorous Asian Wetland Bureau intercession. The area was officially surveyed, demarcated and endorsed for proclamation as a wildlife sanctuary by the DENR (Appendix 6).

1.2. Site Definition and Boundaries

The landward boundary generally follows the edge of the coralline limestone escarpment at the spring high tide level. Seaward, the boundary extends southward form Sitio Basbas of Barangay Sta. Rosa, then eastward toward the southern tip of Barangay Sabang.

2. Evaluation of Features

2.1. Criteria for Evaluation

The Olango Wildlife Sanctuary is of international conservation significance. The criteria used for determining this are those of the Ramsar Convention, an international multi-lateral convention on the protection of important wetlands. Although the Philippines is not yet a signatory, the criteria used in this Convention are useful nonetheless. Listed below are the Ramsar criteria for which Olango qualifies as internationally significant.

1. Supports more than 1% (at least 100 individuals) of a flyway or biogeographical population on a species of waterbird - The area supports more than 1% of the known population in the East Asian flyway, and up to 100 individuals of the Chinese Egret.
2. Supports an appreciable number of rare, vulnerable or endangered species - The Chinese Egret and Asian Dowitche are considered to be endangered species in the IUCN Red Data Book. A significant proportion of the world's population of Chinese Egrets occurs in the area.
3. Is of special value for maintaining the genetic and ecological diversity of a region because of the peculiarity and quality of its flora and fauna - The area is a rich and diverse coastal habitat, including mangrove woodland, and it supports a wide range of waterbird species.
4. Is of special value as the habitat of plants and animals at a critical stage of their biological cycles - Olango Island is a nursery ground for many species of fish and prawns. It is a key staging and wintering area for migratory waterbirds.
5. Is a particularly good example of a specific type of wetland characteristic of its region - The extensive fringing sandy coralline intertidal flats and extensive mangroves are features not common in the
Olango Island Wildlife Sanctuary Management Plan

Philippines. Olango is an intact example of a coastal wetland characteristic of coralline islands in the Indo-Malayan realm.

2.2. National and International Context

The Olango Wildlife Sanctuary holds large populations of many species of waders. Based on surveys so far, the area supports the largest known concentrations of waders in the Philippines, and the largest total numbers of any known site. This makes the area of outstanding national importance. As outlined in the preceding section, the area qualifies as internationally significant as a waterbird habitat.

3. Factors Influencing Management

(The following are outputs from a workshop organized by the Protected Areas and Wildlife Bureau of the DENR in 1992 as a form of consultation among the different sectors that actually or potentially will be affected by the establishment of the Sanctuary. The workshop was organized to assure the different sectors that their needs and concerns are properly addressed and to let them know that they will be partners in the management of the protected area.

Representatives from the Asian Wetland Bureau Philippines Foundation Inc., the Philippine Tourism Authority, the Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, the Bantay-Dagat Federation, the National Economic and Development Authority, the Department of Environment and Natural Resources Region 7, the Protected Areas and Wildlife Bureau, and the people of Olango Island as represented by their local officials participated in the workshop.)

3.1. Natural Trends

3.1.1. Positive

a. Favorable weather condition, away from typhoon belt
b. Wide coralline flat areas
c. Good mangrove stand, although growth is stunted
d. Presence of seagrass beds
e. Feeding ground of migratory birds
f. Presence of big populations of migratory birds
g. Available marine resources such as fish and shells, though in small quantities

3.1.2. Negative

a. Siltation
b. Erosion

3.2. Man-made or Human-induced Factors

3.2.1. Positive

a. Support of communities for establishment of the protected area
b. Use of the area as an alternative fishing ground and place for collection of shells, crabs, sea cucumbers, etc., though at very low intensity

3.2.2. Negative

a. mangrove cutting
b. bird hunting
c. fishing by use of toxic chemicals
d. haphazard mangrove replanting by Island Ventures near Brgy Pangan-an which has a tendency to overlap with the birds’ feeding ground

3.3. External Factors

3.3.1. Existing

a. Noise pollution due to blast fishing and lime extraction
b. Coral destruction
c. Negative rumors

3.3.2. Foreseen

a. Coastal development
b. Population pressure
c. Presence/absence of livelihood and employment opportunities
d. Participation of communities and barangay councils in the management of the area
e. Political intervention and instability
f. Support from elected officials

4. Legal Constraints and Obligations

At present, the protection of Olango Island is provided for in some legal documents.

Proclamation No. 1801 – Declaring certain islands, coves and peninsulas in the Philippines as tourist zones and marine reserves under the administration and control of the Philippine Tourism Authority (Appendix 7)

Presidential decrees prohibiting the exploitation and collection of certain marine and fishery products

Presidential Decree 704 or the Revised Fishery Code preventing the use of dynamite and other destructive techniques for fishing

Presidential Decree 705 or the Revised Fishery Code preventing the cutting of mangroves

Resolutions and local ordinances for the establishment and protection of the Sanctuary, including:
Ordinance No. 8 (Resolution No. 73-88) of the City Government of Lapu-Lapu passed on March 16, 1988 regulating the hunting of birds in the City of Lapu-Lapu, most especially in the island of Olango and the neighboring islets of Caubian, Pangan-an and Caohagan.

Association of Barangay Captains of Olango Island Resolution No. 1 dated April 10, 1988 resolving that Olango Island be protected from any form of hunting, collecting and such other form of exploitation that would endanger the wildlife species found therein.

Bantay Dagat Federation Resolution dated January 26, 1990 supporting and endorsing the project and proposal of the Asian Wetland Bureau Philippines Foundation Inc. making the mangrove forest and the adjoining tidal area in the southern part of Olango as Migratory Bird Sanctuary.

Regional Development Council Executive Committee Resolution No. 53, Series of 1991 requesting the President of the Philippines through the Department of Environment and Natural Resources to issue a Proclamation Order declaring 920 hectares of Olango Island as the Olango Wetland National Park.

5. **Ideal Management Objectives**

5.1. To protect the birds by maintaining their habitats
5.2. To properly identify areas for purposes of zoning such as feeding areas, buffer zone, roosting site, etc.
5.3. To regulate activities that could be permitted in the area such as gathering of shells, crabs and sea cucumber as well as mangrove cutting
5.4. To maintain the mangroves within the area and along the boundaries, if appropriate, to serve as buffer
5.5. To provide livelihood projects to the people along the boundary of the area
5.6. To promote and enhance ecotourism
5.7. To provide job opportunities to qualified local inhabitants
5.8. To provide additional income to local government units from taxes and entrance fees from visitors and tourists
5.9. To promote community development
5.10. To encourage involvement and participation of relevant government agencies (GAs) and non-governmental organizations (NGOs) in the management of the project.

6. **Operational Objectives**

6.1. Habitat Maintenance for Bird Protection
   6.1.1. Maintain the present status of the area and enrichment of degraded areas
   6.1.2. Conduct survey on existing land use permits issued by DENR including new applications within the proposed area
   6.1.3. Disseminate information and enforce city ordinance on bird hunting ban
   6.1.4. Reinstall billboards regarding the resolution at strategic places
   6.1.5. Deputize qualified elected barangay officials as wardens of the protected area
   6.1.6. Monitor and conduct research about flora and fauna
   6.1.7. Impose total ban on sand extraction, and
   6.1.8. Develop protection scheme that will safeguard the habitat inside the reserve.
6.2. Zoning the Area
   6.2.1. Ground delineation of identified buffer zone, feeding areas, roosting areas and maintain them as such (and as passageway of island inhabitants); and
   6.2.2. Conform with zoning plan

6.3. Identify Allowable Activities
   6.3.1. Monitor the number of islanders who are gathering shells, crabs, and sea cucumber and allow them to continue such activities provided they will only do what they are presently doing.

6.4. Maintain Buffer Zones
   6.4.1. Rehabilitation of degraded areas within the buffer zone by residents, and
   6.4.2. Regulate harvesting of mangroves in designated areas

6.5. Provide Livelihood Projects
   6.5.1. The Department of Agriculture to conduct feasibility study on appropriate fishery activities
   6.5.2. For Department of Agriculture to provide technical assistance or assistance in kind to appropriate projects
   6.5.3. Conduct mangrove rehabilitation in reserve areas through contract reforestation, and
   6.5.4. Encourage handicraft industry such as shellcraft and cococraft

6.6. Promote and Enhance Nature Ecotourism
   6.6.1. Provide information materials about nature walk
   6.6.2. Disseminate information about nature through tri-media facilities, TV, radio and print media
   6.6.3. Provide nature center, board walks, hides and other interpretative signs for use of visitors

6.7. Provide Job Opportunity for Local Inhabitants
   6.7.1. Prioritize hiring of qualified local inhabitants,
   6.7.2. To conduct mangrove reforestation within the reserve (selected areas) thru DENR’s Assisted Natural Regeneration Program

6.8. Provide Additional Income to Local Government
   6.8.1. Require standard charges as per DENR’s AO. No. 05, S-1991
   6.8.2. Allot appropriate share from revenue to barangay concerned

6.9. Community Development
   6.9.1. Social preparation of affected residents
   6.9.2. Total acceptance of the community to the idea of setting up the protected area
   6.9.3. Ensure that the design of infrastructure will not disrupt the traditional activities of the affected communities
   6.9.4. Organize community groups
   6.9.5. Mobilize/strengthen existing community groups, and
   6.9.6. Impose sanitation awareness and welfare benefits
6.10. Institutional Linkages
   6.10.1. Coordination and delineation of roles of relevant government agencies (GAs) and non-
   governmental organizations (NGOs)
   6.10.2. Establish communication network, and
   6.10.3. Organize task force

7. Project List

Projects and the corresponding agencies responsible for their implementation are as follows (see Appendix 8
for the list of government agencies and non-governmental organizations):

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Agency</th>
</tr>
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<tr>
<td>7.1. Habitat maintenance for bird protection</td>
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</tr>
<tr>
<td>7.1.1. Flora and fauna inventory</td>
<td>DENR, AWB</td>
</tr>
<tr>
<td>7.1.2. Surveying and monitoring of avian population and species composition</td>
<td>DENR, AWB</td>
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<tr>
<td>7.1.3. Bird banding activities</td>
<td>DENR, AWB</td>
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<tr>
<td>7.1.4. Patrol activities for resource protection</td>
<td>Mgt Unit</td>
</tr>
<tr>
<td>7.1.5. Rehabilitation of degraded areas within the protected area</td>
<td>DENR</td>
</tr>
<tr>
<td>7.1.6. Conduct research on endangered species</td>
<td>DENR, AWB</td>
</tr>
<tr>
<td>7.1.7. Enforcement of rules and regulations</td>
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<td>7.2. Zoning of the Wildlife Sanctuary</td>
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<tr>
<td>7.2.1. Survey of area for purposes of delineating prescribed zones for feeding areas, roosting site, passageway for local inhabitants, etc.</td>
<td>DENR, AWB</td>
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<tr>
<td>7.2.2. Produce maps showing prescribed zones</td>
<td>DENR</td>
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<tr>
<td>7.2.3. Implementation of approved zoning plan</td>
<td>Mgt Unit</td>
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7.3. Identification of allowable activities
<table>
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<th>Agency</th>
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<td>7.1. Habitat maintenance for bird protection</td>
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<td>7.1.2. Surveying and monitoring of avian population and species composition</td>
<td>DENR, AWB</td>
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<tr>
<td>7.1.3. Bird banding activities</td>
<td>DENR, AWB</td>
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<td>7.1.4. Patrol activities for resource protection</td>
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<tr>
<td>7.1.5. Rehabilitation of degraded areas within the protected area</td>
<td>DENR</td>
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<td>7.1.6. Conduct research on endangered species</td>
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<td>7.1.7. Enforcement of rules and regulations</td>
<td>DENR, Mgt Unit</td>
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<tr>
<td>7.2. Zoning of the Wildlife Sanctuary</td>
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<tr>
<td>7.2.1. Survey of area for purposes of delineating prescribed zones for feeding areas, roosting site, passageway for local inhabitants, etc.</td>
<td>DENR, AWB</td>
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<tr>
<td>7.2.2. Produce maps showing prescribed zones</td>
<td>DENR</td>
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<tr>
<td>7.2.3. Implementation of approved zoning plan</td>
<td>Mgt Unit</td>
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<tr>
<td>7.3. Identification of allowable activities</td>
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<tr>
<td>7.3.1. Surveying and monitoring of present users</td>
<td>DA, DENR, AWB</td>
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<td>7.3.2. Formulation of guidelines for allowable activities within the protected area</td>
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<td>7.4. Maintenance of buffer zones</td>
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<td>7.4.1. Implementation of Assisted Natural Regeneration (ANR) project</td>
<td>DENR, LGU</td>
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<td>7.5.1. Transfer of technology on livelihood projects</td>
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<tr>
<td>7.5.2. Implementation of livelihood projects:n</td>
<td>mariculture</td>
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<td>7.6. Promotion and enhancement of ecotourism</td>
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<td>7.6.1. Design preparation of structures and facilities</td>
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<tr>
<td>7.6.2. Construction of structures and facilities</td>
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<td>7.6.3. Maintenance of facilities</td>
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<td>7.6.4. Production of information materials</td>
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<tr>
<td>7.6.5. Conduct information/education drive on conservation values</td>
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<tr>
<td>7.6.6. Conduct workshops, seminars, trainings on conservation values</td>
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<tr>
<td>7.7. Creation of job opportunities for local inhabitants</td>
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</table>
7.8. Provision of additional income to local government

7.8.1. Enforcement of existing policies Mgt Unit

7.8.2. Conduct of training, workshops, etc. DA, AWB, DENS

7.9. Community development

7.9.1. Establishment of cooperatives and community organizations DA, DENR, AWB

7.9.2. Conduct of training, workshops, etc. DA, DENR, AWB

7.10. Institutional Linkages

7.10.1. Organize dialogues Mgt Unit

7.10.2. Formulate operating guidelines Mgt Unit

7.10.3. Formulate agreements Mgt Unit

7.10.4. Mobilize task forces Mgt Unit

7.10.5. Procure communication equipment (communication, patrol craft, etc.) Mgt Unit
<table>
<thead>
<tr>
<th>Project Title</th>
<th>Estimated Budget ($)</th>
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<tr>
<td>1. Habitat Maintenance for Bird Protection</td>
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<td>2. Zoning of the Olango Wildlife Sanctuary</td>
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<tr>
<td>3. Identification of Allowable Activities</td>
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<td>4. Maintenance of Buffer Zones</td>
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<td>5. Provision of Livelihood Projects</td>
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<td>6. Promotion and Enhancement of Ecotourism</td>
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</tr>
<tr>
<td>7. Creation of Job Opportunities for Local Inhabitants</td>
<td>15,000</td>
</tr>
<tr>
<td>8. Provision of Additional Income to Local Government</td>
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<td>9. Community Development</td>
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<td>10. Institutional Linkages</td>
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<td><strong>TOTAL</strong></td>
<td><strong>$1,207,000</strong></td>
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BIBLIOGRAPHY


Appendix 1. Echinoderms, crustaceans and mollusks recorded in Poo and Talima in Olango Island between Sep. 1987 and Feb. 1988

A. Echinoderms
- Holothuria sp.
- Synapta sp.
- Holothuria atra
- H. scabra
- Bohadschia sp.
- Thelenota ananas
- Stichopus sp.
- Diadema setosum
- Echinotrix calamaris
- Toxopneustes sp.

B. Crustaceans
- Squilla sp.
- Thalamita sp.
- Uca sp.
- Portunus pelagicus

C. Mollusks
- Terebralia sulcata
- Terebralia sp.
- Terebralia telescopi
- Dolabella sp.
- Littorina scabra
- L. fascianata
- Littorina sp.
- Cerithium sp.
- Cerithium carbonarium
- Cerithium vertagus
- Cypreae olivacea
- Cypreae Isabella
- Cypreae boivini
- Telescopium telescopium
- Cypreae labrolineata
- Lambis millepeda
- Lambis lambis
- Strombus aurisdiane
- Strombus lentiginosus
- Strombus luhuanus
- Tripneustes gratilla
- Prionocidaris sp.
- Salmacis sphaeroides
- Echinometra oblongata
- Protoreaster sp.
- Linckia laevigata
- Archaster typicus
- M astiphotrix sp.
- O phiomastrix sp.
- O phiorachna incrassata
- Pagurus sp.
- Periclemnes sp.
- Coenobita sp.
- Calappa sp.
- Strombus sinuatus
- Strombus urceus
- Strombus labiatus labiatus
- Strombus gibberulus albus
- Strombus mutabilis
- Strombus sp. 1
- Strombus sp. 2
- Strombus sp. 3
- Strombus sp. 4
- Strombus sp. 5
- Strombus sp. 6
- Strombus sp. 7
- Strombus sp. 8
- Dostorsio anus
- Bursa bufo
- Bursa sp. 1
- Bursa sp. 2
- Conus literatus
- Conus mustelinus
- Conus chaldeus
Conus marmoreus  
Conus planorbis  
Conus rattus  
Conus pohlianus  
Thais echinata  
Thais bufo  
Polinices tumidus  
Polinices flemingianus  
Nassarius bicolor  
Nassarius subspinosum  
Bulla ampula  
Nerita undata  
Nerita exuvia  
Rapana sp.  
Buccinum sp.  
Trochus niloticus  
Trochus pyramidis  
Angaria delphinula  
Astrea sp.  
Turbo marmoratus  
Turbo petholatus  
Turbo sp.  
Ovula ovum  
Oliva annulata  
Ischnochiton sp.  
Cardium sp.  
Tridacna crocea  
Spondylus spondylus  
Spondylus sp. 1  
Spondylus sp. 2  
Malleus malleus  
Anadara maculosa  
Modiolus metcalfei  
(Source: USC, 1988)
Appendix 2. Avifauna other than waterfowls found in Olango Island

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<thead>
<tr>
<th>Family/Order</th>
<th>Common Name</th>
<th>Scientific Name</th>
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<td>Pycnonotidae</td>
<td>Philippine Bulbul</td>
<td>Hypsipetes philippinus*</td>
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<tr>
<td></td>
<td>Yellow-vented Bulbul</td>
<td>Pycnonotus sinensis</td>
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<tr>
<td>Sylviiidae</td>
<td>Pied Bushchat</td>
<td>Saxicola caprata*</td>
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<tr>
<td></td>
<td>Dubois Leaf Warbler</td>
<td>Phylloscopus sibilatrix*</td>
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<tr>
<td></td>
<td>Great Reed Warbler</td>
<td>Acrocephalus arundinaceus</td>
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<tr>
<td></td>
<td>Manchurian Bush Warbler</td>
<td>Cettia diphone</td>
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<tr>
<td></td>
<td>Yellow-breasted Wren Warbler</td>
<td>Gerygone sulphurea</td>
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<tr>
<td>Muscicapidae</td>
<td>Bright-capped Cisticola</td>
<td>Cisticola exilis</td>
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<tr>
<td>Estrildidae</td>
<td>Grey-streaked Flycatcher</td>
<td>Muscicapa grisea</td>
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<td></td>
<td>Chestnut Munia</td>
<td>Lonchura malabar</td>
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<tr>
<td></td>
<td>Richard's Pipit</td>
<td>Anthus novaeseelandiae</td>
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<td>Petchora Pipit</td>
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<td></td>
<td>Gray Wagtail</td>
<td>Motacilla cinerea</td>
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<td>Laniidae</td>
<td>Brown Shrike</td>
<td>Lanius cristatus</td>
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<td></td>
<td>Schack's Shrike</td>
<td>Lanius schack</td>
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<td>Ploceidae</td>
<td>Tree Sparrow</td>
<td>Passer montanus</td>
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<td></td>
<td>Philippine Glossy Starling</td>
<td>Aplonis panayensis</td>
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<td>Olive-backed Sunbird</td>
<td>Nectarinia jugularis*</td>
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<td>Hirundinidae</td>
<td>Barn Swallow</td>
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<td>Pacific Swallow</td>
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<td>Cuculiformes</td>
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<td></td>
<td>Lesser Coucal</td>
<td>Centropus bengalensis</td>
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<tr>
<td></td>
<td>Philippine Coucal</td>
<td>Centropus sinensis*</td>
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<td></td>
<td>Common Koel</td>
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<td>Large-billed Crow</td>
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<td>Spotted Ground Dove</td>
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<td>White-eared Brown Dove</td>
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<td>Zebra Dove</td>
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<td>Coraciiformes</td>
<td>River Kingfisher</td>
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<td>Variable Forest Kingfisher</td>
<td>Ceyx lepidus*</td>
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<td></td>
<td>White-collared Kingfisher</td>
<td>Halcyon chloris</td>
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<td>Psittaciformes</td>
<td>Philippine Hanging Parakeet</td>
<td>Loriculus philippinensis*</td>
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<td>Painted Quail</td>
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<td>Phasianidae</td>
<td>Magpie Robin</td>
<td>Copsychus saularis*</td>
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*Endemic
Appendix 3. Mangrove species and associates within the Olango Wildlife Sanctuary

Rhizophora stylosa
Rhizophora mucronata
Rhizophora apiculata
Lumnitzera racemosa
Avicennia littorea
Avicennia officinalis
Avicennia alba
Avicennia lanata
Avicennia marina
Sonneratia caseolaris
Excoecaria agallocha
Ceriops tagal
Ceriops Roxburghiana
Bruguiera gymnorrhiza
Xylocarpus mollucensis
Osbornia octodonta
Bruguiera cylindrica
Aegiceras floridum
Acanthus abracteatus
Scyphiphora hydrophyllacea
Thespesia populnea
Sesuvium portulacastrum
Terminalia catappa
Chloris sp.
Pemphis acidula
Pongamia junnata
Appendix 4. Marine algae and seagrass within the Olango Wildlife Sanctuary

A. Marine Algae

Hydroclathus clathrates
Padina australis
Padina vichersiae
Padina minor
Ulva lactoca
Hormophysa triquera
Turbinaria omata
Turbinaria conoides
Gracilaria sp.
Hypnea sp.
Laurencia sp.
Chaetomorpha sp.
Sargassum sp.
Enteromorpha intestinalis
Cladophora sp.
Bostrychia sp.
Codium sp.

B. Seagrass

Enhalus sp.
Halodule sp.
Thalassia sp.
Zostera marina
Appendix 5. Marine plants in Poo and Talima, Olango Island

### Blue-green Algae (Cyanophyta)

1. *Lyngbya majuscula*
2. *Symploca sp.*

### Green Algae (Chlorophyta)

1. *Anadyomene plicata*
2. *Anadyomene wrightii*
3. *Boodles composita*
4. *Borengenia forbesii*
5. *Bryopsis plumosa*
6. *Caulerpa peltata*
7. *Caulerpa racemosa var. clavifera*
8. *Caulerpa serrulata*
9. *Chaetomorpha crassa*
10. *Cladophora sp.*
11. *Codius arabicum*
12. *Codium tenue*
13. *Codium ovale*
14. *Dictyosphaeria cavernosa*
15. *Enteromorpha clathrata*
16. *Enteromorpha intestinales*
17. *Halicoryne wrightii*
18. *Halimeda macroloba*
19. *Halimeda opuntia*
20. *Halimeda sp.*
21. *Halimeda typical*
22. *Halimeda serrulata*
23. *Halimeda parvula*
24. *Harmatomorpha crassa*
25. *Hydroclathrus clathratus*
26. *Monostroma nitidum*
27. *Neomeris van-Bosseae*
28. *Spongomorpha sp.*
29. *Struvea anastomosans*
30. *Tydemania expeditions*
31. *Ulvula lactuca*
32. *Ulvula reticulata*
33. *Valonia aegagrophila*
34. *Valonia ventricosa*
35. *Valonia eucheumoides*
36. *Colpomenia sinuosa*
37. *Dictyctia dichotoma*
38. *Dictyopteris repens*
39. *Hormophysa triquetra*
40. *Hydroclathrus clathratus*
41. *Lobophora variegata*
42. *Turbinaria conoides*
43. *Turbinaria ornate*
44. *Padina sp. 2*
45. *Sargassum sp. 1*
46. *Sargassum sp. 2*
47. *Sargassum sp. 3*
48. *Turbinaria conoides*
49. *Turbinaria ornate*
50. *Zonaria variegata*
51. *Acanthophora spicifera*
52. *Actinotrichia fragilis*
53. *Amphiroa foleacae*
54. *Amphiroa fragilissima*
55. *Amansia glomerata*
56. *Bostrychia binderi*
57. *Catenella caespitosa*
58. *Champia parvula*
59. *Claudea batanensis*
60. *Dasys sp.*
61. *Euchema sp. 1*
62. *Euchema sp. 2*
63. *Euchema sp. 3*
64. *Galaxaura fastigata*
65. *Galaxaura fasciculata*
66. *Galaxaura oblongata*
67. *Galaxaura repens (or G. arborea?)*
68. *Gelidium aequalis*
69. *Gelidium acerosa*
70. *Graciolaria coronopifolia*
71. *Graciolaria eucheumoides*
72. *Graciolaria salicornia*
Seagrasses (Marine angiosperms)

90. Enhalus acoroides
91. Cymodocea rotundata
92. Cymodocea serrulata
93. Halodule pinifolia
94. Halodule uninervis
95. Halophilla ovalis
96. Syringodium isoetifolium
97. Thalassia hemprichii

(Source: USC, 1988)
MALACANAN
Manila
BY THE PRESIDENT OF THE PHILIPPINES

PROCLAMATION NO. 903


Upon recommendation of the Secretary of the Department of Environment and Natural Resources and pursuant to the provisions of Presidential Decree 705, otherwise known as the Forestry Code of the Philippines and Act 3915, dated February 01, 1932, and by virtue of the powers vested in me by law, I, CORAZON C. AQUINO, President of the Philippines, do hereby amend Proclamation 1081, dated November 10, 1978, which established certain islands, coves and peninsulas in the Philippines as tourist zones and marine reserves under the administration and control of the Philippine Tourism Authority, by excluding certain portions within the Olango Island, Lapu-Lapu City, Cebu and reserving the same as Wildlife Sanctuary, as shown on the plan, which is more particularly described as follows:

Beginning at a point marked cor. 1 on the PAWB Map, which is identical to cor. 15, A&D, Project 37-D, L.C. Map 2963. Thence...

N. 72° E. 03°, 123.37 m. to cor. 2, identical to cor. 16, A&D, Proj. 37-D, L.C. Map 2963;

N. 34° E. 24°, 357.52 m. to cor. 3, identical to cor. 17, A&D, Proj. 37-D, L.C. Map 2963;

N. 47° E. 27°, 99.09 m. to cor. 4, identical to cor. 18, A&D, Proj. 37-D, L.C. Map 2963;

N. 74° E. 39°, 113.05 m. to cor. 5, identical to cor. 19, A&D, Proj. 37-D, L.C. Map 2963;

N. 09° E. 46°, 182.64 m. to cor. 6, identical to cor. 20, A&D, Proj. 37-D, L.C. Map 2963;

Due East, 29 m. to cor. 7, identical to cor. 21, A&D, Proj. 37-D, L.C. Map 2963;

N. 30° E. 15°, 69.46 m. to cor. 8, identical to cor. 22, A&D, Proj. 37-D, L.C. Map 2963;

W. 06° W. 33°, 87.57 m. to cor. 9, identical to cor. 23, A&D, Proj. 37-D, L.C. Map 2963;

N. 24° E. 03°, 72.07 m. to cor. 10, identical to cor. 24, A&D, Proj. 37-D, L.C. Map 2963;

N. 30° W. 56°, 132.12 m. to cor. 11, identical to cor. 25, A&D, Proj. 37-D, L.C. Map 2963;

N. 25° E. 37°, 80.96 m. to cor. 12, identical to cor. 26, A&D, Proj. 37-D, L.C. Map 2963;

N. 48° E. 05°, 197.55 m. to cor. 13, identical to cor. 27, A&D, Proj. 37-D, L.C. Map 2963;

N. 70° E. 21°, 74.33 m. to cor. 14, identical to cor. 28, A&D, Proj. 37-D, L.C. Map 2963;

N. 52° E. 35°, 132.20 m. to cor. 15, identical to cor. 29, A&D, Proj. 37-D, L.C. Map 2963;

N. 63° E. 21°, 106.19 m. to cor. 16, identical to cor. 30, A&D, Proj. 37-D, L.C. Map 2963;

N. 44° E. 11°, 591.26 m. to cor. 17, identical to cor. 31, A&D, Proj. 37-D, L.C. Map 2963;

N. 36° E. 21°, 155.20 m. to cor. 18, identical to cor. 32, A&D, Proj. 37-D, L.C. Map 2963;

N. 81° E. 25°, 80.14 m. to cor. 19, identical to cor. 17, Timberland, Proj. 37-D, Block C, L.C. Map 2963;

N. 81° E. 25°, 241.46 m. to cor. 20, identical to cor. 18, Timberland, Proj. 37-D, Block C, L.C. Map 2963;

N. 65° E. 11°, 88.14 m. to cor. 21, identical to cor. 19, Timberland, Proj. 37-D, Block C, L.C. Map 2963;

N. 47° E. 39°, 167.78 m. to cor. 22, identical to cor. 20, Timberland, Proj. 37-D, Block C, L.C. Map 2963;

N. 87° E. 42°, 174.14 m. to cor. 23, identical to cor. 21, Timberland, Proj. 37-D, Block C, L.C. Map 2963;

S. 75° E. 33°, 78.16 m. to cor. 24, identical to cor. 22, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 82° E. 34°, 266.12 m. to cor. 25, identical to cor. 23, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 82° E. 24°, 118.20 m. to cor. 26, identical to cor. 24, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 89° E. 19°, 168.01 m. to cor. 27, identical to cor. 25, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 68° E. 51°, 146.90 m. to cor. 28, identical to cor. 26, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 86° E. 15°, 122.26 m. to cor. 29, identical to cor. 27, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 82 E. 40°, 134.31 m. to cor. 30, identical to cor. 28, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 82° E. 40°, 70.58 m. to cor. 31, identical to cor. 29, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 64° E. 06°, 185.63 m. to cor. 32, identical to cor. 30, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 81° E. 40°, 97.59 m. to cor. 33, identical to cor. 31, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
Due South. 110.60 m. to cor. 34, identical to cor. 32, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 29° W. 16°, 237.29 m. to cor. 35, identical to cor. 33, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 42° W. 18°, 157.36 m. to cor. 36, identical to cor. 34, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 13° W. 13°, 75.84 m. to cor. 37, identical to cor. 35, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 87° W. 06°, 23.57 m. to cor. 38, identical to cor. 36, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 10° E. 00°, 82.69 m. to cor. 39, identical to cor. 37, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 80° E. 35°, 26.67m. to cor. 40, identical to cor. 38, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 42° E. 18°, 157.34 m. to cor. 41, identical to cor. 39, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 52° W. 32°, 308.83 m. to cor. 42, identical to cor. 40, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 42° W. 30°, 72.43 m. to cor. 43, identical to cor. 41, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 44° W. 13°, 8.26 m. to cor. 44, identical to cor. 42, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 24° E. 49°, 152.40 m. to cor. 45, identical to cor. 43, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 26° E. 07°, 24.10 m. to cor. 46, identical to cor. 44, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 15° W. 50°, 72.93 m. to cor. 47, identical to cor. 45, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 52° E. 32°, 308.83 m. to cor. 48, identical to cor. 46, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 03° E. 15°, 440.71 m. to cor. 49, identical to cor. 47, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 40° W. 06°, 49.63 m. to cor. 50, identical to cor. 48, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 16° E. 42°, 92.96 m. to cor. 51, identical to cor. 49, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 33 W. 17°, 100.08 m. to cor. 52, identical to cor. 50, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 43° W. 14°, 38.29 m. to cor. 53, identical to cor. 51, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 73° W. 55°, 54.12 m. to cor. 54, identical to cor. 52, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 26° W. 34°, 156.53 m. to cor. 55, identical to cor. 53, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 67° W. 05°, 74.97 m. to cor. 56, identical to cor. 54, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 17° W. 49°, 28.85 m. to cor. 56, identical to cor. 55, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 15° W. 37°, 30.56 m. to cor. 58, identical to cor. 56, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 08 E. 40°, 69.50 m. to cor. 59, identical to cor. 57, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 24 W. 08°, 59.15 m. to cor. 60, identical to cor. 58, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 37° E. 43°, 54.50 m. to cor. 61, identical to cor. 59, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 10° W. 39°, 32.20 m. to cor. 62, identical to cor. 60, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 33° E. 46°, 126.14 m. to cor. 63, identical to cor. 61, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 67° E. 05°, 74.97 m. to cor. 64, identical to cor. 62, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 65° W. 23°, 132.00 m. to cor. 65, identical to cor. 63, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 06° E. 54°, 191.39 m. to cor. 66, identical to cor. 64, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 29° E. 49°, 426.45 m. to cor. 67, identical to cor. 65, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 01° W. 28°, 78.20 m. to cor. 68, identical to cor. 66, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 20° W. 33°, 102.82 m. to cor. 69, identical to cor. 67, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 07° W. 20°, 211.74 m. to cor. 70, identical to cor. 68, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 29° E. 06°, 111.02 m. to cor. 71, identical to cor. 69, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 34° W. 03°, 146.20 m. to cor. 72, identical to cor. 70, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 52° W. 02°, 125.32 m. to cor. 73, identical to cor. 71, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 18° W. 44°, 66.31 m. to cor. 74, identical to cor. 72, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 74° E. 20°, 136.66 m. to cor. 75, identical to cor. 73, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 50° E. 20°, 51.65 m. to cor. 76, identical to cor. 74, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 36° E. 57°, 93.61 m. to cor. 77, identical to cor. 75, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 56° W. 37°, 123.00 m. to cor. 78, identical to cor. 76, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 34° E. 03°, 146.20 m. to cor. 79, identical to cor. 77, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 88° E. 05°, 60.04 m. to cor. 80, identical to cor. 78, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 19° E. 37°, 92.36 m. to cor. 81, identical to cor. 79, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 33° E. 48°, 142.00 m. to cor. 82, identical to cor. 80, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 57° E. 03°, 430.20 m. to cor. 83, identical to cor. 81, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 75° E. 50°, 162.27 m. to cor. 84, identical to cor. 108, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 57 W. 27°, 281.66 m. to cor. 85, identical to cor. 109, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 36° W. 02°, 311.38 m. to cor. 86, identical to cor. 110, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 10° W. 15°, 478.10 m. to cor. 87, identical to cor. 111, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 52° W. 20°, 440.06 m. to cor. 88, identical to cor. 112, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 89° W. 12°, 240.09 m. to cor. 89, identical to cor. 113, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 58° W. 20°, 260.11 m. to cor. 90, identical to cor. 43, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 77° W. 44°, 1,264.06 m. to cor. 91, identical to cor. 38, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
S. 60° W. 01°, 325.11 m. to cor. 92, identical to cor. 37, Timberland, Proj. 37-D, Block C, L.C. Map 2963;
N. 81° W. 30°, 280.00 m. to cor. 93, identical to cor. 6, A&D, Proj. 37-D, Block C, L.C. Map 2963;
S. 62° W. 44°, 394.08 m. to cor. 94, identical to cor. 7, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 27° W. 14°, 280.46 m. to cor. 95, identical to cor. 8, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 28° W. 00°, 498.16 m. to cor. 96, identical to cor. 9, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 30° W. 15°, 340.25 m. to cor. 97, identical to cor. 10, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 02° E. 59°, 175.19 m. to cor. 98, identical to cor. 11, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 01° W. 01°, 235.45 m. to cor. 99, identical to cor. 12, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 01° W. 28°, 250.92 m. to cor. 100, identical to cor. 13, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 01° W. 32°, 175.04 m. to cor. 101, identical to cor. 14, A&D, Proj. 37-D, Block C, L.C. Map 2963;
N. 33° W. 25°, 140.65 m. to cor. 1, identical to cor. 15, A&D, Proj. 37-D, Block C, L.C. Map 2963;

Containing an approximate area of Nine Hundred Twenty (920) hectares.

The management of the subject area shall be under the administrative jurisdiction of the Department of Environment and Natural Resources.

The herein established area shall serve as feeding ground and temporary shelter both for migratory and resident wildlife species.

IN WITNESS HEREOF, I have hereunto set my hand and caused the seal of the Republic of the Philippines to be affixed.

DONE in the City of Manila, this 14th day of May in the year of our Lord, Nineteen Hundred and Ninety Two.

(Sgd.) CORAZON C. AQUINO
President of the Philippines

By the President:

Executive Secretary
APPENDIX 7.

MALACANAN
Manila

PROCLAMATION NO. 1801

DECLARING CERTAIN ISLANDS, CAVES AND PENINSULAS IN THE PHILIPPINES AS TOURIST ZONES AND MARINE RESERVES UNDER THE ADMINISTRATION AND CONTROL OF THE PHILIPPINE TOURISM AUTHORITY.

WHEREAS, the Philippines abound with natural beauty and potentials for aquatic sports, tourism and marine life conservation;

WHEREAS, these natural marine resources offer great potential and tremendous advantage in the growing worldwide interest in aquatic sports;

WHEREAS, lack of proper government control resulted in ecological imbalance to the marine environment;

WHEREAS, said islands require the concentrated efforts of both the government and private sectors in the development of their tourism potential;

NOW, THEREFORE, I, FERDINAND E. MARCOS, President of the Philippines, by virtue of the powers vested in me by the constitution do hereby declare the following islands, caves and peninsulas as tourist zones and marine reserves under the administration and control of the Philippine Tourism Authority (PTA) pursuant to Section 5(D) of 564:

I. Whole of Batangas coastline and the Offshore Islands of:
   1. Fortune Island
   2. Maricabao Island
   3. Gaban Island
   4. Sombrero Island
   5. Ligpo Island
   6. Malahibong Manok
   7. Verde Island

II. Fuga Island, Cagayan Province

III. Oriental Mindoro
   1. Puerto Galera
      a. Port Galera
      b. Balatero Cave
      c. Medio Island
   2. Bulalakao
      a. Bayayao Island
      b. Ason Island
      c. Bating Peninsula
      d. Maasim Island
      e. Balatasan Cave
      f. Pocan Island
      g. Opo Island
      h. Buyafla Peninsula
      i. Suguiyac Island
      j. Libago Island
      k. Sibalat Island
      l. Pambaron Island
      m. Apo Reef Island and Islands

IV. Boracay Island, Aklan

V. Dumaguete
   1. Apo Island
   2. Siquijor Island
   3. Selinog Island (between Negros and Cebu)
   4. Aligway Island

VI. Cebu
   1. Gaubian Island and vicinity (SE of Mactan Island)
   2. Olango Island, Sulu Island, Gilutongan Island, Nalusuan Island, Caohagan Island, Pangan-an Island (SE of Mactan)
   3. Buyog Beach (Maribago, Mactan Island)
4. Sogod (North of Cebu City)

VII. Tagbilaran (Bohol)
1. Panglao Island
2. Cabilao Island
3. Balicasag Island

VIII. Tacloban
1. Guian, Eastern Samar
2. Gigantangan Island, NW tip of Leyte

IX. Palawan
1. Busuanga Island
2. Coron Island
3. Puerto Princesa & surrounding areas
4. Malampaya Sound and islands
5. Canaran Island
6. Solitario Island
7. Bacuit Bay Island
8. Balabac Island
9. Port Barton

X. Cagayan de Oro, Misamis Oriental
1. Al-Sulnuan (west of Cagayan de Oro City)
2. Camiguin Island

XI. Zamboanga
1. Big and small Sta. Cruz Island
2. Sangali Cave
3. Socol Island
4. Ayala/San Ramon
5. Malanipa Island

XII. Davao
1. Maliputo Island – Talicud Island
2. Ligig Island
3. Eastern side of Samal Island

No development projects or construction for any purposes be introduced within the zones without prior approval of the President of the Philippines upon recommendation of the Philippine Tourism Authority.

The PTA shall delineate well-defined geographic areas within the zones with potential tourism value, promulgate rules and regulations subject to the approval of the President, and coordinate the integrated development of these areas for the optimum use of natural assets and attractions, as well as existing facilities.

All proclamations, decrees or executive orders inconsistent herewith are hereby revoked or modified accordingly.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the Republic of the Philippines to be affixed.

Done in the City of Manila, this 10th day of November in the year of our Lord, Nineteen Hundred and Seventy-Eight.

(SGD.) FERDINAND E. MARCOS
President
Republic of the Philippines

For the President:

(SGD.) JUAN C. TUVERA
Presidential Assistant
Appendix 8. List of government agencies and non-governmental organizations

1. AWBPFI – Asian Wetland Bureau Philippines Foundation Inc.
2. BFAR – Bureau of Fisheries and Aquatic Resources
3. DA – Department of Agriculture
4. DENR – Department of Environment and Natural Resources
5. DILG – Department of Interior and Local Government
6. DOT – Department of Tourism
7. DTI – Department of Trade and Industry
8. EA – Environment Agency of Japan
9. LGU – Local government unit
10. PTA – Philippine Tourism Authority
11. PAWB – Protected Areas and Wildlife Bureau
12. USC – University of San Carlos
13. WBSJ – Wild Bird Society of Japan