

## HONDURAS

### INTRODUCTION

based on information provided by Wilberto Aguilar and Mercedes Sierra Reyes, and information taken from Campanella *et al* (1982)

Honduras, the second largest country in Central America, is also that with the greatest geological and biological diversity. The total area is 112,088km<sup>2</sup>, and the population, according to 1980 estimates, some 3,691,000.

The topography is very mountainous, and more than 75% of Honduran territory has gradients greater than 25%. Three main regions can be distinguished: the highlands and inner valleys, the Caribbean lowlands, and the Pacific lowlands. The highlands and inner valleys, comprising 81.7% of the country, consist of mountain ranges with peaks up to 2,849m and intermontane basins at 990-1,400m; the poor soils are stony and acidic. The Caribbean lowlands, comprising 16.4% of the country, are narrow alluvial floodplains stretching for 640 km along the Caribbean coast and extending in valleys into the interior. The Pacific lowlands, comprising 1.9% of the country, include 124 km of mangrove coast around the Golfo de Fonseca, and the narrow floodplains of several rivers such as the Rio Choluteca.

The climate of the Caribbean lowlands is dominated by the east and southeast trade winds which change direction in winter as cold currents move along the coast, giving rise to winds from the north and west and some rain. The main rainy season is from the middle of April to October, the region receiving more than 2,400 mm of rain annually. In the interior highlands, the annual rainfall is less than 1,000 mm, while in the Pacific lowlands, the annual rainfall varies from 400-2,000 mm, depending on local topography. Temperatures throughout the country are generally determined by altitude. Although the southwest Caribbean is not noted for having a high incidence of hurricanes, the north coast of Honduras and the Islas de la Bahia have been struck by thirteen hurricanes and eight tropical storms during the present century.

The classification of Monroe (1968) recognizes eight major natural habitats in Honduras, as follows:

- a) Lowland tropical rain forest, limited to the Caribbean drainage at elevations up to 750m, and consisting of broadleaf evergreen forests with some deciduous species.
- b) Tropical deciduous forest (monzon), replacing rain forest when marked seasonality in the rainfall constitutes the predominant climatic pattern. This forest is the dominant vegetation in the Pacific lowlands, but because of modification of the habitat for cultivation and grazing, it is now restricted to a few scattered enclaves along rivers and streams.
- c) Cloud forest, consisting of humid broadleaf forests in the highlands, at elevations between 1,350 and 2,300m in the south, and between 900 and 2,800m in the Caribbean basin.
- d) Dry thorny shrubland, occurring in the south and in some zones in the centre of the country.
- e) Mixed pine and oak forests in the highlands of western Honduras, at elevations between 600 and 1,800m. The dominant species are *Quercus* sp, *Pinus oocarpa* and *P. pseudostrubus*.
- f) Lowland pine savanna, dominated by the Caribbean Pine *Pinus caribea*, with some tracts of gallery forest along the main rivers.
- g) Mangrove swamps, occurring widely on both coasts. On the Caribbean coast, the dominant mangrove species are *Rhizophora mangle* and *Laguncularia racemosa*. *Erythrina cristagalli* and *Pachira acuatica* appear behind the mangroves. On the Pacific coast, the dominant mangroves are *Rhizophora mangle*, *R. samoensis*, *Conocarpus erectus*, *Laguncularia racemosa*, *Avicennia bicolor* and *A. germinans*.
- h) Coastal wetlands, including areas adjacent to the Bahia de Omoa, the Rio Ulua and the eastern lakes of the Caribbean coast, together with the wetlands around the Golfo de Fonseca on the Pacific coast.

## *Honduras*

### **Institutional Base for Wetland Conservation and Research**

The principal organizations concerned with environmental conservation in Honduras are:

*The Direccion General de Recursos Naturales Renovables (DIGERENARE)*, a governmental body created in 1974 to protect the nation's flora and fauna. The Departamento de Vida Silvestre y Recursos Ambientales in DIGERENARE conducts appropriate research.

*The Asociacion Hondurena*, a non-governmental conservation body.

### **Progress in wetland conservation and research**

The Direccion General de Recursos Naturales Renovables has drawn up an inventory of potential areas for the development of a national system of protected areas (Sistema Nacional de Areas Silvestres). It is hoped that six management categories can be developed: National Parks, Biosphere Reserves, Natural Monuments, Biological Reserves, Wildlife Refuges and National Recreation Areas. Twenty-four areas have been listed in the preliminary selection. These include "La Tigra" (7,651 ha) as a National Park, "Rio Platano" as a Biosphere Reserve, "Cuevas de Talaube" as a Natural Monument, the "Montana de Celaque" as a Biological Reserve, and the "Refugio de Manati" between the Cuero and Salado Rivers as a Wildlife Refuge. However, it is also hoped that refuges will be created for cats, crocodiles and *Cuniculus paca*.

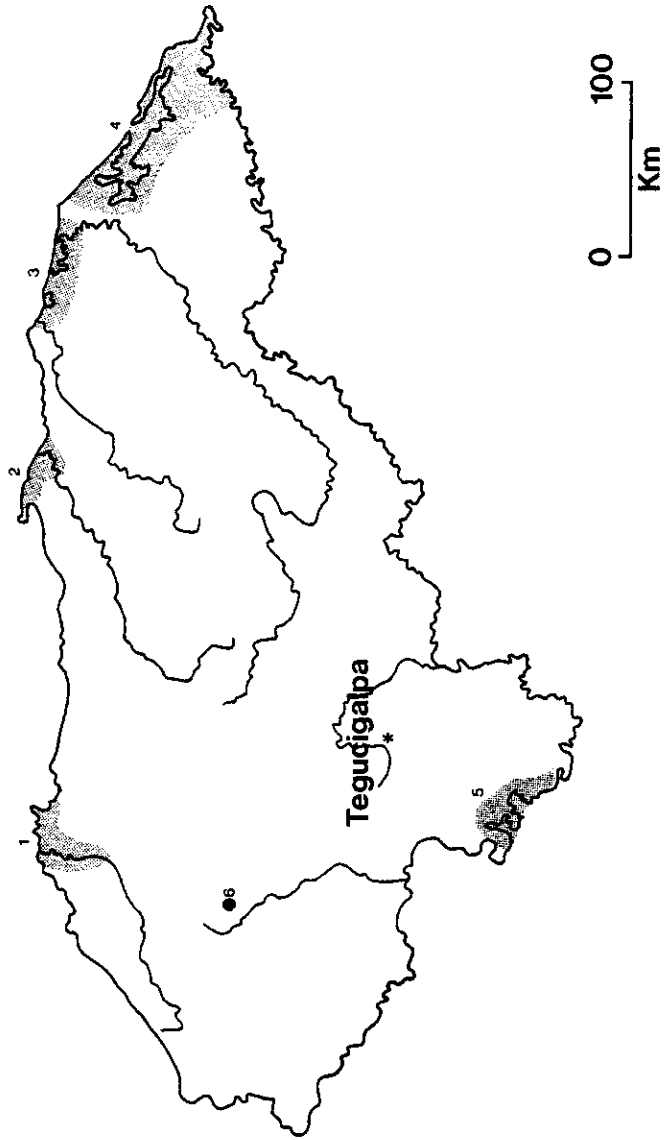
Recent research includes the following:

- a) A study of the current status of the wildlife (including birds) of the Rio Platano Biosphere Reserve (M.J. Marcus, Departamento de Vida Silvestre y Recursos Ambientales, 1981)
- b) An inventory of the birds of Honduras (Departamento de Vida Silvestre y Recursos Ambientales and Universidad Nacional Autonoma, 1980).
- c) An inventory of the avifauna of the lakes of Cortes Department, initiated in 1983.

### **Major Threats to Wetlands**

The principal threats to wetlands in Honduras are changes in the water regime resulting from extensive deforestation, and pollution caused by fishermen.

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**WETLANDS**

Site descriptions based on information provided by Wilberto Aguilar, Gustavo Adolfo Cruz and Mercedes Sierra Reyes of the Departamento de Vida Silvestre y Recursos Ambientales.

**Laguna de Los Micos and the Rio Ulua Delta (1)**

**Location:** 15°22'-15°55'N, 87°30'-87°55'W; in the Sula Valley, east and northeast of San Pedro de Sula, Departments of Cortes and Atlantida.

**Area:** c.55,000 ha.

**Altitude:** 0-25m.

**Province and type:** 8.16.4; 02, 07, 08, 09, 11 & 12.

**Site description:** The lower Rio Ulua from the region of La Lima to its delta, with riverine marshes and about a dozen small freshwater lakes; the extensive fresh to brackish marshes and mangrove swamps of the delta; and Laguna de Los Micos (5,400 ha) in the eastern delta.

**Principal vegetation:** No information.

**Land tenure:** No information.

**Protection:** None.

**Land use:** No information.

**Waterfowl:** No information.

**Other fauna:** No information.

**Threats:** No information.

**Research and conservation:** Some preliminary faunal and floral studies have been conducted in the area by the Departamento de Fauna Silvestre y Recursos Ambientales.

**Source:** Wilberto Aguilar and Mercedes Sierra Reyes.

**Criteria for inclusion:** 0.

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**Laguna de Guaymoreto and the Rio Aguan Delta (2)**

**Location:** 15°45'-16°00'N, 85°30'-85°55'W; west of Bahia de Trujillo, Colon Department.

**Area:** c.34,000 ha.

**Altitude:** 0-5m.

**Province and type:** 8.16.4; 02, 05, 07, 08, 09 & 11.

**Site description:** A large brackish coastal lagoon (4,300 ha) and the estuarine and delta system of the Rio Aguan to the east; with fresh to brackish marshes and mangrove swamps.

**Principal vegetation:** Mangrove swamps.

**Land tenure:** No information.

**Protection:** None.

**Land use:** No information.

**Waterfowl:** No information.

**Other fauna:** The manatee *Trichechus manatus* is known to occur.

**Threats:** No information.

**Research and conservation:** The area is currently under study for the possible creation of a reserve for manatees.

**Source:** Wilberto Aguilar and Mercedes Sierra Reyes.

**Criteria for inclusion:** 2a & 3a.

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**Laguna de Ibans, Laguna de Brus and the Rio Platano (3)**

**Location:** 15°35'-15°55'N, 84°20'-84°55'W; on the Caribbean coast between Rio Tinto and Rio Patuca, Department of Gracias a Dios.

**Area:** c.110,000 ha.

**Altitude:** 0-20m.

**Province and type:** 8.16.4; 02, 05, 07, 08, 09, 11 & 16.

**Site description:** Two large brackish coastal lagoons, Laguna de Ibans (6,600 ha) and Laguna de Brus (11,500 ha); the mangrove swamps and fresh to brackish marshes of the lower Rio Platano; and a complex of freshwater lakes, marshes and seasonally flooded grassland and pine savanna near the mouth of the Rio Patuca.

**Principal vegetation:** Mangrove swamps; swamp forest; seasonally flooded grassland; pine savannas with *Pinus caribea*; and gallery forest along the Rio Platano and main tributaries. In the humid tropical zone.

**Land tenure:** Largely state owned.

**Protection:** Partly included within the Rio Platano Biosphere Reserve (350,000 ha) established in 1980, and designated as a World Heritage Site in 1982.

**Land use:** Little disturbed; a remote area, with some small indigenous communities.

**Waterfowl:** Known to be a very rich area for waterfowl, but no details available.

**Other fauna:** Over 375 species of birds have been recorded in the Biosphere Reserve. The Central American Otter *Lutra anectens*, manatee *Trichechus manatus* and crocodilians *Crocodylus acutus* and *Caiman crocodilus fuscus* occur.

**Threats:** There is some illegal hunting, and a possible threat from the exploitation of forests in the area.

**Research and conservation:** Basic inventories of the natural and cultural resources have been conducted in the Biosphere Reserve. The area is of considerable archeological and anthropological interest.

**References:** DIGERENARE & CATIE (1980); Marcus (1981); IUCN (1982).

**Source:** Wilberto Aguilar and Mercedes Sierra Reyes.

**Criteria for inclusion:** 2a, 2b & 3a.

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#### Laguna de Caratasca and nearby lagoons (4)

**Location:** 14°55'-15°55'N, 83°10'-84°15'W; on the Caribbean coast of eastern Honduras, near the Nicaraguan border, Department of Gracias a Dios.

**Area:** 370,000 ha.

**Altitude:** 0-10m.

**Province and type:** 8.16.4; 02, 05, 07, 08, 09, 11 & 16.

**Site description:** A vast complex of fresh to brackish coastal lagoons and marshes, mangrove swamps, and areas of seasonally flooded grassland, between the mouth of the Rio Patuca in the west and Rio Coco (Segovia) on the Nicaraguan border in the east. The principal lagoons are Laguitara (5,700 ha), Tibalakan (3,500 ha), Siska (1,700 ha), Warunta (12,500 ha), Caratasca (80,000 ha), Kohunta (7,000 ha) and the Apolka complex (2,200 ha). The lagoons and marshes are fed by a number of small rivers.

**Principal vegetation:** No information.

**Land tenure:** No information.

**Protection:** None.

**Land use:** No information.

**Waterfowl:** No information.

**Other fauna:** No information.

**Threats:** No information.

**Research and conservation:** The largest wetland complex in Honduras, and one of the remotest areas in the country. It remains very poorly known, and clearly merits proper investigation.

**Source:** Wilberto Aguilar and Mercedes Sierra Reyes.

**Criteria for inclusion:** 0.

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#### Golfo de Fonseca (5)

**Location:** 13°00'-13°30'N, 87°15'-87°50'W; 90 km SSW of Tegucigalpa, on the El Salvador and Nicaraguan borders, Department of Valle Choluteca.

**Area:** 71,000 ha.

**Altitude:** 0-10m.

**Province and type:** 8.16.4; 02, 05, 06, 08 & 09.

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**Site description:** An extensive system of estuaries with intertidal mudflats, mangrove swamps and sand beaches, on a large sea bay shared by Honduras, El Salvador and Nicaragua. (See El Salvador site 8, and Nicaragua site 1.)

**Principal vegetation:** Mangrove swamps with *Rhizophora mangle*, *Avicennia* sp, *Laguncularia racemosa* and *Conocarpus erectus*; *Hippomane mancinella* on drier sites.

**Land tenure:** Almost entirely state owned.

**Protection:** All the mangrove areas are included in the Golfo de Fonseca Forest Reserve (50,000 ha) established in 1958.

**Land use:** Fishing, exploitation of salt, and wood-cutting.

**Waterfowl:** No information, but presumably similar to Nicaragua site 1.

**Other fauna:** There are commercially important populations of clams, and the area is an important nursery ground for commercially important fishes and shrimps harvested in the Golfo de Fonseca. Large numbers of the sea turtle *Lepidochelys olivacea* nest on the beaches, and there are small populations of *Crocodylus acutus* and *Caiman crocodilus fuscus*.

**Threats:** The cutting of mangroves for fuel.

**Research and conservation:** Studies have been conducted on the sea turtles by DIGERENARE, and some work has been carried out on the mangrove resources.

**References:** IUCN (1982).

**Source:** See references.

**Criteria for inclusion:** 2c & 3a.

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## Lago de Yojoa (6)

**Location:** 14°55'N, 88°00'W; 70 km south of San Pedro Sula, Departments of Comayagua, Santa Barbara and Cortes.

**Area:** 9,000 ha.

**Altitude:** 635m.

**Province and type:** 1.21.12 (Nearctic); 12.

**Site description:** A large permanent freshwater lake and marshes in the mountains of western Honduras; the only large freshwater lake in the interior of the country. The maximum depth is 30m; the level fluctuates seasonally by about 3m and reaches its highest in winter and spring. A canal and several diversion dams have enlarged the catchment area of the lake.

**Principal vegetation:** The aquatic vegetation includes species of *Vallisneria*, *Potamogeton*, *Typha*, *Nymphaea*, *Cabomba*, *Eichhornia*, *Panicum*, *Cyperus*, *Scirpus* and *Nelumbo*. In a region of very humid subtropical forest.

**Land tenure:** A mixture of state and private ownership.

**Protection:** The lake is included within a Multiple Use Area (34,628 ha) established in 1971 to protect the watershed.

**Land use:** Commercial and sport fishing for introduced bass, tourism and recreation; cattle ranching and agriculture in surrounding areas. There is a considerable amount of human settlement around the lake.

**Waterfowl:** An important area for waterfowl. *Dendrocygna autumnalis* and *Cairina moschata* are resident, and *Anas discors* is a common non-breeding visitor. Both *Jacana spinosa* and *Jacana jacana* have been reported.

**Other fauna:** The introduced bass *Micropterus salmoides* supports sport and commercial fisheries.

**Threats:** The many threats to the lake include: pollution from domestic sewage and waste from nearby mines; contamination with fertilizers and pesticides from adjacent agricultural land; increased siltation as a result of deforestation of the watershed; and alteration of the shoreline for the construction of houses.

**Research and conservation:** DIGERENARE has conducted limnological studies, and G.A. Cruz is conducting research on the vegetation and on the population of *Micropterus salmoides*. A zoning plan detailing agricultural, touristic, urban and protected areas has been prepared for the Multiple Use Area, but this has not as yet been fully implemented.

**References:** Betancourt & Dulin (1978); Cruz (1979, in prep-a & in prep-b); IUCN (1982).

**Source:** Gustavo Adolfo Cruz.

**Criteria for inclusion:** 2b & 3a.