

## Encyclopedia of Earth

## Lesser Antilles mangroves

**Content Partner: World Wildlife Fund (other articles)**

**Article Topics: Ecology, Conservation biology and Biodiversity**

**This article has been reviewed and approved by the following**

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**Last Updated: November 17, 2008**

### Introduction

The small islands of the Lesser Antilles have less species diversity than the larger islands of the Greater Antilles but nonetheless have high levels of endemism. They also have a great diversity of habitats associated with environmental conditions related to differences in climate, elevation, rainfall, and salinity found in the different islands.

### Location and General Description

The Lesser Antilles mangrove ecoregion is comprised of a chain of islands at the southeastern edge of the Caribbean Sea from Sombrero and Anguilla in the north, to Grenada in the south. An inner arc is of more recent volcanic origin and of higher elevation up to 1397 meters (m) on Martinique, while the outer arc consists of limestone on top of an eroded igneous rock layer, where elevation is much lower.

Climate and rainfall levels are directly related to elevation, annual rainfall ranges from 750 millimeters (mm) on the outer island of Barbuda which has a tropical arid climate, to 1928 mm on the inner island of Roseau/Dominica where the climate is more tropical. Among the features that contribute to the high productivity found around these islands are the offshore currents, which include outflows of the Amazon and Orinoco Rivers systems - these enter the Caribbean Sea through the narrow and shallow channels between the islands of this ecoregion creating estuarine conditions around the southernmost islands, a south to north increasing salinity gradient, and leaving a high concentration of nutrients that are captured by coastal ecosystems. Mangroves are better developed in the southern islands, while reefs and sea grass beds are more diverse in the more saline waters around the northern islands. They are most frequently found in fringing communities around bays, lagoons and ponds but are most extensive at river mouths and in low coastal plains where there is an abundance of freshwater input, as found in Guadeloupe. Because of hypersaline conditions in some areas, and frequent storm and hurricane damage, many of the mangrove blocks in this ecoregion are vegetated by a poorly developed coastal scrub.

Ten different types of mangrove communities have been identified, depending on the dominant mangrove species and whether they occur in estuarine areas, as fringe on an open coast, in depressions or basins, or as scrub vegetation. Mangroves are also found in association with other types of habitats as part of broader coastal wetland systems, with conditions that range from freshwater and brackish to hypersaline, and associated with marshes, swamp forest, littoral woodland, and dunes, and influenced by both land drainage and tidal flushing. In St. Lucia and also in St. Vincent and the Grenadines for example, the most extensive mangroves are found in basins that have formed where river mouths are blocked by beach barriers, where they are associated with *Pterocarpus officinalis* swamp forests, as well as with salt and freshwater marshes. Coral reefs and seagrass beds are also associated with many mangrove sites.

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Nevis, St. Kitts and Nevis. (Photograph by WWF, US Photolibary)

## Biodiversity Features

Overall diversity is higher on the larger islands in the southern part of the chain, but endemism is greater in the northern islands that are more isolated from the mainland. Therefore the southernmost island, Grenada, shares more fauna with South America. Although there are a number of endemic species, with the exception of birds, it is not always possible to determine if these have any direct association with mangroves. Five mangrove species are found in this ecoregion including *Rhizophora mangle*, *Avicennia germinans*, *A. Schaueriana*, *Laguncularia racemosa*, *Conocarpus erectus*. *Rhizophora mangle* and *Laguncularia racemosa* appear to be the most abundant in all types of mangrove communities - riverine, basin and fringe. A survey in St. Lucia suggests that *Avicennia schaueriana* is found primarily in the fringe mangroves, with the rest appearing occasionally in all types. Other plant species found in mangrove communities include *Acrostichum aureum*, *Thespesia populnea*, *Dalbergia ecastaphyllum*, *Hibiscus tiliaceus*, *Pluchea odorata*, *Anona glabra*, *Brachypteris ovata*, *Sporobolus virginicus*, and *Sporobolus indicus*, *Mariscus planifrons*, *Fimbristylis dichotoma*, *Rhabdenis biflora*, *Cydista aequinoctialis*, and *Eichhornia crassipes*.

Birds most associated with mangroves include spotted sandpiper (*Actitis macularia*), great blue heron (*Ardea herodias*), cattle egret (*Bubulcus ibis*), green heron (*Butorides striatus*), belted kingfisher (*Ceryle alcyon*), Lesser Antillean pewee (*Contopus latirostris*), West-Indian whistling duck (*Dendrocygna arborea*), and Lesser Antillean bullfinch (*Loxigilla noctis*). Mammals such as West Indian manatee (*Trichecus manatus*) utilize mangroves. The calving grounds of the humpback whales (*Megaptera novaeangliae*) are in the Grenadines and between Antigua and Anguilla. Reptiles of interest are *Caiman crocodilus*, several species of anolis lizard (*Anolis spp.*), iguana (*Iguana iguana*), *Boa constrictor*, loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), olive ridley (*Lepidochelys olivacea*), and hawksbill turtle (*Eretmochelys imbricata*).

## Current Status

The total area of mangrove cover on the Lesser Antilles is estimated at 20,636 hectares (ha), which is distributed among 263 different sites. The largest areas of mangrove are found on Antigua and Barbuda, Guadeloupe, Martinique, and the U.S. Virgin Islands. There are a total of approximately 29 protected areas among all the islands, 15 of which are found on St. Lucia, though it is not clear to what extent all of these areas are adequately managed.

## Types and Severity of Threats

As in most places, mangroves are used by local populations for timber and to support fisheries. The two main concerns are deforestation, particularly on Guadeloupe, Martinique and St. Lucia, and expansion of tourism, which is occurring on most of these islands and leads to major damages, associated with coastal development activities. These include beach sand mining and offshore dredging to re-establish beaches removed by hurricanes and dredging and filling of mangroves for resort development. Other concerns are slash and burn farming on steep slopes that have highly [[soil erosion and deposition]erodible soils]], and runoff of agricultural pesticides. Population density ranges from 83 square kilometers (km<sup>2</sup>) in Anguilla to 614 km<sup>2</sup> in Barbados. However, numbers of tourists often exceed that of the local population. There has also been an increase in the frequency and intensity of tropical storms and hurricanes over the past few decades, which appear to be associated with global warming. In Martinique, hurricanes have flattened entire swamps of mangrove trees.

## Additional information on this ecoregion

- For a shorter summary of this entry, see the WWF WildWorld profile of this ecoregion.
- To see the species that live in this ecoregion, including images and threat levels, see the WWF Wildfinder description of this ecoregion.
- World Wildlife Fund Homepage

## Further Reading

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## Citation

World Wildlife Fund (Content Partner); Mark McGinley (Topic Editor). 2008. "Lesser Antilles mangroves." In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the Encyclopedia of Earth August 31, 2007; Last revised November 17, 2008; Retrieved February 10, 2009]. <[http://www.eoearth.org/article/Lesser\\_Antilles\\_mangroves](http://www.eoearth.org/article/Lesser_Antilles_mangroves)>

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