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Nesting of Green Sea Turtles (*Chelonia mydas*) on Tortuguero Beach, Costa Rica

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INTRODUCTION

Tortuguero is located on the northeastern shores of Costa Rica. It is the largest and most important Atlantic nesting-site of the endangered Green turtle (*Chelonia mydas*) in the Western Hemisphere. It is also a rookery for Leatherback (*Dermochelys coriacea*), Hawksbill (*Eretmochelys imbricata*) and Loggerhead turtles (*Caretta caretta*). Tortuguero's population of 450 was first settled in the 1920s. It was established as a National Park in the 1970's with help from the non-profit Caribbean Conservation Corporation (CCC), offering vital protection of the nesting beach and its wildlife. The park includes over 19,000 hectares (46,900 acres) and protects 22 miles of nesting beach from the mouth of the Tortuguero River south to Parismina. The Parky and the Barra del Colorado Wildlife Refuge to the north combine with Tortuguero to form the largest remaining adjoining tract of lowland wet tropical forest on Costa Rica's Atlantic coast.

FLORA, FAUNA AND CLIMATE

Tortuguero is warm and humid. Daily temperatures average 26 degrees C (79 °F) and annual rainfall is over 5,000 millimetres (200+ inches). Trade winds and cool nights temper warm days. The wet tropical lowland environment supports several diverse and distinct ecosystems, including the coastal woodlands, upland tropical wet forest, premontane tropical wet forest, *Raphia* and *Manicaria* palm swamp, swamps and marshes.

Flora: Tortuguero owes its botanical diversity to abundant rainfall and warm temperatures throughout the year. The varied ecosystem throughout the park and along the coast account for an estimated 400 species of trees and 2,000 species of other plants, many adapted to specific environments. On the beach, Morning Glory (*Convolvulus arvensis*) can endure the harsh conditions of intense sunlight and salt spray. In the interior, *Raphia* palms (Palmae), Common Sangrillo (*Pterocarpus officinalis*) and

Cativo trees (*Prioria copaifera*) frequent soils that are prone to flooding. Gavilan (*Pentaclethra macroloba*), Strangler figs (Moraceae), and the majestic Kapok tree (*Ceiba pentandra*) are found on drier ground. Heliconias (*Heliconia latispatha*) and other plants in the banana family (Musaceae), ferns (*Filicinophyta* sp.) and small palms dominate the understorey, while large trees support communities of epiphytes, vines and climbing plants.

Fauna: Abundant wildlife inhabits Tortuguero, including 57 species of amphibians, 111 species of reptiles and 60 species of mammals. Approximately 300 species of bird live in Tortuguero for all or part of the year. Keel-billed toucans (Ramphastidae), Slaty-tailed trogons (Trogonidae) and a variety of parrots are often seen. Birds common along the canals include Great Blue Herons and egrets (Ardeidae), Belted kingfishers (*Ceryle alcyon*), Anhingas (Anhingidae), Jacanas (Jacanidae), Sun grebes (*Podicipediformes*) and several species of hawks and kites. Other animals commonly seen are Fishing bats (Chiroptera), Three-toed sloths (Bradypodidae), Iguanas (*Iguana iguana*), Basilisk lizards (*Basiliscus* sp.), Poison-dart frogs (*Dendrobates* sp.), and Howler, White-faced, and Spider monkeys (Cebidae). The tracks of River Otters (*Lutra longicaudus*) and Baird's Tapirs (*Tapirus birdie*) are often seen on the banks of rivers and canals. Caimans (Aligatoridae) are easily observed in the waterways, which are also home to garfish, manatees, crocodiles, crustaceans and an occasional Bull shark (*Carcharhinus leucas*). Jaguars, Ocelots (Felidae) and Kinkajous (Procyonidae) inhabit the park, but are rarely seen. Olive Ridley *(Lepidochelys olivacea*) turtles do nest on Costa Rica's beaches but only on the pacific coast.

TORTUGUERO SEA TURTLES

Marine turtles inhabit seas throughout the world, usually only coming ashore to lay eggs. The green turtles that nest at Tortuguero migrate from foraging grounds elsewhere in the Caribbean. Nearly 80 percent from seagrass near the Miskito Cays off northeastern Nicaragua. Some travel more than 1000 kilometres to reach Tortuguero beach and have been found as far south as Brazil. Green turtles tagged at Tortuguero virtually never nest on other beaches and genetic tests suggest that they return to nest on the same beach where they hatched. Green turtles nest at Tortuguero from July to October laying their eggs at night. The less common leatherback turtles are present from February to June, with hawksbills and loggerheads nesting occasionally during the summer months. During nesting season, each female turtle lays one to six clutches of eggs at 10 to 14 day intervals. She generally waits two to four or more years before nesting again.

After about 60 days, baby turtles hatch and leave the nest at night, moving rapidly to the sea. They then paddle out toward the open ocean for several days in a continuous swimming frenzy. Researchers do not yet know how long baby turtles spend in the open sea, or where they go. Once turtles reach the size of dinner plates, they reappear in shallow coastal waters to feed on seagrass and algae. They grow slowly and may take 25 to 50 years to reach reproductive maturity. Adult green turtles can be over 3 feet long and weigh more than 300 pounds. In comparison, adult leatherbacks can be up to 10 feet long and weigh 2000 pounds. As adults, sea turtles migrate between feeding areas and the nesting beach. Males and females mate in the sea near the nesting beach, but only the females come ashore.

THREATS TO SEA TURTLES

The natural mortality of sea turtles is high. Many scientists believe that only one in 5,000 to 10,000 hatchlings live long enough to mature and reproduce. Many eggs are destroyed when nests are flooded by seawater and hatchlings eaten by dogs, crab, birds and other predators. Adult green turtles have even been taken as a prey item of Jaguar! Older turtles tend to be predated on in the open sea. One of the major causes of adult death each year is accidental catching in fishing nets. Poaching of

turtle eggs and meat by humans is common. Hawksbill turtles are hunted for their shell, used to make shell ornaments and jewellery. Some beaches where turtles nest are also disturbed by light pollution and development. Marine pollution also threatens the turtles by pollution of the sea with chemicals, oils and plastics.

CONSERVATION

Tortuguero draws the only large nesting colony of green turtles in the Atlantic, so protecting turtles on this beach is essential to the conservation of the species in the Caribbean and the world. Unfortunately, when turtles return to their feeding grounds in other countries, they may not be so well protected. Conservation of sea turtles requires international co-operation. CCC the world's oldest sea turtle conservation organisation began working in Tortuguero in 1954 under the direction of famed zoologist Dr. Archie F. Carr. Today the non-profit organisation operates a research station in Tortuguero and is active in coastal conservation throughout the Caribbean and Western Atlantic.

RECREATION

Tortuguero is only accessible by air and water, making it a complicated journey to the ocean village. Flights land in Barra del Colorado where boats are hired for the canal trip south to Tortuguero. An interesting six-hour trip from Puerto Viejo de Sarapiqui to Tortuguero via the Sarapiqui and San Juan Rivers is also possible. Boats are also hired in Moin for the trip north from Limon. Visitors can take part in a variety of forest walks and explorations. Renting canoes for trips along jungle waterways (the Chiquero Creek being a regularly used trail), beach combing at the mouth of the Tortuguero River for wildlife tracks and exotic plants, and evening excursions with local trained guides to watch turtles nocturnally are popular.

Evening visits to the beach during turtle nesting season run from July through to October and must be under the supervision of a trained guide. Often, only the guide will have a torch and some operate night scopes to avoid disruption to turtle breeding behaviour. Visitors are discouraged from swimming or paddling in the ocean because of strong currents and sharks. The area also operates a 'take your litter home' policy as there are no garbage collections.

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