

Costa Rica

A SUPERLATIVE SEA TURTLE COUNTRY

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Costa Rica is a country of ocean, nature, and sea turtle superlatives. Despite its small terrestrial size (51,100 km², or 19,732 mi², which is about the size of the U.S. state of West Virginia), Costa Rica's marine area (568,054 km², or 219,327 mi²) eclipses its land by more than 10-fold. That area extends 322 km (200 mi) seaward from both shores and encircles Cocos Island in the Pacific, some 612 km (380 mi) southwest, thereby making it truly an ocean nation. Five of the world's seven species of sea turtles nest on its shores, a number exceeded only by the significantly larger countries of Australia and Mexico. A total of nine sea turtle Regional Management Units overlap with this sea turtle-rich nation (see map, pp. 22–23). Costa Rica's abundance of sea turtles derives largely from its geographic position that spans the Central American isthmus, which thus bestows it with 1,016 km (631 mi) of Pacific coastline and with 212 km (132 mi) more on its Caribbean shore. These "rich coasts" are bounded by an array of equally rich nearshore and deep ocean habitats—from mangrove swamps, estuaries, and rocky reefs, to seamounts and undersea features such as the Costa Rica Dome, all of which are traversed by sea turtles in many stages of their lives during foraging, migration, interesting, and breeding.





A green turtle hatchling emerges from its nest in Costa Rica. © SERGIO PUCCI / WWW.PUCCI.CR; PREVIOUS SPREAD: A leatherback turtle returns to sea after nesting at Playa Grande on Costa Rica's Pacific coast. © ELLEN MCKNIGHT

Costa Rica's abundant sea turtles also stand out in remarkable ways. On the Caribbean coast, Tortuguero National Park hosts the largest green turtle rookery in the hemisphere and one of the two largest green turtle populations on Earth. Costa Rica's Pacific coast is home to two olive ridley mass nesting (*arribada*) beaches: Nancite and Ostional. The beaches are among a mere half-dozen such sites found worldwide, and Ostional is one of the two largest on the planet.

From a conservation perspective, the leatherback beaches of the Nicoya Peninsula (Pacific coast) are among the most important on Earth for the leatherback, given that the Eastern Pacific Regional Management Unit (RMU) of this species is considered the highest conservation priority of all leatherback RMUs worldwide (see *SWOT Report*, vol. VII, 26). Costa Rican sea turtles also have a connection to another famous flagship species: the largest cat in the Americas, the jaguar (*Panthera onca*). Turtle nesting beaches in Tortuguero, Santa Rosa, and Corcovado national parks are important jaguar habitats and are among the only places where those majestic cats have been documented to regularly feed on nesting turtles.

Costa Rica is considered the birthplace of modern sea turtle biology, in large part because of the important role played by Dr. Archie Carr (1909–1987), who was a pioneering conservationist, scientist, and author and whose books brought the plight of sea turtles to the world's attention. The theories and observations about sea turtle biology and conservation that emerged from Dr. Carr's work at Tortuguero beginning in the 1950s remain core to our understanding of the animals today. Dr. Carr founded the Sea Turtle Conservancy (formerly known as the Caribbean Conservation Corporation), the first nongovernmental organization dedicated to sea turtles. Thanks to his influence, Costa Rica created the first protected area dedicated specifically to sea turtle protection: Tortuguero National Park.

Several other Costa Rican protected areas have since been established to protect these marvelous creatures. Among them are Las Baulas de Guanacaste National Park and several National Wildlife Refuges, including Ostional, Gandoca-Manzanillo, Camaronal, Caletas-Arío, Playa Hermosa-Punta Mala, and Río Oro. Other national parks in Costa Rica also protect key turtle habitats, including

Santa Rosa, Manuel Antonio, and Cahuita. National protection is also in place for many, though not all, marine habitats used by sea turtles. Among the most important foraging areas are the coral reefs of Cahuita and Punta Mona; the seagrass pastures of the Golfo Dulce; the mangrove areas of Golfo de Nicoya; and the rocky reefs of Santa Elena, Punta Coyote, and Isla del Caño. Cocos Island National Park is also an important developmental habitat for juvenile green and hawksbill turtles, and it provides a stopover habitat for migratory adult green turtles.

National legislation protects turtles both inside and outside of protected areas in Costa Rica, though a number of key nesting beaches have not yet received official protected status. At many of those beaches, local community volunteers and environmental organizations play a fundamental role in protecting sea turtles by helping to convert former poachers into research assistants or tour guides and by providing environmental education for children. The latter has been an essential component of long-term sea turtle conservation in Costa Rica by giving children a voice in converting their families and fellow community members to sea turtle conservationists.

A unique, albeit polemic, conservation program exists at Ostional, the site of the only community-based program that allows egg extraction. The program is considered a global model for conservation-based turtle use. At that beach, local residents are allowed to conduct a managed extraction of "doomed eggs," those that will be incidentally dug by other turtles during the early days of *arribada* nesting. When combined with ecotourism, the program provides sustainable income for local residents. Ostional's egg extraction program is considered to have the added benefit of reducing clutch density, thereby increasing overall hatching success and diminishing the proportion of otherwise doomed clutches.

In addition to being a global leader in biodiversity protection (27 national parks and dozens of wildlife refuges, plus protected zones that cover more than 25 percent of the country), Costa Rica has also been at the forefront of sustainable development for decades. Often called the Switzerland of Central America for the friendliness and quality of life of its citizens, Costa Rica abolished its army in 1948, an act that has contributed greatly to the country's peaceful and democratic history.

As a result of this reputation and its natural beauty, Costa Rica is visited by more than 2 million tourists each year. They are drawn by the opportunity to experience tropical beaches, protected rainforests, and wildlife, including nesting sea turtles. Tourism generates considerable revenue, at a scale far beyond what hunting of sea turtles and collection of eggs could ever provide for communities surrounding protected areas, as is the case at Tortuguero and Las Baulas de Guanacaste national parks and in Ostional National Wildlife Refuge. Using a model of local guides, regulation of tourism in those parks minimizes disturbance of nesting turtles while supporting jobs and livelihoods for local residents. Costa Rica also receives thousands of foreign volunteers every year who supply the work force and skills for conservation, and without whom effective sea turtle protection would not be possible.

Nonetheless, serious threats to sea turtles still linger in many parts of Costa Rica, such as the widespread illegal extraction of eggs, the slaughter of adults for meat and oil, and the bycatch of sea turtles in artisanal and industrial fisheries. Incidental catch by commercial fisheries and the resulting mortality of turtles are perhaps the most insidious and difficult threats to confront in Costa Rica. Costa Rica's enormous marine area makes the control and surveillance of fishing vessels very problematic, which results in the deaths of tens of thousands of turtles each year in trawls and longline fisheries. Diminishing catches from an already severely overexploited fishery has driven fishers not only to increase their effort but also to expand into new, once pristine fishing grounds, thereby causing increased turtle mortality. In the past five years, government agencies, communities, and environmental organizations in Costa Rica have increasingly addressed the topic of fisheries management, but conflicts still remain, as demonstrated by a recently announced and much-criticized government plan to allow continued high-bycatch shrimp trawling.

Although some encouraging trends are visible in Costa Rica, such as increasing numbers of green and leatherback turtles in the Caribbean, persistently large olive ridley arribadas in the Pacific, and new green turtle nesting sites that are being discovered in the Pacific, Costa Rica still faces many superlative sea turtle challenges. Government agencies, with the support of citizens and private conservation organizations, must redouble their efforts to strengthen and enforce national laws, especially those relating to fisheries' impacts and illegal egg harvests, and all must work to improve management of protected areas. Costa Rica must show the same style of leadership in establishing effective marine protected areas as it has demonstrated historically in terrestrial protection if this little country is to remain at the vanguard of turtle conservation, much as it has remained an emblem of peace and tranquility. ■



Levels of illegal egg collection in Costa Rica are close to 100 percent at some sites, such as the Caribbean beach of Moín, where turtle monitoring was abandoned after a tragedy there that drew international condemnation. While on duty protecting turtles, Jairo Mora Sandoval (1987–2013), known locally by his nickname “Foca,” was murdered by poachers. After a mismanaged trial, the main suspects were acquitted. Fortunately, Costa

Rica has countless local heroes who are brave and committed people like Jairo. They continue to patrol remote beaches by night while most of Costa Rica's 5 million residents sleep peacefully in their beds. The sea turtle patrollers face not only mosquitoes and inclement weather, but also the threat of a human enemy that seeks to make money from the illegal killing of Costa Rica's sea turtles.

SWOT Feature Map

On the following pages (22–23) is the first-ever comprehensive map of sea turtle nesting biogeography in Costa Rica, produced in collaboration with dozens of individuals and organizations, and with special assistance from Luis Fonseca and LAST (Latin American Sea Turtles) Association.

The map features nesting data from 60 beaches on both the Pacific and Caribbean coasts, covering four species: green, leatherback, hawksbill, and olive ridley. While loggerhead turtles have also been recorded nesting at Tortuguero on the Caribbean coast, they were omitted from the map since their presence is considered sporadic. We have also included Costa Rican protected areas on the map in order to highlight the protection afforded to many key sea turtle nesting sites, as well as to draw attention to current gaps in protection; these are discussed in greater detail in the article at left.

The data used to create this map were provided voluntarily to SWOT or sourced from literature, and come from approximately 40 sources. Each data point is numbered to correspond with a record (see pages 43–44) that includes detailed metadata and source information. We used the most recent available data from each nesting site, and have indicated when the data used were more than five years old (see map legend). The map displays all data as numbers of clutches; when a different count type was provided by the data source (e.g., nesting females), we converted these to clutches using regionally appropriate conversion factors (see p. 44). Finally, we have included inset maps that depict the nine Regional Management Units of the five sea turtle species that occur in Costa Rica. These serve to emphasize the reality that “Costa Rica's” sea turtles are in fact highly migratory animals that do not belong to any one nation.

We are excited to present this map as the first national-scale, multi-species map of sea turtle biogeography that the SWOT Program has produced. It marks the beginning of a new focus on national- and regional-scale maps that we will generate in the coming years to present sea turtle data at scales that are as relevant as possible for the purposes of informing sea turtle management and conservation.

As always, you can find the complete, global SWOT database online at <http://seamap.env.duke.edu/swot>.