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COIBA NATIONAL PARK

A jewel of the Tropical Eastern Pacific

Climate change



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Hawksbill Turtle

Coiba National Park is one of the most important places in the Eastern Pacific for the reproduction of marine turtles, whose numbers have suffered an alarming decline over recent years.

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Panama's Coiba National Park

A jewel of the Tropical Eastern Pacific

Todd Capson

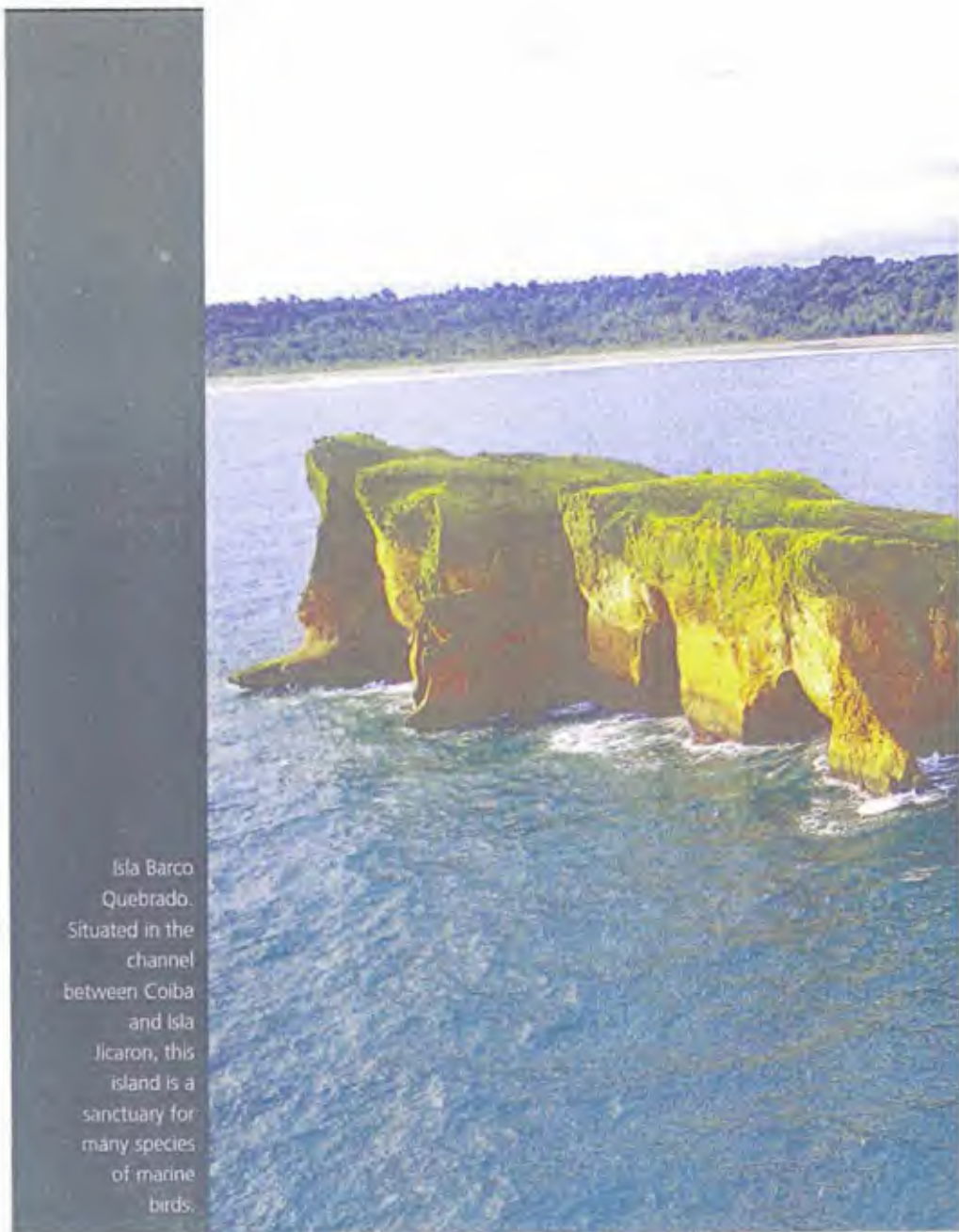
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Panama's Coiba National Park represents a unique piece of global heritage by any standard, whether from the perspective of the tropical forests of Coiba Island or from the surrounding waters of the Gulf of Chiriqui. Located in the central Pacific Ocean, it encompasses over 2,701 km², of which 2,165 km² are marine and 536 km² insular. The latter includes Coiba Island, which covers 503 km², and thirty-eight smaller islands. Coiba island lies at 25 km from the mainland of south-western Panama.

Located in the centre of Coiba National Park, Coiba Island is the largest tropical island on the continental shore of the Pacific coast of the Americas. The island still has approximately 85 per cent of its original primary forest surrounded by 240 km of coastline and irrigated by an extensive network of fifteen rivers, the largest of which is 17 km long. Despite the short time (approximately 15,000 years) that the island has been isolated from the mainland, there is a high level of endemism reported for many groups of mammals, birds and plants. The beaches of Coiba Island offer some of the few remaining protected and usable habitats for marine turtles in Panama, serving as a key area for their reproduction, including nesting beaches for at least four species; hawksbill (*Eretmochelys imbricata*), olive ridley (*Lepidochelys olivacea*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*).

Coiba Island possesses one of the last relicts of tropical moist forest in the Pacific continental slope of all Central America and, by extension, the species, ecosystem services, aesthetic values and potential for scientific research that these forests represent. Ongoing botanical surveys of Coiba National Park suggest that Coiba Island has around 2,000 species of vascular plant, including a genus endemic to Coiba, *Desmotes* (family Rutaceae) and three endemic species. A thorough examination of the flora of Coiba National Park is currently under way, carried out by botanists from the Smithsonian Tropical Research Institute, and sponsored by the International Cooperative Biodiversity Groups Program. The botanical survey is likely to yield species that are new to science and unique to the park.

Plant species that are very rare and threatened in the rest of Panama and the



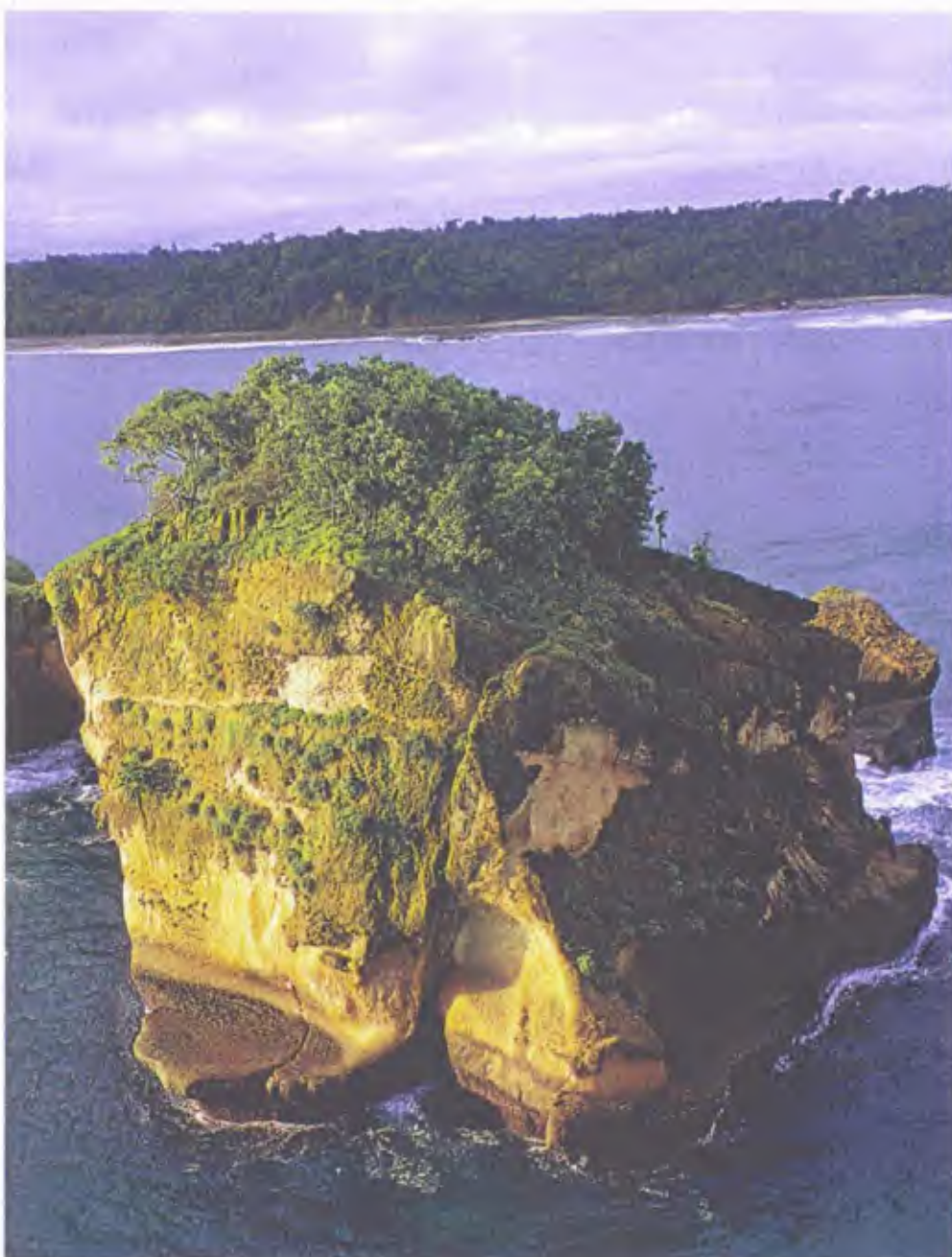
Isla Barco Quebrado. Situated in the channel between Coiba and Isla Jicaron, this island is a sanctuary for many species of marine birds.

Neotropical biogeographic region are present and even common on Coiba, making the island an important floral refuge. Timber species that have been almost completely logged from most of mainland Panama are abundant on the island. Of the 147 species of birds in the park, 96 are found on Coiba. One species is endemic to the island, the Coiba spine-tail (*Craniolouca dissita*), and there are twenty endemic subspecies. The island serves as an important refuge for species

that have largely disappeared from the rest of Panama, such as the crested eagle and the scarlet macaw.

The marine environment of Coiba National Park

The ocean surrounding Coiba National Park, the Tropical Eastern Pacific, is one of the most isolated marine regions in the world, spanning the Pacific coasts of southern Mexico and Central America to northern South America. The Tropical



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Eastern Pacific has probably the highest rate of endemism of any equivalent region in the world, in the order of 85–95 per cent for most groups. Approximately 80 per cent of its fish species are unique to the area. Within the entire Tropical Eastern Pacific, the ecoregion incorporating Coiba National Park has the highest marine biodiversity. The waters of the park host a rich and diverse community of marine fauna including corals, fish, molluscs, echinoderms, sea turtles and cetaceans (whales,

dolphins and porpoises). The park lies centrally within the area of the Tropical Eastern Pacific that supports the greatest diversity of shore fish. Of a list of 1,200 species of marine and brackish-water fish recently compiled for the Tropical Eastern Pacific, the ranges of 760 species include Coiba National Park. The estimated 375 genera of fish in the park constitute fully 85 per cent of the entire eastern Pacific genera, including 33 species of shark such as the whale shark (*Rhincodon typus*), tiger shark

(*Galeocerdo cuvieri*), bull shark (*Carcharinus leucas*), white-tip reef shark (*Trianodon obesus*), black-tip shark (*Carcharinus limbatus*), scalloped hammerhead shark (*Sphyrna lewini*) and nurse shark (*Ginglymostoma cirratum*).

Half of the Tropical Eastern Pacific's 1,200 species of shore fish occur only on the continental shore, and not at offshore islands such as Cocos Island and the Galápagos Islands. The same phenomenon can be expected to apply to other marine groups as well, such as molluscs, consistent with recently published results that show both endemism and extraordinary diversity. The islands within the Gulf of Chiriquí (including Coiba National Park) are the only group of inshore islands in the Tropical Eastern Pacific that have significant populations of trans-Pacific fish species, i.e. Indo-Pacific species that have established themselves in the eastern Pacific. For these reasons, fish experts consider that no other continental-shore marine park could do as much for marine conservation in the entire region as Coiba National Park.

The waters of the park are also important to migratory marine species. Humpback whales (*Megaptera novaeangliae*), listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES – Appendix 1), are present year-round in the park. The frequency with which they are observed suggests that populations visit from both northern and southern hemispheres. At least 19 other species of cetacean have been reported in the region, including Bryde's whale (*Balaenoptera edeni*), sperm whale (*Physeter catodon*), killer whale (*Orcinus orca*), short-finned pilot whale (*Globicephala macrorhynchus*), false killer whale (*Pseudorca crassidens*), bottlenose dolphin (*Tursiops truncatus*), pantropical spotted dolphin (*Stenella atteunata*), Central American spinner dolphin (*Stenella longirostris centroamericana*) and common dolphin (*Delphinus delphis*). These

In Focus Coiba National Park



Playa Barco Quebrado. Pounded by the full force of the Pacific Ocean, this beach, situated on the southern end of Coiba Island, is inaccessible by boat. Access is limited to those who trek for several hours through the crocodile infested swamps and rivers.

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cetaceans are not unique to the waters of Coiba National Park, but it serves as a key nexus in their migrations, movements and distribution.

The isolation of the Tropical Eastern Pacific also protects the park's coral reefs from the adverse effects of climate change. This isolation is a result of the convergence of the Californian (southward) and Peruvian (northward) oceanic currents offshore of Mesoamerica. In addition, the Gulf of Chiriquí, which hosts Coiba National Park, undergoes a very limited upwelling compared with the Gulf of Panama because of the blocking of trade winds by Panama's Cordillera Central range.

Together, these processes enhance the oceanic isolation of the area and indirectly protect it against extreme temperature variation observed during warm episodes of the El Niño-Southern Oscillation (ENSO). In the Pacific, periodic temperature increases during such events are responsible for major bleaching of coral reefs, potentially killing them. And according to the Intergovernmental Panel on Climate Change, warm episodes of ENSO are becoming more frequent, persistent and intense in the context of a changing climate. Fortunately, the oceanic isolation of the Gulf of Chiriquí will act as a buffer to prevent coral bleaching in this area, as was

observed in 1982–83: the average temperature anomaly in the gulf was 1.5 °C and only 70 per cent of the corals died, whereas in the Galápagos the average anomaly was 3 °C and the coral mortality was greater than 90 per cent.

The human factor: from penal colony to World Heritage site

Archaeological findings on various parts of Coiba Island indicate that the island was the site of pre-Columbian settlements whose populations are assumed to have disappeared shortly after the arrival of the Spaniards in the fifteenth century. Coiba Island was designated as a penal colony in 1919 and from that point the island has remained largely uninhabited except for a population of 100 to 1,000 prisoners and the police force assigned to guard them. Apart from a stretch of land designated for agricultural use to supply food for the inmates, the impact of the penal colony on the rest of the island has been insignificant. Coiba National Park was originally created in 1991 by a legal resolution of Panama's Institute of Natural Renewable Resources (INRENARE), the institutional predecessor of the National Authority of the Environment (ANAM), which was established in 1998. Beginning in 2001, the

process of establishing Coiba National Park was initiated. A law provides a more solid legal backing than does a resolution, which is easily modified or rescinded. Starting around 1998, the penal colony was gradually reduced in size and was closed in August 2004. In terms of the biodiversity of Coiba National Park, the closure of the penal colony is significant as it removed an important impediment to resource extraction from the park's rich marine and terrestrial ecosystems. It also opened up the island for potentially unsustainable tourism and other development, hence the importance of the site's inscription on the World Heritage List, which helps to provide an additional layer of protection.

With the gradual reduction of the penal colony, pressure from small commercial fishers and industrial fishing from shrimp trawlers increased. Empirical evidence and socio-economic studies suggested that fish populations had been adversely affected, although populations in general are in relatively good shape. In surveys conducted in the communities and ports that fish with the greatest frequency in Coiba National Park, 87 per cent of the fishermen reported that more time was required to catch the same amount of fish as in previous years. The survey results are consistent with the observations of recreational diving operators who have seen decreases in the number of sharks, billfish, rays, groupers and snappers over the past four to five years, the same time that commercial fishing operations increased in Coiba National Park.

In July 2004, Coiba National Park was established by National Law No. 44 of the Republic of Panama, 'Creation of Coiba National Park and Other Elements', thus affording the park the strongest possible legal protection. The legislation provided for a Special Zone of Marine Protection to serve as a buffer zone. Adjacent to the western border of the park, the zone encompasses 1,607 km² and incorporates

Montuosa Island, which covers an area of 1.4 km² and lies 21.3 nautical miles west of Coiba Island, and Hannibal Bank, 12.6 nautical miles west of Coiba Island, the emerged part of an underwater seamount noted for its remarkable marine productivity. The combined Coiba National Park and the Special Zone of Marine Protection comprise fully 90 per cent of the islands and 60 per cent of the edge of the continental shelf within the Gulf of Chiriquí.

Of great importance is the 2004 legal provision that the purpose of the park is to 'Conserve and protect terrestrial, marine and coastal ecosystems in the park in view of maintaining the species diversity of the park's flora and fauna, the genetic flow within species and the evolutionary and ecological processes for the benefit of present and future generations'. This legislation had the support of both the major political parties in the country. Another salient element is the creation of a multi-institutional Directive Council, the park's highest authority, which includes representatives of government, the conservation community and local stakeholders.

Scientists from the Smithsonian Tropical Research Institute, working in close collaboration with ANAM, had begun work on a proposal for the inscription of Coiba National Park on UNESCO's World Heritage List as a natural site in November 2002. It was during this period that the legal status of Coiba National Park was consolidated and the size and importance of the property increased by the inclusion of the Special Zone of Marine Protection. The nomination was approved during the 29th session of the World Heritage Committee, held in Durban (South Africa) in 2005.

Coiba National Park at the crossroads

The Government of Panama has demonstrated its wholehearted commitment to the protection of Coiba National Park. Efforts are currently under way to develop

Eastern Tropical Pacific Seascape Project

The Marine Programme of the UNESCO World Heritage Centre, Conservation International and a number of local partners are working together on a three-year project for the promotion of long-term management and conservation of five marine protected areas within the Eastern Tropical Pacific – Coiba National Park (Panama), Galápagos Marine Reserve (Ecuador), Malpelo Island (Colombia), Cocos Island and Las Baulas National Park (Costa Rica) – through the World Heritage Convention and other international and national legal instruments and the building of regional collaboration. The project is financed by the United Nations Foundation and the Global Conservation Fund.

The objectives of the project for Coiba are centred on establishing effective management of Coiba National Park, with a new legal foundation and governance system and supported by civil society; promoting conservation and sustainable fishing within the Special Zone of Marine Protection; and linking the conservation and sustainable use of Coiba National Park to the development in adjacent municipalities.

In particular, the project provides support for establishing a management plan for this newly inscribed World Heritage site. The preparation of the plan will be a highly participatory process, closely following the terms of reference approved by the Directive Council for Coiba. The Smithsonian Tropical Research Institute has been invited by the National Direction of Wildlife and Protected Areas to coordinate the preparation of the management plan, with financial support provided by the project. Other activities by partner organizations such as the MarViva Foundation and the National Nature Conservation Association include an analysis of legal procedures necessary for law enforcement in the park, and capacity-building for relevant stakeholders regarding the implications and administration of the laws and regulations that apply there. They will also work with fishing communities and local authorities to establish and implement mechanisms to ensure that the rules and plans for the fisheries are respected. The establishment of a tourism plan for Coiba with support from the World Heritage Sustainable Tourism Programme is envisaged.

an urgently needed management plan that will provide the blueprint for the park's protection and management. The biological value of Coiba National Park, the degree of protection offered by the government, and its inscription on the World Heritage List has attracted the interest of international non-governmental conservation organizations. It is hoped that their response will be commensurate with the value of this extraordinary piece of global heritage. ☉



The Scarlet Macaw. Coiba Island is home to the last healthy population of this species in Panama.

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