

World Heritage Sites

Protected
Areas and
World
Heritage



COIBA NATIONAL PARK & ITS SPECIAL ZONE OF MARINE PROTECTION PANAMA

Coiba Island is one of the last relics of tropical moist forest in Pacific Central America, a site of great beauty and great marine and terrestrial diversity, preserving endemic and endangered species. The coral reefs exemplify successful reef growth under sheltered but very restricted conditions and serve as a refuge and source of species replenishment for other islands, including the Cocos and Galapagos, during and after El Niño disturbances.

COUNTRY

Panama

NAME

Coiba National Park and its Special Zone of Marine Protection

NATURAL WORLD HERITAGE SITE

2005: Inscribed on the World Heritage List under Natural Criteria ix and x.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

The UNESCO World Heritage Committee issued the following statement at the time of inscription:

Justification for Inscription

Criterion (ix): Despite the short time of isolation of the islands of the Gulf of Chiriquí on an evolutionary timeframe, new species are being formed, which is evident from the levels of endemism reported for many groups (mammals, birds, plants), making the property an outstanding natural laboratory for scientific research. Furthermore the Eastern Pacific reefs, such as those within the property, are characterized by complex biological interactions of their inhabitants and provide a key ecological link in the Tropical Eastern Pacific for the transit and survival of numerous pelagic fish as well as marine mammals.

Criterion (x): The forests of Coiba Island possess a high variety of endemic birds, mammals and plants. Coiba Island also serves as the last refuge for a number of threatened species that have largely disappeared from the rest of Panama, such as the Crested Eagle and the Scarlet Macaw. Furthermore the marine ecosystems within the property are repositories of extraordinary biodiversity conditioned to the ability of the Gulf of Chiriquí to buffer against temperature extremes associated to El Niño/Southern Oscillation phenomenon. The property includes 760 species of marine fishes, 33 species of sharks and 20 species of cetaceans. The islands within the property are the only group of inshore islands in the tropical eastern Pacific that have significant populations of trans-Pacific fishes, namely, Indo-Pacific species that have established themselves in the eastern Pacific.

IUCN MANAGEMENT CATEGORY

II National Park

BIOGEOGRAPHICAL PROVINCE

Central American (8.16.4)

GEOGRAPHICAL LOCATION

Coiba National Park comprises a group of 38 islands lying at the south end of the Gulf of Chiriquí between 10 to 55 km off the southwest coast of Panama at 7° 10'04" to 7° 53'37"N and 8° 32'37" to 8° 56'15"W.

DATES AND HISTORY OF ESTABLISHMENT

1991: Created by Resolution 021 by the institute now the National Authority for the Environment under Law 41/article 67;

1994: Management plan adopted by Resolution 12-94;

2004: Enlarged and designated a National Park and Special Zone of Marine Protection, by Law 44.

LAND TENURE

State in the provinces of Veraguas and Chiriquí. Administered by the National Authority for the Environment (*Autoridad Nacional del Ambiente, ANAM*).

AREA

430,825 ha. Coiba National Park: 270,125 ha: terrestrial sector, 53,625 ha; marine sector, 216,500 ha. Special Zone of Marine Protection, 160,700 ha.

ALTITUDE

200m below sea level to 416m.

PHYSICAL FEATURES

Coiba Island in the Gulf of Chiriquí is on the edge of the Gulf of Panama and 22.5 km southwest of the mainland. It is by far the largest island (50,314 ha) of an archipelago of nine smaller islands, Jicaron (2,002 ha), Brincaco, Uva, Rancheria, Canal de Afuera, Jicanta, Pajeros and Afuera plus 28 islets. The property also includes Montuosa Island (136 ha), 21.3 nautical miles (nearly 40 km) west, and Hannibal reef, an underwater sea-mount 12.6 n.m. (23.3 km) west. The National Park with the Special Zone of Marine Protection now covers 60% of the continental shelf and 90% of the islands within the Gulf of Chiriquí. Coiba itself has 15 rivers and 240 kilometers of coastline. Geologically, it is part of a system of oceanic islands of volcanic origin formed from subduction of the Pacific plate under the Caribbean plate, subsequently rising during tectonic movement at the end of the Tertiary. Owing to this origin and its proximity to the coast, Coiba combines volcanic rock and limestone that are overlaid by patches of sedimentary soils of secondary origin. Many of the islands within the Park are of similar origin and represent islets of high productivity, particularly for the marine environment. The islands are on the northeastern edge of the proposed Pacific Marine Biological Corridor, which extends from Punto San Lazaro on the Baya California peninsula at 24°45' north to Paita in Peru at 5°00' south. It includes the archipelagoes of Revillagigedo and Galapagos and the islands of Clipperton, Cocos, Coiba, Gorgona and Malpelo off Columbia.

This marine corridor, which is part of the Eastern Tropical Pacific Marine Wilderness, is characterised by strongly contrasting climatic effects caused by the convergence of major warm oceanic currents and cool coastal counter-currents. The dominant currents are the North Equatorial counter-current bringing moderately warm sub-tropical waters from the north via the south-flowing Panama current; and the north-flowing Columbia current reinforced by the Panamanian Cyclonic counter-current bringing cooler low salinity water from the southwest. There is also an equatorial undercurrent that flows along the equator from the west, producing upwellings of cool water rich in nutrients when they hit the underwater base of islands. Montuosa I. and Hannibal reef are oceanic in character but also nutrient-rich and very productive. Though Coiba is less exposed than the oceanic islands, these marine influences affect it, adding to the diversity of habitats and species in the Gulf of Chiriquí. However, the Gulf, being sheltered between December and April by the mainland's Central Cordillera Mountains from the prevailing cold northeasterly winds, the accompanying upwelling cold currents,

and also from the worst effects of the El Niño, the Gulf is a warm and stable environment year-round where there are several coral reefs in good condition.

CLIMATE

The islands lie within the Inter-Tropical Convergence Zone which moves north and south with the sun, due to the heating of the air over the Equator. Trade winds converging from the northeast and southeast push the warm air up, producing heavy rainfall along the fluctuating North Equatorial Front. The average annual rainfall is 3,500mm, but is strongly seasonal, falling mainly during the rainy season between May and December. During these months, the prevailing northeasterly trade winds are blocked by the low pressure air mass of the convergence zone. In the dry months between January and April this lifts, allowing the northeasterlies to blow, with consequent upwelling of cold ocean water which can drop below 20°C. However, the waters of the Gulf are just beyond the reach of this effect although they are subject to very low tides that can be destructive. The high rainfall may also result in less salty seawater and seasonally washes sediment from the land that enriches the water. Every 3 to 7 years the El Niño Southern Oscillation (ENSO) occurs when the sea temperature warms to over 30° over long periods, causing die-back of coral. The average daily temperature on land is a fairly constant 26°C.

VEGETATION

Coiba Island preserves approximately 80% of its original tropical moist forest cover owing to its previous isolation, and is one of the most extensive areas of insular character on the Central American Pacific coast. Two principal life zones on the island are defined by Holdridge: very humid tropical forest and the same with a transition to pluvial forest. There are around 2000 species of vascular plants. 858 species have been identified, with one genus endemic to Coiba (*Desmotes*) and three endemic species *Desmotes incomparabilis*, *Fleishmania coibensis* and *Psychotria fosteri*. In addition there are four coastal vegetation types: shoreline with coconut *Cocos nucifera* and wild almond *Terminalia catappa*, Mora mangrove *Mora oleifera* forest transitional between mangroves and the coast, mangrove swamp with *Rhizophora mangle* dominating four other species, and brackish-water *Prioria copaifera (cativa)* forest. 130 lichen species and 148 fungi have been recorded. There is also some successional vegetation and secondary forest on old penal colony pastures. The island is still botanically unexplored and further study would certainly reveal more species.

FAUNA

The Gulf of Panama is one of the most productive areas of the tropical eastern Pacific. It has a high degree of complex ecological and oceanographic interactions, due mainly to the convergence of major currents which affect the movements and distribution of many species and disperse marine larvae of many kinds (Conservation International, 2001). The diverse marine habitats include coral reefs, reefless rock bottoms, sandy bottoms and mangrove inter-tidal flats. Panama's Pacific shore has 91% of the eastern Pacific reef-building corals, and the comparatively stable marine environment of the sheltered Gulf of Chiriquí contains many of these. With its less extreme temperature fluctuations, fewer corals die. The Gulf therefore serves as a refuge and a source of replenishment after die-backs in parts of the region as far away as the Galapagos, by larvae swept along in the strong southwesterly Panama current.

There are 1,703 ha of coral reef and coral communities in the National Park. The diversity of species is relatively low compared with the regions richest in coral, except for soft corals, perhaps due to the influence of El Niño. High coral diversity is observed in coral communities rather than in reefs, but the biological interactions between species are complex. Corals which have developed in the calm warm waters of the Gulf of Chiriquí and Coiba Island are relatively healthy, and Ensenada Maria reef at 160 ha is the second largest in the eastern Pacific. The National Park has extensive prairies of rodolites, similar to those in the Sea of Cortés. Twenty-four species of hard corals have been identified in the Gulf of Chiriquí, of which 4 are exclusively from Panama and 2 are endemic, along with 14 species of sponges, of which 3 are new to science, and 34 species of soft corals, of which 32 are new to science.

and 18 exclusive to Panama. Other dispersed larvae abundant in the Gulf are those of echinoderms and molluscs 453 species of which are reported.

The productiveness of the local waters is also a key link in the movements of fish. Of these, 760 species and 375 genera (85% of eastern Pacific genera) are known from the Gulf. 33 species of shark exist locally including whale shark *Rhincodon typus* (VU), tiger *Galeocerda cuvier*, bull *Carcharhinus leucas*, blacktip *C. limbatus*, silky *C. falciformis*, white-tip reef *Trianodon obesus*, scalloped hammerhead *Sphyrna lewini* (EN) and nurse shark *Ginglymostoma cirratum*. 20 species of cetaceans have been recorded, among them humpbacked whale *Megaptera novaeangliae* sperm whale *Physeter macrocephalus* (VU), Bryde's whale *Balaenoptera edeni*, killer whale *Orcinus orca*, short-finned pilot whale *Globicephala macrorhynchus* and false killer whale *Pseudorca crassidens*; bottlenose dolphin *Tursiops truncatus*, spotted dolphin *Stenella attenuata*, Central American spinner dolphin *S. longirostris centramericana* and common dolphin *Delphinus delphis*. There are also four turtle species: leatherback *Dermochelys coriacea* (CR), hawksbill *Eretmochelys imbricata* (CR), olive ridley *Lepidochelys olivacea* (VU) and loggerhead *Caretta caretta* (EN). The islands of the Gulf have the only waters in the eastern Pacific with populations of Indo-Pacific species.

Despite its proximity to the coast, Coiba has been isolated long enough to allow speciation to occur. Few studies have been made but Coiba is known to have 2 endemic mammals, 20 endemic birds and one endemic subspecies of snake. The mammalian fauna is dominated by bats, 30 species having been identified so far, many of them endemic. The Coiban agouti *Dasyprocta coibae* (VU) is endemic, as are the Coiba Island howler monkey *Alouatta palliata coibensis*, black-eared opossum *Didelphis marsupialis* and a white-tailed deer *Odocoileus virginianus rothschildi*. There is a rich freshwater invertebrate life and 53 insect species new to science have been discovered on the islands. 147 species of birds have been recorded, 96 resident on Coiba itself. These include the brown-backed dove *Leptotila battyi* (VU) and 20 endemic subspecies, one being the Coiba rusty-backed spinetail *Cranioleuca vulpina dissita*. The island is also a refuge for birds which have almost disappeared from mainland Panama such as the crested eagle *Morphnus guianensis* and the scarlet macaw *Ara macao*.

CONSERVATION VALUE

Coiba Island is one of the last relics of tropical moist forest in Pacific Central America, a site of great beauty and great marine and terrestrial diversity, preserving endemic and endangered species. The coral reefs are healthy examples of successful reef growth under very restrictive conditions and serve as a refuge and source of species replenishment for other islands, including the Cocos and Galapagos, during and after El Niño warming events. The Park lies within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity and in one of the world's Endemic Bird Areas.

CULTURAL HERITAGE

Archaeological findings, as yet unassessed, prove that the island was settled until the Spanish conquest in the 15th century. From 1919 there has been a penal colony on the east coast for up to 3,000 convicts and guards with 22 convict camps in the south and west, now mostly abandoned.

LOCAL HUMAN POPULATION

There are now only some 80 prisoners in the penal colony, with 30-40 police and the prison is due to leave the island by 2008. About 20% of the original vegetation has been altered by the occupation and its accompanying livestock, now over 2,000 cattle, 70 horses, 18 pigs, 200 dogs and 15 buffaloes. These could threaten the native flora and fauna if let loose. There is also a risk of invasion of the Park by peasants once the penal colony is fully removed and by illegal logging as the Park possesses valuable hardwoods. There is widespread long line and gill net fishing by commercial shrimp boats around the nominated site and, illegally, often within its boundaries which are not known or respected.

VISITORS AND VISITOR FACILITIES

In 2004 there were 3,500 visitors to the Park: 2,450 (70%) foreign tourists and 1,050 (30%) Panamanian tourists, mainly to the Biological Station. The Panamanian Tourism Institute has chosen the Gulf of Chiriquí as one of its national priorities for tourism and the number of visitors is expected to grow rapidly. A tourism development plan exists for the area. Activities include use of the beaches and coastal areas as well as underwater diving which is excellent around the sea-mounts. There are six air-conditioned two-room cabins, three hiking trails and a boat dock. Talks to school groups and the public are also part of the Park's present mission.

SCIENTIFIC RESEARCH AND FACILITIES

The islands of the Gulf of Chiriquí have been isolated long enough for endemic species of flora and fauna to develop, making them a natural laboratory for the study of corals which have grown under unusually restrictive conditions. The Park could play an important role in conservation along the proposed Cocos Islands-Galapagos Marine Biological Corridor. There is a well-established Biological Station with accommodation for both tourists and staff, and the natural resources of the property, including the Special Zone of Marine Protection, have recently been assessed. The Smithsonian Tropical Research Institute has surveyed plants, subtidal and marine invertebrates, and with Duke University, surveyed fishermen of 14 communities to develop a strategy for fish conservation and for limiting illegal fishing. The Spanish Agency for International Cooperation has worked with local communities researching into artisanal fishing, sustainable farming, and their commercial marketing. Ibañez in 2001 established a baseline list for plants seen at seven field sites and in 1997 Ibañez *et al.* described the fauna and avifauna of the Park. Two university student research projects have also begun.

MANAGEMENT

A Management Plan was adopted in 1996 in which conservation takes priority over ecotourism which is encouraged only within defined zones. A revision to this plan, to cover sustainable use of the resources of the Special Zone of Marine Protection was completed in 2009. Agriculture, tree-felling, mining, oil prospecting and the development of infrastructure except for Park use, are prohibited in the National Park. In the Special Zone, regulated traditional fishing is permitted but commercial fishing and the use of long-line and nylon gill-nets are to be prohibited in 2005. Several conservation programs have been started. ANAM with the Spanish Agency for International Cooperation (AECI) set up the Integrated Project of Coiba Island and its surroundings to promote sustainable activities in nearby communities, train guards, buy equipment, and improve infrastructure and accommodation for both tourists and staff at the Biological Station. ANAM with ANCON, the country's leading NGO, has taken on guards and acquired equipment. ANAM with NATURA, another Panamanian NGO, have made marine and land patrols, cleared trails, maintained infrastructure and guided tours. ANCON has also helped with operations, promotion, the coordination of concerned organizations and funding. The Park's marine boundaries are delimited by buoys. Six marine patrols and four land patrols are run each month to curb illegal fishing and monitor the wildlife. Scientific research such as the STRI fishing survey and the Ibañez baseline species surveys are used to guide management decisions.

In 2002 at Johannesburg, under UNEP and IUCN auspices, an initiative named the Marine Conservation and Sustainable Development Corridor: Galapagos-Cocos-Coiba-Gorgona-Malpelo Islands was launched. This marine corridor between the Galapagos and the Gulf of Panama was approved in order to promote both scientific conservation and educational ecotourism in the region. This would sanction the regulation of squatters, new farms, fishing and gun-owning, and outlaw hunting, logging, mining and the introduction of alien species.

MANAGEMENT CONSTRAINTS

Current facilities, funding and staff are insufficient to control the expected pressures from fishing, tourism and a possible influx of peasants and logging companies. Potential threats are of invasion by people seeking land when the penal colony is disbanded and the colony's cattle is released, of logging of its valuable hardwoods now uncommon on the mainland, and the capture of macaws for sale. Dive

operators have reported a marked decrease in the number of sharks, billfish, rays, groupers and snappers as commercial fishing has increased over the last five years. The long line and nylon gill nets widely employed by the fishermen create unintended by-catch of sea turtles. Other fishing includes the extraction of conch and lobsters. Although many fishermen are supportive of the Park, they fish illegally because they do not know where the marine boundaries are and have generally showed a complete lack of respect of the Park's boundaries. In addition, the area as delineated at present may not be large enough to sustain the ecosystems to be protected. Natural disturbances such as ENSO and low tidal exposures occasionally threaten the peaceful condition of the Gulf. In 2009 IUCN requested more intensive management and monitoring of the commercial fishery, removal of cattle which were damaging the property, and adoption of a policy towards development which was spreading along the mainland shore opposite the island (UNESCO/WHC, 2009).

COMPARISON WITH SIMILAR SITES

Within the eastern tropical Pacific region the wildlife of Coiba is amongst the richest in an area with the highest rate of endemism in the world. It is under less threat than that of the Galapagos and Cocos islands. Its combination of a variety of warm and semi-oceanic marine habitats rich in coral and large fish with tropical forest is far larger and richer than that of Cocos Island. There are relatively few reefs in the eastern Pacific and though the coral reefs of the Gulf have fewer species, the diversity of its coral communities is high. They are well protected and in good condition even after the recent El Niño bleaching episodes which killed most of the reef corals of the Galapagos and Cocos. Reefs in the central and west Pacific (Tubbataha and East Rennell Island World Heritage sites for example) are even more vulnerable to natural predation and to damage, pollution, overfishing and destructive fishing methods. The islands' sheltered range of marine substrates from continental to oceanic is the basis for a wide diversity of fish and marine invertebrates; and their position in the flux of regional currents make the islands important in the dispersal of marine organisms and larval fish. Numbers of bird and fish species are high, and of plant species, very high, by comparison with the other sites; and it is not notably lower in species of mammals, corals and endemic species. As for the related World Heritage sites of Darien and Los Katios National Parks, Talamanca Range-La Amistad Reserves and Guanacaste Conservation Area, these are too different in type for their forests to be comparable. And Guanacaste's marine life is enriched by up-welling, not the lack of it as in the Gulf of Chiriqui.

STAFF

Ten ANAM officials (one Administrator and nine guards, mostly local people) are reinforced by ten National Police.

BUDGET

Funding for the Park has recently increased. In 2004 it came from several institutions: MarViva - US\$920,000, AECI - \$148,475, ANCON - \$87,000, STRI - \$80,100 and ANAM - \$67,000, totalling US\$1,303,375.

LOCAL ADDRESS

Administrator General, Autoridad Nacional del Ambiente (ANAM), Apdo.C, Zona 0843, Balboa, Ancon, Panama.

REFERENCES

The principal source for the above information was the original nomination for World Heritage status.

Aguilar, A., Forcada, J., Gazo, M. & Badosa, E. (1997). Los cetáceos del Parque Nacional Coiba (Panamá). In Castroviejo, S. (ed). *Flora y fauna del Parque Nacional de Coiba (Panamá)*. Spanish Agency for International Cooperation, Madrid, Spain. pp. 75- 106.

Cardiel, J., Castroviejo, S., Velayos, M. (1997). Parque Nacional de Coiba: El medio físico. In Castroviejo, S., (ed.). *Flora y fauna del Parque Nacional de Coiba (Panamá)*. pp. 11-31. Spanish Agency for International Cooperation Internacional, Madrid, Spain.

Castroviejo, S. & Ibáñez. A. (2001). Origen y análisis de la diversidad biológica de la isla de Coiba. *Quercus*, 188: 29-32.

Conservation International *et al*, (1995). *A Regional Analysis of Geographic Priorities for Biodiversity Conservation in Latin America and the Caribbean*. C.I. Biodiversity Support Programme, UNF/ NOA/ IUCN , Washington, DC;

Cortés, J. (1997). Biology and geology of eastern Pacific coral reefs. *8th International Coral Reef Symposium*, Smithsonian Tropical Research Institute, Balboa, Republic of Panama. pp. 57-64.

Elder, D. & Pernetta, J. (eds.) (1991). *Oceans*. London, UK.

GBRMPA/WB/IUCN (1995). *A Global Representative System of Marine Protected Areas*. Vol. IV. Washington DC, USA.

Ibáñez, A. (2001). *Estudio de la Composición Forística y Ecología del Bosque Tropical de la Isla de Coiba (Panamá)*. Dissertation, Facultad de Biología, Department of Botany, University of Salamanca, Spain.

IUCN (2009). *The IUCN Red List of Threatened Species*. Gland, Switzerland & Cambridge, U.K.

----- (2005). *World Heritage Nomination Technical Evaluation Coiba National Park (Panama)*. IUCN, Gland, Switzerland

National Environmental Authority (2003). *Proposal for the Inscription of the Coiba National Park in the List of World Heritage Sites of UNESCO*. Panama City. [Contains a bibliography of 22 references.].

----- (2005). *Proposal for the Inscription of the Coiba National Park in the List of World Heritage Sites of UNESCO*. Panama City. [Contains a bibliography of 77 references, many in Spanish.].

UNEP-WCMC (2001). *World Atlas of Coral Reefs*. Cambridge, UK.

UNESCO / WHC (2002). *Proceedings of the World Heritage Marine Workshop*. WH Papers 4, Paris.

----- (2009). *Report on the 33^d Session of the World Heritage Committee, 2009*. Paris.

DATE

July 2005. Updated 8-2009, 5-2011, January 2012.