

## World Heritage Sites

Protected  
Areas and  
World  
Heritage



## DISCOVERY COAST ATLANTIC FOREST RESERVES BRAZIL

*The rainforests of Brazil's Atlantic coast are the most biodiverse in the world. The Discovery Coast Reserves in the states of Bahia and Espírito Santo comprise eight protected areas covering 112,000 hectares of the forest and its associated coastal scrub with a very distinct range of species of high endemism and an evolutionary pattern of great scientific interest. Only a few scattered remnants of this once vast forest remain in an archipelago of sites, an irreplaceable part of the world's heritage it is essential to conserve.*

### COUNTRY

Brazil

### NAME

Discovery Coast Atlantic Forest Reserves

### NATURAL WORLD HERITAGE SERIAL SITE

1999: 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):** The Brazilian Discovery Coast includes a number of areas containing the best and largest remaining examples of Atlantic forest in the northeast region of Brazil and contains high numbers of rare and endemic species.

**Criterion (x):** The site displays the biological richness and evolutionary history of the few remaining areas of Atlantic forest of northeast Brazil. The site reveals a pattern of evolution of great interest to science and importance for conservation. The fact that only these few scattered remnants of a once vast forest remain, make them an irreplaceable part of the world's forest heritage.

### INTERNATIONAL DESIGNATION

1993: *Mata Atlântica* Biosphere Reserve designated under the UNESCO Man & Biosphere Programme;

1999: Extended (29,473,484 ha).

### IUCN MANAGEMENT CATEGORY

Descobrimento National Park	II National Park
Monte Pascoal National Park	II National Park
Pau-Brasil National Park	II National Park
Una Biological Reserve	Ia Strict Nature Reserve
Sooretama Biological Reserve	Ia Ecological Station
Pau-Brasil CEPLAC Experimental Station	Ia Ecological Station
Vale do Rio Doce Natural Reserve (Linhares Forest Reserve)	Ia Private Reserve
Veracel Station Private Natural Heritage Reserve	Ia Private Reserve

### BIOGEOGRAPHICAL PROVINCE

Brazilian Rain Forest (8.8.2)

### GEOGRAPHICAL LOCATION

These eight reserves in southern Bahia and northern Espírito Santo states are scattered along 500 km parallel to the eastern Brazilian coast between the towns of Ilhéus and Vitória in two main groups:

six sites in a 225 km-long buffer zone in the north separated by 150 km from a southern group of two sites within a 125 km-long buffer zone. The average width of the buffer zones is 60 km plus a strip 6 nautical miles (11km) wide offshore. The overall site co-ordinates are 15°10 to 17°15 S by 39°30 to 39°00 W (north) and 18°53 to 19°18 S by 39°45 to 40°19 W (south).

## DATES AND HISTORY OF ESTABLISHMENT

- 1943: Sooretama Biological Reserve established by Federal Decree 87.588;  
 1961: Monte Pascoal National Park established by Federal Decree 242;  
 1973: Vale do Rio Doce Natural Reserve established, formerly the Linhares Forest Reserve;  
 1983: Una Biological Reserve designated by Federal Decree 85.463/1980;  
 1993: Pau-Brasil CEPLAC Experimental Station designated by Decree 750;  
 1998: Pau-Brasil National Park designated by Federal Decree 240;  
 1998: Veracel (formerly VeraCruz) Station, a private Natural Heritage Reserve, received legal protection under Resolution 240 of the National Environmental Council (CONAMA) which also interdicted logging the forest;  
 1999: Descobrimento National Park established.

## LAND TENURE

State 63% and private 27%. The National Parks and state Reserves are administered by the Brazilian Institute for the Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renovaveis*, IBAMA) with the National Commission for the Environment (*Conselho Nacional do Meio Ambiente*, CONAMA). Monte Pascoal is managed jointly by IBAMA and the Pataxó Indians. The properties privately protected for conservation and research are the Pau-Brasil station, managed by the cocoa producers' *Comissao Executiva do Plano da Lavoura Cacaueira* (CEPLAC) under the Ministry of Environment, the Veracel Natural Heritage Reserve, run by Veracel Celulose s.a. and the Vale do Rio Doce Reserve run by the Vale do Rio Doce mining company. The buffer zones are agricultural.

## AREA

111,927.5 ha. The sites are surrounded by two large buffer zones of approximately 16,000 sq.km (north) and 9,000 sq.km (south), including 3,900 sq.km of marine buffer zone.

Site	Area	Coordinates
Sooretama Biological Reserve	24,000 ha	18°53' to 19°05'S 39°55' to 40°15'W
Vale do Rio Doce Natural Reserve (formerly Linhares Forest Reserve)	22,777 ha	19°06' to 19°18'S 39°45' to 40°19'W
Descobrimento National Park	21,129 ha	16°55 to 17°15'S 39°25' to 40°10'W
Monte Pascoal National Park	13,872.5 ha*	16°45' to 16°55'S 39°08' to 39°30'W
Pau-Brasil National Park	11,538 ha	16°25' to 16°35'S 39°10' to 39°22'W
Una Biological Reserve	11,400 ha	15°10' to 15°18'S 39°00' to 39°15'W
Veracel Station Private Natural Heritage Reserve	6,069 ha	16°05 to 16°15'S 39°05' to 39°10'W
Pau-Brasil CEPLAC Experimental Station	1,142 ha	adjoining Pau NP
<b>TOTAL</b>	<b>111,927.5 ha</b>	

\*26,606 ha (WDPA, 2009), 22,500 ha (Management Plan, 1995). The above excludes the Pataxó Indian reserve.

## ALTITUDE

Sea floor to 536m (Monte Pascoal).

## PHYSICAL FEATURES

The reserves of the northern *Mata Atlantica* cover three distinct geomorphologic units: hills, plateau and coastal plain, each of a different geologic phase and character. The hills are the oldest and highest formations, of Pre-Cambrian metamorphic and magmatic gneiss outcrops forming round-shaped hills. These are generally furthest from the sea and are concentrated in the south of Bahia. The most famous is the cone of Monte Pascoal. The plateaus and tabular hills (*sierras*) 100m high are of Tertiary limestones, interrupted by river valleys and which, on the edge towards the sea, form white and red cliffs 40m high. The plains are formed of Quaternary mobile sediments and sands from river and marine deposits which form irregular coastal sandy plains and paleo-dunes and have accumulated in river valleys. Una, Monte Pascoal and Descobrimento Parks include areas of these. Most of the valleys are wide and there are seasonally flooded wetlands after the intense autumn rains. The main rivers are the Pardo, Jequitinhonha, Buranhaém, Jucuruçú and, in the south, the San Mateus and Rio Doce. Marine sediments move up the riverbeds a long way from the coast. River sediments upstream of these intrusions are of silt, gravel and sand. Some streams run black, being saturated with humic acids; at the river mouths and in old lagoons there are deposits of silt and clay rich in organic matter. Soils are yellow-reddish podzols and latosols on the plateau, sandy on the coastal plain.

## CLIMATE

The Discovery Coast has a humid tropical climate influenced by the moist warm anti-cyclonic tradewinds of the south Atlantic, and by periodic intrusions of cold winds from the Patagonian anti-cyclone that condense tropical humidity in frontal rains. The average annual precipitation is 1,500-1,750mm evenly distributed with slightly less rainfall in August-September and January-February. Dry seasons are more marked inland away from the ocean. The relative humidity is constant, at about 80%. Dominant winds come from the east, being strongest in spring from September to November. In winter, winds are weaker and more variable. The average annual temperature is 22-24°C.

## VEGETATION

The isolation of the Atlantic forest from Amazonia took place in the late Tertiary which explains why the region has many plant species in common with the Amazon, but its partial isolation since the Ice Age with its wealth of climatic and ecological conditions due to the wide geographical and altitudinal ranges also explains the exceptionally high endemism - 70% of the tree species, 39% of the mammals and 85% of the primates. The forests are considered to be among the world's richest forests for tree species at almost 300 species per hectare (476 in southern Bahia). It is claimed that there are over 55,000 species of plants (22% of the total found on Earth), of which some 18,000 are endemic (IUCN, 1999). It is also the forest ecosystem with the greatest number of endangered and threatened species on earth (IUCN, 1999; Mori, 1989; Prance, 1987) and has recently been given the highest priority for conservation.

The sites of the Discovery Coast form an important part of the Atlantic Forest Central Corridor, a 12.2 million hectare area central to the preservation of Earth's biodiversity. Its richness is explained by its mixture of regionally endemic, Atlantic Forest and Amazon species. Of the original 1,350,000 square kilometres of Atlantic forest which stretched 3,600 km along the coastal margin of Brazil, less than 8% still survives. In the northern region, only 0.4% of the original Bahian Atlantic forest remained intact in 1998, though an additional 3.1% existed in fragments smaller than 400 ha, scattered amongst sugarcane fields. Partially isolated since the Ice Age, the complex forest ecosystem evolved exceptionally high endemism, in three separate centres, north, central and south, each containing distinct species and genera and having undergone differing deforestation regimes. The south Bahia-north Espírito Santo region is one of the three centres: more than 50% of its trees are endemic and more than 75% of its non-arborescent families (Mori & Prance, 1981; Thomas *et al.*, 1998). Several species find their southern limit of distribution at the Rio Doce in the south or their northern limit on the Jequitinhonha near the Una Reserve. The region contains impressive gradients and levels of biodiversity across a variety of landscapes and communities, but being the near the fertile and populous coast, it is also one of the most endangered though it has at last begun to receive the highest priority for conservation.

The sites are among the world's richest forests in numbers of tree species per hectare. In the 1990s a study by the CEPLAC cocoa growers association with the New York Botanic Garden found 458 different tree species in one hectare of Bahia forest, many new to science (NYBG, 1993). A later

survey identified 476 species per hectare in northern Espírito Santo (Thomaz & Monteiro, 1997). In the lowlands up to 300m elevation, the dominant vegetation is this extremely diverse primary tropical moist broadleaf forest with tall 20-30m trees with 35m emergents. The most prevalent woody plant family is the Myrtaceae. Undergrowth vegetation is limited by lack of light but includes *jussara* palm *Euterpe edulis* and several species of orchids and lichens. In dryer sectors, there is semi-deciduous subtropical forest, the *piçaba* palm *Attalea funifera* is common and lianas are more abundant. Along river valleys the gallery forests have *jatoba* *Hymenaea rubriflora*, *jussara* palm and *araçá* *Psidium* spp., as well as species typical of the surrounding moist forests and shrubland (*restinga*). Orchids, heliconias and bromeliads are widespread in the forest. The dominant vegetation of the two large inland reserves is tall *terra-firma* rainforest, shorter *mussununga* on seasonally flooded sandy soils and *varzea* forest on wet soils and savannas. Some 637 tree species are recorded and 372 species of shrubs, lianas and herbaceous plants. Liana growth is luxuriant (Luna-Peixoto *et al.*, 1995).

Several areas are covered with secondary forests in varying stages of regeneration. They are rich in epiphytes and parasitic plants and carry a dense shrub layer. On sandy nutrient-poor coastal soils, there is xerophytic *restinga* shrub vegetation, a distinct ecotype, isolated, moderately endemic and threatened by urban expansion. It is a mosaic of pioneer species which runs from humid prairies and bush to low 5-15m forest containing lianas, orchids and epiphytes. Other vegetation types in the sites include the seasonally inundated vegetation or *mussunungas*, which are endemic to southern Bahia and northern Espírito Santo; swamps; mangroves; and pastures. Bare sands are colonised by psammophil vegetation. Patches of the original forest remain on cocoa farms which have preserved it as shade trees, though this area will be lost if the cocoa market fails. And the forest is still being eliminated for commercial *Eucalyptus* plantations outside the protected areas.

The Discovery Coast sites comprise over 77% of those protected central forests, which are still intact, or nearly intact, and are effectively managed. Una Biological Reserve is covered by dense lowland forest with high *restinga* coastal forest and at least 800 plant species including a tree *Peltogyne chrysopsis* (Caesalpinaceae) only discovered in 1994. The Veracel Private Natural Heritage and CEPLAC Reserves are contiguous. They lie on a limestone plateau cut by deep valleys, 60% covered by tall pristine moist lowland forest in 3-4 levels with 210 recorded tree species, many being valuable timber trees such as *Manilkara longifolia* (CR), and 25% covered by riparian forest with palms, orchids, heliconias and bromeliads; there are also patches of *mussununga* scrub. The nearby Pau-Brasil National Park exemplifies local endemism: the *pau-brasil* or Brazilnut tree *Caesalpinia echinata* (EN) is almost restricted to the park and research station which contain probably the largest remaining number of such trees. Monte Pascoal National Park contains dense well preserved Atlantic montane rainforest 30m high, though it is lower above 300m, with species like the valuable Brazilian rosewood *Dalbergia nigra* (VU) and rare orchids. There are also semi-deciduous forest, secondary forest and prairies, coastal *restinga* forest, swamps, mangroves, beaches and reefs. Descobrimento National Park is a large nearby rainforest on both plateau and coastal plain. Sooretama Biological Reserve and the contiguous privately owned Vale do Rio Doce Natural Reserve on a plateau well to the south are two other large pristine rainforests with many rare trees.

## FAUNA

The Discovery Coast sites are notable for their high levels of endemism. For mammals endemism is 39%, for primates 67% and for amphibians up to 92% (CEPF, 2001). The forest's ecological heterogeneity makes precise definition of habitats and local fauna difficult though except for ecosystems such as wetlands, many organisms are confined to limited niches and ecotones. Una Biological Reserve was originally established to preserve the endemic golden-headed lion tamarin *Leontopithecus chrysomelas* (EN); the yellow-breasted capuchin monkey *Cebus xanthosternos* (CR) is also found there. The well-studied Veracel Private Natural Heritage and CEPLAC Reserves have recorded 440 vertebrates, 37 being endangered and 54 endemic and 46 mammals (7 endangered and 4 endemic) including the tufted-ear marmoset *Callithrix geoffroyi*, southern Bahian masked titi *Callicebus melanochir* (VU) and lowland tapir *Tapirus terrestris* (VU). It has recorded 207 species of birds (11 endangered and 21 endemic) among them the Alogoas antwren *Myrmotherula snowi* (CR), 39 amphibians (13 endangered), 60 reptiles (22 endangered), including the endemic yellow-footed tortoise *Chelonoidis denticulata* (VU), 2 fish and the butterfly *Heraclides himeros baia*. The harpy eagle *Harpia harpyja* has been seen over nearby Pau-Brasil National Park. A rich rodent fauna has been recorded from the region and bats from four different families have been captured. Freshwater fish endemism is high.

Monte Pascoal National Park has records of maned three-toed sloth *Bradypus torquatus* (EN), bristle-spined porcupine *Chaetomys subspinosus*, giant otter *Ptenoura brasiliensis* (EN), jaguar *Panthera onca*, puma *Felis concolor*, prairie deer *Ozotoceros bezoarticus*. Among the birds are king vulture *Sarcoramphus papa*, solitary tinamou *Tinamus solitarius* and Atlantic royal flycatcher *Onychorhynchus swainsoni* (VU). 152 bird species are recorded from Descobrimento National Park nearby. The Sooretama Biological Reserve and Vale do Rio Doce Natural Reserve 200 km south have brown howler monkey *Alouetta fusca*, crested capuchin *Cebus robustus* (EN), tufted capuchin *C. paella*, black-tufted marmoset *Callithrix pincillata*, whiteheaded marmoset *C. leucocephala*, margay *Leopardus weidii*, jaguarondi *F. yagouaroundi*, whitelipped peccary *Tayassu pecari* and red brocket deer *Mazama americana*. The birds include crested eagle *Morphnus guianensis*, red-billed curassow *Crax blumenbachii* (EN), vinaceous amazon *Amazon vinacea* (EN), red-browed parrot *A. rhodocorytha* (EN), hook-billed hermit *Glaucis dohrnii* (EN), striated soft-tail *Thripophaga macroura* (VU), blue-throated parakeet *Pyrrhura cruentata* (VU), black-hooded berry-eater *Carpornis melanocephalus* (VU), plumbeous antvireo *Dysithamnus plumbeus* (VU), band-tailed antwren *Myrmotherula urosticta* (VU), white-winged cotinga *Xipholena atropurpurea* (EN) and banded cotinga *Cotinga maculata* (EN).

### CONSERVATION VALUE

The sites include much of the remaining Atlantic forest in Brazil and comprise an outstanding mosaic of terrestrial ecosystems of extremely high biological diversity with many plants and animals of conservation concern. They are in excellent condition despite past selective logging, which the sites are large enough to sustain. They lie within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity, a BirdLife-designated Endemic Bird Area and a UNESCO Biosphere Reserve.

### CULTURAL HERITAGE

Numerous archaeological sites, historic and prehistoric, have been found and an old town of the Tupi culture was recently unearthed. The area was long inhabited by native tribes, the survivors are the present Pataxó people who live in separate territories distributed among the sites. This coast is the site of the first European landfall and contains a series of famous memorials. Monte Pascoal was the first land seen by the Portuguese on Easter Day 1500, and is a major symbol of the nation's past. Porto Seguro was the first settlement and the ruins of Brazil's first church lie at the top of a cliff to its north. Other historic centres nearby are Vale Verde, Arraial d'Ajuda, Trancoso and Santa Cruz Cabrália. The early use by *brasileiros* of the *pau-brasil* tree for dye gave the country its name.

### LOCAL HUMAN POPULATION

The former *Mata Atlântica* forest region is home to approximately 70 percent of Brazil's population; that of south Bahia State alone was estimated to be 600,595 in 1999 and increasing: Porto Seguro had 34,661 inhabitants in 1999; in 2008 it has 120,460) and in 2008 the municipalities of Canavieiros (36,911), Prado (26,082), Santa Cruz Cabrália (26,051), Belmonte (22,336) and Mascote (16,557) all lie within the northern buffer zone. Towns in the southern buffer zone include Linares (130,901), São Mateus (100,655) and Nova Venécia (46,080). In the course of industrialisation many Pataxó have been displaced. Pockets (1998 figures) of the indigenous Pataxó people live in the areas of Coroa Vermelha (1,202), Barra Velha (814 inhabitants), Boca da Mata in the Monte Pascoal Park (349), Mata Medonha (142), Imbiriba (137), Trevo do Parque (91), Aguas Belas (65) and Corumbauzinho (55). The region's main economic activity is cattle ranching which covers more than 94% of the former forest. Other staples are fruit growing, small scale agriculture, tourism and cocoa production which only uses 2.4% of the land unlike states to the north, where it used to cover 40-44%. Timber extraction was interdicted in 1998 by the National Environmental Council (IBAMA) so local industries which depended on timber are now in decline. But commercially profitable cattle ranching and *Eucalyptus* monoculture are increasing across the plateau in its place. Another important activity is artisanal fishing. And in the south, mining of minerals by the huge *Companhia Vale do Rio Doce* is one of Brazil's main industries.

### VISITORS AND VISITOR FACILITIES

Since forest conservation is the paramount aim of the reserves, visitation to most of the sites is restricted to certain areas or trails, as at Una, Sooretama and the research stations. These latter however, encourage ecotourism, ecological researchers and environmental education and Veracel Reserve has a canopy observation platform. In 1998 it hosted 300 visitors and 2,000 schoolchildren. The CEPLAC Experimental Station also has an environmental education program but no visitors are encouraged in the neighboring Pau-Brasil National Park. The Vale do Rio Doce Reserve has

excellent ecotourism facilities. The most visited site is Monte Pascoal National Park which between 1992-4 had up to 6,000 visitors a year, a figure which has since increased. It has a visitors' centre, marked trails up the mountain and picnic tables. The coastal side is accessible by boat or on foot from small ports north and south and although the northeastern Boca da Mata reserve is officially closed to tourism the Pataxó do not discourage visitors. One main reason is the prominence and symbolic significance of the mountain itself, also its proximity to Porto Seguro. This town is one of the most visited tourist destinations in the country with an average of 70,000 visitors per year in the 1990s, predominantly Brazilians and Argentinians, attracted to the historic monuments, the 50 km-long cliff-backed almost virgin beaches, offshore coral reef pools, and archaeological sites. It has an Open Museum of Discovery and 312 hotels and hostels. The nearby towns on the Discovery Coast of Prado, Cabralia and Belmonte six have respectively 61, 56 and 6 hotels, and the development of the 'green line' coastal highway through the remaining *restingas* will accelerate the growth. There is an airport at Porto Seguro.

## SCIENTIFIC RESEARCH AND FACILITIES

There are two research stations in the southern Bahia forest: the Pau-Brasil CEPLAC Experimental Station of the *Comissao Executiva do Plano da Lavoura Cacaueira*, which started with research into cocoa production, and the Veracel (previously Vera Cruz) Reserve near Porto Seguro set up by the pulp and paper company Veracel Celulose, for ecological research to use in its own reforestation programs and to educate the public about the flora and fauna of south Bahia, partly to exorcise an earlier negative image. Staff from the National Centre for Genetic Resources works there permanently and the station has released considerable information about its forest. All the protected areas have some facilities to accommodate visiting scientists. The Una and CEPLAC reserves also function as in situ genetic seed banks. CEPLAC and the Vale do Rio Doce Reserve grow seedlings for reforestation on a large scale.

## MANAGEMENT

The Brazilian Institute for the Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renovaveis*, IBAMA) with the National Commission for the Environment (*Conselho Nacional do Meio Ambiente*, CONAMA) are responsible for the country's parks and reserves. The legislation that protects the Atlantic forest includes Federal Decree 750 of 1993 which restricts the use or occupation of the forest and CONAMA's Resolution 240 of 1998 banning the extraction, transport and use of Atlantic forest vegetation. Management plans for all six public reserves have been completed. These promote co-operation with the local industry, aim to restore and improve existing facilities, to increase the number of staff and facilitate the integration of local and federal institutions of research, protection and management. For instance the Pataxó indigenous group and neighbouring population are now actively involved in the management of Monte Pascoal. The Vale do Rio Doce Reserve has a plan prepared by the mining company that owns it. The Veracel Celulose company has established one of a growing number of legally recognized Private Natural Heritage Reserves dedicated by landowners to conservation. Monitoring is generally conducted of deforestation, large and rare species, the state of rare ecosystems and water quality.

During the 1990s NGOs such as the *Consórcio Mata Atlântica*, the *S.O.S. Mata Atlântica* foundation and local NGOs began to influence environmental policy, coordinate conservation authorities nationwide and publicise their work. The establishment of the UNESCO Biosphere Reserve and the legal conviction in the 1990s of the then VeraCruz Cellulose company for deforestation were partly due to these efforts. WWF, the Ford Foundation, Conservation International (CI), and the Nature Conservancy all support a drive to increase the linkage of forest patches, establish participatory management and set up effective biodiversity conservation. The forest's relatively low level of protection and high fragmentation prompted the Critical Ecosystem Partnership Fund (CEPF) to run a five-year Atlantic Forest Hotspot program 2002-2007, to enlist NGOs, community groups, and others in the conservation and restoration of biodiversity corridors (CEPF, 2001).

## MANAGEMENT CONSTRAINTS

Construction of the BR-101 highway through the former forest on the west side of the coastal ranges in the 1970s and the creation of many government-subsidised sawmills, along with the absence of clear responsibilities for forest management or reforestation led during the following 30 years to the rapid and nearly complete destruction of the old forest, now mainly replaced by eucalyptus plantations or cattle ranches. Deforestation has not diminished. Dense moist broadleaf forest is now restricted to protected areas, the land between which is mainly pasture and cropland with scattered wood lots easily

invaded by peasants seeking land. The Federal Government deals with the invaders by settling them on non-productive land which only increases deforestation. Following protests, IBAMA even legitimised swidden farming.

In spite of federal legislation, management of the forest suffers from lack of clear definitions of protection and permitted interventions, overlapping and competing government agencies, competition from commercial interests plus increasing pressures from local people to use protected area resources, all of which make it very difficult to enforce laws. The number of separate sites and resource management institutions also make the integration of the managements unwieldy. The relationship between the traditional people and conservation can also be controversial, and sustainable development strategies using traditional knowledge do little to empower them under commercial pressures. Even in the recent past many Pataxó have lost their lands to well-backed multinational industrial companies such as Veracruz Cellulose, or, in the case of National Parks, to the government. There was conflict in 1999 between the Pataxó Indians and Monte Pascoal National Park (i.e. IBAMA) because the Boca da Mata in return for cash from logging companies allowed their reserve within the Park to be stripped of its valuable timber and the Park is now two-thirds its original size (Dean, 1995). The background however is that the Pataxó had been displaced when the Park was first created in 1961. And the growing urbanisation of the Porto Seguro coastal region along the 'green line' highway threatens to destroy yet more of its distinctive *restinga*, already 90% gone (CEPF, 2001).

## STAFF

In 1999 CEPLAC Pau Brasil Station employed 32 people: the Director, three forest agents, two administrators, three guards and 26 workers. Sooretama had a staff of 23: one Director, one secretary, chief warden, 19 guards and one driver. Pau Brasil National Park had a staff of 8: a Director, five forest agents, one administrator and one radio operator. Una Biological Reserve had a highly qualified staff of seven: one Administrator and six rangers. Monte Pascoal National Park had a staff of six: two administrators, one technician, two forest agents, and one radio operator. The privately staffed Vale do Rio Doce Reserve had a staff of 12, and Veracruz Station, a staff of nine: one Administrator, one technical, three forest agents and four tourist guides.

## BUDGET

The state properties are federally funded. Funding varies between protected areas: the 1998 budget of Monte Pascoal National Park was US\$156,000; of the then Veracruz Station, US\$180,000. Conservation International (CI), the Ford Foundation, USAID, WWF and the World Bank have supported the preservation of Una Biological Reserve. The Rain Forest Pilot Program coordinated by the World Bank and supported by the Brazilian Government, the G7, the EC and the Netherlands, funds the establishment of ecological corridors. In 2001 the Critical Ecosystem Partnership Fund, a joint initiative of CI, GEF, the government of Japan, the MacArthur Foundation and the World Bank allocated US\$8 million for the five-year corridor conservation program (CEPF, 2001).

## LOCAL ADDRESSES

The Director, *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*, Diretoria de Ecossistemas/DIREC, E. de Souza Martins Av. L4, Norte, Brasília, 70.000-000, DF, Brasil

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The Director, Instituto do Patrimônio Histórico e Artístico Nacional (IPHAN), 9a Subregional II, Paço Municipal, Praça do Campo Tourinho s/n, Porto Seguro, 45810-000 Bahia, Brasil.

## REFERENCES

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

Azenha, G. (2005). *Conservation, Sustainable Development, and 'Traditional' People: Pataxo Ethnoecology and Conservation Paradigms in Southern Bahia, Brazil*. Ph.D.dissertation, Cornell University. 549 pp.

Brown, K. & Brown, C. (1992). Habitat Alteration and Species Loss in Brazilian Forests. Pp. 121- 142 in Withmore, T. & Sayer, J. *Tropical Deforestation and Species Extinction*. Chapman & Hall, London.

Companhia Vale do Rio Doce (1998). *Plano Diretor de Uso da Reserva Florestal de Linhares*. 54 pp.

Critical Ecosystem Partnership Fund (CEPF) (2001). *Assessing Five Years of CEPF Investment in the Atlantic Forest Biodiversity Hotspot Brazil*. A Special Report. Conservation International, Arlington, VA, U.S.A.

da Costa, J. (2001a). *Bahia Coastal Forests (NT0103)*. WWF WildWorld report. Gland, Switzerland.

----- (2001b). *Atlantic Coast Restingas (NT0102)*. WWF WildWorld report, Gland, Switzerland.

Dean, W. (1995). *With Broadaxe and Firebrand. The Destruction of the Brazilian Atlantic Forest*. University of California Press, Berkeley, USA. 482 pp.

Diegeus, A., (1995). *The Mata Atlântica Biosphere Reserve: An Overview. South-South Cooperation Programme in Environmentally Sound Socio-Economic Development in the Humid Tropics*. Working Paper No.1. MAB-UNESCO, Paris, France. 36 pp.

Etchevarne, C., Motta, L. & Nascimento, L. (1998). *Mapeamento de Sítios Arqueológicos da Costa do Descobrimento (Municípios de Porto Seguro e Santa Cruz Cabrália)*. Relato, Universidade Federal da Bahia, Museu de Arqueologia e Etnologia. 5 pp.

Lacerda, L., Araujo, D., Cerqueira, R. & Turcq, B. (1984). *Restingas; Origem, Estrutura, Processos*. Universidade Federal Fluminense, Rio de Janeiro.

Hetzel, B., Barreira, C. & Castro, E. (1994). *Corais do Sul da Bahia*. ZMAN Leao Colaboradores, Nova Fronteira, Rio de Janeiro. 189 pp.

IBAMA (1995). *Plano de Ação Emergencial para o Parque Nacional de Monte Pascoal*. Documento Final. A. Pantoja Consultora, Petrobrás, DIREC, Brasília. 37 pp.

IBAMA (1997). *Reserva Biológica de Una (Plano de Manejo)*. 61 pp.

----- (1999a). *Presentation of the Brazilian Discovery Coast as Natural Property to be nominated for inscription to the World Heritage List*. 26 pp.

----- (1999b). *Plano Básico de Implantação do Parque Nacional do Pau Brasil*. 12 pp. + Annexes.

----- (1999c). *Plano Básico de Implantação do Parque Nacional do Descobrimento*. 12 pp. + Annx.

----- (1995). *Plano de Ação Emergencial do Parque Nacional de Monte Pascoal*. Brasília. 98 pp.

Instituto Brasileiro de Desenvolvimento Florestal (IBDF) (1981). *Plano de Manejo Reserva Biológica de Sooretama*. 69 pp.

Hilton-Taylor, C. (compiler) (2008). *IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland, Cambridge, U.K..

IUCN (1998). *World Heritage Nomination - IUCN Technical Evaluation. Brazilian Discovery Coast (Brazil)*. IUCN, Gland, Switzerland.

Ministry of the Interior/ IBAMA (1989). *Unidades de Conservação do Brasil Vol.1: Parques Nacionais e Reservas Biológicas*. Ministério do Interior / Instituto Brasileiro do Meio Ambiente e Recursos Naturais Renováveis (IBAMA), Brasília. 182 pp.

Mori, S., Boom, B. & Prance, G. (1981). Distribution pattern and conservation of eastern Brazilian coastal forest tree species. *Brittonia* 33 (2):233-245.

Mori, S. & Boom, B. (1981). *Botanical Survey of the Moist Forests of Eastern Brazil*. New York Botanic Garden, New York, U.S.A.

Mori, S., Carvalho, A. & Santos, T. (1983). Southern Bahian moist forest. *Bot. Rev.* 49:155-232.

Mori, S. (1989). Eastern extra-Amazonian Brazil pp. 427-454. in Campbell, D. & Hammonds, D. (eds.). *Floristic Inventory of Tropical Countries: The Status of Plant Systematics, Collections and Vegetation, plus Recommendations for the Future*. New York Botanic Garden.

New York Botanical Gardens (NYBG) (1993). New in the botanical book of records: highest tree diversity in the world. *Field Notes from the New York Botanical Gardens*, Vol. 2 No.1.

Por, F.(1992). *Sooretama, the Atlantic Rain Forest of Brazil*. SPB Academic Publishing. The Hague, The Netherlands.130 pp.

Prance, G. (1987). Biogeography of Tropical Plants pp 46-65 in *Biogeography and Quaternary History in Tropical America*. Clarendon Press, Oxford.

Sips, P. (n.d.).The Atlantic forest of south Bahia, Brazil: A hotspot within a hotspot. *European Tropical Forest Research Network 29*.

Thomas, W.,Carvalho, A., Amorim, A., Garison, J. & Arbeláez, A.(1998). Plant endemism in two forests in southern Bahia, Brazil. *Biodiversity and Conservation 7*: 311-322.

Thomaz, L. & Monteiro, R. (1997). Composição florística da Mata Atlântica de encosta da Estação Biológica de Santa Lúcia, município de Santa Teresa - ES. *Boletim do Museu de Biologia Mello Leitao 7*:3-48.

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