

## World Heritage Sites

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### PUERTO PRINCESA SUBTERRANEAN RIVER NATIONAL PARK PHILIPPINES

*This Park covers the complete ecosystem of an underground river which runs beneath of limestone karst mountains directly into the sea, its lower reach being tidal. The area has one of the richest forest floras in Asia and is highly biodiverse, much of its flora and fauna being endemic or related to those of Borneo.*

**COUNTRY** Philippines

**NAME** Puerto Princesa Subterranean River National Park

#### NATURAL WORLD HERITAGE SITE

1999: Inscribed on the World Heritage List under Natural Criteria vii and x.

#### IUCN MANAGEMENT CATEGORY

II National Park

#### INTERNATIONAL DESIGNATION

1990: Palawan recognised as a Biosphere Reserve under the UNESCO Man & Biosphere Programme (1,150,800 ha: includes the whole island).

#### BIOGEOGRAPHICAL LOCATION

Philippines (4.26.13)

#### GEOGRAPHICAL LOCATION

The site is on the north coast of Palawan Island in the far southwest of the Philippine archipelago, in the Saint Paul Mountain Range, 81 km northwest of the city of Puerto Princesa. The Park is bounded on the north by St Paul Bay and by the Babuyan River to the east. It is centred on 10°10'N by 118°55'E.

#### DATES AND HISTORY OF ESTABLISHMENT

- 1971: St. Paul Subterranean River National Park established under Proclamation 835 under the Philippine Department of Environment and Natural Resources;
- 1989: Chosen as one of the protected areas for the Debt-for-Nature Swap Program;
- 1990: Recognised as a core part of the Palawan Island Biosphere Reserve, and of the Ecologically Critical Area Network, a core element of the Strategic Environmental Plan for Palawan Province;
- 1992: The name Puerto-Princesa Subterranean River National Park and the site boundaries established by Presidential Proclamation 212 under the Republic NPIS Act 7586: the city of Puerto Princesa was granted management of the Park by the national government;
- 2002: Park extended by 2,000 ha (D.Socrates *in litt.*, 2002);
- 2003: The St. Paul limestone declared a National Geological Site by the National Committee on Geological Science;
- 2005: Designated an ASEAN Heritage Park.

## LAND TENURE

Ownership and management of the core zone was transferred in 1992 from the National Department of Environment & Natural Resources (DENR) to the National Park Management Board (PAMB) of the City of Puerto Princesa. Ownership of the buffer zone is mixed, and includes considerable private ownership.

## AREA

5,753 ha. This is the core land area of the National Park. There are a marine zone of 292 ha and a buffer zone of 16,157 ha.

## ALTITUDE

Sea level to 1,028m (Mount Saint Paul).

## PHYSICAL FEATURES

The Subterranean River National Park centres around the Cabayugan river which runs underground for 8.2 kilometers through a massive cave, flowing directly into the sea at St. Paul's Bay. It is tidal in its lower reaches. The Park comprises various landforms from flat plains and rolling hinterlands to hills and mountain peaks. The most impressive of these is the geologically young karst limestone mountain landscape of the St Paul Range which is part of a series of rounded limestone peaks aligned north-south along the western coast of Palawan. More than 90% of the Park is comprised of sharp karst limestone ridges around Mount St. Paul. The river begins about 2 km southwest of the mountain where the river plunges underground to flow underground for almost its entire length to its mouth. The cathedral-like cave includes major formations of stalactites and stalagmites, and there are several large chambers up to 120m wide and 60m high. A small marine area is included within the Park's boundary. Another feature is the Babuyan River, which flows along the eastern side of the Park (Nomination, 1998).

## CLIMATE

The mean annual rainfall averages between 2,000 and 3,000mm. The wet season is from May to October; the dry season from November to April. The average temperature is 27° C.

## VEGETATION

The rich flora of Palawan is radically different from that of the rest of the Philippines, preserving relics of the period when the island was connected by a land bridge with Borneo. There are 800 recorded plant species, 295 of them trees. Three forest formations are present: lowland rainforest, karst forest and limestone forest. The lowland forest is part of the Palawan Moist Forest, one of the WWF Global 200 Ecoregions, and is noted as having the richest tree flora in Asia. Its canopy trees grow to 35m high. Approximately two-thirds of the reserve's vegetation is natural, dominated by *Dipterocarpus grandiflora* (apitong), *Instia bijuga* (ipil) and other hardwood species. Large specimens of *Dracontomelon dao*, *Swintonia foxworthyi*, *Atuna racemosa*, *Pometia pinnata* and *Diospyros* spp. are also found.

Thinly vegetated karst covers a third of the Park but karst forest with epiphytes and lithophytes is restricted to small pockets where soils have developed. Typical species in this kind of forest are of the genera *Antidesma*, *Drypetes*, *Sterculia*, and *Pipturus*, including the large liana species *Strophantus*, *Marillana* and *Champersia*. The palm *Aranga brevipes* has been found. The *almaciga*, *Agathis philippensis*, is a giant coniferous tree which is the source of a lacquer resin known as Manila copal. Coastal forest covers no more than four hectares. It is dominated by large specimens of *Calophyllum inophyllum*, *Pometia pinnata* and *Palaquium dubardii*. Stands of large mangroves are a major feature of Ulugan Bay. Mossy forest and savannahs, sea-grass beds and coral reefs also exist (Nomination form, 1998).

## FAUNA

The fauna is moderately rich, especially in invertebrates. There are 30 mammal, 18 reptile, 10 amphibian, 41 butterfly, 62 reef fish and 91 bird species. Endemic mammals include Palawan tree shrew *Tupaia palawanensis* (VU), Palawan porcupine *Thecurus pumilis* and Palawan stink badger *Mydaus marchei* (VU). Other mammals include crab eating macaque *Maccaca fascicularis*, Asian bearcat *Arctictis binturong* (binturong), anteater *Manis javanicus*, oriental small-clawed otter *Amblonyx cinerea*, palm civet *Paradoxurus hermaphroditus*, oriental civet *Viverra zangara*. Dugong *Dugong dugon* (VU), have been recorded in the marine section of the Park. Birds include

heron *Egretta sacra*, whitebreasted sea eagle *Haliaeetus leucogaster*, peacock pheasant *Polyplectron emphanum* (VU), scrub-hen *Megapodius freycinet cumingii*, blue-napped parrot *Tanygnathus lucionensis*, the threatened Palawan cockatoo *Cacatua haemoturophygia* (CR), Palawan hawk-owl *Ninox palawanensis*, collared scops owl *Otus bakkamoena*, stork-billed kingfisher *Pelargopsis capensis*, Palawan hornbill *Athracoceros marchei*, Palawan flycatcher *Ficedula platenae* (VU), white bellied swiftlet *Collocalia esculenta* and pygmy swiftlet *C. troglodytes*. Saltwater crocodiles *Crocodylus porosus*, water monitor lizard *Varanus salvator* and marine turtles are present. The tunnel and chambers of the river house abundant populations of swiftlets and eight species of bats (Nomination, 1998).

### **CULTURAL HERITAGE**

St Paul Cave has been known to local people from ancient times, inhabited by a spirit that prevented them from entering the cave. The Park territory and surroundings are the ancestral lands of the negrito Batak people, of whom only 200-250 survive, and the Tagbanua communities who live around the boundaries, including the coast. The Tagbanuas unlike the Bataks are generally acculturated to the Christian culture (DENR, 1992, Nomination, 1998).

### **LOCAL HUMAN POPULATION**

The only residents of the core area of the Park are its staff members. Except on certified ancestral domains and alienable lands, households and communities surrounding the National Park may no longer gather rattan and *almaciga* resin without regulation or practise any swidden agriculture within the buffer areas. This reform, in the face of opposition, was the result of an information campaign (D.Socrates *in litt*, 2002).

### **VISITORS AND VISITOR FACILITIES**

The area of the Subterranean River has attracted visitors since the middle of the 19th century. In 1992 the Park won an Environmental Enhancement award from the Pacific Asia Travel Association. In 1997 there were nearly 40,000 visitors and the development of eco-tourism is being encouraged there. A Visitor Centre was inaugurated in late 2003, including a Site Ethnographic Museum for the local Batak and Tagbanua cultures, and a Botanical Garden of indigenous herbal and medicinal plant species. Bridges, trails, and boats provide access within the Park and to the underground river which is navigable for 4.3 kilometers; there is also a 1-km paddle-boat guided tour through the old mangrove forest (J.Mendoza, *in litt*, 2004). The Park is accessible from Puerto Princesa by both road and boat, via Baheli. Some accommodation and camping facilities are provided (Nomination, 1998).

### **SCIENTIFIC RESEARCH AND FACILITIES**

Topographic and hydrologic studies of the Subterranean River area and the river itself began in 1911. Mapping and recording species was done in 1980-81 by the Australian Speleological Society and in 1989-91 by an Italian speleological team with the participation of the National Park, the Dept-for-Nature Swap Programme and the Department of Environment and Natural Resources (Nomination, 1998).

### **CONSERVATION VALUE**

Palawan Island is a remnant of the land bridges that formed during glacial periods, and consequently supports a biologically rich flora closer to Borneo's than to the rest of the Philippines. The St. Paul Range is a spectacular karst limestone landscape, beneath which flows the underground river. There are three types of forest, mangroves and mossy forests, with sea-grass beds and coral reefs in the marine section. The entire watershed is protected, an important example of low-lying and coastal ecosystems. The Park lies within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity and is in one of the world's Endemic Bird Areas. It also forms part of Palawan Island UNESCO Biosphere Reserve and is an ASEAN Heritage Park.

### **CONSERVATION MANAGEMENT**

The core area of the site is owned by the municipality of Puerto Princesa, and falls under the authority of the City Mayor. All decisions are made by the Mayor in consultation with the Protected Areas Management Board (PAMB). This local administration reflects strong local political support for the site, although a new mayor could mean a change in policy so in 1999 DENR appointed an independent Park Management Superintendant who in practise is now the main authority (IUCN, 2002). A management plan was compiled by PAMB. The main management strategy is the expansion of the area to include tribal lands and to focus management concern on the predicament

of the vanishing tribes. Other objectives include: protection of the watershed forest to prevent flooding and erosion and to protect water supplies; protection of ecosystems, biological diversity and rare and endemic species; protection of and contribution to the livelihood of local communities; securing the environmental awareness and co-operation of these in management; and the support of ecotourism. Several ranger stations have been established. Until 2002 the E.U.-funded Palawan Tropical Forestry Protection Programme extensively aided the development of the Park, and recently helped to draw up a new Management Plan (Nomination, 1998; IUCN, 2002).

A study and pilot scheme initiated by the Community Management of Protected Areas Conservation Project (COMPACT) started in 2003. This was to strengthen community-based initiatives for conserving biodiversity through development of community enterprises. It dealt with Protected Area biodiversity, people, stakeholders and partners, land and resource use and management policy (D.Socrates *in litt*, 2002). Small GEF grants were channelled via the Critical Ecosystem Partnership Fund for elements of an educational nature park: tourist boats, trail restoration, a seedling nursery for native species and an open air information centre; also, in return for labor, cleaning up the coast, patrolling, guiding and other services from local youths and NGOs such as the Palawan Conservation Corps. Among benefits of small scale projects have been to increase public awareness of and involvement in the site, to improve cooperation between local officials and Park management, and quick results. An eventual large extension to the Park is planned.

### **MANAGEMENT CONSTRAINTS**

The Park was initially opposed by squatting farmers, logging companies and hunters; issues that had to be addressed included deforestation and mining, licensing for rattan and resin collection, uncontrolled local tourism, damage to watersheds and threats to the natural vegetation by slash and burn cultivation. The site's small patches of coastal forest were also designated as recreation areas and extensive clearing was compounded by inappropriate planting (PAWB, 1992; Nomination, 1998). By 2002 the advantages of the COMPACT Project and increased tourist revenues had won round public support, but there was still poaching in the core zone, and the management plan for the site had not been applied owing to lack of effective staff (IUCN, 2002).

### **STAFF**

44 Park staff including administration, rangers and assistant staff (D.Socrates *in litt*, 2002). An administrative centre and four ranger stations have been built. Many of the staff are local tribesmen

### **BUDGET**

The Park is financed mainly by the City of Puerto Princesa but no detailed information is available. Grants from the GEF Small Grants Program and UNF have funded community based conservation initiatives, via the Critical Ecosystem Partnership Fund.

### **LOCAL ADDRESSES**

The Park Superintendent, Puerto-Princesa Subterranean River National Park, Basaya Building, No.11 National Highway, Bgy.San Miguel, Puerto Princesa City 5300, Palawan, Philippines.  
UNESCO National Commission of the Philippines, Department of Foreign Affairs, Manila.

### **REFERENCES**

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

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