

World Heritage Sites

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CENTRAL SURINAME NATURE RESERVE SURINAME

The Central Suriname Nature Reserve covers 1.6 million hectares of undisturbed, even un hunted, primary neotropical forest in the west centre of the country. It protects the entire upper watershed of the Coppename River with the headwaters of half a dozen tributary and other rivers, covering a wide range of topography and soils with several ecosystems in pristine condition, rare among Amazonian forest parks. Its extensive and highly diverse montane and lowland forests contain almost 6,000 species of vascular plants and 1,890 species of vertebrates. Its animals are typical of the region and many are both endemic to the Guyanan Shield and globally threatened. The site's huge area ensures that one of the world's most biologically diverse forests is maintained as a massive carbon store and refuge for threatened animals.

COUNTRY

Suriname

NAME

Central Suriname Nature Reserve

NATURAL WORLD HERITAGE SITE

2000: 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

Criteria (ix) and (x): The site encompasses significant vertical relief, topography and soil conditions that have resulted in a variety of ecosystems. This ecosystem variation allows organisms within these ecosystems to move in response to disturbance, adapt to change and maintain gene flow between populations. The site's size, undisturbed state (in general a rare condition in Amazonian forest parks) and protection of the entire Coppename watershed, will allow long-term functioning of the ecosystem. The site contains a high diversity of plant and animal species, many of which are endemic to the Guyana Shield and are globally threatened.

IUCN MANAGEMENT CATEGORY

II National Park

BIOGEOGRAPHICAL PROVINCE

Guyanan (8.04.01)

GEOGRAPHICAL LOCATION

The Reserve is in west central Suriname, between 130 and 330 km southwest of Paramaribo, in the District of Sipaliwini. Approximate site co-ordinates are 2°55'N to 4°50'N by 55°45'W to 57°05'W.

DATES AND HISTORY OF ESTABLISHMENT

1961: Raleighvallen Nature Reserve established under the Nature Protection Act of 1954; expanded in 1986 (78,170 ha);

1966: Tafelberg Nature Reserve (140,000 ha) and Eilerts de Haan Gebergte Nature Reserve (220,000 ha) established by State Resolution under the same act;

1998: The Central Suriname Nature Reserve designated under the same act to link the three reserves.

AREA

1,600,000 ha, including the Raleighvallen, Tafelberg and Eilerts de Haan Reserves, total: 438,170 ha.

LAND TENURE

State owned. Administered by the Nature Conservation Division of the National Forest Service.

ALTITUDE

25m -1,230m (Juliana Top, Suriname's highest peak).

PHYSICAL FEATURES

Central and south Suriname are part of the Guyana Shield a two billion-year-old crust of PreCambrian rocks between the Amazon and Orinoco river basins that stretches from eastern Venezuela to Suriname where it covers more than 80% of the country. The site is a large and representative segment of the Shield, hilly in the north, rising to mountains in the south. Underlying it is a complex massif of gneiss and granite basement rocks up to 2,000 million years old which cover most of the site and yield sandy nutrient-poor soils. Several striking granite inselbergs protrude from the tropical forest, bare rocky domes with sheer sides which were exposed by erosion during the Tertiary and Pleistocene periods. They have little or no vegetation on their summits but often possess unusual plants (Lideman & Mori 1989). The best known are the granite Voltzberg Dome (210m), the Van Stockenberg formation (362m) and the Devil's Egg, a giant boulder balanced on top of a granite spire several hundred metres high. In the Tafelberg (1,026m) an outcrop of Roraima quartzite sandstone in the headwaters of the Saramacca river forms the easternmost *tepui* or table mountain in South America. This sandstone is the eroded remnant of the 1,800 million year old tableland that covered the older basement rocks of the Shield. Its long isolated soils are highly weathered, acidic, leached and infertile. The southern part of the Reserve lies in the Wilhelmina Mountains (highpoint Juliana Top 1,230m), the Kayser Mountains and the Eilerts de Haan range named for an explorer who died there in 1910.

The Reserve protects the entire catchment of the upper Coppename River, one of Suriname's largest rivers and the third largest watershed in the country, and those of its tributaries the Rechter-Coppename, Midden-Coppename, and Linker-Coppename rivers and Adampada and Tanjimama Creeks. It also protects part of the headwaters of the Curuni, Lucie, Oost, Zuid, Saramacca, and Gran Rio rivers. Waterfalls and rapids occur, for instance, the sula complex, a 2 km-long unnavigable rapid just south of Foengoe Island in Raleighvallen Nature Reserve.

CLIMATE

Suriname has a typical hot and wet tropical climate, with a mean daily temperature of about 27 °C and an annual range of only 2 °C. Annual rainfall varies between 1,750 and 3,000 mm, and there is high humidity year-round. The site is in the monsoon belt: there are two rainy seasons, one from approximately mid-April to mid-August and a lesser one from December to January. Dry seasons occur between them. The climate is a major cause of the high weathering rates in the region. The prevailing winds are moisture-bearing northeast trades influenced by the Intertropical Convergence Zone. Hammond (2008) maintains on the basis of charcoal signatures and forestry records that the forests growing on the poor soils of the Guyanan Shield have long been susceptible to floods and fires resulting from the effects of the El Niño Southern Oscillation.

VEGETATION

Suriname, although beyond the Amazon basin, falls within its phytogeographical limits and is mostly covered by Amazonian basin vegetation. It has four broad ecological zones: the recent coastal plain, the old coastal plain, the savanna belt and the forested interior which covers about 90% of the country, equivalent in area to three-quarters the area of all the forests of Central America.

Despite infertile soils, the Reserve is dominated by moist lowland and montane neotropical rainforest, and is one of the largest tracts of uninhabited, undisturbed and un hunted primary forest in the entire tropics. Small fragments of marsh forest exist along rivers and creeks, and there are isolated savannas. To date nearly 6,000 vascular plant species - 75% of the country's total - have been collected from the Reserve, with five endemic plant species on the Voltzberg Dome, and 42 endemic species in other areas. This floral diversity is mainly due to the humid climate. Because of

its size and inaccessibility, a detailed inventory of the vegetation of the site has yet to be made, but information available for some of the component reserves may prove representative of much of the rest of the area.

The former Raleighvallen Nature Reserve contains most of the forest systems present in the whole site. Moist mesophytic forest predominates, although swamp forest, marsh forest, liane forest, savanna forest and mountain savanna forest also exist (WWF, 1993). The canopy of mesophytic forest typically extends to 30 metres high, and sometimes to 40-50 metres. Tree species include kankantri *Ceiba penandra* and ingipipa *Couratari* spp. Palms constitute much of the understorey, including paramacca *Astrocaryum paramacca*, kumbu *Oenocarpus bacaba* and maripa *Maximiliana maripa*, with ferns and moss-ferns on the forest floor.

An uncommon ecosystem is the Roraima sandstone savanna in the Tafelberg Reserve, the only one of its type in the country. A dry belt, known as Kappel savanna, extends over 1,000 ha, at an elevation of 300m scattered amongst semi-open forest. The savanna and tableland isolated in the pristine forest mark the area as a centre of plant diversity (Hiwat, 1998). The xerophytic vegetation of the inselbergs also differs markedly from that of the surrounding forest. The vegetation on and around the granite outcrops is predominantly from the Bromeliaceae, Orchidaceae and Poaceae. Epiphytic species of orchid growing on rocks and stones are quite common (WWF, 1993).

FAUNA

Suriname is rich in fauna and its size and variety of ecosystems guarantee sufficient area to allow animals to move in response to disturbance and adapt to change. 1,890 vertebrate species are known at present, 3% of which are endemic to the country. 680 species of bird, 200 mammals, 152 reptiles, 95 amphibians and 790 fish have been recorded. It is believed that many of these species are present in the World Heritage site which is a valuable reservoir of biodiversity. However, as much of the Reserve is unexplored, the true extent of its diversity is not yet known.

The Reserve is home to all eight species of Suriname's monkeys, in seven genera from two families. These include the golden-faced saki *Pithecia pithecia* and the South American squirrel monkey *Saimiri sciureus*, Columbian red howler monkey *Alouatta seniculus*, Guiana spider monkey *Ateles paniscus* (VU), yellow-handed tamarin *Saguinus midas*, Margarita Island capuchin *Cebus paella*, the weeper capuchin *C. olivaceus* and the black-bearded saki *Chiropotes satanas* (CR). Viable populations of the jaguar *Panthera onca*, giant river otter *Pteronura brasiliensis* (EN) and giant armadillo *Myrmecophaga tridactyla* (VU) also exist in the site. Other animals recorded include southern two-toed sloth *Choloepus didactylus*, pale-throated sloth *Bradypus tridactylus*, puma *Puma concolor* and the lowland tapir *Tapirus terrestris* (VU). Faunal checklists are given in Mittermeier *et al.* (1997).

The Reserve is known to contain more than 400 of Suriname's known birds although none is endemic. They include harpy eagle *Harpia harpija*, scarlet, red-and-green and blue-and-yellow macaws *Ara macao*, *A. chloropterus* and *A. ararauna*, great tinamou *Tinamus major*, black curassow *Crax alector*, great jacamar *Jacamerops aureus* and the Guianan cock of the rock *Rupicola rupicola*, the national emblem. Proving the need for further exploration, a 2003 expedition by the National Herbarium and National Zoological Collection is reported to have discovered on the Tafelberg six species of birds new to Surinam: rufous-winged antwren *Herpsilochmus rufimarginatus*, Venezuelan antvireo *Dysithamnus tucuyensis*, white-chinned swift *Cypseloides cryptus*, white-tipped swift *Aeronautes montivagus*, velvet-browed brilliant hummingbird *Heliodoxa xanthogonys* and tepui greenlet *Hylophilus sclateri* (NIBA,2005).

CONSERVATION VALUE

The Reserve is a regionally and globally significant segment of the uninhabited and virtually undisturbed tropical rainforest in one of the most completely forested countries in the world. The site's huge area, a little larger than the states of East Timor or Connecticut, ensures that one of the world's most biologically diverse areas is maintained as a massive carbon store and refuge for threatened animals. It provides a valuable baseline for biological and ecological research in other tropical ecosystems, and has plant gene-pool benefits. The presence of the inselbergs is also of value. The site lies within a WWF Global 200 Freshwater Eco-region and is a Centre of Plant Diversity.

CULTURAL HERITAGE

Archaeological evidence suggests that the region has always been sparsely inhabited owing to its poor soils (Hammond, 2008). Pre-Colombian cultural artefacts have been found around the Coppename River in the Raleighvallen area, and material from ancestors of the Carib Indians has been found near the confluence with the Linker-Coppename River; petroglyphs have also been found along a small creek near the Voltberg Dome and there probably exist further archaeologically significant remains in the Reserve (WWF, 1993). Raleighvallen commemorates the early explorer Sir Walter Raleigh. Dutch suzerainty ended in 1975 but left the language which is interwoven with the native creole speech, and a mixed population of Hindustani, Javanese, Chinese and white, largely descendents of indentured labourers, mostly living on or near the coast. The local Kwinti Tribe are Maroons or bush-negroes, descendents of escaped negro slaves (from *cimarron*, untamed) finally freed in 1873, who then settled along the Coppename river. Their relationship to the forest is close and quasi-mystical and they hold their land in common. Some 70,000 Maroons in six larger tribes live in the country, three-quarters of them in the interior valleys. However, the government denies their rights to land and forest resources (MacKay, 2001).

LOCAL HUMAN POPULATION

The Reserve is uninhabited and unused although the Kwinti Maroons are said to have lost a third of their ancestral land without meaningful prior consultation or compensation when Raleighvallen was created (MacKay, 2001). There are three communities nearby that may be affected by its creation. These are the 120-strong Kwinti communities of Witagron and Kaaimanston 40 and 25 km north alongside the Coppemame River, and the Tirio indigenous community of Kwamalamutu, which is 100 km south. Members of the Witagron and Kaaimanston communities act as guards, porters and guides for visitors and researchers at the Raleighvallen Reserve.

VISITORS AND VISITOR FACILITIES

In 2000 there were less than 1,000 recorded visitors, most of whom were foreign. A local nature tour and ecotourism operator runs trips to the top of the Voltzberg Dome. On average four to six four-day tours of 40 people each are made during the dry season. Other visitors include researchers, scientists and independent adventure travellers. There is overnight accommodation at Raleighvallen Reserve which comprised two guesthouses on Foengoe Island close to the airstrip, and one research/guest facility owned by the Forest Service. In 2005 they were joined by a high quality thatched timber ecotourist centre plus riverside and forest bungalows. Several hiking trails exist in Raleighvallen and link Foengoe Island to the airstrip and with several places of interest such as the Voltzberg Dome. The Foundation for Nature Preservation in Suriname (STINASU, an NGO) is responsible for the upkeep of these facilities and for promoting tourism. A recently refurbished guesthouse also exists at Rudi Kappel airstrip near the Tafelberg. At the Kayser airstrip in the far south three lodges and tour facilities are located where four groups can be accommodated during the dry season. These lodges are managed by the Friends of Kayser Foundation.

Several developments are planned to develop the Reserve as a wilderness, adventure and wildlife viewing destination which would give economic and physical support to the conservation of its resources, preserve its wilderness and benefit the Maroon community of Witigron. Projects for the development of printed materials, trails, rafting, canoeing, kayaking, rock climbing, specialty wildlife viewing of birds, otters and butterflies and guide training are funded through the UNDP/GEF Small Grants Programme. The Park headquarters at Witagron also serves as a visitor centre and craft store for tourists. Access to the Reserve is by river and road to Raleighvallen, or by air. Visitors must travel approximately 185 km south to Witagron from Paramaribo. On reaching it, a 4-5 hour boat trip up the Coppename River to Foengoe Island brings visitors to the Reserve's headquarters. The communities' Foundation for the Resettlement of Witagron and Kaaimanston plans to develop transport for visitors to the Reserve by boat. There are three airstrips in the reserve, at Foengroe, the Tafelberg and in the Kayser Hills.

SCIENTIFIC RESEARCH AND FACILITIES

The site's inaccessibility has always limited research into the area although it is known as an important centre for many species and will probably yield many discoveries in future. Recently biological studies have been made in all three component reserves with Raleighvallen the main focus for research and the most used for scientific study. Its geology and geography was first described by Martin (1888) and Bakhuis (1902). Since then botanical and zoological fieldwork by researchers from around the world has continued. Botanical fieldwork has studied tropical rainforest ecology (Schulz, 1960), surveyed the vegetation (Holthuizen & de Jong, 1977) and forest fruits (van Roosmalen).

Completed zoological studies include work on monkeys (Mittermeier, 1977), Mittermeier & Fleagle (1980), nightjars (Ingels *et al.*, 1984), reptiles (Goin, 1971) and cock-of-the-rock (Trail, 1983,1984,1985). Much recent research has focused upon larger animals such as caimans and primates (Hiwat, 1998). Conservation International has built a research station at the base of Voltzberg Dome and the University of Florida operates a primate research station near Raleighvallen.

Operating country-wide, but very relevant to the site was the International Cooperative Biodiversity Group project in Suriname between 1993 and 2003 which aimed to develop new drugs, document the ethnobotanical and other uses of plants, train locals and improve biodiversity research, ensure that equitable economic benefits from drug discoveries accrue to Suriname, use non-timber forest products sustainably, perpetuate traditional plant knowledge and identify potentially marketable non-timber forest products. The project supported the creation of a Shaman Apprentice Program and the Forest People's Fund and published several scientific papers (Werkhoven, 2008).

MANAGEMENT

The country's nature conservation system, rooted in Dutch tradition, is good. A Conservation Action Plan for Suriname was published in 1990, complemented in 1994 by the publication Priority Conservation Activities for Suriname. Sixteen priority initiatives were outlined, including the preparation and implementation of reserve management plans, the training of conservationists, nature conservation education, research into threatened species and the enforcement of conservation legislation. A Concept National Environmental Action Plan was drafted in 1996 by the University of Suriname's Institute for Development, Planning and Management. The outcome of these plans was a commitment by the government in 1998 to protect instead of logging and mining the forests and to explore their potential for sustainable development and ecotourism.

Reserve management in Suriname is currently the responsibility of the Nature Conservation Division of the Forest Service. At present the only management plan that exists for the site is that for the former Raleighvallen Nature Reserve, compiled by WWF in 1993, with the assistance of The Foundation for Nature Preservation (STINASU). It gives a good coverage of the Raleighvallen reserve. Management and ecotourism plans for the composite Reserve are being developed. Its inaccessibility both preserves the area and complicates its effective protection. A *de facto* buffer zone of 100 km width exists around the boundary but zoning, management planning, wilderness maintenance and monitoring remain to be developed. A guard station is planned at Witagron, with two satellite stations for two adjacent creeks. The tourism plan aims to promote sustainable ecotourism within the protected area, establish tourist infrastructure, develop policy and promote the Reserve. Management activities will focus on the airstrips. Between 1999 and 2004 the Suriname government, Conservation International and UNDP/GEF funded the provision of facilities and capacity building on the site, managed by the Suriname Conservation Foundation (IUCN, 2000). Though they are not contiguous at present, an opportunity exists for a future conservation corridor from Kaieteur National Park in Guyana through the Suriname site to the Parc du Guyane in French Guiana (IUCN, 2000).

MANAGEMENT CONSTRAINTS

Due to the nominated site's large size and inaccessibility, threats to the site are insignificant at present. However with the promotion and increased exploitation of the gold, bauxite and diamonds of the mineral-rich Shield threats will arise. This is aggravated by the government's denial of the rights to land and resources of the six long established Maroon tribes (some 70,000 in Surinam, 74% in the interior), whose lands though long settled are often taken without notice or compensation by government-backed multinational logging and mining companies who are able to work without legal controls on pollution and other impacts (MacKay, 2001). Existing pressures stem primarily from concession activities which, being unregulated by the government, are bound to burgeon. Several large-scale mining and logging concessions exist or are being awarded close to the boundaries of the designated site. Several mining companies are prospecting for gold to the north of Raleighvallen, in the northern portion of the Reserve. Large bauxite deposits have recently been discovered west of the Reserve, while several exploratory timber concessions are located to the north and east. These concessions mainly exist outside the boundaries and watershed, but vigilance is needed to ensure that future development or increased human activity does not damage fragile and pristine ecosystems within the Reserve. The boundaries are not yet marked however, emphasising the need to ensure prohibited or illegal mining or harvesting do not occur within them. The management plan

specified the need for guard posts at all access points: three around Raleighvallen have been identified, and posts are also planned for the three airstrips.

STAFF

Current staffing levels within the Reserve are relatively low, mainly due to the site's isolation. At present a Reserve Manager and 3-4 guard/field workers are employed at Raleighvallen Nature Reserve. Two tour companies take tourists to Tafelberg, where 2 caretaker/managers are employed. There are no permanent staff or guard stations at Eilerts de Haan.

BUDGET

The Government does not provide a budget for the management of the site. Funds necessary to complete and implement the management plan plus long-term financing to support the Reserve are provided by the Suriname Conservation Trust Fund. This was established and launched by Conservation International in 1999, with an initial US\$1.75 million endowment. By 2003, with contributions from the Global Environment Facility, WWF, UNF and UNDP, the endowment should have reached US\$15 million. This endowment was both for the Reserve and the field management of Suriname's entire protected area system, covering biodiversity conservation, management, research and ecotourism development. In May 1999, GEF also approved funding of US\$18.33 million to support Suriname's long-term development and conservation goals.

LOCAL ADDRESSES

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The Foundation for Nature Preservation in Suriname, Cornelis Jongbawstraat #12, Paramaribo, Suriname.

Conservation International Suriname, Gravenstraat #17, P.O. Box 2420, Paramaribo, Suriname.

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