
WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

MORNE TROIS PITONS NATIONAL PARK (DOMINICA)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet (8 references)
- (ii) Additional Literature Consulted: Wright, M. 1995. Morne Trois Pitons National Park in Dominica: A Case Study in Park Establishment. *Ecology Law Q.* 12:747; Christian, C. et al. 1996. Parrot Conservation and Ecotourism in the Windward Islands. *Journal of Biogeography* 23; Caribbean Conservation Association. 1991. Dominica Country Environmental Profile; Thorsell, J. 1984. National Parks form the Ground Up: Experience From Dominica, West Indies. *in National Parks, Conservation and Development*. Smithsonian Press; McNeely, J. et al. 1994. *Protecting Nature - Regional Reviews of Protected Areas*. IUCN.
- (iii) Consultations: 7 external reviewers, Government officials from Ministries of Tourism and of Agriculture, and scientists at Springfield Centre for Environmental Research.
- (iv) Field Visit: J. Thorsell, March, 1996

2. SUMMARY OF NATURAL VALUES

Morne Trois Pitons National Park (MTPNP) is located in the south-central interior of the island of Dominica in the Lesser Antilles. 6,875 ha in size, the park is centered on the 1,342m high volcano called Morne Trois Pitons. Five relatively recent (25 mya) Pleistocene composite volcanoes make up the park which is known for its precipitous slopes and deeply-incised valleys. Dramatic examples of active vulcanism occur in the park. In the Valley of Desolation there are 50 fumaroles and hot springs as well as a "boiling lake", one of the two or three largest in the world. Other landscape features include three freshwater lakes and numerous waterfalls. The climate is humid tropical maritime with rainfall of 7m per year. The area is subject to tropical cyclones, the most recent major one being Hurricane David in 1979. The park contains a rich rainforest flora with six communities which vary with elevation. There are elfin/cloud forest at the summits, montane thicket, montane rainforest, mature rainforest, secondary rainforest and semi-evergreen forest. The majority of the 5,000 species of vascular plants found on the island are present in the park including 21 endemics. Also present are 135 species of birds including one endangered parrot, 12 species of bats, four species of reptiles and 30 decapod crustaceans. There is no settlement or major roads within the park, only one small area of agricultural encroachment.

MTPNP has been nominated by the Government of Dominica under natural criteria i, iii and iv.

3. COMPARISON WITH OTHER AREAS

175 protected areas exist in the insular Caribbean of which 46 are national parks. The Lesser Antilles Biogeographic Province of Udvardy which consists of the ten island countries of the Windward and Leeward Islands have eight national parks of which MTPNP is one. It is, in fact, not only the largest one but the only one with major forest cover and has the most varied volcanic features. Similar volcanic landscapes

on the nearby islands of Guadeloupe, Martinique, St. Lucia and Montserrat are all of considerably less conservation importance, have been significantly altered by human activity and have not been protected by IUCN Category II national parks. Even when compared to the Greater Antilles, MTPNP compares favorably with all the larger islands except Cuba which has a larger and more diverse forest area in Alexander von Humbolt National Park.

Dominica's forests are often referred to in the literature as the most luxuriant and the finest remaining in the Caribbean. Their species richness per unit area compares well with those in mainland South America. The volcanic features, particularly the boiling lake found within MTPNP are also the most varied in the region, though they are surpassed on a global scale in other World Heritage sites such as Kamchatka, Tongariro and Hawaii Volcanoes.

MTPNP has few comparable features with existing island sites on the World Heritage List. In the sense that it is a remnant forest site protected as part of a larger island it is similar only to Garajonay in the Canary Islands, Yakushima in Japan, Vallée de Mai in the Seychelles, and Hawaii Volcanoes National Park on the island of Hawaii. All these islands are very distinct in terms of their natural features but many management issues are shared (e.g. tourism pressure).

In sum, MTPNP represents a rare combination of natural features not found on many islands. Luxuriant natural and diverse tropical forest blend with volcanic features of high scenic appeal and scientific interest. The only other site that rivals it in the region is the Northern Forest Reserve also on Dominica. This area has within it a greater extent of mature rainforest and parrot habitat. It does not, however, contain active volcanic features and lacks the scenic appeal provided by the freshwater lakes and five volcanoes in MTPNP. MTPNP is thus one-of-a-kind, the priority one terrestrial park in the Lesser Antilles and one of the two or three most important parks in the entire Caribbean.

4. INTEGRITY

MTPNP is not large by international standards but is in keeping with the scale of the island (it amounts to about nine percent of the area of Dominica). Deficiencies in its boundaries include the lack of key parrot habitat on the side of Morne Watt and lack of an extension to the Atlantic coast. As private land is involved in both these instances the "ideal" boundary could not be achieved. Another shortcoming in the boundary is the existence of some private land near the Freshwater Lake which is presently being cultivated. The Forestry and Wildlife Division are in the process of acquiring this inholding through a Trust fund being set up with the help of the Nature Conservancy.

The park has a management plan but it was prepared by an external consultant and is not being fully implemented as it was not officially adopted. An update of this plan using locally-available expertise is suggested. (The authorities in Dominica have since made a technical assistance request to revise the plan.)

Over the past ten years MTPNP has been adversely affected by several damaging activities including the development of a shooting range and quarry near the Emerald Pool and a new transmission line built through the central area. A major negative change was the augmentation of hydro-power infrastructure at Freshwater Lake which involved a new pipeline, water diversion channel and new access road. This type of activity was allowed for in the original Parks Act but, in view of MTPNP's World Heritage nomination, further expansion of this facility should be discouraged. (Since the Bureau meeting the authorities have written to note that the "Government has no plans to expand hydro development in MTNP.")

Finally, there are minor problems with feral animals (pigs) and some poaching occurs. Tourism pressure (particularly cruise ships) has become a serious issue at several localized sites and is receiving attention from the park director and his staff. The park has been the recipient of substantial donor aid since 1975 and

will soon be more economically viable with a new user-fee system which will be implemented in the near future.

5. ADDITIONAL COMMENTS

MTPNP would have much to gain in sharing experience in managing a national park on a small island with other World Heritage island sites. A “twinning” arrangement might be explored (possibly through the ‘Parkshare’ scheme supported by IUCN’s World Commission on Protected Areas) if it succeeds in being added to the World Heritage List.

6. APPLICABILITY OF WORLD HERITAGE NATURAL CRITERIA

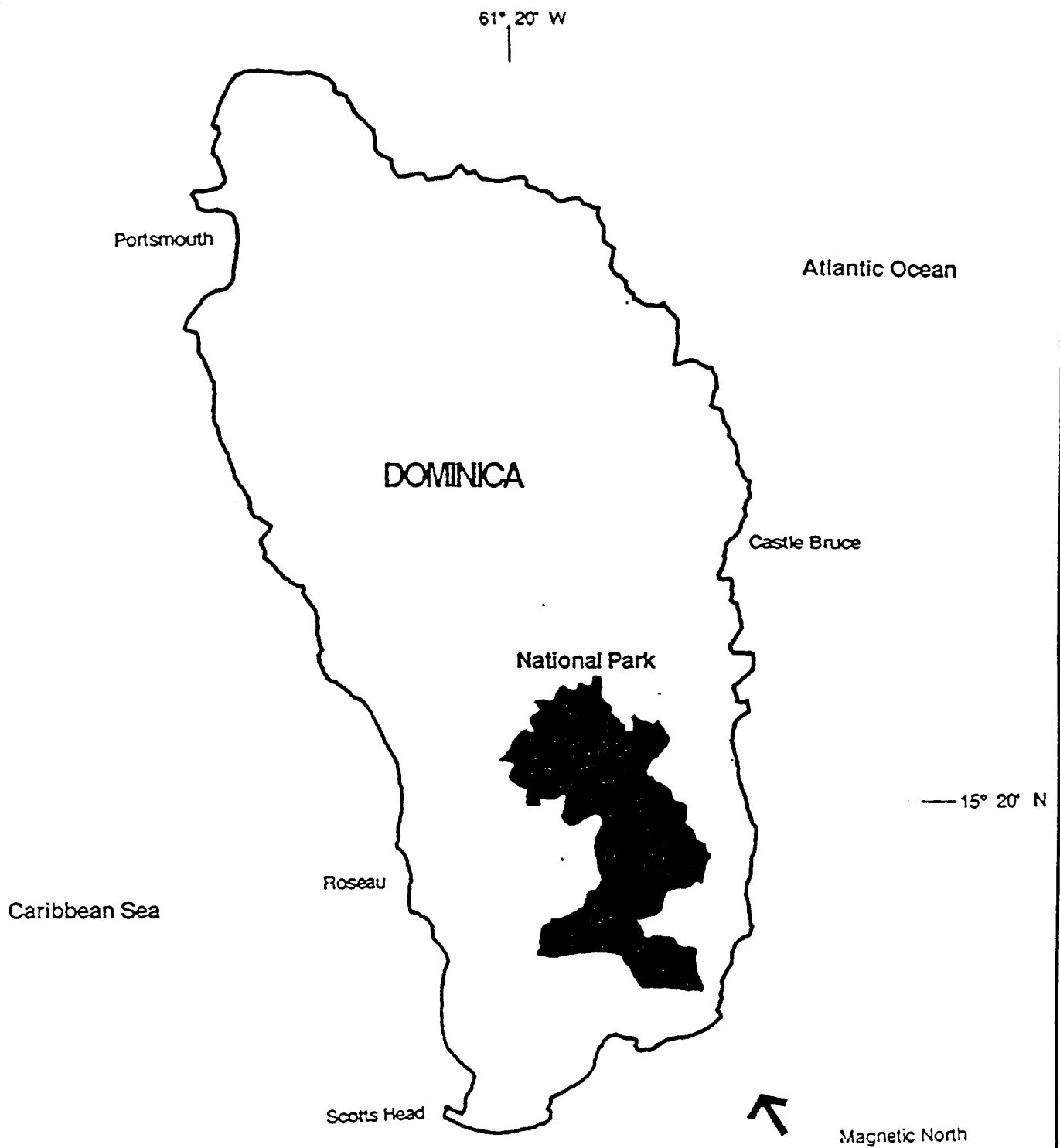
MTPNP is a park of high natural value containing a diverse and luxuriant flora with a sequence of five vegetation zones. Due to its steep topography, high rainfall and important local watershed protection values it has remained largely in its natural condition, a rare such area in the intensely settled islands of the Lesser Antilles. It also has high scenic values with five volcanoes, three freshwater lakes, waterfalls and many rivers. Its dacitic-andesitic volcanic features along with the geomorphological processes of reduction provide an outstanding laboratory for scientific research. Floral diversity is quite high with 21 endemics though no threatened species occur.

IUCN thus concludes that MTPNP meets natural criterion (i) for its distinctive geology and landforms as well as criterion (iv) for diversity of its tropical forests, the most outstanding remaining in the insular Caribbean. Conditions of integrity are met for both these criteria. The case for criterion iii was not convincingly made in the nomination and IUCN concludes that it is secondary to i and iv.

7. RECOMMENDATIONS

The Bureau recommended that MTPNP be inscribed on the World Heritage List on the basis of natural criteria (i) and (iv). The Committee may wish to consider additional recommendations to the Government of Dominica on the issues brought out in this evaluation namely:

- the need for an up-dated official management plan;
- the discouragement of further hydro power development in the park as incompatible with World Heritage status;
- encouragement of boundary extensions and removal of the inholding area near Freshwater Lake; and
- a possible “twinning” arrangement with a similar World Heritage island forest park.



MORNE TROIS PITONS NATIONAL PARK

Commonwealth of Dominica - West Indies

COUNTRY Commonwealth of Dominica

NAME Morne Trois Pitons

IUCN MANAGEMENT CATEGORY

Morne Trois Pitons National Park

II (National Park)

Natural World Heritage property (proposed) - Criteria i, ii, iii, iv

BIOGEOGRAPHICAL PROVINCE 8.41.13 (Lesser Antillean)

GEOGRAPHICAL LOCATION Morne Trois Pitons is located 13km east of the town of Roseau in the highlands of south-central Dominica. 15°16'-15°23'N, 61°17'-61°21'W

DATE AND HISTORY OF ESTABLISHMENT Morne Trois Pitons was first proposed as a forest reserve in 1952. The area was designated as National Park under the National Parks and Protected Areas Act No. 16 of July 1975.

AREA 6,857ha

LAND TENURE Morne Trois Pitons National Park was established from former government lands and a private contribution from the former Middleham Estate, which was originally donated to The Nature Conservancy by John Archbold. The Conservancy held the approximately 400ha of land in trust until 1980, and then transferred ownership to the Commonwealth of Dominica for inclusion in the park. A few small private inholdings remain and certain rights-of-way have been granted to the Dominica's Electric Utility Company (DOMLEC).

ALTITUDE 500-1,220m

PHYSICAL FEATURES Morne Trois Pitons is the basaltic spike-like remains of a former volcano rising to approximately 1,300m, within eight kilometres of the sea. The landscape is characterised by volcanic piles with precipitous slopes, and deeply incised valleys (glacis slopes). There is also a fumarole known as Valley of Desolation (or Grand Soufriere), with fumaroles, hot springs, mud pots, sulphur vents and the Boiling Lake, which is the world's second largest of its kind. The valley is a large amphitheatre surrounded by mountains and consisting of at least three separate craters where steam vents, small ponds, and hot springs bubble up through the ground. Boiling Lake is surrounded by cliffs and is almost always covered by clouds of steam. The lake's water level and colour are highly variable, often bubbling and churning at about 95°C, and making dull roaring sounds. The Valley of Desolation drains into the Pointe Mulatre River, which flows into the Atlantic Ocean.

Other outstanding features in the area include the Emerald Pool, fed by the Middleham Falls; Stinking Hole, a lava tube in the middle of the forest; and the Boeri and Freshwater Lakes. The Freshwater Lake is the largest and second deepest of Dominica's four freshwater lakes. The Boeri Lake is the second largest in Dominica, and is located in the crater of an extinguished volcano. Both lakes are separated from each other by Morne Macaque (1,221m) and vary in depth with the season. Both are thought to have originated about 25,000-30,000 years ago. The park also encompasses nearly all the headwaters of the streams and rivers in the southern half of the island.

According to Lang (1967), there are three types of soils groups represented within the park, allophanoid clays, kandoid, and protosols. These soils are primarily differentiated by the degree of chemical weathering they have undergone.

CLIMATE The climate is classified as humid tropical marine, with little seasonal or diurnal variation. During most of the year there are gentle trade winds averaging 14.5kph. Average temperature range is about 19-27°C from January to June, and 21°C-28°C during the rest of the year. Relative humidity is very high at approximately 95 percent, rarely falling below 85 percent. Nearly all the lower elevation rainfall occurs between June and January. Precipitation is usually short in duration but intense, with an average exceeding 7,600mm per year (The Nature Conservancy, 1995).

VEGETATION According to McKenzie (1984), the following five natural vegetation zones are recognised within the area, plus a small patch of encroaching agricultural land. First, elfin/cloud forest, which occurs at the highest elevations, above 914m, and is almost constantly covered by mist and subject to high winds, rain, and cold temperatures. Main vegetation types consist of mosses, ferns, shrubs and stunted trees covered by lichens. The two predominant species are *Clusia venosa* and *Lobelia cirisifolia*. Second, montane thicket, which is transitional between elfin and montane forests, and is dominated by spindly trees, about 12-15m high with small canopies. The most common tree found on steep slopes is *Podocarpus coriaceus*, the island's only native conifer. In flatter areas, the main tree is *Amanoa caribaea* (V). Third, montane rain forest, which grows above 610m and is frequently in cloud cover or fog. The species composition is similar to that of mature rain forest, yet much reduced in stature. Non-vascular epiphytes cover most montane rain forest plants. Fourth, mature rain forest, which grows below 460m. This zone contains the most luxuriant growth, and is dominated by *Dacryodes excelsa*, *Sloanea* spp., and *Licania ternatensis*. Fifth, secondary rain forest. Vestigial old stands often remain, surrounded by smaller re-growth. Common species include *Cyathea* spp., *Miconia guianensis*, *Simarouba amara* and *Chimarrhis cymosa*.

FAUNA A full faunal inventory is yet to be completed. However, previous surveys indicate the occurrence of at least seven species of mammal, 50 birds, 12 reptiles and amphibians and 12 crustaceans.

Apart from introduced opossum *Didelphys marsupialis* and agouti *Dasyprocta agouti*, there are no terrestrial mammals in the area. Other introduced mammals include feral cats and pigs and rats.

Birds include imperial amazon *Amazona imperialis* (VU) and red-necked amazon *A. arausiaca* (VU). Imperial amazon was formerly common but is now threatened in Dominica. A reduced population of the species existed in the Morne Watt area prior to Hurricane David, but now its existence in the park is uncertain. Red-necked amazon was also a commonly seen species, but now is rarely observed in only a few small areas of the park.

There are no poisonous snakes in Dominica. Boa *Boa constrictor nebulosa* grows to 3.6m in length and is common in Morne Trois Pitons. Three species of lizards, including the endemic *Anolis oculatus*, exist in the park. The island's two native species of tree frogs, including the endemic *Eleutherodactylus amplinympha*, also occur in the park.

There is also a wide variety of moths, butterflies and other insects.

CULTURAL HERITAGE No information available

LOCAL HUMAN POPULATION Being located in the roadless interior of Dominica there are only a few small holder farmers using land near the park boundary. Because the area contains the major source of electric power for the island, and of freshwater for several southern communities, the Commonwealth of Dominica reserved certain water and power rights when the National Parks and Protected Areas Act of 1975 was conceived. Currently, DOMLEC rights-of-way and about two hectares of private inholdings are clustered near Freshwater Lake, a primary entry to the park. There is also a small quarry towards the northeastern border of the Park.

VISITORS AND VISITOR FACILITIES The area receives a number of tourists which increases each year (Ministry of Tourism, Ports and Employment, 1996). Visitors can drive into the park at two locations: the village of Laudat on the road from Roseau, and the Emerald Pool site on the cross-island road between Roseau and Castle Bruce. Approximately 10,000-15,000 visitors walk to the Emerald Pool each year, and another 1,500-2,000 take the six kilometre hike to the Boiling Lake (J. Thorsell, pers. comm.). A number of ancient trails or footpaths, traverse the park running roughly east-west between mountains or north-south along ridges. Some of these were used in the recent past (before the development of roads to the east, completed in 1960) for access to Roseau, and are use for sightseeing. Others were used for hunting and still are used for access to the Valley of Desolation. Some facilities (picnic shelters, tables, washrooms) have been constructed in the park. In addition, a variety of publications (brochures, booklets, leaflets) pertaining to the park and its main attractions have been produced. The park's education program is facilitated through the Environmental Education Unit of the Forestry and Wildlife Division.

SCIENTIFIC RESEARCH AND FACILITIES Scientific research in the park includes biological studies (flora and fauna distribution/abundance) in the Freshwater Lake area; assessment of environmental impact of ecotourism and recreation; measures of the flow rate of selected streams in the Freshwater/Boeri Lakes area; analysis of past impact of tropical cyclones; studies of natural regeneration of the flora; assessment of the impact of Hurricane David (1979) on the vegetation; and evaluations of the presence of inert gases released by fumaroles in the Valley of Desolation. A university research and training facility is located adjacent to the park at Springfield.

CONSERVATION VALUE Morne Trois Pitons National Park includes within its boundaries the headwaters of most major streams and rivers in the southern half of the island. The area protects large tracts of almost intact tropical forest and associated fauna. In particular, the park appears is important for imperial and red-necked amazons, as well as for other species of conservation concern.

CONSERVATION MANAGEMENT The agency responsible for the management of Morne Trois Pitons National Park is the Forestry and Wildlife Division of the Ministry of Agriculture and the Environment of Dominica. Non-governmental organizations with important supporting roles include the Dominica Conservation Association (DCA) and Dominica's Electric Utility Company (DOMLEC). In 1975, the first preliminary plan outlining management guidelines for the park was prepared (Thorsell, 1975). In 1989, a ten-year management plan for the park was written. Guidelines for the management of the park

are also included in the plan prepared by Scheele on behalf of the Organization of American States (1991).

MANAGEMENT CONSTRAINTS In 1990, Morne Trois Pitons National Park was classified as being in peril by The Nature Conservancy. A major threat to the area is the foreseeable continuation of hydroelectric and thermal energy development. Recent construction of a hydroelectric project in the park, which occurred without adequate impact assessment and mitigation design, resulted in temporarily increased soil erosion around Freshwater Lake and along the pipeline, deterioration of an access road, stream sedimentation, and possibly a major land-slide. Pipeline rights-of-way for one hydroelectric project have been transferred to DOMLEC, complicating decision making in the park. Increased tourism, the need for increasing monitoring and other programs are placing pressure on the limited staff and financial resources of the Forestry and Wildlife Division (The Nature Conservancy, 1995). It is not known to what extent introduced mammal species may be disturbing the native fauna and flora.

STAFF A total staff of three full time people, including a deputy director and two forest officers. Field supervision is part of the duties of local forest rangers. Some 20 casual labourers also work on trail and facility maintenance (J. Thorsell, pers.comm., 1997).

BUDGET An operational budget is provided but capital improvement projects have only been carried out with donor assistance (J. Thorsell, pers.comm., 1997).

LOCAL ADDRESSES

Forestry and Wildlife Division of the Ministry of Agriculture and the Environment.
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DATE January 1997