

WORLD HERITAGE NOMINATION - IUCN SUMMARY

494 (Rev.) BEMARAHA INTEGRAL NATURE RESERVE (MADAGASCAR)

Summary prepared by IUCN (April 1990) based on the original nomination submitted by the Government of Madagascar. This original and all documents presented in support of this nomination will be available for consultation at the meetings of the Bureau and the Committee.

1. LOCATION

The integral nature reserve of Tsingy of Bemaraha lies 60-80km inland from the west coast in the northern sector of the Antsingy region of the Bemaraha Plateau, north of the Manambolo River Gorge. The additional forests and lakes nominated include all the remaining native forest, mangrove, and lakes between the west coast and the Bemaraha Reserve, lying between the Sohanina and Manambolo rivers.

2. JURIDICAL DATA:

The Réserve naturelle intégrale Tsingy de Bemaraha (No. 9) was first established on 31 December 1927, and is now protected under Decree No. 66-242 of 1 June 1966.

3. IDENTIFICATION:

Much of the Réserve naturelle intégrale Tsingy de Bemaraha comprises limestone karst, delimited to the east by abrupt cliffs which rise some 300 to 400m above the Manambolo River valley and extend several tens of kilometres from north to south. The western slopes rise more gently, and the whole western region of the reserve forms a plateau with rounded hillocks which slope away to the west. To the north undulating hills alternate with limestone extrusions, while in the south extensive pinnacle formations make access extremely restricted. The Manambolo River Gorge is on the southern edge of the reserve. Both seasonal and permanent rivers flow on the plateau (draining to the west), and numerous permanent springs arise at the base of the Tsingy on both sides.

Rainfall is seasonal, with a dry season of 6-8 months, and a wet season around December-March. Annual rainfall is about 980mm, and the Tsingy is wetter than all areas lying to the west. Mean annual temperature is above 26°C, and mean monthly temperatures remain above 20°C. Extremes of 38°C and 9°C have been registered in December and July, respectively.

Vegetation is characteristic of the calcareous karst regions of western Madagascar, with dense, dry, deciduous forest, and extensive anthropogenic savannas. The fauna of the region has not been studied in any detail. The Tsingy is the only known location for chameleon Brookesia perarmata, and the only western dry forest site known for Madagascar grey-throated rail Canirallus kioloides (only previously known from north-western and eastern Madagascar). The reserve is also the only protected area where the endemic nesomyine rodent Nesomys rufus lambertoni is known to occur and there is also an unconfirmed report of aye-aye Daubentonia madagascariensis just outside the reserve. Other notable species include goshawk Accipiter henstii, which may be threatened, and lemurs Propithecus verreauxi deckeni, Hapalemur griseus occidentalis, Phaner furcifer, and Lepilemur edwardsi, all of which are (or may be) threatened.

4. STATE OF PRESERVATION/CONSERVATION

There is no current management plan for the Réserve naturelle intégrale Tsingy de Bemaraha, and staff are insufficient to adequately control the reserve. As a result, while the pinnacle region to the south is relatively well protected through its inaccessibility, much of the rest of the reserve is seriously threatened, particularly by fire. Cattle damage also occurs in accessible forest areas, and may reduce regeneration locally. Some timber exploitation occurs near the villages, but its effects appear to be limited, as do the effects of hunting. Village agriculture on the eastern boundary is encroaching the reserve.

An ongoing WWF project to help improve protected area management within Madagascar has made several recommendations on management of the Tsingy, and the forests, lakes and mangroves to the west. They suggest that this combined programme would require major planning and investment, but given the biological importance of the area, this would be a valuable step forward. Further recommendations have been made by a national workshop on the conservation of the reserve (Mahajanga, 13-18 October 1989).

5. JUSTIFICATION FOR INCLUSION ON THE WORLD HERITAGE LIST:

- b) Natural property
 - (i) Earth's evolutionary history. Impressive geological features include karstic scenery with a highly dissected limestone massif. A deep river gorge runs through the massif, exposing lower strata.
 - (ii) Biological evolution. The forests of the site are relatively undisturbed, and contain a range of species typical of the region.
 - (iii) Exceptional natural beauty. The 'Tsingy' of the limestone plateau form an unusual feature of some beauty. In addition, the area contains very good examples of the major ecosystem types of western Madagascar.
 - (iv) Habitat of rare and threatened species. The reserve and neighbouring forests, lakes and mangroves provide important habitat for a range of threatened species. They also provide suitable habitat for a range of other Madagascan endemics, and following detailed research it is likely that more species would be added to this list.

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

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1. DOCUMENTATION

- i) IUCN data sheet
- ii) Literature consulted: IUCN/UNEP Review of the Protected Areas System of the Afrotropical Realm; Madagascar: Revue de la Conservation et des aires protégées. WWF.
- iii) Consultations: P. Randrianarijaona (Director Eaux et Forêts), L. Rajery, M. Nichol, B. Vaohita, P. Portas, J. Shea, J. Andriamampianina, M. Louis, J. Sayer, K. Mackinnon, I. Tattersall, R. Mittermeier, O. Langrand.
- iv) Field Visit: May 1988. Jim Thorsell.

2. COMPARISON WITH OTHER AREAS

The island of Madagascar is often referred to as a "microcontinent" due to its large size and as a "megadiversity" country due to its unique species makeup. For instance, 5% of the earth's plant species are found on this one island and two-thirds of these are endemic.

Biographically, there are two Madagascars; The wetter and more species rich eastern side and the drier western side. The nominated site is found in the latter.

Within Madagascar there are two national parks, eleven integral nature reserves and some twenty-three special reserves. Of these, both national parks, five integral nature reserves and thirteen special reserves are found in the eastern side. Of these, by far the largest is Tsingy de Bemaraha Reserve at 152,000 ha., the next largest being Isolo National Park at almost half the size (81,540 ha.). The most similar site, Tsingy de Namoroka, covers 21,742 ha. and contains lower species diversity.

Two of these sites were on the Madagascar indicative list, Ankarafantsika and the Massif d'Ambre, while a third, Cap Masoala, was once an integral reserve and is proposed for redesignation. The Gorge de Manambolo is also on this list and one half of it is included in the Bemaraha Reserve. The Massif d'Ambre is basaltic, with upland moist forest, and therefore rather different from Bemaraha. Ankarafantsika (60,520 ha.) is a much better known reserve than Bemaraha, and consequently has many more identified endemics. It lies on sandstones and grits rather than limestone, and is certainly less spectacular and has suffered much from human encroachment. The limestone pinnacles found in Bemaraha are comparable, on a global scale, only to China's "stone forest". This feature would not merit World Heritage status by itself but adds an important feature of geological interest to the park. Similarly, the Gorge of the Manambolo River (the north side of which is included in the Reserve) is a scenic attraction that adds to the intrinsic values of Bemaraha.

Because of the considerable difference between the fauna of Madagascar and other regions, comparisons here are not easily made. Similar tropical dry forests are found throughout the tropical regions of the world but Bemaraha, with its assemblage of numerous endemic and threatened species (particularly five species of lemurs), is unique. In terms of its large size and relatively low surrounding human population pressure, it is the single most biologically important protected area in western Madagascar.

3. INTEGRITY

In theory, the designation of integral nature reserve is the strongest protective legislation in Madagascar. But although Bemaraha was established in 1927, there is a total lack of any management presence in the Reserve. No resource inventory is available, there is no management plan, there are no facilities, boundaries are not marked, and there is no resident staff or budget. Much of the Reserve, however, is protected due to its inaccessibility, but even this is threatened by fires set outside the Reserve to facilitate cattle grazing. Forest edges are slowly retreating as a result. Village agriculture along the eastern boundary is also encroaching on the Reserve. Finally, an oil exploration road was built 30 km. into the Reserve in 1984 and this is now used as a regular route for foot travel and cattle transport through the Reserve. Bemaraha, thus, is beginning to lose its integrity through perimeter erosion and increasing disturbance by man and livestock.

4. ADDITIONAL COMMENTS

Very little is known about the status of wildlife populations in the Bemaraha and an inventory of resources is an urgent need. A vegetation map, a study of faunal densities and a survey of human impacts are basic requirements before a management plan can be prepared. Much of this background work could be carried out by local institutions such as the University of Madagascar's "Groupe d'Etude et de Recherche sur les primates".

The nomination, as submitted, contained a large number of errors and omissions which have since been corrected by the authorities in Madagascar.

5. EVALUATION

The Bemaraha Integral Nature Reserve clearly meets criteria (iv) for natural properties (habitat for threatened species). It also meets criteria (iii) for its display of the limestone pinnacle "forest". Although it is gradually losing its integrity due to an absence of management, the area is largely intact and worthy of concentrated effort to protect it. The World Wide Fund for Nature (WWF) is currently preparing a project to assist the Département des Eaux et Forêts to strengthen management of the Reserve. Technical assistance to address the measures proposed in the nomination has also been approved by the Federal Republic of Germany.

6. RECOMMENDATION

The Bemaraha Reserve is of outstanding universal value and should be inscribed on the World Heritage List on the basis of meeting criteria (iii) and (iv). The Committee should monitor the accelerated efforts to implement a management regime for the Reserve.



