
WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

LORENTZ NATIONAL PARK (INDONESIA)

1. DOCUMENTATION

- i) **IUCN/WCMC Data Sheet** (10 references)
- ii) **Additional Literature Consulted:** Conservation International. 1997. Irian Jaya Biodiversity Conservation Priority Setting Workshop. Map.; Davis, S.D. *et. al.* 1995. **Centres of Plant Diversity**. Vol. 7. IUCN; P.T. Freeport Indonesia 1998. **Biodiversity Surveys – Compilation Report**. 702p.; Mealey, G.A. 1996. **Grasberg**. Freeport; Deutsche Forst Consult. 1992. Preparation Report on Lorentz. Asian Development Bank.
- iii) **Consultations:** 8 external reviewers, Provincial Government officials, church and military representatives, WWF, local NGO's, Freeport Mine representatives.
- iv) **Field Visit:** February 1999. Jim Thorsell, Peter Hitchcock, Jeff Sayer.

2. SUMMARY OF NATURAL VALUES

Lorentz National Park (LNP) stretches for over 150km from the equatorial glaciers of New Guinea's Central Cordillera, the highest mountains in South East Asia, to the south coast bordering the Arafura Sea. It is the largest protected area in Southeast Asia (2.5 mil. ha.), extending from sea-level up to 4,884m at the summit of Puncak Jaya (also known as Mt Carstensz), the highest mountain in New Guinea and Indonesia. There are 3km² of ice in the summit region, one of only three regions in the world where glaciers are to be found in equatorial latitudes. The park which includes part of the Sudirman Range, has a large number of streams and rivers which have cut deep valleys in the mountains and foothills as they drain south to the coastal plain. Here they form extensive areas of swamps with numerous permanent and seasonal lakes. A marine component extends into the Arafura Sea to the 10m depth boundary. At the meeting point of two colliding continental plates, the area has a complex geology. In the north, moraines overlie an extremely rugged karst limestone topography; the Central Cordillera mountains are folded and metamorphosed oceanic sediments of Cretaceous (100 million years BP) and Eocene (40 million years BP) origin. Alluvial deposits cover the southern coastal plain. Extensive fossils of ice age plants and animals are found in four highland caves. Climate is humid tropical with rainfall of 5000mm/year recorded at the higher elevations.

All the main natural land systems found in Irian Jaya occur within Lorentz National Park. Some 34 vegetation types and 29 "land systems" have been identified. The coastal plain has extensive areas of wetlands, including mangroves along the coast, tidal and freshwater swamp and riparian forests, sedgeland, *Pandanus* and sago palm formations, and permanently and seasonally flooded peat swamp forests. Lowland rain forest, the richest community, occurs up to 1,000m. Lower montane rain forest, which is less rich in tree species than lowland alluvial and hill forests, occurs between 1,000m and 3,000m. An abrupt change in vegetation occurs at 3,000m. Tree ferns, bogs, grasslands and heath vegetation predominate, until at 4000m the alpine zone is reached.

Some 123 mammals have been recorded from the reserve, representing 80% of the total mammalian fauna of Irian Jaya. The swamplands are home to two species of crocodile, both of which are threatened: the estuarine crocodile (Endangered) and the New Guinea crocodile (Vulnerable). The

avifauna is likewise extremely rich, with 411 species recorded, including at least 20 species endemic to Irian Jaya. Notable species include 2 species of cassowary, 4 megapodes, 30 parrots, 20 birds-of-paradise and 6 species of bowerbirds.

LNP has been inhabited for more than 25,000 years. A total of 6,300 people from 8 indigenous groups live inside the park. Some are agriculturalists cultivating bananas, taro and sweet potatoes. Others also raise pigs with hunting providing additional protein. Subsistence use by the coastal groups is focused on sago palms and fish. The Freeport gold/copper mine is adjacent to the northwest boundary of the park.

3. COMPARISON WITH OTHER AREAS

The island of New Guinea (of which Irian Jaya makes up almost half) is home to the most physiographically and biotically diverse assemblages in the Australo-Pacific region. Some 60-90% of the flora is endemic and the island has the highest mammalian diversity in the Oceanian Realm. All the main environments of Irian Jaya are represented in LNP including 29 “land systems” and 34 vegetation types that extend from the coastal plain through lowland rain forest, montane rain forest, conifer forest, heath, grassland and the alpine zone. The range of altitudinal, life zone and temperature variation in LNP is probably the greatest of any protected area in the world (with the possible exception of Santa Marta/Tayrona in Colombia).

LNP is in the Papuan Biogeographical Province which has in it one existing natural World Heritage site – East Rennell in the Solomon Islands. East Rennell is a small raised coral atoll and has no geographic or species similarities with Lorentz which is part of a continental island and is a mountainous area with an icefield.

Indonesia has an extensive protected area system consisting of 105 IUCN Category I and II areas totalling 15 mil. ha. Irian Jaya, however, is in a different Biogeographic Realm (Oceania) from the rest of Indonesia (Indomalayan Realm). Wallace’s Line (as modified by Huxley) separates the two and splits the predominantly Oriental biota of Asia and the Australasian biota to the south. As Table 1 indicates, Irian Jaya is the richest biogeographical region of Indonesia with the highest level of endemism in the country. LNP is by far the largest protected area in Indonesia and indeed of all the region, with the next closest areas only reaching half its size. For comparative scale, LNP is 25% larger than Kakadu National Park (Australia).

Table 1 - Comparative biotic richness and endemism in the biogeographical regions of Indonesia

Island	Resident Bird Spp.	% Bird Endemism	Mammal spp. Richness	% Mammal endemism	Reptile spp. richness	% Reptile endemism	Relative plant spp. richness	% Plant endemism
Sumatra	465	2	194	10	217	11	820	11
Java	362	7	133	12	173	8	630	5
Borneo	420	6	201	48	254	24	900	33
Sulawesi	289	32	114	60	117	26	520	7
Lesser Sunda	242	30	41	12	77	22	150	3
Maluku	210	33	69	17	98	18	380	6
Irian	602	52	125	58	223	35	1030	55

In Irian Jaya itself, there are 47 protected areas (not including 8 recreation parks). Several other very important sites exist (for example the Arfak Mountains and the Mamberamo-Foja National Park), but these are smaller, have less diversity, are not as varied altitudinally and do not provide the “mountains to the sea” spectrum of habitats that are found in LNP.

The geology and geomorphology of LNP is also distinctive. Its main mountain range is at the collision point on the leading edge of the Australian tectonic plate and the Pacific plate. While there is graphic evidence of the plate collision along the length of New Guinea, nowhere is it better expressed than within LNP. Although the mountains of Lorentz are located on the Australian plate, there are no mountains of age or genesis on the adjacent Australian continent which is mainly an ancient tectonically stable surface.

LNP is also one of three areas where equatorial glaciers are still found – the others being in eastern Africa and in the Andes. All these tropical glaciers are in retreat but LNP retains vestigial glaciers as well as classic evidence of past glaciation such as glacial lakes and moraines. Mount Kinabalu on Borneo illustrates evidence of past glaciation as well but glaciers are no longer found there and it lacks the cordilleran physiography of Irian Jaya which causes greater snow accumulation.

In conclusion, LNP is distinctive in the region and in the world for its biogeographically strategic position between Asia, Australia and the Pacific, its geological history at the junction of two tectonic plates, its exceptionally rich biodiversity, its large size and its steep “mountains to the sea” gradient which is unmatched anywhere on the planet.

4. INTEGRITY

One of the outstanding features of LNP is its large size (2.5 mil. ha.) making it a globally significant large tract of intact tropical forest. Only one road enters the park and that is on the north-east edge to Lake Habbema. An additional aspect of the integrity of the site is that it protects a whole sequence of river catchments from their source in the mountains to the Arafura Sea. Despite its large size, LNP still faces a number of threats and a number of management issues need to be addressed if its stewardship is to be assured. These relate to boundaries, development pressures, human residents and management constraints.

4.1. Boundaries

Protection of the Lorentz area dates back to 1919 when the colonial government gazetted a 300,000 nature reserve around the main peaks. Boundaries and legal status changed several times before the current national park was established in 1997 encompassing 2.5 mil. ha. Boundary details are still being negotiated with a small section of community land near Wamena soon to be excised.

The main boundary issue is on the western side where LNP borders the Freeport mine “Contract of Work” (COW) area. A series of straight lines which delineate the COW have no regard for the topography and, although there is no drainage from the mine into the LNP, it certainly can be seen from vantage points in the park. Although all mining activity has been excluded from the park, the limit of the Grasberg mine lease extends to within several hundred metres of the summit of Mount Jaya. It is unlikely that mining will take place any closer than it already does to the park (except underground). Freeport, however, could take full advantage of their surface rights to mine or place infrastructure right up to the boundary. The agreed western boundary buffer zone, however, should assist in minimising further conflicts.

Another boundary issue is in the southern foothills in the east where a pre-existing petroleum exploration lease extends into the park and forestry concessions have been excluded. Similarly, the human settlements in the Illaya and Beoga on the northern boundary have been excluded from LNP and result in the convoluted shape. The integrity of the marine boundary to the 10m depth mark is dependent on awareness and law enforcement.

In sum, the boundaries of LNP are a realistic compromise between existing land uses and human population distribution. There are no major features of the system lacking and, apart from minor adjustments, boundaries are ready for final proclamation.

4.2. Resident human population

The 2.5 mil. ha. of LNP's pristine forests are occasionally interrupted by small settlements of indigenous peoples several of which are serviced by missionary airstrips. These small settlements (some 50 in all) are accessible by foot-trails and their impact is limited to cultivation on steep slopes, removal of forests for subsistence uses, and fishing. Some 8 indigenous groups with a total of 6,300 people (one estimate gives 10,000) are involved. The greatest portion of the park is uninhabited though partly visited by local subsistence hunters and gatherers. Health, nutrition, security, land tenure, education, and loss of traditional customs are issues being faced by these park residents.

Given the number of indigenous people living in the park and in proximity to it, it is essential that park management work in partnership with them. The various indigenous groups have much to offer in contributing to the management of the park and the park could bring significant benefits to them in return. WWF have undertaken some excellent work with the local communities here and the Asian Development Bank (1992) has also studied what types of projects are needed to address community issues. The process of preparing the management plan for LNP has also involved representatives from the different stakeholders and this involvement needs to be encouraged and further expanded.

4.3. Development pressures

Threats to LNP come from mining activity, petroleum exploration, proposed road construction and illegal logging. Adjacent to the western boundary of the site, P.T. Freeport Indonesia (PTFI) has been producing huge volumes of copper ore and gold since it began operation in 1972. In 1997, the mine generated sales of 1.2 billion pounds of copper and 1.9 million ounces of gold making it one of the largest and most profitable mines in the world. Current reserves within the mining lease are estimated to last another 40 years. Opencast mining has created a number of social and environmental problems including displacement of the indigenous Amungme people, river pollution, oil spillages, forest clearance and construction of support services for the 14,000-strong workforce. It is important to note that all of these impacts occurred outside the current boundary of the LNP and that the mine drains to a catchment outside the park.

A part of the mining area was once inside the Lorentz reserve but in 1997 when the LNP was created the new boundary excised the portion affected. Nevertheless, the Suridman range is highly mineralised and mining exploration concessions exist all around the western and northern borders of LNP (see Map). Mining exploration concessions formerly within the LNP have been withdrawn and national park legislation does not allow new mining in parks. PTFI has stated that it supports the World Heritage site nomination and also that they do not intend to expand their activities inside the park (a formal letter confirming this has been received). It is also noteworthy that one of the four government ministers to sign the World Heritage nomination was the Minister of Mines and Energy.

Despite the progress in the re-drawing of the boundaries to exclude the mine, the current intention not to expand into the park and the considerable effort that PTFI has put into environmental restoration and research over the past 5 years, IUCN remains concerned over the influence on the park of such a dominant neighbour. In this regard, the 9 point list of actions (Table 2) given in Freeport's Biodiversity Survey Report (1998, p.575) form a strong basis for cooperation. IUCN is also aware that a Trust Fund to support the management of LNP (and to which Freeport would contribute) is now being established. The Bureau may consider it essential for the future integrity of the site to encourage both the Government of Indonesia and PTFI to implement these actions which will establish an effective management regime for the LNP and enhance the well-being of local indigenous residents.

The second threat from proposed development comes from oil exploration permits which predate the national park inside the east boundary. In this case, IUCN was informed that investors in the CONOCO oil company's proposed US\$40 million investment which would have been inside LNP had been voluntarily withdrawn and that no further activity on this lease will take place. Negotiations with CONOCO to forfeit lease areas in the park have resulted in agreement. Exploration will, however, proceed outside the LNP and once again cooperation between private interests and the Government of Indonesia such as underway with PTFI should be encouraged. The Bureau may wish to point out the incompatibility of oil extraction within the LNP.

Table 2. - P.T. Freeport Mine Assistance in LNP Management

<p>The GOI is responsible for the conservation of biodiversity in the Lorentz National Park, and PTFI will assist GOI by:</p> <ul style="list-style-type: none"> i) working with PHPA to rationalize the boundaries of the Lorentz National Park; ii) providing logistical support for field studies in the Lorentz National Park; iii) carrying out ecological research in ecosystems which occur in both the PTFI COW Mining and Project Area and the Lorentz National Park; iv) working with GOI to establish biodiversity research sites and permanent monitoring plots within the Lorentz National Park which can provide ecosystem management data for ecosystems within the park, and also serve as "control" sites for biodiversity research sites and permanent monitoring plots established within the PTFI COW Mining and Project Area; v) preparing and distributing field guides which summarize the results of PTFI biodiversity research to agencies (government, universities, NGOs) who are involved in the management of the Lorentz National Park; vi) developing an integrated GIS and mapping system which can be adapted for use in the Lorentz National Park, as well as in the PTFI COW Mining and Project Area; vii) carrying ethnobotanical studies for indigenous groups living in ecosystems within the PTFI COW Project Area and the Lorentz National Park, and assisting these groups to develop potential income generating activities based on the sustainable use of local plants and animals; viii) developing the PTFI COW Mining and Project Area as a "buffer" between the Lorentz National Park and development activities to the west of the PTFI COW Mining and Project Area; and ix) working with government agencies, including PHPA, and other private sector companies operating in the area, for bioregional/ecosystem conservation of biodiversity.
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(Source: P.T. Freeport Indonesia 1998. Biodiversity Surveys in the PTFI COW Mining and Project Area, Irian Jaya, Indonesia, p.575.)

Three proposed road developments in LNP are discussed in the nomination. The new road to Lake Habbema along the northern boundary was constructed with little regard for the environment and is now in an unstable condition. During the field inspection, IUCN expressed concerns over reduction of the impacts of this road with government officials and greater care to protect the fragile highland life zone was encouraged.

A proposed road that would link the Freeport Mine site with Beoga has also been under study but is unlikely to be seriously considered for some years. Of greater concern would be a proposed road across the width of the park between Timika and Merauke (via Agimuga) (see Map 3.).

Such a road would severely disrupt the forest and catchment integrity of the park and, although unlikely to proceed (for financial and security reasons), strong cautionary warnings should be given by the Bureau.

Logging concessions border LNP on the east. These pose a threat to the park as they include long-term changes to traditional lifestyles of some inhabitants (i.e. dependency on a consumer economy and shortage of suitable trees for making canoes). Already, some of the Nakai tribe are engaged in logging activities, some of them illegal. There is currently no management presence by the Forestry Department in this region.

The final issue affecting integrity is the need for a more adequate management regime to be put in place. The LNP does not have a headquarters, a resident Director or a management plan. It does have a person nominally responsible based in Jayapura and forest department rangers based in several locations nearby but all these people have other responsibilities. A beginning has been made towards preparing a management plan by bringing together a meeting of stakeholders but work has not progressed since then. LNP has been largely supported to date by WWF-Indonesia with funds from the German and US Governments. The Government of Indonesia is intending to establish a local headquarters and staff early next year but a capital budget to support site management has not yet been estimated.

A particular requirement will be for the managers of LNP to make a concerted effort to build a partnership with the local people both within and outside the park. Close liaison through the Tribal Councils, a cooperative management approach and the establishment of staff community liaison positions are three suggested actions. A commitment to strengthening local managerial capacity is another high priority task.

The availability of resources for management of LNP is seen as the main issue facing the park in future. There are proposals to establish a special foundation to independently raise funds for the park. PTFI has indicated an interest in participating in such a project as has CONOCO. The regional offices of UNESCO and WWF are both acting to facilitate the setting up of a "Friends of Lorentz" following the model of the Friends of Kutai National Park in Kalimantan. Completion and adoption of a management plan thus becomes ever more important as a means of demonstrating the commitment of the park authorities and establishing funding priorities.

Another proposal discussed during the field inspection is the establishment of a partnership between LNP and the Wet Tropics World Heritage Area in tropical Australia. Preliminary inquiries of both agencies suggests a positive interest. Such a pairing of these two large tropical rainforest areas could be particularly beneficial to Lorentz in the short term and eventually should be mutually beneficial.

In conclusion, all the above issues will require a concentrated effort in the years ahead. Although LNP has been affected by human activity along its periphery, its size and rugged terrain have helped maintain it in a relatively pristine state to date. With various regional pressures now mounting and with social concerns with local residents in need of attention, the Government of Indonesia and its partners in LNP need to take a proactive stance. The initial management planning process now needs strong follow-up to prepare a programme of action.

5. ADDITIONAL COMMENTS

The field inspection found strong levels of support for the nomination from many sectors. In particular, it is apparent that there is a good level of support for the nomination in the indigenous communities which were consulted. Notwithstanding, it is apparent that there is still a significant level of concern about protection of their traditional rights and questions about how the Government might impact on their lives. Indigenous groups voiced the need for greater efforts by all levels of Government in building trust with the local people. This needs to be addressed by a communication programme by the park managers and others, including regular community liaison and information.

The official positions presented by Central and Provincial government agencies were highly supportive of the nomination and future management of LNP as a World Heritage area. The fact that the nomination was signed by the President and three senior ministers was taken as a strong sign of commitment from the Government of Indonesia. This provides a timely opportunity to press for this commitment to be translated into more adequate management.

The non-government environmental and community welfare organisations, including the church, indicated strong support for the nomination. The Dani Tribal Council indicated support but also showed some concern about possible restrictions on access to resources in their traditional lands. Again, they expressed the need for better relations with government agencies.

PTFI also indicated their strong support for the nomination. The company is already actively involved in sponsoring social development programmes with the local indigenous programme and shows interest in a more direct role in helping the park.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

All assessments conducted on the biological priorities of protected areas in Asia/Pacific by FAO, UNEP, IUCN, ADB, Conservation International, WWF as well as the Government of Indonesia, rank LNP at the top. With its size, variety of habitats and the combination of numerous additional natural values, LNP is a clear candidate for inscription on the World Heritage List on the basis of the following three criteria:

Criterion (i): Earth's history and geological features

The geology and geomorphology of LNP provides extraordinarily graphic evidence of major elements of the earth's evolution. The main mountain range is the direct product of the collision of the leading edge of the Australian tectonic plate with the Pacific plate. Massive marine sediments, comprising mainly limestone and sandstone, have been rapidly uplifted to produce a major cordillera, albeit of very recent origin. The uplift is on-going.

Whilst the graphic evidence of the plate collision is evident along the length of the island of New Guinea, there is no doubt that Lorentz represents the most outstanding example, containing as it does the highest points on the mountains and the only remaining glaciers on the island. Furthermore, it is the only intact mountains-to-sea transect on the island which has been incorporated in a protected area.

LNP also graphically illustrates a remarkable response to the last glacial and the post-glacial period. The main range shows all the classic evidence of glaciation, including glacial lakes and moraines. Furthermore, Lorentz retains vestigial direct evidence of the last glacial with 4 or 5 small remnant glaciers, all retreating rapidly. None of the two other tropical glacier fields in the world exhibit the features of Lorentz. Indeed, there appears to be no better example of the combined effect of collision of tectonic plates with the secondary major sculpting by glacial (glaciation) and post-glacial events

(shoreline accretion). Analogues of this do extend across much of the southern side of the island of New Guinea but only Lorentz retains its glaciers and is in a protected area.

In response to global warming, as the glaciation of the mountains was receding, the sea level was rising. Almost the whole of the southern lowlands of Lorentz National Park post-date the last glacial as the massive amounts of debris eroded from the mountains, including the products of glaciation, contributed to rapid accretion of the southern coastline. Most of the southern lowlands are inundated during high tide, both in the estuarine and freshwater zones, attesting to their very recent origin.

LNP thus meets Criterion (i) in representing a major stage of the earth's history, in particular the mountain building associated with collision of tectonic plates, overlaid with the impact of glacial and post-glacial events, including the rise of sea level in response to global warming. Furthermore, there is an abundance of known fossil sites in the nominated area which provide a major resource recording the evolution of life on the island of New Guinea. Some of the fossils and fossil sites are of international significance, including many now extinct New Guinea endemic species, such as the *Protomnodon hopei*, a large extinct member of the kangaroo family.

Criterion (ii): Ecological processes

The geophysical processes at work in LNP (mountain building and tectonic plate collision and accretion of erosional materials in the lowlands) along with high rainfall have led to coincident development of significant on-going ecological processes. LNP's climatic gradient represents the most complete climatic gradient for the island of New Guinea, indeed for the whole of the Australian tectonic plate, from nival zones and glaciers to lowland equatorial with an equally extreme range of plants and animal species and communities. LNP is the only protected area in the world which incorporates a continuous, intact transect from snow cap to tropical marine environment, including extensive lowland wetlands. The combination of these two geophysical processes, mountain building and coastal accretion, has created climatic and salinity gradients along which ecological processes have sieved the regional biota in an outstandingly graphic way.

The rapid and expansive growth of the lowlands from the many parallel rivers flowing from the mountains, means that the altitudinal change over much of the lowlands is minimal and is mostly at or below high-tide level, even in freshwater areas. The result is that tidal influence in LNP extends well into the freshwater areas towards the base of the mountains. The biota of the lowlands have therefore been sieved into a complex array of species. These occur along a salinity gradient, from mangrove communities in the lower estuaries, giving way upstream to nipa palm and sago palm forests which in turn give way to open freshwater swamps, freshwater swamp forest and peat forests further upstream.

The mountain building process has provided temperate refuges in the tropics for ancient Gondwana species of plants during climatic warming since the last ice age. For example, LNP's *Nothofagus* beech forests are well represented, although their closest relatives are otherwise confined to the cool temperate regions of south-eastern Australia, New Zealand and the southern Andes.

The refugial effect or local genetic evolution, or both, are manifest as local endemic species or restricted range species. Although research to date has been limited, it is apparent for example, that a number of mammal species, including some newly discovered species such as the Dingiso tree kangaroo, have evolved to utilise the specialised habitats of the sub-alpine and upper montane climatic zones. The mammal fauna of the mountains is distinguished by the predominance of marsupials and monotremes indicating a Gondwanan origin, the Asian origin placentals being limited to rodents and bats.

LNP provides evidence of a highly developed endemism in both plants and animals, at least for the higher altitudes of the mountains. This is what would be expected in a region combining on-going uplift and climatic warming.

LNP thus also meets criterion (ii) as an outstanding example of on-going ecological and biological processes in the development of terrestrial, freshwater, coastal and marine systems and communities of plants and animals.

Criterion (iv): Biodiversity and threatened species

Biological research in LNP to date has been very restricted and relatively little is known about the species composition of the area. However, research undertaken by Freeport and others in specific localities has been extrapolated to some extent across altitudinal zones of the LNP and confirm that the park supports the highest biodiversity of species in the region. The greater part of the case for meeting criterion (iv) is based on detailed information available for several montane, sub-alpine and alpine areas on the main range. Here a high level of local endemism is apparent, including many newly discovered species.

Much of the rich biota of LNP is new to science and some of special interest to science. For example, the newly described tree kangaroo is of special interest given the hypothesis that it has entered on an evolutionary reversal, re-evolving from an arboreal species to a mainly ground dwelling animal. LNP contains substantial portions of two Endemic Bird Areas with a total of 45 restricted range birds and 9 endemic bird species. Two of the restricted range bird species, Archbold's bower bird, and MacGregors Bird of Paradise are considered rare and vulnerable.

LNP, however, is not just the habitat for many rare, endemic and restricted range species. Given the large size and exceptional natural integrity, it is an especially important habitat for these species and their on-going evolution. Given the population and development pressures that are starting to build in Irian Jaya, LNP will become increasingly important for long term conservation of the species already recorded and the many that remain to be discovered.

It is clear that LNP contains "the most important and significant natural habitats for in-situ conservation of biological diversity, including those habitats that contain threatened species of universal value from the point of view of science or conservation". LNP thus meets Criterion (iv). Furthermore, given the limited knowledge on the park, it is possible to predict that further research will reinforce the fact that LNP is a globally important protected area for the conservation of a rich biodiversity, including many local endemic and rare species.

Criterion (iii): Superlative natural phenomena, scenic beauty

The case for this criterion has not been convincingly made in the nomination. Although there are many scenic features in LNP such as waterfalls and the glaciers on Puncak Jaya, these features are secondary in importance to the park's main values under criteria (i), (ii) and (iv).

Conditions of Integrity

The LNP nomination meets all related Conditions of Integrity except (v) which notes that a nominated site "should have a management plan". In as much as the planning process has commenced with a stakeholders workshop in 1997, the plan has at least been initiated. The Bureau may wish to note that the Government of Indonesia intends to give priority attention to completing the plan and to strengthening the management presence in the coming year.

7. RECOMMENDATION

At its twenty-third session, the Bureau recommended to the Committee that the Lorentz National Park be **inscribed** on the World Heritage List under natural criteria (i), (ii) and (iv). The Centre has

informed the Indonesian authorities of concern over a number of aspects dealing with management of the site as discussed above. In particular, these are:

- ◆ the priority need to continue the process of management planning for the park with full involvement of the local stakeholders;
- ◆ encouragement for the proposed establishment of a Foundation which would assist in the management of the park;
- ◆ possible twinning arrangement with the Wet Tropics World Heritage site in Australia;
- ◆ appointment of a Park Director and support staff (as planned for 2000);
- ◆ the concern over development projects that would affect the park, for example the proposed Timika/Merauke road and any expansion of mining activity towards the park boundary so as not to conflict with LNP's nomination as a World Heritage Site.

The Indonesian authorities have subsequently responded positively to all the above concerns in a 1 October 1999 letter to the Centre.

The Committee may also wish to commend the Government of Indonesia for acting to ensure that the former existing mining and petroleum exploration leases in the park were withdrawn. Finally, the Committee may wish to recommend that a monitoring mission be undertaken to gauge progress three years after inscription.