IUCN Conservation Outlook Assessment 2017 **(archived)**
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Please note: this is an archived Conservation Outlook Assessment for Lorentz National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

# Lorentz National Park

## SITE INFORMATION

Country:
Indonesia
Inscribed in: 1999
Criteria:
(viii) (ix) (x)

Site description:

Lorentz National Park (2.35 million ha) is the largest protected area in South-East Asia. It is the only protected area in the world to incorporate a continuous, intact transect from snowcap to tropical marine environment, including extensive lowland wetlands. Located at the meeting-point of two colliding continental plates, the area has a complex geology with ongoing mountain formation as well as major sculpting by glaciation. The area also contains fossil sites which provide evidence of the evolution of life on New Guinea, a high level of endemism and the highest level of biodiversity in the region.
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# SUMMARY

# 2017 Conservation Outlook

**Significant concern**

The remoteness and extreme topography of much of Lorentz National Park means there are few threats to World Heritage values in those areas in the immediate future. However, the tract of alpine/sub-alpine and montane landscape stretching along the central cordillera is vulnerable and under immediate threat, along with the WH values associated with it as a result of on-going threat of road construction. Most other current threats such as illegal logging and hunting of Boelen's python are either manageable or not yet critical, although more information is needed on the level of poaching in the property. However, emerging threats, in the absence of assertive management intervention, risk escalating to major threats, road construction being the likely precursor to other associated serious direct and indirect threats. Management is ill-prepared to deal with these threats and its ineffectiveness, including ineffective engagement with the traditional owners of the park and lack of field presence, augurs poorly for protection of the park and its values.

## Current state and trend of VALUES

**Low Concern**
**Trend: Deteriorating**

The remoteness, extreme topography and low population density of much of Lorentz National Park means there are currently few threats to World Heritage values in those areas. However, much funding is made available to all districts in the Province of Papua to speed up development, and the tract of alpine/sub-alpine and montane landscape of the property stretching along the central cordillera is vulnerable and under immediate threat along with the WH values associated with it as a result of on-going and proposed road construction and associated impacts. It is therefore the highlands of Lorentz that are most threatened and this trend is expected to accelerate.
The current rapid melting of the glaciers in Lorentz is an indicator of global

climate change but may also be a local indicator of the increasing inhabitability of the extensive sub-alpine/montane zone of the park and hence the likely future escalation of threat from settlement to this important landscape.

## Overall THREATS

**High Threat**

The very large size, remoteness, rugged terrain, cold mountain climates and labyrinthine waterways and wetlands in the lowlands together with a low population density has meant that the greater part of the park remains in an intact if not pristine condition. Most of the park and its OUV have no identifiable threats in the short term. Most other current threats such as illegal logging and hunting of wildlife are either manageable or not yet critical, although more information is needed on the level of poaching in the property. However, emerging threats are now evident. Some of those threats, in the absence of assertive management intervention, risk escalating to major threats, road construction being the likely precursor to other associated serious direct and indirect threats. The desire of district governments to provide development services to their communities is likely to put significant pressure on the property from further proposals for road construction and other developments. Impacts of climate change are now evident in the form of late stage melting of the remaining glaciers in the park and it is expected the glaciers will disappear within another 10-15 years.

## Overall PROTECTION and MANAGEMENT

**Serious Concern**

The large size, remoteness, rugged, mountainous terrain and labyrinthine waterways of the lowlands ensure that for the foreseeable future most of the park is to a certain extent self-protecting. However, the highlands are now coming under increasing threat and management is ill-prepared to deal with the threats. Ineffectiveness of management, including ineffective engagement with the traditional owners of the park and the absence of a monitoring mechanism (which should engage traditional owners) to identify threats augers poorly for protection of the park and its values.

# FULL ASSESSMENT

## Description of values

### Values

### World Heritage values

► **Graphic evidence of tectonic collision and uplift strata and the geomorphological effect of the last glacial and post-glacial periods**
**Criterion:(viii)**

The geology and landforms of Lorentz National Park display graphic evidence of Earth's history. Located at the meeting point of two colliding continental plates, the area has a complex geology with ongoing mountain formation as well as major sculpting by glaciation and shoreline accretion. Lorentz National Park is close to the line of collision between the Australian and Pacific tectonic plates and the high mountains of Lorentz provide graphic evidence of the collision and major uplift arising from the collision, including the highest mountains of New Guinea. There is also clear evidence of post glacial shorelines (Nomination document, 1999; SoOUV, 2013). Graphically illustrating the geomorphological effect of the last glacial and post-glacial periods, the mountains show all the classical glacial landforms including lakes and moraines. Furthermore, there are five small remnant glaciers. While all five glaciers are retreating rapidly under present climatic conditions, no other tropical glacier fields in the world exhibit glacial evolution as well as those in Lorentz National Park. There is also no better example in the world of the combined effect of collision of tectonic plates and the secondary major sculpting by glacial and post-glacial events (SoOUV, 2013).

► **Fossil evidence of post Pleistocene mammal extinctions.**
**Criterion:(viii)**

Fossils, particularly from the Pleistocene and Holocene are evidence of post Pleistocene mammal extinctions. These fossil sites are exceptionally valuable as the main sources of evidence of mammal species that have only recently become extinct. (Nomination document 1999)

### ► A centre of on-going ecological and biological evolution

**Criterion:(ix)**

Lorentz National Park provides evidence of highly developed endemism in both plants and animals, especially for the higher altitudes of the mountains, as expected in a region combining on-going uplift and climatic warming (SoOUV, 2013). The major mountain building uplift to form the central cordillera of the large island of New Guinea is believed to have played a major role in driving relatively rapid biological evolution of species, especially of mammal and bird species. New Guinea is the centre of diversity of the highly distinctive tree kangaroo group with 15 of the recognized 17 taxa being confined to New Guinea. Lorentz is primary habitat for two species, including the most recently discovered and most unusual species, the ground inhabiting Dingiso, Dendrolagus mbaiso. The world famous Birds of Paradise evolved in Australia but underwent major evolutionary radiation in New Guinea to the point where they now have species represented across almost the full altitudinal range on the island. Similarly, the honeyeaters show evidence of a major radiation. (Nomination document 1999)

### ► Diversity of habitats

**Criterion:(x)**

Lorentz, with altitudes ranging from 4884 metres to sea level and below, incorporates the greatest altitudinal range, and hence habitat diversity, on the island of New Guinea, indeed the Australian continental plate – from tropical ice cap to tropical sea - making it a globally unique attribute. Furthermore, this transect comprises a continuum of protected intact habitats. Habitats range from limited areas of alpine zone to the very extensive lowland coastal wetlands and mangrove systems.

### ► Diversity of species

**Criterion:(x)**

Notwithstanding the limited extent of survey, Lorentz has been clearly established as an area of great species diversity. Leading mammalogists describe it as being the most important area in the Australo-Pacific region for mammal diversity. It also contains major representation of two Endemic Bird Areas (EBA's) with a total of 45 restricted range species and 9 endemic species recorded. A transect survey in 1997, ranging from sea level to 4,000 metres recorded a very impressive 274 species, including 5 globally threatened species. Lorentz provides habitat for no less than an estimated 18 species of the spectacular and distinctly New Guinean 'Birds of Paradise' group (Nomination document 1999).

► **Rich montane flora with many endemic species and species with overlapping Gondwana and Asian links.**
**Criterion:(x)**

Lorentz contains a substantial area of alpine, sub-alpine and montane habitat, the most extensive in New Guinea, which exhibits a rich diversity of plants which include many local endemics and many relictual Gondwanan species, including Gondwanan conifers with close relatives in temperate Gondwanan fragments in Tasmania, New Zealand and Chile. E.g. Dacrycarpus sp. and Papuacedrus sp.. The Rhododendron group of plants with recognized Asian links, has a centre of diversity in New Guinea with many local endemics and the group is well represented in Lorentz, including the world's smallest Rhododendron, R.saxifragoides. (Nomination Document 1999)

## Other important biodiversity values

► **ASEAN Heritage Park**

Lorentz National Park is also an ASEAN (Association of South-East Asian Nations) Heritage Park.

# Assessment information

## Threats

### Current Threats

**High Threat**

The very large size, remoteness, rugged terrain, cold mountain climates and labyrinthine waterways and wetlands in the lowlands together with a low population density has meant that the greater part of the park remains in an intact if not pristine condition. Most of the park and its OUV have no identifiable threats in the short term. Most other current threats such as illegal logging and hunting of wildlife are either manageable or not yet critical, although more information is needed on the level of poaching in the property. However, emerging threats are now evident. Some of those threats, in the absence of assertive management intervention, risk escalating to major threats, road construction being the likely precursor to other associated serious direct and indirect threats.

#### ▶ Hunting (commercial/subsistence)

**High Threat**
**Inside site, extent of threat not known**
**Outside site**

There is reportedly a steady trade in poaching and sale of Boelen’s python for the pet trade (Comments in workshops for Strategic Planning). Other species such as other reptiles, mammals and birds may also be subject to intensive poaching, though an assessment of the current level of poaching in the property is needed (IUCN Mission Report, 2014). The 2014 IUCN Mission noted that there are indications in the media that a lot of wildlife species from Papua are being traded on markets in Java and Sumatra. In 2016, nearly 4,000 Pig-nosed turtles were confiscated by Airport authorities in one week in both Jakarta and Timika (a well-known regional hub for the trade of wildlife species from Papua, located adjacent to the property), the majority of which

is known to come from Lorentz National Park (IUCN Consultation, 2017). According to the State Party (Government of Indonesia, 2016), no large-scale poaching has so far been recorded at the property, but this may well be a result of the absence of an effective monitoring programme in the property. Preventive measures have nevertheless been increased, including routine patrols and awareness raising campaigns.

### ► Roads/ Railroads

**High Threat**
**Inside site, localised(<5%)**

The Lake Habema road, constructed prior to listing of the park and the only road in the park at that time, has had demonstrable impacts on the environment including siltation of streams, illegal logging, and introduction of alien fish (UNESCO/IUCN Mission Report, 2008). Construction of the Wamena – Habema – Kenyem road has continued with further impacts such as damage to peat bogs and a glacial moraine. The Environmental Impact Assessment (EIA) of this road has been revised to consider IUCN's World Heritage Advice Note on Environmental Assessement, and has been approved by the Governor of Papua Province in 2015. The revised EIA concludes that significant environmental impacts from the road might potentially affect the property. However, it is unclear what the current state of advancement of road construction is, and how any impacts are being managed (SOC report, 2017). Therefore, the Committee has requested the State Party to invite an IUCN reactive monitoring mission to the property to assess this issue (Decision 41 COM 7B.29).

### ► Invasive Non-Native/ Alien Species

**High Threat**
**Inside site, scattered(5-15%)**

In Indonesia, introduction of alien species, especially fish, is sometimes promoted, without any assessment of any environmental impact. For example the exotic fish Tilapia sp was reportedly introduced to Lake Habema in the park with the result that reported unnamed native species of fish and crustaceans have since disappeared (Nomination document 1999 citing PT Hatfindo/Freeport EIS reports).
In the lowlands, deliberate introductions and invasive freshwater fish species are reported from the park and have the potential to seriously impact the

native species such as Barramundi (Nomination document 1999).
District governments around the property have development programs that help to distribute tilapia to villages located inside the property. Such development actions should be halted before the damage done becomes irreversible (IUCN Consultation, 2017).
Current and proposed road construction in the highlands will facilitate access to pristine glacial lakes and to the headwaters of most rivers in the park and so potentially expose these to the risk of alien species introduction. (Pers. obs.) Water hyacinth is another reported invasive (IUCN Consultation 2014), and is notoriously problematic once it becomes established.

### ► Other

**High Threat**
**Inside site, localised(<5%)**

Dieback of Nothofagus has been observed in the property for many years. It has long been speculated that this may have been caused by road construction, and research into the causes of the dieback disease is ongoing. While the Government of Indonesia has stated that road construction is no longer seen as the major contributing factor, with climate change and parasitic fungi now assumed to be the primary causes (Government of Indonesia, 2016), this statement is not in line with the findings of the global scientific community that indicate clear links between dieback and road construction (see for example https://www.dwg.org.au/what-is-phytophthora-dieback).

### ► War, Civil Unrest/ Military Exercises

**Low Threat**
**Inside site, scattered(5-15%)**
**Outside site**

Since the formal integration of Papua into Indonesia in the 1960’s, there has been a demand for independence amongst certain factions of the Papuan society, leading on occasions to civil unrest, including within Lorentz National Park (Various media reports, book “Open Cage” by Daniel Start).
The civil unrest represents a serious constraint on development of trust and free movement of personnel in the mountainous regions of the park and hence constrains park management and also greatly limits the important tasks of community development, scientific survey and research in the

highlands region of the park (UNESCO/IUCN Mission Report, 2008). Work has been done to map out the land claims of tribes around Lorentz National Park, which provides an opportunity to establish collaborative management with the communities in and around the property. The High Court ruling No.35 of 2012 (Putusan MK Nomor 35/PUU-X/2012) that upholds that tribal forests (Hutan Adat) are not State lands, is yet to be translated into laws, and currently lacks a legal framework for its implementation (IUCN Consultation, 2017).

## Potential Threats

**High Threat**

Impacts of climate change are now evident in the form of late stage melting of the remaining glaciers in the park and it is expected the glaciers will disappear within another 10-15 years. The impact is not just physical but also on the biodiversity of the property as species are likely to move towards higher elevations. People are also likely to be affected.

### ▶ Habitat Shifting/ Alteration

**High Threat**
**Inside site**

As well as the obvious ongoing melting of the last of the glaciers in Lorentz National Park, the last on the island of New Guinea, future climate change has serious potential to impact on the park environment (Kincaid and Klein on retreat of glaciers, 2004 and Lonnie Thompson 2010). Climatic warming threatens the biodiversity of the alpine environment that includes many local endemic, rare and threatened species, and has the potential to render the sub-alpine/montane plateau of the park suitable for subsistence agriculture, leading to a migration to this landscape with associated implications for the park and its Outstanding Universal Value. Several small ‘pioneer’ villages are located in this landscape just above 3,000 metres asl, including 18 km west of Lake Habema, within the property.
Sea level rise associated with climate change has the potential to significantly impact on the vast coastal wetlands of the park. The nature of the impact is unknown without an understanding of the dynamics of coastal processes and rivers. Much of what is mapped as coastal lowland is flooded forest at or only slightly above sea level; a rise in sea level of 1 metre would

have regional scale implications. (Pers. obs.)

### ▶ Oil/ Gas exploration/development, Mining/ Quarrying

**High Threat**
**Outside site**

There continues to be agitation at the local and provincial level to allow exploration for oil, gas and metals (gold, copper) in parts of the park. This in part is driven by the knowledge of a geomagnetic anomaly detected by airborne exploration in the east of the park (UNESCO/IUCN Mission Report 2008). Impacts from active mining West of the park (the Freeport mine) remain a potential risk, in particular through the contamination of the marine environment by mine tailings (IUCN Consultation, 2014).

### ▶ Logging/ Wood Harvesting

**High Threat**
**Inside site**

Local government is already talking up potential for oil palm development in the inner coastal lowlands towards the foothills of the park. Oil palm development has already commenced in similar terrain east and west (IUCN Consultation, 2014) of the park and could help drive demand for similar development inside the park. Increasing assertion of traditional landownership within the park may facilitate such development as a threat (Website of Nduga regency).

### ▶ Roads/ Railroads

**Very High Threat**
**Inside site**

As is evidenced by the relatively small amount of road construction already within the park, road construction represents a real threat to the park and its values. As with many tropical regions of the world, roads are the precursor of many associated developments and have been described as ‘the beginning of the end’ for tropical forest. Proposals for major new roads on the lowlands of the park have been articulated by the military and by district governments. Whilst there appears to be no active promotion of such roads, they remain a serious potential threat to the park.
Typically in Indonesia, ad hoc settlement develops along any road and so

construction of roads in the lowlands of the park can be expected to attract unplanned suburban development and exploitation of the surrounding forests, hence the seriousness of this threat.

### ▶ Housing/ Urban Areas

**Low Threat**
**Outside site**

Satellite imagery indicates that there is significant urban development at the town of Kenyam, the capital of Nduga District. This urban development in close proximity to the property is reportedly being done without proper prior assessment of impacts (IUCN Consultation, 2017), and no information has been provided to the World Heritage Committee as required by paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention. Such development may lead to further road developments in close proximity to, and potentially inside, the property, as well as a growth in the local population and an increased risk of poaching and other illegal activities.

## Protection and management

### Assessing Protection and Management

### ▶ Relationships with local people

**Serious Concern**

Whilst the nomination of Lorentz was supported by the local traditional owners, the post listing relationship between the Wamena based management and the traditional owners has been very weak and appeared to be deteriorating at the time of the 2011 UNESCO/IUCN reactive monitoring mission (UNESCO/IUCN Mission Report, 2011). The 2014 IUCN mission was aware of indications that the situation may be improving, but was unable to confirm this (IUCN Consultation, 2014). There has developed a fundamental divergence of opinion between central government and the traditional owners about who owns the land. Local people, particularly traditional owners, are not fully involved in management of the park (UNESCO/IUCN Mission Report, 2011). However, the 2014 IUCN mission noted that a

collaborative mechanism has been established, which is pending formalization by ministerial decree (IUCN Mission Report, 2014). Local communities are also being involved in a review of the zonation of the property, which was ongoing in 2016 (Government of Indonesia, 2016). Until the above-mentioned new mechanism is proven to be effective, the situation remains of serious concern.

### ► Legal framework

**Mostly Effective**

The legal framework for management of national parks in Indonesia is robust.

### ► Enforcement

**Serious Concern**

Law enforcement is weak, owing to the vast size of the property, its relative inaccessibility, and low staffing levels.

### ► Integration into regional and national planning systems

**Serious Concern**

The on-going issue of the road construction is illustrative of the apparent lack of integration of the park into the national, provincial and local government planning systems. Local government websites promote development of oil palm within the park without so much as a reference to it being in a park and World Heritage area (e.g. Nduga website).

### ► Management system

**Some Concern**

A park specific Bureau for management of Lorentz was established in 2006 and is headquartered in Wamena, a highland town north of the park. The Bureau is a unit of the Jakarta based Department of Forestry and is therefore not integrated into the autonomous Papua Province administration. The low echelon of the Lorentz National Park Bureau within the Indonesian governmental structure hampers its ability for coordination and negotiation with other government agencies of a higher echelon level, such as district Forestry Offices (IUCN mission report, 2014).

### ► Management effectiveness

**Serious Concern**

It is increasingly evident that the management of the park is failing and ineffective in any form of field management. In 2008 it was found that none of the Wamena staff had ever been to the park. More recent reports have been very critical of the management effectiveness. The ineffectiveness of the park management represents a serious threat to maintenance of the values of the park.
The establishment of a collaborative management mechanism is a positive step, however, park management remains hampered by a lack of capacity to address the threats on the ground (IUCN Mission Report, 2014).

### ► Implementation of Committee decisions and recommendations

**Some Concern**

The World Heritage Committee has made many decisions and recommendations on Lorentz, but until recently only few had been implemented. Notably, road construction had continued (90 km were built since the 2011 mission) despite repeated requests by the Committee since 2008 that the State Party halt road construction pending the completion of an EIA. The EIA process only started after the Committee's 37th session in 2013, and road construction had been halted at the time, pending the completion of the EIA (IUCN Mission Report, 2014). With the EIA having been completed and approved by the Governor of Papua Province in 2015, it is unclear what the current state of advancement of road construction is (SOC report, 2017).

### ► Boundaries

**Mostly Effective**

Substantial lengths of the boundary have been marked with concrete markers but the extent of marking in the highlands is unknown. Some more populated areas were marked by local cooperative in the early 2000's. Much probably remains unmarked. (Management planning process)

### ► Sustainable finance

**Some Concern**

The Central Government's budget allocation for the property has increased by 65% from IDR 9,695,314,000 in 2011 to IDR 15,047,364,000 in 2014. However, given the vast area of the property (2.3 million hectares), the current budget allocation is still insufficient (IDR 6,403 or US$ 0.56 per hectare) to deal with the complexities on the ground. Furthermore, the biggest proportion of the budget (75%) is allocated for support costs, including infrastructure, office and staffing costs (IUCN Mission Report, 2014).

### ► Staff training and development

**Serious Concern**

Additional staff has been hired with a diverse educational background, including agriculture, law, and social sciences. Strong efforts have been made in 2013 to improve staff capacities, including by providing training to 24 staff members on topics such as GIS and conflict resolution, among others. However, the limited number of staff and inadequate capacities still remain a key challenge in monitoring and managing the property (IUCN Mission Report, 2014).

### ► Sustainable use

**Some Concern**

Traditional tribal communities undertake subsistence hunting but are mostly dependent upon subsistence agriculture. No studies have been undertaken to identify long-term impacts, however, social changes are leading to changes in traditional natural resources management and hunting methods, which in turn may result in a more significant impact on the park's biodiversity (IUCN Consultation, 2014).

### ► Education and interpretation programs

**Data Deficient**

Some education programs appear to have been conducted but it is difficult to assess their effectiveness. Working with traditional communities will need specific culturally appropriate education programs. These should be designed in collaboration with anthropologists. However, such approaches are currently absent (IUCN Consultation, 2014).

### ▶ Tourism and visitation management

**Data Deficient**

Tourism is very limited, comprising mountaineering focused on Carstenz Pyramid in the west and Mt. Trikora in the east plus bird tours to the Lake Habema area in the north east. Freeport mine has provided major assistance (construction of a mountain top airstrip) in establishing the village of Tsinga as a fly-in base for mountaineering with the operation directly benefiting the villagers.

### ▶ Monitoring

**Serious Concern**

No monitoring mechanism exists for the property, and no monitoring has taken place (IUCN Mission Report, 2014)

### ▶ Research

**Data Deficient**

No specific data but there appears to have been no research conducted in the park since nomination, with the exception of some limited research on the causes of the dieback disease that is affecting the Nothofagus forests in the property.

## Overall assessment of protection and management

**Serious Concern**

The large size, remoteness, rugged, mountainous terrain and labyrinthine waterways of the lowlands ensure that for the foreseeable future most of the park is to a certain extent self-protecting. However, the highlands are now coming under increasing threat and management is ill-prepared to deal with the threats. Ineffectiveness of management, including ineffective engagement with the traditional owners of the park and the absence of a monitoring mechanism (which should engage traditional owners) to identify threats augers poorly for protection of the park and its values.

### ▶ Assessment of the effectiveness of protection and management in

### addressing threats outside the site

**Some Concern**

Given the large size, remoteness and rugged terrain in much of the park, the park is to a large degree self-buffering and requires limited management intervention outside the park. Park management is ineffective within the park and it is unlikely to have any beneficial effect in dealing with threats outside the park. There is a constant threat of invasive and exotic species being introduced, especially fish, which warrants management intervention outside the park. Similarly, plans for major roads that may approach the park deserve management attention. There is a need to monitor the development trends outside the park (IUCN Consultation, 2014), in order to ensure that impacts on the property's OUV are avoided. The political situation and uncertain security in the area further complicates management efforts both within and outside the property (IUCN consultation, 2014).

## State and trend of values

### Assessing the current state and trend of values

#### World Heritage values

▶ **Graphic evidence of tectonic collision and uplift strata and the geomorphological effect of the last glacial and post-glacial periods**

**Low Concern**
**Trend:Stable**

Recent glaciation of the high mountain areas of Lorentz, including remaining small glaciers, has spectacularly exposed the geological strata in the core of the mountain range. Most of these values are not vulnerable; however, in areas where the road has been constructed certain geological formations, such as moraines, have been damaged. Nevertheless, the property still features many similar geomorphological formations to maintain its OUV (IUCN Mission Report, 2014).

▶ **Fossil evidence of post Pleistocene mammal extinctions.**

**Data Deficient**
**Trend:Data Deficient**

Important fossils were cited in the nomination document as part justification for nomination. Most of these fossils are from late Pleistocene or Holocene and so in the form of sub-fossil cave deposits which are very vulnerable to disturbance. There appears to have been no monitoring or update of the condition of the fossils which constitute this value (Nomination document 1999).

### ► A centre of on-going ecological and biological evolution

**Good**
**Trend:Stable**

Due to the combination of the large area, huge diversity of habitat and prevailing overall intact natural condition, Lorentz remains a globally important centre for on-going ecological and biological evolution (Nomination document, 1999, UNESCO/IUCN Mission Reports, 2008, 2011, and IUCN Mission Report, 2014).

### ► Diversity of habitats

**Low Concern**
**Trend:Deteriorating**

The great diversity and altitudinal sequence of habitats from tropical glacier to tropical sea remains essentially intact. Only the alpine/sub-alpine/montane uplands are particularly vulnerable and coming under increasing threat as a result of opening access by road construction (UNESCO/IUCN Mission Reports, 2008 and 2011, IUCN Mission Report, 2014). The deteriorating trend of this value may be reason for more significant concern in future, if no effective management interventions are made to reverse this trend.

### ► Diversity of species

**Low Concern**
**Trend:Data Deficient**

Notwithstanding the absence of any official monitoring at species level, indicators suggest that Lorentz retains its wealth of species, both of plants and animals (Nomination document, 1999, Management planning process, UNESCO/IUCN Mission Reports 2008 and 2011, IUCN Mission Report, 2014). Few species are imminently threatened, however, there are indications that many species of Papuan wildlife are being traded on pet markets (IUCN

Mission Report, 2014), and changes in traditional management of natural resources and hunting methods may represent an increasing threat to certain species (IUCN Consultation, 2014).

► **Rich montane flora with many endemic species and species with overlapping Gondwana and Asian links.**

**High Concern**
**Trend:Deteriorating**

The large size, remoteness, rugged, mountainous terrain and labyrinthine waterways of the lowlands ensure that for the foreseeable future most of the park is to a certain extent self-protecting. However, the highlands are now coming under increasing threat and management is ill-prepared to deal with the threats. Ineffectiveness of management, including ineffective engagement with the traditional owners of the park and the absence of a monitoring mechanism (which should engage traditional owners) to identify threats augers poorly for protection of the park and its values.

## Summary of the Values

► **Assessment of the current state and trend of World Heritage values**

**Low Concern**

**Trend: Deteriorating**

The remoteness, extreme topography and low population density of much of Lorentz National Park means there are currently few threats to World Heritage values in those areas. However, much funding is made available to all districts in the Province of Papua to speed up development, and the tract of alpine/sub-alpine and montane landscape of the property stretching along the central cordillera is vulnerable and under immediate threat along with the WH values associated with it as a result of on-going and proposed road construction and associated impacts. It is therefore the highlands of Lorentz that are most threatened and this trend is expected to accelerate.
The current rapid melting of the glaciers in Lorentz is an indicator of global climate change but may also be a local indicator of the increasing inhabitability of the extensive sub-alpine/montane zone of the park and hence the likely future escalation of threat from settlement to this important

landscape.

## Additional information

### Benefits

#### Understanding Benefits

**► History and tradition**

There is a rich Indigenous culture in Lorentz. Some tribes share aspects of their culture as a part of minor tourism activities. The Asmat tribe in the lowlands makes significant income from the sale of their world famous wood carvings; not dependent on tourism.

**► Outdoor recreation and tourism**

Tourism remains very minor although there is great potential. Mountaineers are focused on Carstenz Pyramid as one of the ‘ 7 peaks of the world’. Some bird watching tours occur in the Lake Habema part of the park but logistics are problematic and security can be a concern. Both mountaineering and birdwatching have great potential if logistic and security issues can be overcome. There is potential for various forms of adventure tourism.

**► Importance for research**

Much of Lorentz remains unexplored and has high potential for discovery of new species of plants and animals. The large altitudinal range and pristine nature of the park enhances potential for major expansion of natural history knowledge.

#### Summary of benefits

Lorentz National Park possesses great potential for scientific exploration and could support a series of major expeditions. Expansion of scientific knowledge

would enhance the potential for increasing benefits flowing from specialized tourism, especially mountaineering and birdwatching. Cultural tourism has untapped potential but Indigenous culture is undervalued externally and being eroded by outside influences.

## Projects

### Compilation of active conservation projects

| № | Organization/ individuals | Project duration | Brief description of Active Projects |
|---|---|---|---|
| 1 | WWF Sahul | | Are implementing some projects. They have assisted the national park with the development of zonation and a collaborative management mechanism. |
| 2 | YBAW (Yayasan Bina Adat Walesi) based in Wamena | | Mapping of tribal territories (Hutan Adat) |
| 3 | Burung Indonesia | | Identification of IBAs and KBAs in Papua and West Papua |

### Compilation of potential site needs

| № | Site need title | Brief description of potential site needs | Support needed for following years |
|---|---|---|---|
| 1 | Integrated monitoring mechanism | There is an urgent need to establish an integrated monitoring mechanism to identify and respond to threats. This should be accompanied with the required increases in human, financial, and material resources. | |
| 2 | Assessment of poaching | There are indications that wildlife species of Papua are being intensively traded on markets in Java and Sumatra (IUCN Mission Report, 2014). It is however difficult to determine the origin of the specimens being traded. There is a need to perform an assessment of the extent and impact of poaching in Lorentz National Park. | |

| № | Site need title | Brief description of potential site needs | Support needed for following years |
|---|---|---|---|
| 3 | Revise park zonation | The current zonation of the property is inadequate, and does not properly take into account its Outstanding Universal Value. It should be urgently reviewed in order to fully incorporate OUV, and to address conservation and management needs. | |
| 4 | (Suggest a consortium of Indonesian, Papua New Guinean, Australian and New Zealand scientists with experience in this shared Gondwanan biome.) | HIGHLANDS ENVIRONMENT: There is an urgent need to comprehensively survey and map the most vulnerable alpine/sub-alpine/montane region of Lorentz, now under threat by proliferation of road access across the high country. (‘Roof of New Guinea’, ‘Roof of Papua’ or ‘Archbold Expedition Update’) This survey and mapping work could be a critically important prerequisite to an environmentally oriented road planning process. (The current management plan appears inappropriately to relegate this critically important habitat to ‘Use Zone’.) | |

| № | Site need title | Brief description of potential site needs | Support needed for following years |
|---|---|---|---|
| 5 | (Suggest contribution of expertise from Australian/Papua New Guinean/New Zealand road engineering and environmental specialists in high country (alpine/sub-alpine) transport engineering) | TRANSPORT PLANNING: Road transport represents the greatest immediate threat to the park, in particular to the sub-alpine/montane lands. Current road planning needs to be urgently broadened to factor in environmental impact, in particular impacts on World Heritage Values. There is a need to conduct SEAs in all districts located in the property. The 2014 IUCN reactive monitoring mission noted that: “As both the provincial and district governments in Papua struggle with insufficient capacities to conduct environmentally friendly development planning, special attention and support should be given to develop Strategic Environmental Assessments (SEA) at district level. The Indonesia Forest and Climate Support (IFACS), a USAID funded project, is currently assisting the Mimika district government in developing their SEA. Lessons learned from this project could be extrapolated to the other districts in the park. There is a window of opportunity to develop a SEA for each new district and integrate the recommendations in their Mid Term Development Plan (RPJM) and Spatial Planning Document (RTRWK), before these documents are being developed.” | |
| 6 | . | CULTURAL: There is a perceived need to offer a service to the Indigenous tribes of the park to conduct oral history recording. There remain a significant number of tribal people who were present at time of first contact with Europeans and who should retain knowledge of pre-contact culture. This service should contribute to building mutual respect and trust between management and traditional landowners – the key stakeholders in the future of the park.In addition to oral history recording, such a service should focus on the intangible culture of tribes living in Lorentz (this might include songs, dances, performances, ceremonies and oral history), and on mapping in detail local knowledge systems and natural resources management systems, as well as social changes, to identify impact on park and biodiversity. | |
| 7 | . | LOWLAND RIVER SURVEY: Given the reported introduction of invasive fish species into the lowland rivers of southern Papua, there is a need for an updated survey of fish fauna of the lowland rivers of the park. This survey would build on to the survey work conducted on behalf of Freeport mine. | |

| № | Site need title | Brief description of potential site needs | Support needed for following years |
|---|---|---|---|
| 8 | Exploration of collaborative management with local tribes | With the autonomous law plus the High Court ruling on tribal lands (Hutan Adat), there is the opportunity for greater collaboration and involvement of local groups in the management of the property. | |

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