IUCN Conservation Outlook Assessment 2014 **(archived)**
Finalised on 26 May 2014

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

Virunga National Park

SITE INFORMATION

Country:
Democratic Republic of the Congo
Inscribed in: 1979
Criteria:
(vii) (viii) (x)

Site description:

Virunga National Park (covering an area of 790,000 ha) comprises an outstanding diversity of habitats, ranging from swamps and steppes to the snowfields of Rwenzori at an altitude of over 5,000 m, and from lava plains to the savannahs on the slopes of volcanoes. Mountain gorillas are found in the park, some 20,000 hippopotamuses live in the rivers and birds from Siberia spend the winter there.
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SUMMARY

2014 Conservation Outlook

Critical

Biological attributes are under steady pressure throughout much of the park and management capacities to deal with the pressures are permanently overstretched (despite significant improvement recently). Unequivocal high level political support for the park's values is essential (but currently absent) for the survival of the park. The uncertainty of the outcome of the oil exploration issue is the overriding concern since if it goes ahead Congolese law requires degazettment. In a country racked by conflict and corruption, oil exploitation in the park is likely to fuel conflict and greatly intensify pressure on the site's unique attributes. The trend of decline in biodiversity attributes is reversible if strong political leadership is given to support park management's law enforcement and conservation actions.

Current state and trend of VALUES

High Concern
Trend: Data Deficient

The status of landscape attributes relating to criteria vii (superlative natural phenomena) and viii (outstanding examples representing major stages of earth's history) are good and are likely to remain so. However the biological attributes relating to criteria vii (exceptional large mammal biomass) are severely degraded, although the situation can recover if sustained protection is applied. The status of attributes relating to criteria x (significant natural habitats for in-situ conservation of biological diversity), is a concern because of encroachment and habitat degradation affects 67% of the park boundaries. The trend is reversible if strong political leadership is given to support park management's law enforcement and conservation actions.
The uncertainty of the outcome of the oil exploration issue is the overriding concern, since if it goes ahead Congolese law requires degazettment. For this

reason the summary status and trend is classified as “High concern”.

Overall THREATS

Very High Threat

Decades of poor governance culminating in two civil wars and the ongoing civil unrest are the factors that have created the current threats: encroachment for agriculture and fishing, commercial hunting, and deforestation for charcoal. At least 67% of the park boundary is under moderate (21%) to high pressure (46%). The cumulative effect of these threats is resulting in intense pressures on many of the park’s World Heritage attributes including:
• Diversity and ecological connectivity of terrestrial habitats (particularly dry forests, woodlands, wooded savanna and humid rainforest)
• Endangered and/or threatened species (2 subspecies of gorilla, chimpanzees, L’Hoest monkey, okapi, Rwenzori duiker, forest elephant)
• Large mammal assemblages of the central plains
• Wetland habitats for palearctic migrants
Overfishing on Lake Edouard also threatens the biological diversity of the aquatic ecosystem and threatens food security of local populations.
Possible future oil exploitation is the greatest threat to the site as it will require degazettment of parts of the park where oil exploitation will take place. In a country racked by conflict and corruption, oil exploitation in the park is likely to fuel conflict and greatly intensify pressure on the site’s unique attributes.

Overall PROTECTION and MANAGEMENT

Some Concern

In a context of continuing civil strife, insecurity and political instability the park faces enormous management challenges. The issues of mass encroachments, presence of armed militia, commercial charcoal making, illegal fishing and oil exploration require clear and strong political leadership in support of park management structures but regrettably the necessary level of leadership is not forthcoming. Park management therefore often finds itself in an isolated position as it tries to reestablish the rule of law in the park.
However, park leadership is currently strong, and remarkable efforts (and sacrifices) are being made to save the park’s World Heritage attributes despite the enormous challenges. A significant increase in financial and technical support to the park from public and private partners in recent years has been of critical

importance in preserving these attributes.

FULL ASSESSMENT

Description of values

Values

World Heritage values

- **Aesthetically spectacular afro-montane and alpine landscape of Rwenzori mountains**
  Criterion:(vii)

  Snow-capped peaks located on the equator. Third highest peak in Africa (5,109m). Uninterrupted gradient of intact habitats 800m to >5,000m within a horizontal distance of only 30 km. Largest expanse of glaciers on the African continent (SoOUV, 2012).

- **Spectacular Virunga volcanoes with frequent volcanic activity**
  Criterion:(vii)

  Chain of 2 active and 6 extinct volcanoes. Highest peak 4,500m. Nyamulagira and Nyragongo are two of the world’s most active volcanoes, with almost annual eruptions over the past decade. They account for 2/5 of historic eruptions on the African continent. The larva is extremely fluid which makes for visually spectacular rivers of lava during eruptions and a major tourist attraction (SoOUV, 2012).

- **Aesthetically spectacular concentrations of large mammal fauna in the savanna plains, particularly hippos.**
  Criterion:(vii)

  The hippo population in the central sector (Rwindi plains) was the highest known density in Africa at the time of inscription (population estimated at 29,000 in 1974). The mammal biomass of the Rwindi plains in 1960 was one

of the highest known (26.7 tons/km²) (Languy, De Merode, 2006) (SoOUV, 2012).

- **Active and extinct volcanoes as a result of ongoing tectonic movements along the Albertine Rift**
  Criterion:(viii)

  Chain of 2 active and 6 extinct volcanoes. Intense volcanic activity. The frequent lava flows create a unique mosaic of habitats in different stages of evolution (SoOUV, 2012).

- **Exceptionally high biodiversity resulting from a unique combination of uninterrupted gradient of habitat types from 680m to 5,109m and geographic location within three bio-geographic regions.**
  Criterion:(x)

  High diversity of habitats and species results from uniquely wide altitudinal range covered by the park (680m - 5,109m) which includes dense humid rainforest, afro-montane forest, afro-alpine forest & meadows, dry forests, savannas, lakes, rivers, swamps, thermal sources.
  The park straddles three bio-geographic regions: guinea-congolian, afro-montane, and central African lakes. It is also located within Africa’s two largest river basins: the Congo basin and the Nile basin.
  Species diversity: 2,077 higher plant species, 218 mammal species (including 22 primate species), 706 bird species. In an area representing 0,3% of the surface area of DRC the park contains over half of the country’s mammal species and two thirds of its bird species (Languy & De Merode, 2006 ; UNESCO World Heritage Centre, 2010.).
  It is the park containing the highest vertebrate diversity of the African continent (Languy & De Merode, 2006; SoOUV, XXXX).

- **Presence of several endangered and emblematic mammal species**
  Criterion:(x)

  Mountain gorilla (Gorilla beringei beringei), Grauer’s gorilla (Gorilla beringei graueri), eastern chimpanzee (Pan troglodytes schweinfurthii), okapi (Okapi johnstoni), forest elephant (Loxodonta cyclotis) (SoOUV, 2012).
  13 species of mammal are considered endangered.
  The 2010 census of the Virunga population of mountain gorillas counted 480

individuals – of which about two thirds are found in Virunga National Park (http://www.igcp.org/2010-mountain-gorilla-census/).

- **Endemic species**
  Criterion:(x)

  Albertine endemics: 230 plants, 21 mammals (including 4 primates), 25 birds, 11 reptiles, 21 amphibians (Languy & De Merode, 2006; SoOUV, 2012).

- **Ruwenzori mountains, uplifted from the floor of the Albertine Rift as a result of recent (<3m years) movement of tectonic plates**
  Criterion:(viii)

  Africa’s largest alpine mountain chain with the largest expanse of glaciers (SoOUV, 2012).

Other important biodiversity values

- **Important wetland areas for overwintering palearctic bird species, and fishing for local communities.**

  Lake Edouard, and the rivers flowing into and out of it, are important wetland habitats for migrating bird species.
  Lake Edouard has a high potential for fish production (estimated at 15,000 – 16,000 tons/year in 1989(Vakily, 1989)) and is a vital resource for local populations. Fishing rights for local communities, regulated by a cooperative (COOPEVI), were preserved when the park was created (but the COOPEVI is now dysfunctional) (Draft Plan d’Aménagement et de Gestion du Parc National des Virunga, 2011-2015).

Assessment information

Threats

Current Threats

High Threat

Decades of poor governance culminating in two civil wars and the ongoing civil unrest are the factors that have created the current threats: encroachment for agriculture and fishing, commercial hunting, and deforestation for charcoal. At least 67% of the park boundary is under moderate (21%) to high pressure (46%). The cumulative effect of these threats is resulting in intense pressures on many of the park's World Heritage attributes:
• Diversity and ecological connectivity of terrestrial habitats (particularly dry forests, woodlands, wooded savanna and humid rainforest)
• endangered and/or threatened species (2 subspecies of gorilla, chimpanzees, L'Hoest monkey, okapi, Rwenzori duiker, forest elephant,);
• large mammal assemblages of the central plains;
• wetland habitats for palearctic migrants
Overfishing on Lake Edouard also threatens the biological diversity of the aquatic ecosystem and threatens food security of local populations.

► Crops

High Threat
Inside site

Subsistence agriculture around illegal occupations inside the park is a high threat to the park's values. 67% of the park boundary is under moderate or high pressure. In October 2010 an estimated 37,182 ha of the park were illegally occupied (Draft Plan d'Aménagement et de Gestion du Parc National des Virunga, 2011-2015).
The park is long and narrow (300km long, average width 25km with minimum of 2.5km), 1150km of boundary) so encroachment threatens the connectivity between the uniquely diverse range of habitat types within the park. The integrity of the park is thus directly threatened.
Deforestation and hunting are also associated with illegal encroachment. Deforestation in the southern and northern sectors also threatens the survival of certain endangered or endemic forest species (eg. Chimpanzee, L'Hoest's monkey, okapi). Hunting associated with illegal settlements has greatly reduced the exceptional mammal biomass of the Rwindi plains.
The main areas affected by illegal occupations are:

Southern sector: Kirolirwe, Mugunga, Nzulo. 12,500 ha of mid altitude natural forest have been lost in Kirolirwe.
Central sector: Ndwali, west coast of Lake Edouard, and along eastern border at Nyamilima. Encroachment along west coast interrupts the ecological connectivity of terrestrial habitats between the south and the north of the park.
Northern sector: Lubilya, Djuma, Nyaleke. Deforestation in the Djuma sector threatens the dense humid rainforests of the Semiliki valley where chimpanzees and okapi are found. Encroachment around Tchiabirimu mountain threatens the small population of Grauer’s gorillas.

► Commercial hunting

High Threat
Inside site

Elephant, hippo, buffalo and other plains ungulates are seriously threatened by commercial hunting in the plains section to supply bushmeat markets in neighboring cities and towns. While none of these species individually are unique to the park, it is the overall biomass of the mammal assemblage in the Rwindi plains which is the unique attribute affected by commercial poaching. Elephants are hunted for ivory and meat. The hippo population has been reduced by 95% since the beginning of the 90s.
Commercial hunting of forest species elsewhere in the park threatens the survival of endangered and/or endemic species (eg chimpanzee, L’Hoest’s monkey, okapi, Ruwenzori duiker). Chimpanzees may already have disappeared from the Ishasha forest (Etat des Forêts, 2008).
The two subspecies of gorilla (mountain and Grauer’s gorillas) in the park are vulnerable to even low levels of hunting because their numbers are so small. Poaching of mountain gorillas in the southern sector is an ever present threat although there have been no new cases since the killing of 10 individuals in 2007.These endemic species have the potential to generate sustainable sources of funding for the park and local communities through tourism.

► Fishing / Harvesting Aquatic Resources

High Threat
Inside site

Overfishing is causing impoverishment of the resource. Fish are of vital importance for the food security of many of the 3 million people living around

the park.
Lake Edouard used to be one of the most productive lakes in Africa for fish. Illegal fishing increased during the wars and has continued to increase since fundamentally under the control of the FARDC. There is now clear evidence of overfishing as catches (volumes and fish sizes) have declined dramatically. The illegal fishing impacts the integrity of the park as agriculture and hunting are associated with the illegal fishing villages that have been established inside the park.
Agriculture and hunting are associated with the illegal fishing villages and cause habitat impoverishment, and loss of wildlife, including endangered species. Illegal settlements along the west coast of the lake also currently interrupt the terrestrial ecological connectivity of the uniquely wide range of habitat types within the park.
Wetland habitats for migrating palearctic bird species are also threatened by illegal fishing settlements in the park.

► War, Civil Unrest/ Military Exercises

High Threat

The park is used as a cover for by at least three groups of militia (FDLR, Mai Mai, ADF-NALU). They are involved in illegal exploitation of resources wherever they are present (eg charcoal exploitation, elephant and hippo poaching, agriculture). In April 2012 fierce fighting broke out in and around the park with dissident elements of the Congolese army. These rebels (called M23) currently occupy the gorilla sector of the park and the conflict continues.
Their presence is a cause of great insecurity for local populations living near the park and for people travelling across the park on the main road. Hold-ups, assassinations and rape are common. 14 park guards have been killed since the beginning of 2011 (ICCN Parc National des Virunga. Rapports de Sécurité Hebdomadaire janvier- décembre 2011., janvier –septembre 2012. This erodes the morale of park staff.
The insecurity that they create undermines the management effectiveness of the park. No-go areas are created and morale is sapped by the frequent mortal attacks on guards. Park management is further handicapped by the ineffectiveness of MONUSCO and the corruption prevalent within the Congolese army. However the paramilitary capacities of the park guards

have been considerably strengthened over the past 18 months.

► Logging/ Wood Harvesting

High Threat
Inside site

The biologically unique dry forests (forêts sclérophylles) on and around the two active volcanoes are under intense pressure from commercial charcoal making operations to supply the burgeoning population of Goma where over 90% of the residents cook with charcoal (WWF-PEVi 2012). Annual consumption in 2007 was estimated at 47,000 tons (Balole Bwami, 2008), almost all coming from the park. FDLR militias control much of the operation. Congolese military are also involved. Rwandan interests (where charcoal making is forbidden) also fuel the trade. Chimpanzee populations are directly threatened, as well as the habitat for the endemic L'Hoest's monkey.
As these unique dry forests are slow growing forests, the long term impact of charcoal making is severe.
The involvement of FDLR militia groups, and certain elements of the Congolese army, in the charcoal commerce make this a particularly difficult challenge for park management.

► Volcanoes

Low Threat
Inside site

Relatively extensive areas of dry forests (forêts sclérophylles) are lost each time there is a lava flow. Since so much of these dry forests have already been degraded by illegal charcoal exploitation the loss of even a small area of intact dry forest is a major concern with respect to the integrity of the park and the loss of chimpanzee and l'Hoesti monkey habitat.
The volcanic activity also threatens communities living in the vicinity. Much of Goma town was destroyed by a lava flow in 2002.
As this is a geological event it is impossible to influence its occurrence or impact. However it should be noted that eruptions are an important source of tourism revenue.
Areas of varying size of intact dry forests (tens to hundreds of hectares depending on the direction of the lava flow) are lost each time there is a lava flow. Since so much of the natural forests have already been degraded by illegal charcoal exploitation the loss of even a small area of intact dry forest

is a major concern with respect to the integrity of the park and the loss of chimpanzee and L'Hoesti monkey habitat.
The volcanic activity also threatens communities living in the vicinity. Much of Goma town was destroyed by a lava flow in 2002.
As this is a geological event it is impossible to influence its occurrence or impact. However eruptions are an important source of tourism revenue.

Potential Threats

Very High Threat

Possible future oil exploitation is the greatest threat to the site as it will require degazettment of parts of the park where oil exploitation will take place. In a country racked by conflict and corruption oil exploitation in the park is likely to fuel conflict and intensify pressure on the site's unique attributes.

► Oil/ Gas exploration/development

Very High Threat
Inside site
Outside site

In 2007, 85 percent of Virunga National Park was allocated as oil concessions by DRC government.
Acceptance of oil exploitation in the park will create a very dangerous precedent which will require degazettment of part, or all, of the park since mining and oil exploitation in national parks are specifically proscribed by law. It will also strengthen the hand of a minority of powerful local politicians who are lobbying for degazettment of the park for purely political reasons.
Oil spills in the closed aquatic ecosystem of the park could have catastrophic consequences for aquatic resources in the lake on which at least 3 million local depend.
Most of Virunga National Park is covered by 3 oil prospection blocks (Blocks III, IV, V). Bloc III belongs to French oil company TOTAL S.A which committed not to enter current boundaries of the park in May 2013, nevertheless TOTAL pursues its activities in close proximity of the park (north part of bloc III) in the watershed of the Semliki river; peripheric activity could impact the park itself. At the time of writing, TOTAL had not published its Environmental and social impact study.
In 2010 Block V was attributed to SOCO International/ Dominion Oil / Cohydro

for exploration. After a public outcry and pressure from international agencies, the exploration permit was suspended pending a Strategic Environmental Assessment which receives support from EU (the scoping studies - phase I finished in September 2012, currently in phase II). To date, Soco International PLC (Soco) is the only oil company that has indicated that it will explore for oil within park boundaries. Soco's area of interest is the Virunga's lowland savanna area around Lake Edward and the lake itself. Soco is now currently setting a base camp and preparing to conduct seismic tests inside the park.
It is important to highlight that oil development could lead to an intensification of all the threats listed above, including

• Large scale clearance of vegetation, introduction of invasive plants, fragmentation of habitats, increased human pressure (fishing , charcoal), increased likelihood of poaching, which could threaten the survival of local species, and pollution from oil spills, gas flaring and waste dumping,
• The forest clearing necessary for seismic testing, drilling and the laying of pipelines could disrupt animal migration patterns, and could be used by poachers, illegal loggers and rebel groups.
• The threat of pollution and environmental damage from oil extraction could put at risk the health and livelihoods of 50,000 people that directly depend on Lake Edward for jobs, food and water.
• The potential contamination of Virunga's water resources will affect not only the farmers and fishermen of Lake Edward from DRC, but also communities from other side of the boarder in Uganda and in other countries downstream that rely on the waters of the White Nile basin.
• During exploratory drilling, pollutants can be released into the air, soil and water causing health problems including poisoning and respiratory infections.

Protection and management

Assessing Protection and Management

► Relationships with local people

Serious Concern

Relationships with local people are strained in areas where illegal activities,

particularly encroachment and illegal fishing, are actively encouraged by local politicians. However, the park makes a concerted effort to maintain a constructive dialogue with local customary chiefs and supports, within the limits of its resources, community development activities which will help reduce pressures on the park (water sources, micro hydroelectric installations, alternatives for charcoal, energy efficient stoves, tree planting, etc.), or promote goodwill and better understanding of the park's values (schools, human-elephant conflict strategies) (Draft Plan d'Aménagement et de Gestion, 2011-2015). The park has continued the development activities in the buffer area even during confrontations M23 and FARDC. The park sites were considered sufficiently secure and no human loss and material is to be attributed to the M23 and FARDC confrontation. However, given the very high population density around the park (average 300 inhabitants/km² - maximum 600) it is inevitable that many stakeholders have little or no direct relations with park management and not all stakeholder needs are addressed. Relations with local people in the gorilla sector are generally good because gorilla tourism brings direct benefits (revenue sharing, employment, improved security.
Revenue sharing mechanisms are in place and are used to fund community development initiatives.

► Legal framework and enforcement

Serious Concern

ICCN has subcontracted the management of the park to Africa Conservation Fund ACF (UK) until 2021 (http://acfvirunga.org/who-we-are)
The legal framework of the park is clear and adequate. However enforcement is extremely challenging in view of the current situation of political turmoil, civil unrest, and the presence of armed groups in the park. There has been an escalation of violence since the beginning of 2011 and 11 park guards have been lost. The granting of an oil exploration permit is likely to have been a contributing factor, as well as the approach of elections.
The ongoing oil code reform could allow exploitation of protected areas for "reasons of national interest" (article 24), putting at risk the network of protected areas in DRC and its 5 World Heritage Sites.

► Integration into regional and national planning systems

Some Concern

Wherever possible the park's strategy for support for community development takes into consideration the local development plans drawn up by the 11 "Collectivités" around the park. Development initiatives must be compatible with the conservation objectives of the park. Decades of poor governance culminating in two civil wars and the ongoing civil unrest are the factors that have created the current threats: encroachment for agriculture and fishing, commercial hunting, and deforestation for charcoal. At least 67% of the park boundary is under moderate (21%) to high pressure (46%). The cumulative effect of these threats is resulting in intense pressures on many of the park's World Heritage attributes including:

• Diversity and ecological connectivity of terrestrial habitats (particularly dry forests, woodlands, wooded savanna and humid rainforest)
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Overfishing on Lake Edouard also threatens the biological diversity of the aquatic ecosystem and threatens food security of local populations.
Possible future oil exploitation is the greatest threat to the site as it will require degazettment of parts of the park where oil exploitation will take place. In a country racked by conflict and corruption, oil exploitation in the park is likely to fuel conflict and greatly intensify pressure on the site's unique attributes.

► Management system

Some Concern

A management plan has been drafted and is awaiting official approval by ICCN headquarters. In the meantime most of the elements of the plan are being implemented (Draft Plan d'Aménagement et de Gestion, 2011-2015).

► Management effectiveness

Serious Concern

No official management effectiveness assessment, using one of the recognized management effectiveness assessment tools, is available.

► Implementation of Committee decisions and recommendations

Some Concern

Implementation of Committee decisions and recommendations is variable. Generally there has been inadequate implementation of recommendations which require decisions at the government level (eg political support for peaceful evacuation of illegal occupants, cancellation of oil exploration permits in the park) or at the level of the high command of the armed forces (closure of the Nyaleke army training camp, evacuation of armed militias). Implementation of decisions requiring action by the park's authorities have been more successful (strengthened surveillance, revenue sharing mechanisms, public awareness, promotion of alternative energy sources) (IUCN-UNESCO Mission Report, 2010).

► Boundaries

Mostly Effective

The park has 1,165 km of boundary (including 154 km of international boundary) established over 70 years ago. Over this time many factors have led to a situation where the actual position of the real boundaries has become unclear (official and unofficial modifications, encroachment, displacement or loss of old boundary markers, etc.) A painstaking process of participatory boundary marking has been under way since 2002. About a third of the distance has been marked (Draft Plan d'Aménagement et de Gestion, 2011-2015).

► Sustainable finance

Mostly Effective

In 2013 the park will have an annual operating budget of 1.85m USD, and an investment budget of 3.53m USD. This is a very significant increase compared with the previous 2 decades. Funding comes from about 10 public and private sources and are of varying time frames. The Web site also generates funds to support development projects, a fund for widows of guards, anti-poaching, etc. Significant funding is mobilized by ICCN's partners (notably WWF) for activities in the buffer zone of the park (awareness campaigns, tree planting, energy efficient stoves, etc.). Tourism in 2011 generated almost 1 m USD (De Merode, pers comm..). The

last time an equivalent level of revenue was generated was 20 years ago. 20% of the tourism revenue returns to the park (the rest being split between local communities and the ICCN headquarters. Tourism came to a standstill in early 2012 and remained so throughout 2013 because of insecurity. While the funding situation is the best it has been for over 20 years it undoubtedly falls short of full requirements.

► Staff training and development

Mostly Effective

Over the past two years the park has invested heavily in restructuring the personnel (pensioning off retirement-age staff, divesting the personnel of illegally employed staff, recruiting and training new staff) (Draft Plan d'Aménagement et de Gestion, 2011-2015). This is an ongoing process as staff numbers and capacities are not yet at optimal levels.

► Sustainable use

Some Concern

The COPEVI which is meant to regulate fishing on Lake Edouad is completely dysfunctional. As a result overfishing and the installation of illegal fishing villages threaten several attributes. An assessment of fish stocks and sustainable off take has not yet been conducted, but is planned (Draft Plan d'Aménagement et de Gestion, 2011-2015). The park devotes considerable effort to curbing illegal fishing (patrols, confiscation of illegal nets and boats, etc) but the problem remains serious.

► Education and interpretation programs

Some Concern

Awareness programs concerning the park's most emblematic animal, the mountain gorilla, are highly effective.
The park's excellent innovative and dynamic website has a very positive awareness building impact nationally and internationally. It is also an effective fund raising tool.
Several schools near the park have been built or rehabilitated by the park, using funds from public and private donors and from tourism revenues, and contribute significantly to awareness building.
However park management's education and interpretation is constantly

undermined by the activities of an active minority of corrupt local politicians who orchestrate a campaign of disinformation about the park, actively encourage illegal occupations, and lobby strenuously for degazettment of the park.
The overriding daily urgency of dealing with illegal activities and attacks from armed militias means that park management probably devotes less time than it would like to education and interpretation activities.

► Tourism and interpretation

Mostly Effective

Tourism currently focuses mainly on gorilla viewing, chimp viewing and treks to the active volcanoes. Given the current circumstances of civil unrest the park management authorities are achieving a remarkable level of success with these activities. More than 3,200 tourists visited the park in 2011, generating nearly 1 million USD of revenue. The resurgence of tourism to the park has contributed significantly to improving staff morale.
The potential future yearly value of tourism linked to Virunga’s extraordinary landscapes and rare wildlife is estimated at US$235 million. Further, the tourism industry could be the source of over 7,000 jobs in park management and other necessary services (Dalberg report).

► Monitoring

Mostly Effective

Daily monitoring of the mountain gorilla population is effective and has ensured that there have been no poaching incidents since 2007. The 2010 census indicated a 26% increase in the gorilla population (Congo, Rwanda and Uganda sectors combined) (http://www.igcp.org/2010-mountain-gorilla-census/). Aerial monitoring of the plains sector is done as and when possible. Hippo counts were done in 2003, 2005, 2006, 2009, 2010 and indicate a population of between 630 and 1310 individuals. Aerial counts of plains ungulates and elephants were conducted in 2003, 2006, 2010 (References in the draft Management Plan).
Illegal occupations, charcoal making, agriculture and fishing are regularly monitored (on an ad hoc basis) by aircraft, foot patrols and boat patrols.

► Research

Some Concern

The management plan lays out a series priorities for applied research (energy alternatives, evaluation of fish potential of lake, diseases transmission in apes, human-animal conflict, control of introduced exotic species, feasibility studies for controlled resource use, bush fires). However given the current security situation park management is rightly focusing on law enforcement, although research on energy alternatives and disease transmission in apes is ongoing (Draft Plan d'Aménagement et de Gestion, 2011-2015).

Overall assessment of protection and management

Some Concern

In a context of continuing civil strife, insecurity and political instability the park faces enormous management challenges. The issues of mass encroachments, presence of armed militia, commercial charcoal making, illegal fishing and oil exploration require clear and strong political leadership in support of park management structures but regrettably the necessary level of leadership is not forthcoming. Park management therefore often finds itself in an isolated position as it tries to reestablish the rule of law in the park.
However, park leadership is currently strong, and remarkable efforts (and sacrifices) are being made to save the park's World Heritage attributes despite the enormous challenges. A significant increase in financial and technical support to the park from public and private partners in recent years has been of critical importance in preserving these attributes.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Some Concern

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► Best practice examples

In a serious situation of confliction, the PNVi ensures the conservation of the

World Heritage and implements activities of a green economy with the aim of contributing to peace and ensure the development in the buffer area and the financial resources for the Park by an adaptive, innovative and proactive management

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Aesthetically spectacular afro-montane and alpine landscape of Rwenzori mountains**
Good
Trend:Data Deficient

Aesthetic quality intact, although the glaciers are receding (600ha in 1906 to 200 ha in 2005) (Languy & De Merode, 2006)

▶ **Spectacular Virunga volcanoes with frequent volcanic activity**
Low Concern
Trend:Data Deficient

Aesthetic quality intact, although threatened by degradation of the natural forests on and around them as a result of illegal charcoal making (IUCN-UNESCO Mission report, 2010).

▶ **Aesthetically spectacular concentrations of large mammal fauna in the savanna plains, particularly hippos.**
High Concern
Trend:Data Deficient

A massive decline in the large mammal biomass has occurred since the site’s inscription. Since 1959 elephant, buffalo, hippo and certain species of antelope have declined by between 82% and 92% (IUCN-UNESCO Mission Report, 2010). However repopulation can occur from the contiguous Queen Elizabeth II National Park in Uganda.

► Active and extinct volcanoes as a result of ongoing tectonic movements along the Albertine Rift

Good
Trend:Data Deficient

Intact (IUCN-UNESCO Mission Report, 2010)

► Exceptionally high biodiversity resulting from a unique combination of uninterrupted gradient of habitat types from 680m to 5,109m and geographic location within three bio-geographic regions.

High Concern
Trend:Data Deficient

The uninterrupted gradient of habitats from 680m to 5,115m is threatened in places by encroachment and habitat destruction. The long and narrow shape of the park (300km long, average width 25km with a minimum of 2.5km), 1150km of boundary (Languy & De Merode, 2006) makes it particularly vulnerable to pressures, especially as it is located in an area with one of Africa’s densest human populations. With the exception of emblematic large mammal species such as gorillas, elephants, okapi, hippo, savanna ungulates, up to date data on the distribution and abundance of most of the plant and animal species is lacking. There are no known cases of species extinction in the park.
The threat of degazettment of part, or all, of the park because of oil exploration is however a very serious concern and would lead to severe degradation of habitats and loss of biodiversity.

► Presence of several endangered and emblematic mammal species

High Concern
Trend:Data Deficient

The mountain gorilla population is well protected and increasing (http://www.igcp.org/2010-mountain-gorilla-census/).The Grauer’s grorilla population is well protected but fragile because of its very small size (less than 30 individuals). The small chimpanzee population at Tongo (chimp viewing site, approx 30 individuals) is well protected but elsewhere in the park they are threatened by poaching and habitat degradation. They appear to have already disappeared from the Ishasha forest (Etat des Forêts, 2008).

Forest elephants are severely threatened by poaching (less than 350 remain in the plains sector) but replenishment from Uganda's contiguous QEII NP is possible (IUCN-UNESCO Mission Report, 2010). Okapi numbers in the north of the park are probably very low and are threatened by human activities (Bashonga et Languy, 2008).
The threat of degazettment of part, or all, of the park because of oil exploration is however a very serious concern and would lead to severe degradation of habitats and loss of emblematic species.

► Endemic species

High Concern
Trend:Data Deficient

See comments above for gorillas and okapi. Data is lacking for most other endemic species. Hunting and habitat degradation is likely to be a concern for L'Hoest's monkey. Hunting may be a concern for the Ruwenzori duiker. Threats to smaller endemic vertebrate species are probably low, but this could change if habitat loss/degradation accelerates (IUCN-UNESCO Mission Report, 2010).
The threat of degazettment of part, or all, of the park because of oil exploration is however a very serious concern and would lead to severe degradation of habitats and loss of endemic species.

► Ruwenzori mountains, uplifted from the floor of the Albertine Rift as a result of recent (<3m years) movement of tectonic plates

Good
Trend:Stable

Intact (IUCN-UNESCO Mission Report, 2010)

Other important biodiversity values

► Important wetland areas for overwintering palearctic bird species, and fishing for local communities.

Lake Edouard, and the rivers flowing into and out of it, are important wetland habitats for migrating bird species.
Lake Edouard has a high potential for fish production (estimated at 15,000 – 16,000 tons/year in 1989(Vakily, 1989)) and is a vital resource for local

populations. Fishing rights for local communities, regulated by a cooperative (COOPEVI), were preserved when the park was created (but the COOPEVI is now dysfunctional) (Draft Plan d'Aménagement et de Gestion du Parc National des Virunga, 2011-2015).

Summary of the Values

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

High Concern

Trend: Data Deficient

The status of landscape attributes relating to criteria vii (superlative natural phenomena) and viii (outstanding examples representing major stages of earth's history) are good and are likely to remain so. However the biological attributes relating to criteria vii (exceptional large mammal biomass) are severely degraded, although the situation can recover if sustained protection is applied.
The status of attributes relating to criteria x (significant natural habitats for in-situ conservation of biological diversity), is a concern because of encroachment and habitat degradation affects 67% of the park boundaries. The trend is reversible if strong political leadership is given to support park management's law enforcement and conservation actions.
The uncertainty of the outcome of the oil exploration issue is the overriding concern, since if it goes ahead Congolese law requires degazettment. For this reason the summary status and trend is classified as "High concern".

► Assessment of the current state and trend of other important biodiversity values

High Concern

Trend: Data Deficient

Illegal fishing settlements are encroaching on wetland overwintering sites for palearctic migrants. Massive overfishing is depleting fish stocks and threatening food security for local populations. The perspectives for inversing the trend are not encouraging as the necessary strong political leadership is currently lacking. However recovery of the fish stocks will be feasible if

proper protection measures can be implemented and maintained.

Additional information

Key conservation issues

▶ Oil exploration

National

Acceptance of oil exploitation in the park will create a very dangerous precedent which will require degazettment of part, or all, of the park since mining and oil exploitation in national parks are specifically proscribed by law. Oil exploration blocks cover almost the whole surface area of the park. It will also strengthen the hand of a minority of powerful local politicians who are lobbying for degazettment of the park for purely political reasons.
Oil spills in the closed aquatic ecosystem of the park could have catastrophic consequences for aquatic resources in the lake on which local populations depend.
All mining and oil exploration/exploitation permits should be cancelled in accordance with national laws (Conservation Law, Mining Law) and in the spirit of international agreements (World Heritage Convention, Convention on Biodiversity, Ramsar Convention).
High level political leadership is required.

▶ Encroachment

Local

67% of the park boundary is affected by encroachment. Much of it is as a result of the breakdown of law and order during the civil wars and has been maintained by political maneuvering from a small group of local politicians whose aim is to degazette the park. The continued situation of civil unrest, with the presence of marauding bands of armed militias, mean that it is proving very difficult resolve. Some areas have been so extensively transformed (Kirolirwe, Lubliya) that it may prove impossible to recover them.
Strong high level political leadership is required to resolve this issue.
Strengthening dialogue with local communities and contributing to local

development initiatives must be part of the strategy to persuade local communities to adhere to the conservation objectives of the park. Participatory boundary marking has proved to be a useful tool for clarifying misconceptions about the park.

► Charcoal making

Local

Illegal charcoal makers in the park must be removed, with support from the armed forces since the activity is largely controlled by FDLR militia. At the same time alternative/efficient energy solutions must be developed in order to reduce charcoal use, particularly in Goma (tree planting, energy efficient stoves, “briquettes”….).

► Presence of armed militia

National

Armed militias are involved in many of the illegal activities, and indeed they essentially control the charcoal making. They create no-go areas in the park. The violence of their attacks on local populations and parks staff creates a climate of insecurity and risks demoralizing park staff. Fourteen guards have been killed since the beginning of 2011. Strong and decisive leadership is required from the highest level of government and the armed forces to resolve this issue.

► Hunting

Local

Park management is gradually upgrading its capacity to control hunting and is progressively improving its effectiveness. As with all the above conservation issues the first priority is to restore the rule of law.

► Strengthening park management capacities

Local

Park management capacities across the board must continue to be strengthened to face the conservation challenges. This involves laying off elderly and surplus/ineffective staff, recruitment and training of new staff, provision of equipment, housing and social infrastructures, setting up efficient and motivational staff management systems, creating sustainable funding

sources (eg tourism), strengthening community conservation capacities, etc… These actions are currently ongoing.

Benefits

Understanding Benefits

► Is the protected area valued for its nature conservation?

Conservation of the major proportion of the Democratic Republic of the Congo’s plant and vertebrate diversity. The park contains the highest vertebrate diversity of the African continent. It is the oldest national park in African and the second oldest in the world (Languy, M. and de Merode, E. 2006).

► Water provision (importance for water quantity and quality)

The mountainous region covered with natural vegetation ensures steady supplies of clean water outside the park for households and agriculture, and for the whole White Nile, and contributes to mitigating the frequency of landslides and erosion. The potential for energy generation from micro-hydroelectric installations is very high (Languy, M. and de Merode, E. 2006).

► Outdoor recreation and tourism

High end ape viewing tourism generates very significant benefits for the park and local communities (through revenue sharing and employment). The spectacular landscapes (rift valley, volcanoes, snow-capped Rwenzoris, savannas, lakes) are also of very high tourist value (Languy, M. and de Merode, E. 2006).

► Fishing areas and conservation of fish stocks

The fish resources of Lake Edouard are of very high value both economically and in terms of food security for the 3 million people living around the park (Languy, M. and de Merode, E. 2006).

Summary of benefits

The national and global benefits in terms of nature conservation (biodiversity), recreation (tourism), water supplies and food (fish) are incontestable and of very high importance.
However, given the extraordinarily difficult context of eastern Congo (continuing war, absence of rule of law, extreme poverty, looting of natural resources) the benefits for communities outside the park are probably not appreciated at their real value. At the national level it is also a matter of very serious concern that the national and global benefits of the park appear to be undervalued (as evidenced by the possibility of degazettment as a result of oil exploitation, and the unwillingness/inability to confront the problem of illegal encroachments and the presence of armed militia).

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	European Union		Support to improve general management of Virunga National Park
2	European Union		Micro-hyrdoelectric installation for Mutwanga
3	RAPAC		Tourism and Training
4	Frankfurt Zoological Society (GEF funds)		Support to improve general management of Virunga National Park
5	UNESCO		Emergency support to central sector
6	Belgian Cooperation		Ranger Training
7	WWF		Projet Ecomakala
8	WWF		Participatory boundary marking
9	WWF (CARPE-USAID)		Community Based Natural Resource Management (CBNRM)
10	GTCV/Community		Water supply Rumangabo

№	Organization/ individuals	Project duration	Brief description of Active Projects
11	UNHCR		Protection des femmes retournées et déplacées
12	Suez Electrabel Foundation		Suez Electrabel Foundation
13	PACEBCo		Ranger Training and anti-poaching

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