IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 26 October 2017

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

2017 Conservation Outlook

Critical

Biological attributes are under constant 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. Despite Soco pulling out of oil exploration in the park the uncertainty over the government's position on future oil exploration is an overriding concern since if it goes ahead Congolese law would involve degazettement. 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. In recent times there has been slight progress in this area with increasing numbers of some of the charismatic large mammals. 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.

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 savannah and humid rainforest) • Endangered and/or threatened species (2 subspecies of gorilla, chimpanzees, l’Hoest's monkey, okapi, Ruwenzori duiker, forest elephant) • Large mammal assemblages of the central plains • Wetland habitats for Palaearctic migrants. Overfishing on Lake Edward 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 involve degazettement of parts of the park where oil exploitation would take place. In a country racked by conflict and corruption, oil exploitation in the park is likely to fuel further 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 from the higher levels of DRC government. Park management therefore often finds itself in an isolated position as it tries to re-establish 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 two active and six extinct volcanoes. Highest peak 4,500m. Nyamulagira and Nyragongo are two of the world’s most active volcanoes, with frequent eruptions over the past decade. They account for 2/5 of historic eruptions on the African continent. The lava 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 hippopotamus 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 two active and six 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 (680 - 5,109m), which includes dense humid rainforest, afro-montane forest, afro-alpine forest and 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 primates), and 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.). This park contains the highest vertebrate diversity of any park on the African continent (Languy & De Merode, 2006; SoOUV, 2012).

► **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), elephant (Loxodonta africana) (SoOUV, 2012).
13 species of mammal, 11 birds, 10 amphibians, and 6 plants are considered threatened.
A 2010 census of the Virunga population of mountain gorillas estimated 480

individuals, of which one third usually reside in Virunga National Park (Gray et al. 2013).

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

  Albertine endemics: 230 plants, 21 mammals (including 4 primates), 27 birds, 11 reptiles, 21 amphibians (Languy & De Merode, 2006; SoOUV, 2012).

- **Rwenzori 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 Edward, and the rivers flowing into and out of it, are important wetland habitats for migrating bird species.
  Lake Edward 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 COOPEVI is no longer functioning) (Draft Plan d’Aménagement et de Gestion du Parc National des Virunga, 2011-2015).

Assessment information

Threats

Current 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: • Diversity and ecological connectivity of terrestrial habitats (particularly dry forests, woodlands, wooded savannah and humid rainforest) • Endangered and/or threatened species (2 subspecies of gorilla, chimpanzees, l'Hoest's monkey, okapi, Ruwenzori duiker, elephant); • Large mammal assemblages of the central plains; • Wetland habitats for Palaearctic migrants. Overfishing on Lake Edward also threatens the biological diversity of the aquatic ecosystem and threatens food security of local populations. Although there has in recent times (2014 – 2017) been some improvements (reclamation of some of the park, end of M23 rebel group threat, construction of hydro power stations (which potentially reduces the need for charcoal), change in mandate of MONUSCO to take on armed groups in the east of the country and increases in numbers of some of the large charismatic mammals, plus the creation of Virunga Alliance and good financial stability) to some of these threats mentioned they all still exist and any gains made can very quickly be reversed because of the overall poor governance of the country.

▶ Fishing / Harvesting Aquatic Resources

Very High Threat
Inside site, throughout(>50%)

Overfishing is causing impoverishment of fish stocks. Fish are of vital importance for the food security of many of the 3 million people living around the park. Lake Edward used to be one of the most productive lakes in Africa for fish (in part due to the large hippopotamus population that feeds the fish through their dung). Illegal fishing increased during the wars and has continued to increase fundamentally under the control of the FARDC. There is now clear evidence of overfishing as catches (volumes and fish sizes) have declined dramatically (IUCN NL study reported in ICCN 2017). Agriculture and hunting are associated with the illegal fishing villages and cause habitat

impoverishment, and loss of wildlife, including threatened 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 Palaearctic bird species are also threatened by illegal fishing settlements in the park.

► Logging/ Wood Harvesting

High Threat
Inside site, widespread(15-50%)
Outside site

The biologically unique dry forests (forêts sclérophylles) on and around the two active volcanoes, Nyamulagira and Nyragongo, 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. There has recently been an attempt to stem this destruction with the construction of hydro-electric structures outside of the park. Matebe plant (13.8 MW) has already been completed and two other sites are under construction (Lubero and Talihya-Nord) with a total capacity of 35 MW. These activities are carried out under the Virunga Alliance program and are intended to greatly reduce the people's reliance on charcoal.

► Crops

High Threat
Inside site, scattered(5-15%)
Outside 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 (e.g. chimpanzee, l'Hoest's monkey, and 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, and Nzulo. 12,500 ha of mid-altitude natural forest have been lost in Kirolirwe. Central Sector: Ndwali, west shore of Lake Edward, and along eastern border at Nyamilima. Encroachment along west shore 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 Tshiaberimu mountain threatens the small population of Grauer's gorillas, currently numbering only six individuals (Sikubabwo, 2015). From 2003 - 2015 ICCN has recovered 25,788 ha. This has been due to the Congolese army (FARDC) carrying out patrols and liberating these areas and this is still ongoing. In 2016 280 FARDC soldiers under the command of ICCN patrolled parts of Virunga NP especially along Route 2 that crosses the park in the Central Sector and the Northern Sector. These were referred to as Sekolo I & II operations and are ongoing (ICCN, 2017).

► War, Civil Unrest/ Military Exercises

High Threat
Inside site, widespread(15-50%)
Outside site

The park is used as a cover for by at least three groups of militia (FDLR, Mai Mai, and ADF-NALU). The rebel groups are involved in illegal exploitation of resources wherever they are present (e.g. 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) occupied the gorilla sector of the park. Their presence

was a cause of great insecurity for local populations living near the park and for people travelling across the park on the main road. This rebel group M23 was defeated in November 2013 by MONUSCO and FARDC although there is a threat of this group re-establishing (ICCN, 2017). This was only possible because of a change in the mandate of MONUSCO, namely that it has been given a mandate of neutralising armed groups in the east of the country (Aveling et al., 2014).
Park guards risk their lives daily, and many have been killed while on duty. This is still ongoing today with over 150 killed since the beginning of the civil war in 1996 (www.virunga.org, July 2017). This greatly erodes the morale of park staff and the insecurity that this creates undermines the management effectiveness of the park. No-go areas are created and morale is sapped by the frequent attacks on guards. There was an assassination attempt on the park director in April 2014 (Aveling et al., 2014). It is not known who carried out this attack but added to the continuous attacks on park guards this makes effective management of the park very difficult. However the paramilitary capacities of the park guards have been considerably strengthened over the past 18 months. The CorPPN (corps responsible for the security of national parks and created in 2015) has not been implemented due to a lack of financial and human resources (SOC, 2017). This could greatly help secure Virunga NP and allow ICCN to operate across the whole of the NP which they are unable to do at the moment.

► Volcanoes

Low Threat
Inside site, extent of threat not known

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’Hoest's 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'Hoest's monkey habitat. The volcanic activity also threatens communities living in the vicinity.

► Hunting (commercial/subsistence)

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

Elephant, hippopotamus, buffalo and other plains ungulates are seriously threatened by commercial poaching in the plains section to supply bushmeat markets in neighbouring cities and towns. While none of these species individually are unique to the park, it is the overall biomass and tourism potential of the mammal assemblage in the Rwindi plains which is the unique attributes affected by commercial hunting. Elephants are poached for ivory and meat, and are down to fewer than 100 individuals, with many regularly moving into Queen Elizabeth National Park in Uganda. The hippopotamus population has been reduced by 95% since the beginning of the 1990s and 50% of the 2000 that remain occur in the Ishasha river on the border with Uganda. Commercial poaching of forest species elsewhere in the park threatens the survival of endangered and/or endemic species (e.g. chimpanzee, l'Hoest's monkey, okapi, and 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 highly 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 generate sustainable revenue for the park and local communities through tourism. With the ongoing instability in the country, the growing human population and many thousands of people unable to feed themselves this, threat is unlikely to diminish or go away soon.

Potential Threats

Very High Threat

Possible future oil exploitation is the greatest threat to the site as it will require

degazettement 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. As the DRC government has not announced their long term intentions regarding drilling for oil in Virunga NP or any World Heritage site this threat can become real and active again very quickly. Once a decision is made by the DRC government and it is announced the situation will become clearer. There will be the continuous threat from Uganda from the Ngaji block, which borders Virunga NP on the Ugandan side of Lake Edward.

► Oil/ Gas exploration/development

Very High Threat
Inside site, localised(<5%)
Outside site

In 2007, 85 percent of Virunga National Park was allocated as oil concessions by the DRC government. Acceptance of oil exploitation in the park will create a very dangerous precedent which will require degazettement 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 degazettement 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 people depend. Most of Virunga National Park is covered by 3 oil prospection blocks (Blocks III, IV, and 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 Semiliki river; periphery 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).
In June 2014, under intense pressure from UNESCO and many conservation organisations, SOCO announced it was stopping all activities in Virunga National Park unless the DRC government and UNESCO agreed that these

activities can be compatible with world heritage status. It should be noted that SOCO had completed its seismic activities by this time. There has been no confirmation from the DRC government on whether they have cancelled oil exploration licenses for Virunga NP (SOC, 2017). According to the SOCO annual report 2015 “Following the end of our contractual obligations to the Government of the DRC, SOCO did not seek to renew the Block V licence. In 2015, SOCO finalised its relinquishment of the licence. This is in accordance with its public commitments made in 2014. The closure of the SOCO office in Kinshasa was completed by the end of the year. SOCO holds no licence interests in the DRC.” (SOCO 2015).
There were no recorded oil activities in VNP in 2016 (ICCN 2017).The World Heritage Committee of UNESCO noted with concern the lack of commitment by the DRC government to not issue any more exploration permits for Virunga NP and also noted the importance of Lake Edward and its surrounding floodplains for its OUV (WHC, 2015).
There is a potential threat from oil exploration in neighbouring Uganda which has offered out a license for Ngaji block which is located in Queen Elizabeth NP and borders DRC along Virunga NP and covers Lake Edward which is jointly split between DRC and Uganda.
This potential threat is very real with the agreement in April 2016 to construct an oil pipeline from Uganda to the coast of Tanzania.
Over 60 DRC, Ugandan and International NGOs, along with UNESCO, signed a joint declaration to the Ugandan and DRC governments to prevent any exploration, extraction or related activities in the wider Virunga area.

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).
With the completion of the Matebe power station in 2015, efforts have been made to build relationships with the local populations including employment in tourism (SOC, 2017). In 2016, there was an expulsion of 7,000 cattle and 500 households from Karuruma-Kasaka-Bwino area of the park (ICCN, 2017), which caused tensions with local people. With 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 contact with park management and not all stakeholder needs are addressed. In 2016, a strategy to address some of these concerns was developed. A communication strategy for the dissemination of information on Virunga NP to local and international media has been established. In July 2016, there was a stakeholder meeting held in Beni with public officials, civil society and local development organisations on the illegal occupation of the park and peaceful ways of restoring its integrity (ICCN, 2017).
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

Serious Concern

ICCN has subcontracted the management of the park to Virunga Foundation, formerly known as 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, which has caused casualties among park guards every year since. 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 five World Heritage Sites.

► Enforcement

Serious Concern

Law enforcement is now being supported by the Congolese army and externally by MONUSCO with their new mandate (ICCN, 2017). Some areas of the park have been freed from illegal encroachment. In 2016, 120 new guards were recruited which will greatly improve enforcement capacity. However, there are still fatal attacks on park guards (SOC, 2017) and this is very demoralising for all the staff, local management included. On 15 June 2015, the DRC published a decree (n° 15/012) on the establishment of a Corps in charge of securing national parks and nature reserves (Corps en charge de la sécurisation des Parcs Nationaux, or CorPPN) (http://whc.unesco.org/en/news/1343/, published on 8 September 2015). There is need to activate the CorPPN as soon as possible.

► 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 of the country culminating in two civil wars and the ongoing civil unrest are factors that have exacerbated the current threats: encroachment for agriculture and fishing, commercial poaching, 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 savannah and humid rainforest) • Endangered and/or threatened species (2 subspecies of gorilla, chimpanzees, l'Hoest's monkey, okapi, Ruwenzori duiker, elephant) • Large mammal assemblages of the central plains • Wetland habitats for Palaearctic migrants. Overfishing on Lake Edward also threatens the biological diversity of the aquatic ecosystem and threatens food security of local populations. There is cross-border

agreement between conservation NGOs to protect the mountain gorillas that exist in DRC, Uganda and Rwanda, which is supported and facilitated by the International Gorilla Conservation Programme. Further, in October 2015, the Treaty on the Greater Virunga Transboundary Collaboration on Wildlife Conservation and Tourism Development was signed between the governments of DRC, Uganda and Rwanda for eight transboundary Protected Areas in the Greater Virunga Landscape, inclusive of Virunga National Park. The Treaty outlines the purpose and six organs of collaboration, inclusive of a Secretariat which is currently based in Kigali, Rwanda (www.greatervirunga.org, accessed on 5 October 2017).

► Management system

Serious Concern

A management plan has been drafted and is awaiting official approval by ICCN headquarters although this is now out of date. In the meantime most of the elements of the plan are being implemented (Draft Plan d'Aménagement et de Gestion, 2011-2015). At the beginning of 2017, no management plan had been submitted for official approval.

► Management effectiveness

Serious Concern

No 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 (e.g. 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). With the change to the mandate of MONUSCO the Congolese army were able to successfully defeat the rebel group M23 who were operating within and around the park. The army are now carrying out two operations within the park (Sokola I & II) in the centre and north of the park in coordination with

ICCN. Implementations 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 over 1,150 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). Another 63kms of demarcation of boundary was completed in 2016 (ICCN, 2017).

► Sustainable finance

Mostly Effective

In 2013 the park had an annual operating budget of 1.85m USD, and an investment budget of 3.53m USD. This is a significant increase compared with the previous two decades. Funding comes from about 10 public and private sources and are of varying time frames. The website also generates funds to support development projects, a fund for widows of guards, and anti-poaching. 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 ICCN head office. Tourism came to a standstill in early 2012 and remained so throughout 2013 because of insecurity, but high-end tourists are now staying at Mikeno Lodge, which opened in 2011.
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.
In 2016, 120 candidates were selected for training to become park guards from over 5,000 applicants.

► Sustainable use

Some Concern

COPEVI is meant to regulate fishing on Lake Edward, but is 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.
A recent study by IUCN-NL confirmed that there is overfishing of Lake Edward and this needs to be addressed (ICCN, 2017).

► Education and interpretation programs

Some Concern

Awareness programs concerning the park's most emblematic animal, the mountain gorilla, are highly effective and raise awareness around the world. The park's social media activities have a very positive awareness building impact nationally and internationally. It is also an effective fund raising tool. A documentary film raised global awareness about the threat from drilling for oil in Africa's oldest NP and an incredibly important area for biodiversity. This documentary has been shown around the world.
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, education and interpretation by the park authorities is constantly undermined by an active

minority of corrupt local politicians who orchestrate a campaign of disinformation about the park, encourage illegal occupations, and lobby strenuously for degazettement 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.
In 2016, a meeting was held in Beni to address some of the problems of illegal encroachment of the park and sensitization of the population.

► Tourism and visitation management

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. Following a collapse since 2011, the recent 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 (WWF, 2013).

► Monitoring

Mostly Effective

Daily monitoring of the habituated groups of mountain gorillas in Mikeno Sector is conducted when security and human resources allows.

There are several known poaching incidents. In June 2013, an infant gorilla now known as Matabishi was found alone in a cornfield outside of Virunga National Park. He was confirmed to be a mountain gorilla and was suspected to have been a victim of gorilla trafficking and had been held captive for several weeks (https://virunga.org/news/orphan-matabishi/ and http://www.gorilladoctors.org/saving-lives/orphan-gorillas/matabishi/). In April 2016, during the field work for the latest census of mountain gorillas, teams discovered a mountain gorilla dead in a poacher’s snare likely set to capture

duiker. Poacher’s snares remain a persistent threat to the mountain gorillas in the Mikeno Sector and transboundary Virunga Massif.

While the results from the last census are yet to be released, the 2010 census indicates that the transboundary mountain population is likely increasing, with trend analysis not conclusive due to increased effort and improved survey techniques. Aerial monitoring of the plains sector is done as and when possible. Hippopotamus counts were done most years between 2003 and 2015 with the population changing from 1,309 in 2003 to 2,406 individuals in 2015. Aerial counts of plains ungulates and elephants were conducted in 2003, 2006, 2010 (References in the draft Management Plan). In 2016, 15 elephants were collared and monitored which highlighted movement between DRC and Uganda. In 2016, it was confirmed that there are forest elephants and 3 groups of savannah elephants. Two communities of chimpanzees are monitored and habituated for tourism, Tongo (25 individuals) and Rumangabo (14 individuals).
Illegal occupations, charcoal making, agriculture and fishing are regularly monitored (on an ad hoc basis) by aircraft, foot patrols and boat patrols. SMART patrolling is established and operational throughout the park, but more could be done to use the information for management.

► 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 from the higher levels of DRC government. Park management therefore often finds itself in an isolated position as it tries to re-establish 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

There has been an increase in effort to address outside threats to Virunga NP with a community meeting being held in Beni to address the integrity of the park in that region with local leaders in 2016.

► **Best practice examples**

In a serious situation of ongoing conflict, the Park enables the conservation of the World Heritage values of Virunga. It and its partners implement activities of a green economy (e.g. hydro power at Matebe) 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. The fact that mountain gorilla tourism has continued to generate significant revenue for the Park despite the ongoing conflict demonstrates the remarkable level of success park management authorities are achieving with these activities.

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, 2010).

▶ Aesthetically spectacular concentrations of large mammal fauna in the savanna plains, particularly hippos.

Critical
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, 2010). However, re-population can occur from the contiguous Queen Elizabeth II National Park in Uganda. It has been proven that elephants cross between the two countries (ICCN 2017) so there is no reason to believe this cannot happen to all threatened savannah species. Oil exploration on either side could potentially hamper this. There is a real threat of local extinctions.

▶ 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), over 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, savannah ungulates, up to date data on the distribution and abundance of most of the plant and animal species is lacking for the entire park. There are no known cases of species extinction in the park.

► **Presence of several endangered and emblematic mammal species**

High Concern
Trend:Data Deficient

The mountain gorilla population is relatively well protected and believed to be stable or increasing (Gray et al., 2013).
The small chimpanzee population at Tongo (chimpanzee viewing site, approx. 25 individuals) is well protected but elsewhere in the park they are threatened by poaching and habitat degradation. They seem to have already disappeared from the Ishasha forest (Etat des Forêts, 2008). They are known to exist in the following sectors; Nyamulagira, Ishasha, Kasali, Watalinga, Ruwenzori, Kinyonzo, Sarambwe, Busendo, Mwaro and Kibati (Aveling et al., 2014, ICCN 2017).
Elephants are severely threatened by poaching (less than 350 remain in the plains sector from an estimated figure of 3425 in 1959 (Aveling et al., 2014)) but replenishment from Uganda's contiguous Queen Elizabeth II NP is possible (IUCN-UNESCO, 2010). It has since been confirmed that savannah elephants do cross between Uganda and DRC when 15 elephants were collared and recorded moving between the two countries, spending most of their time in Uganda. 16 elephants were poached in 2016 as opposed to 13 in 2015 (ICCN 2017). There is also known to be a forest elephant population

in Mikeno sector (ICCN 2017). Okapi numbers in the north of the park are probably very low and are threatened by human activities (Bashonga & Languy, 2008).

▶ Endemic species

Critical
Trend:Data Deficient

The mountain gorilla population seems to be stable or increasing over the last several decades and the results of the 2015/2016 census will provide additional information as to the status of the population. For Grauer's gorillas their population is thought to have decreased quite significantly, from an estimated 20 individuals in 2009 to six individuals in 2015 on Mount Tshiaberimu.
Exact data is lacking for most other endemic species. Hunting and habitat degradation is likely to be a concern for l'Hoest's monkey and okapi. Okapi were only reconfirmed in the Park in 2009 when ZSL and ICCN caught them on camera trap. This was the first confirmation that they still existed inside Virunga NP since 1959.
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, 2010).

▶ Rwenzori 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, 2010)

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. In recent times there has been slight progress in this area with increasing numbers of some of the charismatic large mammals. 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.

► **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

Benefits

Understanding Benefits

► **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 & De Merode, 2006).

Forests being changed illegally to agricultural land could lead to landslides and erosion affecting water quality.

► **Outdoor recreation and tourism**

High-end tourism generates significant benefits for the park and local communities (through revenue sharing and employment). The spectacular landscapes (Rift Valley, volcanoes, snow-capped Ruwenzori Mountains, savannas, lakes) are also of very high tourist value along with many of the charismatic large mammals in the savannah (Languy &De Merode, 2006).

► **Fishing areas and conservation of fish stocks**

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

There is evidence of over fishing in Lake Edward and depletion of fish stocks

Summary of benefits

The park contains many endemic species (e.g. Okapi), two sub-species of gorilla, many other charismatic species and spectacular landscapes. It is a primary source for both the Nile and Congo rivers and clean water for millions of people.
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 degazettement 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-hydroelectric 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	GVTC/Community		Water supply Rumangabo
11	UNHCR		Protection des femmes retournées et déplacées
12	Suez Electrabel Foundation		Suez Electrabel Foundation
13	PACEBCo		Ranger Training and anti-poaching
14	Virunga Alliance		Sustainable energy, sustainable fisheries, agro-industry, tourism
15	Wildlife Conservation Society		Support to management of the Park, SMART and ecological monitoring

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