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

Bwindi Impenetrable National Park

SITE INFORMATION

Country:
Uganda
Inscribed in: 1994
Criteria:
(vii) (x)

Site description:
Located in south-western Uganda, at the junction of the plain and mountain forests, Bwindi Park covers 32,000 ha and is known for its exceptional biodiversity, with more than 160 species of trees and over 100 species of ferns. Many types of birds and butterflies can also be found there, as well as many endangered species, including the mountain gorilla. © UNESCO

SUMMARY

2017 Conservation Outlook

Good with some concerns

Bwindi is a relatively small, ecologically- isolated island of Afromontane forest in one of the most densely populated parts of Africa. As such it faces enormous pressure from surrounding communities, which have traditionally used the forest’s resources but are now prevented from doing so. Conflict over resource access rights remains an issue. Achievements have been made in improving park-community relation, but there needs to be better understanding of linkages between national park conservation and poverty alleviation and of the interventions that can address both issues. The issue of human wildlife conflict as a result of crop raiding animals still remains an issue of concern for park management. Measures to address the crop raiding by wild animals on local people's gardens have not yet been adequately addressed. Inequity in park resource sharing (revenue sharing and other park benefits) is also another issue that needs to be addressed by park management. Without park management addressing these issues, then there is likely potential conflicts between park managers and the adjacent local people (Bitariho et al 2016; Blomley et al 2010)

Current state and trend of VALUES

Good
Trend: Stable

Since the change in management status in 1991 (from forest reserve to national park), timber harvesting and other forms of consumptive resource use have reduced in most areas, and protection has resulted in recovery of more natural pristine habitats. Although there are few supporting data, it appears that the dynamic ecological processes and biodiversity values of the property are at least stable, and may be improving in some respects. Mountain gorilla census data from 1997 to 2011 indicate an increasing population of these highly endangered primates with 400 individuals in 2011(Robbins et al., 2009; IGCP, 2012).

Overall THREATS

Low Threat

Overall, the threats to the site are moderate and localited. The increase in the gorilla population from the 2011 census is a positive indication that law enforcement efforts have protected the gorilla population. However, reducing threats through law enforcement is not sustainable over the long-term, and the major threat is the poverty of the people living in the surroundings and their feelings of injustice about conservation. The recent advent of gorilla-based tourism has created a strong economic incentive for enhanced protection and efforts to alleviate the poverty drivers of biodiversity loss, and the park has attracted strong donor support for an array of interventions to mitigate development pressures, engage local communities and strengthen management thus reducing threat levels. There remain significant conflicts between park authorities and local communities over access to forest resources, fair and equitable distribution of benefits from the national park, as well as crop damage by wildlife. Gorilla-based tourism brings the risk of transmission of human diseases to the gorillas, and habituation makes them more vulnerable to being killed. Collection of some minor forest products (honey, medicinal plants and basketry materials) continues under management agreements with local communities, affecting 18% of exterior areas of the park. The park is relatively small and has become ecologically isolated, threatening the viability of some of the larger species in the long term. Climate change will alter vegetation communities and may threaten some of the unusual Afromontane forest species. The possibility of civil unrest and insurgency cannot be ignored, since the park lies in a region of central Africa that has a long history of instability and there is presently unrest across the border in the Democratic Republic of Congo. Other potential threats arise from the possibility of upgrading roads through the park.

Overall PROTECTION and MANAGEMENT

Mostly Effective

Protection and management of the area has been considerably strengthened since it became a national park in 1991 and timber harvesting was reduced. About half of the park is now maintained as a wilderness zone, largely free of human activity, with a quarter designated for gorilla-based tourism and 20% managed for sustainable use of non-timber forest products by local communities.

Despite the challenges of its situation as an ecological island in one of the poorest, most densely populated parts of the continent, the park has developed a strong integrated management programme. Achievements have been made in improving park-community relations but the challenge of better linking conservation and poverty is still to be met.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► Mountain Gorillas and other threatened mammals

Criterion:(x)

Bwindi is home to about 400 (45%) of the world's mountain gorillas (IGCP, 2012), and other rare and endangered mammals, including elephants, chimpanzee and l'Hoests monkey (SoOUV, 2011). The property has an unusually rich small mammal fauna with 47 species of rodents, 20 shrews, and numerous bats (UNEP-WCMC, 2012), at least four of which are rare Albertine Rift endemics (Davenport et al., 1996). It has a diverse species of birds, and approximately 50 elephants.

► Rich montane flora and fauna.

Criterion:(x)

The park has one of the richest montane floras of any site in Africa, including many endemic species. For all major taxonomic groups, available information indicates unusually high total species counts for an area of this size. The property has the highest diversity of tree species (over 200 species including 10 endemics) and ferns (some 104 species) in East Africa, and maybe the most important forest in Africa for montane forest butterflies with 202 species (84% of the country's total), including eight Albertine endemics (SoOUV, 2011). There are at least 1,000 known species of flowering plants, 120 species of mammals, 348 species of birds in an area of just 321 km2 (UNEP-WCMC, 2012)

► Rare and endemic birds

Criterion:(x)

The property is internationally recognized as an Important Bird Area (BirdLife, 2012; NatureUganda, 2015) and lies within the Albertine Rift Mountains Endemic Bird Area (Stattersfield et al., 1998). At least 348 species of birds have been recorded, including 23 of the 36 known Albertine Rift endemics (UNEP-WCMC, 2012). There eight species of avifauna included in the IUCN Red List of Threatened species, including: Grauer’s Swamp Warbler (Bradypterus graueri, EN), Turner's Eremomela (Eremomela turneri, EN), African Green Broadbill (Pseudocalyptomena graueri, VU), Chapin’s Flycatcher (Fraseria lendu, VU), Shelley's Crimsonwing (Cryptospiza shelleyi, VU), Lagden’s Bush Shrike (Malaconotus lagdeni, NT), Dwarf Honeyguide (Indicator pumilio, NT) and Forest Ground-thrush (Geokichla oberlaenderi, NT) (IBA Factsheet 2012; IUCN Red List)

► Occurrence of Albertine Rift endemic species

Criterion:(x)

Although knowledge of the site’s biodiversity is far from complete, most groups of flora and fauna exhibit high levels of endemism. Eleven (41%) of the 27 known amphibians are endemic to the Albertine Rift (UNEP-WCMC, 2012), as well as 8 of the known 310 species of butterfly (Davenport et al., 1996), and nine (64%) of the 14 recorded species of snakes (UNEP-WCMC, 2012)

► Diversity of co-evolving habitats

Criterion:(x)

There is an exceptional diversity of habitats on account of the range of altitude (1,190 to 2,560m), equatorial location and high rainfall. These cover the complete transition from lowland to montane forest, with some notable swamps and a small grove of bamboo at the highest elevations.

Assessment information

Threats

Current Threats

Low Threat

The park’s rugged terrain, long history of protection and low potential for commercial forestry have resulted in the fact that threats are localized. The recent advent of gorilla-based tourism has created a strong economic incentive for enhanced protection and efforts to alleviate the poverty drivers of biodiversity loss, and the park has attracted strong donor support for an array of interventions to mitigate development pressures, engage local communities and strengthen management thus reducing threat levels. Collection of some minor forest products (honey, medicinal plants and basketry materials) continues under management agreements with local communities. There remain significant conflicts between park authorities and local communities over access to forest resources, fair and equitable distribution of benefits from the national park, as well as crop damage by wildlife. There is a limited amount of illegal hunting of bushmeat. Gorilla-based tourism is increasing and there are some associated risks including the possibility of human disease transmission and increased scope for illegal killing of gorillas. In the long-term, climate change may cause far-reaching ecological changes.

▶ Crops

Low Threat
Inside site
Outside site

Although the park boundary is clearly demarcated, there have always been periodic instances of encroachment by neighbouring cultivators.

▶ Other

Low Threat

Inside site

The property is an ‘ecological island’ of forest in one of the most densely populated (and intensively cultivated) parts of Africa. Local population densities around the forest edge are typically 160-320 people per km2 (UNEP-WCMC, 2012), and the forest has been progressively isolated from other protected forests along the Albertine Rift through the clearing of forest remnants in the agricultural areas. The small size of the forest (320 km2) means that maintaining viable populations of larger species – such as elephants, gorillas, chimpanzees, birds of prey – may not be possible without sustained intervention.

► Logging/ Wood Harvesting

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

A few incidences of trees cutting (pitsawing) for timber are usually reported by park management. However incidences of pole cuttings for building poles are still prevalent. The poles are are felled illegally by local people for building poles while the trees are cut for timber.

► Poaching

Low Threat
Inside site, localised(<5%)

Low-level subsistence hunting has been a way of life for the local Bakiga people and (especially) the former forest-dwelling pygmy Batwa community for centuries. Its impact has been limited due to the extremely rugged terrain, park law enforcements, local people sensitisation by park management, provisions of other park benefits such as tourism development for the local people and other means of livelihoods for the local people. Hunting is illegal, but there is still significant hunting pressure, generally using wire snares to trap animals and hunting dogs (EoH, 2007; IUCN Consultation, 2014). In 2013, bushmeat was the most desired forest resource and the most widely consumed by local people. Hunting and consuming bushmeat is mostly concentrated in remote areas and the frontline zone of the national park, and driven by the poverty associated with a lack of money

to buy meat or livestock (Baker et al., 2014).

► Roads/ Railroads

Low Threat
Inside site

An unsurfaced rural access road cuts through the highest reaches of the park, along its boundary and through the narrow ‘neck’ that connects the two parts of the forest. This seems to serve as a barrier to gorilla dispersal and use of habitat, and may also affect other species. It is frequented by local people on foot, bicycle and car, and used as a main through route for lorries transporting goods from the regional capital at Kabale to villages lying to the north of the forest.

► Other Biological Resource Use

Low Threat
Inside site, localised(<5%)

Minor forest produce, notably honey, medicinal plants and basketry materials, make an important contribution to local livelihoods and these products may now be taken from designated zones under the terms of community-use Memoranda of Understanding (MoUs). Off-take is monitored by park rangers (IUCN Consultation, 2014). The demand for these minor forest products by the local people is still high despite the MoUs allowing a section of the local people (resources users) to access these resources at given offtake quotas. Not all the local people are registered under the MoU to access these resources, therefore the pressure for these resources is still there and therefore some local people access them illegally. The illegal access of these resources is a potential threat to the site (Bitariho, 2013; Bitariho et al 2016)

► Fire/ Fire Suppression

Low Threat
Inside site, localised(<5%)

Fire can cause localized habitat destruction when conditions are exceptionally dry, especially along the forest edge where fires can spread from neighbouring agricultural lands (EoH, 2007). However, the wet closed canopy forest is generally resilient to outbreaks of fire. In 2016, only one

incidence of fire was recorded (IUCN consultation, 2017).

► Other

High Threat
Inside site

Whilst habituation of mountain gorillas for tourism brings enormous economic benefits, it also puts them at risk of disease transmission from human visitors, and exposes them to the threat of being killed easily (for example, by those who may not benefit directly from gorilla tourism and resent the sacrifices being made by local people denied access to other forest resources; or by 'dealers' wanting to sell gorilla babies or body parts on international markets). Gorillas may also suffer disturbance from the activities of local people taking forest produce in the designated 'integrated resource use zones' around the edge of the forest, and tend to avoid using such areas, thus reducing the area of suitable habitat available to them (EoH, 2007). Many claim that habituating gorillas is increasing gorilla crop raiding. There is no empirical evidence on this. However, crop raiding gorillas face additional risks of contracting diseases from local people (IUCN Consultation, 2014).

► Other Activities

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

Crop damage around the forest edge remains a source of conflict between park authorities and local farmers, with crop raiding by elephants, gorillas, chimps, baboons and other primates, as well as bushpigs, antelope and birds (EoH, 2007; Akampurila et al 2015). This conflict is exacerbated by the long boundary (relative to area protected), and high population pressure all along it. Crop raiding influences the attitudes of communities negatively towards conservation, reduces the ability of families to feed themselves and leads to poaching and snaring (EoH, 2007). Resentment by local people over the lack of support for crop raiding drove illegal activities. This has important implications for conservation, as local feelings of injustice about conservation is a primary driver of illegal activities (in addition to the poverty drivers) (Baker et al., 2014). Crop raiding is the biggest threat to the already improved people/park relationship at the site (UWA 2013; Akampurila et al 2015). Several methods to mitigate the problem of crop raiding have been

proposed but the problem still persits due to gaps in the implementing the mitigation ostensibly caused by the park management prioritising the measures and lacking the funds to implement the measures. Despite the problem, only a few areas have implemented the crop raiding mitigation measures around the park.

► Tourism/ visitors/ recreation

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

Although the tourism numbers are relatively low compared to other national parks such as the savannah ones, since 1993, Bwindi tourists numbers have been increasing as a result of increased numbers of gorillas available for tourism.The tourists numbers since 1993 has increased from 1300 per annum in 1993 to around 20,000 today (UWA, 2016). Visitors are generally taken into the forest in groups of 8 to track and locate a known group of gorillas and spent an hour with them. Controls on tourist visits to gorillas are tight, with each group visited once daily, and fees are substantial (they have been increased repeatedly and now stand at US$ 650 per person in 2016). There is strong pressure from tourism operators to increase the number of gorilla groups that are habituated. Habituation of gorillas means that they become fearless of encounters with people – making them vulnerable to those who might want to kill them and susceptible to transmission of human disease.

► Invasive Non-Native/ Alien Species

Low Threat
Inside site, localised(<5%)

The occurrence of alien exotic vegetation is generally limited to areas around the edge of the forest and affects no more than 2% of the property (EoH, 2007). Alien species in the property include Lantana camara, tea and eucalyptus.

► Habitat Shifting/ Alteration, Storms/Flooding, Temperature extremes

Data Deficient
Inside site, extent of threat not known

Rising temperatures due to climate change is expected to cause a general

shift of vegetation zones to higher elevations. This will increase the area of the forest suitable for lowland forest species and reduce its suitability for higher-elevation montane species (which tend to be the rarer ones). The small grove of bamboo which currently exists at the highest point may no longer survive under warmer conditions. Changing climate may also lead to expansion of gorilla home ranges, and facilitate the spread of invasive alien species. Sensitization of local communities to climate change is additionally required

Potential Threats

Low Threat

The possibility of civil unrest and insurgency cannot be ignored, since the park lies in a region of central Africa that has a long history of instability and there is presently unrest across the border in the Democratic Republic of Congo. Other potential threats arise from the possibility of upgrading roads through the park.

► War, Civil Unrest/ Military Exercises

High Threat
Inside site

The park is located in a volatile part of central Africa, with insurgency activity erupting from time to time and currently (2012) causing severe disruption just across the border in eastern DRC. A particularly nasty incident occurred in 1999 when Rwandan Hutu rebels killed 8 westerners and a park ranger (UNEP-WCMC, 2012). Although the park is now secure and tourism and management activities are progressing normally, the possibility of renewed violence is very real.

► Roads/ Railroads

Low Threat
Inside site, localised(<5%)

Although there are currently no plans build new roads through the park, this is a constant potential threat. An old road used to run through the western edge of the park, close to the DRC border where gorilla tourism is now centred, south of Buhoma. There is strong interest in re-establishing this road, but doing so would be highly disruptive to gorilla movements and

tourism in the area, and create an ecological barrier across a critical part of the forest (which links to Sarambwe, a small contiguous protected forest on the Congolese side of the border). There is also plans by the Uganda Government of upgrading an old road that has existed since the 1950s to a tarmac road for improved tourism roads and infrastructure (Barr et al 2015). The improvement of the road will affect about 3.5% of the park's area. If the mitigation measures are not well thought out, there is a potential threat to the gorilla habitat

Protection and management

Assessing Protection and Management

► Relationships with local people

Some Concern

Prior to the change of status from forest reserve to national park in 1991, local people had unrestricted access to ‘minor forest produce’ for their own personal domestic use, and many people were employed in ‘sustainable timber harvesting’ using traditional pit-sawing methods under forestry department supervision. The granting of national park status was accompanied by an initial ban on all consumptive use of resources, followed by a gradual relaxation of this ban to restore access rights for specialist resource users within the local community to three minor forest resources (honey, medicinal plants and basketry materials) within designated zones under the terms of agreements that are formally negotiated with the specific forest-edge communities. Community relations have improved in recent years, but there are still significant challenges. Currently, resentment amongst local communities that drove illegal activities arose from three main factors: 1) lack of support to address crop raiding; 2) feelings of inequity in the distribution of benefits from revenue sharing that went to people far from the national park, not those suffering from crop raiding; 3) employment by the national park goes to outsiders (Baker et al., 2014). Considerable efforts have been made in recent years to foster better community relations, including provision of financial support to community projects (20% of gate entry fees are used on community projects (US$58,400 in 2006/7; EoH, 2007) as well as income from the Bwindi & Mgahinga Conservation Trust). However,

these community benefits from tourism could be further increased. There is also the need to strengthen incentive mechanism to reward those who report illegal activities.

▶ Legal framework

Mostly Effective

The legal framework is strong. Originally protected as a Forest Reserve in 1932, Bwindi became a National Park under Statutory Instrument No. 26 of 1991. No cultivation or settlement is permitted within the park. The park is managed by the semi-autonomous Uganda Wildlife Authority (UWA), established under the Uganda Wildlife Statute 1996, with its own Board of Trustees. Enforcement is generally strong. Financial sustainability is based on retention of all park revenues by UWA, enabling cross-subsidy within the Uganda parks system.

▶ Enforcement

Mostly Effective

The law enforcement was and is currently the most highly funded park program of the Bwindi. Forty eight percent (48%) of the Bwindi's work force has been assigned to law enforcement in comparison to only 4% and 1% for community conservation and research respectively (UWA 2013). Today the Bwindi park management spends about US$29,000 annually in allowances, rations and equipment (excluding salaries) for patrolling the entire Bwindi Park (UWA, 2013). By 1994, the law enforcement ranger force stood at about 32 personnel (supervised by park wardens) to patrol the entire 331Km2 area of the park. Presently, the Bwindi Impenetrable National Park ranger force stands at 85 personnel and is augmented in numbers by military and police personnel to patrol the forest (UWA, 2013). As such, the law enforcement despite a few shortcomings, is the most effective park management program of the site

▶ Integration into regional and national planning systems

Mostly Effective

The park is managed alongside Mgahinga Gorilla National Park as the Bwindi Mgahinga Conservation Area within UWA's regional management structure. Its management is in accordance with national wildlife policies and planning

procedures. Coordination of management for all the parks that support mountain gorillas (in Uganda, Rwanda and DRC) is achieved through the International Gorilla Conservation Programme (IGCP, http://www.igcp.org)

► Management system

Mostly Effective

The park has been under planned management for more than half a century, the first management plans being produced by the Uganda Forestry Department. Park management is structured around actions dealing with (1) resource conservation and management, (2) tourism development, (3) community conservation, (4) park operations and management, (5) monitoring and research, and (6) regional cooperation (GMP, 2001). Management is implemented by UWA, with support for community-level interventions outside the park provided by the Bwindi and Mgahinga Conservation Trust (http://www.bwinditrust.ug/), and research and monitoring led by Mbarara University's Institute of Tropical Forest Conservation (http://www.itfc.org/). The park has a General Management Plan and an Annual Operating Plan in place, supported by a strategic plan (IUCN Consultation, 2017).

► Management effectiveness

Mostly Effective

Management has been strongly supported by donors since the area became a national park. This has helped Bwindi become a regional 'model of best practice' in park management, developing a well-balanced strategy that includes strong initiatives for sustainable finance, community integration, park protection and management-orientated research and monitoring. By 2001 the park had a staff of 78, slightly short of the minimum required (88) (GMP, 2001), but nevertheless providing for generally effective management. The park was selected as a pilot site for development of the Enhancing Our Heritage management effectiveness monitoring tool, under which a series of reports were produced detailing the results of annual assessments of management effectiveness from August 2001 to 2007 (EoH, 2007). By 2007, ten out of 13 'outcomes of management' were assessed as 'good', and 191 of the required 216 actions in the GMP (2001-11) had been completed or had

substantial work done (EoH, 2007)

▶ Implementation of Committee decisions and recommendations

Mostly Effective

At its 23rd session (1999) the Committee expressed concern about the deteriorating security situation at the property (after 8 visitors and a ranger were killed by Rwandan rebels) and requested information on measures taken to improve it (Committee Decision, 1999). This request was addressed promptly by the State Party and there have been no significant security incidents in subsequent years.

▶ Boundaries

Mostly Effective

The park is an ‘ecological island’ of forest habitat in an intensively cultivated landscape. Its boundaries are well marked with concrete beacons and lines of planted trees, creating a ‘hard’ boundary, the intact forest of the park contrasting with the adjacent cleared agricultural land. There are no significant boundary incursions. There is no formally-recognised buffer zone, but forest-edge communities have been supported to plant trees and encouraged to grow crops that are not susceptible to damage by wildlife. The property comprises two tracts of forest linked by a narrow ‘neck’ (which has a public road running through it), with a correspondingly high boundary:area ratio. This means that most of the forest is within easy walking distance (an hour or two) of the forest boundary and at risk from ‘edge effects’. The narrow neck seems to have (so far) prevented mountain gorillas from using the smaller tract of forest, which appears to offer suitable habitat.

▶ Sustainable finance

Highly Effective

The park benefits from two main sources of sustainable finance – an endowment fund, and the proceeds of gorilla-based tourism. The Bwindi Mgahinga Conservation Trust (BMCT, http://www.bwinditrust.ug/) was established with approximately US$ 8 million of donor investment from the GEF, Netherlands and USAID in the 1990s (UNEP-WCMC, 2012). It provides support to local communities around the parks, as well as some research and

monitoring activities. Gorilla-based tourism generated US$ 1.2 million in park 'gorilla tracking' fees in 2007 (EoH, 2007), and may be generating much greater revenues by now, with higher fees and new groups of gorillas habituated. Revenues generated at Bwindi are used to cross-subsidize UWA operations across the Uganda national parks system, and were contributing 50% of UWA's gross income in the late 90s (UNEP-WCMC, 2012).

► Staff training and development

Some Concern

Staff training of park management has been more focused on law enforcement department to the detriment of other departments such as research and monitoring and community conservation. Most of the park management staff trainings have been facilitated by development and research organisations such as IGCP and ITFC working in the region. The past two decades the park management used a Management Information system (MIST) to strenghthen the law enforcement department.Its objective was to provide basic tools for ecosystem surveillance and management by park managers/rangers (Gray & Kalpers, 2005). Today, Bwindi park management is in the process of taking up a new law enforcement tool called Spatial Management and Reporting Tool (SMART) with technical training and financial support from Wildlife Conservation Society (WCS). It is expected that the SMART tool will allow more complex and useful analyses to be made to the data collected by the rangers. There is an important need for park managmenent to be trained in research and monitoring and its hoped the SMART tool will enhance this

► Sustainable use

Mostly Effective

Ten Memoranda of Understanding have been developed under which communities adjacent to the park can harvest medicinal plants, basketry materials and place beehives in designated zones (which collectively account for 18% of the park's total area). Resource availability and off-take are monitored by park rangers and community members to ensure sustainable use. Several research has shown that the plant harvest in Bwindi is sustainable and not detrimental to the site conservation (Bitariho et al 2006;

Ndangalasi et al 2007; Stas et al 2016; Bitariho et al 2016)

► Education and interpretation programs

Some Concern

A community education and development plan aimed at strengthening awareness of park values amongst local communities is described in the GMP (UWA, 2013). This builds on earlier community education work involving video recording and local drama group productions, supported by CARE's Development Through Conservation (DTC) project during the 90s (GMP, 2001). However, the remote location of the park and difficulty of access means that education programmes tend to be limited to the immediate vicinity of the park and target a relatively small number of beneficiaries. In 2006, only 280 school children visited the park (EoH, 2007). Because of the lack of funding to the community conservation department by UWA, there very little efforts put in place by park management in community education and making of conservation interpretative materials.

► Tourism and visitation management

Highly Effective

Bwindi attracts relatively low numbers of 'high-value' visitors, prepared to pay the substantial amounts charged for gorilla tracking (US$ 500 per person in 2011). Although it is hoped to diversify the range of activities on offer at Bwindi, most visitors come to make the one-day trek to spend an hour with a habituated group of mountain gorillas. The number of visitors is growing steadily, reaching 11,680 (i.e. an average of 32 per day) by 2006/7 (EoH, 2207). There is no visitor interpretation centre or self-guided trail interpretation displays, but tourist guides are trained to inform visitors about wildlife, aspects of park ecology and human use of forest products.

Outside of the park boundaries in neighboring areas, tourism infrastructures are increasing. Given the isolation of the property, these developments outside of the property could become a concern.

► Monitoring

Some Concern

Bwindi operates a Ranger-Based Monitoring (RBM) programme, through

which rangers collect relevant data as part of their daily routine, which is used to detect broad trends within the ecosystem and inform management decision-making. Customised computer software (MIST) is used to provide rapid feedback to those involved, including maps and graphics of patrol coverage, illegal activities, animal distributions etc, thus serving as a motivational tool (EoH, 2007). There is now a new program called SMART being introduced and to be used by park management with the facilitation of WCS. MIST program in Bwindi has not been effective in being used by park management. It is hoped that the SMART program will address the gaps MIST had.

► Research

Some Concern

Mbarara University's Institute of Tropical Forest Conservation (ITFC) is an internationally-supported research institute located within the park at Ruhija. It serves a lead role in providing management-orientated research services to the park, co-ordinating gorilla censuses, training university students, carrying out biodiversity inventories and hosting international scientific studies (see http://www.itfc.org/). Despite the existence of ITFC, however, not all the the research results from the various studies carried form the basis for management decisions (GMP, 2001), and there is scope to strengthen the working relationships between UWA and ITFC. At a joint workshop during the preparation of the GMP (UWA 2013), priority research topics are identified, as well as other additional needs for management-orientated research. UWA still does not prioritise it research and monitoring department like it does for other departments such as law enforcement.

Overall assessment of protection and management

Mostly Effective

Protection and management of the area has been considerably strengthened since it became a national park in 1991 and timber harvesting was reduced. About half of the park is now maintained as a wilderness zone, largely free of human activity, with a quarter designated for gorilla-based tourism and 20% managed for sustainable use of non-timber forest products by local communities. Despite the challenges of its situation as an ecological island in one of the poorest, most densely populated parts of the continent, the park has

developed a strong integrated management programme. Achievements have been made in improving park-community relations but the challenge of better linking conservation and poverty is still to be met.

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

Some Concern

The site has a relatively long boundary and is surrounded by some of the poorest, most densely-populated agricultural land in Africa, so human-wildlife conflicts around the forest edge are widespread, and there is lingering resentment over the loss of resource access rights that accompanied the area's designation as a national park. The challenge at Bwindi is to better link conservation and poverty – this requires understanding the role of poverty reduction activities in reducing biodiversity loss and the contribution that national park conservation can make towards poverty alleviation.

▶ **Best practice examples**

The site has often been used as an example and pilot of new park management best practises. Most parks in Uganda learn from the Bwindi park. For example park management practises such as integrated resource use, revenue sharing, community protected area institutions, tourism development etc were first piloted in Bwindi and because of their success were adopted by other national parks in Uganda.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Mountain Gorillas and other threatened mammals**

Good
Trend:Improving

Census data for mountain gorillas over the past 20 years indicate an increasing population at Bwindi, with 400 individuals in 2011(Robbins et al.,

2009; IGCP, 2012), and superficial impressions of the abundance of other threatened mammals suggests that populations are probably stable.

► Rich montane flora and fauna.

Good
Trend:Stable

There are no data on trends in overall species richness, but the property is well protected and the general state of conservation is good (EoH, 2007), so species richness is expected to be stable

► Rare and endemic birds

Good
Trend:Stable

There are no data on trends in rare and endemic bird populations, but the property is well protected and the general state of conservation is good (EoH, 2007), so the status of the park's birds is expected to be stable. Ornithological surveys carried out in collaboration with the US-based Wildlife Conservation Society (WCS) added several new records in recent years, as well as increased our understanding of the basic distribution and habitat requirements of the little-known Albertine Rift endemic bird species (EoH, 2007; see also www.albertinerift.org)

► Occurrence of Albertine Rift endemic species

Good
Trend:Stable

There are no data on trends in the occurrence of endemic species, but the property is well protected and the general state of conservation is good (EoH, 2007), so this is expected to be stable

► Diversity of co-evolving habitats

Good
Trend:Improving

Given that the property is well protected and the general state of conservation is now better than it was prior to the establishment of the national park in 1991 (EoH, 2007), habitats have been recovering from previous cutting of timber and returning to a more pristine condition. Periodic

measurements of trees in permanent sampling plots by scientists at ITFC indicate a general accumulation of woody biomass over the recent past (Pers. comm..)

Summary of the Values

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

Good

Trend: Stable

Since the change in management status in 1991 (from forest reserve to national park), timber harvesting and other forms of consumptive resource use have reduced in most areas, and protection has resulted in recovery of more natural pristine habitats. Although there are few supporting data, it appears that the dynamic ecological processes and biodiversity values of the property are at least stable, and may be improving in some respects. Mountain gorilla census data from 1997 to 2011 indicate an increasing population of these highly endangered primates with 400 individuals in 2011(Robbins et al., 2009; IGCP, 2012).

Additional information

Benefits

Understanding Benefits

► **Collection of wild plants and mushrooms**

There is an available Memorandum of Understanding (MoU) between park management and the former forest dwellers (Batwa) that allows a selected Batwa group to collect wild yams from Bwindi. The wild yams harvest and collection by the Batwa are however limited to twice a year and of given limited offtake quotas. The batwa are also not allowed to go to the forest alone. They are escorted by park rangers and this is resented by the Batwa

(Bitariho et al 2006)

The park management are worried that the harvest and collection of yams by the Batwa (root tubers) could lead to the wild yams overexploitation if not controlled. Therefore park management controls on how the wild yams will be collected and at specific times. Currently there is no data available showing evidence of wild yams overexploitation.

► Access to drinking water

The site has many rivers and other water sources that the local community use. Three gravity flow schemes have been constructed to supply domestic use water to over 40,000 people. These include that of Rubuguri (south of the site), Banyara (central of site) and Buhoma (west). Some of these schemes are actually supplying water to neighbouring towns like those of Butogota and Rubugiri. There is more pressure from local people to construct more gravity flow schemes to supply water in other areas such as Ruhija (east of site) and Mpungu.

Some of the water sources are getting polluted from agricultural practises and tourism activities within and around the site. It has been noted that the river Banyara and other water sources are getting acidic (Kasangaki et al 2006). Soil erosion as a result of poor agricultural practises has resulted in the siltation and poor water quality of some of the rivers used for supply of water to the local people (Kasangaki et al 2006). With increased demand for water by the ever increasing human populations and urbanisations, there is a likely over exploitation of the water sources by the increased demand

► Sustainable extraction of materials (e.g. coral, shells, resin, rubber, grass, rattan, etc)

There an established program for local communities to collect plant resources used for basketry and medicinal purposes and placement of beehives at the park collection for honey collection. This program has been established through a Memorandum of Understanding (MoU) and has been on going for over two decades. Despite the program being in existence for a long time, it has been viewed by the local people as being too restrictive (Bitariho et al 2016).The plant resources that are most preferred by local people are those prohibited by park management. Local people get little income from use of these plant resources and therefore find the program not

offering them tangible benefits (Bitariho et al 2016).

All the recent studies carried in Bwindi have indicated that plant resource extraction in Bwindi is not overexploited (Bitariho et al 2006; Ndangalasi et al 2007; Bitariho et al 2016; Stas et al 2016). The current offtake quota of 1% is negligable and has been recommended to be increased to atleast 3% to allow more local people involvement in the program.

► **Direct employment, Tourism-related income, Provision of jobs**

The site has offered employment opportunities to the rural local people. Park rangers, guides and porters have been recruited from the local population. Other organisations such as research institutions and development organisations have also employed the local people. There is however a complaint from the local people that the senior jobs employment opportunities (wardens, senior wardens, research officers etc) are normally occupied by those from "outside" since those senior jobs require higher education level (masters and Phds) that very few local people have. Tourism related incomes also do not directly benefit the poorest people close to the park. Thus the local people still have a negative attitudes towards the park. This is driven by the fact that most tourism benefits go to a few elite people and others who come from far away from Bwindi since they have the skills and funds to tap from the tourism industry. The local poorest people make very poor qualities of handicrafts that don't attract sales from tourists.

The local people who live near Bwindi forest and that suffer significant costs from crop raiding and other human-wildlife conflicts receive little benefits from tourism. They they don't have the skills and funds to tap from the tourism industry. The local people do not realize tangible benefits from gorilla tourism than was projected when the tourism program was introduced and will therefore continue to rely on the forest for livelihood resources. Some of these resources are extracted illegally from the forest and include,poles, firewood, timber, fish etc and might potentially lead to their exploitation.

Summary of benefits

There is a potential for the site to provide more benefits to the local people and others than is currently provided. Park resources, employments, tourism related benefits etc. are not being realised by the minority groups such as

women and Batwa and the poorest local people adjacent the forest. There is a dire need for programs to focus on these vulnerable groups of local people that are the immediate adjacent to the park and are affected by the crop raiding animals.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	Bwindi Mgahinga Conservation Trust		Range of community-support projects with funding stream from large capital endowment
2	International Gorilla Conservation Programme (WWF, FFI & AWF)		Interventions to support conservation of both populations of mountain gorillas (i.e. the trans-boundary population in the Uganda/Rwanda/DRC Virungas volcanoes, and the Bwindi population)
3	Wildlife Conservation Society (WCS) Albertine Rift Conservation Programme		Biodiversity inventories and conservation planning on regional basis along the Albertine (western) Rift Valley
4	Conservation Through Public Health		Disease surveillance
5	Mountain Gorilla Veterinary Project		.
6	Max Planck Institute for Biological Anthropology		Gorilla research and census
7	Dian Fossey Gorilla Fund International		Funding support for gorilla census
8	Institute of Tropical Forest Conservation		Comprehensive research programme at Bwindi

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Sustainable funding for research and monitoring	There is need for funds to sustain ecological and sociological research at the site. The past five years have witnessed a decline in donor funds for research and monitoring activities. Program such as the Bwindi's Ecological monitoring program were closed after funding from the Dutch government ended. Such ecological program formed an integral part of Bwindi park management in the past. Most of the data currently available for the site are from that five year funded ecological monitoring program. Currently the funds available are for short time studies. There is need to fund climate change and mitigation measures studies at the site	From: 2014 To: 2024
2	Coordinated border patrols	Coordinated border patrols with the Institut Congolais pour la Conservation de la Nature (ICCN) in the Democratic Republic of the Congo.	

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