SECTION 9: THREATS TO SITES

Snare in Virunga volcanoes.. A.J..Plumptre, WCS

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9.1 SUMMARY

The common category of threats that sites within the Albertine Rift face are reviewed briefly and data on forest loss analyzed from satellite images is presented. Forest loss over the past 10-15 years has varied between sites within the rift but has been particularly severe east of Lake Albert in western Uganda and also in eastern congo around Kahuzi Biega National Park and the Itombwe Massif. Hunting of large mammals has led to the reduction of their numbers within forests and savannas over the past 20 years across all sites in the rift. Timber exploitation is not that great at most sites but has the potential to become a major threat in DRC when the civil war ends and access to the forests improved. Mining for minerals has led to invasion of protected areas in DRC and the resulting campments have hunted wildlife extensively around the mining sites. Mining for oil is only just beginning but also has the potential to become a major threat to protected areas in the northern end of the Albertine rift. The most threatened sites in the rift occur in DRC and include both the parks and the unprotected sites such as the Itombwe Massif, Marungu Massif and Mt Kabobo. Virunga and Kahuzi Biega national parks are severely threatened by encroachment for land, settlement in fishing villages and heavy poaching for bushmeat.

L'ensemble de catégories communes des menaces auxquelles les sites du Rift Albertin font face sont brièvement examinées et les données présentées sur l'analyse de la perte des forêts à partir des images sattélitaires. La perte des forêts durant les 10-15 dernières années a varié suivant les sites du rift. Mais, elle a été particulièrement sévère à l'Est du Lac Albert àl'ouest de l'Ouganda et aussi à la partie est du Congo autour du Parc National de Kahuzi-Biega et du Massif d'Itombwe. La chasse des grands mammifères a conduit à la réduction de leur nombre dans les forêts et les savanes des sites du Rift au courant des vingt dernières années. L'exploitation du bois n'est pas aussi importante pour tous les sites mais peut devenir une menace majeure en RDC quand la guerre se termine et l'accès

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dans les forêts s'améliore. L'exploitation minière a conduit à l'invasion des aires protégées en RDC et les personnes qui ont occupé ces sites y ont largement pratiqué la chasse. L'exploitation du petrole est tout juste à son début mais peut potentiellement devenir une menace majeure aux aires protégées à l'extrême nord du Rift Albertin. Les sites les plus menacés se trouvent en RDC et incluent les parcs et les aires non protégées comme le Massif d'Itombwe, le Massif Marungu et le Mont Kabobo. Les Parcs Nationaux des Virunga et de Kahuzi-Biega sont très gravement menacés par l'empiètement des terres, le tassement des villages des pêcheurs et une grande chasse (braconnage) pour la viande sauvage.

9.2 INTRODUCTION

Threats to protected areas and species are important factors when considering the prioritisation of sites for conservation. If a very species rich site is so threatened that it may be difficult to protect it may be better to invest scarce conservation funds in less threatend but complementary sites. The threats that the protected areas face in the Albertine Rift are numerous and vary by region and country. Some are very specific to a site such as the mining around Queen Elizabeth National Park which leads to heavy metal pollution, while others are more general such as poaching by local communities for bushmeat, and occur in many sites. It is not possible to detail every threat, in the summary we present here, for each site. Therefore this chapter will focus on the differences that occur between countries in the types of threats the sites face and in particular look at changes that have occurred over the past 15-20 years in this region.

This region has experienced a series of civil wars over the past 20 years with fighting in Uganda, Burundi, Rwanda and eastern DRC leading to the decimation of wildlife and loss of the integrity of protected areas. The wars have exacerbated the threats because protected area staff have not been able to patrol effectively because of the dangers involved, and with the breakdown in law and order local people have engaged in illegal activities with immunity. However, apart from direct hunting of wildlife by armies we do not consider civil war as a threat in itself in this chapter. The settlement of refugees has affected protected areas more directly but primarily through activities that are described below.

9.3 HABITAT LOSS

The forested areas of the Albertine Rift are the sites of the greatest terrestrial diversity of species and in particular the endemic species. This habitat type is severely threatened in the rift as a result of the increasing human population in this part of Africa. Human population density now reaches 6-700 people per square kilometre in the central part of the rift and there is a great demand for farmland and firewood for cooking. This is leading to deforestation and forest degradation in the region.

Satellite images of the Albertine rift were analysed by Nadine Laporte, Miroslav Honsak, and Didier Devers at the University of Maryland to provide an estimate of current forest cover (using images from 1999, 2000 and 2001) and also to study forest loss between the mid 1980s and the most recent images. Due to the difficulty in obtaining cloud-free images of this part of the world, the analysis of landcover change in the Rift compared satellite images from 1986/7 with images from 1995-1999 for most of the area under study. In one area however (zone 1 in Fig. 9.1) it was possible to obtain cloud free images from 1999-2001—these particular images were analysed as part of a study for the GEF PDFb process for the Albertine Rift implemented by WWF (Plumptre, 2002).

The Landsat-7 images, the most recent ones, were georeferenced, with less than 1 pixel (< 30m) error, into the EarthSat Corporation's GeoCover™ orthorectified Landsat-5 image base map using a 2nd order polynomial function and the Nearest Neighbor resampling scheme. Once the images were georeferenced to each other they were processed using standard image processing methods, eg unsupervised classification. The resulting classification—forest, nonforest, water, or cloud—provided the analyst with diachronic landcover values over the region, which were then used to estimate forest loss and to compute table 9.1

Finally a mosaic of the images covering the region was created using standard mosaicking techniques, including histogram matching and feathering of the overlap areas, to provide images—one for mid-eighties, one for late nineties—of the entire Albertine Rift Area.

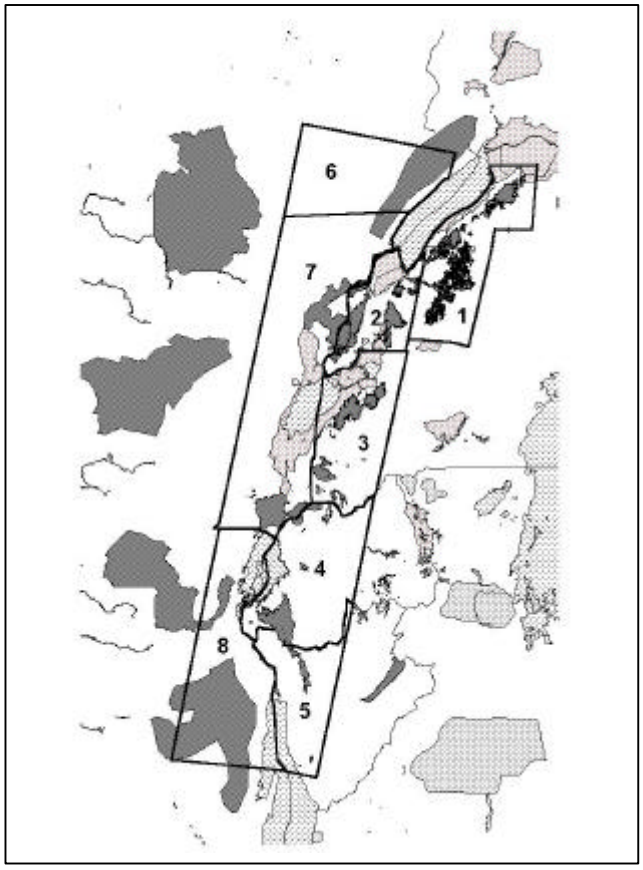

Figure 9.1 Eight areas or 'zones' analysed for change in forest cover since the mid 1980s. Analyses compared satellite images from 1986-1987 with satellite images from 1995-1999 (zones 2-8) and 1999-2001 (Zone 1).

The region under study was divided into eight areas or 'zones' within which threats/human pressures and governance and policy were similar. Comparison between these zones showed that forest loss varied markedly (Table 9.1). A large area of forest has been lost in the northern part of the rift in Uganda around Budongo and Bugoma Forest Reserves (zone 1). Closer analysis shows that most of this loss has

been outside these reserves on unprotected land. It is interesting to note though that this loss is greater in area than the forest loss in the zones in DRC despite the fact that zone 7 and 8 are much larger in total area. Zone 1 has been analysed over a longer time period (an additional 3-5 years) but this doesn't account for the marked difference in forest loss.

The sites referred to in previous chapters with significant forest loss include Kahuzi Biega National Park where there has been much destruction of forest between the highland and lowland parts of the park. Similarly there has been forest loss in Virunga National Park around sites neighbouring refugee camps, which were established at the time of the Rwandan genocide. Itombwe Massif has suffered a fair amount of forest loss because it is not a protected area and there has been farming taking place there for many years. Nyungwe Forest in Rwanda and Kibira Park in Burundi have also lost forest cover during the war in these countries and the conversion of forest to agriculture or the effects of fires which have burnt large areas of the forest during El-Nino years.

Table 9.1 Forest cover and forest loss in the eight zones mapped in fig. 9.1. These figures exclude areas of cloud cover in either the 1980s or 1990s images and hence are lower than the real value. If the clouds are randomly located then the percentage cover and percentage forest loss should be reasonable estimates of the total loss.

Zone	Forest cover 1980s (km^2)	Percentage of zone forested	Area of forest lost (km^2)	Percentage loss
1	3237.8	27.6	507.8	15.7
2	1302.0	19.6	58.0	4.5
3	1807.7	16.7	24.9	1.4
4	752.5	6.0	33.4	4.4
5	351.7	5.6	15.2	4.3
6	7428.6	57.0	117.6	1.6
7	10377.1	38.8	310.3	3.0
8	8686.9	41.3	492.9	5.7

Other types of habitat loss have occurred in recent years with encroachment of savanna parks and buffer reserves, particularly around the Queen Elizabeth and Virunga National Parks. These two parks border Lake Edward and several fishing villages have expanded over the past 15-20 years leading to loss of land for wildlife also.

9.4 HUNTING WILDLIFE

Hunting large mammals for meat takes place in all of the sites in the Albertine Rift. At most sites the activity is illegal under the national laws for each country but the inability of institutions to enforce the laws has led to various degrees of poaching. Ungulates are primarily targeted because they yield more meat than other mammals although where these have been hunted to very low numbers poachers will target smaller mammals. In Uganda, Rwanda, Burundi and Tanzania local people tend not to eat primate meat but in DRC primates are hunted intensively. A survey of the highland sector in Kahuzi Biega National Park by WCS in 2000 showed that Grauer's gorilla numbers had been nearly halved by hunting following three years of civil war in DRC when park staff could not protect the park.

Many of the forests in the rift have low numbers of ungulates, particularly the duikers and bushpigs. Monitoring of these species in Nyungwe forest following the genocide in Rwanda showed continued declines even while control of the forest was being regained following the civil war. Buffalos have been driven to extinction in many sites through over hunting and surveys by WCS in Uganda show that densities are probably too low to be viable in the long term in any forested site. Only those forests with connections to savanna sites still have some buffalos left in the forest (Kibale park and Virunga Volcanoes).

Hunting elephants for the ivory trade is not a major threat in most countries in the Rift because they have few elephants left to hunt. It is primarily taking place in DRC and even here many elephants have been killed for their meat rather then their ivory in recent years (J. Mapilanga pers. comm.).

Hunting takes place in forests using snares or dogs and nets in Rwanda, Uganda and Tanzania but more actively with guns in DRC. In the savanna parks hunting is often carried out with guns or snares.

9.5 Harvesting plant products

9.5.1 Timber

The forest areas left in the Albertine Rift are small and commercial timber exploitation is mostly by pitsawing operations rather than mechanised with sawmills. An exception is the operations in Budongo and Kalinzu forests in Uganda. There is interest in opening up parts of eastern DRC to mechanised harvesting and sawmilling operations are beginning to become established. At present these cannot function easily because of the civil war and the poor condition of roads but once peace comes to the country it is likely that large areas of forest will be harvested for timber. Pitsawing is leading to the degradation of habitat in areas where timbers of high economic value are present but on the whole harvesting is illegal in most sites and only takes place rarely.

9.5.2 Non-timber forest products

Harvesting firewood, rattan cane, medicinal plants and honey takes place in all the forests in the rift. Given the high density of people living around these forests these activities have the potential to degrade the habitat over time unless the activities are monitored and controlled. Rattan cane in Uganda has been depleted from most of the reserves near the main market of Kampala and is now being harvested from forests within the Albertine Rift for sale to this market rather than for local consumption as it was historically used. The Uganda Wildlife Authority has been working with its partners to develop monitoring programmes and controlled use of non-timber forest products in several of its protected areas and Bwindi Impenetrable National Park probably has the most comprehensive programme to date.

Charcoal has been made at many sites within the rift and is of greater concern because often it is made on site within the forest. Fires used to make the charcoal often burn more widely and destroy forest. In most forests in the rift charcoal making is illegal but does take place at a small scale.

9.6 Mining

Mining of minerals is not common in the Albertine Rift but has affected sites in Rwanda, Uganda and DRC. In DRC, particularly in the Kahuzi Biega National Park,

many miners have settled in the park to mine for columbo-tantalite, diamonds and gold and in the process degrade the habitat through the mining activity and also hunt wildlife to feed themselves. In some parts of Kahuzi Biega people are now selling rats in local bushmeat markets implying that the larger mammals have been completely hunted out (J.Hart pers. comm.). Pressure is being put on the companies that buy the minerals to buy from sources that are not fuelling civil war or destroying the environment.

Oil exploration has been taking place around Lake Albert over the past 10 years and exploratory drilling is now taking place. Several of the protected areas, including Queen Elizabeth, Semliki, Murchison Falls and Virunga National Parks and Budongo, Bugoma and Itwara Forest Reserves all fall within concessions for oil exploration. If significant amounts of oil are discovered under these protected areas great pressure will be put on them to either allow drilling or de-gazette them all together.

9.7 Fire

Fire affects the savanna parks annually. Some fire is necessary for these parks as part of the natural processes that have maintained the grasslands over time, however the intensity of burning is much higher than it should be and is probably leading to degradation of the grasslands and loss of species. Fires come from outside the parks where people burn their fields and do not control the fires or are set deliberately within the park to drive animals towards hunters.

Fires also occur in forests and can lead to major changes in the vegetation of the forest. Nyungwe Forest has been burnt several times and large areas of hillside are now devoid of trees as a result. Fires are usually set to collect honey from the trees by smoking the bees out and then get out of control but burning wood to create charcoal in the forests also creates fires.

9.8 Other threats

There are many other threats that could be listed here which are specific to each site. Some general threats that are common across several sites include:

a. the presence of exotic or invasive species – species such as black wattle, Lantana, Mauritius thorn as well as other plants are invading many of the reserves and preventing regeneration of native species.
b. pollution from human activities inside or outside the sites – mining of lime and copper around Queen Elizabeth Park has polluted areas of the park. Similarly the pollution of rivers with detergents or mercury (in the case of mining) upstream of protected areas has led to losses of fish species
c. impacts of tourism activities such as vehicle driving (off road and the killing of wildlife on the roads), and
d. disease risks from people and their domestic animals. Disease transmitted by tourists is a particular risk to ape tourism activities and is being monitored closely at gorilla tourism sites but less so at chimpanzee tourism sites.

9.9 Sites most affected

The sites within the rift that are most threatened are firstly those which have no protected status and secondly those in DRC affected by the civil wars. Those with no status include Itombwe Massif, Mt Kabobo, Marungu Massif and the Lendu plateau. Woodland to the east of Mahale Mountains Park may also be vulnerable as refugees from the Burundi civil wars move down and settle near the park. This area may be

important for conservation and needs more surveying to determine this before it is lost.

Kahuzi Biega and Virunga National Parks are suffering particularly from the civil wars and have problems with people encroaching to farm and settle in the parks, widespread bushmeat hunting, mining activities and destruction of habitat through the collection of firewood and making of charcoal. These two parks consistently ranked high for species richness and endemism but are also highly threatened at present. Their large size will help them weather some of the impacts of these threats but they have already lost a high percentage of their large mammals. Already the game reserves around Virunga Park have been lost to encroachment over the years since the park was created in 1925. It is very possible that these parks could be completely lost if pressure is not exerted on everyone involved to protect what remains of these sites.