

Strengthening Elephant Conservation in the Greater Virunga Landscape



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CHAPTER 1: The Greater Virunga Landscape and its elephants

Introduction

The Greater Virunga Landscape (GVL) is 13,800 km² of some of the most biodiverse habitat in Africa (Plumptre *et al.* 2003; 2007). This landscape straddles the borders of Uganda, Democratic Republic of Congo (DRC) and Rwanda. It comprises the Virunga National Park in the Democratic Republic of Congo (DRC) and the contiguous protected areas in Rwanda (Parc National des Volcans) and Uganda (Semuliki, Rwenzori, Queen Elizabeth, Kibale, Bwindi Impenetrable and Mgahinga Gorilla National Parks, Kasyoha-Kitomi and Kalinzu Forest Reserves and Kigezi and Kyambura Wildlife Reserves). The GVL is identified as one of six landscapes in the Albertine Rift and is the most species rich of these landscapes. The Albertine Rift has more vertebrate species and more endemic and threatened species than any other region in Africa. The GVL contains three World Heritage Sites, one Man and Biosphere Reserve and one Ramsar Site. These protected areas are inhabited by 1,448 vertebrates out of which 150 are endemic to the region. Up to 48 species of mammals, birds and amphibians are threatened. The Greater Virunga Landscape has 3180 plants species with 246 plant species only occurring in the region. Consequently the GVL is one of the most biodiverse landscapes in Africa.

In the 1960s the savanna areas of this landscape contained the highest biomass density of large mammals recorded on earth. Elephants formed a high percentage of this biomass but since that time have been severely reduced in numbers first in Uganda during the 1970s and then in DRC during the 1990s and 2000s. Numbers of elephants in Queen Elizabeth National Park in Uganda varied between 2,500 and 3,500 in the 1960s and dropped to only 150 in 1981 (Lamprey *et al.* 2003). Since that time elephant numbers have slowly recovered and a recent census in the park in 2004 showed that they were around the level they were at in the 1960s (about 2,300 individuals). It is impossible for the elephants to have regained their numbers through reproduction alone. At a maximum birth rate of 6%, numbers could only have reached about 600 individuals through reproduction (Plumptre *et al.* 2007). Therefore there must have been movements of elephants from the adjacent Virunga National Park in DRC. Currently poaching of elephants for both meat and ivory is taking place in Virunga Park in DRC as well as poaching of other large mammals such as hippos and buffalos. The park staff in DRC have been valiantly trying to stop the poaching at great risk to their lives. Over 100 rangers have been killed in Virunga park since 1996 with no compensation for their families. They have been killed by armed militias, and DRC military personnel who are involved in the poaching. There are also transboundary links to the poaching with ivory leaving DRC through Uganda or Rwanda. This poaching has led to elephants fleeing to Uganda and has increased the population in Queen Elizabeth National Park.

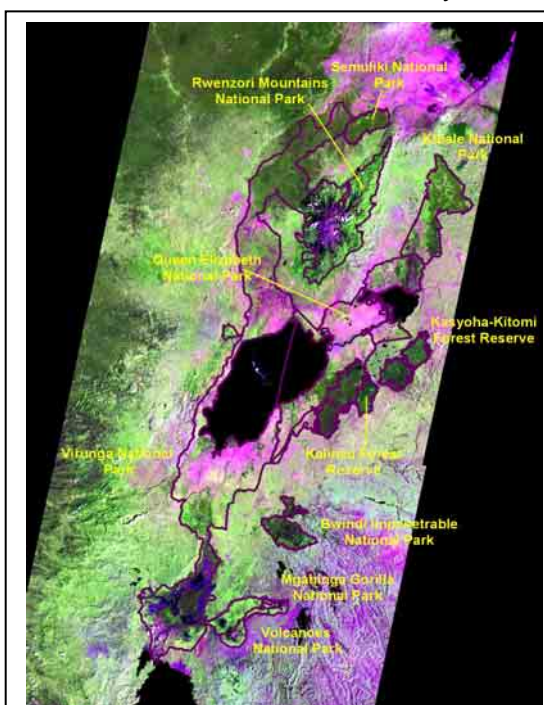


Figure 1.1. Satellite image of the Greater Virunga Landscape

The Wildlife Conservation Society (WCS) has been working with the Uganda Wildlife Authority (UWA) and the Institut Congolais pour la Conservation de la Nature (ICCN) in the Democratic Republic of Congo (DRC) to jointly work to manage the Greater Virunga Landscape at a landscape scale since 2003. The recognition that several landscape species need to be managed at a scale larger than any individual protected area is one of the main reasons driving this collaboration. Transboundary planning meetings are held quarterly between wardens from the two countries and semi-annual regional meetings at which conservation partners are present. Coordinated patrols occur along the international boundary to intercept poachers that flee across the border to escape arrest. Regional meetings have undertaken some analyses of threats to the GVL and identified landscape species whose conservation needs to be addressed at the scale of the GVL. Elephants were one of these species because they range over large areas, and have a major impact on the habitats within the landscape.

The majority of the elephants in the GVL occur in the savanna woodland areas of central and eastern Virunga Park and Queen Elizabeth Park. A few still occur in the Virunga Volcanoes, Kibale and Bwindi Impenetrable National Parks and also a few are still found in the Rwenzori massif. Regular aerial surveys in Queen Elizabeth National Park were made from 1963 up to the 1980s (Malpas, 1980), sometimes of large mammals and sometimes focused upon elephant numbers. Two surveys were made in the 1980s (Olivier et al., 1989; Douglas-Hamilton et al., 1980) and then several in the 1990s and early 2000s (Lamprey et al., 2003). Surveys of large mammals on the savannas in Virunga Park were made in 1958-1960 (Verschuren, 1993), 1981 (Mertens, 1983) and 2003 (Mushenzi et al., 2003). However there has never been a census that looks at both sides of the border at the same time. Consequently there is always doubt about increases and decreases in the animal numbers because it is never clear whether they are due to an increase in the population or due to immigration/emigration.

Elephant numbers in the DRC remained relatively high up to the early 1980s but since then have declined dramatically and now number a few hundred at the most. The 2003 census only estimated 286 for the savanna parts of the park (Mushenzi *et al.* 2003). The civil war in DRC that started in 1996 led to armed groups hiding out in the Virunga Park. Rebel militias and the military employed by the rebel groups that control eastern DRC are still causing havoc in some parts of Virunga National Park especially in the border region with Uganda around the Ishasha-Lulimbi sector. A local NGO, IDPE noted that 29 elephants were killed, primarily by the military, between April and July 2004 south of Lake Edward. The problem of insecurity in the region caused a history of poor law enforcement and poaching across the international border between Uganda and DRC leading to declines in large mammal populations on both sides despite efforts to reduce poaching. Park staff try to stop the poaching at great risk to their lives.

As a result of these threats and observed needs WCS put together a proposal to the US Fish and Wildlife Service African Elephant Fund to strengthen ICCN and UWA's ability to tackle the elephant poaching problem that is taking place in the Greater Virunga Landscape and in particular the Virunga National Park. The following specific objectives were funded:

- Survey the elephant population in the GVL to provide an estimate that could be used as a baseline for future monitoring. This will prevent the problem that currently exists where counts of one park cannot ascertain if elephants have moved to the other park which is known to occur regularly.
- Radiotrack two additional elephants at the border area using satellite collars to assess movements in the corridor areas and to complement tracking of six

individuals in Queen Elizabeth Park that is funded by USAID. This would provide information to help guide where patrols should concentrate their efforts in corridor areas.

- Strengthen the existing transboundary collaboration between ICCN and UWA by involving other law enforcement authorities and district officials in the transboundary collaboration with the aim that they will start to work with ICCN and UWA rather than against them.
- Supporting ranger-based monitoring activities in Virunga and Queen Elizabeth National Parks to better train staff in data collection, data computerization and data analysis. Also equip rangers with field gear to allow patrols to take place.

This report summarises the results of this 18 month project under each of the objectives above.

CHAPTER 2: Aerial surveys of elephants in the GVL

Introduction

In June/July 2006 two aerial surveys were made of Virunga National Park (savanna portion -9-12 June) and Queen Elizabeth National Park (early July) including the corridor linking this park to Kibale National Park. The UWA aerial survey unit carried out the survey of Queen Elizabeth National Park with support from USAID's Prime/West project through WCS, and the WCS flight program worked with ICCN to survey Virunga Park supported by this USFWS grant. We had hoped to survey during the same time period but lack of availability of Avgas for the plane in Uganda prevented this. However we believe that the two week difference will not affect the numbers found for both parks greatly. These are the closest surveys that have been made of both parks to date.

The surveys were sample counts of all large mammals (rather than complete counts of the elephants). This was felt to be more useful at the present time because of the poaching in Virunga Park which was affecting many of the large mammals. Other species surveyed included buffalo, waterbuck, Uganda kob, topi and warthog. Signs of illegal human activities were also recorded whenever they were encountered.

Methods

UWA has been flying the same 2.5 x 2.5 km grid system since 1995/6 for their aerial survey of Queen Elizabeth and the same grid system was extended to the Virunga Park surveys so that the results would be comparable. Flying at 300 feet above the ground, this tends to give a sampling effort of about 15% of the area of the parks. Identical methods were used in both surveys to ensure comparability of the results and each observer was calibrated prior to the survey taking place.

The aerial transect sampling method (M. Norton-Griffiths 1978) was used to estimate the population of the large mammals in both protected areas with modifications in the estimation of strip width. Norton Griffiths (1978) proposed flying several times at the same altitude (300 feet) over markers at regularly spaced intervals to estimate the area searched between markers on each side of the plane. Recently this method has been altered to fly 4 times at a 100 feet intervals from 200 to at least 800 feet so that a calibration curve can be calculated to adjust the strip width if the plane changes its average altitude above the ground when flying the transects.

A Cessna 206 aircraft was used in Uganda and a Cessna 186 in DRC, both equipped with a radar altimeter. The aircrafts flew along parallel transects 2.5 km apart in each country. Each transect was subdivided in sub units of 2.5 km length. The flight transects were evenly spaced to provide a systematic coverage of the area. Figure 2.1 shows the counting blocks with center point coordinates of transects.

A Front Seat Observer (FSO) seated next to the pilot continually recorded radar altimeter readings every half a minute. The Rear seat Observers (RSO) seated on each of the rear seats, repeatedly scanned the transect area demarcated by the rigid streamers attached to the wing struts on either side of the aircraft and tape-recorded the observations. Big herds that were not easily countable (exceeding 40 animals) were photographed to allow more accurate counting on the ground when the photographs are printed and developed.

The sample strip width used was calibrated by flying back and forth over a straight road on which white markers were placed at an interval of 25 meters on the ground in

Uganda and 20 metres in DRC, for a distance of 2 km. Calibrations between strip width and height above ground had R^2 values of 0.95-0.97 in DRC and 0.87-0.97 in Uganda. We could be fairly confident therefore in estimating the strip width accurately given an average flying height recorded by the FSO.

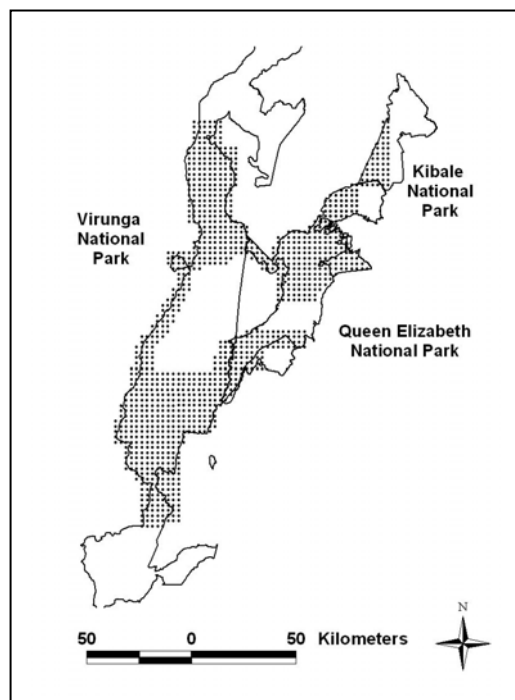


Figure 2.1. Map of the areas surveyed by the planes in Uganda and DRC. Each dot is the centre of a 2.5 x2.5 block. Areas that are unsurveyed are forested or lakes.

Results were analysed separately for Virunga, Queen Elizabeth and the Kibale Corridor to allow comparisons with previous counts. The Jolly II Method (Jolly 1969) was used for analysing the aerial survey data for unequal sized sampling units. Each transect was treated as a sample of the population. If a species occurred in 'clumps', either occupying part of the census zone, or by aggregating into a few large herds, there is usually a large difference in the numbers in each transects, and the standard error (SE) tends to be high. In DRC we found a few small groups of elephants and then one herd of at least 120 animals. When this large herd is entered into the survey analysis it greatly increases the estimated numbers in the park and also gives wide errors to the estimate. We felt that the numbers generated were unrealistic and that it would therefore be better to estimate a density of small herds of elephants for the park, calculate a number for the area surveyed and then add in this large herd. We are fairly sure there were no other large herds in the park because we could see well to the right and left of the plane between transects and the pilot and FSO kept an eye out for obvious groups of elephants.

Results

The results for Queen Elizabeth National park (Table 2.1a) and Virunga National Park (Table 2.1b) are given separately. There were no large mammals observed in the corridor between Kibale Forest and Queen Elizabeth National park and hence no results can be presented for this region. Table 2.2 shows the total numbers of large mammals estimated for the savanna portion of the Greater Virunga Landscape. A total of 3,300 elephants was estimated for this area. Figure 2.2 shows the distribution of elephants seen during the aerial surveys with relative sizes of herd sizes portrayed with varying circle size.

Table 2.1. Population estimates with standard error (SE) and 95 % confidence limits for a) Queen Elizabeth National Park and b) Virunga National Park

a.

Species	NORTH			SOUTH			Total
	Population Estimate	SE	95% Confidence Limit	Population Estimate	SE	95% Confidence Limit	
Buffalo	5,940	1,696	3,732	8,918	2,539	5,586	14,858
Bushbuck	29	15	33				29
Elephant	1,824	648	1,425	1,135	384	844	2,959
Reedbuck	7	7	15				7
Topi				1,521	833	1,833	1,521
Uganda Kob	14,679	5,484	12,065	6,293	1,831	4,028	20,971
Warthog	1,179	300	661	208	70	153	1,388
Waterbuck	2,630	655	1,440	919	290	639	3,548

b.

Species	North of Lake Edward			South of Lake Edward			Total estimate
	Population estimate	SE	95% Confidence limit	Population estimate	SE	95% Confidence limit	
Buffalo	74	61	12-208	3,748	1,335	811-6,685	3,822
Bushbuck	6	5	1-17	7	6	1-21	13
Elephant	50	42	8-153	298	78	145-470	348
Reedbuck	6	5	1-17	35	15	5-67	41
Topi				1,353	430	408-2,298	1,353
Uganda Kob	583	268	94-1172	12,399	2,611	6654-18,144	12,982
Warthog				694	158	347-1,041	694
Waterbuck	6	5	1-17	368	106	130-600	374

Table 2.2. Total numbers of large mammals estimated for the savanna regions of the Greater Virunga Landscape. QENP – Queen Elizabeth National Park.

Species	Virunga	QENP	Total
Buffalo	3823	14,858	18,681
Bushbuck	13	29	43
Elephant	341	2,959	3,300
Reedbuck	42	7	49
Topi	1353	1,521	2,874
Uganda Kob	12982	20,971	33,954
Warthog	694	1,388	2,082
Waterbuck	375	3,548	3,923

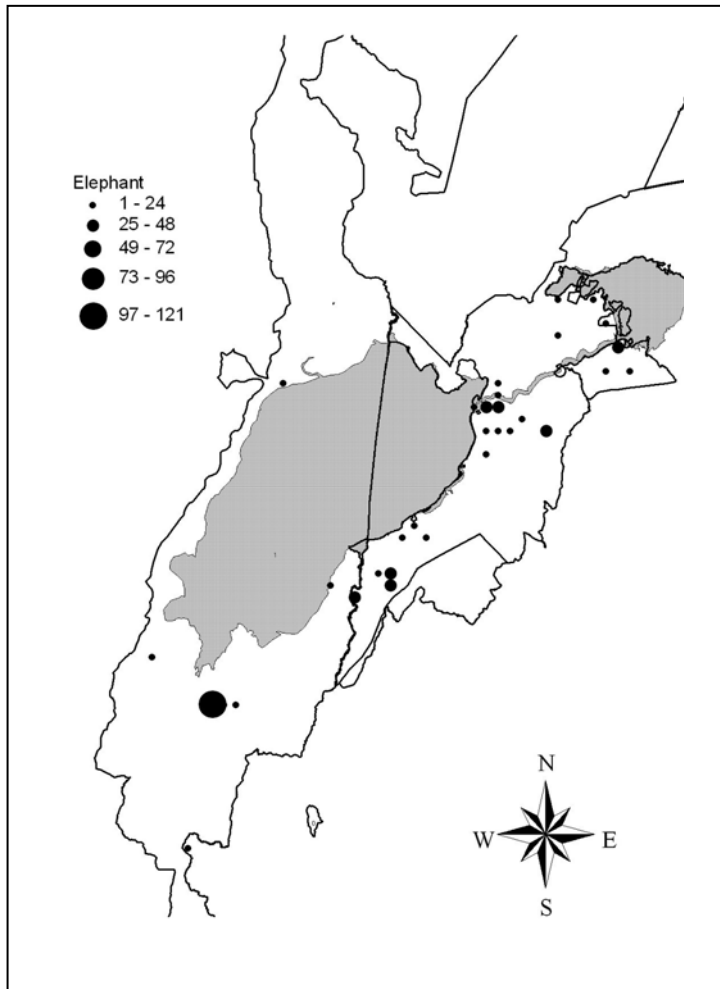


Figure 2.2. The distribution and relative abundance of elephant herds in the aerial surveys over the GVL.

In addition to these numbers surveys Uganda Wildlife Authority have made in Kibale National Park estimate about 390 elephants there (F. Wanyama 2005) and about 30-50 in Bwindi Impenetrable National Park (Unpublished data from ITFC). There are a few in the Rwenzori massif and in the Semuliki forest west of the Rwenzoris but these numbers are unknown. There may also be about 30-50 elephants in the Virunga Volcanoes. So the total number of elephants for the GVL are a minimum of 3,750 animals.

CHAPTER 3: Radio tracking elephants in the GVL

Introduction

Radio tracking of wild animals is a technique that is primarily used to better understand their use of a particular area, their use of specific habitats and their movement patterns. In the Greater Virunga Landscape we are particularly interested in the ranging patterns of elephants within and outside the various protected areas, particularly in the region where there are corridors linking one protected area to another. Historically the various protected areas in the GVL have been managed as separate units and there has been little consideration of the linkages between them when developing management plans. Elephants need to move between the protected areas and historically this has enabled them to weather poaching pressures much better than in parks where the elephants have not been able to migrate across the international border.

WCS is supported in Uganda with a grant from USAID to monitor the impacts of the PRIME/West project on conservation. As part of this project, six radio collars were purchased to monitor the movements of elephants in the Queen Elizabeth National Park. The US Fish and Wildlife Service grant reported on here allowed us to purchase an additional 2 radio collars to attach to elephants at the Uganda-DRC border in the Ishasha Sector to monitor ranging patterns across the border.

Methods

Eight radio collars from Africa Wildlife Tracking (South Africa) were purchased with 18 months of satellite time. The collars were programmed to obtain 3 fixes per day (every 8 hours) from each animal and the data are automatically sent to South Africa via satellite from each animal and then sent on to the WCS Uganda Program country office. These collars have been used extensively in the forests of central Africa and on the whole have been fairly robust and have worked well.

Dr Mike Kock from WCS's Field Vet Program visited Uganda in May 2006 to train UWA's veterinary unit in the process of immobilizing elephants and attaching radio collars. Over a period of about a week the eight elephants were collared with support from UWA field staff and plane (Fig. 3.1). Elephants were immobilized with M99 and reversed once collared.



Figure 3.1. Photos of radio collaring team and elephant with radiocollar in place recovering from anesthetic.

Results

The elephants have now been tracked for 20 months and we present some of the results we have obtained to date here. Tracking will continue until the battery life in the collar has ended. Two of the collars have already ceased to function. One collar failed in October 2006 about five months after the animal was collared and the other collar stopped functioning in July 2007 about 14 months after collaring took place.

Figure 3.2 shows the distribution of fixes overlaid on a satellite image of the GVL. Forest and dense woodland is green, grassland is pink, and water is white. Cultivation is a duller pink outside the protected area boundaries (black lines).

Five bulls and three cows were collared. The fifth bull was a younger male of about 15-20 years. Bull 1 was radio collared in Kyambura Wildlife Reserve but has since moved across to the DRC border through the corridor north of Lake Edward and back (figure 3.2). Bull 2 was collared near lake Katwe and spent much of its time in the corridor north of Lake Edward moving into the cattle ranches to the north of the park at night. This animal has also been moving over much of the northern part of the park west of the Kazinga Channel. Bull 3 was collared near the Ishasha border in the southern part of Queen Elizabeth Park. This animal has occasionally moved into Virunga Park in DRC but only rarely. Bull 4 is the one whose collar stopped working in October 2006. This animal moved through the Maramagambo Forest from the southern sector of the Queen Elizabeth Park to the northern sector early on during the radio tracking.

Bull 5 (figure 3.2), the young male, has moved over much of the northern part of Queen Elizabeth Park. He was collared with a herd of females and probably spends time with them part of the time although he has been observed alone as well. Cow 1 (figure 3.3) has a similar ranging pattern to this young bull (although they have not been seen together). Both use the islands in lake George during the dry season months of June-August and December-February. They are known to consume 'Ambatch' here which is also used by fishermen as floats for their nets on the lake.

Cow 2 and Cow 3 (figure 3.2) have moved further into Virunga Park in DRC than any of the other elephants collared. They can be seen to hide in patches of forest and dense woodland in Virunga Park and obviously seem to be aware of the danger of poaching in this part of the park. This is a region which has been notorious for poaching by armed rebel groups and the DRC military (see chapter 5).

Analysis of the home range data was made in Ranges 6, a home range analysis software. The average distance walked between each 8 hour fix and the area of home range measured using a Kernel analysis of the fix data was calculated for the 95% and 50% contours (table 3.1).

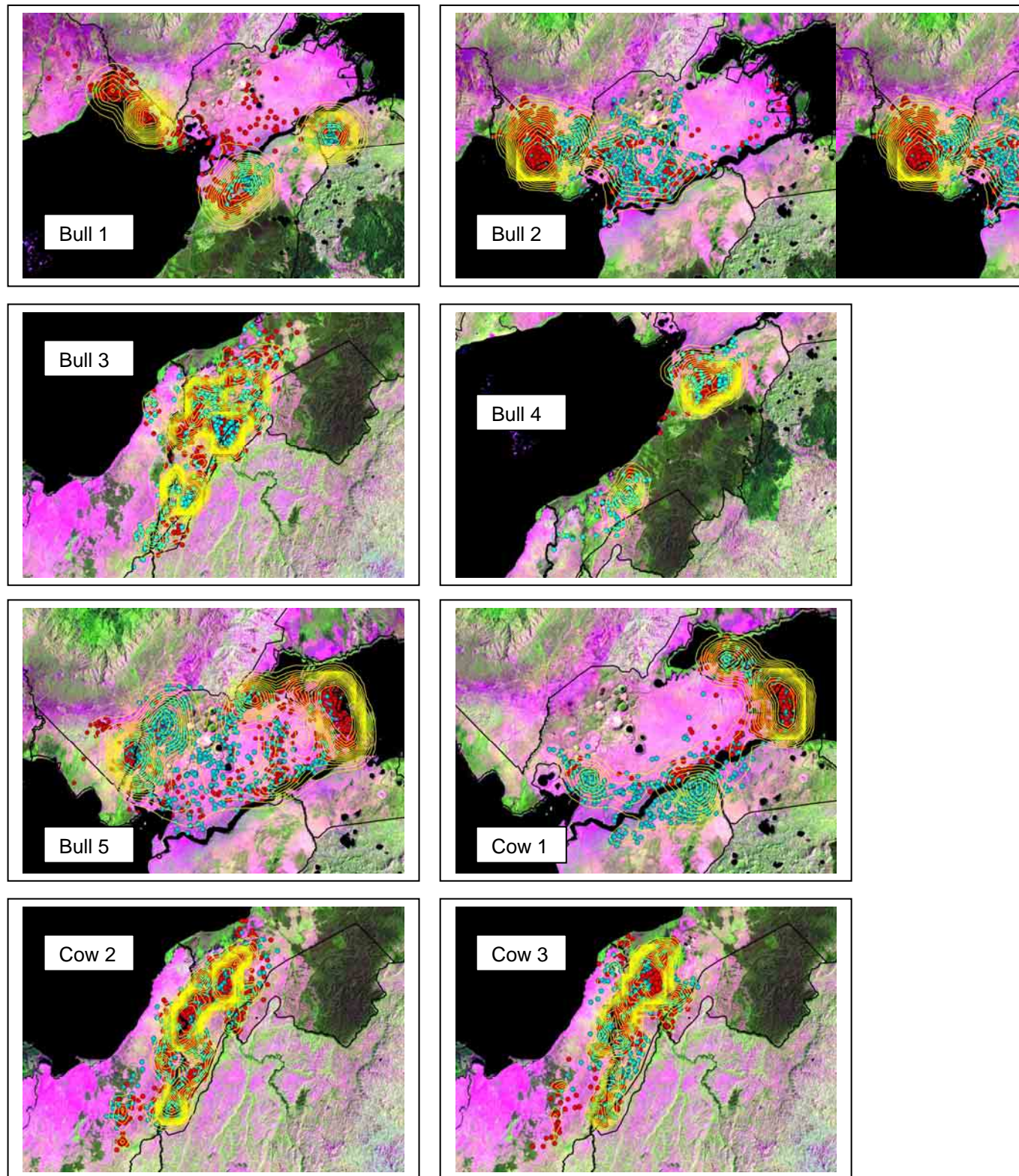


Figure 3.2. Ranging patterns of the eight elephants. Points are shown for dry (red) and wet (blue) seasons and the results of a kernel home range analysis with 5% contour lines from 20-95%. Satellite image provided by Woods Hole Research Center.

Table 3.1. Home range data for each of the elephants collared giving the number of fixes, the average distance walked between each 8 hour fix with its standard error, the home range area within the 95% and 50% kernel contour lines.

Name	Sex	Fixes	Av dist walked (m)	se av dist walked (m)	Area 95% kernel (km ²)	Area 50% kernel (km ²)
Bull 1	M	1637	1224.5	33.8	370.3	85.1
Bull 2	M	1782	2417.8	49.7	332.5	66.7
Cow 1	F	1853	1315.9	29.4	252.1	44.4
Bull 3	M	1243	2271.4	50.26	271.1	76.2
Cow 2	F	1748	2036.3	35.9	213.3	69.1
Cow 3	F	1781	1708.2	32.3	192.6	47.7
Bull 4	M	482	1940.6	76.5	230.3	61.4
Bull 5	M	1823	2178.8	45.4	540.3	110.5

It is clear that bulls have larger ranges (ignoring Bull 4 where there were much fewer fixes) in this park but don't necessarily move further than cows each day. The subadult bull had the largest range of any of the elephants collared – almost 200 km² larger than the nearest Bull..

A vegetation map of the Virunga and Queen Elizabeth parks was created from aerial photos under separate projects (figure 3.4). We are in the process of obtaining aerial imagery from the 1950s to assess vegetation changes and relate these to changes in elephant numbers over this time period.

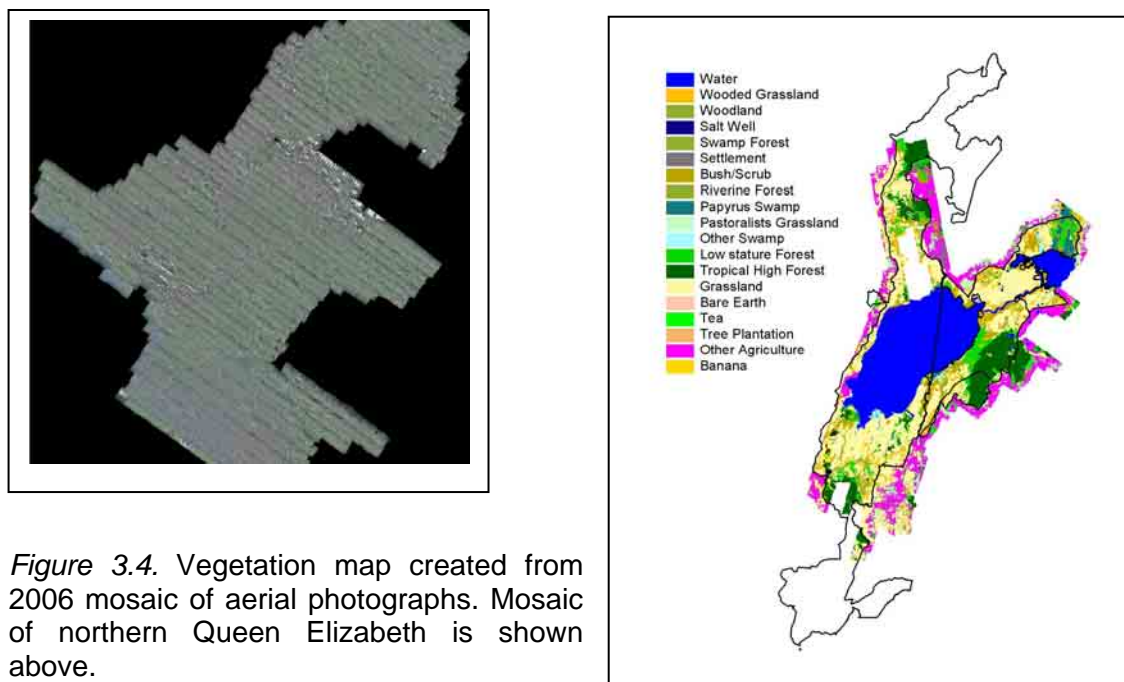


Figure 3.4. Vegetation map created from 2006 mosaic of aerial photographs. Mosaic of northern Queen Elizabeth is shown above.

Overlaying the elephant census data on the vegetation data we used a stepwise regression analysis to assess which variables best predicted elephant density. Riverine forest, bush/scrub and wooded grassland were highly significant in predicting elephant density but only predicted with about 9% accuracy. These appear to be the main habitats where the elephants occur in the savanna parts of the landscape.

CHAPTER 4: Transboundary Conservation in GVL

Introduction

WCS has been supporting transboundary collaboration between DRC and Uganda in the GVL since 2003. This support is primarily to three parks in Uganda; Queen Elizabeth, Rwenzori Mountains and Semuliki; and to Virunga Park in DRC. Four main activities are funded:

1. Joint planning meetings by wardens for coordinated activities
2. Regional meetings to improve management at a landscape scale
3. Coordinated patrols along the common border
4. Intelligence gathering and monitoring of wildlife trade

The support from USFWS was to primarily engage other law enforcement agencies in helping UWA and ICCN tackle the illegal activities taking place in the GVL.

Coordinated Patrols and Intelligence Gathering

Monitoring of animals killed including elephants in the protected areas of Greater Virunga Landscape (GVL) is done through conventional patrols and investigative activities such as intelligence gathering. During the coordinated patrols, park staff from UWA and ICCN patrol their respective border areas at the same time and share information about what they find. They are able to arrest suspects and confiscate their tools. This has resulted in arrests and recovery of items used for poaching (snares, firearms, spears, knives, etc) and poached items (meat, trophies, timber etc) as summarized below:

Arrests

Table 1 gives the different categories of suspects recorded in GVL during transboundary patrols from 2003 to 2007. A total of 86 poachers were arrested on either side of the border. Out of the 67 poachers arrested on the Ugandan side, 17 were prosecuted (10 from Semliki NP and 7 from Queen Elizabeth NP) and were given various sentences ranging from 2 months to 9 months as laid down by the law. There is a decline in the number of people encountered during the border patrols since the transboundary patrolling started, with particularly low numbers encountered in 2006, indicating that people are probably realizing that the old tactic of fleeing across the border to evade arrest is less likely to work these days.

Intelligence gathering made it possible to follow up information concerning illegal activities back to its sources in the villages or towns. Most of the information comes from a network of informers that has become an important source of information especially in Ishasha Sector of Queen Elizabeth NP, Lulimbi Sector of Virunga NP and Semliki NP. Intelligence gathering has helped in the recovery of fire arms, trophies and has led to arrests being made. There is a suggestion that this system could be improved further by offering bonus payments for information leading to arrests or confiscation of firearms and/or trophies.

Encroachment and arrests throughout Queen Elizabeth Park

Although the level of arrests at the border areas has been declining this is not the case elsewhere in the GVL, particularly in Queen Elizabeth National Park. A new challenge that arose in the area was that of encroachers in Queen Elizabeth NP and Virunga NP. An estimated 1500 pastoralists with about 10,000 head of cattle returned to Uganda from Virunga NP where they had illegally settled during the civil war in DRC, and were temporarily housed in Queen Elizabeth NP in March 2006. This number increased as a result of the Government being unable to resettle them quickly, with other pastoralists joining them from the Kasese District, exacerbating the

problem. This settlement into the park by cattle keepers affected wildlife ranging and complicated management issues. Elephants and other wildlife were pushed to the edges of the park into community land leading to increased crop raiding. Poaching also increased in Queen Elizabeth NP and predators in the area (lions, hyenas, etc) were being poisoned for attacking cattle (see Table 2). For example while there were 393 arrests of poachers made in Queen Elizabeth NP between Jan-September 2005, there were 953 arrests made in the same period in 2006. Human-wildlife conflict and poaching dramatically increased in the area and UWA struggled to manage the issue. Eventually the Uganda Government re-settled the pastoralists in an area north of Queen Elizabeth Park in September 2007.

Table 1. Category of suspects encountered between 2003-07 in the GVL during transboundary patrols.

PA	Year	Category of suspects					
		Poacher	Charcoal Burner	Fisherman	Cattle Grazer	Smuggler	Encroacher
QENP	2003/04	23	6	21			
	2004/05	5			3	3	
	2005/06	16					1500
	2006/07	3					
SNP	2003/04		6				
	2004/05	10					
	2005/06	9		3			
	2006/07	1					
Total (Uganda)		67	12	24	3	3	
PNVi	2004/05	9	9	275			164
	2005/06	10					
	2006/07			2			4
Total (DRC)		19	9	279			168

Table 2. Evidence of illegal activities recorded during routine ranger patrols and operations throughout Queen Elizabeth PA (Jan. – Sept. 2005 and 2006)

Activity		Time period								
		January	February	March	April	May	June	July	August	September
Firewood	2005				8	9	10	7	11	
	2006	6	2	7	2	1		4		4
Fishing	2005			9	21	13	851	395	362	
	2006	348	404	1353	71	1606	15	124	179	52
Logging	2005	13		5		6	2	2	14	
	2006	3				24	3	49		15
Poaching	2005	23	24	76	24	13	45	62	126	
	2006	26	119	95	205	52	46	151	140	118

Monitoring and quantifying law enforcement could be improved by recording patrol effort and encounter rates with illegal activities. This is being done through the MIST Ranger-based Monitoring program (chapter 5) but the data are still being entered in the computer for Queen Elizabeth Park because of initial problems with the set up of the software in this park.

Confiscated items as indicators of poaching

Table 3 summarises animal body parts recovered while Appendix 1 gives the number of animal carcass recorded and suspected to have died of poaching during patrols and intelligence gathering. Animal trophies recovered include 18 elephant tusks, hippo teeth (28 kg and 28 pieces), 8 leopard skins, 3 lion skins and over 200 kg of bush meat. Animals that were poached most were Uganda kobs (300), elephants (42), hippos (43 recorded during patrols and 310 through intelligence reports) and buffaloes (39). These numbers indicate that poaching is still a big threat in the region (figure 4.1) which is also confirmed by Appendix 2 showing wildlife seizures by UWA staff on regular patrols in QENP for January 2005 to August 2006.

Table 3. Live animals and animal body parts recovered during patrols and intelligence operations during transboundary patrols in the GVL

PA	Year	Live animals and animal body parts recovered						
		Parrots	Elephant Tusk	Hippo Teeth	Leopard Skin	Lion Skin	Buffalo Meat	Hippo Meat
QENP	2003/04		12		4		2 (sacks)	
	2004/05 2005/06		2	10 kg	1	1		1 car
SNP	2003/04	8	2					
	2004/05						20 kg	
RMNP	2005/06	2						
Total (Uganda)		10	16	10	5	1	20 kg	
	2004/05			11 kg	3			
	2005/06		2	28 pcs		2		190 kg, 4 sacks
Total (DRC)			2	11kg & 28 pcs	3	2		190 kg 4 sacks



Figure 4.1. Carcass of hippo being recovered (left, Photo courtesy of Innovation pour le Developpement et la Protection de l'Environnement) and (right) a carcass of a poached elephant (Photo courtesy of ICCN).

Hunting equipment recovered

There were 8 guns recovered during the period of 2003-2007, seven of them from the DRC side. Three hundred and thirty (330) wire snares and 288 rope snares were also recovered. This indicates that snaring is the main method used by poachers in this region (Appendix 3). Unfortunately snaring is one of the most difficult methods of poaching to detect unless park officials come across the snares and remove them physically. Occasionally the presence of snares can also be detected by locating carcasses of animals that were trapped. Managing snaring will require regular patrols with more areas covered compared to the current 2 coordinated patrols in 3 months per sector due to logistical problems. Illegal fishing is another problem faced in the region but this is expected to reduce with the recent purchasing of two out board engines and the repair of two boats for UWA to boost up their marine department and increase the patrols on Lakes Edward and George.

Regional Training workshop for Customs and Immigration officers

A training workshop on control of illegal wildlife trade in the Greater Virunga Landscape (GVL) was held on 12th – 15th Feb 2007 attended by 21 participants (customs, immigration and security officials from the DRC-Uganda border regions including West Nile) with 10 from DRC and 11 from Uganda. This meeting was also funded by another USAID grant for conservation in Uganda (USFWS funded the Congolese attendance).

The workshop objectives were to:

- Introduce the officers to the laws and regulations governing the wildlife trade
- Familiarise participants with the correct procedures to follow for legal trade
- Train officers in basic identification techniques of animals that can be legally traded
- Introduce participants to investigative techniques of detecting illegal malpractices of the wildlife trade
- Equip participants with cross-border trade intelligence gathering skills

The workshop was conducted in both English and French. Key presentations covered the following topics (see Appendix 4 for details of the presentations):

- The wildlife trade and international conventions
- Laws and regulations of the wildlife trade in DRC and Uganda
- Identification techniques of mammals, birds, reptiles and amphibians
- Procedures, verification and detecting illegal animal trafficking

A Guide to Wildlife Species Permitted for Trade in Uganda

This guide has been compiled by Isaiha Owiunji of WCS in collaboration with UWA and ICCN and was funded by USAID. This is a first attempt to give comprehensive information on the status of the wildlife species proposed for trade in Uganda. It is intended to help law enforcement officers identify species that can be legally traded and to ensure compliance with law. The list of wildlife species that are tradable in Uganda is up-dated yearly and this guide will therefore be subject to change in the coming years. This guide is not meant for sale.

The Wildlife Conservation Society's is an International Conservation Non-governmental Organisation that saves wildlife and wild lands by understanding and resolving critical problems that threaten key species and large, wild ecosystems around the world. WCS Albertine Rift Program is working in Greater Virunga Landscape to improve conservation in this biological rich region by focusing on providing information for managers of protected areas, building capacity to better manage these areas and encouraging collaboration across national boundaries.

The Uganda Wildlife Authority (UWA) manages ten national parks and twelve wildlife reserves. UWA's conservation approach focuses on law enforcement, community conservation, research and monitoring and financial sustainability.

The Institut Congolais pour la Conservation de la Nature (ICCN) is the authority responsible for managing wildlife in DRC. It has been managing the conservation of the Virunga National Park for 80 years.



A GUIDE TO WILDLIFE SPECIES PERMITTED FOR TRADE IN UGANDA

WILDLIFE CONSERVATION SOCIETY

COMPILED BY
ISAIAH OWIUNJI, WILDLIFE CONSERVATION SOCIETY, 2006






DESIGNED AND PRINTED BY: DESIGN PLUS TEL: 0712929072 EMAIL: elansand@yahoo.com







Bird Species	Bird Species
 <p>Little Bee-eater <i>Merops pusillus</i></p> <p>Name: Little Bee-eater <i>Merops pusillus</i></p> <p>Identification: The adult bird is green above with a yellow throat that has black stripe. The eye stripe is also black. The underpart is cinnamon-rufous.</p> <p>Size: This is a small bee-eater with an average body size of 15 cm.</p> <p>Occurrence: Pairs and families are common in bushed and wooded grassland.</p>	 <p>Olive-bellied Sunbird <i>Cinnyris chloropygia</i></p> <p>Name: Olive-bellied Sunbird <i>Cinnyris chloropygia</i></p> <p>Identification: The adult male of Olive-bellied Sunbird has red breast band without any collar above it. It has green upperpart-coverts and a dark olive body.</p> <p>Size: It has an average body size of 11 cm.</p> <p>Occurrence: It is common in a variety of lush habitats including forest edge, moist bush and cultivation.</p>
 <p>Ross's Turaco <i>Musophaga rossae</i></p> <p>Name: Ross's Turaco <i>Musophaga rossae</i></p> <p>Identification: The body colour of the Ross's Turaco is deep blue and with a bright yellow bill, yellow eye patches, and a brilliant crimson crest and outer wings.</p> <p>Size: The average body size is 54 cm</p> <p>Occurrence: They can be found in singles, pairs and small groups in riverine forest, forest edge, woodland and mature gardens.</p>	 <p>Malachite Sunbird <i>Nectarinia famosa</i></p> <p>Name: Malachite Sunbird <i>Nectarinia famosa</i></p> <p>Identification: The breeding male of the Malachite Sunbird is very bright uniform green, sunbird with yellow pectoral tufts which are often not visible. The non breeding male is similar to the female; olive green with green feathers on the wings and rump.</p> <p>Size: The male is about 24 cm while the female is 14 cm.</p> <p>Occurrence: It occurs in montane forest edges and farming areas in highlands.</p>
 <p>Purple-banded Sunbird <i>Cinnyris bifasciata</i></p> <p>Name: Purple-banded Sunbird <i>Cinnyris bifasciata</i></p> <p>Identification: The adult Purple-banded Sunbird has maroon breast band bordered with blue and no pectoral tufts. It is similar to Merop Sunbird <i>Cinnyris mariguensis</i> but is slightly smaller and shorter-billed.</p> <p>Size: A sunbird of average body size of 10 cm.</p> <p>Occurrence: It is common and widespread in woodland and thickets.</p>	 <p>Bronze Sunbird <i>Nectarinia kilimensis</i></p> <p>Name: Bronze Sunbird <i>Nectarinia kilimensis</i></p> <p>Identification: The head, back and breast of the adult male Bronze Sunbird is bronze-green but appears blackish at the first sight.</p> <p>Size: The male has a long tail and its average body size is 23 cm long.</p> <p>Occurrence: It is common in gardens, forest edge or open woodland in southern part of Uganda and eastern DRC.</p>

Figure 4.2. Guide to legally permitted trade species for Uganda.



Figure 4.3. Poster produced for the training workshop to help stop the illegal trade in wildlife and wildlife products. Each customs post has been provided with copies of this in English and French.

Workshop materials produced for the training including an identification guide (fig. 4.2) for species that can be legally traded in Uganda and posters (fig. 4.3) highlighting CITES species in which wildlife trade is restricted or illegal. The posters

are also being distributed around hotels and other NGOs. In DRC, there is an act which determines which species cannot be traded. The law was signed in 1982 and application measures have been adopted in 2004. This act was also distributed to DRC officials during the workshop. These were given to the participants as reference and publicity materials. Although DRC has not developed a list of wildlife species for trade yet it is anticipated that it will do so in the near future. The booklet also detailed the procedures for carrying out the wildlife trade properly and will serve as an identification guide. These booklets will now be used by UWA to train additional Customs and Immigration officers in other parts of Uganda apart from those in GVL.

As a follow-up for the future the workshop made the following recommendations:

- Improvement on information sharing and management through provision of relevant materials related to the wildlife trade. More strategies should also be laid for information sharing and awareness raising
- Investment in capacity building through training and sensitization seminars for the relevant stakeholders,
- Improvement on facilitation of officers at the borders through provision of proper equipment for detection of illegal materials and remuneration
- Involvement of local communities around protected areas through sensitization. This could be done through radio programmes and advertisements in churches and public gatherings
- Improvement on border patrols and having frequent spot-check points by URA
- Provision of incentives to encourage intelligence gathering
- UWA to deploy borderline monitoring groups to keep in contact with immigration and customs officials.



Figure 4.4. Participants in the training workshop.

CHAPTER 5: Ranger-based Monitoring in the GVL

Ranger-Based Monitoring in the region

Ranger-based monitoring (RBM) makes use of the fact that park rangers are the people who visit most of the areas of the parks where they work. As a result they have a lot of information that they are aware of that would be useful for managers to know. In Uganda, Rwanda and eastern DRC there has been a programme to develop RBM in a more systematic manner, providing GPS units to allow mapping of rangers observations and the development of a database Management Information System (MIST) by UWA.

As part of the whole process of establishing monitoring in parks, WCS has been working with the parks authorities in Uganda (UWA), and Rwanda (ORTPN) to develop monitoring plans that allow them to subjectively assess the impacts of their management strategies and hence adaptively adjust their management strategies when they are not obtaining the desired results. We have also helped ICCN develop a similar monitoring plan for Virunga Park.

MIST – database for RBM management

Training and establishment of MIST in Virunga Park

WCS has been working with UWA to establish MIST in all parks in Uganda with support to the entry of data and training of wardens and rangers, as well as the provision of computers and other equipment. As part of the USFWS grant we were able to establish MIST in Virunga National Park in DRC and Nyungwe National Park in Rwanda as pilot sites for the evaluation of the system by ICCN and ORTPN respectively. ICCN has already decided to establish RBM and MIST in all its World Heritage Sites as a result of its success in Virunga Park.

WCS has been supporting data collection through RBM in Virunga Park since 2003 and in February 2006 we held a 12 day training program in the use of MIST for park wardens from DRC and Rwanda and at this time imported all the historic data from the two parks (which had been entered in Excel). Eight ICCN staff and 2 WCS staff from Goma attended the workshop. Two different teams were trained – the first one for all attendees for data management and an advanced course for administrators. The workshop was led by Kevin Sallee with support of Fred Wanyama and Andy Plumtre. After the training session, Kevin visited Goma in order to get the database established and working for ICCN requirement and get the Goma based team used to some other technical tools. During his visit in Goma, Kevin had to correct and adapt the software to Virunga NP data collection protocols, and get the field-based team used to some other uses of MIST. After the training and the visit, there have been internet-based assistance to Virunga Park from Kevin to make sure that the software gives the required results.

In Virunga Park data were entered by WCS staff with support of 1 ICCN staff financially supported by WCS funds. There are about 3000 data sheets provided monthly and data transferred from the field to Goma for data entry. In order to ensure ICCN uses the database at field level, it is necessary to build field staff capacity in basic computer use so that they can enter data at field station level. There has been a computer training session for 15 ICCN staff including 6 chief wardens, 6 senior rangers in charge of monitoring and 3 administrative staff based at ICCN Goma headquarters (the Director, cashier and receptionist) over a six day period. The aim of this training was to get staff trained in basics computer skills so that we can build on this with further training such as MIST in order to make functional data entry at every field station. Different topics were covered by the training: basics in Windows,

Word, Excel and Powerpoint. Computers are being provided by WCS to each field station to allow data entry.



Figure 5.1. Computer training for wardens and rangers in Goma.

Analyses from MIST for elephants

Virunga Park

Analyses have been made for 2006 and 2007 data from the data entered in MIST (figures 5.2 and 5.3). These show that although much of Virunga park is being covered by ranger patrols there are still areas where it is too insecure to visit (particularly around the active volcanoes in the south and the lowland forest in the north). In 2007 the lowland forest in the north started to be come accessible and rangers started to patrol this area.

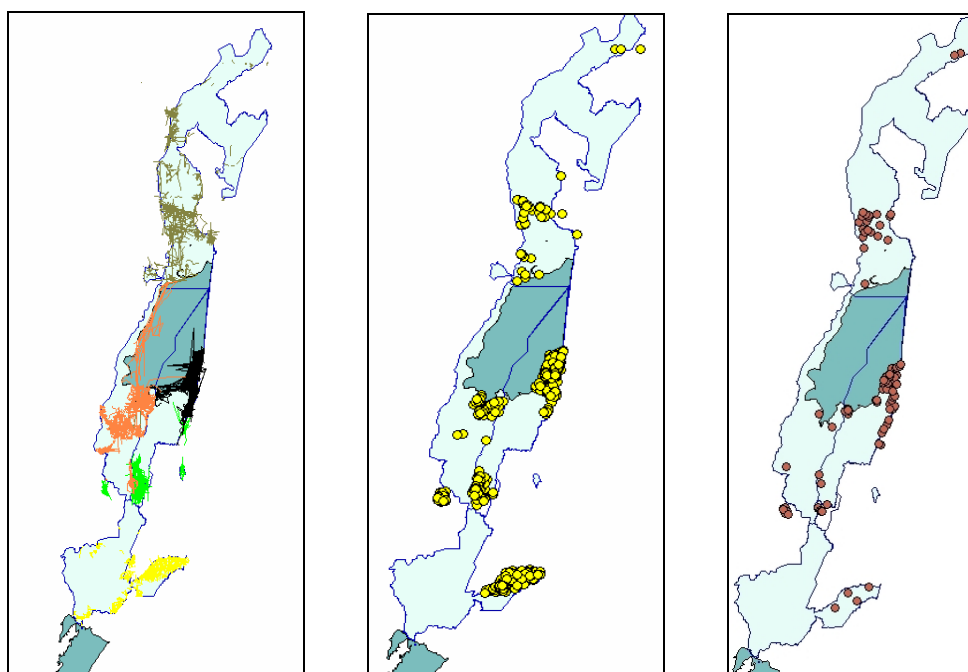


Figure 5.2. Maps of a) patrol coverage, b) elephant sightings and c)

elephant carcasses in Virunga National Park during 2006

Elephants are sighted in many of the places where patrols have taken place but are most common near the border with Uganda in the Lulimbi sector (east of park) and around Rwindi station and Vitshumbi fishing village. Most elephant carcasses are on the border with Uganda in Lulimbi and in the northern sector. The carcasses in the

northern sector are the most disturbing as few elephants were seen here during the aerial survey (chapter 2) and therefore many of the deaths are probably of individuals moving here from Uganda. Details of the numbers and encounter rates per km walked by the patrols are given in Appendix 5.

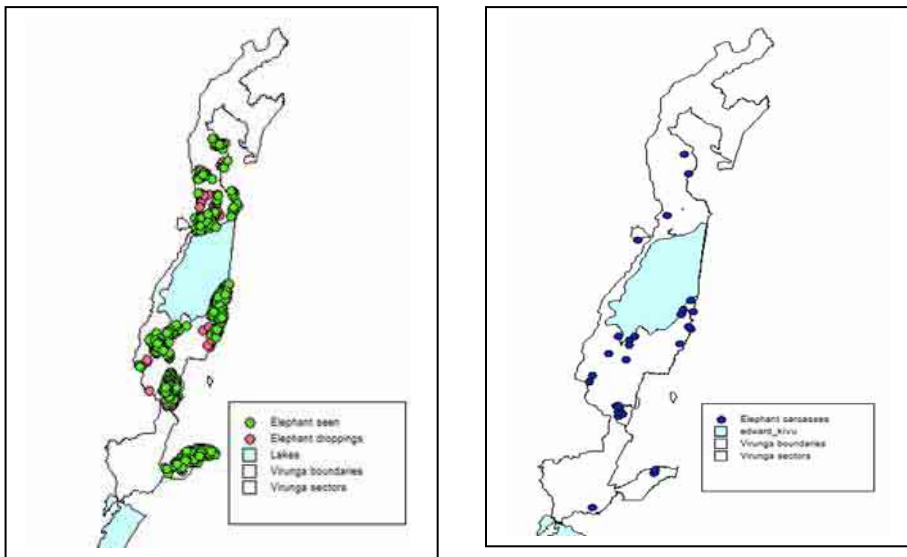


Figure 5.3. Elephant sightings and sightings of droppings (left) and elephant carcasses (right) for 2007 RBM data.

Queen Elizabeth Park

There are still problems with data entry for RBM data in MIST for Queen Elizabeth because historically the data were entered in Excel and in UTM coordinates when there are four UTM zones covering the park and these need to be converted to be able to import them to MIST. This is being worked on at the moment. Summaries are given here for 2001-2007 therefore based on all sightings that are currently in the MIST database (having downloaded GPS data from the GPS units directly to the computer).

Most elephant carcasses are near the lake edge or along the Kazinga Channel. It is possible that the animals move to the water's edge if sick or injured but this is only speculation. Most of the sightings are in the savanna woodland areas and along the lake/channel with few in Maramagambo forest or in the open short grasslands north of Mweya peninsula. Sightings outside the park to the east are in Kasyoha-Kitomi forest where it is known elephants migrate from Queen Elizabeth Park.

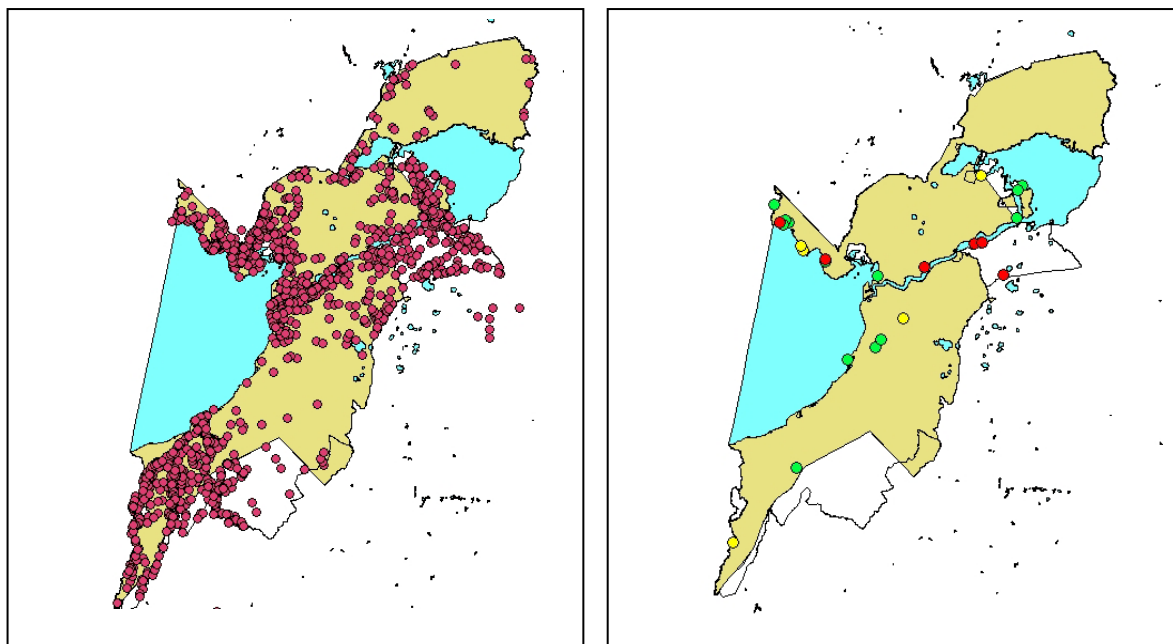


Figure 5.3. Map of elephant sightings (left) and carcasses (right) for Queen Elizabeth Park from 2001-2007. Carcasses are colour coded as follows: red=poached, green=natural death, yellow=unknown cause.

Support to ranger patrols

WCS has been supporting ranger patrols in Virunga park through the provision of equipment such as uniforms, tents, backpacks, and boots, and through the provision of rations for the teams when in the field camping. We have focused support on the common border areas between Uganda and DRC and also in some of the corridor areas (eg. western coast of Lake Edward).

Under the USFWS grant six tents, 50 sleeping bags and rations to support ranger patrols were provided to ICCN. We also purchased two motorbikes and have supported their running costs to allow access to and from the remote ranger posts (figure 5.3). Printers and generators to allow field stations to produce reports from MIST have also been purchased and will be donated to ICCN in April 2007.



Figure 5.3. These bikes have been used to monitor and supervise ranger post activities but they are also used by Chief wardens to get in contact with local authorities as the two sectors when problems occur.

CHAPTER 6: Conservation of elephants in the GVL

Elephants were identified as one of 14 Landscape Species that need to be managed at a landscape scale within the Greater Virunga Landscape. The work we report here has started to look at managing this species at this scale rather than at the scale of the individual protected areas as has been undertaken traditionally. At present most of the elephants in the landscape are in Uganda (about 90%) because of the high levels of poaching in Virunga Park (Figure 6.1). It is clear from the radio tracking data that the elephants soon turn around and head back to Uganda whenever they enter DR Congo and when they are in DR Congo for any time they hide in the forest. Poaching of elephants has been high in DR Congo around the border with Uganda and consequently it is not a great surprise that they rarely enter far from Uganda in the Ishasha area (southern end of Queen Elizabeth Park). Elephants in the Ishasha area are relatively frequently encountered with bullet wounds or scars because they have migrated here from Virunga Park. The elephants still remaining in Virunga Park keep together as one large herd in the central and eastern sectors (south of Lake Edward) for the most part with a few smaller groups scattered in the north and west.



Figure 6.1. Military and armed rebel groups are the main actors involved in elephant poaching.

Ivory does appear to be coming across the border to Uganda from Congo and Sudan (probably Congo elephants also) at the moment and WCS is working with UWA and ICCN to try and obtain intelligence about this and also track the movements of the ivory.

The importance of the transboundary nature of this landscape cannot be overemphasized. Elephants have been able to survive much better in this landscape because they have been able to flee across the international border when fighting and poaching has erupted (first in Uganda in the 1970s and then in DR Congo from the mid 1990s to the present). Numbers are much higher than for instance Murchison Falls Conservation area which is confined to Uganda where elephant numbers dropped from 14,000 to 250 in the 1970s and have only rebuilt to about 1,000 since then.

A PhD student from Makerere University, Polycarp Mwima, will be analyzing the radio tracking data in more detail over the coming months to measure the elephant's use of habitats in the vegetation map. He will also be assessing their use of corridors within the GVL using the radio tracking data, dung count data and sightings.

What is needed to conserve the population of elephants in the GVL?

It is clear that at the moment that the poaching in DR Congo is the main cause of mortality of elephants in the GVL. Elsewhere the population is increasing through births and immigration. Tackling the illegal hunting in DR Congo is therefore the critical need.

Under a separate USAID grant WCS has been spearheading a process of conflict resolution in Virunga Park in collaboration with WWF and the International Institute for Sustainable Development (IISD). This process has built the capacity of ICCN staff to undertake conflict resolution work, has developed a conflict strategy for Virunga Park and started tackling specific conflicts of which one is the illegal hunting of wildlife. As a result of this work the military commanders and local communities have reduced the level of poaching and soldiers have been imprisoned recently when caught killing animals. The main source of poaching is now from the armed militias and remnants of the Rwandan *interahamwe* who are hiding in parts of the park. There is a need to support the governments of Congo to find a solution to the problem of these armed groups before Virunga Park and its wildlife are safe.

At the same time there is a need to rehabilitate more ICCN buildings for parks staff as most have been destroyed during the conflict. Support for vehicles and field equipment is also needed to help them tackle some of the poaching by having regular patrols across most of the park.

There is also a need to reduce the numbers of people living in Virunga Park, particularly in the villages around Lake Edward, because the high numbers of people have led to overfishing, and with the declining fish stocks people have switched activities to hunting bushmeat, including elephants for their meat and ivory to make a living. Many of the fishermen are supportive of this reduction in numbers of people because they see their livelihoods being destroyed as the fish stocks crash. They and the local customary chiefs that oversee the fishing villages in DR Congo are much more supportive of ideas about sustainably managing the fisheries than they used to be 2-3 years ago and it is now possible to plan interventions that will help re-settle people outside the park. Large amounts of funds though will be needed to do this and there is a need to involve development agencies who can help the people find other ways of making a living when re-settled.

At present we do not know how many elephants occur in the north of Virunga Park in the lowland forest and whether they migrate northwards to Mt Hoyo and further west towards the Ituri region. Here again radiotracking using satellite collars could be useful. A recent survey of chimpanzees and other large mammals by WCS and ICCN, funded by USFWS, will give some indication of where elephants can be found in this region but will not give a good estimate of population size.

Elephant-human conflict around Queen Elizabeth and Kibale Parks is growing as the numbers of elephants increase. UWA has been addressing this problem by involving the local communities in digging trenches along the park border. There is a need to support this activity for much more of the border than has been done to date and also address some of the losses people face when their fields are raided.

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Appendix 1. Summary of carcasses suspected to have been poached that were observed in the GVL between 2003-07 during coordinated and investigative patrols

PA	Year	Animals that were poached and whose carcass were sighted											
		Blue Monkey	Buffalo	Bush buck	Kob	Crocodile	Duiker	Elephant	Hippo	Forest Hog	Lion	Warthog	Water buck
QENP	2003/04		5					2	4				
	2004/05												
	2005/06		2						1				
	2006/07							5	8	1	2		1
SNP	2006/07		4			1			2				
RMNP	2006/07	1											
Total (Uganda)		1	11			1		7	15	1	2		1
PNVi	2004/05		10				1	17	25				3
	2005/06							1	1				
	2006/07		18	3	300			17	2			3	2
Total (DRC)			28	3	300		1	35	28			3	5

Appendix 2. Wildlife specimen seizure in Queen Elizabeth National Park from January 2005 to August 2006

Date of seizure	Place of seizure	Animal	Specimen	Action taken
18/01/2005	Bwera	Leopard	Leopard skin	Suspect taken to court
4/02/2005	Kikorongo	Hippo	Hippo meat (20 kg)	Suspect taken to court
7/02/2005	Kikorongo	Hippo	Hippo meat (8 kg)	Suspect taken to court
6/03/2005	Hamukungu	Poisoned 3 lions and 48 vultures	Carcasses recovered	Suspects escaped arrest
28/03/05	Bwera	Hippo	Hippo meat (10 kg)	Suspects taken to police
28/06/05	Kisenyi	Hippo	2 pieces of ivory	Stored at Myeya
28/06/05	Ankole track	Hippo	Hippo meat (10 kg)	Suspects escaped arrest
14/08/05	Katoni II	Warthog	2 teeth of Warthog	Suspect taken to court
16/06/05	Nyakiyumbu	Hippo	Hippo meat	Suspect taken to court
31/07/07	Mundongo	Hippo	Hippo meat	Suspect taken to court
8/08/05	Muruti	Uganda Kob	Uganda Kob meat	Suspect taken to court
22/08/05	Hamukungu	Warthog	Warthog meat	Suspect taken to court
23/08/05	Kashaka	Pelican bird	Trapped Pelican bird	Suspect taken to court
27/08/05	Butanda	Buffalo	Buffalo meat	Suspect taken to court
4/09/05	Kitabi	Hippo	Hippo meat	Suspect taken to court
14/09/05	Kazinga Channel	Elephant	2 pieces of ivory	Ivory stored at Myeya
16/10/05	Mahyoro	Fish Eagle	Trapped Fish Eagle	Suspects taken to court
24/12/05	Kaseses town	Leopard, Jackal and Python	Skin of a Leopard, Jackal and Python	Suspect taken to court
12/11/05	Kihihi	Uganda Kob	Uganda Kob meat	Suspect taken to court
1/02/06	Kafuru	Uganda Kob	Uganda Kob meat	Suspects taken to court
2/03/06	Kiabu	Leopard	Skin of leopard	Suspects escaped arrest
04/03/06	Mahyoro	Leopard	Skin of leopard	Suspects escaped arrest
12/03/06	Katerera	Hippo	Hippo meat	12 suspects

				taken to court
18/03/06	Kisyo-Hima	Lion	Carcass of a lion	Suspects escaped arrest
23/04/06	Nyamununka	Leopard	Leopard killed by a vehicle	Skin preserved at Myeya
4/06/06	Ndekye	Chimpanzee	A live young chimpanzee	Sent to Entebbe
8/06/06	Kasenye	5 Hyaena 1 Buffalo 2 Genets	Poisoned	Suspects at large
24/06/06	Kiyanga	Buffalo	Buffalo meat	Suspects taken to court
8/08/08	Rwempunu	Buffalo	Buffalo meat	Suspect taken to court
16/08/06	Nyamezi	Buffalo	Buffalo meat	Suspect taken to court
20/08/06	Bundibugyo Sector	A live Chimpanzee		Suspects escaped arrest

Appendix 3. Equipment used by poachers that was recovered in the GVL between 2003 – 2007 during coordinated patrols

PA	Year	Categories of equipment used by poachers												
		Hunting Equipment (Tools)				Hunting Equipment (Snares)				Fishing Equipment				
		Gun	Spear	Panga	Knife	Metal Snare	Wire Snare	Rope Snare	Hunting net	Boat Canoe	Fish net	Hoop net	Fish net	Fishing Basket
QENP	2003/04	1		4										
	2004/05		6	1		5	5		1					
	2005/06		11	4	9		16							
	2006/07			4										
SNP	2003/04			4										
	2004/05		1	3			16	140						
	2005/06		2	6		7	71	47					2	
RMNP	2003/04						3							
	2005/06					1		10						
Total (Uganda)		1	20	26	9	13	111	197	1				2	
PNVi	2004/05											14		
	2006/06	3	2	3		27	4				18			
	2006/07	4	8	90			215	91		5	96			78
Total (DRC)		7	10	93		27	219	91			114	14		78

Appendix 4. Programme for training workshop on control of illegal wildlife trade in the Greater Virunga Landscape 11-13th Feb 2007, Mbarara Uganda

DATE & TIME	SESSION	FACILITATOR (S)
11th Feb.2007	Day 1	
	Arrival of participants and registration in Pelikan Hotel	UWA/WCS
12th Feb.2007	Day 2	
8:30 – 9:00	Registration; house keeping announcements/logistics Self introduction – facilitators & participants	WCS/UWA
9:00 – 9:30	Welcome Remarks	LCV C/M Mbarara
9:30 – 10:00	Background information on workshop	WCS (IO)
10:00 – 10: 20	TEA BREAK	
10:20 – 11:00	Brief overview about National policies and legislation on wildlife use rights in Uganda	UWA (EM)
11:00 – 11:40	Brief overview about National policies and legislation on wildlife trade in DRC	ICCN (VK)
11:40 – 12:20	Wildlife species permitted for trade in Uganda	UWA (JB)
12:20 – 1:00	Status of wildlife trade in DRC	ICCN (VK)
1:00 – 2:00	LUNCH BREAK	
2:00 – 2:30	Basic identification of mammals and products	UWA (JB)
2:30 – 3:30	Group Discussion on the role of customs and immigration officers in wildlife trade	UWA& WCS
3:30 – 3:45	TEA BREAK	
3:45 – 4:45	Presentation & Reactions on previous day discussion	WCS/UWA
	END	
13th FEB.2007	DAY TWO	
8:30 – 9:20	<i>International policies and legislation on wildlife trade</i>	UWA (AB)
9:20 – 10:00	Concealments and wildlife trafficking techniques	UWA (JB)
10:00 – 11:20	TEA BREAK	
11:20 – 12:20	Minimizing concealments and illegal wildlife trafficking in DRC and Uganda (Group discussion and presentation)	WCS/UWA
12:30 – 1:00	Arrest, investigation and use of fire arms	UWA (EM)
1:00 – 2:00	LUNCH BREAK	
2:00 – 3:00	Basic identification of birds, reptiles, amphibians and products	WCS (IO)
3:00 – 3:30	Compliance & challenges to the wildlife trade in Uganda	UWA (EM)
3:30 – 4:00	Challenges to the wildlife trade in DRC	ICCN
	TEA BREAK	
4:00 – 4:30	Recommendations and the way forward	WCS/ICCN
4:30 – 5:00	Demonstration - guide/posters	WCS/
5:00 – 5:30	Closing remarks	RDC- Mbarara
	End	
14th Dec 2006	Day 3	
	Breakfast & departure	

Appendix 5. MIST report for Elephant from 2006 giving numbers of elephant carcasses and sightings per sector in Virunga Park.

Patrol days	4103	Total distance	22815,88595

Pa id	Management sector	Observation	Observation code	Total count	Total per km	Total per km per days	Adult males	Adult females	Total young	Males to females
DRKZ	N/A	Eléphant	Carcasse	92	0,00403	0	78	0	1	0
DRKZ	N/A	Eléphant	Vu	4737	0,21	5E-5	3777	0	950	0
LU	N/A	Eléphant	Carcasse	118	0,00517	0	75	0	12	0
LU	N/A	Eléphant	Vu	2876	0,13	3E-5	2358	0	508	0
MA	N/A	Eléphant	Carcasse	36	0,00157	0	1	0	0	0
MA	N/A	Eléphant	Vu	582	0,0255	0	504	0	77	0
PV	N/A	Eléphant	Carcasse	4	0,00017	0	0	0	0	0
PV	N/A	Eléphant	Vu	938	0,04111	1E-5	776	0	162	0
RW	N/A	Eléphant	Carcasse	3	0,00013	0	2	0	0	0
RW	N/A	Eléphant	Vu	836	0,03664	0	701	0	132	0

DRKZ – Domaine de chasse Rutshuru ; LU – Lulimbi ; MA – Northern Sector ; PV – Virunga Volcanoes (Mikeno) ; RW – Rwindi.