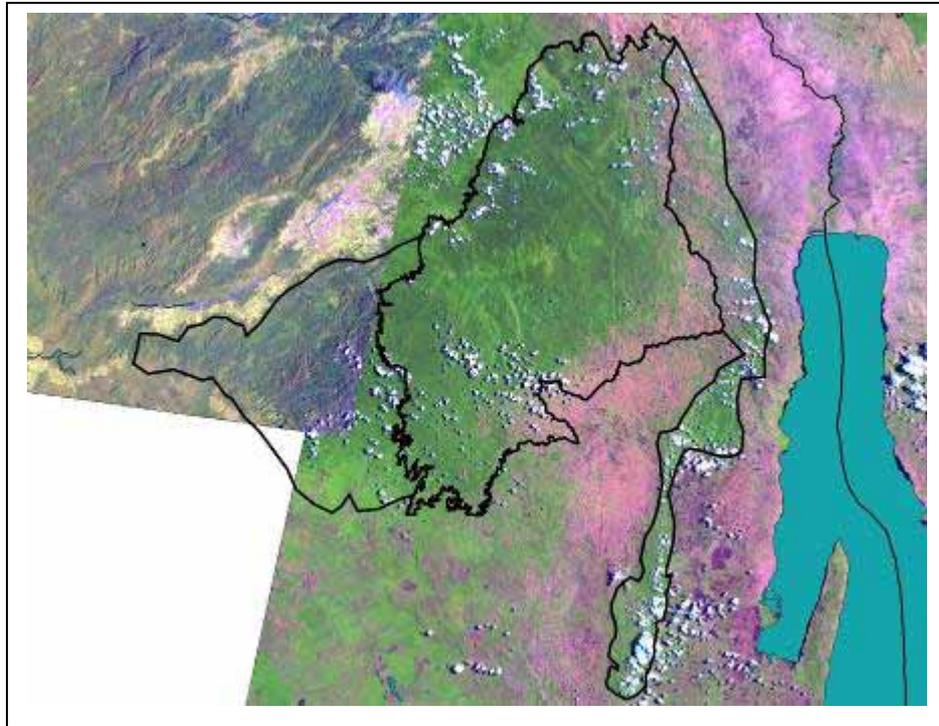


# **Itombwe Massif Conservation Project: Delimitation and zoning of the Itombwe Natural Reserve for protection of great apes.**



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**Final Report for USFWS Project  
98210 – 7– G293**

**January 2009**



## **Sources of financial support**

USFWS Great Apes Conservation Fund

John D. and Catherine T. MacArthur Foundation

Daniel K. Thorne Foundation

Wildlife Conservation Society

Institut Congolais pour la Conservation de la Nature

### **Acknowledgements**

We would like to thank Honoré Mashagiro and Faustin Batetchi, respectively the last Provincial Director of ICCN Suth Kivu and in charge of Technical and Scientific matter at the last Provincial office in Bukavu for permissions to carry out this work. We would also like to thank the local Chiefs; Bugoma Mubeza IV, Bulambo Simeon and Baguma Mwati respectively and the Chief of Luindi local authorities ( Collectivite de Luindi ), Groupement d'Irangi et Groupement de Kigogo who helped us with hospitality and advice about how to work with their people and in the region. Thanks also to Augustin Kazadi, Administrator of Mwenga territory who lent us moral support. We would also like to thank Benjamin Wilondja, Lionel Itonwa, Etienne Lubanda and all porters, guides and cooks who helped with the surveys which took place under particularly difficult situations.

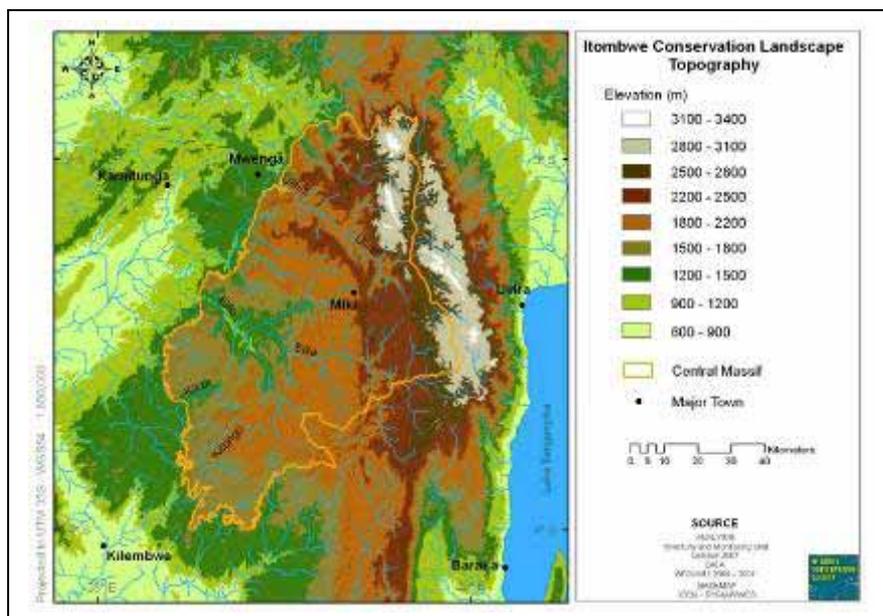
We also want to thank all the donors who have supported these surveys; particularly the US Fish and Willdife Service through the Great Apes Conservation Fund, the John D. and Catherine T. MacArthur Foundation, the Daniel K. Thorne Foundation, ICCN and Wildlife Conservation Society.

## Introduction

The Democratic Republic of the Congo (DRC) is among the most biologically diverse countries in Africa. It harbors spectacular endemic species such as Grauer's gorilla, bonobo, okapi, northern white rhinoceros and the Congo peacock. Its size and wide range of habitats make it one of the world's most important centers of biodiversity and a stronghold for three of the four great ape species (gorilla, bonobo and chimpanzee).

DRC contains the largest and least known extent of African equatorial forest, including 50% of Africa's rainforest grading into deciduous forests and savannas. These forests are spread across some of Africa's most spectacular landscapes including the snow capped Rwenzori mountains and active volcanoes along the Albertine Rift. Mountainous ridges with alpine vegetation, bamboo, and highland forest parallel the Great Lakes.

Situated in this region, west of the northern tip of Lake Tanganyika, the Itombwe Massif holds the largest and most remote block of intact montane forest in Africa (figure 1). The entire Massif, an area of about 12,000 sq. km includes an unbroken block of forest, the central massif, of about 6,500 sq. km ranging up to 3700m in elevation. Its unique range of habitats includes various highland forest formations, bamboo, moorland heath, miombo-moist forest transitions, and a high elevation forest savanna ecotone. It contains an important populations of both the eastern chimpanzees (*Pan troglodytes schweinfurthii*) and the endangered Grauer's gorilla (*Gorilla beringei graueri*). The Itombwe Massif represents one of the most significant remaining new areas for the conservation of DRC's great apes, and the endemic biodiversity of the Albertine Rift. A properly gazetted and managed protected area encompassing the Massif and surrounding ecotones is one of the most important conservation priorities for DR Congo.



**Figure 1.** Location of Itombwe Landscape with the central massif outlined in yellow.

Though it is remote, the Itombwe Massif is confronted by a number of threats, including mining, artisanal logging, wild fires, a major increase in hunting, and pressure from human populations that are converting the forest for agriculture and pastures. A decade of conflict has led to wide availability of arms and ammunition, and some areas remain under the control of small bands of rebels. These threats are growing and combined, these pressures are threatening the biological integrity of the Massif and critical populations of chimpanzees and gorillas. In addition these threats have contributed to the fragmentation of the great apes habitats with the gorilla the most affected and its very existence seriously compromised. The recent studies conducted by WCS teams in 2006, although not covering the entire Massif,

have recorded a dramatic decrease in the number of gorilla populations comparatively to 1996 surveys. Conservation of the Massif and its great apes must happen quickly before these biological treasures are compromised or lost.

Rudolph Grauer recognized the biological importance of the Itombwe during the first exploration in the early 20<sup>th</sup> century. Ornithological studies by Alexander Prigogine and the first survey of the region's gorillas in 1959 by George Schaller confirmed the continuing importance of the region. Efforts to conserve the Massif were initiated in the late 1980s by IUCN but the required field work was not undertaken until 1996 during the first WCS expedition to the Massif. This WCS study identified about 860 gorillas living in scattered isolated locations across the high elevation Massif. This first comprehensive view of the Itombwe in 1996 found that a number of the populations of gorillas first documented by Schaller had already disappeared. It also emphasized the need to collaborate with local communities in developing a new protected area in the Massif.

Over the following decade, despite continuing conflict in the region, some of which was centered in the Massif, WCS, ICCN and other local NGOs continued to contact local communities and promote the concept of a new protected area. Further biological and socio-economic surveys were initiated, but most were carried out in a single sector located in the middle of the Massif, the Miki sector, the only area secure enough to be accessible.

These efforts bore fruit in 2005 with the Kamituga workshop which confirmed the intentions of the local authorities and the Ministry of Environment to create a protected area in the Massif. The workshop established the Itombwe Technical Group with terms of reference to promote conservation activities, develop a site based map, and coordinate collaboration with local communities, across the Massif. A first meeting of the working group was held in September 2005 in Kamituga. This gathering produced a signed Memorandum of Understanding between ICCN and NGO partners to ICCN (WCS, WWF, etc.) and recommended that ICCN under the auspices of the Ministry of Environment speed up the creation of a Reserve in the Itombwe Massif. In September 2006, a year after the Kamituga meeting, the Ministry of Environment gazetted the Reserve Naturelle de l'Itombwe (RNI).

Merely gazetting the RNI was not sufficient to ensure conservation of Itombwe and its great ape populations. Further surveys were needed, and in particular in the two sectors with potentially very important great ape populations North Ulindi and West Mwana. The boundaries of the Reserve were not well clarified in the decree. Finally participation of the local communities in the RNI area had to move beyond the initial contacts and discussion of the past decade to their real participation in the protection of the massif and its apes.

A second Technical Group meeting held in March 2007 concluded that: 1) delimitation of the Reserve was required, and over a more inclusive area than that contained in the original decree and 2) the management of the RNI, left unclear in the original decree, should be developed through a zoning process. Field work presented at the meeting showed that DRC's decade of conflict had taken a serious toll on the Massif's large mammals, particularly the gorillas, and that the threats were growing. The need for conservation was more urgent than ever.

USFWS Great Ape Conservation fund has provided key support for much of the progress to date, including the first resurvey of the central Massif in 2005-2006, as well as a pilot project now underway to initiate community conservation through training and placement of local monitors. This support has been critical to permit field teams to operate on the ground in the Massif. The surveys reported here builds on this earlier support to complete biological surveys in the entire proposed Reserve and to undertake community outreach and education to build and ensure participation in and support of the Reserve. Furthermore, we propose to conduct the socioeconomic studies required to delineate the limits of the reserve and provide

a basis for its zoning. Results of biological and socioeconomic surveys proposed here, in conjunction with the results of the USFWS-supported community conservation pilot project underway, will be used to propose management recommendations with emphasis on the zoning of the RNI. We believe that this will be an important contribution to ensure protection of the great apes and ultimately pave the way for the management planning and policy in the Reserve Naturelle d'Itombwe.

### Goal and Objectives:

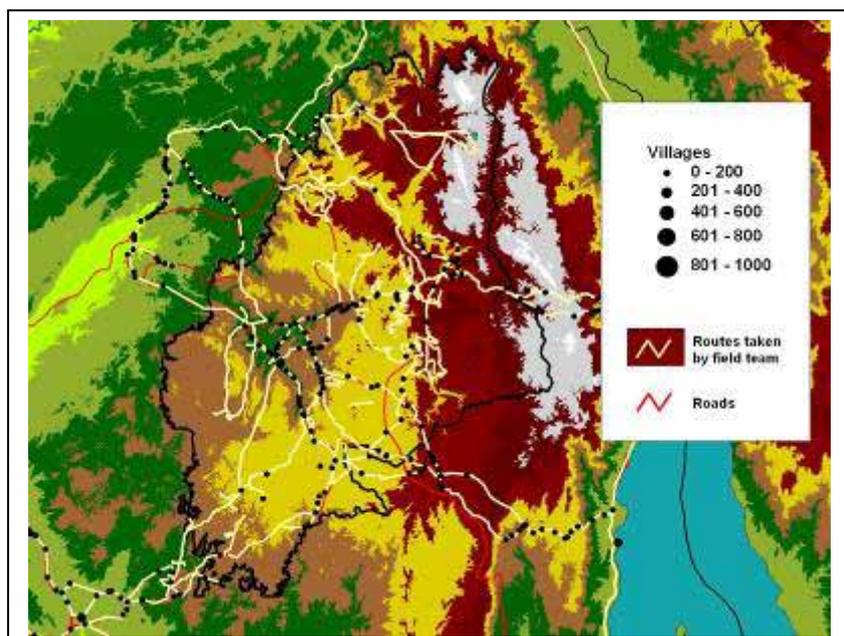
The overall goal of the project was to develop the biological and socioeconomic information base to allow delimitation and development of conservation zones in coordination with the GTI.

### Specific Objectives were to:

1. Complete the initial exploration in the expanded RNI area, including West Mwana (Fizi and Shabunda territories), North Ulindi, and portions of the high plateau (Uvira territory),
2. Undertake biological inventories in the most important areas for great apes to assess great apes populations and other biodiversity for conservation.
3. Evaluate the status of human populations and impact of their activities in these areas and initiate education and outreach for ape protection.
4. Undertake an aerial survey to map the reserve boundaries and other important zones for conservation within the Reserve
5. Recommend strategies for zoning the Reserve.

### Results of biological inventories

The security situation in the whole region is still fluid and as a result it has been difficult to achieve all the objectives as outlined above. The presence of *Interahamwe* and *Mai mai* militias means that the field teams have had to be flexible and were not able to access all areas as planned. The high plateau in particular was not safe at the time the field teams were in the field. However, we have been able to complete the surveys of the central massif as planned (figure 2). There is a promising area to the west of the central massif, north of Kilembwe, which we were unable to access during this project but which will be accessed this month with some funding from WWF. This may need to be included in the final protected area.

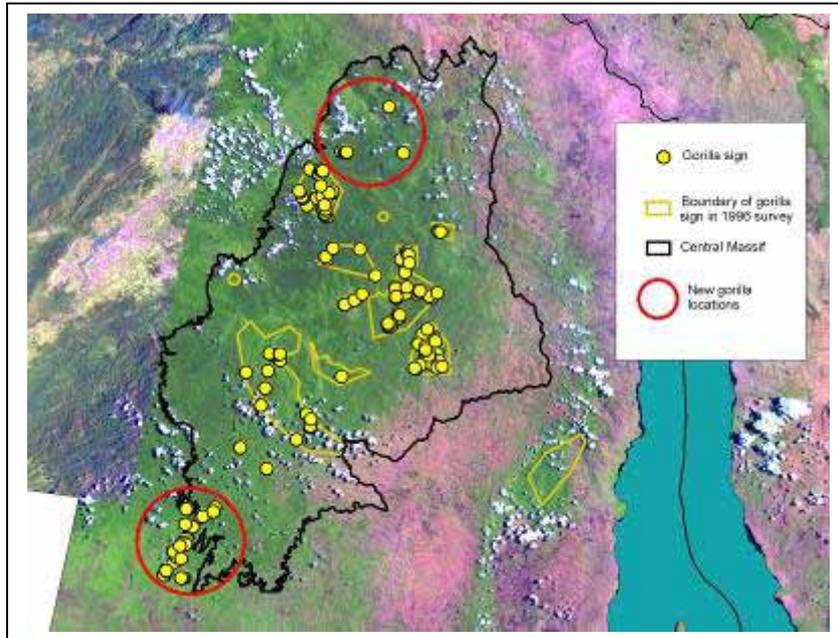


**Figure 2.** Routes surveyed in all surveys made since 2004 to present day. Villages encountered on routes with relative size of human population are shown.

### **Species distributions**

#### *Grauer's Gorillas*

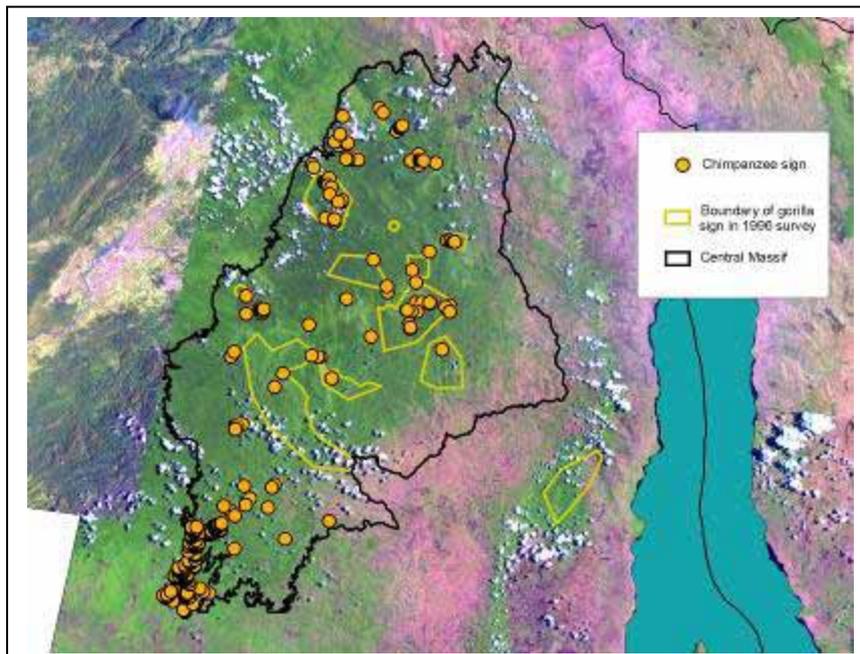
We have discovered two new sub-populations of gorillas that were not identified in the 1996 surveys of the massif. These include some in the south west and some in the north of the central massif (Figure 3). These data need to be assessed in relation to the survey routes in figure 2 because not all areas of the central massif have been visited. Interestingly gorillas are sighted quite close to human habitation (figure 2) despite the fact that they are hunted by people for meat.



**Figure 3.** Sightings of signs of gorillas (nests, feeding sign and dung). The boundaries of all signs located in the 1996 survey are also shown and indicate two new areas where gorillas have been located.

#### *Chimpanzees*

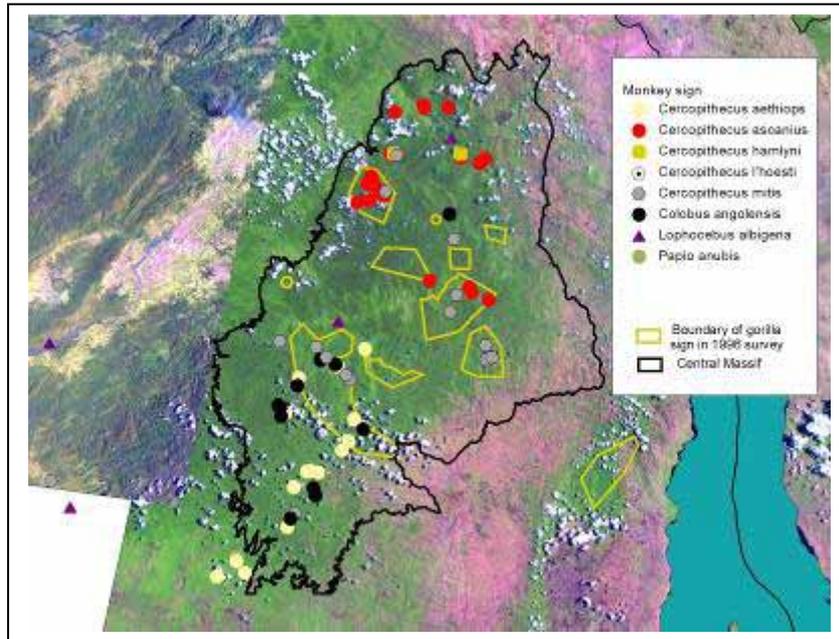
Chimpanzee distribution is similar to that of the gorillas (figure 4) except that they are more abundant in the north west. Chimpanzees seem to be able to survive human hunting pressures better than gorillas, probably because of the fission-fusion social system and the fact they do not always travel on one large group which is easier to track and hunt.



**Figure 4.** Locations of signs of chimpanzees (nests, feeding sign and dung) for all surveys since 2004.

*Other primates*

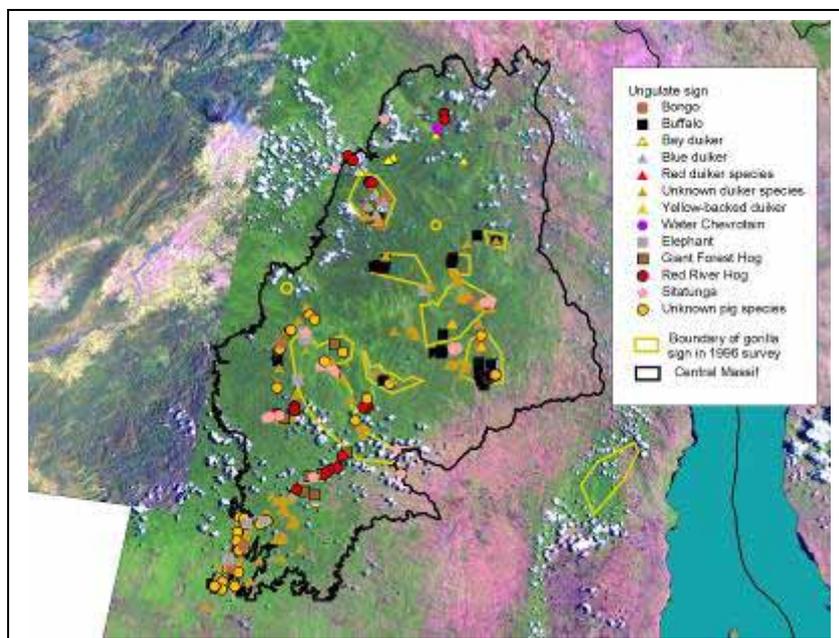
Eight other primate species were encountered on these surveys (figure 5) making a total of 10 species with the two apes. A total of 17 primates are known from Itombwe (A. Plumptre unpublished data, Plumptre et al. 2007) of which four are Galagos and one is the Potto, nocturnal species that would not have been found during these surveys. The two diurnal species that have not been encountered are the red colobus monkey (*Ptilocolobus oustaleti*) and Dent's monkey (*Cercopithecus denti*). Of these 17 species two are new records for the Itombwe list (Ilambu et al. 1999): Vervet monkey (*C. ascanius*) and Owl-faced monkey (*C. hamlyni*) although the latter was believed to occur in the massif by Doumenge and Schilter (1997).



**Figure 5.** Locations of sightings or calls of other primate species on the surveys.

*Ungulates*

Fourteen ungulate species have been recorded for the Itombwe massif in the past (A.Plumptre unpublished data, Plumptre et al. 2007) of which five are duiker species. This survey found 11 of these species (figure 6) but was unable to separate the four red duiker species from signs easily unless physically observed. If the 'red duiker' category is separated into these four then we would have observed the same species as listed for the area.

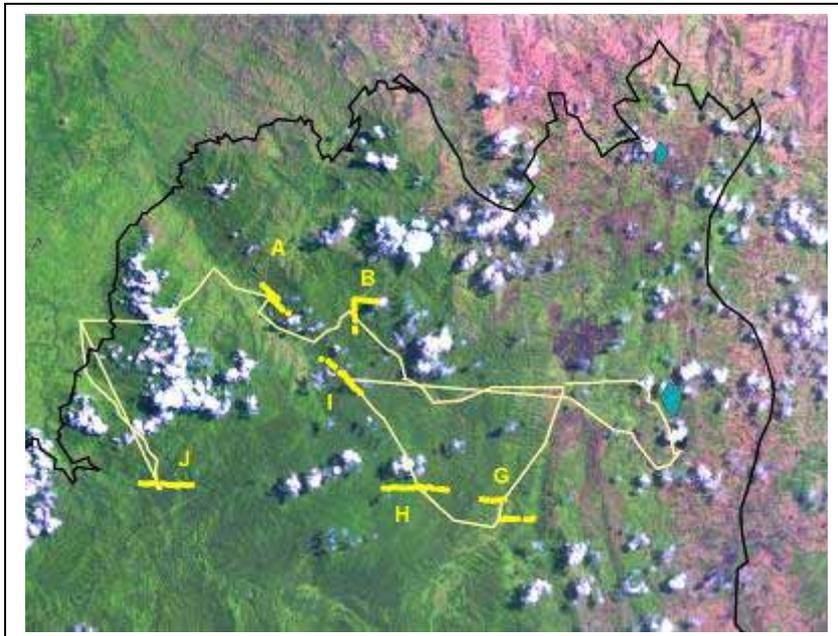


**Figure 6.** Locations of signs and observations of different ungulate species.

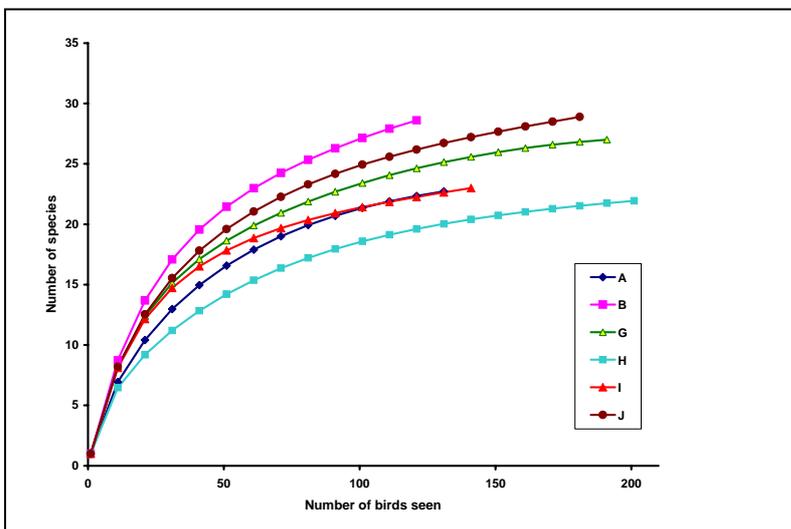
Most signs of elephants were in the south west of the central massif and like gorilla and chimpanzee sign we believe that this is one of the most important region for these three species. We are in the process of starting a survey of the area to the west of this site (outside the central massif border line) to assess whether this area is important for the conservation of these endangered species as a result of these findings.

*Birds*

The Itombwe Massif is incredibly important for bird conservation with 583 species known from the region with 30 of the Albertine Rift endemic species and two species, *Caprimulus prigoginei* and *Shoutedenapus schoutedeni* endemic to this massif only (Prigogine 1971-84; 1985; Wilson and Catsis, 1990). Due to the insecurity in the Itombwe massif it has not been possible to survey the region for birds at all sites surveyed but it was possible to survey them in the surveys funded under this grant for the northern Ulindi region (figure 7). Six sites were visited and four 3 km transects established at each site. The bird team visited two of these transects at each site and carried out five minute point counts at every 250 metre interval along the transects recording all birds seen or heard.



**Figure 7.** Bird point count locations visited in the 2008 surveys of the northern part of the central massif. The cream line shows the path taken by the mammal survey team and the yellow points represent each point count site at the six survey sites (A,B,G,H,I and J).



**Figure 8.** Rarefaction curves for bird species seen per number of individual birds recorded at the six sites surveyed.

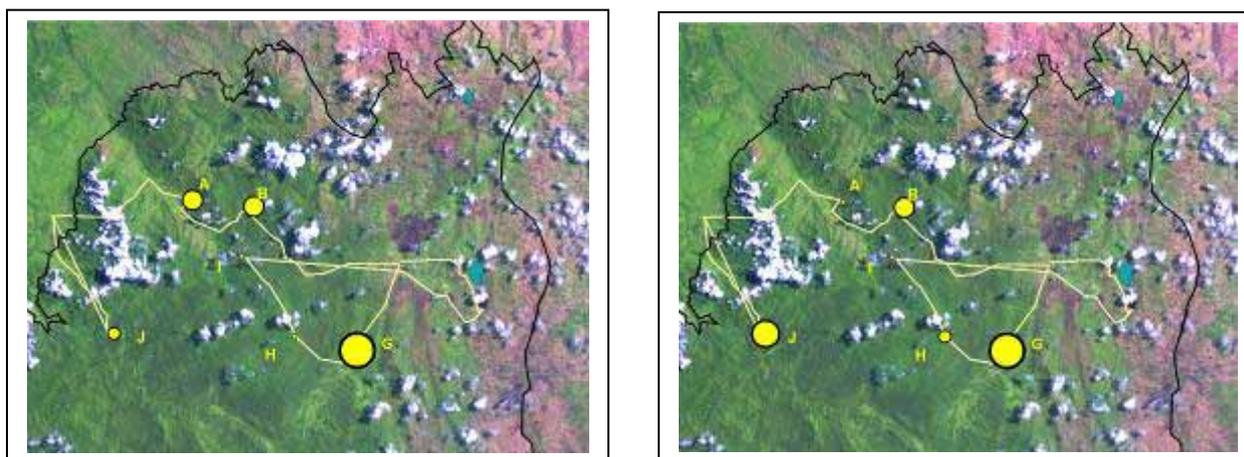
**Table 1.** Bird and plant species richness at the North Ulindi sites.

Site	Bird species	Endemic birds	Plant species
<b>A</b>	44	5	195
<b>B</b>	45	11	216
<b>G</b>	60	15	214
<b>H</b>	35	9	131
<b>I</b>	30	7	141
<b>J</b>	37	12	208
<b>Total</b>	95	18	564

A total of 95 bird species were recorded at these six sites and eighteen of the Albertine Rift endemic species (Table 1). These numbers are relatively low compared with other sites in the Albertine Rift region and yet the rarefaction curves indicate that there is some leveling off of species at the six sites (figure 8).

Part of the reason for the few species observed may be that there is widespread hunting of birds in the massif and the ornithological team noted the absence of many large species such as tauraco's and hornbills which they expected to be present.

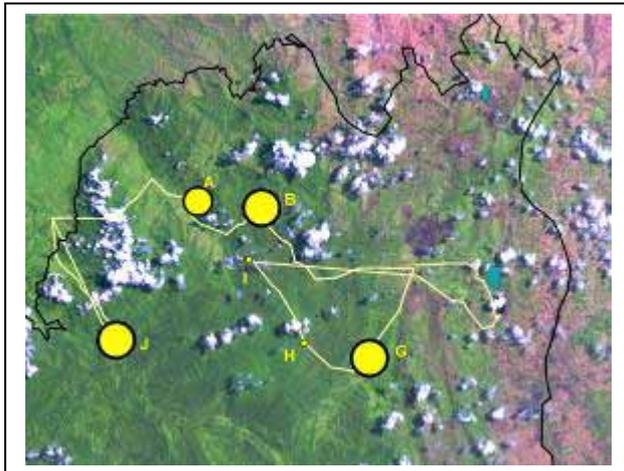
The relative abundance of bird species and endemic bird species show that there is no obvious pattern with altitude or location (figure 9).



**Figure 9.** Relative number of bird species (left) and endemic bird species (right) found at each site in North Ulindi.

### *Plants*

Not many collections of plants have been made in Itombwe. Bashonga (1998) collected plants on the 1996 surveys (Ilambu et al. 1999) and identified 249 species. During these surveys plants were also collected for identification and the common species identified in the field and plots established at the same sites as the point count locations. The collections are still being identified but we can estimate minimum numbers of plant species based on those species identified and the collections that differ from each other (Table 1). A total of 564 species at a minimum estimate (figure 10) have been collected but this number may increase when all the samples have been identified.



**Figure 10.** Plant species richness at the six sites in north Ulindi.

### *Reptiles and amphibians*

A provisional list of 20 amphibian species and 11 reptiles were identified or collected at the six sites in north Ulindi. The collections are still to be identified by a herpetological expert but previously only 23 amphibian and 35 reptile species had been identified for the massif (Plumptre et al. 2007; Laurent 1964). It is possible therefore that some of the species collected will be new for the massif and more work is likely to discover new species for this region.

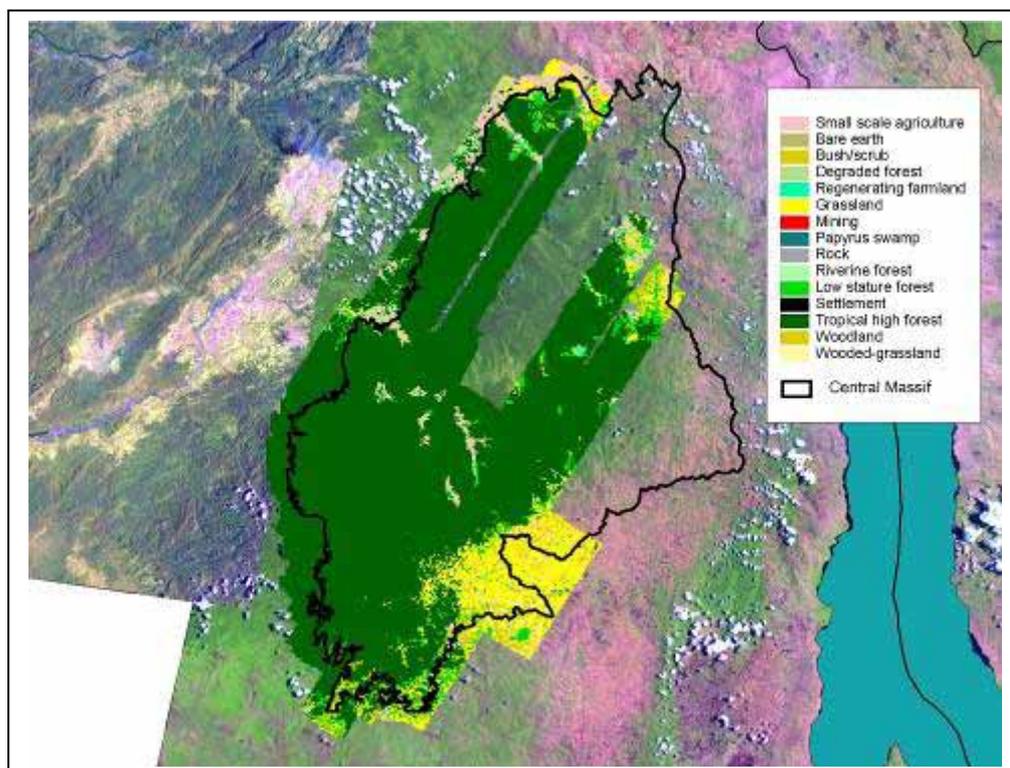
### **Aerial mapping with Enso Mosaic**

Aerial photos were taken across much of the central massif region by the WCS flight program. The photos were joined with the Software package Enso Mosaic to produce an orthorectified map of the massif at a resolution of about 80 cm (varies depending on the height of the plane above the ground). This map was used to digitize:

1. Habitat types
2. Roads and paths
3. Houses

### *Habitat types*

A grid of 250 x 250 m cells was overlaid on the aerial photo map and each cell assigned a habitat type (figure 11). A total of 87,214 cells were classified. Of the area mapped 80.72% was relatively intact forest and 2.8% degraded forest that had been affected by people. 13.3% of the vegetation was savanna/moorland habitat (grassland, bush/scrub, wooded-grassland and woodland). Only 0.07% was allocated to a 'settlement' category and 0.05% to mining category. However, more cells than this may have mining sign or houses but form less than 50% of the area of the cell.



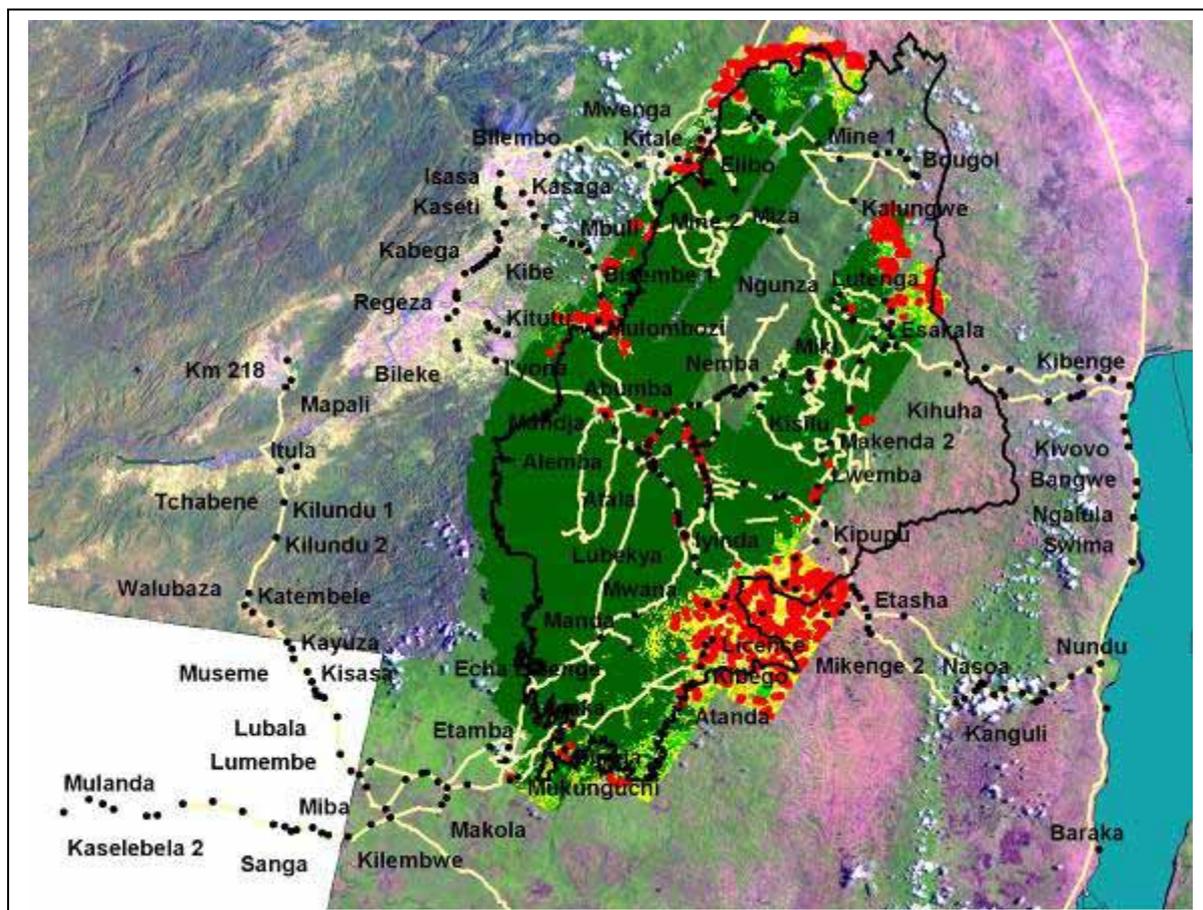
**Figure 11.** Mapped habitat types over the area where aerial photos were obtained. Heavy cloud cover has made it difficult to map the whole of the central massif as planned.

### *Roads/paths and Habitation*

Roads and paths were used by the field teams to access different parts of the central massif. There are few roads that actually enter the central massif but the road to Mwenga from Bukavu and also from Bukavu down to Uvira and across to Kilembwe are the major roads around the massif. Unfortunately the field teams did not record if they were on a footpath or not when in the massif all the time so we cannot assess from their trails when they were on footpaths. However they did record all villages they came across when in the massif. The term 'villages' is relative as about 75% are small hamlets with fewer than 10 houses. Mapping the routes taken by the field teams together with these villages give a good indication of where paths across the massif occur (figure 2).

It is possible to identify buildings from the enso-mosaic imagery in addition to the villages/hamlets recorded along the trails used by field teams. These show that many of the sites where houses occur have been visited by the field teams. It is mainly those houses in the grassland/woodland areas which have not been visited (figure 12). A total of 11,940 houses were identified and digitized in this region where we were able to obtain aerial photos. This area totals 5,451 km<sup>2</sup> of the massif which computes as 2.2 houses per km<sup>2</sup>, although as can be seen from figure 12 many of these are outside the central massif

boundary. Of the houses identified 5,255 occur within the boundary of the central massif or just under 50%.



**Figure 12.** Villages/hamlets encountered along trails visited by the field teams (black circles) and houses mapped from the Enso-mosaic imagery (red circles) in the regions where imagery was obtained (Habitat type map)

It is clear that a large number of people live in the central massif of Itombwe. If we estimate about 6 people per household (Bisidi et al. 2008) then there are about 31,530 people in the houses we have identified from the aerial photography and therefore about 5.4 people per square kilometer in this region. Therefore any planning for conservation of this region needs to incorporate some form of zoning that would include the needs of the local people as well as the conservation of the incredible biodiversity to be found here. Parks such as the Adirondack park in northern New York state in USA have been able to combine wilderness conservation together with areas of development for the people who live in the park. Similarly in the Okapi Faunal Reserve in northern DR Congo a similar process has been adopted to work with local people and indigenous people to agree zoning options for this reserve.

The following section of this report therefore assesses possible zoning options for the Itombwe massif and proposes one option that will be discussed with local communities in the coming year.

## Recommendations for conservation and zonation of Itombwe

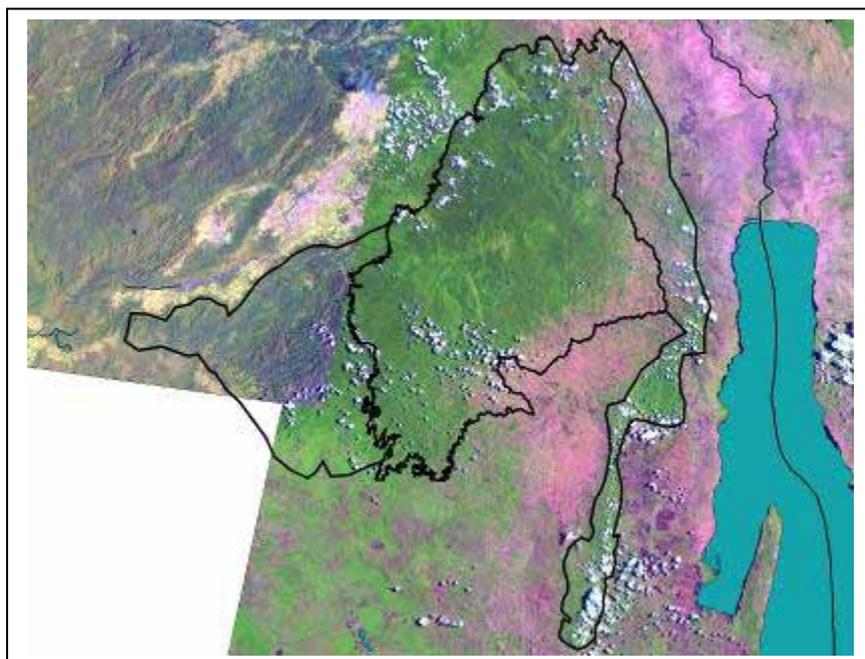
In any zonation of a piece of natural habitat there are at least three major zones:

1. Human habitation where development activities occur and people are supported to improve their livelihoods.
2. A resource use zone where people access particular agreed upon resources and harvest these in as sustainable a manner as can be achieved. Resources used can include non-timber forest products, timber, water, fish and bushmeat.
3. A core protected zone where agreements are reached that there will be no utilization of the zone by people. This zone can be potentially further divided into a tourism zone and a wilderness zone.

The surveys we have reported on above, and previous surveys of the massif (Doumenge, 1998; Ilambu et al. 1999) have mainly concentrated on the area within the central massif. However we believe that the proposed reserve should consider other regions before determining the final boundaries:

1. One survey also included the forest along the escarpment to the south east of the central massif towards Baraka and Fizi (figure 1). This region also had a small population of Grauer's gorillas (Ilambu et al. 1999) with an estimate of about 65 individuals.
2. The high montane moorland which is unsuitable for large mammals but is important for many of the endemic species, particularly amphibians and plants is also mostly omitted from the central massif region.
3. Thirdly the area to the south west, north of Kilembwe appears to have many large mammals where surveyed at its easternmost extent and may be an important for conservation. This last area also seems to have fewest people living within it.

As a result of these three factors we believe that we should consider a larger area (Figure 13) than the central massif and work with local communities on the larger area initially before limiting the final area. We will call this the proposed protected area boundary.



**Figure 13.** The central massif with the two additional areas that should be considered at least initially when planning for zoning.

*Scenario assessment*

When developing a zoning plan it is often useful to consider simple rules that could easily be applied on the ground that could help define where the boundaries of zones might be placed. Here we develop four scenarios that consider the effects of four rules that might be used to determine where human development would take place around the network of paths and roads that link villages and also around settlements themselves. The four scenarios were:

1. Allowing a human development zone of 5 km around all roads and paths linking villages
2. Allowing a human development zone within 10 km of all roads but only within 3 km of all paths
3. Allowing a human development zone within 5 km of all settlements identified in the proposed boundary
4. Allowing a human development zone within 3 km of all settlements identified in the proposed boundary

1. *Allowing a human development zone of 5 km around all roads and paths linking villages*

Under this scenario a large portion of the reserve is allocated for human development, particularly within the central massif. Most sightings of gorillas also fall within the development zone (figure 14a).

2. *Allowing a human development zone within 10 km of all roads but only within 3 km of all paths*

Under this scenario slightly less of the area of the proposed reserve is allocated to human development but it is still a large percentage. Most of the gorilla sightings are within the development areas also (figure 14b). Ten kilometers is often the distance cited that hunters will walk to hunt in forest and so these distances were selected to aim at some level of realistic measure of human impact on the Itombwe.

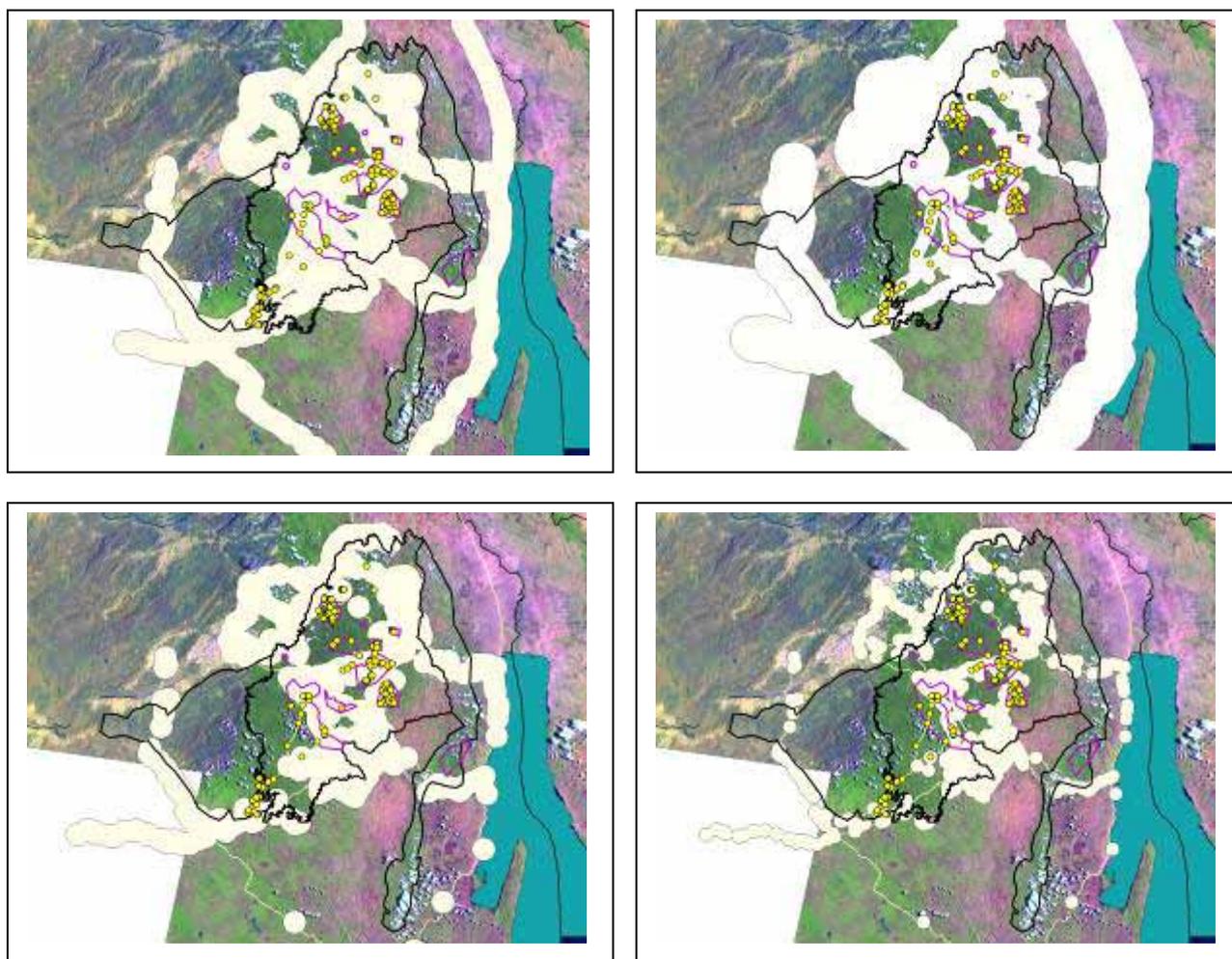
3. *Allowing a human development zone within 5 km of all settlements identified in the proposed boundary*

Under this scenario the amount of human development is similar to scenario 2 and a similar number of the gorilla sightings are within the development zone (figure 14c.).

4. *Allowing a human development zone within 3 km of all settlements identified in the proposed boundary*

Under this scenario there is the smallest impact on the reserve by human development and the largest number of gorilla sightings are outside the zone (figure 14d.).

The area affected by each scenario and the percentage of the total area within the proposed protected area is given in table 2.



**Figure 14.** Human development zone scenarios to assess impacts of potential rules that would allow development within a) 5 km of all roads and paths – top left; b) 10 km of roads and 3 km of paths – top right; c) 5 km of all settlements and d) within 3 km of all settlements. Areas affected are shown in white. Gorilla sign is shown as yellow points and the 1996 limits of gorilla distribution are also given (purple lines).

**Table 2.** The area within the boundaries of the proposed protected area boundary that would be affected by human development under these four scenarios and the percentage of the total area of 10,296 km<sup>2</sup> is given.

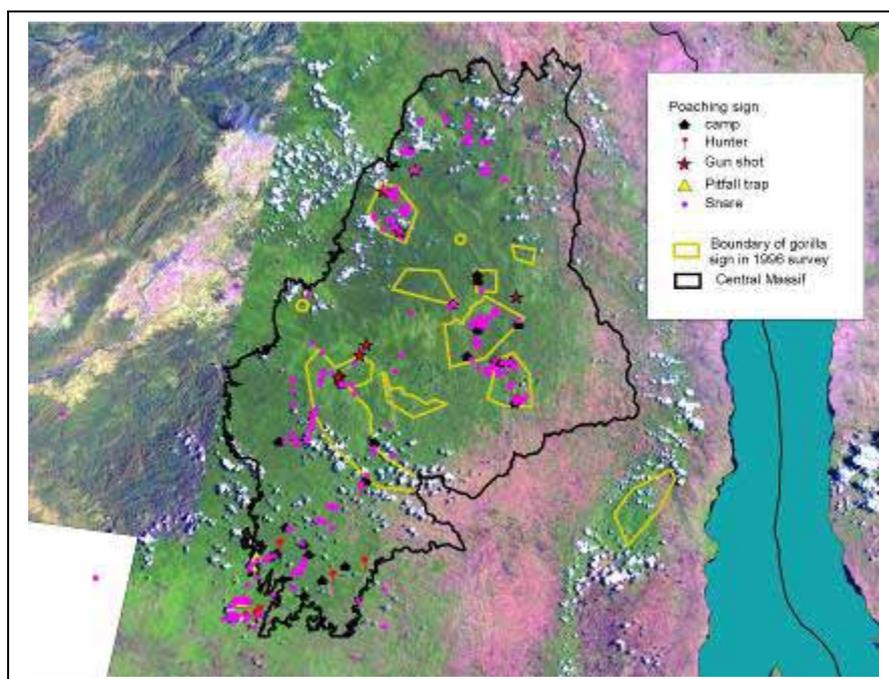
Buffer	Area (km <sup>2</sup> )	Percentage
5km buffer around paths and roads	5,187	50.38
10 km around roads and 3 km around paths	4,704	45.69
5 km from villages	4,382	42.56
3 km from villages	2,735	26.57

It is clear that any simple rule that tries to propose that people should be allowed to use land within a current distance of existing settlements and paths/roads will lead to a large portion of the proposed protected area becoming impacted by people. Even with a minimal rule that, allows use only within 3 km of where people live, at least 25% of the reserve would become

unsuitable for conservation (Table 2). Part of the reasons for this are that most of the people are living in very small settlements that are scattered throughout the central massif.

Creating development opportunities for such a scattered group of people would also be very difficult because development is more easily supported where there are urban centres. For this reason we believe that there will be a need for some negotiated movement of people to encourage the development of centres where development support could be targeted within the Itombwe. Miki would be an obvious choice as it is already forms a central hub where many paths meet in the massif. However, prior to the war in DR Congo many of the people currently living in Itombwe were in fact living outside the massif along the roads to Uvira along the lake and south of the massif to Kilembwe as well as north of the massif to Mwenga. Encouraging development in the towns along these roads would also provide an incentive for people to return to these areas provided security can be achieved.

The presence of the large number of people in the massif is having an impact on the wildlife of the massif, particularly the large mammals and birds. The ornithological team reported that it was very surprising how few large birds were observed when compared with other forests they have surveyed in the Albertine Rift region. Some measures of human impacts were collected on the reconnaissance and transect walks (figure 15) which shows that snaring in particular was common.

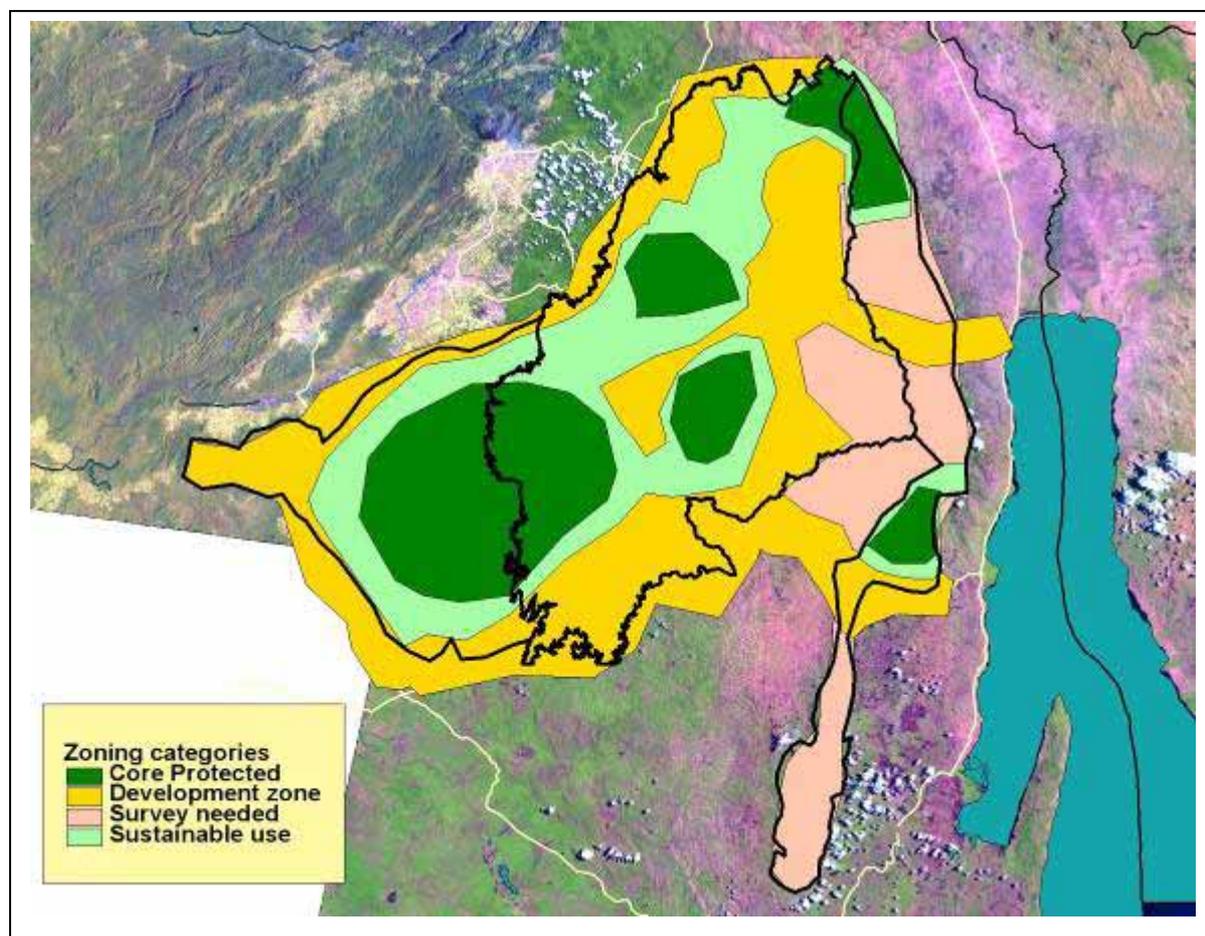


**Figure 15.** Locations of signs of human hunting of wildlife in the Itombwe massif.

The field teams were regularly offered bushmeat, including primate meat, while in the massif and it was clear that near villages large mammals were very scarce. If large mammals are to survive in the massif then there is a need to create relatively large areas that are isolated from human hunting and these areas may need to be linked with corridors to maintain viable populations.

The area to the south west of the massif is currently being explored. There may well be villages in this area that we do not know about and so planning any zoning at the moment has to be tentative. We present here though a zoning plan based on the analyses above which show that there are certain areas which are relatively free from human influence in the massif and which could form areas of wilderness surrounded by areas of sustainable use with limited or no hunting outside which would be development areas for human

development and agriculture (Figure 16). This is a tentative proposal and requires presentation to communities and discussions with them as well as with local government and provincial government. In effect this zoning proposal is a 'straw man' that will stimulate discussion about possible ways of establishing and managing a reserve in the Itombwe Massif.



**Figure 16.** Proposed draft zoning plan for the Itombwe Massif. This zoning plan envisages three types of land use: a) a core protected area with no human use; b) a sustainable use zone with limited human use and the aim of sustainable harvesting of resources and c) a development zone where development projects would be encouraged and supported in villages and towns. Where we are unsure about what zoning type to designate we have specified that more surveys are needed.

The zoning plan is based on the current distribution of people and houses within the massif and the findings of large mammals from the surveys. This plan is likely to be modified following the results of on going surveys in the area to the south west of the central massif where we have designated the largest core protected area.

The next steps in developing the designation of the reserve on the ground will be to take this proposed zoning plan and work with all the stakeholders in the massif to refine the plan and obtain agreement on where boundaries should occur. Some MacArthur Foundation funding and funds from WWF and WCS are available to do this and we hope to be able to obtain some agreement in 2009 on a zoning plan.

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**Appendix 1.** List of birds seen at each of the sites surveyed in North Ulindi (northern section of the central massif). Site locations are given in figure 9.

<b>Bird species</b>	<b>A</b>	<b>B</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
Afep Pigeon	1					
African Broadbill	1	1	1			
African Crowned Eagle			1	1		
African Dusky Flycatcher	1		1	1	1	
African Grey Parrot			1	1		
African Hill-Babbler		1	1		1	
African Paradise-flycatcher	1					
African Pied Hornbill			1			
African Wood Owl		1			1	
Banded Prinia	1	1	1		1	1
Barred Long-tailed cuckoo	1	1	1	1	1	
Black Cuckoo			1			
Black Duck		1				
Black Saw-wing	1		1			1
Black-and-White Casqued Hornbill			1	1		
Black-and-white Mannikin		1	1			
Black-billed Turaco	1	1	1			1
Black-Crowned Waxbill			1			
Black-faced Rufous Warbler	1		1		1	1
Black-throated Apalis	1	1	1	1	1	1
Blue-headed Coucal	1		1	1		
Blue-headed Sunbird		1	1	1	1	1
Cardinal Woodpecker			1			
Chestnut Wattle-eye	1	1			1	
Chestnut-throated Apalis		1	1	1	1	1
Chubb's cisticola	1		1			
Cinnamon Bracken Warbler			1			
Cinnamon-chested Bee-eater		1	1	1	1	1
Collared Apalis	1	1	1	1	1	1
Collared Sunbird		1	1		1	1
Common bulbul			1			1
Crowned Eagle		1				
Dark-backed Weaver	1	1		1		1
Dusky Crimsonwing			1			
Dwarf Honeyguide			1			
Emerald Cuckoo	1		1			
Equatorial Akalat		1				
Grauer's Warbler		1	1			
Great Blue Turaco	1	1				
Green Hylia						1
Green-Hylia	1					
Green-throated Sunbird	1		1			
Grey Apalis		1	1			
Grey Parrot						1
Grey-backed Camaroptera					1	
Grey-chested Illadopsis	1	1		1	1	1
Grey-throated Barbet	1					
Grey-throated Flycatcher	1				1	
Handsome Francolin				1		
Little Swift						1
Ludher's Bush-shrike	1	1				
Mackinnon's Fiscal			1			
Montane Oriole	1	1	1	1	1	1

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Mountain Black Boubou	1	1	1		1	1
Mountain Buzzard			1			
Mountain Greenbul	1	1	1	1		1
Mountain Illadopsis		1	1	1	1	1
Mountain Masked Apalis		1	1	1	1	1
Mountain Yellow Warbler			1			
Narina's Trogon	1					
Northern Puffback			1			
Olive Pigeon			1	1		
Olive Sunbird	1	1		1		
Olive Thrush	1			1		
Olive-green Camaroptera				1		
Palm Swift				1		1
Prigogine's Nighthjar			1			
Purple-breasted Sunbird		1	1	1	1	1
Red-chested Cuckoo	1					
Red-faced Woodland Warbler	1	1	1	1	1	1
Red-throated Alethe	1					1
Regal Sunbird		1	1	1	1	1
Ross's Turaco		1				
Rwenzori Batis	1	1	1	1		
Rwenzori Double-collared Sunbird			1			1
Rwenzori Turaco		1	1	1		1
Short-tailed Warbler	1	1	1	1	1	1
Slender-billed Starling			1			
Speckled Tinkerbird	1				1	
Tambourine Dove	1			1		
Thick-billed Seed-eater			1			
Waller's starling	1	1	1	1	1	
Western Green tinkerbird		1				1
White-bellied Crested Flycatcher			1			1
White-browed Crombec		1				
White-headed Saw-wing	1					
White-headed Woodhoopee	1		1	1	1	1
White-Starred Robin		1	1	1	1	1
White-tailed Ant-Thrush	1					
Yellow White-eye	1	1	1	1		1
Yellow-billed Barbet	1	1				
Yellow-Crested Helmet-Shrike		1				
Yellow-eyed Black Flycatcher			1			1
Yellow-rumped Tinkerbird	1	1	1	1	1	1
Yellow-whiskered Greenbul	1	1	1		1	1
<b>Total species</b>	<b>44</b>	<b>45</b>	<b>60</b>	<b>35</b>	<b>30</b>	<b>37</b>

**Appendix 2.** List of identified plants in the north Ulindi region of the central massif. Specimens that were not identified are in the process of being identified. Site locations are given in figure 9.

Scientific name	A	B	G	H	I	J
<i>Acanthus montanus</i>		1	1			
<i>Acanthus pubescens</i>		1	1			
<i>Achyranthes aspera</i>			1			
<i>Acroceras gabonense</i>	1					
<i>Acystorhynchus recurvus</i>				1		
<i>Adenia cissampeloides</i>					1	1
<i>Adenia lobata</i>						
<i>Aframomum angustifolium</i>	1	1				1
<i>Afrocrania volkensis</i>			1			1
<i>Agaurea salicifolia</i>			1			
<i>Agelaea paradoxa</i>	1	1	1		1	1
<i>Agelaea pentagina</i>	1		1			
<i>Agelaea rubiginosa</i>			1			
<i>Alangium chinensis</i>	1	1				
<i>Albizia gummifera</i>	1	1	1			
<i>Alchornea cordifolia</i>	1					
<i>Alchornea hirtella</i>	1	1	1	1	1	1
<i>Allophyllus abyssinicus</i>	1	1	1			1
<i>Allophyllus macrobotrys</i>		1	1	1	1	1
<i>Amorphophalus abyssinicus</i>		1			1	1
<i>Ancystorhynchus clandestinus</i>			1			
<i>Aneilema beniniense</i>	1		1			
<i>Angraecum angustifolia</i>				1		
<i>Anthocleista grandiflora</i>	1					1
<i>Anthocleista vogellii</i>						1
<i>Anthonota acuminata</i>						
<i>Anthonota macrophylla</i>	1					
<i>Anthrophyllum manniana</i>	1					
<i>Aoranthe penduliflora</i>	1			1		
<i>Ardisia buesgenii</i>		1		1	1	
<i>Ardisia staudtii</i>			1			1
<i>Artabotrys stenopetalus</i>		1				1
<i>Asparagus abyssinicus</i>	1					
<i>Asparagus asparagoides</i>		1				
<i>Asplenium aethiopicum</i>			1			
<i>Asplenium africanum</i>	1	1				
<i>Asplenium bugoense</i>					1	
<i>Asplenium burtonii</i>		1				
<i>Asplenium eugnoides</i>	1					
<i>Asplenium eugoiensis</i>	1	1				1
<i>Asplenium hemitomum</i>	1	1	1	1	1	1
<i>Asplenium inaequilaterale</i>	1	1	1			
<i>Asplenium linchii</i>		1				
<i>Asplenium megalura</i>				1		
<i>Asplenium obscurum</i>	1	1	1	1	1	
<i>Asplenium sandersonii</i>	1	1	1	1	1	1
<i>Asplenium theciferum</i>		1	1	1		
<i>Asystasia gangetica</i>						1
<i>Baissea leonensis</i>	1		1		1	
<i>Baissea sublufa</i>	1					
<i>Bambekea racemosa</i>			1			
<i>Barteria fustilosa</i>						

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Basela alba			1	1		1
Begonia ampla						1
Begonia eminii			1	1	1	1
Begonia eugoiensis						1
Begonia haullevilleana						1
Begonia massisiensis		1				
Begonia meyeri-johannis	1	1		1		1
Begonia oxyloba	1	1			1	1
Begonia quadrialata					1	
Begonia scapigera		1				
Begonia scutulium		1				
Beilschmiedia michelsonii	1	1			1	1
Bersama abyssinica			1			1
Bidens pilosa		1				
Bligia welwitschii	1					
Brachystephanus africanus					1	
Bridelia anthroviridis		1	1			1
Bridelia brideliifolia						1
Bridelia micrantha			1			
Bridelia ndellensis			1			
Brillantaisia kirungae		1				1
Brillantaisia lamium	1		1	1	1	
Brillantaisia vogeliana		1	1	1		1
Bulbophyllum barbigerum		1				
Bulbophyllum maximum		1				
Bulbophyllum resupinatum			1			
Bulbophyllum virginea			1			
Bulbophyllum vulcanicum					1	
Calanthe sylvatica	1		1			
Calvoa orientalis		1	1	1	1	1
Calycosyphonia spathicalyx				1	1	1
Carapa macrophylla	1	1	1		1	1
Cardiospermum welwitschii					1	
Cardiospermum senegaelense	1					
Carduus nyassanus		1				
Cassia mimosoides	1	1	1			
Cassia spectabilis						
Cassipourea gummiflua		1		1	1	1
Cassipourea ruwenzoriensis			1		1	1
Cathium oligocarpum			1			
Celtis mildbraedii	1					
Chamaengis odoratissima						1
Chionanthus milbraedii			1			1
Chlorophytum blepharophyllum		1			1	
Christella hispidula	1					
Chrysophyllum albidum		1	1		1	
Cissampelos micronata			1			
Cissus dinklangei	1					
Cissus petiolata						1
Cissus producta	1		1			1
Clausena anisata						
Clerodendrum fuscum	1					
Clerodendrum johnsonii			1			
Clerodendrum silvanum	1	1	1		1	1
Coffea eugenioides	1					
Cola altissima	1	1				
Cola pierlotii	1					
Combretum cuspidatum			1			

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<i>Combretum mucronatum</i>			1			
<i>Commelina capitata</i>	1				1	
<i>Connarus staudtii</i>						1
<i>Conyza sumatresis</i>		1				
<i>Cordia millenii</i>			1			1
<i>Corymborkis corymbis</i>				1		
<i>Costus afer</i>						
<i>Costus lucanusianus</i>	1		1			
<i>Crassula granvinkii</i>	1	1			1	
<i>Cremaspora triflora</i>	1	1		1	1	1
<i>Cribbia brachyceras</i>			1			
<i>Crossocephalus montuasum</i>			1	1		
<i>Crossocephalus penidifolium</i>		1	1			
<i>Crossocephalus sanguineum</i>			1			
<i>Crotalaria pallida</i>		1				
<i>Croton haumanianus</i>			1			
<i>Croton macrostachyus</i>	1		1			
<i>Culcasia scandens</i>	1	1	1		1	
<i>Cuviera nigrescens</i>	1					
<i>Cyathea manniana</i>	1	1	1	1	1	1
<i>Cyathula prostrata</i>					1	
<i>Cynoglossum amplifolium</i>			1			
<i>Cyperus atroviridis</i>			1	1		1
<i>Cyphomandra betacea</i>			1			
<i>Cyphostema cymosum</i>			1			
<i>Cyrtorchys injoloensis</i>		1				
<i>Dalbergia hostilis</i>	1					1
<i>Dalbergia lactea</i>	1	1			1	
<i>Dalbergia saxtilis</i>	1					
<i>Dasylepsis seretii</i>			1			
<i>Desmodium adscendens</i>		1	1			
<i>Diaphanante globuloso-carcarata</i>				1		
<i>Dicellandra barberi</i>	1					1
<i>Dichaetenthera africana</i>	1	1	1		1	1
<i>Dichapetalum staudtii</i>						
<i>Dicliptera obaniensis</i>	1		1	1		
<i>Dicranopteris linearis</i>	1					
<i>Didymochlaena truncatula</i>	1		1			1
<i>Diopyros ferrea</i>		1	1			
<i>Diospyros hoyliana</i>		1				1
<i>Diplazium welwitschii</i>	1					
<i>Discoglyprena caloneura</i>	1	1				
<i>Dissotis rutundifolia</i>	1	1	1			1
<i>Dodonea viscosa</i>		1		1		
<i>Dombeya goetigen</i>		1	1			
<i>Dombeya mukole</i>	1		1			
<i>Dorstenia psilurus</i>	1	1				
<i>Dovyalis zenkeri</i>			1	1		
<i>Droquetia iners</i>		1	1	1		1
<i>Drynaria laurentii</i>	1					
<i>Dryopteris kirkii</i>	1					
<i>Drypetes gerrardii</i>			1	1		1
<i>Drypetes pellegrinii</i>		1		1		
<i>Ehretia cymosa</i>		1				
<i>Elatostema monticola</i>			1	1		1
<i>Elatostema paivaeatum</i>		1		1	1	1
<i>Elatostema welwitschii</i>		1				
<i>Elytraria marginata</i>		1				1

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<i>Emilia shossifolia</i>					1	
<i>Encete ventriculosum</i>			1		1	
<i>Englerina woodfordioides</i>			1	1		
<i>Englerophytum ituriensis</i>						1
<i>Englerophytum vermoensenii</i>						1
<i>Entandrophragma cylindricum</i>	1					
<i>Epilobium stereophyllum</i>		1				
<i>Eragrostis tenuifolia</i>		1				
<i>Erica kingaensis</i>		1				
<i>Erythrina abyssinica</i>						1
<i>Ficalhoa laurifolia</i>	1	1	1	1	1	1
<i>Ficus asperifolia</i>					1	
<i>Ficus barteri</i>	1				1	1
<i>Ficus conraui</i>	1	1	1			
<i>Ficus craterostoma</i>						
<i>Ficus exasperata</i>	1					
<i>Ficus kilimanjarica</i>			1			
<i>Ficus leonensis</i>		1				
<i>Ficus mallotoides</i>	1		1			
<i>Ficus pseudomangifera</i>						
<i>Ficus sur</i>	1		1			1
<i>Ficus vallis-shoudae</i>						
<i>Flabellaria paniculata</i>	1		1			1
<i>Funtumia elastica</i>						
<i>Galieniera callicarpoides</i>			1			
<i>Galiniera saxifraga</i>	1	1	1	1	1	1
<i>Galium simense</i>		1				1
<i>Gallisoga parviflora</i>		1				1
<i>Garcinia chromocarpa</i>			1		1	1
<i>Garcinia epunctata</i>		1		1	1	1
<i>Garsinia epuctata</i>				1		
<i>Gomphocarpus phillipsiae</i>		1				
<i>Gongolonema angolense</i>	1			1		1
<i>Gongolonema latifolium</i>	1	1	1			1
<i>Gouania longispicata</i>	1		1		1	
<i>Greenwayodendron suaveolens</i>	1					
<i>Grewia oligoneura</i>						
<i>Gunnera perpensa</i>		1				
<i>Gynura scandens</i>			1	1	1	1
<i>Habenaria malacophylla</i>				1		
<i>Hagenia abyssinica</i>	1		1			
<i>Hallea stipulosa</i>			1			1
<i>Harrisonia abyssinica</i>		1	1			
<i>Harungana madagascariensis</i>	1			1		1
<i>Haumaniastrum galeopsifolium</i>		1				
<i>Heisteria parviflora</i>						1
<i>Helychrysum forskahlii</i>		1				
<i>Helychrysum panduratum</i>			1			
<i>Heterotis rutundifolia</i>						1
<i>Hommaliium africanum</i>	1	1			1	
<i>Hoslundia opposita</i>	1		1	1	1	
<i>Hugonia platysepala</i>		1	1			1
<i>Huperzia tournayana</i>						
<i>Hymenocardia ulmoides</i>						1
<i>Hymenodyctyon floribundum</i>						1
<i>Hypericum revolutum</i>		1	1			
<i>Hypoestes aristata</i>			1			
<i>Illigera pentaphylla</i>	1	1	1	1	1	1

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<i>Impatiens congolensis</i>	1					
<i>Impatiens kasaiensis</i>		1	1	1		1
<i>Impatiens massisiensis</i>	1		1	1	1	1
<i>Impatiens niamniamiensis</i>	1	1		1	1	1
<i>Impatiens stuhlmanii</i>			1		1	1
<i>Imperata cylindrica</i>		1				
<i>Impomea involucreta</i>			1			
<i>Iodes scandens</i>		1				
<i>Jasminium barkeri</i>				1		
<i>Jasminium pauciflorum</i>		1			1	1
<i>Juncus rigidus</i>		1				
<i>Kalanchoe crenata</i>			1			1
<i>Keetia aff. niamniamiensis</i>		1				
<i>Keetia mulundensis</i>						1
<i>Keetia venosa</i>						1
<i>Keetia zanzibarica</i>		1				
<i>Khaya anthotheca</i>					1	
<i>Kigelia africana</i>	1	1	1	1		
<i>Kylinga erecta</i>		1				
<i>Landolphia buchananii</i>	1		1			
<i>Landolphia incerta</i>	1	1				1
<i>Lebrunia buchaie</i>	1				1	1
<i>Lecaniodiscus cupanoides</i>		1	1		1	
<i>Leea guineensis</i>	1					
<i>Leptaulus daphnoides</i>						
<i>Leptoderris congolensis</i>						
<i>Leptoderris fasciculata</i>					1	
<i>Leptoderris reygaertii</i>		1			1	
<i>Lindackeria bukobensis</i>		1	1			
<i>Liparis bowkeri</i>		1				
<i>Lobelia giberroa</i>		1	1	1		1
<i>Loeseneriella africana</i>	1		1			
<i>Loeseneriella apocynoides</i>		1	1		1	1
<i>Lomariopsis loangensis</i>	1	1	1		1	1
<i>Ludwigia abyssinica</i>						1
<i>Lycopodium cernuum</i>			1			1
<i>Lygodium microphyllum</i>			1		1	
<i>Macaranga capensis</i>		1				
<i>Macaranga monandra</i>				1		
<i>Macaranga spinosa</i>	1	1	1		1	1
<i>Maerua pygmea</i>					1	
<i>Maesa lanceolata</i>	1	1	1	1	1	
<i>Maesobotrya floribunda</i>	1	1			1	1
<i>Magnistipula butayei</i>			1	1	1	
<i>Majidea forsteri</i>						1
<i>Manotes expansa</i>	1	1	1	1		1
<i>Maranthocloa leucantha</i>	1					
<i>Margaritaria discoidea</i>	1					
<i>Mariscus amauropus</i>						
<i>Markamia lutea</i>						
<i>Marsilea minuta</i>		1				
<i>Maytenus acuminata</i>	1	1		1	1	
<i>Maytenus undata</i>		1	1	1	1	
<i>Melanthera scandens</i>	1					
Melastomataceae			1			1
<i>Melchiora schliebenii</i>	1			1		1
<i>Memecylon viride</i>	1		1			1
<i>Mesobotrya floribunda</i>	1					

Surveys and zoning of Itombwe

<i>Microglossa pyrifolia</i>		1	1			1
<i>Microsorium punctatum</i>	1	1		1		1
<i>Mikania cordata</i>		1	1	1	1	1
<i>Milicia excelsa</i>	1					
<i>Milletia dura</i>	1					
<i>Milletia psilopetala</i>	1				1	
<i>Milletia versicolor</i>						1
<i>Mimulopsis arboreus</i>				1		1
<i>Momordica foetida</i>			1	1	1	1
<i>Momordica pterocarpa</i>						1
<i>Monathotaxis elegans</i>	1		1		1	1
<i>Mostuea microphylla</i>				1		
<i>Motandra guineensis</i>	1					
<i>Musanga cecrospioides</i>	1					1
<i>Mussaenda arcuata</i>						1
<i>Myrianthus arboreus</i>	1	1	1		1	
<i>Nephrolepis bisserata</i>		1		1		
<i>Nuxia congesta</i>			1		1	
<i>Ochna membranifolia</i>		1	1	1		1
<i>Ocimum americanum</i>				1		
<i>Ocotea kenyensis</i>	1		1	1	1	1
<i>Odontosoria africana</i>				1		
<i>Olendra disticha</i>						
<i>Oncoba routlegei</i>			1			
<i>Oncoba spinosa</i>		1	1		1	
<i>Oplismenus hirtellus</i>	1	1	1	1	1	
<i>Ouratea arnoldiana</i>	1					1
<i>Oxyanthus pallidus</i>	1					
<i>Oxyanthus troupinii</i>	1	1	1	1		1
<i>Oxyanthus ugandensis</i>	1		1		1	1
<i>Palisota ambigua</i>						
<i>Palisota mannii</i>	1	1			1	1
<i>Pancovia harmisiana</i>						
<i>Panicum repens</i>			1			
<i>Parinari excelsa</i>		1	1	1	1	1
<i>Paspalum scrobiculatum</i>		1				
<i>Passiflora edulis</i>				1		
<i>Pauridiantha callicarpoides</i>	1	1	1			1
<i>Pavetta mulundensis</i>		1			1	1
<i>Pavetta stenosepala</i>		1				
<i>Pavonia urens</i>		1				
<i>Peddiaea africana</i>	1	1				
<i>Pellaea doniana</i>						
<i>Pennisetum purpureum</i>		1				1
<i>Pentadesma lebrunii</i>	1	1				1
<i>Peperomia blanda</i>					1	
<i>Peperomia molleri</i>			1		1	1
<i>Peperomia pellucida</i>	1	1		1		
<i>Peperomia retusa</i>			1			
<i>Peperomia tetraphylla</i>			1			
<i>Peridium aquilinum</i>	1					
<i>Peucedanum aff. Scottinum</i>		1	1	1		1
<i>Phillipia johnsonii</i>						
<i>Phyllanthus urinaria</i>				1	1	1
<i>Physalus angulata</i>			1			
<i>Pilea rivularis</i>		1	1	1	1	1
<i>Pillipia johnsonii</i>					1	
<i>Piper cappense</i>	1	1	1			1

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<i>Piper guineense</i>	1					
<i>Piptadeniastrum africanum</i>		1				
<i>Pittosporum spathocalyx</i>	1		1	1		
<i>Plantago palmata</i>					1	1
<i>Plectranthus lanuginosus</i>				1	1	
<i>Plectranthus luteus</i>	1	1				
<i>Pleiocarpa pycnantha</i>		1			1	1
<i>Poddiea africana</i>					1	
<i>Podocarpus milanjiensis</i>		1		1		1
<i>Podocarpus usambarensis</i>				1		
<i>Podocarpus usambariensis</i>			1			
<i>Polygala aff. Scabrae</i>		1				
<i>Polygonum purchrum</i>						1
<i>Polyscias fulva</i>	1	1	1	1	1	1
<i>Polystachia dewanckeliana</i>			1			
<i>Polystachia polychaete</i>				1		
<i>Polystachya virginea</i>				1		1
<i>Polystachya vulcanicola</i>						1
<i>Pouteria altissima</i>		1				
<i>Procris crenata</i>	1					
<i>Pseuderanthemum luduvisianum</i>	1	1				
<i>Pseudospondias microcarpa</i>	1					
<i>Psychotria cyathicalyx</i>				1		1
<i>Psychotria mahonii</i>	1	1		1	1	1
<i>Psychotria spathicalyx</i>				1		1
<i>Psydrax arnoldiana</i>						1
<i>Psydrax parviflora</i>		1		1		
<i>Psydrax subcordata</i>					1	
<i>Pteridium aquilinum</i>		1	1	1	1	1
<i>Pteris burtonii</i>	1	1	1	1	1	1
<i>Pteris guardriaurita</i>		1				
<i>Pterydophyta</i>		1				
<i>Pueraria javanica phaseoloides</i>						1
<i>Pueraria phaseoloides</i>	1					
<i>Pycnanthus angolensis</i>						1
<i>Pycnostachys erici-roseni</i>				1		1
<i>Ranunculus bequaertii</i>		1				1
<i>Ranunculus multifidus</i>		1				1
<i>Rapanea melanocarphloeos</i>					1	1
<i>Raphiostylis beninensis</i>		1	1			
<i>Rauvolfia vomitoria</i>						1
<i>Rauvolphia mannii</i>						1
<i>Rawsonia lucida</i>	1					
<i>Reineckia congolana</i>	1					1
<i>Rhaphidophora africana</i>	1					
<i>Rhus vulgaris</i>	1	1				
<i>Rinorea beniensis</i>						
<i>Ripsalis baccifera</i>		1	1			
<i>Rothmannia urceolliformis</i>	1					
<i>Rourea thomsonii</i>	1		1			
<i>Rumex abyssinicus</i>		1				
<i>Rutidea orientalis</i>	1	1	1	1		1
<i>Rytigynia dubiosa</i>		1		1	1	1
<i>Rytigynia kigeziensis</i>		1	1	1	1	
<i>Rytigynia dubiosa</i>			1			
<i>Sabicea bigerrica</i>	1					
<i>Sabicea calycina</i>	1				1	1
<i>Salacia ceracifera</i>	1		1	1	1	

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<i>Salacia elegans</i>	1		1	1	1	1
<i>Sanucula alata</i>					1	
<i>Sapium ellipticum</i>	1	1				1
<i>Satyrium ecalcaratum</i>		1				
<i>Scadoxus cinnabarinus</i>		1				
<i>Schefflera goetzenii</i>	1	1				
<i>Sclerochiton vogelii</i>		1	1	1	1	
<i>Scottellia coriacea</i>		1		1		
<i>Scottellia kaineana</i>	1					
Scrophulariaceae					1	
<i>Sebaea brachyphylla</i>						
<i>Secamone africana</i>	1	1	1	1	1	1
<i>Selaginella miosorus</i>			1			
<i>Selaginella muosorus</i>	1				1	
<i>Senecio maranguensis</i>		1				1
<i>Seredaga procera</i>			1			
<i>Sericostachys scandens</i>		1	1		1	1
<i>Setaria megaphylla</i>		1	1			1
<i>Sinarundinalia alpina</i>		1				
<i>Smilax anceps</i>	1	1	1		1	1
<i>Solanecio mannii</i>			1			
<i>Solanum nigrum</i>			1			
<i>Solanum welwitschii</i>	1		1	1		
<i>Solenangis scandens</i>		1				
<i>Sorindea nitidula</i>		1				
<i>Spermacoce latifolia</i>		1				
<i>Spermacoce princeae</i>			1			
<i>Sporobolus pyramidalis</i>		1				
<i>Sticherus flagellaris</i>				1		1
<i>Stictocardia beraviensis</i>			1			
<i>Strombosia scheffleri</i>	1	1	1		1	
<i>Strombosiopsis tetrandra</i>	1	1			1	
<i>Strychnos johnsonii</i>		1	1			
<i>Strychnos longicaudata</i>		1				1
<i>Symphonia globulifera</i>		1	1	1	1	1
<i>Synedrella nodifolia</i>						1
<i>Syzygium guineense</i>	1		1	1	1	1
<i>Tabernaemontana eglandulosa</i>	1					
<i>Tabernaemontana odoratissima</i>	1	1	1		1	1
<i>Tarenna quadrangularis</i>		1				
<i>Tarenna laurentii</i>	1		1			
<i>Tarenna nitidula</i>						1
<i>Tetracera poggei</i>					1	
<i>Tetralia guimmifera</i>		1				
<i>Tetrorchidium didymostemon</i>						1
<i>Thecocaris lucida</i>						1
<i>Tiliacora mayumnensis</i>					1	
<i>Trema guineensis</i>		1				
<i>Tricalysia coriacea</i>		1		1		
<i>Tricalysia kigeziensis</i>		1				1
<i>Tricalysia verdcoutiana</i>	1	1	1	1	1	1
<i>Trichilia monadelphica</i>	1					
<i>Trichilia rubescens</i>	1					
<i>Triclisia dictyophylla</i>	1					
<i>Tridactyle anthomanica</i>				1		
<i>Tridactyle Tridactylites</i>				1	1	
<i>Trilepisum madagascariensis</i>	1					
<i>Triumfetta cordifolia</i>	1		1			1

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<i>Trydactyle anthomaniaca</i>			1			
<i>Turraea vogellii</i>	1					
<i>Turreanthus africanus</i>	1					
<i>Urera trinervis</i>	1	1	1	1	1	1
<i>Urtica dioica</i>				1	1	1
<i>Urtica massaica</i>						1
<i>Vangueria madagascariensis</i>				1		
<i>Vernonia auriculifera</i>	1	1	1			
<i>Vernonia brachycalyx</i>	1	1	1			1
<i>Vernonia conferta</i>	1	1	1			1
<i>Vernonia lasiopus</i>			1		1	
<i>Vernonia scaettae</i>					1	
<i>Vitex micrantha</i>		1	1			1
<i>Vitex rivularis</i>	1					1
<i>Voacanga africana</i>						1
<i>Warneckea guineense</i>		1				1
<i>Warneckea guineensis</i>	1					
<i>Xymalos monospora</i>	1	1	1	1	1	
<i>Zanha golungensis</i>			1	1	1	1
<i>Zanthoxylum giletii</i>		1	1			
<i>Zanthoxylum lemairei</i>						1
<b>Grand Total Identified to date</b>	<b>174</b>	<b>195</b>	<b>186</b>	<b>110</b>	<b>123</b>	<b>181</b>