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Programme National

Parc National de la Maiko

Identifying conservation priorities for the recovery of
the Maiko National Park

Part 2

*Post-conflict surveys of wildlife populations and
human impact in the South Sector (Oso Block).*

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IMU Technical Rapport N° 6

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WCS –DRC Program’s Inventory and Monitoring Unit (IMU)

Timely and accurate information presented in the right format and to the right audience will be required to meet the challenges faced by DRC’s wildlife and parks at a time when these have never been more vulnerable. To help meet this need, WCS’s DR Congo Program established in 2003 an Inventory and Monitoring Unit (IMU).

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- Gather, analyze and communicate information on important natural areas and their fauna.
- Apply this information in support of conservation and natural resource management in DRC.
- Provide technical support for field based programs.
- Train protected areas staff and partners.

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Past IMU Technical Reports include:

N° 1. *La Réserve de Faune à Okapis, Agricultural Zoning Project: Interim Evaluation.* March 2004, Brad Mulley and John A. Hart. 13 pp.

N° 2. *La Réserve de Faune à Okapis, Base Map Update: Human Population.* August 2004, Teresa Njeri. 12 pp.

N° 3. *Rapport sur le braconnage à l’Eléphant et sur la commerce de l’ivoire dans et à la périphérie de la Réserve de Faune à Okapis.* December 2004, Christian Amboya, 33 pp.

N° 4. *Identifying conservation priorities for the recovery of the Maiko National Park, Part 1: Post-conflict surveys of wildlife populations and human impact in the North Sector of the park.* September 2005. Fidele Amsini, F. Grossmann, J. Hart, C. Kibambe, B. Nyembo and C. Vyahavwa. 39 pp

N° 5. *La Réserve de Faune à Okapi. Post Conflict Faunal Baseline Surveys. Part 1. Central Sector « Zone Verte » .* May 2006. F. Grossmann, J. Hart and S. Dino. 35pp.

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1. SUMMARY

- The report presents information on fauna and human activities in the Oso Block, south sector of the Maiko National Park.
- Three survey teams conducted 300 km of ground reconnaissance over an area of 600 km² in the park and immediate buffer zone. Surveys were conducted from late march through early May, 2006.
- The Oso Block is distinguished by many ranges of very steep, but low hills, (maximum elevation about 1200 m).
- The Oso Block, has been occupied for about 40 years by groups of armed renegades. These trace their origin to the Simba rebels who led the first post-independence rebellion in Congo in 1965, and who retreated to the park after their defeat by the national army. The few original Simba who remain, have been joined by their offspring, military deserters and some traditional Kumu families in settlements that are located to the north of the Oso Block.
- The Oso Block is one of the Simba's primary hunting grounds. The Simba also control the artisanal mining in the block.
- Field teams, joined by ICCN negotiated with the Simba for access to the block for surveys. This was the first official and open contact between ICCN staff and the rebels.
- Field teams collected data on large mammals and human activities. These included indicators of occurrence of key species (dung, nests, feeding) and evidence of human access, settlement, mining, fishing and hunting..
- The occurrence of elephant, gorilla, chimpanzee and okapi are confirmed for the block.
- Large mammals occur primarily in the north and east of the block in the Obelekeku River watershed. Elephants and buffalo mainly are restricted to this zone.
- About 20 mining sites were observed. Mining occurs at an artisanal scale. Most sites are small and occupied on a temporary, irregular basis. About 150 miners worked the largest mine located in the block.
- Evidence for small-scale subsistence fishing is widespread on rivers in the block.
- Hunting is the primary activity in the block, and is concentrated in the north and east, where indices of faunal occurrence were also highest.
- WCS first surveyed the Oso Block area in 1990. The distribution of gorilla, chimpanzees and okapi has not changed markedly over the past 16 years. Elephants however have reduced distribution and lower numbers in the block.
- The Oso Block, despite continuous hunting pressure for 40 years, still retains its original large mammal fauna.
- Active conservation will be required to halt the evident decline and range reduction for some key species, and to ensure that this sector of the park is not depleted. This will require further engagement with the Simba.

2. INTRODUCTION

The establishment of base line surveys of biodiversity and human impact is a primary objective of WCS CARPE-supported program in the Maiko-Tayna-Kahuizi Biega (MTKB) Landscape.

The Maiko Park and its surrounding landscape is one of the least known and most inaccessible of Congo's protected areas. Current status of the biodiversity and the impact of human activities in the area remain little known. Over the past decade, and continuing to present, many areas of the park and its adjoining landscape have been inaccessible due to continuing activities of Mai-mai Simba, Interahamwe and other militias. The entire park has been classed as one of the most logistically difficult and insecure areas in the country by MONUC.

The present report summarizes the results of surveys in the Oso Block of the southern sector of the park. This was the first major field expedition to this area, since 1990. The expedition's report of their encounters and negotiations with the Simba rebels represents an important historical document, and provide the first direct communication with this small, but determined group of people who have sought refuge – or chosen self-exile – in the park as an alternative to full integration into Congolese society.

The present and future potential of the Maiko Park is linked in no small way to the fate of the rebels and renegades who now occupy and control the park. We hope that the documentation in this report will assist in further engagement with them, and to a more effective conservation of this important park.

Rationale and products of base line inventories

Over the past fifteen years, WCS and its partners, including the CITES MIKE program, have conducted exploratory surveys, and wildlife inventories and human impact assessments over a number of large forest landscapes in DRC. These surveys often represented the first significant conservation engagement with these remote little known natural landscapes and have identified a number of sites of high conservation importance and potential.

The inventories include faunal surveys, as well as an evaluation of the use of wildlife, other forest products and mining resources by local people. The primary product of these inventories is the identification of remaining important concentrations of biodiversity, with an assessment of the threats and opportunities for the effective conservation and management of these areas and their resources. This information has been used to develop conservation and management in zones where risks and costs are high, but where important remaining natural resources are at stake.

In addition to providing information, the surveys hire local people and train them to participate in the discovery and documentation of the landscape. These individuals raise awareness and create support for conservation in local communities. Some are recruited as park guards by ICCN, other work in long term monitoring. In the case of the Maiko Landscape, the surveys have been instrumental in recovery and re-establishment of ICCN in areas where they have been absent, or had only limited access for over a decade.

The WCS Maiko Survey Program

The report presented here is the second report from the WCS program on the status of large mammal fauna, and on the distribution and impact of human activities in the park. The first

report¹ presented the results of the surveys of the north sector of the park. This report covers portions of the southern sector of the park in the highlands of the Oso Block (**FIGURE 1**).

Acknowledgements

We acknowledge and thank staff of the ICCN, Parc National de la Maiko, and in particular, ICCN Chef de Site, Didier Bolamba, for his support for this survey.

3. OBJECTIVES OF THE REPORT

The Oso Block survey retained the same basic objectives of the survey in the north block. These include:

1. **Exploration and post conflict status.** To document the distribution and relative abundance of important fauna; describe threats and human use of natural resources in the survey zone.
2. **Site base map.** To verify and map access routes, park boundaries, rivers, settlements, natural resource extraction and ICCN operations.
3. **Security and Logistics.** To evaluate security, establish contacts with ICCN and other elements operational in the park and establish operational bases and access routes in relation to overall objectives for protection and natural resource management in the zone.

This report provides an overview of the Oso Block, presents the survey design and data collection methods and provides a summary of the field results, including survey coverage, distribution of faunal indices and human activity. An initial evaluation of the relationship between fauna with hunting, and a preliminary comparison of the results of the 2006 surveys with those obtained in the 1990 exploration provide a basis for some initial conclusions concerning the conservation status of the block.

An annex provides a separate report on the Simba rebels and the survey teams engagement with them.

Survey protocols, are provided in the Maiko North Block report (IMU Report N° 4).

¹ IMU Technical Report N° 4. Identifying conservation priorities for the recovery of the Maiko National Park, Part 1: *Post-conflict surveys of wildlife populations and human impact in the North Sector of the park*. September 2005. Fidele Amsini, F. Grossmann , J. Hart, C. Kibambe, B. Nyembo and C. Vyahavwa. 39 pp.

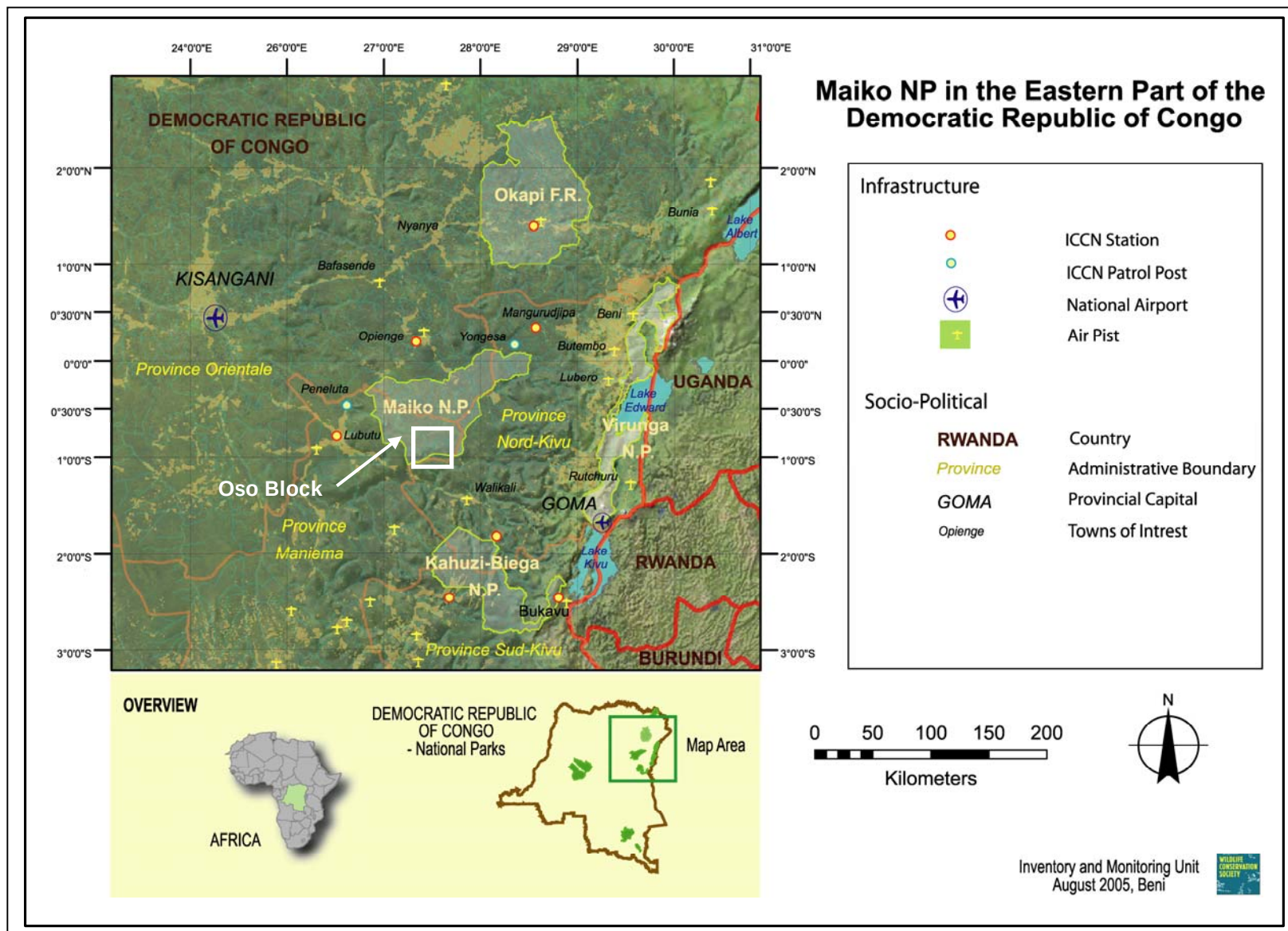


FIGURE 1. The Maiko National Park, and surrounding landscape showing the Oso Block Survey Zone.

4. OVERVIEW OF THE OSO BLOCK

The first Maiko survey report provided an overview of the entire park and its history. This report will focus on the Oso Block, including the most southern portion of the Makio Park (**FIGURE 1**). This area has several important features that are challenges to its effective conservation.

Topographic relief.

The Oso Block contains ranges of very steep hills that run in a generally east west direction, and that rise from Oso River plain. These hills succeed each other is a series of tightly packed linear ranges from north to south. The elevations are not high (maximum 1200 m) and the elevation differential is only about 300 m. But the topographic variation increases vegetation and faunal diversity. Thus the block is a key area for biodiversity.

Simba Rebels.

The Oso Block falls within a region controlled by the Simba rebels and their successors who fled into the park after 1965. Over the years, the original rebels have been joined by others, including some Bakumu with traditional land claims in the park. The total number of Simba today is probably less than one thousand. The Simba live by hunting, fishing, mining, and shifting cultivation. Of all the renegade groups occupying the park, the Simba have the longest tenure in the park. Their departure from the park and integration into mainstream Congolese society remains difficult to foresee at present.

Lubutu town.

The Oso Block has ready access from the Kisanagni-Goma road, and is located near the district capital of Lubutu, a town of about 20,000. The proximity and easy access of the block to a substantial human population are two features that contrast with most of the remainder of the park, which is very remote.

5. SURVEY OPERATIONS, SECURITY AND TRAINING

Field work for this survey was conducted during the period from March 28 to May 4, 2006.

The expedition entered the block from the south, using the Kisangani-Goma road for access. This road passes within about 5 km of the southern limit of the park, along the Oso River.

Relations with the Simba Rebels.

Following official contacts with ICCN, regional military commanders and local cadre of the administration territoriale, the expedition sent emissaries to the villages occupied by Simba rebels. In March 2006, Simba commanders agreed to a meeting with the WCS team, accompanied by the ICCN warden based in Lubutu. This was the first open, official contact ever between the rebels and the ICCN

The agreement that was reached between WCS / ICCN and the Simba included positions for Simba in all of the inventory teams. Relations between the field teams and the Simbas, always tenuous, ultimately broke down, when rumors spread that the WCS team had secret intentions to open their own mining operations in the parks. The field teams were forced to leave the field before completing the full survey plan.

Access to the site was re-negotiated, but by then, the time and funds available for the field mission had come to an end. While this was not the desired outcome, the experience never the less showed that contact, and even a working relation with the Simbas could be achieved. Even more importantly, the Simba formally requested that they be considered candidates for park guards by ICCN. Recruiting former rebels as park guards would require a number of conditions to be met to ensure that they did not use the position as a vantage for poaching. Never the less, this is the first

indication that there might be a strategy to engage them, and control their negative impact on the park.

ANNEX 1 provides an account of the encounter with the Simbas and details on the negotiated agreements.

Training.

Field work was conducted by teams led by an experienced technical staff, including a team leader and assistant leader. Team leaders and assistants undergo regular training and evaluation by WCS-IMU staff, and are full time employees dedicated to inventory work and the delicate negotiations needed to make this possible. Team leaders recruit and train local staff at each survey area as field observers, guides and porters. Each team operated with a chef de camp responsible for porters, food and logistics.

6 SURVEY DESIGN AND FIELD DATA COLLECTION

Data for this survey were collected from reconnaissance lines (termed recces). Recces were walked along a given compass direction by a teams consisting of a team leader, responsible for keeping the data forms, a “bousolier” who handled the compass and determined the direction of travel, a path cutter, to open the way, and two observers. Porters carrying supplies followed. The Oso Block survey was conducted by three teams

Travel recces were placed in a systematic design. The design was produced by dividing the survey zone into a 5 km by 5 km grid, each grid with each grid defined by a geo-referenced centroid. Travel recce placement was determined by linking one centroid to another centroid in a circuit leading from and returning to a base.

FIGURE 2 provides the survey design for the Oso Block.

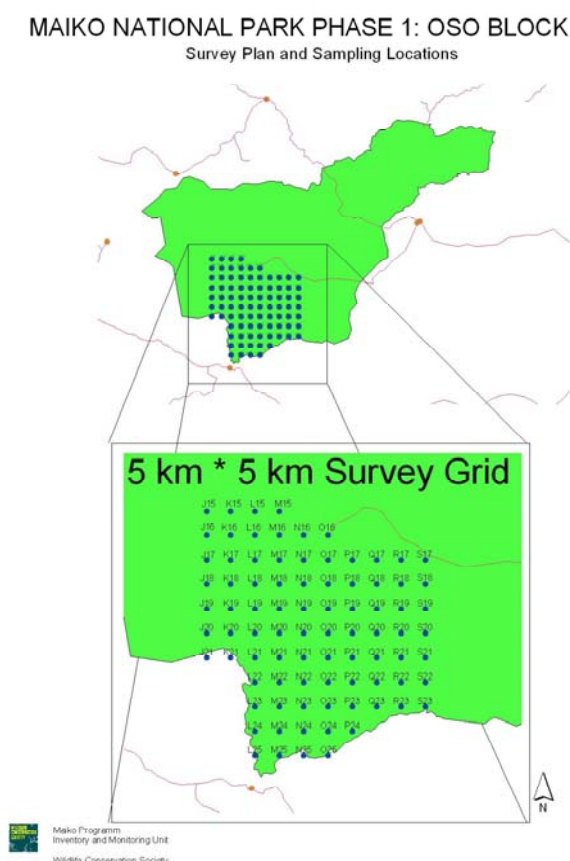


FIGURE 2. Survey design for travel recces for exploration of the Oso Block, South Sector of the Maiko

Recces were classed as two types: The first consisted of route and village recces where teams followed established paths. Data collection was focused in this case on geographic information to assist in producing a base map for the site including village names, river names, road conditions, bridges and bridge conditions and other auxiliary information collected during visits to the villages

The second type of recce consisted of compass line walks between centroids, almost always off-piste. All animals and their sign, and evidence of human activity observed from the recces, were recorded on a prepared field form. The geographic location of each observation was determined with a GPS and the habitat for each observation recorded. Field forms were the same as those used in the north sector survey. Examples were included in the annex of that report.

A more detailed protocol was developed to address park boundary verification points including important landmarks (hill tops) and river boundaries.

Following data collection in the field, all teams entered their data on a prepared data base, and mapped observations using GIS software. Distances covered by recces was calculated for each of the “graticules” covered in the grid.

7 SURVEY COVERAGE

TABLE 1 summarizes survey circuits for each team. A map showing the recce locations in the block is shown in **FIGURE 3**. A total of 300 km of recce were surveyed, covering 31 centroids (**TABLE 2**)

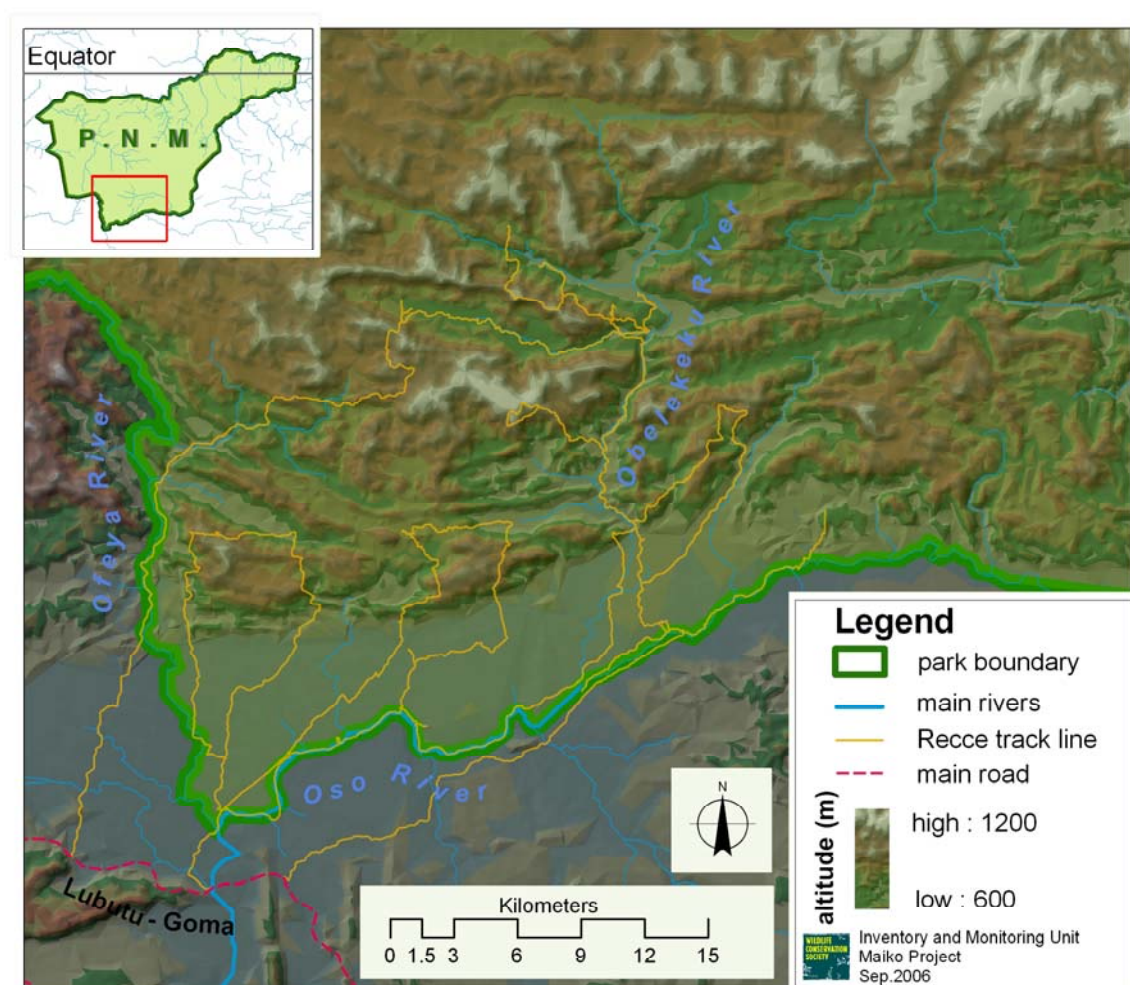


FIGURE 3. Survey Coverage in the Oso Block.

TABLE 1. Recce catalog for three field teams in the Oso Bloc,.

TEAMID	No Recce	Start Date	Stop Date	Observateur1	Observateur2
Eq1	RV O22	24-Apr-06	26-Apr-06	Boniface Nyembo	Yuma Gbogboto
Eq1	RV O22B	26-Apr-06	26-Apr-06	Boniface Nyembo	Yuma Gbogboto
Eq1	RV Q20	30-Apr-06	30-Apr-06	Boniface Nyembo	Yuma Gbogboto
Eq2	RV Q22	20-Apr-06	22-Apr-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV Q22B	22-Apr-06	23-Apr-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV O20	30-Apr-06	2-May-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV O20B	2-May-06	2-May-06	Chryso Vyahavwa	Batwayonga Mombe
Eq3	RV R23	16-Apr-06	21-Apr-06	Crispin Kibambe	Asango Lisingahindo
Eq3	RV P21	25-Apr-06	26-Apr-06	Crispin Kibambe	Asango Lisingahindo
Eq3	RV N21	3-May-06	4-May-06	Crispin Kibambe	Asango Lisingahindo
Eq3	RV L25	28-Mar-06	28-Mar-06	Crispin Kibambe	Asango Lisingaindo
Eq3	RV L24	29-Mar-06	29-Mar-06	Crispin Kibambe	Asango Lisingaindo
Eq3	RV L23	29-Mar-06	30-Mar-06	Crispin Kibambe	Asango Lisingaindo
Eq3	RV M23	30-Mar-06	31-Mar-06	Crispin Kibambe	Asango Lisingaindo
Eq3	RV M24	31-Mar-06	1-Apr-06	Crispin Kibambe	Asango Lisingaindo
Eq3	RV M24B	1-Apr-06	2-Apr-06	Crispin Kibambe	Asango Lisingaindo
Eq2	RV N25	28-Mar-06	30-Mar-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV O25	30-Mar-06	30-Mar-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV P24	30-Mar-06	31-Mar-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV P23	31-Mar-06	1-Apr-06	Chryso Vyahavwa	Batwayonga Mombe
Eq2	RV P23B	1-Apr-06	3-Apr-06	Chryso Vyahavwa	Batwayonga Mombe
Eq1	RV M25	28-Mar-06	29-Mar-06	Boni Nyembo	Yuma Gbogboto
Eq1	RV N24	29-Mar-06	30-Mar-06	Boni Nyembo	Yuma Gbogboto
Eq1	RV N23	30-Mar-06	31-Mar-06	Boni Nyembo	Yuma Gbogboto
Eq1	RV O23	31-Mar-06	1-Apr-06	Boni Nyembo	Yuma Gbogboto
Eq1	RV O24	1-Apr-06	2-Apr-06	Boni Nyembo	Yuma Gbogboto
Eq1	RV O24B	2-Apr-06	2-Apr-06	Boni Nyembo	Yuma Gbogboto

TABLE 2. Summary data on survey coverage for the Oso Block.

Teams	No of data points	Number of photos	Number of basemap points	Total number of Faunal Observations	Number of Human sign observations	Number of centroids
3	1,945	1,408	171	905	555	31

Number of circuits	Total km	Recce length		Elevation			
		average	Median	Low	High	Range	Range/recce
5	301.239	3.20	4.00	1121.36	562.4819	684.9508	96.0356

8 FAUNAL OBSERVATIONS

FIGURE 4 summarizes the faunal observations made on the recces. **FIGURES 5** through **FIGURE 12** provide details for each of the key species and species groups.

Large mammals recorded on the recces, included elephant, great apes, okapi and leopard, small ungulates, pigs and primates. Duikers and their sign were the most frequently observed wildlife.

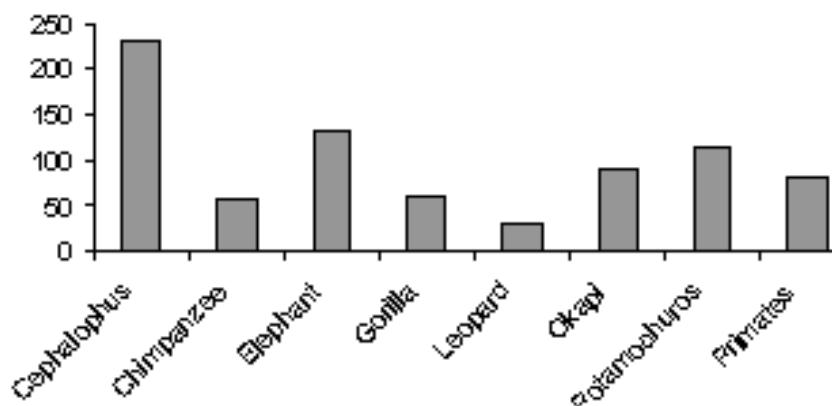


FIGURE 4. Faunal observations (number of records on travel recces) in the Oso Block

Elephant

Evidence for elephant included dung, feeding sign, paths and carcasses:

Paths	Feeding	Carcass	Recent dung	Old dung	Total Dung
18	1	3	17	61	78

The following summarizes the status of elephant in the Oso Block:

- **Low numbers and localized.** Field teams found little evidence of elephant in the Oso Block, and most of it old or very old. Elephants only occurred in the northeastern-most corner of the block, furthest away from the road and human settlement, but even here, most dung encounter rates, a standard index of abundance, were less than 2 per km of recce. Most of the block is empty of, or avoided by elephants. Steep topography in some of the Oso Block might be avoided by elephant.
- **History of high poaching pressure.** Poaching in the present and past appears to be the primary reason for low numbers of elephants. In interviews, Simba reported that they regularly hunt the area along the Obelekeku River, one of the best elephant habitats in the block. Discovery of two carcasses suggests that elephant continue to be a target of active poaching.
- **Impact of Lubutu.** Hunting pressure is intense in the hills within two days walk of Lubutu. The area seems to have been abandoned by elephant quite some time back, as elephant paths are nearly absent in this area. It is likely that elephant still occur north of the Oso Block in the central western sectors of the park, some distance away from the Lubutu and other settlement areas.

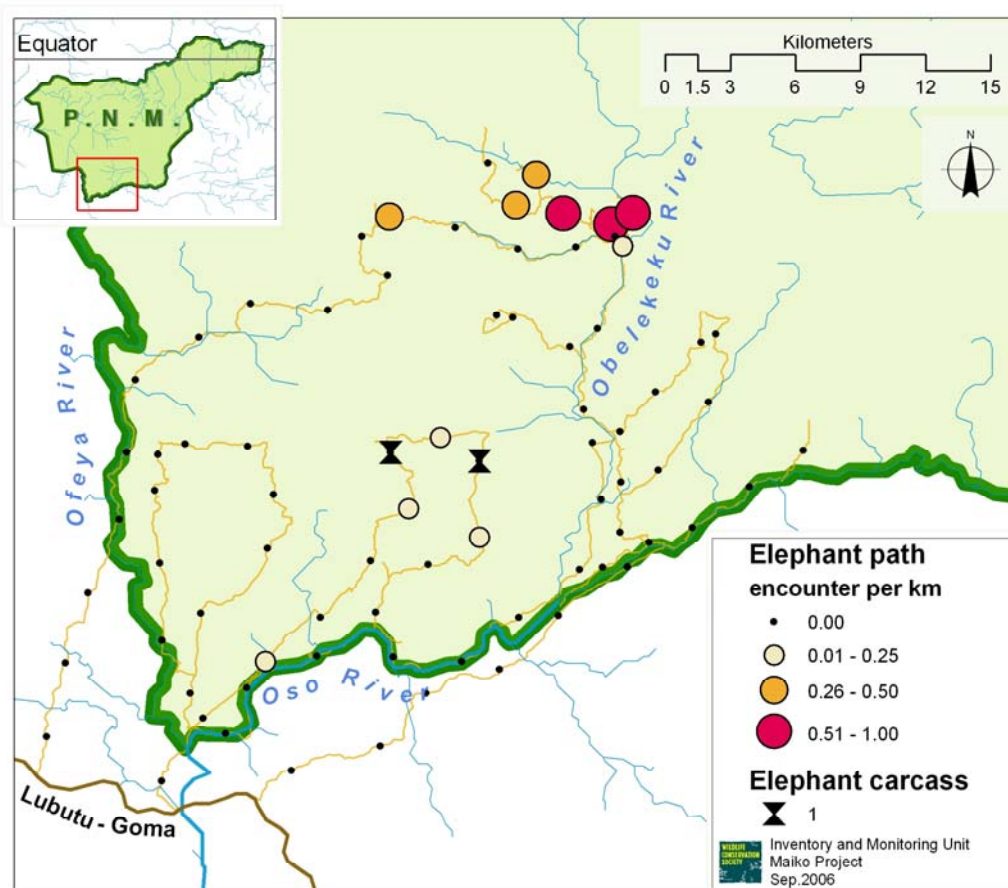
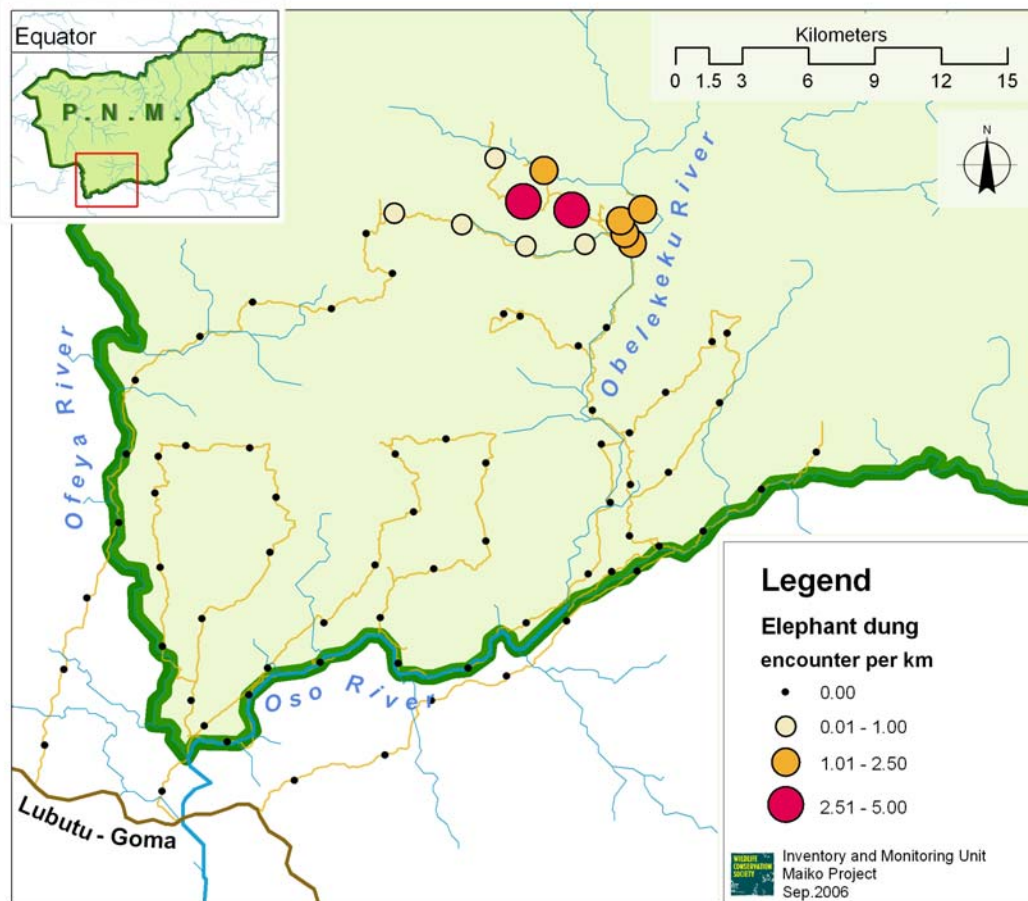


FIGURE 5. Evidence of elephant in the Oso Block

Gorilla and Chimpanzee

Both species of great apes occur in the Oso Block. Some evidence (such as feeding remains) could not always be attributed to one of the species with certainty. Observations of great apes included:

Species	Nest groups	Calls	Dung	Tracks	Feeding
Chimpanzee	32	1	10	5	46
Grauer's gorilla	3	1	8	10	

The following points summarize the status of great apes in the Oso Block:

- **Chimpanzees: Common.** Based on nest group encounters, a standard index of occurrence, chimpanzee are widespread throughout the block, though numbers appear to be low at most locations. Highest numbers were found in the Obelekeku watershed in the east of the block. But chimpanzees also used the heavily hunted forests near Lubutu in the west of the block.
- **Gorillas: Low numbers and localized.** Nesting sites and fresh tracks are the most reliable indicator for gorilla occurrence. The survey indicates that gorillas have a limited distribution in the block and may be restricted to only a few groups, and solitary animals. Most records are in the Obelekeku River area. Both tracks and feeding remains indicate that one group of gorillas may occur in the west of the block near the Ofeya-Oso confluence. This area is close to the Kisangani-Goma road. Further follow-up by the ICCN guards is recommended.

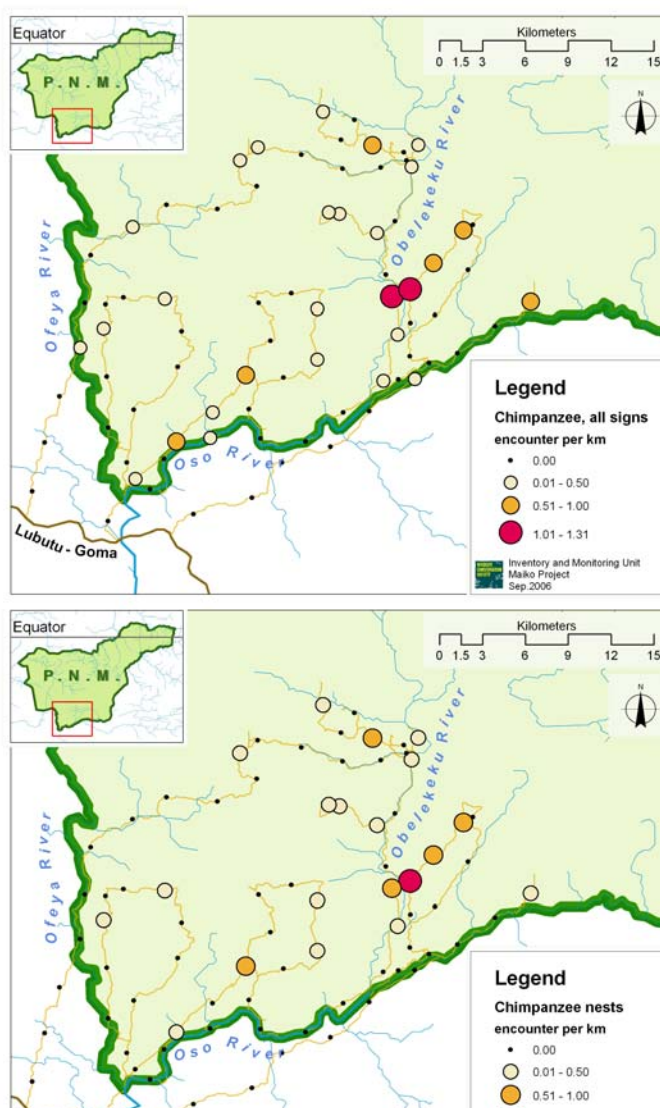


FIGURE 6. Evidence of Chimpanzee in the Oso Block

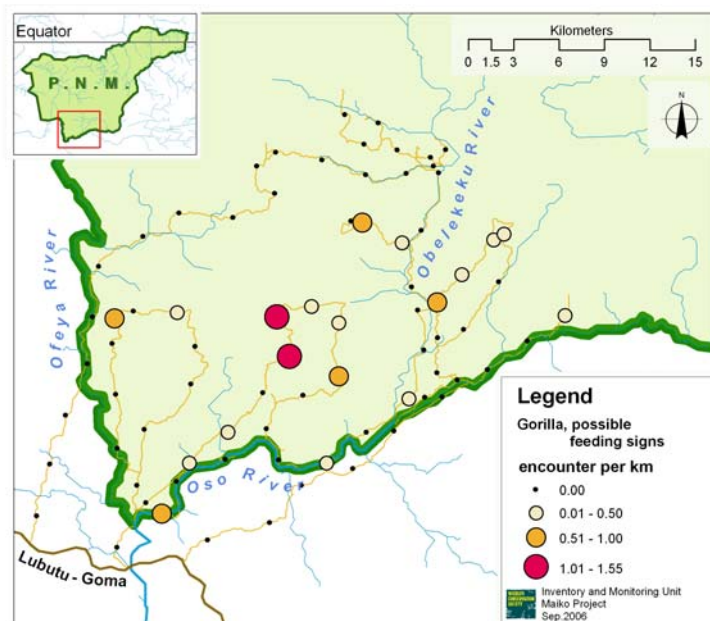
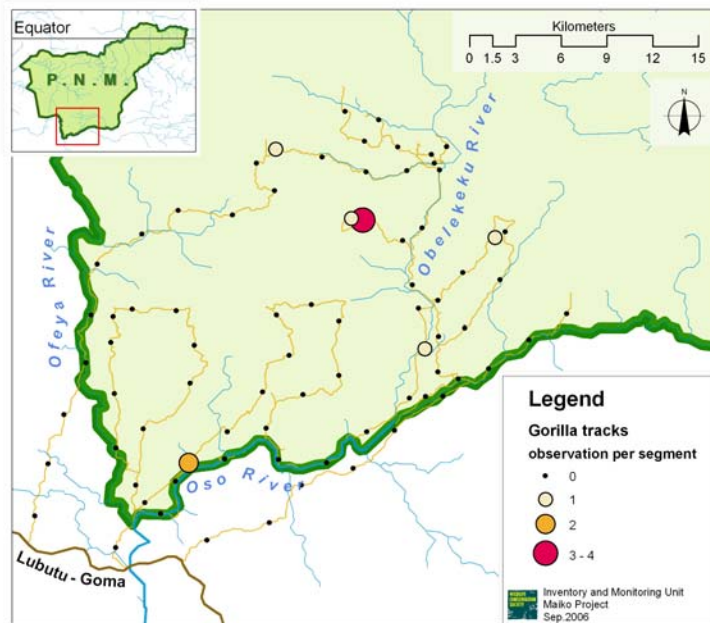
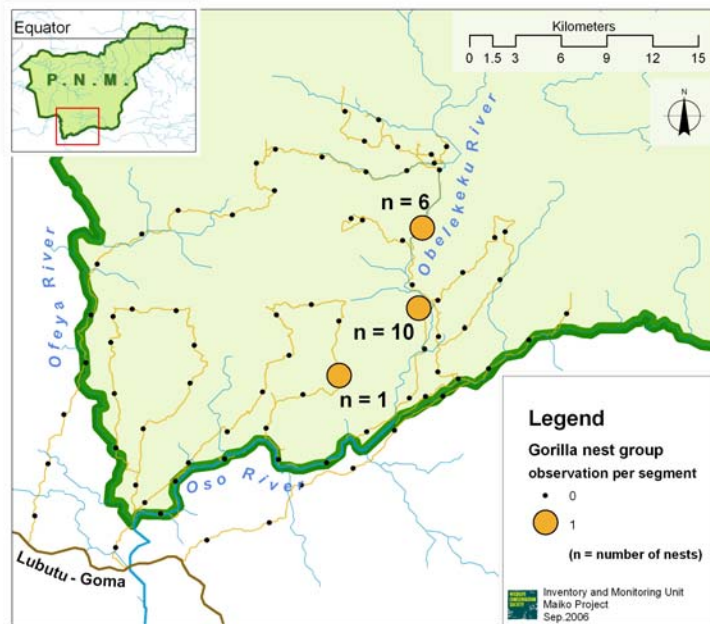


FIGURE 7. Evidence of Gorilla in the Oso Block Feeding remains of chimpanzees and gorillas could be confused, occurrence of each species must be confirmed by additional evidence.

Large Ungulates

Four species of large ungulates were recorded in the Oso Block: bongo (*Tragelaphus euryceros*), forest buffalo (*Syncerus caffer nanus*), the okapi (*Okapia johnstoni*) and the sitatunga (*Tragelaphus spekei*). The evidence for them is summarized as follows:

Species	Feeding sign	Dung	Tracks	Total
Bongo	1	1	2	4
Buffalo	2		5	7
Okapi	6	7	77	90
Sitatunga			11	11
Total	9	8	95	112

Key observations on the status of large ungulates in the Oso Block follow:

Indicators of human impact. Although the evidence indicates that their numbers are not high the occurrence of these species in the block indicates that the overall impact of hunting and other human disturbance has not been extreme.

Okapi at their southern limit. At present there are no certain records of the okapi south of the Oso River, which represents the southern limit of the species' range. The surveys established that okapi occur widely throughout the Oso Block, and confirm the Maiko Park as an important protected area for okapi conservation.

Riverine association of sitatunga. Most of the large antelope occurrences recorded are those of sitatunga. Sitatunga occur primarily along the Oso River, and appear to be frequent even in areas close to the road. The sitatunga is a semi-aquatic species, and specializes on inundated habitats that are not easily accessible to hunters.

Bongo and buffalo constrained by lack of open habitats. Both these species are most abundant in areas containing a mosaic of clearings, or small savannas. These are infrequent in the Oso Block. Buffalo occurrence is almost identical with that of elephant, and restricted to the northeast corner of the block. Both species may be sensitive indicators of the negative impact of hunting and human disturbance.

Small ungulates and pigs

Eight species of small ungulates and two species of pigs are known to occur in the Maiko Park. In the Oso Block, the survey teams reported evidence for five species of duiker (*Cephalophus monticola*, *C. dorsalis*, *C. nigrifrons*, *C. sylvicultor* and *C. leucogaster*), the chevrotain (*Hyemoschus aquaticus*) and the bush pig (*Potamochoerus porcus*). Evidence for duikers consisted of 45 dung counts, 184 track counts and four animals seen directly. Chevrotain observations included 6 dung counts, 24 track counts, and six direct observations. Evidence of the bush pig consisted of 15 feeding remains, 21 dung counts, 77 track counts and one direct observation.

- **Widespread occurrence.** Duikers and red river hog are found across the block, but highest indices are found in remote areas in east, the area far from Lubutu town and the road.
- **Larger duikers well represented.** Evidence of at least four species of larger "red duikers" species and giant yellow-backed duiker are well represented in the sample of dung and track counts. These larger duikers are the first to be reduced under intensive hunting. While there is limited ability to distinguish between duiker species based on track and dung, direct observations of these species, as well as 6 sightings of chevrotain, are evidence that major faunal reductions have not occurred, at least in the east of the block.

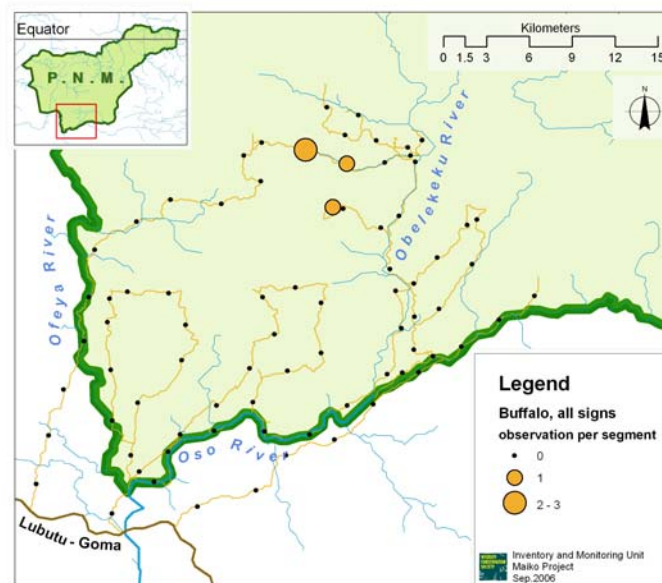
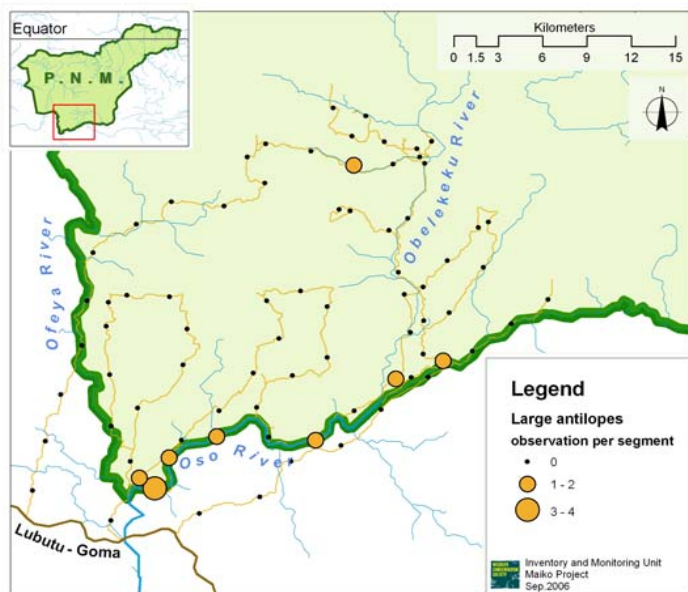


FIGURE 8. Occurrence of Bongo and Sitatunga (left) and buffalo in the Oso Block

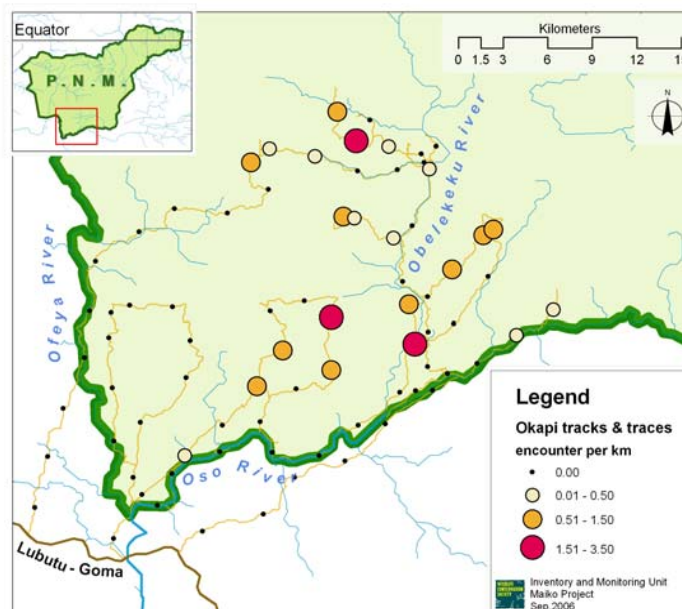
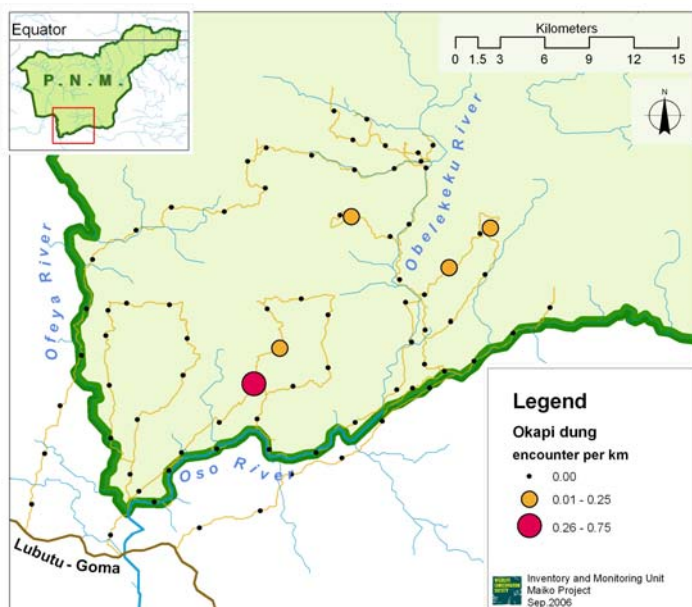


FIGURE 9. Evidence for okapi in the Oso Block: including dung counts, feeding sign and recent tracks.

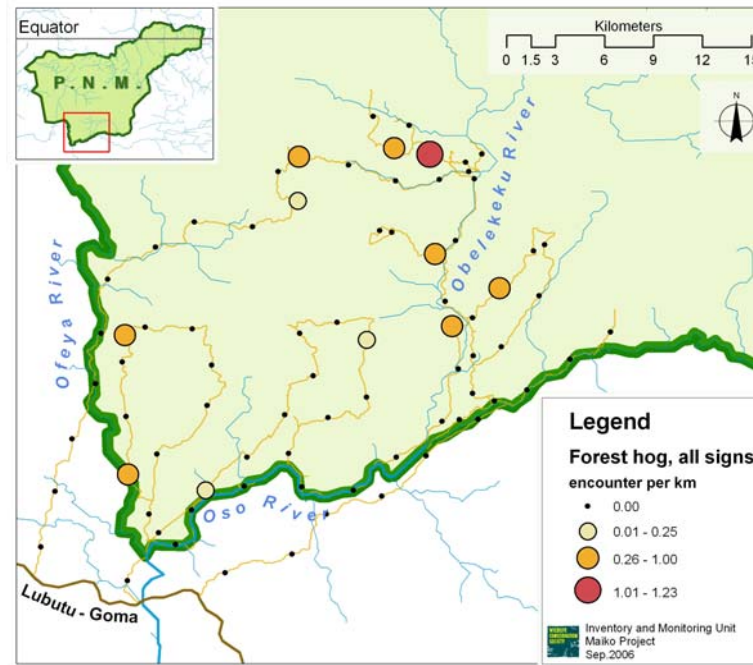
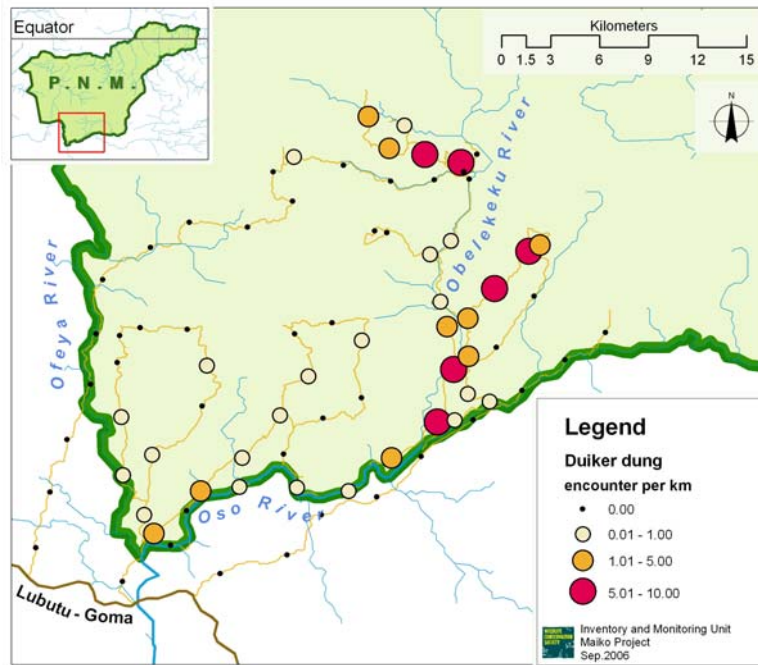


FIGURE 10. Evidence of duikers (left) and Red river hog (right) in the Oso Block:.

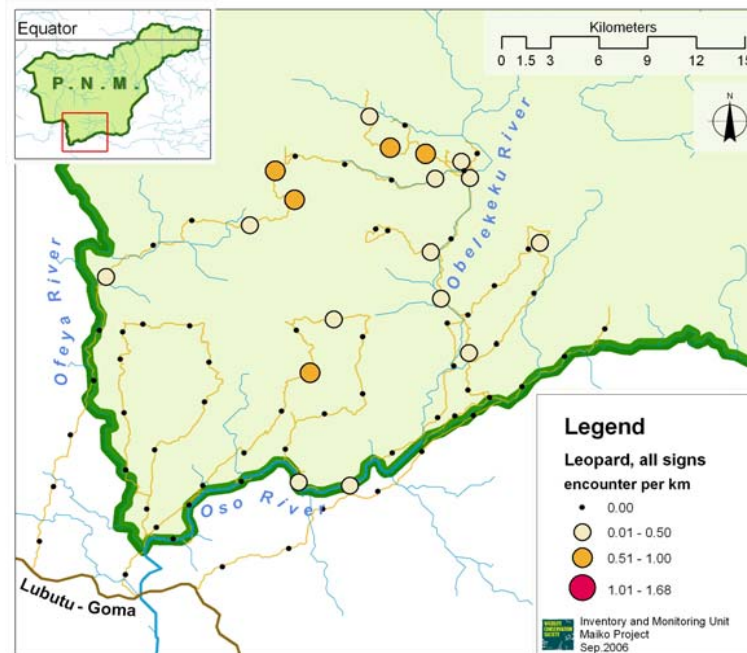
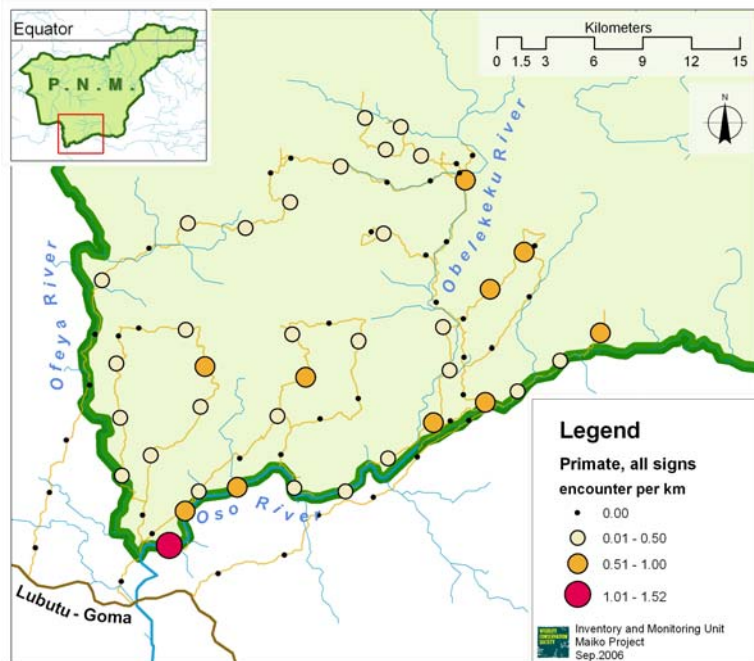


FIGURE 11. Evidence of primates (left) and leopard (right) in the Oso Block: including dung counts, urine marks and recent tracks.

Primates

In total, 65 groups of primates were observed directly (visual or auditory contact). Field teams were not consistent in noting species identities; nevertheless, 8 species were identified including: *Ptilocolobus badius*, *Lophocebus albigena*, *Cercopithecus hamlyni*, *C. Lhoesti*, *C. ascanius*, *C. mitis*, *C. wolfi-denti*, and *Papio anubis*.

Observations on the status of the primates in the Oso Block follow:

- **Widespread occurrence, but encounter rates low.** Primates were recorded throughout the block, however encounter rates were uniformly low throughout. This may not be due to hunting pressure only. It is possible that low fruit availability during the survey period may have played a role. Primates are less vocal—and less detectable—during periods when fruits are rare, as opposed to periods of fruit abundance, when they vocalize and move about more frequently.
- **Hunting may have affected behavior and detection.** Low encounter rates could be due to hunting pressure. The teams did not record marked differences in encounter rates across the survey zone, as they did for other species that are vulnerable to hunting, notably duikers, which were concentrated in the northeast. Both snares and firearms are used to hunt primates in the Oso Block. It is possible that the low detection rates of primates by field teams is due to the escape behaviors such as infrequent vocalization, hiding and rapid retreat that have developed to facilitate escape from hunters with firearms.

Leopard

The field teams recorded thirty signs of leopard including dung, recent tracks and scrapes and urine marking posts.

Dung	Fresh tracks	Scrapes and urine posts
11	14	5

Observations on the status of the leopard are summarized as follows:

- **Occurs in association with small ungulate prey.** Evidence for leopard were found widely in the block, but was most was concentrated in the northeast, in areas with the highest indices of duikers and pigs, which are preferred prey species.
- **Indicator of ecosystem health.** Occurrence of top predators such as leopard is an indicator of the status of both the prey population, and the status of the habitats that support the prey. The wide occurrence of leopard sign is further evidence that the small ungulate populations remain large enough to support this large predator.

All large mammals

The distribution and an index of relative abundance for all large mammals is provided in **FIGURE 12**. Although different species have different habitat needs and respond to hunting and human disturbance differently, the overall distribution shows a consistent concentration of large mammals in the eastern and northern sector of the block, with much lower presence in the east and south. Further observations follow:

Very few large mammals remain outside the park. Although coverage outside the park, was concentrated along major foot paths, and thus may not have been totally representative, nevertheless the absence of faunal indicators in immediate periphery of the park (left bank of the Oso), in contrast to the occurrences inside the park shows that the park, despite threats to it, still constitutes a regionally significant faunal reservoir

Faunal abundance increases with distance from Lubutu. Although it is not possible to provide density estimates, distribution of different indicators are consistent in showing a relative absence of large mammals in the western and southern sectors of the Oso Block, and a decisive increase in fauna in the north and east in the areas furthest from Lubutu town.

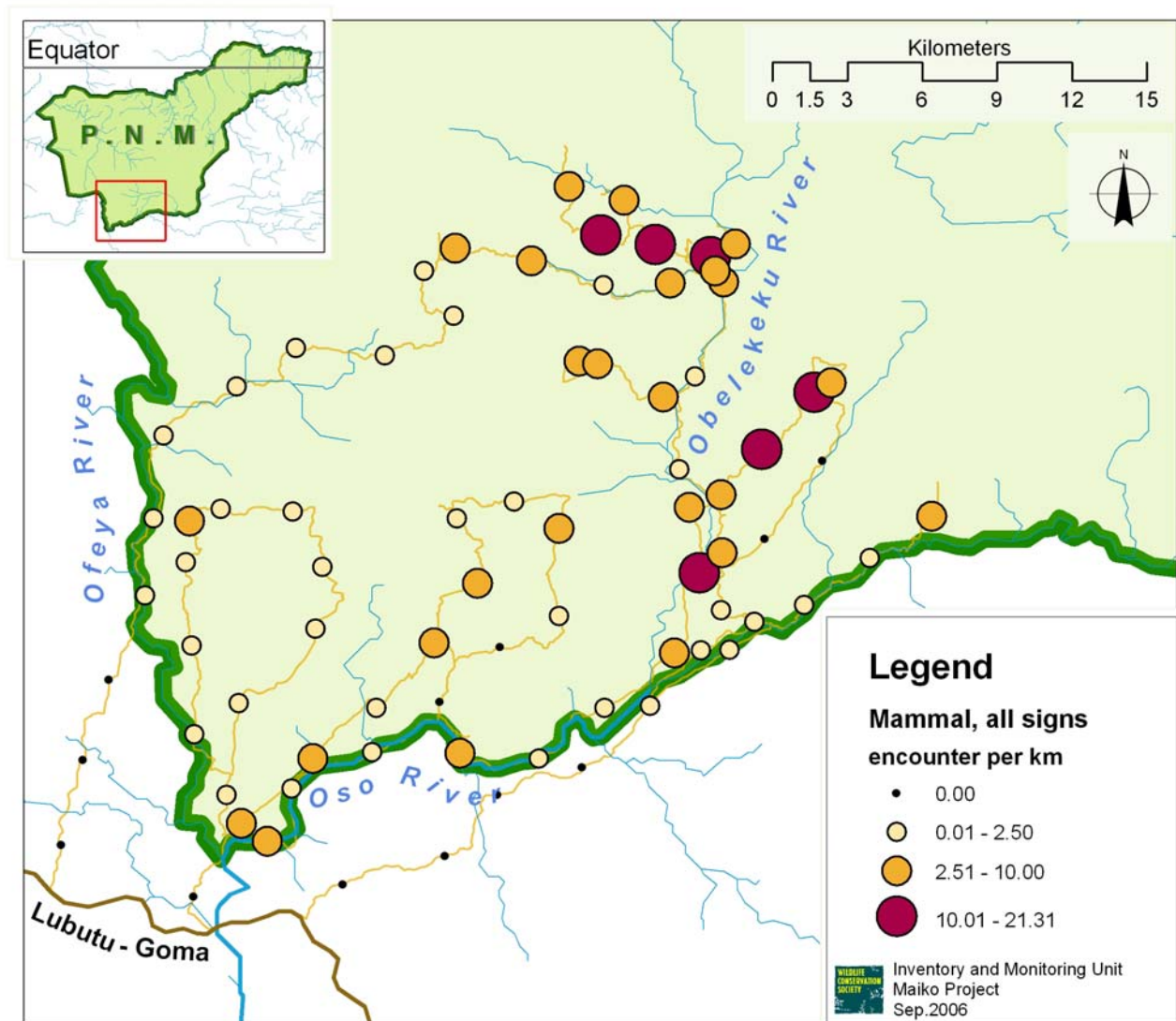


FIGURE 12. Distribution of all large mammal indicators in the Oso Block.

9. HUMAN ACTIVITIES

Evidence of human activities was widespread in the Oso Block. Activities recorded included:

- Agriculture (settlements, gardens)
- Mining (mining camps, test pits, carrières),
- Hunting, (snares, hunting camps, gun shots and spent cartridges),
- Fishing (camps)
- Other forest products (honey gathering)

In addition, all evidence of human movement (path crossings and machete cuts) was recorded. Although these signs can not always be associated with a specific activity, evidence of passage and in particular path crossings, provides an indicator of overall human presence in the block.

FIGURES 13 through FIGURE 15 present data on human activities in the block. Primary findings are summarized in the sections that follow:

Access.

Several major paths lead into the Oso Block from the road. Within the block, 67 path crossings were recorded, of which 86 percent had recent use. Access paths were recorded in all areas of the block, with higher encounter rates along the major rivers, probably in association with fishing camps.

Agriculture

Agricultural clearing is primarily located outside the park limits in the Oso Block, although clearing and gardens associated with the Simba settlements occur within the park to the north of the survey zone. Field teams did not arrive at Silisa, the Simba “Etat Major”, however the location is visible on satellite imagery.

Artisanal Mining

Field teams recorded three indicators of mining: test pits (“meta”), active extraction sites, and mining camps. Mining was recorded in scattered locations within the block, though with concentrations along the rivers where alluvial gold deposits are being mined. Fewer than half the mining operations were active at the time they were observed. Many of the sites, including most test pits and gravel quarries for road construction were definitively abandoned. Some gold mining sites along rivers were temporarily unoccupied because of high water.

Most of the mining camps recorded were small (median less than 3 shelters). Only one large camp occurs in the block, *Monde Arabe*, with 150 shelters.

Fishing

Fishing occurs widely in the Oso Block, always at a artisanal, subsistence level. Survey teams, recorded 31 fishing camps; all were small (1 – 2 shelters). None were occupied at the time of the survey, but most appeared to be used on a seasonal basis, some clearly have been used for many years.

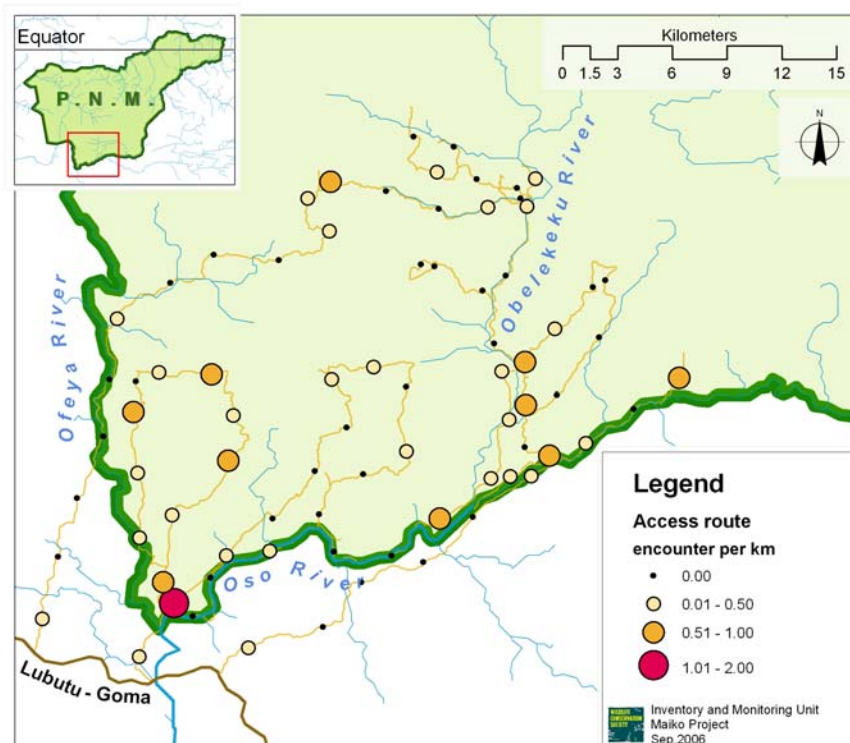


FIGURE 13. Encounter rates of human path crossings in the Oso Block, an indicator of human presence and use of the park..

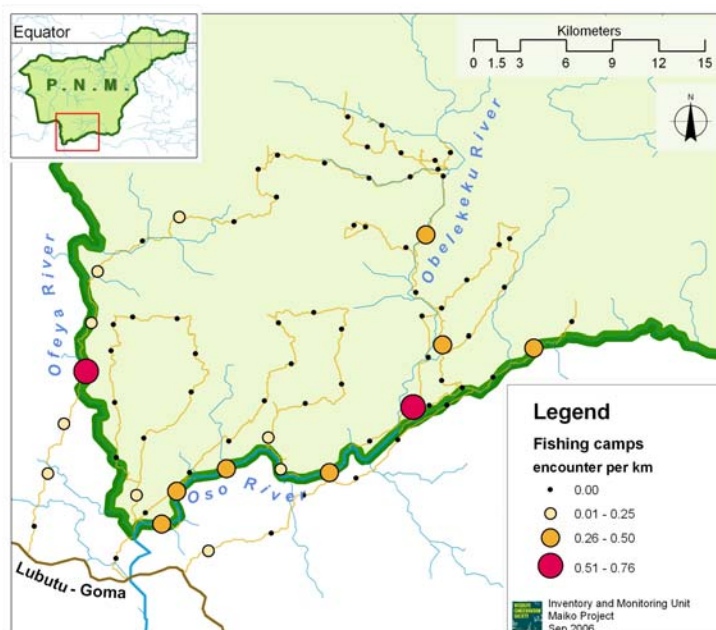
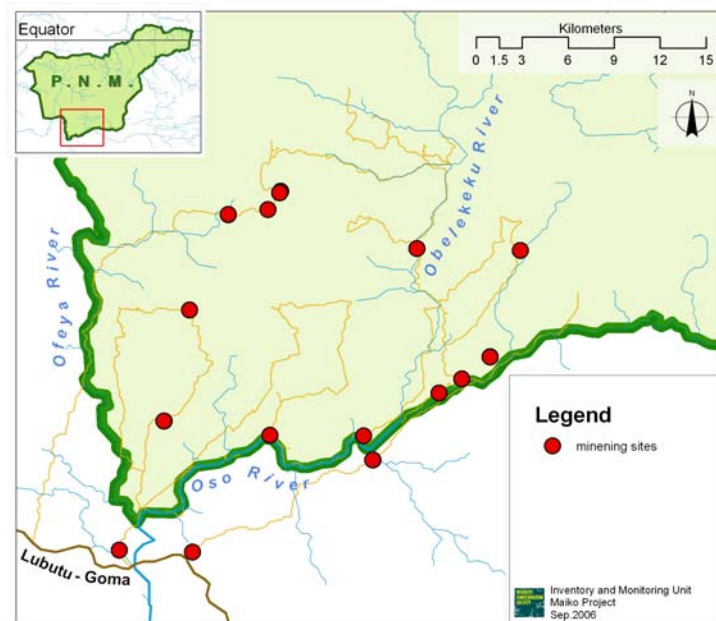
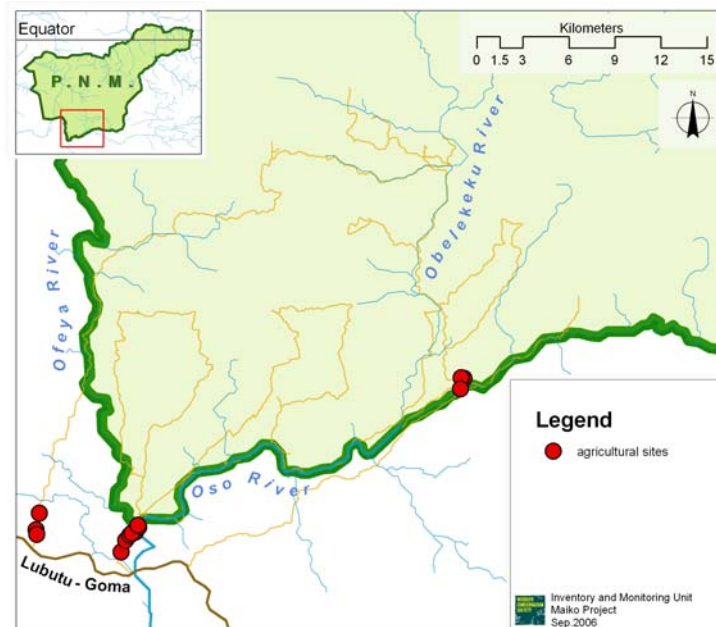


FIGURE 14. Distribution of agricultural settlements, mines and fishing camps in the Oso Block.

Hunting

Hunting was the most frequently recorded human activity in the Oso Block. Hunting occurs on a continuous basis. The maps of hunting sign and human access sign are very similar, suggesting that most of the human use of the block is associated with hunting. Hunting sign included 191 snare sites, 26 hunting camps, 13 spent cartridges (shot gun) and four gun shots. Hunting evidence was located throughout the block, but concentrations were highest in most remote areas in the east and north. Field teams found several snares with trapped animals, and encountered hunters with shotguns. One hunter was seen with four dead L'hoest's monkeys, a species of conservation concern

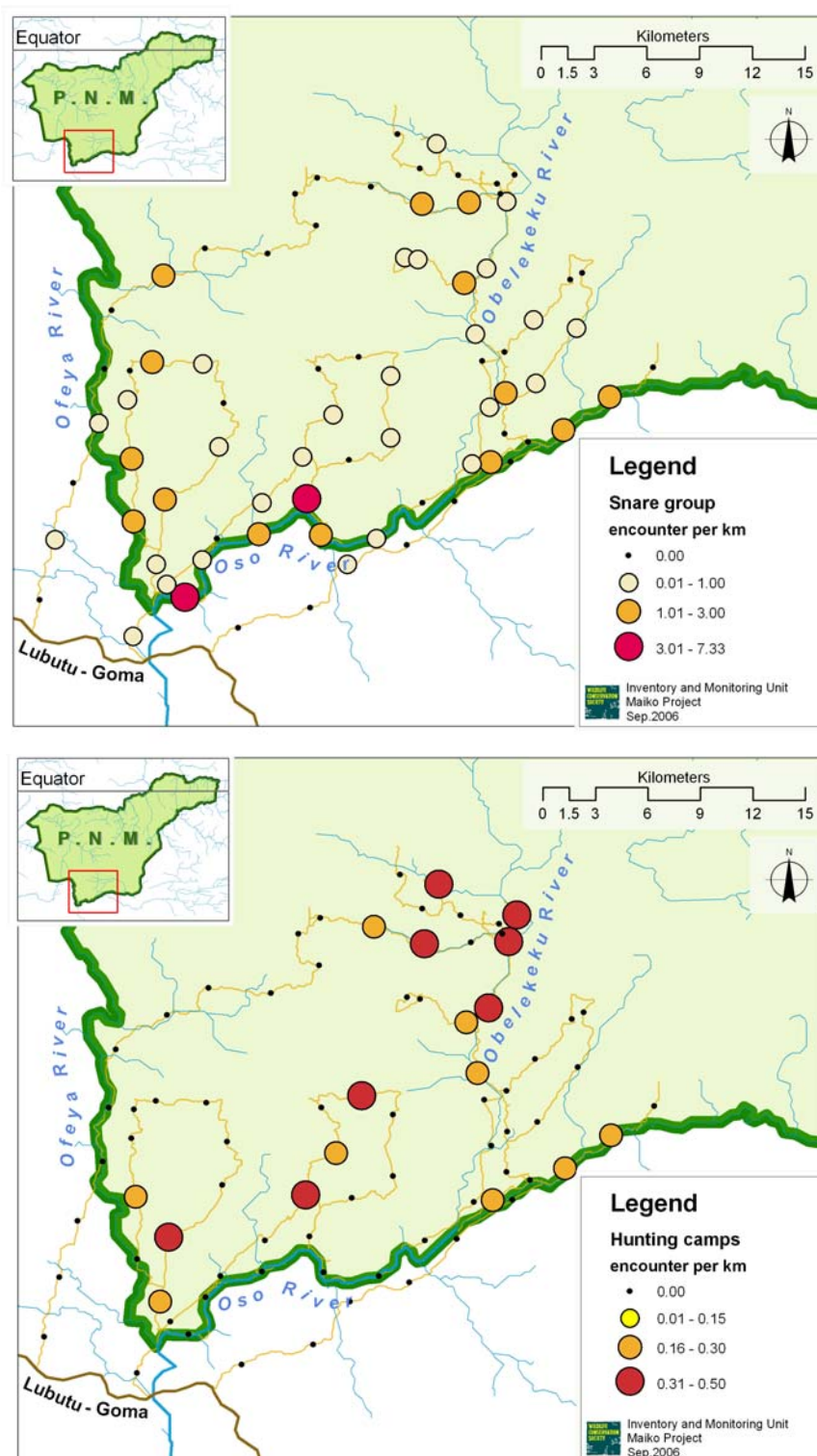


FIGURE 15. Evidence of hunting in the Oso Block

10. IMPACT OF HUNTING ON FAUNA

The impact of illegal hunting on wildlife in the Oso Block is the most immediate concern for the conservation park. Hunting pressure was classed on each survey from low to high, in three categories, and compared to faunal encounter rates. **FIGURE 16** illustrate the relationship between indices of occurrence of all large mammals and hunting pressure at different locations in the survey block. **FIGURES 17 to 19** show the relationship individually for several important faunal groups.

All large mammals: Overall large mammals show decreased indices in the areas of high hunting levels. The relationship occurs when both hunting camp occurrence and snare frequencies are used as indicators of hunting pressure. The relationship with snare occurrence is the strongest.

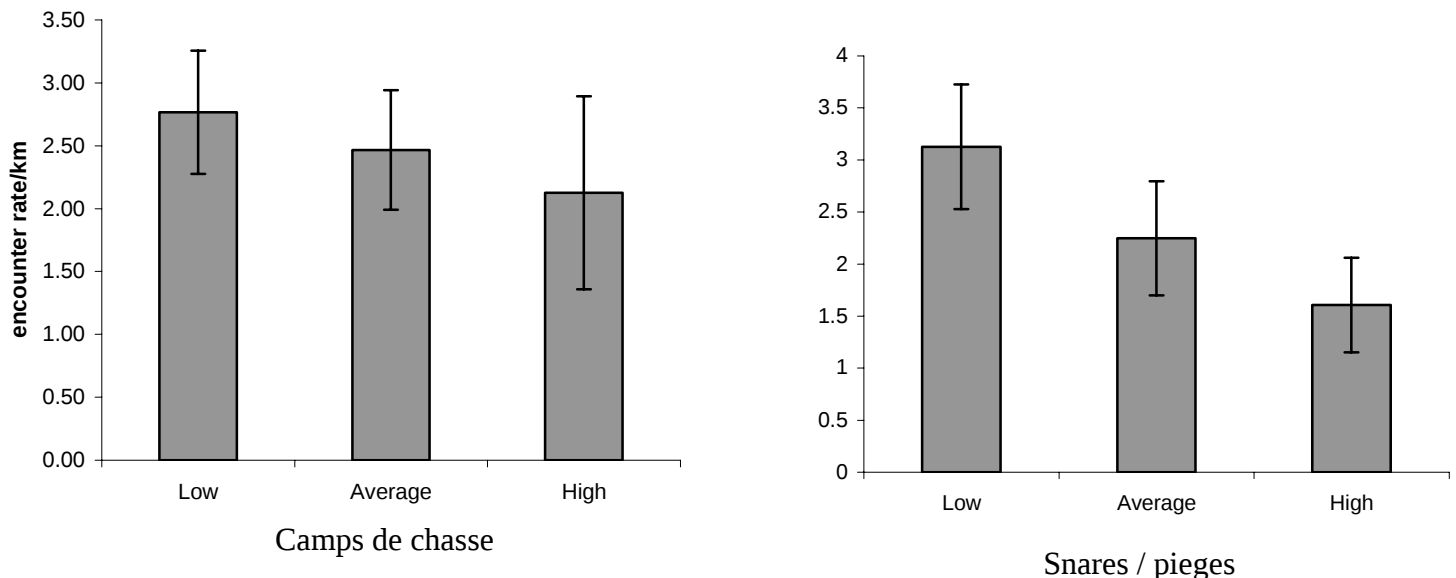


FIGURE 16. Encounter rates of all large mammals and encounter rates of hunting camps and snares in the Oso Block

The relationship between hunting indicators and faunal indices varies with taxonomic group:

Great Apes: Great ape nest groups have comparable frequencies in zones of low and average hunting pressure. In areas of high hunting pressure, nest groups have very low occurrence. Snares do generally not target great apes, however, low frequency of ape groups in areas of high snare rates suggests that where snares are abundant, apes are vulnerable. Another possibility is that the high snare areas have had high hunting pressure for some time, and apes are vulnerable to long term hunting pressure.

Duikers: Duiker occurrence shows a steady decline from areas of low hunting pressure to areas of intermediate and high hunting pressure. This result is to be expected given that these small ungulates are the primary target of snares.

Primates: These species show a highly variable relationship with snare frequency, and as a result no clear trend is evident. Most primates are strongly arboreal, and not targeted by terrestrial snares. Primates are hunted by caliber 12, however, there were not enough observations on hunting by firearms to use this as an indicator of hunting pressure.

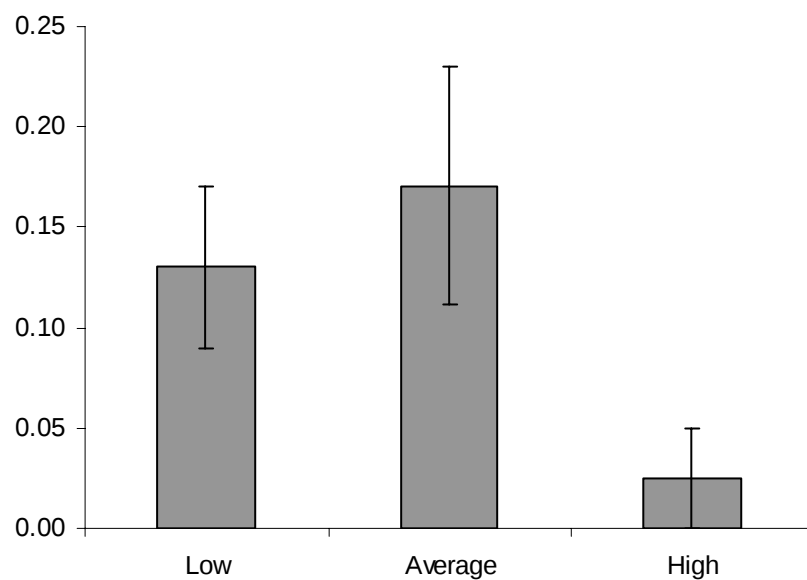


FIGURE 17. Frequency of ape nests versus hunting pressure (snare encounter rate) in the Oso Block

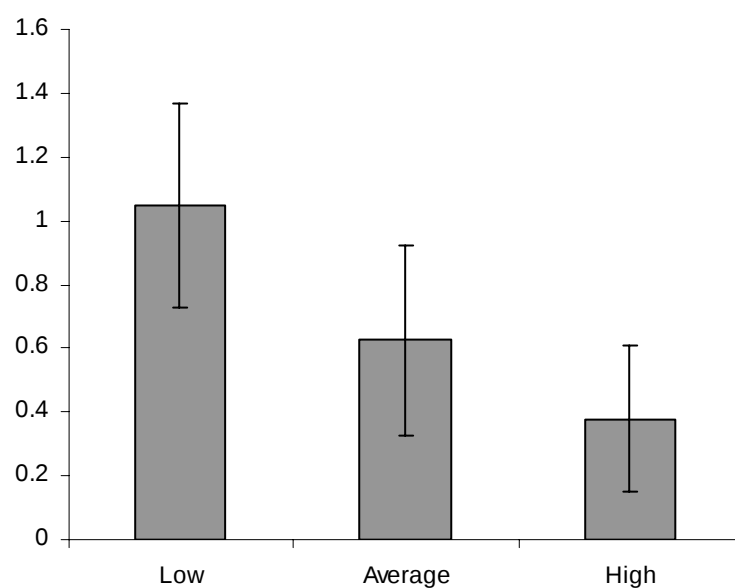


FIGURE 18. Frequency of duiker observations versus hunting pressure (snare encounter rate) in the Oso Block

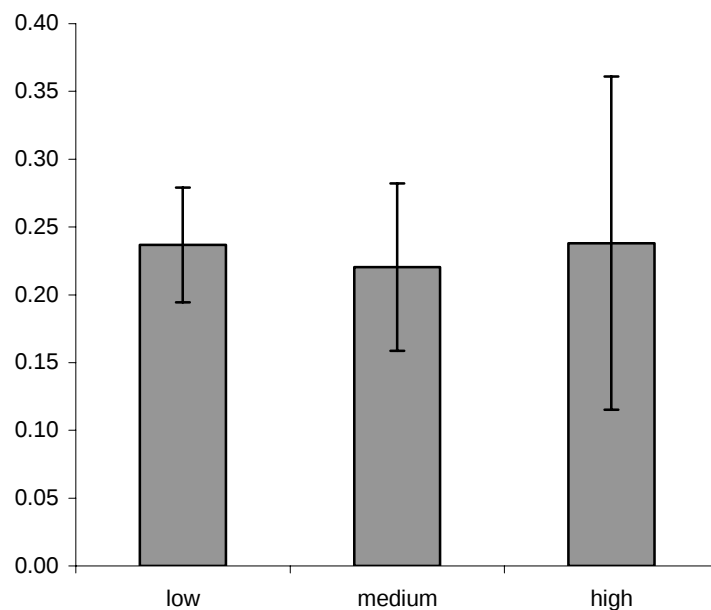


FIGURE 19. Frequency of primate observations versus hunting pressure (snare encounter rate) in the Oso Block

11. FAUNAL CHANGES IN THE OSO BLOCK SINCE 1990.

The Oso Block was first surveyed in 1990-91 by the WCS Maiko exploration project.² Data for the first survey were not geo-referenced by GPS, and are presented in a different spatial format (10 x 10 km blocks). Nevertheless, the basic field data collection methods were similar.

A first, and preliminary assessment of changes in large-scale faunal distribution from 1990 to 2006 follows:

- Eight 10 km by 10 km survey grids from the 1990 surveys are included in the 2006 Oso Block Survey.
- **Elephant:** Distribution in 1990 included concentrations in the Ofeya, Oso and Obelekeku watersheds. In 2006 elephants only occur in the upper Obelekeku basin, a major retreat, and reduction in numbers.
- **Gorilla:** The confirmed occurrences in west of the block, and unconfirmed occurrences in the Obelekeku area recorded in 1990, were both confirmed in 2006.
- **Chimpanzee:** Distribution and relative numbers similar in 1990 to 2006.
- **Primates:** Distribution and low density encounters in both 1990 and 2006.
- **Okapi:** Distribution and low-density dung encounters similar in both 1990 and 2006.
- **Buffalo.** Distribution along Oso and Obelekeku in 1990. Not reported along Oso in 2006. Overall distribution similar to that of elephant during both periods
- **Pigs:** widespread in 1990, concentrated along Obelekeku in 2006.
- **Duikers:** Widespread, low-density occurrence in both 1990 and 2006.
- **All mammals:** Concentrations occurred in the Obelekeku watershed, and secondarily along the Oso River in 1990. The distribution in 2006 is similar, but populations along the Oso reduced.

The overall assessment of faunal changes in the Oso Block is that distributions of several key species, notably gorillas, chimpanzees and okapi have remained fairly constant over the past 16 years. Elephants and buffalo now occupy a reduced area, in comparison with 1990, and an apparent decline in numbers. Overall, large mammals have decreased along the Oso River since 1990, and now remain common only in the Obelekeku watershed.

12 CONCLUSION

The conservation assessment for the Oso Block is not negative. The threats of continuing hunting by the Simba are significant. Great apes apparently are holding their place, but elephants clearly are declining and are threatened. The Oso Block—and certainly other areas within the Maiko National Park-- needs active conservation effort. How to do this in the face of continuing occupation by the Simba rebels is not clear.

² Hart, John A. and Claude Sikubwabo. 1994. Exploration of the Maiko national Park of Zaire: 1989-1992. History, Environment and the Distribution and Status of Large Mammals. WCS Working Paper N°2.

Photos from the Oso Block Survey. 2006.



Field teams. *Left*, on the Kisangani – Goma road. *Right*, Along the Oso River on the border of the Maiko Park



View of the hills north of the Oso River in the southern sector of the Maiko National Park.



L'hoest's monkey, a near threatened species. *Left* alive, *Right*, Hunter with four dead l'hoest's monkeys killed with 12 caliber shotgun.



Artisanal mining in the park. *Left*, excavation site. *Right*, View of an abandoned mining camp