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TOTAL AERIAL COUNT OF ELEPHANTS AND OTHER WILDLIFE SPECIES IN FARO, BENOUE AND BOUBA NDJIDDA NATIONAL PARKS AND ADJACENT HUNTING BLOCKS IN NORTHERN CAMEROON



By

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MAY 2008

Funding



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EXECUTIVE SUMMARY

The total aerial count of elephants in northern Cameroon parks of Benoue, Faro and Bouba Ndjidda as well as adjacent hunting blocks were conducted between 26th April and 01st May 2008. During the census, total counts of elephants, elephant carcasses, large herbivores and plain game was conducted. Livestock numbers (cattle and shoats) were estimated. GPS was used in navigation, recording survey paths and waypoints.

The count involved 2 aircrafts and counted 525 elephants in the census zone. Most of elephants (44.2%) were found in Bouba Ndjidda National Park while 22.67% were found in the hunting zone (Block ZIC 23). Notable during this count was the high number of buffaloes in Bouba Ndjidda (21.65%) and Benoue (16.9%) national parks. The rest of the buffaloes were in the hunting zone (Block ZIC 18Bis). Most of the roan antelopes counted during the count were in the national parks (57.56%). The rest were found in the hunting blocks. Settlements were also recorded during the survey and most were in Faro National Park (73.33%). High numbers of livestock were recorded inside the protected areas especially in Faro (53.6% of all livestock within the protected areas). The highest concentration of cattle was however observed in hunting zone (ZIC 7). Other species that were recorded in high numbers were the western hartebeests, which had the highest concentration in Bouba Ndjidda National Park (27.11% of the total counted or 59.7% were hartebeests within the national parks).

RESUME EXECUTIF

Le comptage total par voie aérienne des éléphants dans les Parcs Nationaux de la Bénoué, Faro et Bouba Ndjidda dans le Nord Cameroun aussi bien que les Zones de Chasse Adjacentes a été réalisé entre le 26 avril et le 01 mai 2008. Pendant ce dénombrement, le comptage total des éléphants et leurs carcasses, les grands herbivores et les petites antilopes de plaine était fait.

Le cheptel ou bétail (bœufs, chèvres et moutons) était aussi estimé. Le GPS était utilisé pour la navigation, les circuits de vol ou lignes de transects et les points GPS étaient enregistrés.

Le comptage a impliqué 02 avions type CESSNA et a estimé un total de 525 éléphants dans la zone recensée. La plupart de ces éléphants (42,2%) ont été comptés dans le Parc National de BoubaNdjidda pendant que 22,67% était trouvé dans la ZIC 23.

De façon notable, l'on a enregistré un grand nombre de buffles dans les Parcs Nationaux de BoubaNdjidda (21,6%) et de la Bénoué (16,9%). Le reste de buffles était trouvé dans la ZIC 18bis.

La plupart des hippotragues comptés pendant le survol se trouvaient dans les Parcs Nationaux (57,56%). Le reste était compté dans les ZIC.

Les habitations ou installations humaines étaient aussi comptées pendant le dénombrement et la plupart était observée dans et autour du Parc National du Faro (73,33%).

Un grand nombre de bétail était enregistré à l'intérieur des Parcs Nationaux spécialement dans le Parc National du Faro (53,6% du total de bétail enregistré dans les aires protégées). La grande concentration des bovins était cependant observée dans la ZIC 7.

Les autres espèces animales qui ont été comptées en grand nombre sont le bubale qui a une plus grande concentration dans le Parc National de Bouba Ndjidda (27,11% du total compté ou 59,7% de bubales observés dans les Parcs Nationaux).

INTRODUCTION

Elephants are found in three distinct ranges in Cameroon: the Sahelian zone in the far north, the Sudanian zone in the north, and the Forest zone in the south. The elephant management problems in the three ranges are different. Most of Cameroon's elephants live in the dense forest zone, and the majorities are outside the protected areas. The information required for effective management is lacking in majority of the range. For example, information on elephant numbers is inadequate. There is little information available on basic ecological questions such as seasonal movement patterns. The optimum elephant densities which managers should aim for in each habitat have yet to be estimated hence the optimum number that the country can support is not known. Because of resources that are inadequate for managing elephants effective protection in national parks and reserves cannot be guaranteed.

The growth of the human population means that roads, settlement, agriculture, logging operations and other forms of development are encroaching upon and fragmenting elephant habitats. This causes increasing conflict between people and elephants. Crop raiding by elephants has become a major issue. The high cost of elephants to the rural populace is not balanced by any benefits because there is no effective community participation in elephant management. This survey was aimed to establish the baseline elephant numbers, their distribution and assess the level of encroachment into the protected areas of Faro, Benoue & Bouba Ndjidda.

Objectives of the survey

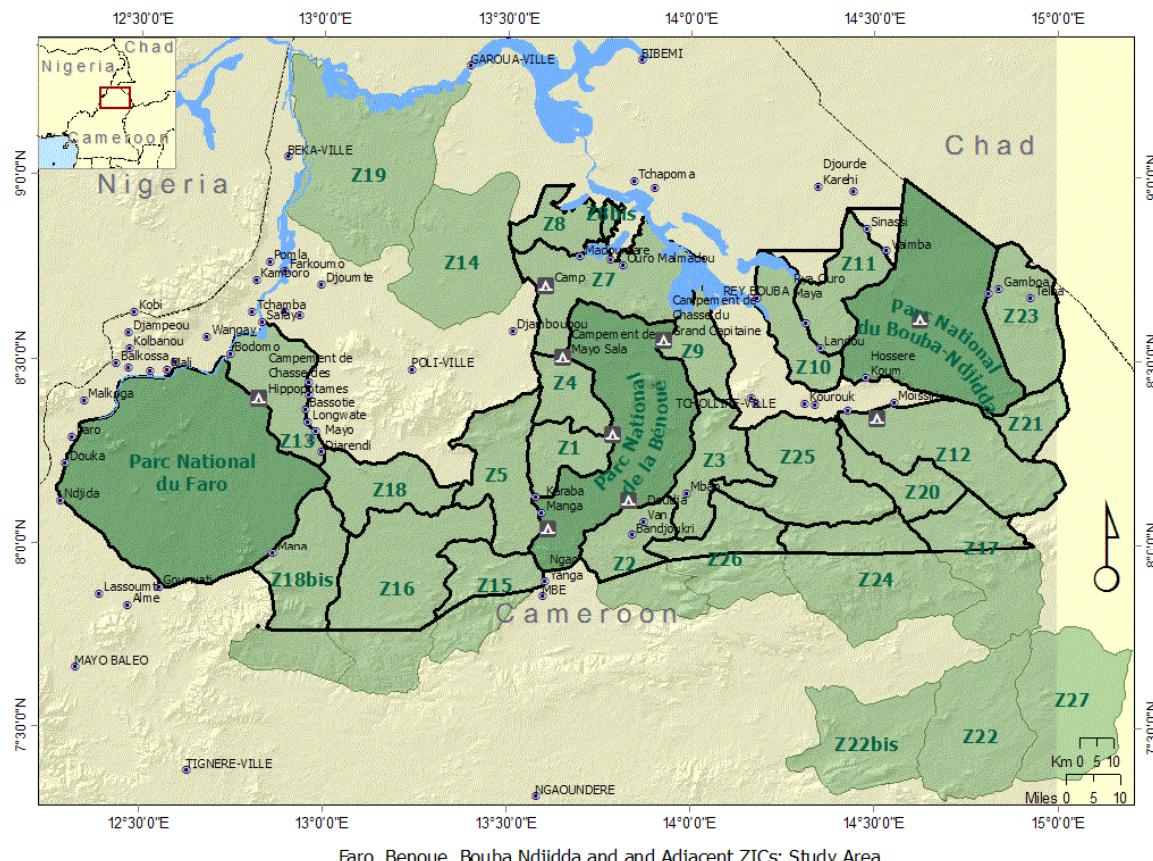
The objectives of the survey were therefore as follows:

- Establish current elephant population size and distribution
- Determine number and distribution of elephant carcasses
- Setting a baseline for future change in the elephant population size and distribution
- Document distribution and numbers of other species such as Giraffes, roan antelopes and livestock
- Train Cameroon staff on the methods of aerial counting of elephants
- To map the incidences of human activities that may be threatening elephants through protected area encroachment

STUDY AREA

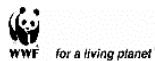
The study area has three National Parks (Benoue, Bouba Ndjidda and Faro). They cover a total area of approximately 7579.519 km Sq. The Parks lie in the Sudanian region. In Cameroon, there are twenty-seven sport-hunting zones. They are all located in the Sudanian wooded savanna of North Cameroon. They surround and help to protect the Faro, Benoue and BoubaNdjidda National Parks because the licensees have a vested interest in the protection of their zones. During the count, total coverage of the hunting blocks was 14,300.24 sq km.

Figure 1 - Study Area



Faro, Benoue, Bouba Ndjidda and and Adjacent ZICs: Study Area

- villages
- Waterbodies
- ▲ Camp
- Survey Blocks
- Village/Town
- Hunting Blocks
- Parc_National
- Country



Total Aerial Count of Faro, Benoue, Bouba Ndjidda National Parks and
Adjacent Hunting Blocks (29th April to 2nd May 2008)

Source: WWF, ESRI/USGS, SRTM-90,
National Geographic Centre, Yaounde

The common vegetation encountered in the study area is widespread over northern Cameroon and comprises mainly of herbaceous woodlands and open savannah country. Most of the savanna shrubs and trees include *Sclerocarya birrea*, *Combretum* and *Terminalia* shrubs and stands of *Hyphaena thebaica*; *Anogeissus leiocarpus* woodland on sandy soil; *Lannea humilis* open grass savanna with short annual grasses, sparse trees and stands of *Mitragymna innermis* forming small islands around temporary waterholes; and *Acacia seyal* tree savanna on black clay soils which are saturated with water in the rainy season.

As with vegetation, climate of northern Cameroon is semi-arid, with a dry season extending from October to May. Rainfall is irregular, with an annual mean of 700mm. The mean annual temperature is 28°C. December is the coolest month, with a mean monthly minimum temperature of 16°C and a mean monthly maximum temperature of 33°C. April, just before the first rains, has a mean monthly minimum temperature of 21°C and a mean monthly maximum temperature of 45°C.

METHODOLOGY

Training of the crew

Because up to date information on wildlife population in the study area was scanty, the entire area was flown to determine large mammal species occurrence and distribution. The total aerial survey technique standards for the MIKE (monitoring of illegal killing of elephant) programme as detailed in Craig (2004) and as described in Omondi *et al* (2002) and Douglas-Hamilton (1997). This technique aimed to systematically cover the entire surface of the defined census zone and to record every species of animal being counted and its geographical location. Total aerial count relies heavily on the experience of both the pilot and the flight crews (Douglas-Hamilton *et al.*, 1994). Therefore one day training was undertaken for both the Front Seat Observers (FSO); Rear Seat Observers (RSO) and students & staff of Garoua wildlife college Cameroon.

Census zone

The census area included the entire Benoue, Faro, Bouba Ndjidda National Parks and adjacent Hunting blocks. The entire ecosystem covered an area of 22,136.68 sq km. The survey area was

divided into 29 discrete counting blocks, all bordered by well-defined features such as roads, rivers, and park boundaries. Each crew was provided with maps for each of the blocks. Flight paths covering each block were selected by pilot and the FSO. The transects were spaced at 3 km interval in national Parks however in the open hunting blocks, the transects were extended to 5 km because of the need to cover all the areas within the available flight hours.

Table 1 - Area of Survey Blocks

BLOCK	AREA KM2
Parc National de la Bénoué	1979.471
Parc National du Bouba Ndjidda	2113.815
Parc National du Faro	3486.231
ZIC 1	389.375
ZIC 2	454.448
ZIC 3	623.966
ZIC 4	380.565
ZIC 5	791.512
ZIC 7	1144.504
ZIC 8	349.867
ZIC 8BIS	46.512
ZIC 9	436.89
ZIC 10	498.125
ZIC 10 - Outside	113.629
ZIC 11	568.135
ZIC 11 - Outside	143.297
ZIC 12	1192.024
ZIC 13	670.937
ZIC 15	411.841
ZIC 16	1251.578
ZIC 17	378.463
ZIC 18	599.207
ZIC 18BIS	756.942
ZIC 20	437.133
ZIC 21	302.054
ZIC 23	741.399
ZIC 24	404.802
ZIC 25	1041.451
ZIC 26	428.508

Data recording

The count employed the Global Positioning System (GPS) technique with ArcView software used for plotting species distribution maps. Two Cessna 206 Stationair six-seater aircraft were used in the count. The aircraft had a GPS for use in navigation and recording survey paths. Some of the animals recorded were elephants (**EL**) both live and dead, Giraffes (**GI**), (**HI**) Hippotrague; (**DA**) Damalisque ; (**LI**)-Lion; (**HY**)- Hyena; (**AU**) Autruche; (Ph) Phacochère; (**CB**) Cobe de Buffon; (**CG**) Cephalophe de Grimm; (**IL**) Illegal Activity and cattle (**C**), sheep

and goats (SH) distribution. **Cattle, goats and sheep (sheats)** herds were recorded as approximate estimates. The aim was to fly parallel lines across each block, to scan the entire surface and to record the accurate position and number of each group of animals.

Dead elephants were recorded in the following categories (Craig, 2004):

- **Carcass 1 (C1):** for **fresh** carcass (less than 1 month old), still has flesh giving the body a rounded appearance. Vultures probably present and ground still moist from body fluids.
- **Carcass 2 (C2):** for **recent carcass (more than 1 month old but less than one year old), the rot patch and skin still present. Skeleton not scattered.**
- **Carcass 3 (C3):** for an **old** carcass (more than a year old), where only a skeleton is present with white bones visible. Vegetation regrown in rot patch.
- **Carcass 4 (C4):** for a **very old** carcass (up to ten years old), where the bones are grey and cracked and widely scattered so the carcass does not stand out as a distinct entity. Difficult to spot from the air.

Each FSO was equipped with a data entry sheet and a flight map. The FSO was responsible for the entry of all data onto these sheets. During the flight the FSO recorded, serially as a GPS waypoint (or time reading), each individual group of each species on the data sheet along with the herd count or estimate and any photographs taken.

A UTM grid were super-imposed on each block map, so that transects could be flown on this grid with the help of GPS. The GPS record the exact flight pattern for the later reconstruction of the exact position of each observation. The GPS were also used to fly in parallel strips or ‘flight lines’, using the GPS to stay on track. In most cases East-West lines were chosen, which has the advantage of equal light for the observers on both sides.

Finalizing Data

All observations made were saved in Garmin GPS as waypoints with the geographical location referenced and were used in producing species distribution maps. The GPS was down loaded onto a computer at the end of each day’s operation and the Front Seat Observer (FSO) and the crew produced a summary table of each block. Any double counts were identified and eliminated during these sessions. The survey crew consisted of 1 FSO, 2 Rear Seat Observers (RSO) and two pilots.

Data Analysis

The densities known as numbers of direct sightings or signs per unit area (km^2) were calculated per block for each animal. Densities were also used for human activities.

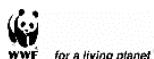
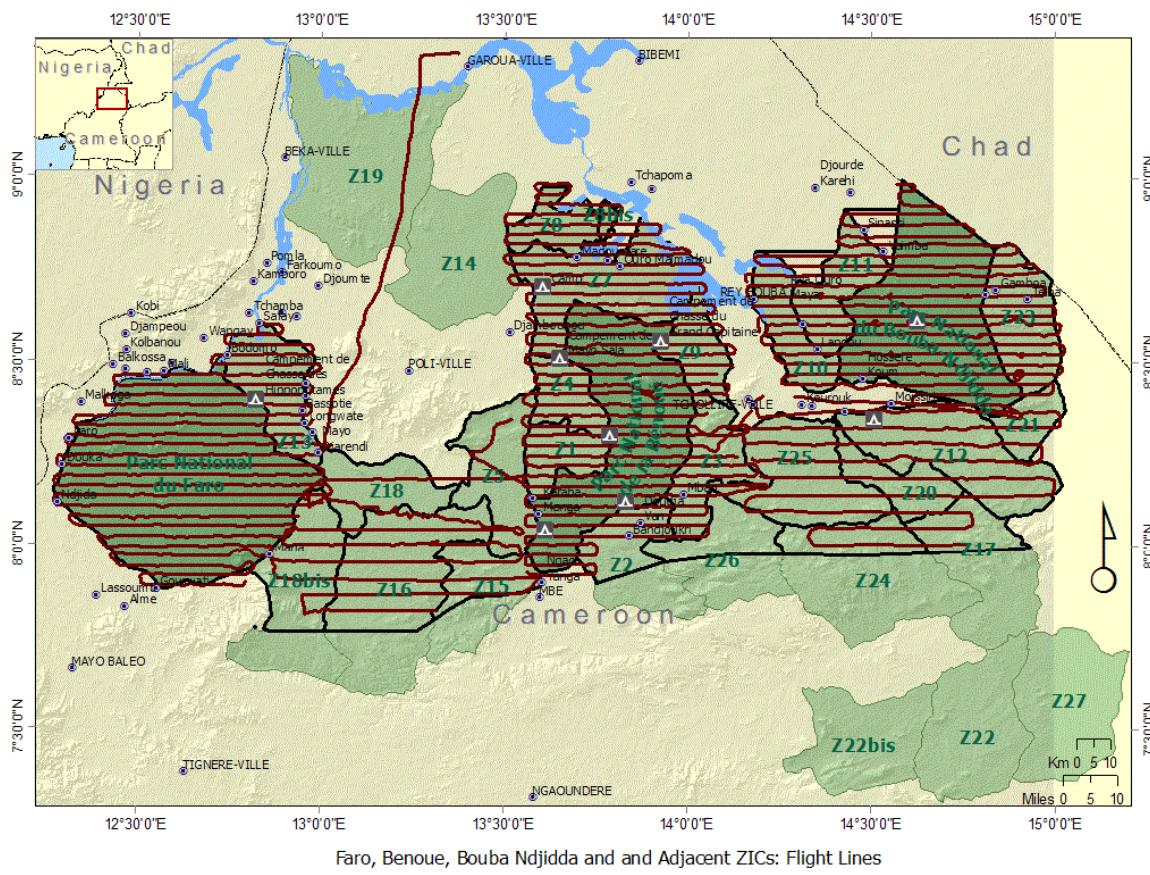
RESULTS

A total of 16 persons drawn from the WWFCCPO, Northern Savannahs Project Garoua; MINFOF National Parks staff; Garoua Wildlife Training College and five private pilots of SIL were successfully trained on the techniques of total aerial count of elephants and were involved in the exercise as either Pilot, Front and Rear Seat Observers. A total of 26 students from Garoua Wildlife Training College were also trained although they did not participate in the survey.



A total of 54.14 hours was flown during the exercise, with a total count time of 42.42hrs; the ferrying time to start count and stop count points to and from the crew base took 6.29 hrs & 5.03 hours respectively. Fig 2 shows the flight patterns of the Cessna aircraft involved in the count and table 2 and 3 provide the flight summary details of the flight logs.

Figure 2 - Flight Patterns Flown



Total Aerial Count of Faro, Benoue, Bouba Ndjida National Parks and Adjacent Hunting Blocks (29th April to 2nd May 2008)

Source: WWF, ESRI/USGS, SRTM-90,
National Geographic Centre, Yaounde

Table 2 - Flight Summary

Date	Block	Take off time	Start Count	End Count	Land time	FSO	RSOL	RSOR	Pilot	Dist. (kms)
29-Apr	Ndjidda	07:50	08:14	11:34	11:44	AG	LB	EM	D	460.9
29-Apr	Ndjidda	06:15	06:40	11:15	11:26	EB	EH	ST	RP	803.3
29-Apr	Ndjidda	15:15	15:25	17:53	18:04	AG	K	B	D	383.4
29-Apr	Benoue	15:15	15:44	17:03	17:23	EB	EH	ST	RP	240.8
30-Apr	Benoue	06:29	06:58	11:36	11:46	AG	LB	K	D	681
30-Apr	Benoue	06:16	06:36	11:20	11:28	EB	EH	ST	FD	733
30-Apr	Benoue	15:37	15:47	17:26	17:36	AG	K	B	RP	274
30-Apr	Benoue	15:40	15:46	17:20	17:32	EB	EH	ST	FD	241.7
01-May	Faro	06:15	07:05	09:52	10:40	EB	ST	A	A	424
01-May	Faro	06:09	06:57	10:20	10:57	AG	EH	LB	RP	530.4
01-May	Faro	15:26	15:56	16:54	17:35	AG	EH	LB	D	153.8
02-May	Z15-Z16	06:05	06:45	10:29	10:56	EB	ST	A	A	625.6
02-May	Faro	06:03	06:43	09:53	10:33	AG	EH	B	RP	636
02-May	Rey-Bouba	15:06	15:11	17:28	17:35	AG	EH	SA	D	383.6
02-May	Rey-Bouba	15:05	15:28	17:34	17:45	EB	A	ST	A	360.9

Table 3 - Flying Time

Block	Take off time	Start Count	End Count	Land time	Ferrying Time - Start	Counting Time	Ferrying Time - End	Total Time
Ndjidda	07:50	08:14	11:34	11:44	00:24	03:20	00:10	03:54
Ndjidda	06:15	06:40	11:15	11:26	00:25	04:35	00:11	05:11
Ndjidda	15:15	15:25	17:53	18:04	00:10	02:28	00:11	02:49
Benoue	15:15	15:44	17:03	17:23	00:29	01:19	00:20	02:08
Benoue	06:29	06:58	11:36	11:46	00:29	04:38	00:10	05:17
Benoue	06:16	06:36	11:20	11:28	00:20	04:44	00:08	05:12
Benoue	15:37	15:47	17:26	17:36	00:10	01:39	00:10	01:59
Benoue	15:40	15:46	17:20	17:32	00:06	01:34	00:12	01:52
Faro	06:15	07:05	09:52	10:40	00:50	02:47	00:48	04:25
Faro	06:09	06:57	10:20	10:57	00:48	03:23	00:37	04:48
Faro	15:26	15:56	16:54	17:35	00:30	00:58	00:41	02:09
Z15-Z16	06:05	06:45	10:29	10:56	00:40	03:44	00:27	04:51
Faro	06:03	06:43	09:53	10:33	00:40	03:10	00:40	04:30
Rey-Bouba	15:06	15:11	17:28	17:35	00:05	02:17	00:07	02:29
Rey-Bouba	15:05	15:28	17:34	17:45	00:23	02:06	00:11	02:40
				Totals	06:29	42:42	05:03	54:14

Population number and density

A total of 27 wildlife species were counted, 50.57% of which was found within the National Parks. Table 3 and the appendixes provides the number and the density of each species counted across census blocks.

Elephants and Carcasses

The count involved 2 aircraft and counted 525 elephants in all blocks. Most of elephants (44.2%) were found in Bouba Ndjidda National Park while 22.67% were found in Block ZIC 23. Other concentrations of elephants were in ZIC 11 (99), ZIC 16 (69) and ZIC 2 (5). During the survey, a total of 11 carcasses were counted. Majority of them (6) were in Bouba Ndjidda. One was recorded in each of the following blocks ZIC 2, ZIC 1, ZIC 10 outside, ZIC12 and ZIC 25. (Figs. 3, 4 and 5)

Figure 3 - Elephant and Carcass distribution in Benoue National park and adjacent hunting blocks

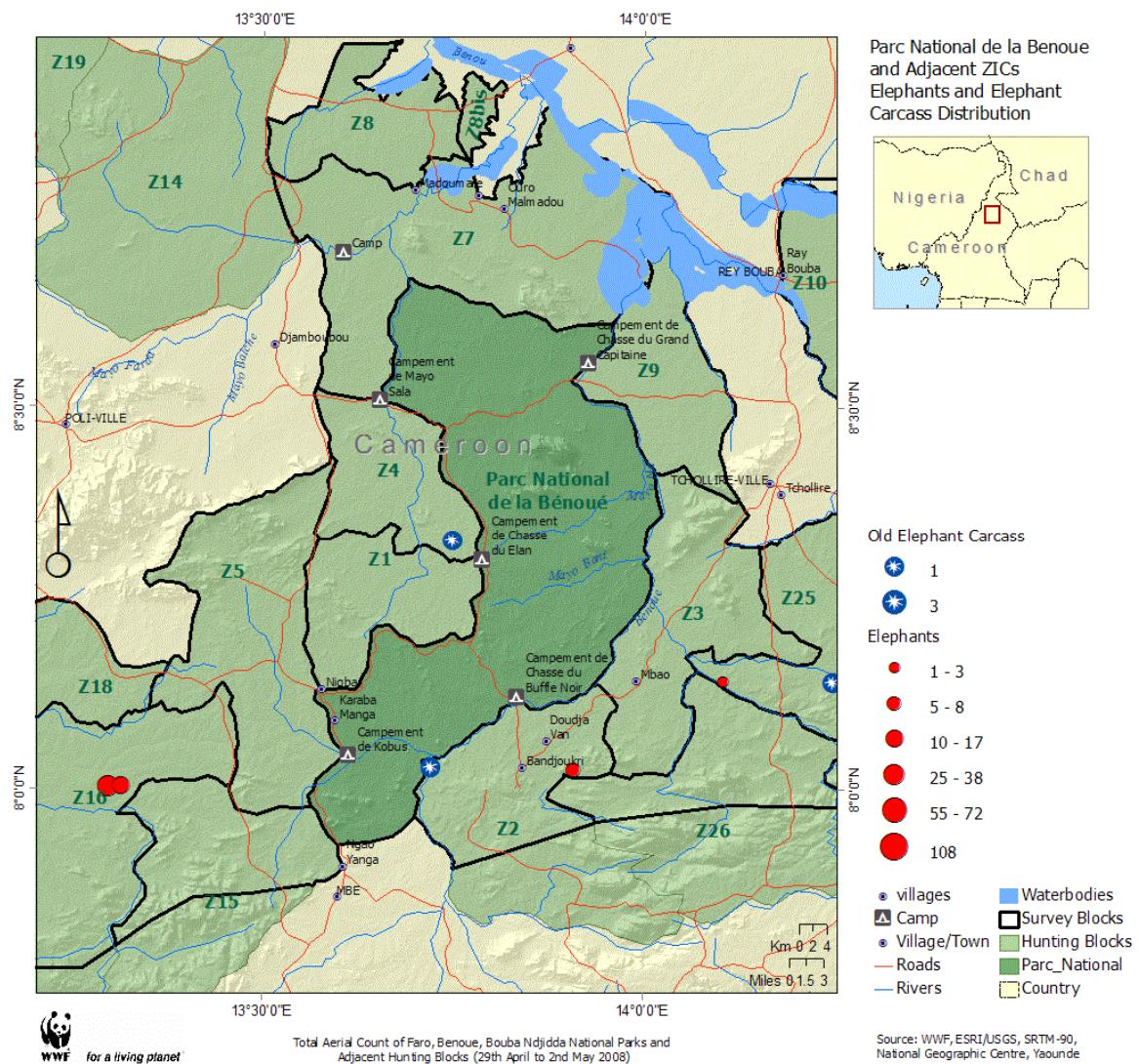


Figure 4 - Elephant and Carcass distribution Faro National Park and adjacent hunting blocks

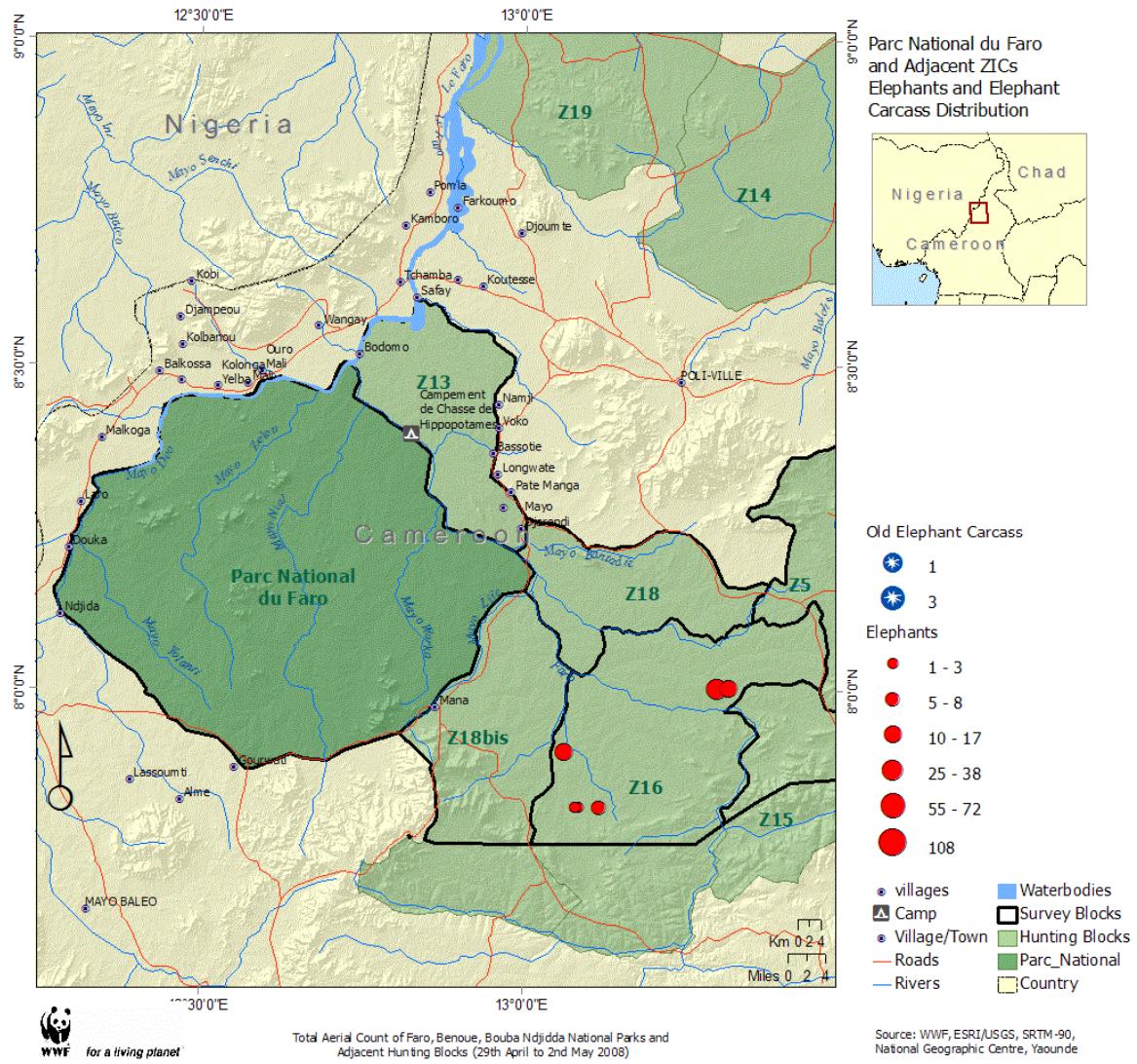
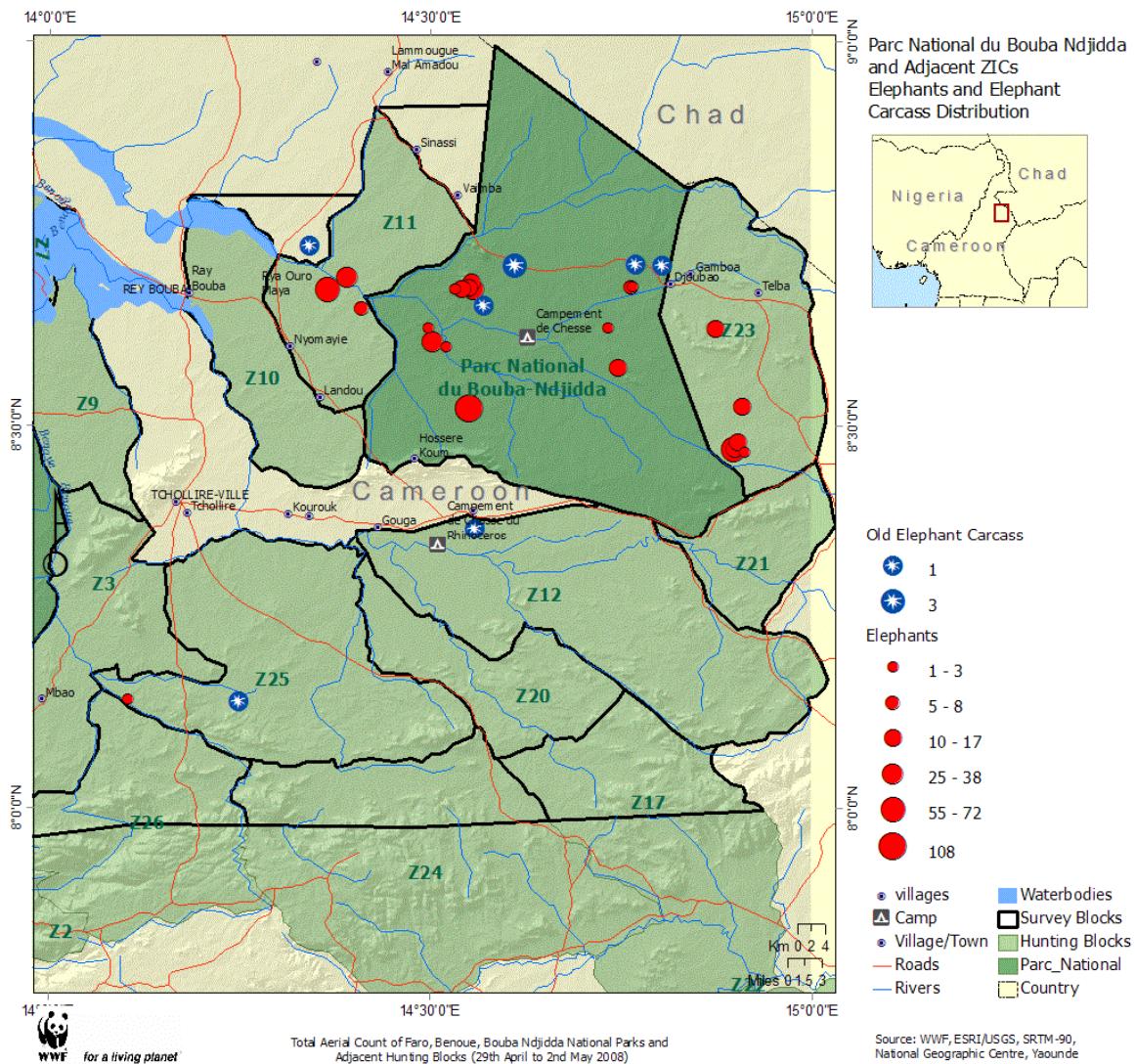


Figure 5 - Elephant and Carcass distribution Bouba Ndjidda National Park and adjacent hunting blocks



Buffaloes and other herbivores

Notable during this count was the high number of buffaloes in Bouba Ndjidda (21.65%) and Benoue (16.9%) national parks. The rest of the buffaloes were in Block ZIC 18Bis. Most of the roan antelope counted during the count were in the national parks (57.56%). The rest were found in the hunting blocks. Settlements were also recorded during the survey and most were in Faro national Park (73.33%). Other species that were recorded in high numbers were the western hartebeests, which had the highest concentration in Bouba Ndjidda National park (27.11% of the total counted or 59.7% of hartebeests within the national parks). Most of the giant eland were in

Bouba Ndjidda (176) and Faro (9). Giraffes were recorded in Benoue (6), Bouba Ndjidda (27) and two each in ZIC 16 and ZIC 23. Only one lion was seen in Faro. (Figs 6, 7 and 8).

Figure 6 - Large Herbivore distribution in Benoue National Park and adjacent Hunting Blocks

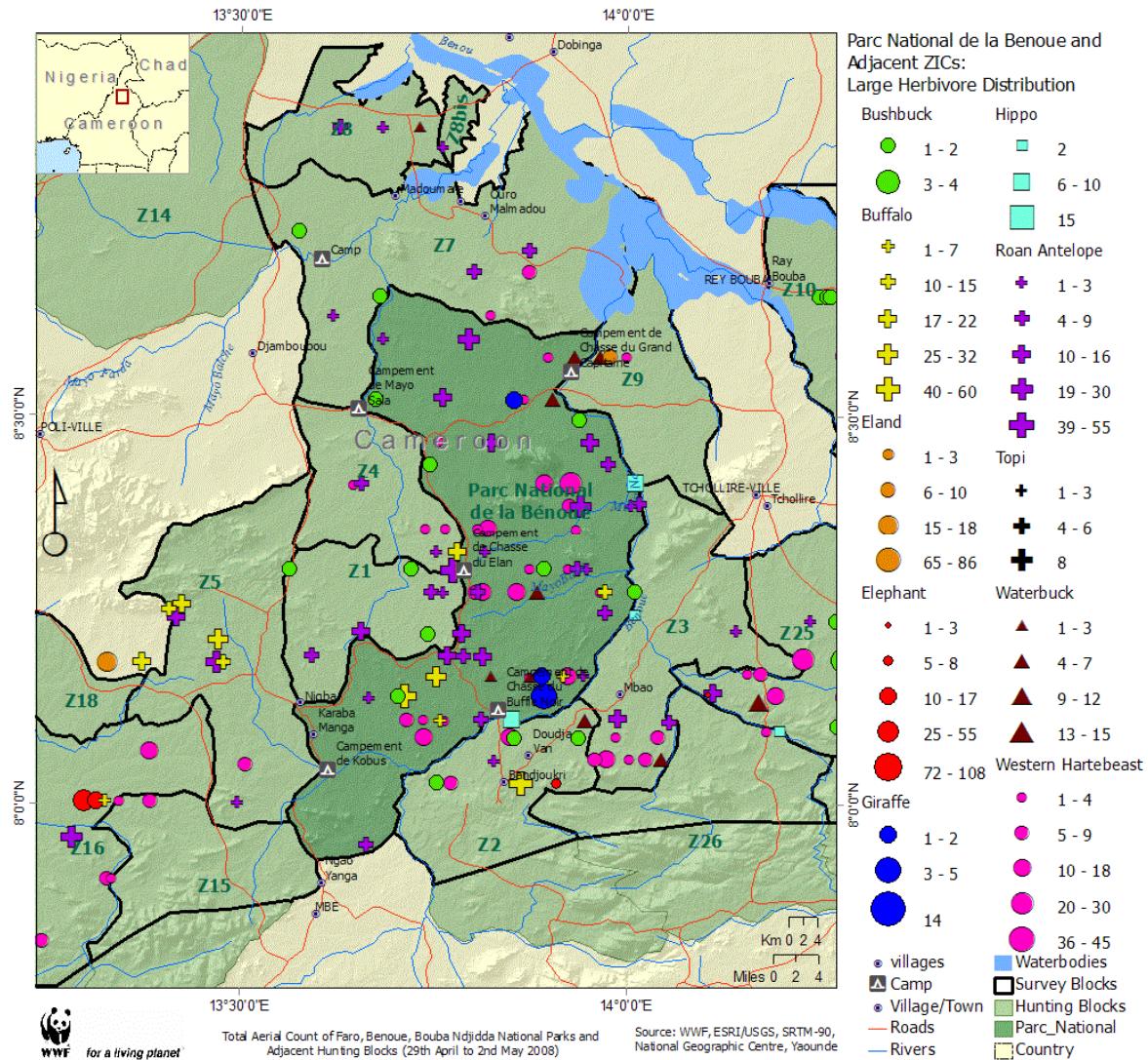


Figure 7 - Large Herbivore distribution in Faro National Park and adjacent Hunting Blocks

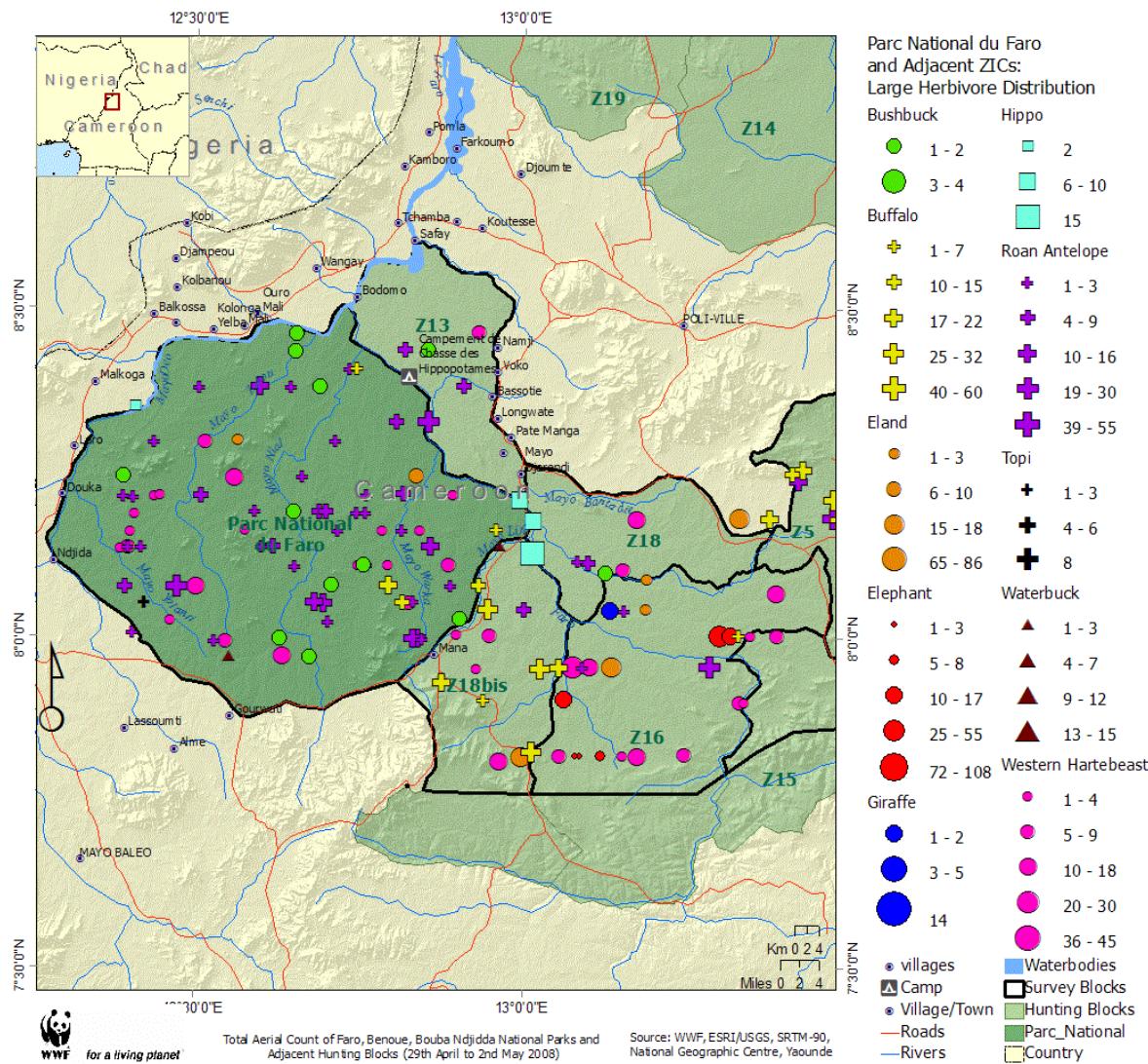
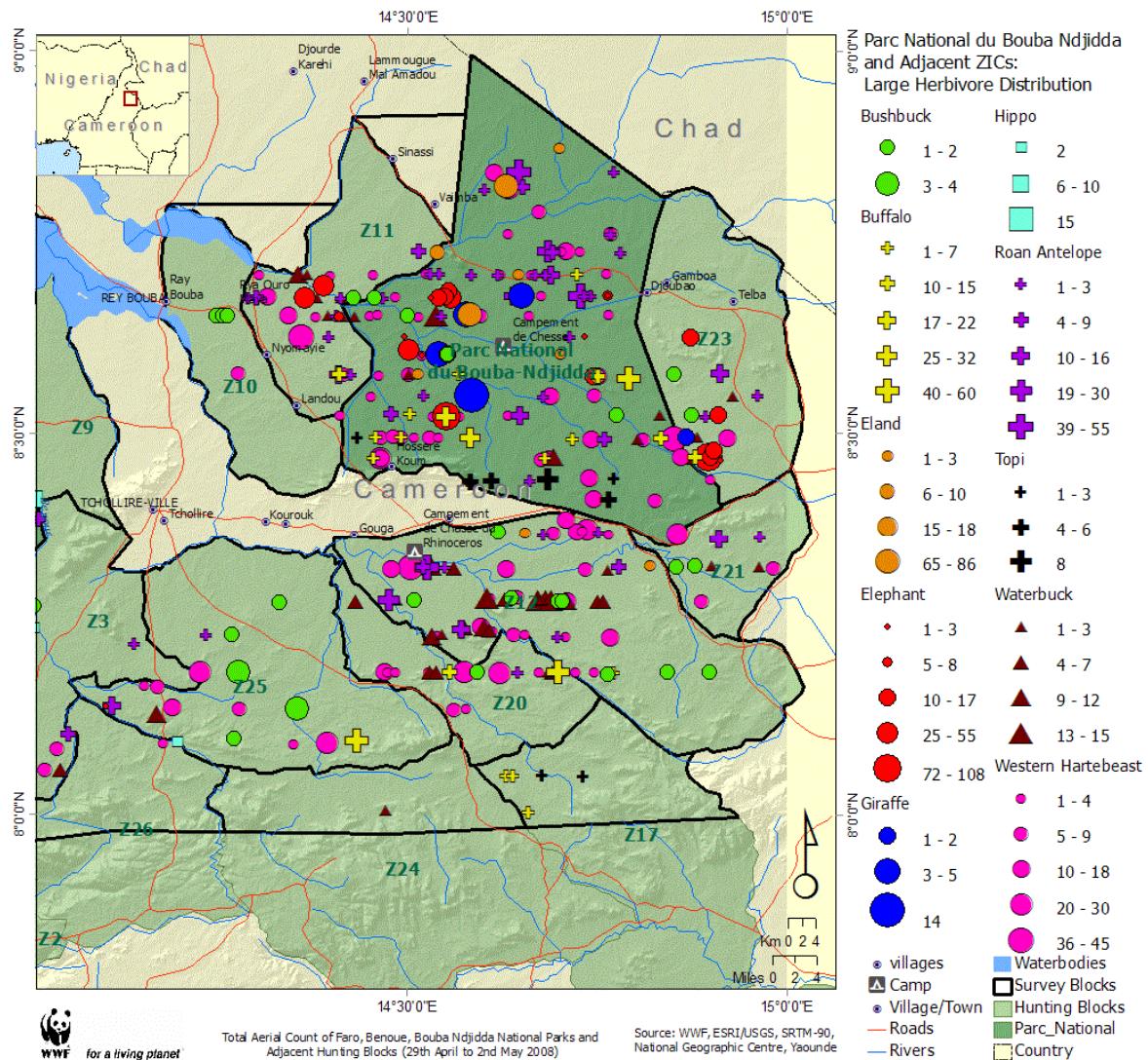


Figure 8 - Large Herbivore distribution in Bouba Ndjidda National Park and adjacent Hunting Blocks



Livestock, Farms and other human Activities

The number of livestock (cattle & shoats) was estimated. High number of livestock was recorded inside the protected areas especially in Faro (53.6% of all livestock within the protected areas). The highest concentration of cattle was however observed in ZIC 7. Shoats though not in big numbers were observed in most of the counting blocks. Cattle invasion and encroachment into the protected area were also recorded (Figs. 9, 10 & 11.)

Farms inside protected area were observed in Benoue (3), Bouba Ndjidda (2) and 10 in Faro. Other illegal activities were also seen in Benoue (7), Bouba Ndjidda (2) and 10 in Faro. The low

number of wildlife in Faro may therefore be attributed to high concentration of farms, livestock and other illegal activities.

Figure 9 - Human activities in Benoue National Park and adjacent Hunting Blocks

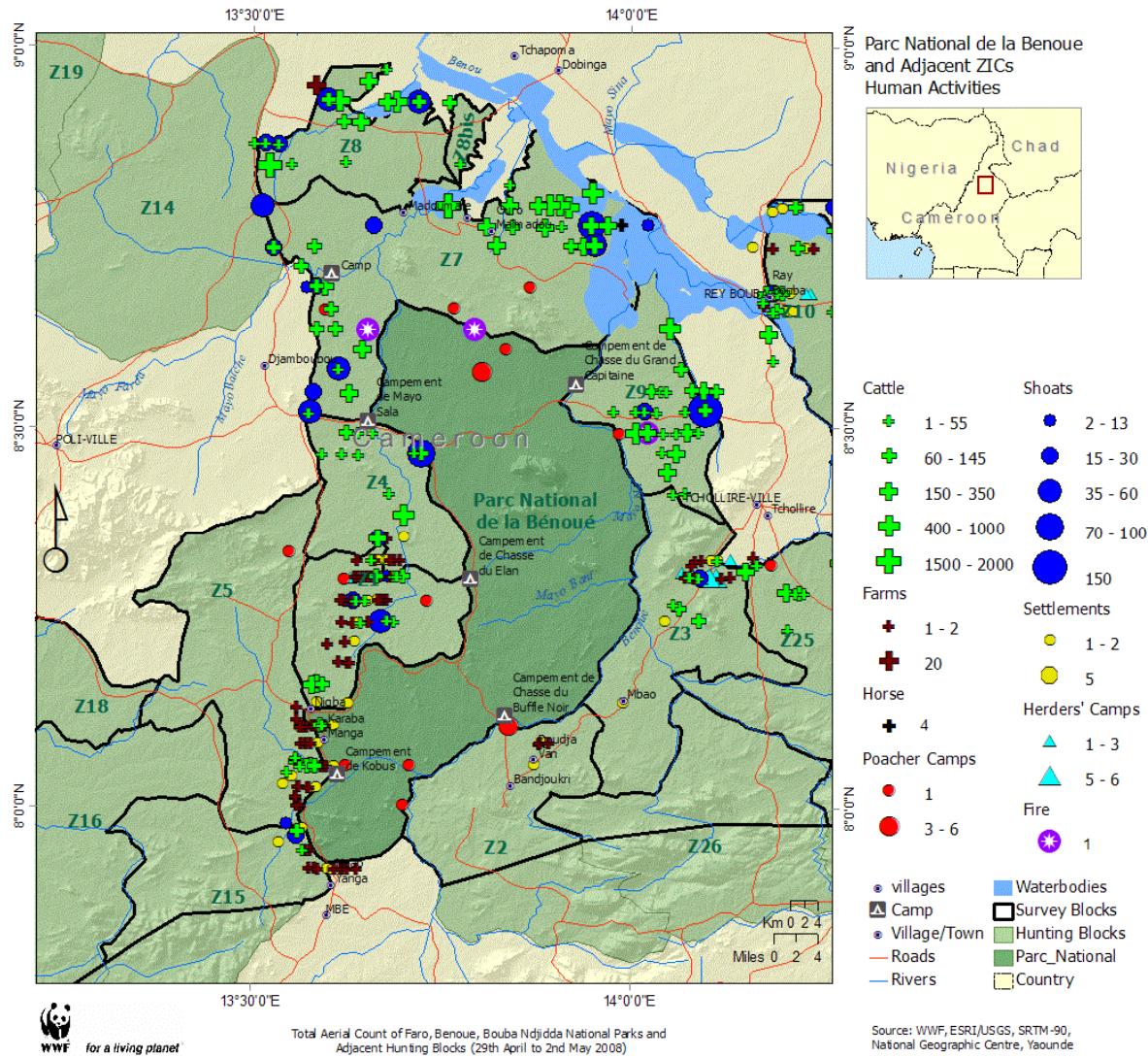
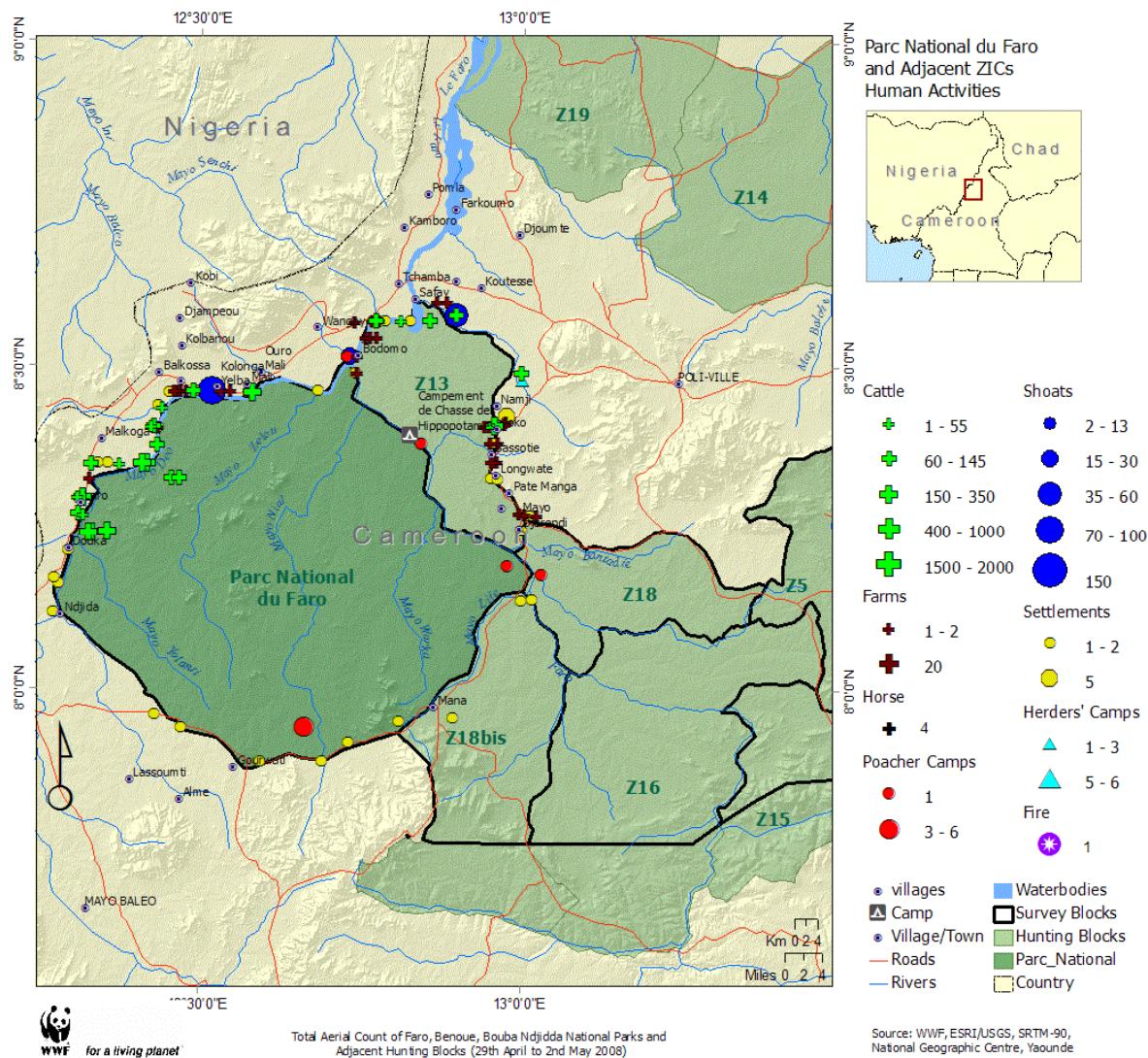


Figure 10 – Human activities in Faro National Park and adjacent Hunting Blocks

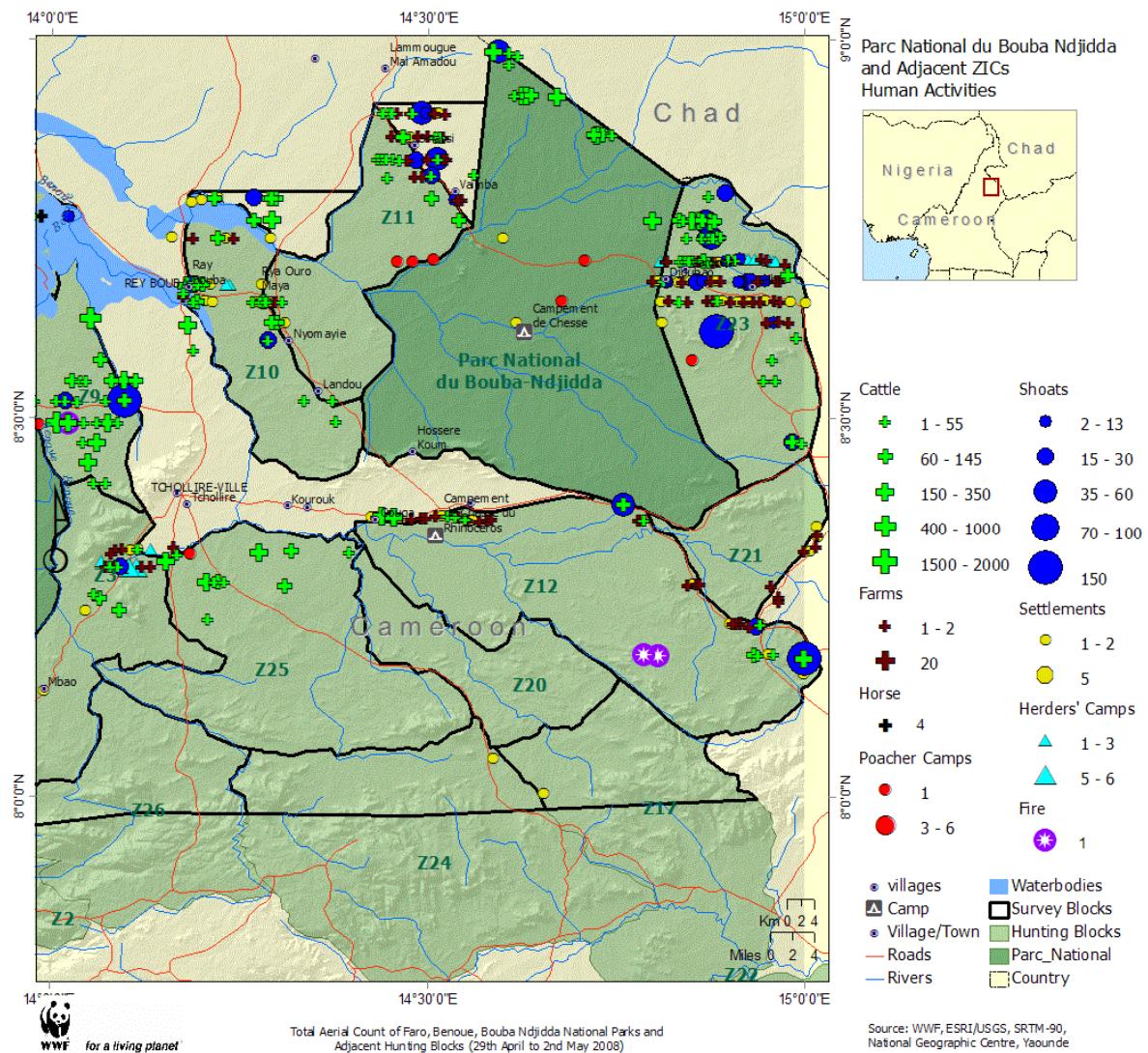


WWF for a living planet

Total Aerial Count of Faro, Benoue, Bouba Ndjida National Parks and
Adjacent Hunting Blocks (29th April to 2nd May 2008)

Source: WWF, ESRI/USGS, SRTM-90,
National Geographic Centre, Yaounde

Figure 11 – Human activities in Bouba Ndjidda National Park and adjacent Hunting Blocks



Plain Game

During the survey, the most encountered plain game (Appendices 5, 6 and 7) was cob de buffon. 36% of them were inside the protected areas with Faro having the highest concentration (19.4%) followed by Benoue which had 9.1% with Bouba Ndjidda having the least (7.9%). The highest concentration outside the parks was in block ZIC 12 (27.7%), and ZIC 13 which had 8.5%. Other common plain game included the ourebi (16.5% in Benoue; 31.2% in Bouba Ndjidda and 9.9% in Faro), Cephalophe de grimm (13% in Benoue; 14.8% in Bouba Ndjidda and 20% in Faro). Overall 57.1% and 48.1% of all the Ourebi and cephalophe de grimm counted were within the parks. Also notable during the count were the high numbers (55.2%) of reduncas within the parks.

Table 4 - All Block Summaries

SPECIES	BLOCK TOTALS																						
	Parc National de la Bénoué	Parc National du Bouba Ndjidda	Parc National du Faro	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 5	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 12	ZIC 13	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS
Bushbuck	7	6	10	2	3	0	0	1	2	0	0	0	3	0	2	0	9	1	0	0	0	1	0
Buffalo	125	160	41	0	45	0	0	76	0	0	0	0	0	0	13	0	5	0	0	1	12	19	134
Baboon	70	48	185	23	5	7	17	7	20	0	0	1	0	0	0	0	3	42	0	43	0	10	2
Old Carcass	0	6	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
Cob de Buffon	115	100	245	0	24	90	1	0	5	0	0	21	0	0	10	0	350	107	0	19	2	30	18
Cephalophe a fl. Roux	10	0	3	2	1	4	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0
Cephalophe de Grimm	18	20	27	4	9	9	2	2	4	0	0	7	1	0	7	1	3	2	3	2	0	1	0
Colobus Monkey	3	4	12	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Cattle	145	1,705	2,259	762	0	272	1,061	497	7,755	3,541	130	2,845	1,424	485	560	166	992	555	110	0	0	0	0
Civet Cat	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Eland	0	176	9	0	0	0	0	0	0	0	0	9	0	0	0	0	6	0	0	24	0	18	15
Elephant	0	232	0	0	5	0	0	0	0	0	0	0	0	0	99	0	0	0	0	69	0	0	0
Farm	3	2	10	27	3	8	4	24	0	20	0	0	3	0	8	12	25	23	11	0	0	0	0
Fire	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0
Giraffe	6	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Ground Hornbill	8	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hippo	17	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Horse	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Illegal Activity	7	2	4	2	6	0	0	1	3	0	0	1	0	0	3	0	0	2	0	0	0	1	0
Lion	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leopard	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vevet Monkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ourebi	87	164	52	11	11	9	13	0	8	2	0	2	2	0	27	0	74	3	0	22	1	2	4
Python	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roan Antelope	202	207	173	83	2	20	5	38	16	7	1	0	0	0	29	0	87	45	0	28	0	9	8
Reedbuck	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Redunca	20	46	6	1	0	4	2	0	2	0	0	3	0	0	19	1	8	0	1	4	0	2	0
Red Duiker	1	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Monkey	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shoats	0	100	100	78	0	25	155	5	290	150	0	180	40	20	40	82	165	70	25	0	0	0	0
Settlements	3	5	22	9	2	5	2	5	0	0	0	0	11	0	2	5	9	15	4	0	1	1	2
Topi	0	28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
Tresspass	0	1	0	2	0	16	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
Waterbuck	24	35	1	0	4	5	0	0	0	2	0	4	0	0	18	0	141	0	0	0	0	0	1
Warthog	29	33	38	0	23	15	3	0	6	0	0	0	0	0	7	0	0	0	0	1	6	0	0
Western Hartebeast	143	352	94	0	15	68	6	5	9	0	0	3	6	0	79	0	209	7	13	86	0	20	23

DISCUSSION AND RECOMMENDATIONS

During the survey, a total of the 525 elephants counted most were in Bouba Ndjidda National Park giving a density of $0.11/\text{km}^2$, while hunting block ZIC 23 had the highest density of $0.16/\text{km}^2$. Taking into consideration the good visibility during the count, this result and that of the rest of herbivores constitute the baseline numbers upon which future surveys should be based. However, future survey planning should take cognizance that the survey adopted a 3-km & 5km spacing in the protected areas and hunting zones respectively. This was due to limited flying hours available for the count. From this baseline information, other studies such as the establishment of movement patterns and population structure should be initiated.

There is also need for improved infrastructure within the protected areas so as to enhance elephant and other wildlife species monitoring. This will enhance their protection from poachers. From field observations incidences of human-elephant conflict may be on the increase because of encroachment. This must be arrested before it becomes a serious problem by encouraging locals leaving near the protected areas to participate actively in elephant management. There is also the need to strengthen the legislative and institutional framework for managing elephants in these National Parks and in the hunting blocks.

As in other Parks of Cameroon, the required conservation programs for elephants and other species should address encroachment, establishing efficient protection systems and stopping illegal killing. The strategy should conform to Regional (West Africa) Programs and should also ensure:

- Adequate park protection and surveillance for the elephants.
- Securing all the buffer zones of Benoue, Faro and Bouba Ndjidda National Parks by promoting compatible land use practices within the dispersal areas. Such an action should develop strategies that would maximise benefits from elephants to the local communities through eco tourism project. A team of Park managers, community opinion leaders should for example visit Kenya where such venture has led to efficient elephant management.
- Recruit, train, equip and motivate anti-poaching and other illegal activities patrol teams to make them efficient.
- Establish village or community game guards to control poaching and other illegal activities

- Establish intelligence networks to combat poaching and investigate the linkage between domestic ivory trade and illegal killing.
- Undertake intensive research into the bio-diversity of the park, to establish the impact of encroachment.

Acknowledgement

We are grateful to FFEM through PDOB for funding the exercise. Special thanks to the programme administrators at the WWF-CARPO office in particular Justine Manetsop for organising the logistics of the Kenyan team to travel to Cameroon for the exercise.

We are also very grateful to WWF staff in Garoua for their support and MINFOF North Delegate, Deputy Director, Staff and students of Garoua Wildlife College for providing training facility & observers for the census. In addition, we appreciate the efforts and dedication shown by the pilots who flew tirelessly to ensure that all blocks were covered within schedule. We also thank all the observers and staff from MINFOF Garoua and Tcholliré for their logistical support on the ground. We thank all the drivers, and other support staff for their dedication. Finally, to all those who participated in anyway and have not been mentioned, we thank you for your contribution to make the count a success.

Reference:

Craig G.C. (2004). *Monitoring the illegal killing of elephants*: Aerial Survey Standard for the MIKE programme, Approved by the MIKE Technical Advisory Group

Douglas-Hamilton, I. (1996). *Counting elephants from the air: total counts.* In: Kangawana, K.F. (ed.), *Studying Elephants*. AWF Technical Handbook Series Vol. 7. pp.28-37. Nairobi: African Wildlife Foundation.

Omondi, P., King J., Bitok .E., & Geddes, C. (2002). Total Aerial Count of Elephants and Buffalo In the Tsavo/Mkomazi Ecosystem. Nairobi: Kenya Wildlife Service/CITES-MIKE Programme

APPENDICES

Appendix 1: Survey results for Parc National de la Bénoué and adjacent Hunting Blocks

Results Table 1 - Elephant and Carcass Block Totals Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS									
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	Totals
Old Carcass	0	0	1	0	1	0	0	0	0	2
Elephant	0	0	5	0	0	0	0	0	0	5

Results Table 2 - Elephant and Carcass Block Densities Park National de la Benoue Adjacent Hunting Blocks

SPECIES	BLOCK DENSITIES									
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	
Old Carcass	0	0	0.0022	0	0.002628	0	0	0	0	0
Elephant	0	0	0.011002	0	0	0	0	0	0	0

Results Table 3 - Large Herbivore Block Totals Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS									
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	Totals
Bushbuck	7	2	3	0	0	2	0	0	0	14
Buffalo	125	0	45	0	0	0	0	0	0	170
Eland	0	0	0	0	0	0	0	0	9	9
Elephant	0	0	5	0	0	0	0	0	0	5
Giraffe	6	0	0	0	0	0	0	0	0	6
Hippo	17	0	0	2	0	0	0	0	0	19
Roan Antelope	202	83	2	20	5	16	7	1	0	336
Topi	0	0	0	0	0	0	0	0	0	0
Waterbuck	24	0	4	5	0	0	2	0	4	39
Western Hartebeast	143	0	15	68	6	9	0	0	3	244

Results Table 4 - Large Herbivore Block Densities Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK DENSITIES								
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9
Bushbuck	0.003536	0.005136	0.006601	0	0	0.001747	0	0	0
Buffalo	0.063148	0	0.099021	0	0	0	0	0	0
Eland	0	0	0	0	0	0	0	0	0.0206
Elephant	0	0	0.011002	0	0	0	0	0	0
Giraffe	0.003031	0	0	0	0	0	0	0	0
Hippo	0.008588	0	0	0.003205	0	0	0	0	0
Roan Antelope	0.102047	0.213162	0.004401	0.032053	0.013138	0.01398	0.020008	0.0215	0
Topi	0	0	0	0	0	0	0	0	0
Waterbuck	0.012124	0	0.008802	0.008013	0	0	0.005716	0	0.009156
Western Hartebeast	0.072242	0	0.033007	0.10898	0.015766	0.007864	0	0	0.006867

Results Table 5 - Plain Game Block Totals Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS									
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	Totals
Cob de Buffon	115	0	24	90	1	5	0	0	21	256
Cephalophe a fl. Roux	10	2	1	4	0	0	0	0	0	17
Cephalophe de Grimm	18	4	9	9	2	4	0	0	7	53
Oribi	87	11	11	9	13	8	2	0	2	143
Reedbuck	2	0	0	0	0	4	0	0	0	6
Redunika	20	1	0	4	2	2	0	0	3	32
Red Duiker	1	0	0	0	1	4	0	0	0	6
Warthog	29	0	23	15	3	6	0	0	0	76

Results Table 6 - Plain Game Block Densities Park National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK DENSITIES								
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9
Cob de Buffon	0.058096	0	0.052811	0.144239	0.002628	0.004369	0	0	0.048067
Cephalophe a fl. Roux	0.005052	0.005136	0.0022	0.006411	0	0	0	0	0
Cephalophe de Grimm	0.009093	0.010273	0.019804	0.014424	0.005255	0.003495	0	0	0.016022
Oribi	0.043951	0.02825	0.024205	0.014424	0.03416	0.00699	0.005716	0	0.004578
Reedbuck	0.00101	0	0	0	0	0.003495	0	0	0
Redunika	0.010104	0.002568	0	0.006411	0.005255	0.001747	0	0	0.006867
Red Duiker	0.000505	0	0	0	0.002628	0.003495	0	0	0
Warthog	0.01465	0	0.050611	0.02404	0.007883	0.005242	0	0	0

Results Table 7 - Human Activities Block Totals Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS									
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9	Totals
Cattle	145	762	0	272	1,061	7,755	3,541	130	2,845	16,511
Farm	3	27	3	8	4	0	20	0	0	65
Fire	1	0	0	0	0	1	0	0	1	3
Horse	0	0	0	0	0	4	0	0	0	4
Illegal Activity	7	2	6	0	0	3	0	0	1	19
Shoats	0	78	0	25	155	290	150	0	180	878
Settlements	3	9	2	5	2	0	0	0	0	21
Tresspass	0	2	0	16	0	0	0	0	0	18

Results Table 8 - Human Activities Block Densities Parc National de la Benoue and Adjacent Hunting Blocks

SPECIES	BLOCK DENSITIES								
	Parc National de la Bénoué	ZIC 1	ZIC 2	ZIC 3	ZIC 4	ZIC 7	ZIC 8	ZIC 8BIS	ZIC 9
Cattle	0.073252	1.956982	0	0.435921	2.78796	6.775861	10.12099	2.794978	6.511937
Farm	0.001516	0.069342	0.006601	0.012821	0.010511	0	0.057165	0	0
Fire	0.000505	0	0	0	0	0.000874	0	0	0.002289
Horse	0	0	0	0	0	0.003495	0	0	0
Illegal Activity	0.003536	0.005136	0.013203	0	0	0.002621	0	0	0.002289
Shoats	0	0.200321	0	0.040066	0.407289	0.253385	0.428734	0	0.412003
Settlements	0.001516	0.023114	0.004401	0.008013	0.005255	0	0	0	0
Tresspass	0	0.005136	0	0.025642	0	0	0	0	0

Appendix 2: Survey Results for Parc National du Faro and adjacent Hunting Blocks

Results Table 9 - Elephant and Carcass Totals and Densities Parc National du Faro and Adjacent Hunting Blocks

Species	Block Totals			Block Densities	
	Parc National du Faro	ZIC 13	Totals	Parc National du Faro	ZIC 13
Old Carcass	0	0	0	0	0
Elephant	0	0	0	0	0

Results Table 10 - Large Herbivores Totals and Densities Parc National du Faro and Adjacent Hunting Blocks

Species	Block Totals			Block Densities	
	Parc National du Faro	ZIC 13	Totals	Parc National du Faro	ZIC 13
Bushbuck	10	1	11	0.002868	0.00149
Buffalo	41	0	41	0.011761	0
Eland	9	0	9	0.002582	0
Elephant	0	0	0	0	0
Giraffe	0	0	0	0	0
Hippo	2	0	2	0.000574	0
Roan Antelope	173	45	218	0.049624	0.06707
Topi	2	0	2	0.000574	0
Waterbuck	1	0	1	0.000287	0
Western Hartebeast	94	7	101	0.026963	0.010433

Results Table 11 - Plain Game Totals and Densities Parc National du Faro and Adjacent Hunting Blocks

Species	Block Totals			Block Densities	
	Parc National du Faro	ZIC 13	Totals	Parc National du Faro	ZIC 13
Cob de Buffon	245	107	352	0.070276	0.159478
Cephalophe a fl. Roux	3	1	4	0.000861	0.00149
Cephalophe de Grimm	27	2	29	0.007745	0.002981
Oribi	52	3	55	0.014916	0.004471
Reedbuck	0	0	0	0	0
Redunca	6	0	6	0.001721	0
Red Duiker	0	0	0	0	0
Warthog	38	0	38	0.0109	0

Results Table 12 - Human Activities Totals and Densities Parc National du Faro and Adjacent Hunting Blocks

Species	Block Totals			Block Densities	
	Parc National du Faro	ZIC 13	Totals	Parc National du Faro	ZIC 13
Cattle	2,259	555	2,814	0.647978	0.827201
Farm	10	23	33	0.002868	0.03428
Fire	0	0	0	0	0
Horse	0	0	0	0	0
Illegal Activity	4	2	6	0.001147	0.002981
Shoats	100	70	170	0.028684	0.104332
Settlements	22	15	37	0.006311	0.022357
Tresspass	0	1	1	0	0.00149

Appendix 3: Survey results for Parc National du Bouba Ndjidda and adjacent Hunting Blocks

Results Table 13 - Elephant and Carcass Totals and Densities Parc National du Bouba Ndjidda and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS							BLOCK DENSITIES						
	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	Totals	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	
Old Carcass	6	0	1	0	0	0	7	0.002838	0	0.008801	0	0	0	
Elephant	232	0	0	99	0	119	450	0.109754	0	0	0.1743	0	0.1605	

Results Table 14 - Large Herbivores Totals and Densities Parc National du Bouba Ndjidda and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS							BLOCK DENSITIES						
	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	Totals	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	
Bushbuck	6	3	0	2	0	3	14	0.002838	0.00602	0	0.00352	0	0.00405	
Buffalo	160	0	0	13	0	13	186	0.075693	0	0	0.022882	0	0.01753	
Eland	176	0	0	0	0	0	176	0.083262	0	0	0	0	0	
Elephant	232	0	0	99	0	119	450	0.109754	0	0	0.174254	0	0.16051	
Giraffe	27	0	0	0	0	2	29	0.012773	0	0	0	0	0.0027	
Hippo	0	0	0	0	0	0	0	0	0	0	0	0	0	
Roan Antelope	207	0	0	29	0	17	253	0.097927	0	0	0.051044	0	0.02293	
Topi	28	0	0	0	0	0	28	0.013246	0	0	0	0	0	
Waterbuck	35	0	0	18	0	8	61	0.016558	0	0	0.031683	0	0.01079	
Western Hartebeast	352	6	0	79	0	12	449	0.166524	0.01205	0	0.139051	0	0.01619	

Results Table 15 - Plain Game Totals and Densities Parc National du Bouba Ndjidda and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS							BLOCK DENSITIES						
	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	Totals	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	
Cob de Buffon	100	0	0	10	0	11	121	0.047308	0	0	0.0176	0	0.0148	
Cephalophe a fl. Roux	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cephalophe de Grimm	20	1	0	7	1	0	29	0.009462	0.002	0	0.01232	0.00698	0	
Oribi	164	2	0	27	0	7	200	0.077585	0.004	0	0.04752	0	0.0094	
Reedbuck	0	0	0	0	0	0	0	0	0	0	0	0	0	
Redunika	46	0	0	19	1	13	79	0.021762	0	0	0.03344	0.00698	0.0175	
Red Duiker	0	0	0	0	0	0	0	0	0	0	0	0	0	
Warthog	33	0	0	7	0	23	63	0.015612	0	0	0.01232	0	0.031	

Results Table 16 – Human Activities Totals and Densities Parc National du Bouba Ndjidda and Adjacent Hunting Blocks

SPECIES	BLOCK TOTALS							BLOCK DENSITIES						
	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	Totals	Parc National du Bouba Ndjidda	ZIC 10	ZIC 10 - Outside	ZIC 11	ZIC 11 - Outside	ZIC 23	
Cattle	1,705	1,424	485	560	166	1,987	6,327	0.806598	2.8587	4.26828	0.9857	1.15843	2.68007	
Farm	2	3	0	8	12	28	53	0.000946	0.006	0	0.0141	0.08374	0.03777	
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	
Horse	0	0	0	0	0	0	0	0	0	0	0	0	0	
Illegal Activity	2	0	0	3	0	1	6	0.000946	0	0	0.0053	0	0.00135	
Shoats	100	40	20	40	82	444	726	0.047308	0.0803	0.17601	0.0704	0.57224	0.59887	
Settlements	5	11	0	2	5	13	36	0.002365	0.0221	0	0.0035	0.03489	0.01753	
Tresspass	1	2	0	0	0	6	9	0.000473	0.004	0	0	0	0.00809	

Appendix 4: Survey results for other Hunting Blocks

Results Table 17 - Elephant and Carcass Totals Other Hunting Blocks

SPECIES	BLOCK TOTALS												Totals
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	
Old Carcass	0	1	0	0	0	0	0	0	0	0	1	0	2
Elephant	0	0	0	69	0	0	0	0	0	0	1	0	70

Results Table 18 - Elephant and Carcass Densities Other Hunting Blocks

SPECIES	BLOCK DENSITIES												
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	
Old Carcass	0	0.00084	0	0	0	0	0	0	0	0	0.001	0	
Elephant	0	0	0	0.0551	0	0	0	0	0	0	0.001	0	

Results Table 19 - Large Herbivore Totals Other Hunting Blocks

SPECIES	BLOCK TOTALS												Totals
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	
Bushbuck	1	9	0	0	0	1	0	1	2	0	11	0	25
Buffalo	76	5	0	1	12	19	134	55	0	0	40	0	342
Eland	0	6	0	24	0	18	15	0	0	0	0	0	63
Elephant	0	0	0	69	0	0	0	0	0	0	1	0	70
Giraffe	0	0	0	2	0	0	0	0	0	0	0	0	2
Hippo	0	0	0	0	0	14	15	0	0	0	0	0	31
Roan Antelope	38	87	0	28	0	9	8	1	17	0	16	0	204
Topi	0	0	0	0	3	0	0	0	0	0	0	0	3
Waterbuck	0	141	0	0	0	0	1	25	4	2	10	0	183
Western Hartebeast	5	209	13	86	0	20	23	72	16	0	58	2	504

Results Table 20 - Large Herbivore Densities Other Hunting Blocks

SPECIES	BLOCK DENSITIES												
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	
Bushbuck	0.00126	0.00755	0	0	0	0.00167	0	0.002	0.0066	0	0.01056	0	
Buffalo	0.09602	0.00419	0	0.0008	0.03171	0.03171	0.17703	0.126	0	0	0.03841	0	
Eland	0	0.00503	0	0.01918	0	0.03004	0.01982	0	0	0	0	0	
Elephant	0	0	0	0.05513	0	0	0	0	0	0	0.00096	0	
Giraffe	0	0	0	0.0016	0	0	0	0	0	0	0	0	
Hippo	0	0	0	0	0	0.02336	0.01982	0	0	0	0	0.0047	
Roan Antelope	0.04801	0.07299	0	0.02237	0	0.01502	0.01057	0.002	0.0563	0	0.01536	0	
Topi	0	0	0	0	0.00793	0	0	0	0	0	0	0	
Waterbuck	0	0.11829	0	0	0	0	0.00132	0.057	0.0132	0.0049	0.0096	0	
Western Hartebeast	0.00632	0.17533	0.032	0.06871	0	0.03338	0.03039	0.165	0.053	0	0.05569	0.0047	

Results Table 21 - Plain Game Totals Other Hunting Blocks

SPECIES	BLOCK TOTALS												
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	Totals
Cob de Buffon	0	350	0	19	2	30	18	40	8	11	21	35	534
Cephalophe a fl. Roux	0	3	0	0	0	0	0	1	1	0	4	0	9
Cephalophe de Grimm	2	3	3	2	0	1	0	2	2	1	7	1	24
Ourebi	0	74	0	22	1	2	4	2	2	1	15	4	127
Reedbuck	0	1	0	0	0	0	0	0	0	0	0	0	1
Redunka	0	8	1	4	0	2	0	0	4	0	2	0	21
Red Duiker	0	0	0	0	0	0	0	0	0	0	0	0	0
Warthog	0	0	0	1	6	0	0	2	8	2	17	0	36

Results Table 22 - Plain Game Densities Other Hunting Blocks

SPECIES	BLOCK DENSITIES											
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26
Cob de Buffon	0	0.29362	0	0.01518	0.00528	0.05007	0.02378	0.09151	0.02649	0.02717	0.02016	0.08168
Cephalophe a fl. Roux	0	0.00252	0	0	0	0	0	0.00229	0.00331	0	0.00384	0
Cephalophe de Grimm	0.00253	0.00252	0.00728	0.0016	0	0.00167	0	0.00458	0.00662	0.00247	0.00672	0.00233
Ourebi	0	0.06208	0	0.01758	0.00264	0.00334	0.00528	0.00458	0.00662	0.00247	0.0144	0.00933
Reedbuck	0	0.00084	0	0	0	0	0	0	0	0	0	0
Redunka	0	0.00671	0.00243	0.0032	0	0.00334	0	0	0.01324	0	0.00192	0
Red Duiker	0	0	0	0	0	0	0	0	0	0	0	0
Warthog	0	0	0	0.0008	0.01585	0	0	0.00458	0.02649	0.00494	0.01632	0

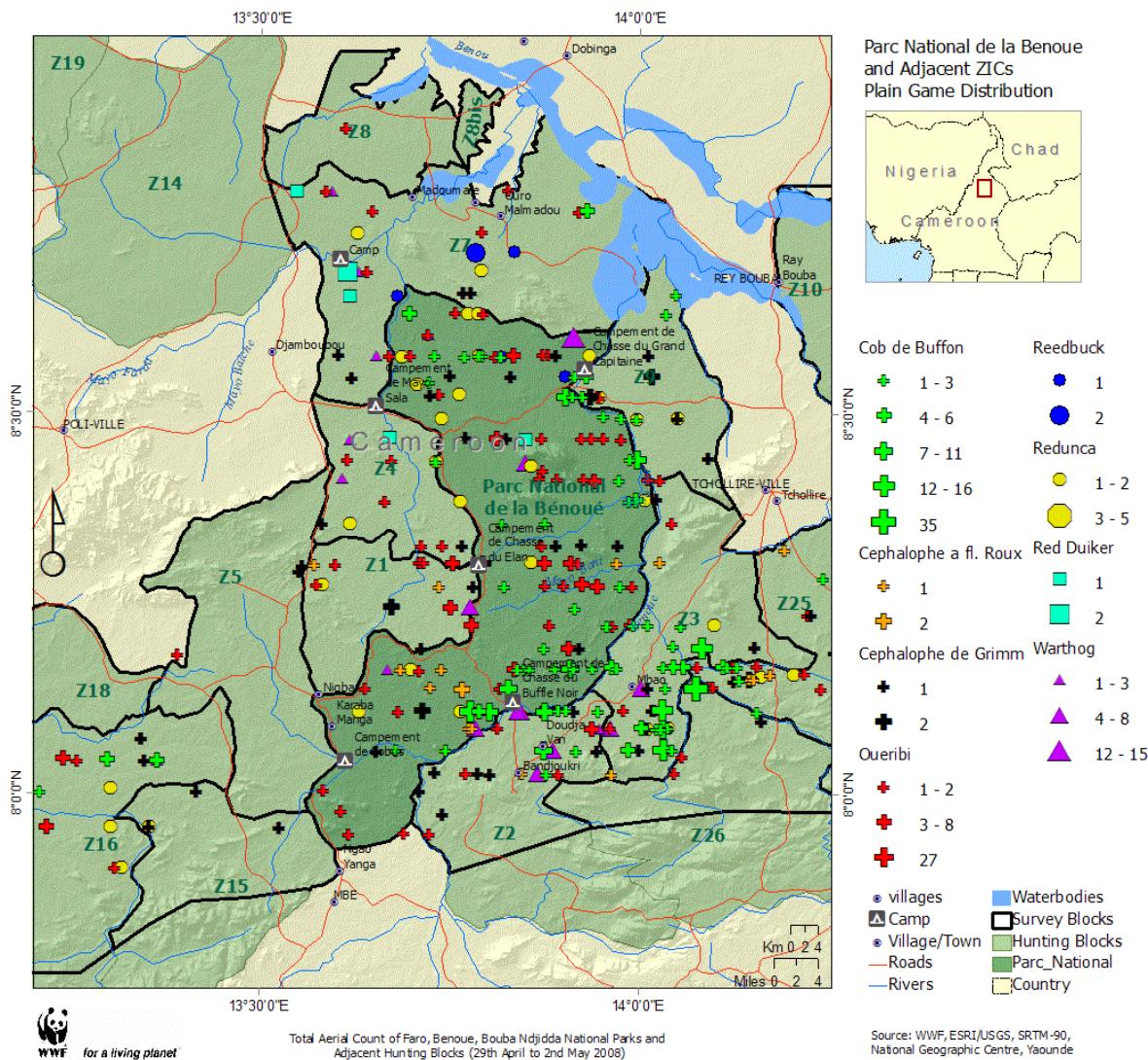
Results Table 23 - Human Activities Totals Other Hunting Blocks

SPECIES	BLOCK TOTALS												
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	Totals
Cattle	497	992	110	0	0	0	0	0	0	0	817	0	2,416
Farm	24	25	11	0	0	0	0	0	7	0	1	0	68
Fire	0	2	0	0	0	0	0	0	0	0	0	0	2
Horse	0	0	0	0	0	0	0	0	0	0	0	0	0
Illegal Activity	1	0	0	0	0	1	0	0	0	0	1	0	3
Shoats	5	165	25	0	0	0	0	0	0	0	0	0	195
Settlements	5	9	4	0	1	1	2	0	3	1	0	0	26
Tresspass	0	0	0	0	0	0	0	0	0	0	0	0	0

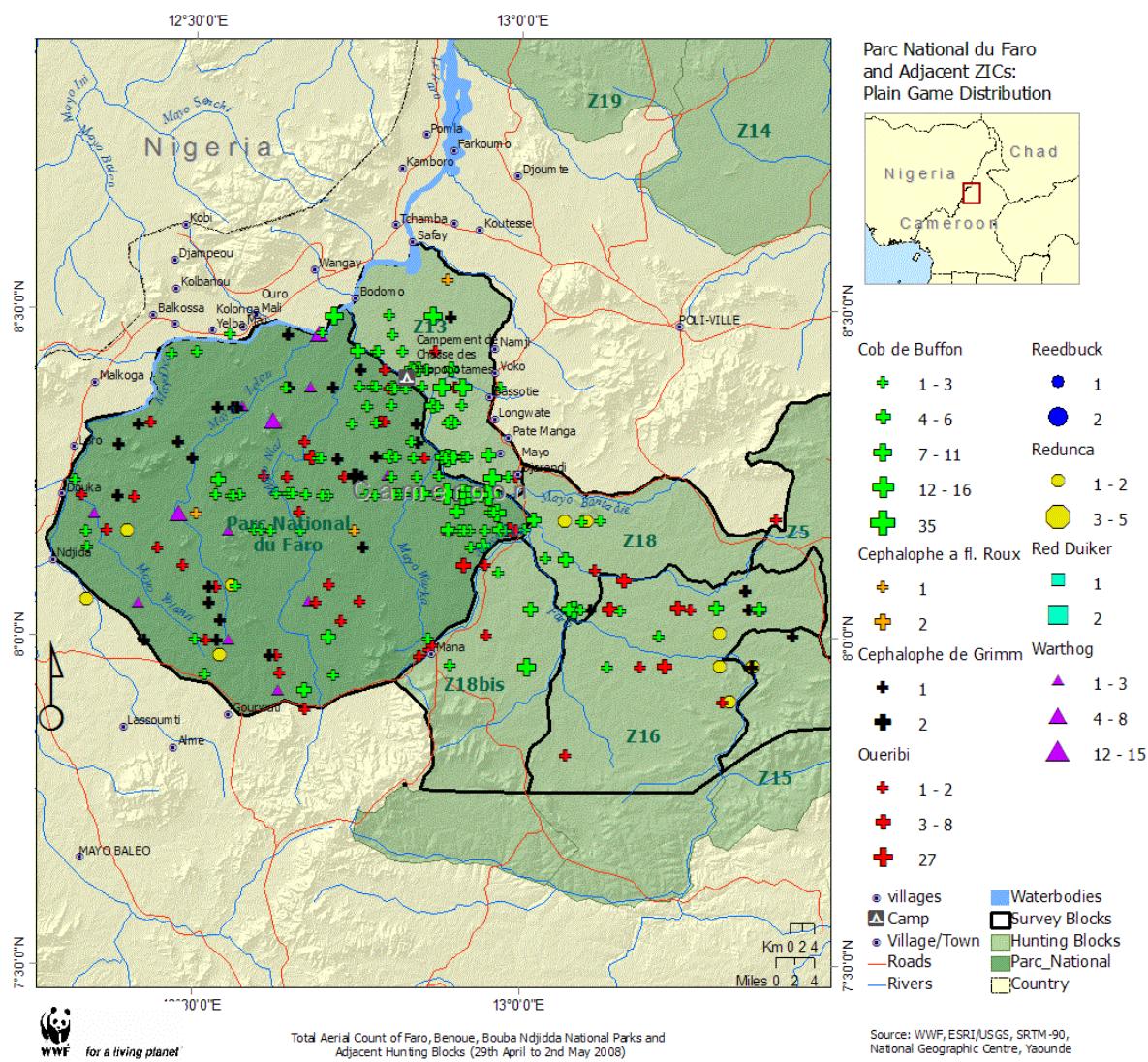
Results Table 24 - Human Activities Densities Other Hunting Blocks

SPECIES	BLOCK DENSITIES												
	ZIC 5	ZIC 12	ZIC 15	ZIC 16	ZIC 17	ZIC 18	ZIC 18BIS	ZIC 20	ZIC 21	ZIC 24	ZIC 25	ZIC 26	
Cattle	0.62791	0.8322	0.26709	0	0	0	0	0	0	0	0	0.7845	0
Farm	0.03032	0.02097	0.02671	0	0	0	0	0	0.02317	0	0.001	0	
Fire	0	0.00168	0	0	0	0	0	0	0	0	0	0	
Horse	0	0	0	0	0	0	0	0	0	0	0	0	
Illegal Activity	0.00126	0	0	0	0	0.0017	0	0	0	0	0.001	0	
Shoats	0.00632	0.13842	0.0607	0	0	0	0	0	0	0	0	0	
Settlements	0.00632	0.00755	0.00971	0	0.00264	0.0017	0.00264	0	0.00993	0.0025	0	0	
Tresspass	0	0	0	0	0	0	0	0	0	0	0	0	

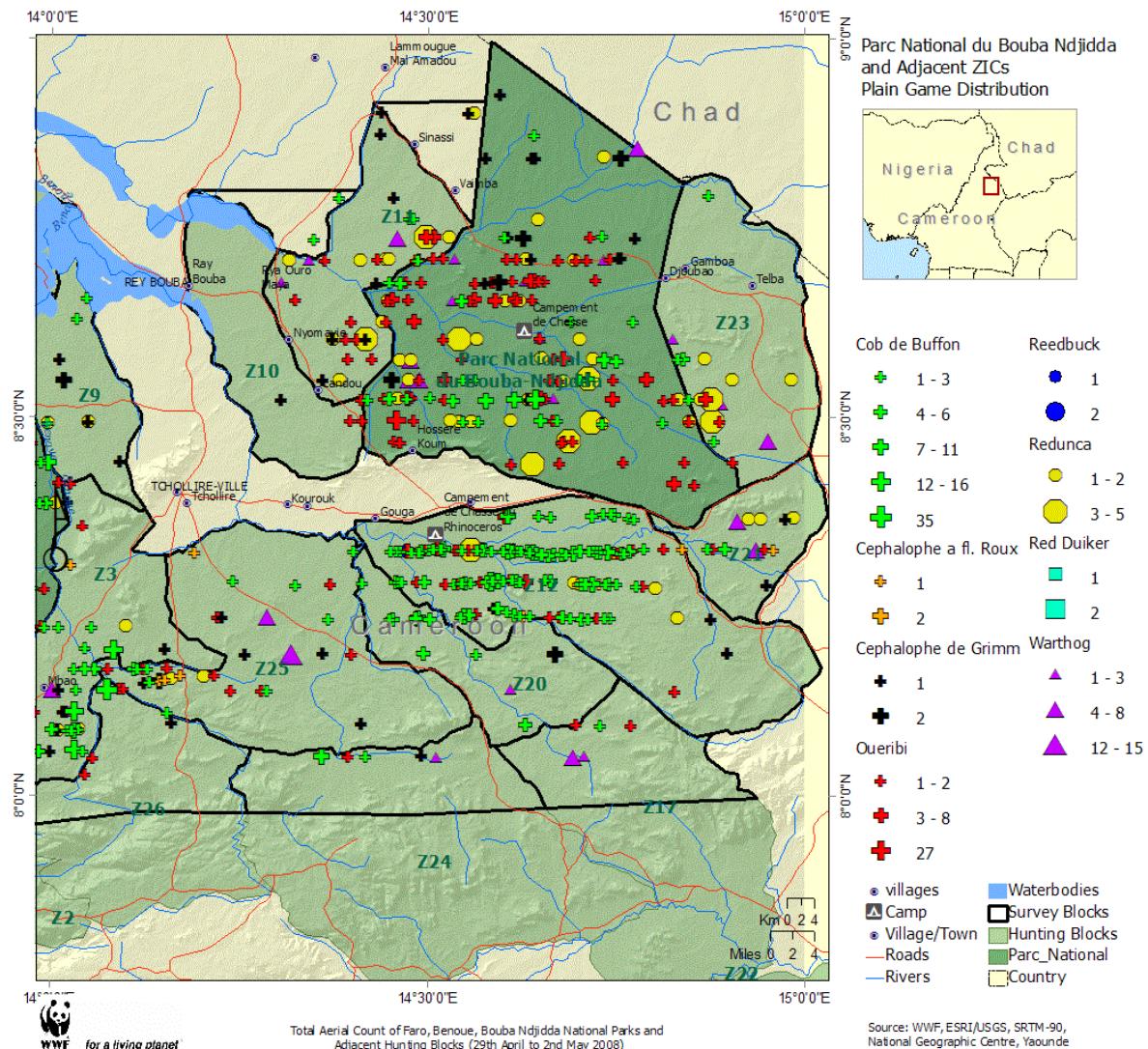
Appendix 5: Plain Game Distribution in Benoue National Park and Adjacent Hunting Blocks



Appendix 6. Plain Game Distribution in Faro National Park and Adjacent Hunting Blocks



Appendix 7. Plain Game Distribution in Bouba Ndjidda National Park and Adjacent Hunting Blocks



Appendix 8: List of Participants

PARTICIPANTS BENOUÉ, FARO AND BOUBA NDJIDDA WILDLIFE CONSERVATION AREAS AERIAL COUNT 29TH APRIL - 2ND MAY 2008

	Name	Institution	Position	Telephone	Address	Email
1	Joseph Ele	Cameroon Radio and Television (CRTV)	TV Reporter	+237 77557631	B.P. 103 Garoua, Cameroon	
2	Etienne Hatungimana	Ecole De Faune	Lecturer	+237 94229300	B.P. 271 Garoua, Cameroon	ehatunga@yahoo.fr
3	Elphas K. Bitok	Kenya Wildlife Service	Research Scientist	+254 721589401	P.o. Box 40241, Nairobi Kenya	ebitok@kws.go.ke
4	Assan Gomse	Ecole De Faune	Assistant Director	+237 74643030		
5	Tiawoun Sylvain	WWF		+237 99618048	B.P. 126, Garoua, Cameroon	tiawountiawoun@yahoo.fr
6	Baiojaja Mickel	DD MINFOF		+237 79780166	B.P. 6 Tchollire, Cameroon	
7	Bene Bene Lambert	WWF	Project Manager	+237 77481642	B.P. 126, Garoua, Cameroon	lbene@wwfcarpo.org
8	Abdoulaye Oumarou	WWF	Driver	+237 75568783	B.P. 126, Garoua, Cameroon	
9	Mekem Anatole Mayo-Rey	DD MINFOF		+237 77603943	B.P. 6 Tchollire, Cameroon	anamuk@yahoo.fr
10	Rose Mayienda	African Wildlife Foundation	GIS Analyst	+254 722151663	P.O. Box 56484, 00200, Nairobi, Kenya	rmayienda@awfke.org
11	Daryl Young	SIL	Pilot	22303948	B.P. 1299, Yaounde, Cameroon	aviation-camereroon@sil.org
12	Dennis Freeland	SIL	Pilot	22303948	B.P. 1299, Yaounde, Cameroon	aviation-camereroon@sil.org
13	Robert Peterson	SIL	Pilot	22303948	B.P. 1299, Yaounde, Cameroon	aviation-camereroon@sil.org
14	David Carman	SIL	Pilot	22303948	B.P. 1299, Yaounde, Cameroon	aviation-camereroon@sil.org
15	Amanda Nelson	SIL	Pilot	22303948	B.P. 1299, Yaounde, Cameroon	aviation-camereroon@sil.org
16	Patrick Omondi	Kenya Wildlife Service	Principle Scientist	+254 722 791718	P.o. Box 40241, Nairobi Kenya	pomondi@kws.go.ke
17	Saleh Adam	Benoué National Park	Conservator	+237 75024037	B.P. 126, Garoua, Cameroon	salehadamwaza@yahoo.fr
18	Kiang Andre	DD MINFOF		+237 99320254 +237 79252754	B.P. 126, Garoua, Cameroon	
19	Bashir	MINFOF	Driver		B.P. 126, Garoua, Cameroon	

Appendix 5: Data Sheets

BENOUE, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	David Carman	Aircraft:	N44344	Take Off Time:	07:50
Front Seat Observer	Assan Gomse	Date:	29/04/2008	Start Count:	08:14
Rear Seat Observer (Left)	Bene Lambert	Block:	Bouba Ndjidda	Stop Count:	11:34
Rear Seat Observer (Right)	Ele Medjo/Amanda Nelson			Landing Time:	11:44

Waypoint	BN	C3	CB	CG	CT	ED	EL	FM	LP	OB	RA	RD	SH	ST	WH	WHB	WP
1							38										
2						200											
3													50				
4														1			
5						50											
6						30											
7						50											
8						1											
9						40											
10						250											
11						180											
12						75											
13						200		1									
14													1				
15						1											
16								1									
17													1				
18								1									
19													1				
20													4				
21													36				
22						2											
23								1									
24								1									
25						2											
26						13											
27						2											
28						1											
29						1											
30								1									
31								1									
32						80											
33													1				
34								1									
35								1									
36						2											
37						2											
38								1									
39															1		
40															1		
41					1												
42	6																
43							1										
44						75											
45						150											
46						100											
47						40											
48						15											
49															1		
50														7			
51													1				
52						2											
53															1		
54													1				
55													45				
56						1											
57						1											
58															15		
59						1											
60													1				
61													1				

62		20					
63						35	
64			1				
65						1	
66						20	
67			1				
68			1				
69		16					
70		20					
71		1					
72		4					
73		35					
74		12					
75		40					
76			1				
77			1				
78		35				20	
79		45					
80					1		
81						25	
82			86				
83	22						
84					9		
85						15	
86		2	40				
87							6
88				1			
89				1			
90						1	
91						7	
92			100				
93		1					
94							
95			110				
96			75				
97			100				
98						20	
99							1
100							
101			100				
102							1
103							1
104			130				
105			200				
106		3					
107		2					
108			110				
109	5						
110							3
111						1	
112			0				
113					2		7
114			150				
115			0				
116			100				
117			50				
118			200				
119			250				
120			100				
121						50	
122			300				
123			75				
124			40				
125			70				
126			13				
127						60	
128			20				
129						30	

130		50						
131		50						
132		15						
133			1					
134				1				
135		1						
136		1						
137								4
138				1				
139								15
140								2
141					4			
142					20			
143		2						
144		1						
145		1						
146							2	
147			10					
148						1		
149					5			
150					5			
151					3	5		
152								4
153		2						
154		1						
155							1	
156				1				
157							1	
158			75					
159				1				
160							1	

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Robert Peterson	Aircraft:	N123TM	Take Off Time:	06:16
Front Seat Observer	Elphas Bitok	Date:	29/04/2008	Start Count:	06:40
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Bouba Ndjidda	Stop Count:	11:15
Rear Seat Observer (Right)	Tiawou Sylvain			Landing Time:	11:26

Way point	BB	BF	BN	CB	CG	CL	CT	ED	EL	GF	IL	NIL	OB	RA	RD	SH	TP	WB	WH	WHD
1							100									50				
2																				17
3																				15
4																				5
5													4							5
6													1							
7													2							
8																				3
9													2							
10																				2
11													2							
12																				10
13																				8
14													1							
15															1					
16															4					
17													1				6			
18																	4	1		
19		3											2							
20													1							
21													2							
22																				21
23			1																	
24																				10
25													1							5
26		4											2							6
27															3					7
28													1				10			
29																				11
30		13	2														4			
31										72										
32										11										
33										10										
34										2										
35																				5
36																				
37							80									20				
38							10													12
39																				
40													1							
41																	3			
42															4					
43									2											
44										0										36
45										1			1							
46		14																		
47			3																	5
48																	3			
49													4							
50																				15
51			1	1											1					
52		5													3					
53			1																	
54				6									2							
55																1				
56																				
57		26																		
58				1									2							
59															1					

60		3		2		
61				2		1
62				1		6
63						1
64	6					5
65				1		5
66						6
67	1			27		
68						3
69				1		
70				1		
71		10				
72		1				
73		45				
74		20				
75				2		2
76		1				
77				2		
78		5				
79					1	
80		2		3		
81				1	7	
82	7	2				
83				1		
84		5				1
85	32		108			
86						4
87		10				
88		7		1		
89		1			1	3
90		13				
91				3	12	
92				2		
93						3
94				3		
95	1					
96				2		
97				2		
98					1	2
99		1				
100					2	
101				4		
102	2				4	
103						15
104					2	
105			13			
106					1	
107		35			1	
108		4				
109						1
110					1	
111		4			5	
112					1	6
113		5				4
114		2				
115					1	12
116					1	1
117				2		
118				1		
119			14			
120		3		2		
121		1				
122				5	1	
123				1		6

124									2			6	
125				2									1
126										1			1
127				1									
128													6
129								2					
130		13							12				
131													5
132								2	2				
133										2			3
134										1			5
135											2		8
136				2									
137							2						
138	5												
139										1			
140								1					
141								8					
142										1			
143		8											
144					10								6
145		6									1		10
146		20			10								
147	10												
148	46												
149		2											
150		4											
151	1						1						
152										1			
153								14					
154			55										
155				10									
156										150			
157													3
158				1						1			
159									1				1
160										2			1
161	2					1							
162						4				3			
163					3			2					2
164					26								
165			1							4			
166								2					
167								2					
168			1							2			
169					10						15		

BENOUE, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	David Carman/Amanda Nelson	Aircraft:	N44344	Take Off Time:	15:15
Front Seat Observer	Assan Gomse	Date:	29/04/2008	Start Count:	15:25
Rear Seat Observer (Left)	Andre Kiang	Block:	Bouba Ndjidda	Stop Count:	17:53
Rear Seat Observer (Right)	Badjanga			Landing Time:	18:04

Way point	BB	BF	C1	C2	C3	CB	CG	CT	ED	EL	FM	GF	IL	OB	PY	RA	RD	SH	ST	WB	WBH	WH	WHD	WP
1								45																
2								150																
3																								2
4																								
5																								1
6																								
7																								10
8																								2
9																								1
10																								
11																								
12																								1
13																								1
14																								1
15																								
16																								1
17																								
18								2																
19																								
20																								
21																								2
22																								
23																								2
24																								
25																								1
26																								2
27																								1
28																								
29								3																
30																								2
31																								
32																								2
33																								
34								1																1
35									1															
36																								1
37																								
38																								1
39																								1
40																								10
41																								1
42																								
43																								
44																								
45								1																
46																								1
47																								
48									1															
49									1															
50																								1
51								1																
52																								
53								1																
54																								
55																								
56																								
57																								
58									25															

59		50				
60		15				
61		12				
62		20				
63		25				
64			1			
65		75				
66			1			
67		40				
68			1			
69						1
70					2	
71		2				
72		14				
73						5
74				1		
75				1		
76				1		
77			1			
78			1			
79			1			
80			1			
81			1			
82			1			
83		75				
84			1			
85			1			
86					10	
87			1			
88						1
89					20	
90					25	
91					7	
92					6	
93					5	
94			1			
95						1
96			1			
97					10	
98					15	
99						1
100			1			
101						1
102					7	
103					2	
104		10				
105						1
106			1			
107			1			
108			8			
109					1	
110					1	
111					45	
112				1		
113						1
114				1		
115			3			
116				1		
117					5	
118				4	15	
119				3		
120						1
121					1	
122		2				

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Robert Peterson	Aircraft:	N123TM	Take Off Time:	15:15
Front Seat Observer	Elphas Bitok	Date:	29/04/2008	Start Count:	15:44
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Bouba Ndjidda	Stop Count:	17:03
Rear Seat Observer (Right)	Tiawon Slyvain			Landing Time:	17:23

Waypoint	CT	FM	OB	RA	SH	WB
1	50					
2	150					
3		20				
4	120				50	
5	500					
6	200					
7	600					
8	100				50	
9	80					
10	150					
11	60					
12	40					
13	20				20	
14	10				30	
15		2				
16					5	
17					2	
18						2
19	50					
20				1		
21	10					
22	31					
23	1500					
24	10					

BENOUE, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	David Carman/Amanda Nelson	Aircraft:	N44344	Take Off Time:	06:29
Front Seat Observer	Assan Gomse	Date:	30/04/2008	Start Count:	06:58
Rear Seat Observer (Left)	Lambert Bene	Block:	Benoue	Stop Count:	11:36
Rear Seat Observer (Right)	Andre Kiang			Landing Time:	11:46

Way/ point	BB	BF	BN	C3	CB	CF	CG	CL	CT	EL	FM	GF	HC	HP	IL	MN	NIL	OB	RA	RD	SH	ST	WB	WG	WH	WHD		
1											1																	
2											1																	
3											1																	
4																		0										
5																										1		
6																										1		
7												1																
8												1																
9												1																
10												1																
11												1																
12																			1									
13																			1									
14																				4								
15																			2									
16																		0										
17												1																
18												1																
19												1																
20												50																
21																				25								
22												60																
23																					1							
24																				1								
25												1																
26												1																
27																	1											
28																		1										
29																		0										
30													1															
31												1																
32												1																
33												1																
34												1																
35												1																
36												1																
37												1																
38												1																
39												1																
40												1																
41																					1							
42												1																
43												1																
44												1																
45																				1								
46																												5
47													1															
48													1															
49																				1								
50																												
51																												
52																												4
53																												
54													1															
55																					1							
56														5														
57													1															
58																				1								
59																				1								
60																												5
61																												
62																												
63																												7
64																												3
65																												
66																												
67																												
68																												10

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Dennis Freeland	Aircraft:	N123TM	Take Off Time:	06:16
Front Seat Observer	Eliphas Bitok	Date:	30/04/2008	Start Count:	06:36
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Benoué	Stop Count:	11:20
Rear Seat Observer (Right)	Tiawon Slyvain			Landing Time:	11:28

Way point	BB	BN	CB	CG	CT	CV	ED	FR	GF	HS	IL	OB	RA	RB	RD	RK	SH	WB	WH	WHD	
25					400																
26					1000																
27					500																
28					400																
29					200																
30					150																
31												1									
32					2000																
33																			3		
34												1									
35																	1				
36																		40			
37												1									
38																		25			
39					150																
40					100																
41						1															
42					200																
43					25																
44												1									
45				5																	
46					350													70			
47					150																
48											4										
49																		10			
50					150													50			
51					350																
52					60																
53					300							1									
54																					
55																1					
56					80																
57	1																	20			
59					70																
60					100																
61														2							
62														1							
63												8									
64																		8			
65			20																		
67														7							
68																1					
69													2								
70	1																	2			
71																	2				
72					250																
73					100													15			
74																		10			
75												1									
76					100																
77																		1			
78	1															1					
79					1								1								
80					1																
81																					
82					400																
83					1																

84								
85				1		2		
86							1	
87							2	
88					1			
89	4	1						
90			1					
91						1		
92		100						
93		60						
94		200						
95						1		
96					1			1
97						22		
98					1			
99								15
100		120						
101		1						
102								3
103			9					
104								4
105							1	
106								6
107	20							
108		1						
109					2			
110					2			
111					3			
112	3						1	
113			1			2		
114					3			
115	3							
116	2						2	
117	2							
118	1							
119					2			
120							1	
121						1		
122								1
123		50						40
124		1						
125								20
126	1							
127		150						
128							1	
129	2							
130		1						
131		1						
132						1		
133	1	1						
134		4						
135		2						
136			70					
137			40					
138			20					
139			135					
140			200					
141			145					
142			100					150
143			50					
144			20					
145			50					20
146			25					
147			20					

148							2		1					
149			2											
150		2												
151														
152		8									6			
153														2
154						1								
155		10												
156									11	1				
157								2						
158		1												
159	1													
160											50			
161			20											
162			100											
163			20											
164			50											
165											2			
166	1													
167		3												
168		1												
169							1							
170		3									1			
171			400											
172			200		1									
173			50											
174			1								1			
175			45											
176			170											
177			20											

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	David Carman/Rob Peterson	Aircraft:	N44344	Take Off Time:	15:37
Front Seat Observer	Assan Gomse	Date:	30/04/2008	Start Count:	15:47
Rear Seat Observer (Left)	Andre Kiang	Block:	Benoué	Stop Count:	17:26
Rear Seat Observer (Right)	Badjanga			Landing Time:	17:36

Way point	BB	BF	BN	C3	CB	CF	CG	CP	CT	FM	IL	NIL	OB	RA	RD	SH	ST	TR	WB	WHB
1									75											
2									25											
3	1																			
4													1							
5						1														
6		11																		
7																			1	
8													3							
9			6										3							
10													2							
11																			6	
12													2							
13																			15	
14						1														
15																			10	
16														6						
17																			5	
18								1												
19														1						
20														7						
21								1												
22										1										
23											1									
24											1									
25											1									
26											1									
27											1									
28											1									
29																			1	
30											0									
31																			1	
32									4											
33									15											
34																			15	
35										1										
36										1										
37										1										
38										1										
39																			1	
40													2							
41		17																		
42									1											
43									1											
44	1																			
45								1												
46													1							
47											1								1	
48																			1	
49										1										
50										1										
51										1										
52										1										
53										1										
54																			1	
55									100											
56											1									
57																			1	
58																			13	

BENOUE, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Dennis Freeland				Aircraft:	N123TM		Take Off Time:	15:40					
Front Seat Observer	Elphas Bitok				Date:	30/04/2008		Start Count:	15:46					
Rear Seat Observer (Left)	Etienne Hatungimana				Block:	Benoue		Stop Count:	17:20					
Rear Seat Observer (Right)	Tiawoun Sylvain							Landing Time:	17:32					
Waypoint	BB	BN	CB	CG	CT	HP	OB	RA	RD	RK	RM	SH	WH	WHD
1					300									
2					25									
3							2							
4							2	11						
5							2							
6							2							
7							2							
8											1			
9				1				15						
10							3							
11			1											
12													3	
13				60								80		
14					10									
15										1				
16				5										
17				1								1		
18				15										
19							1							
20							2							
21		1								1				
22	2												4	
23														
24										1				
25							2					1		
27									5					
28		2												
29		10												
30				200										
31			1											
32	1			40										
33				35										
34							1							
35						7	1							
36		2												
37							3							
38							2						25	
39							2						15	
40							1							
41	12													
42				30										
43	5								4					2
44														
45													2	
46							2							
47				500										
48										1				9
49														
50									25					
51		2												
52		5					2							
53									1	1				
54									5					
55				1										

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Rob Peterson/Dennis Freeland	Aircraft:	N123TM	Take Off Time:	06:09	Take Off Time:	15:26
Front Seat Observer	Assan Gomse	Date:	01/05/2008	Start Count:	06:57	Start Count:	15:56
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Faro	Stop Count:	10:20	Stop Count:	16:54
Rear Seat Observer (Right)	Lambert Bene			Landing Time:	10:57	Landing Time:	17:35

Waypoint	BB	BF	BN	CB	CF	CG	CL	COR	CT	ED	FM	HP	IL	LN	MK	OB	OR	RA	SCH	SH	ST	TR	WH	WHD
1												1												
2																								
3														1										
4																								50
5														100										
6														100										
7														15										1
8																								1
9															1									
10														120										
11															1									1
12															1									
13																								1
14																2								
15																1								
16																1								
17															1									
18														1										
19																								
20															1									
21																								1
22																								20
23																								
24																7								
25															7									
26																								1
27																	1							
28															2									
29															10									
30															1									
31															60									
32																								1
33															5									
34																								7
35															10									
36															1									
37																		1						
38															1									
39																								7
40																								1
41															5									
42															1									
43																1								
44															250									
45																								1
46															1									
47																	1							
48																	1							
49																								1
50																								100
51																								1
52																								1
53																								1
54															100									
55																	1							
56																	1							
57																								
58																								
59																		1						

BENOU, FARO, BOUBA NDJIDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Amanda Nelson	Aircraft:	N44344	Take Off Time:	06:15
Front Seat Observer	Elphias Bitok	Date:	01/05/2008	Start Count:	07:05
Rear Seat Observer (Left)	Tiauwun Shyain	Block:	Faro	Stop Count:	09:52
Rear Seat Observer (Right)	Andre Kiang			Landing Time:	10:40

Waypoint	BB	BF	BN	CB	CG	CL	HB	IL	OB	OR	RA	RD	ST	TP	WH	WHD
1													1			
2										1						
3			8													
4													1			
5			4													
6			3													
7														1		
8			4													
9			5										1			
10													1			
11													1			
12			2													
13								3								
14										2						
15			2										1			
16																
17			3													
18													1			
19																
20				6												
21			1													
22					1											
23										2						
24															10	
25	1															
26			6													
27			4													
28									2							
29										2						
30										1						
31			15													
32				2												
33											1					
34											11					
35											10					
36			1													
37				4												
38			1													
39	1							3						3		
40										1						
41															8	
42					1											
43											1					
44									2							
45			6													
46				1												
47			10													
48					1											
49											1					
50															2	
51			20													
52					1											
53			1													
54			3													
55											1					
56									1							
57			5								2					
58																
59															9	
60		15														
61	1									1						
62		1														
63										16						
64									1							
65										15						
66														2		
67				1												
68												2				
69													1			
70		1														
71											2					
72		1														
73			1													
74										5						
75										25						
76															13	
77				1												
78									1							
79												2				
80			1													
81	1									1						
82		18														
83											1					
84		10														

BENOUE, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Rob Peterson	Aircraft:	N123TM	Take Off Time:	06:03
Front Seat Observer	Assan Gomse	Date:	02/05/2008	Start Count:	06:43
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Faro	Stop Count:	09:53
Rear Seat Observer (Right)	Badjanga			Landing Time:	10:33

Waypoint	BB	BF	BN	CB	CF	CG	CL	COR	CT	ED	HP	IL	OB	OR	RA	RD	ST	WB	WH	WHD
1														1						
2														3						
3																			6	
4																				2
5															1					
6	1																			
7																				1
8														1						
9			11																	
10														2						
11										1										
12										1										
13																	1			
14								3												
15					2															
16																			3	
17															2					7
18															2					
19														1						
20															1					
21														6						
22							1													
23		1																		
24														10						
25			3																	
26			5																	
27																	1			
28																1				
29																	1			
30			2																	
31													1							
32			3											4						
33																				
34				2																
35				4																
36		3																		
37			2																	
38			2																	
39			2																	
40			3																	
41			5														1			
42																2			2	
43															2					3
44																				1
45					1															
46														1						
47			3																	
48			3																	
49			2																	
50			2																	
51			3																	
52			15																	1
53																	2			
54			1																	2
55																				2
56																	1			
57														2						
58			2																	
59																	1			

60										1				
61						1								
62											1			
63												1		
64			1											
65												6		
66				1										
67										1				
68	1													
69									1					
70										7				
71										5				
72											1			
73											1			
74			4											
75		1												
76			3											
77			3											
78			9											
79									1					
80								6						
81			16											
82			5											
83			4											
84			11											
85			8											
86			13											
87				1								1		
88														
89			14											
90			3											
91									3					
92			2											
93			4							1				
94			3											
95			2											
96										5				
97			1											
98				1										
99			1											
100			1											
101			1											
102										1				
103			2											
104			2											
105			1											
106			2											
107			3											
108			2											
109			3											
110			1											
111			3											
112			2											
113									7					
114											1			
115											2			
116									1					
117										1				
118										1				
119				1										
120									1					
121											1			
122			2											
123							150							
124							300							
125							200							
126					1									
127	1													
128			4											
129											12			
130									1					
131									1					
132										1				
133									1					
134				2										
135				1										
136											2			
137			2											
138							6							
139			1											
140			1											
141			7											
142			1											
143									1					
144											1			

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Amanda Nelson	Aircraft:	N44344	Take Off Time:	06:05
Front Seat Observer	Elphas Bitok	Date:	02/05/2008	Start Count:	06:45
Rear Seat Observer (Left)	Tiawoun Sylvain	Block:	Z15-Z16	Stop Count:	10:29
Rear Seat Observer (Right)	Andre Kiang			Landing Time:	10:56

Waypoint	BB	BF	BN	CB	CG	CL	CP	CR	CT	ED	EF	EL	GF	HP	IL	OB	RA	RD	SH	ST	WH	WHD
1																						5
2			25																			
3																						10
4																						4
5																						
6																						
7																						
8																						
9																						7
10		30																				
11											15											
12																						12
13																						2
14																						5
15																						2
16																						
17		5																				
18												11										
19		2																				
20		2																				
21		22																				
22			2																			1
23																						1
24			8																			
25		28																				
26		17																				
27																						25
28																			2			
29																						15
30			3								18											
31																			1			
32																			4			
33																			25			
34		6																	1			
35			1																1			
36		1																				
37																			1			
38																			5			
39																			1			
40			3								1											
41																						
42																						9
43																						2
44		6																				
45		1																				
46																			15			
47																			33			
48																			1			
49		1																				
50											1								1			
51																						8
52																						2
53	1																					
54		25																	8			
55																						
56			5																			
57			4																			
58			7																			
59			2																			
60				1																		

61							2		
62							3		
63		3					1		
64				3			4		
65							2		
66									
67		6							
68			1						
69		6							
70								2	
71									1
72				50					
73		2							
74									5
75									15
76			1				2		
77		1							
78				3					
79							3		
80									7
81	1								
82							1		
83								8	
84									1
85		5							
86		3							
87							15		
88		3							
89							8		
90		5							
91							1		
92									1
93		1							
94									1
95		1							
96									13
97				18					
98		10							
99		19							
100							1		
101									25
102		11							
103				1					
104		30							
105								12	
106		15							
107		20							
108		5							

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Dennis Freeland	Aircraft:	N123TM	Take Off Time:	15:06
Front Seat Observer	Assan Gomse	Date:	02/05/2008	Start Count:	15:11
Rear Seat Observer (Left)	Etienne Hatungimana	Block:	Rey-Bouba	Stop Count:	17:28
Rear Seat Observer (Right)	Saleh Adam			Landing Time:	17:35

Waypoint	BB	BN	CB	CF	CG	COR	CT	CV	ED	FM	HC	IL	OB	RA	RB	RD	SH	ST	WB	WH	WHD
1																	1				
2											1										
3								200													
4												1									
5												1									
6								150													
7																	1				
8											1										
9											1										
10											1										
11											1										
12																	1				
13								35													
14								30													
15											1										
16								17													
17											1										
18																	1				
19											1										
20											1										
21											1										
22																3					
23								7													
24	1								1												
25								1													
26								3													
27											3										
28								2													
29																1					
30																			5		
31											1										
32								4												18	
33																				4	
34																					
35								3													
36																				25	
37								3													
38								6													
39																1					
40																			1		
41								2													
42								2													
43											2										
44											2										
45											35		1								
46																				22	
47								7													
48																16				4	
49																	1				
50																		1			
51																1					
52								1										2			
53																			1		
54																				1	
55											1										
56																				1	
57											1										
58																				1	
59											1										

60		
61		
62	1	
63		1
64		
65		4
66	5	
67	1	1
68	3	
69	1	
70	1	
71		3
72		1
73	2	
74		4
75	1	2
76	6	
77		2
78	2	
79	6	
80		2
81		2
82		2
83	10	
84		7
85	5	
86		2
87	5	
88		2
89	1	2
90	1	
91	4	
92	10	
93	1	
94	5	
95	4	
96	6	
97	6	
98	5	
99	6	
100	8	
101	1	
102	5	
103		15
104	2	
105	3	
106	4	3
107	8	
108	1	
109	3	
110	5	
111	5	
112		3
113		2
114	3	
115		1
116		4
117		3
118		2
119		3
120	3	
121		1
122		2
123		9
124		39
125		5
126	10	
127	3	
128	3	
129		2
130		3
131		2
132	2	
133		38
134	3	
135		2
136	4	
137	3	
138		1
139	3	

140					3		
141					1		
142	1						
143	1						
144	1						
145	2			17			
146			1				
147			75				
148			150				
149			1				
150			1		1		
151		1					
152					1		
153			200				
154			150				
155			25				
156			60				
157			20				
158	1						
159			60				
160	1						
161	1						
162					1		
163	2						
164							5
165	4						
166	2						
167	1						
168					19		
169					2		3
170	5						
171	2						
172					2		
173	2						
174					2		
175	2						
176	1						
177	3						
178	5						
179	3						
180					2		
181	6						
182	12						
183					3		
184	1						
185	3						
186	7						
187	2						
188							15
189					2		
190	2						
191	4						
192	1						
193					3		4
194	1						
195							
196	3						4
197	4				1		
198							2
199							15
200							3
201							14
202							13
203						1	
204	1	1					
205	1	5					
206		5					10
207		9					15
208		1					2
209		3					
210		5					
211		2					7
212							5
213		1					
214					1		
215						1	
216				1			
217				1			
218				1			
219				1			
220				1			
221				1			
222		1					
223				1			
224				1			

225			1					
226			1					
227		25						1
228							15	
229			1					
230			1					
231			1					
232			1					
233								1
234		1						
235							1	
236								10
237		2						
238		2						
239					2			
240		3						
241								1
242		5				2		
243						1		
244		1						
245		4						
246					2			
247					2			
248								2
249								6
250		3						
251		1						
252		2						
253		5						
254								2
255							4	
256								1
257		1						
258								12
259								14
260		6						
261			1					
262								7
263						14		
264					1			
265		4						
266		7						
267								3
268		2				2		
269								2
270								9
271		4						
272		9						
273		5						
274		5						
275		1						
276		2						
277								5
278	2							
279		3						
280		2						
281						1		
282		1						
283						1		
284			25					

BENOUÉ, FARO, BOUBA NDJIDDA AND ADJACENT HUNTING BLOCKS TOTAL COUNT 29TH APRIL - 2ND MAY 2008

Pilot:	Amanda Nelson	Aircraft:	N44344	Take Off Time:	15:05
Front Seat Observer	Eliphas Bitck	Date:	02/05/2008	Start Count:	15:28
Rear Seat Observer (Left)	Andre Kiang	Block:	Rey Bouba	Stop Count:	17:34
Rear Seat Observer (Right)	Tiawoun Sylvain			Landing Time:	17:45

Waypoint	BB	BF	BN	C3	CB	CG	CT	FR	HP	OB	RA	SH	ST	TP	WB	WH	WHD
1		6															
2															1		
3																2	
4				1													
5			1														
6					8												
7												1					
8					3												
9						1											
10															2		
11													1				
12		5															
13			1														
14														2			
15															4		
16															2		
17													1				
18												1					
19					2												
20												2					
21			4														
22				4													
23		40															
24						1											
25															26		
26															2		
27	1																
28											2						
29															2		
30					1												
31				3													
32		2															
33													10				
34														12			
35									2								
36			1														
37									2						9		
38			1														
39	3																8
40															1		
41																2	
42																1	
43									1								
44												1					
45					300						150						
46					50												
47											1						
48					50												
49					100												
50	1					1											
51	1																
52									1								
53										1							
54		5															
55	1																
56			3													3	
57															4		
58																	
59		45															
60													5				
61														3			
62															3		
63				2													
64											1						
65															25		
66	1																
67															20		
68				3													
69		10															
70													5				
71														7			
72															1		
73			5														
74															1		
75															2		
76															11		
77									2								
78						1											
79														12			
80	4																
81						1										30	
82																	