The Status of Elephant on the Zambian Bank of the Middle Zambezi Valley

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Introduction

Historically, the elephant population in the Middle Zambezi has been one of the most heavily affected by hunting in Central Africa. Since the 15th century when the Portuguese plundered for ivory, elephants have never fully recovered from the impact of legal and illegal hunting. The impact of hunting for ivory was more prominent during the difficult years of European advance into the interior of Central Africa in the early part of the 19th century. In 1876 alone 18 tonnes of ivory were traded on the Zambezi, representing about 850 elephants. Since the late 19th century, the middle Zambezi Valley has been neglected by successive administrations. As a result of ineffective management, few historical numbers are available. The first record of game estimates for the Middle Zambezi in 1960 suggested a total of 1,000 elephants for the north bank. In May 1970, the first aerial census of wildlife on the north bank was carried out covering a total of 760 km^2 of valley floor (Bell, 1972). The results gave an estimate of 647 elephants.

Between Bells's census and the present time, the Zambezi valley has come under sharp focus of various international and local conservation concerns because of escalating cross-border illegal hunting of rhino and elephant. The current decline of Black rhino and elephant population in Zambia is alarming.

Therefore, the purpose of this study was to determine the current status of the elephant population in the area. Specific objectives were to determine: 1) the abundance and distribution of elephants, and 2) the extent of illegal hunting of elephant, as evidenced by elephant carcasses.

Study Area

The study area is located between the Zambezi/ Kafue confluence in the west and that of the Zambezi/ Chongwe to the east. The floor of the valley varies in altitude from 350 m to 640 m above sea level and the escarpment rises to 1,200 m. above sea level.

The average annual rainfall at Chirubdu is 628 mm. Rainfall usually occurs between November and March. Mean temperatures vary between 6.5 C (July) and 40 C (October). The vegetation is predominantly composed of Acacia/ combretum woodlands, ***Colophospermum mopane*** woodland, mixed scrub and riparian woodland along the Zambezi River. On the alluvial floor-plain. ***Acacia albida*** becomes very common sometimes occurring in pure stands.

Methods

Systematic sampling was used throughout the survey in order to map the distribution of animals and resources.

The survey of Chiawa Game Management Area (GMA), covering elephant and illegal elephant hunting was carried out on the 25th July 1991 for 2 hours 15 minutes. The Lower Zambezi National Park (NP) survey was covered on the next day for about 4 hours. A total of 790 km^2 of the GMA and 580 km^2 of the NP valley floor was covered in this survey.

The survey was done by a crew of four, comprising a pilot, a navigator and two observers on opposite sides of a Cessna 182 aircraft flown at a ground speed of approximately 80 knots (145 km/ h). An average height of 120 m was maintained over the GMA and 92 m for the NP with strip width of 500 m for the former and 250 m for the latter.

The strip maintained by streamers fixed to the wing-struts of the aircraft was determined by geometric calculation.

All observations were made from systematic transects oriented by a north-south direction and spaced at 2.4 km intervals. The recording intervals (or sampling units) were kept at 25 seconds, a long each transect for the GMA and one minute each for the NP area. At the stated survey speed, these intervals translated into distances of 1 km for the GMA and 2.4 km for the NP sampling units. Most transects were flown from the

north bank of the Zambezi or the Kafue to the foot of the escarpment except in the case of a few whose southern boundary was a range of hills in the upper reaches of the Munsenshi river. The extent of illegal elephant hunting was recorded as the numbers of tuskless elephant carcasses observed.

The result of the game transect counts were analysed using the procedure recommended by Caughley (1973) and Kaweche et al. (1987) for the Luangwa Valley elephant survey.

Results

Abundance and Distribution of Elephant

A total of 31 elephants were estimated for Chiawa GMA (Table 1) and 328 elephants for the Lower Zambezi NP (Table 2).

Elephant densities were much higher in the NP than in the GMA at this time of the year (mid dry season). All the elephants observed were within 2-3 km^s of the Zambezi alluvial floodplain. The GMA population concentrated in the area near Nyamangwe river (Figure 1). In the NP, all elephants were recorded between the Chongwe and Chakwenga rivers (Figure 2) save for the one herd of about 70 animals sighted outside the counting strips in the upper Musensenshi Valley.

Illegal Elephant Hunting

Only one elephant carcass with skin and no tusks was seen in the GMA near the confluence of the Munyameshi and the Zambezi but it fell outside the counting strips. A total of 10 elephant carcasses were sighted within the Lower Zambezi NP giving an estimate of 52 carcasses for the whole park suggesting an excessively high illegal offtake. All carcasses sighted in the NP were tuskless skeletons widely scattered on the valley floor.

Discussion

Abundance and Distribution of Elephant

It is likely that the number of elephants especially in the NP is underestimated. For instance, reports from wildlife field officers and safari hunting operators indicate the existence of a large elephant population in the area between the upper Musensenshi and Rufunsa valleys, an area that was only partially covered in the survey. This is the area in which a herd of about 70 elephants was sighted outside the counting strips and during the survey. Elephants are also known to exist in the hilly region above the main perennial rivers such as the Chongwe, Chakwenga, Musangashi and Musensenshi.

A comparison between the last census in 1970 (Bell, 1972) with the present one shows elephant numbers appear to have been depressed to almost half of the 1970 number probably due to illegal hunting and migration to the safer south bank. Elephant, like many other species are attracted to the flood-plain areas on account of year round availability of shade, water and food. ***Acacia albida*** is of particular importance in this regard. It is also possible that the islands on the plains offer some good measure of protection from poachers.

Illegal Elephant Hunting

The current pressure of illegal elephant hunting in the area suggests that the total number cited in the present study is under estimated. This is likely to have happened

Table 1. The abundance of elephant in Chiawa GMA.

Species	Estimated Numbers	Density km^2	Sampling Intensity %	S.E	S.E %	95% C.I
Elephant	31	.04	18	58		36

Table 2. The abundance of elephant in Lower Zambezi NP.

Species	Estimated Numbers	Density km^2	Sampling Intensity %	S.E	S.E %	95% C.I
Elephant	328	.06	18	121	37	242

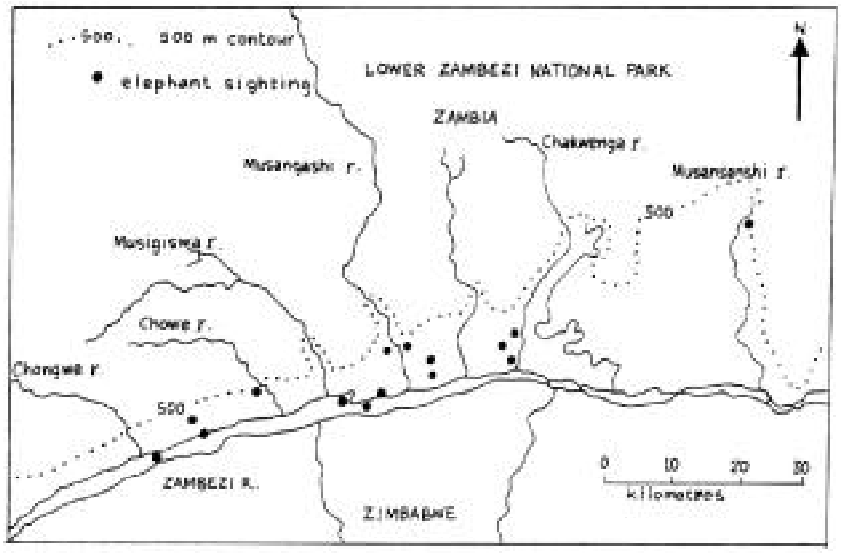

Figure 1: Distribution of elephant in Lower Zambezi NP, 1992

given the problem of locating elephant carcasses from the air. Nevertheless, the carcass to live elephant ratio of (about 13%) is extremely high indicating an excessive high illegal offtake and inadequate policing by wildlife authorities in the area. Under natural conditions the ratio of dead to live animals should be less than 9%.

Recommendations

There is a need to continue monitoring herds of elephant population and other important species of the Lower Zambezi NP and Chiawa GMA as well as the escarpment region of the Middle Zambezi.

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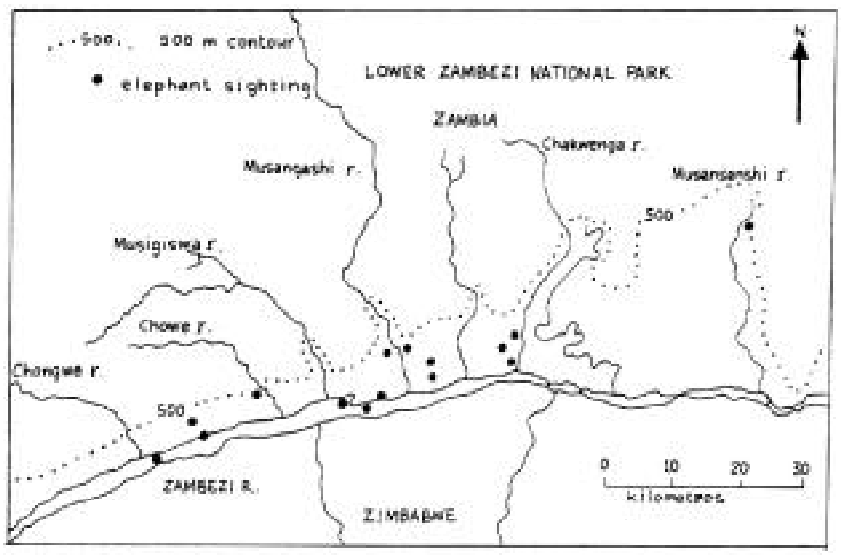

Figure 2: Distribution of elephant in Chiawa, GMA, 1992