

N 13/4/2/1/5.

TOTAL AERIAL CENSUS OF EASTERN BUSHMANLAND:
14/9/1988 - 20/9/1988.

RESPONSIBLE OFFICERS: C. J. H. HINES
J. LAWSON
C. BLOEM
M. LOOTS

REPORT: C. J. H. HINES.

1. INTRODUCTION:

A total aerial census of eastern Bushmanland was undertaken from the 14-20/9/88

There have been 5 previous censuses of game in eastern Bushmanland, the last of these took place in 1984. A number of major developments have taken place in eastern Bushmanland since 1984, and these are likely to have altered the utilization of the area by game. Cattle farming enterprises at waterholes previously utilized exclusively by game, have reduced the accessibility to water by game. Professional hunting of certain species has been practised in the area for the past year. General tourism has increased markedly in the past two years and this may have caused some stress in the population.

2. The purpose of the census was to attempt to census all game species encountered and to fit this information in with (a) the recently completed Hereroland census and (b) to provide real data, ^{on which} to base the allocation of hunting quotas.

2. METHODS

The census being reported on here is not directly comparable to Baytel's (1984) report for a number of reasons. These are,

- different aircraft and number of observers used,
- different transect and census blocks used,
- continuous flying throughout the day
- no areas were re-censused.

The area censused is shown in Fig 1. The western boundary is demarcated by the N-S cutline 15km West of Tsunkwe. The large areas burnt before the census period are also shown in Fig 1. as these are likely to have affected the distribution of game negatively.

A high-wing Maule aircraft with a pilot and 2 observers was used. Census blocks proposed in the 1984 census were not used because of the very long periods given over to ferry-time (more than 12 hours in 1984). The whole census area was divided into a northern and southern section as delimited by the main Grootfontein - Tsunkwe - Botswana border road. All transect data are summarised in TABLE 1. Total flying time came to 34.4 hours including ferrying within the census area. Censusing would start at 0800 and continue till 1130-1200. An afternoon session

from 13h30 - 17h00 was used.

Navigation and transect directions were plotted on 1:150 000 aerial photographs. The 1:250 000 scale maps for the area were found to be totally inadequate for purposes of the census.

Census conditions were optimal for the whole census period. Temperatures ranged between 15 - 25°C, winds were generally light and visibility was good. Vegetation cover was very low, with lateral and vertical visibility being good.

All transect data are summarised in Table 1.

TABLE 1. Summary of Transect Data for census

Transect width	:	:	1000m
Transect direction	:	:	N-S
Transect movement	:	Northern section:	W-E
		Southern section:	E-W
Number of transects	:	Northern section:	66
		Southern section:	66
Average altitude	:	:	100m
Average speed	:	:	150km/h

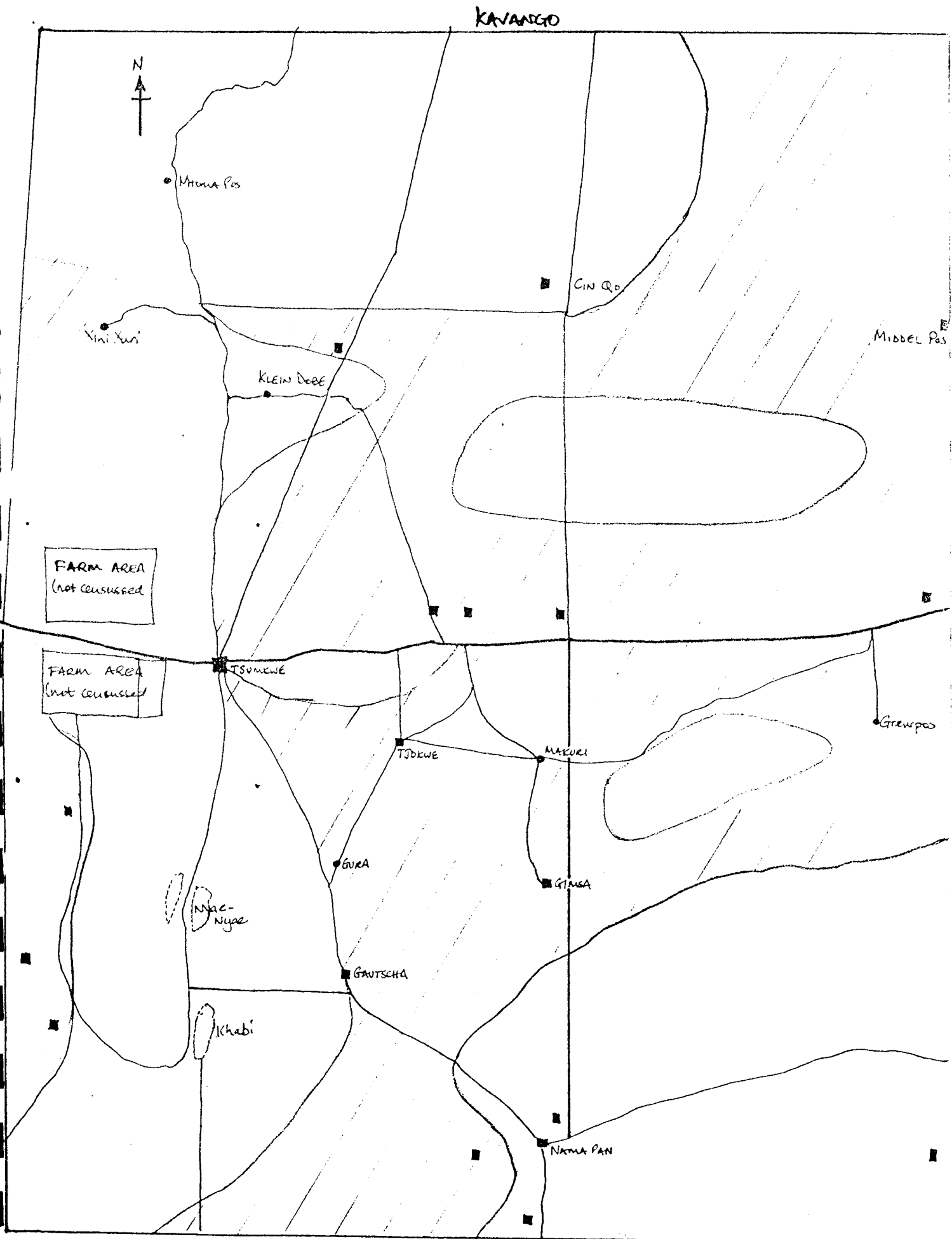


Fig 1. Map showing census area.
 Areas affected by fire = hatched areas
 ■ = settlements
 ● = waterholes

HEREROLAND

3. RESULTS AND DISCUSSION:

3.1. General.

Total numbers for each species, totals for northern and southern sections and totals for 1984 are given in Table 2.

TABLE 2. Census totals for all species counted 14-20/9/88. Totals from 1984 census given for comparison.

SPECIES	NORTH	SOUTH	TOTAL 1984	TOTAL 1988
Elephant	194 (19♂)	207 (58♂)	395 (160♂)	401 (77♂)
Giraffe	190	43	425	233
Roan	21	35	108	56
Kudu	203	122	875	325
Gemsbok	108	90	267	198
Blue Wildebeest	29	30	368	59
Red Hartebeest	8	57	116	65
Eland	8	0	17	8
Buffalo	0	11	40	11
Duiker	5	2	29	7
Steenbok	7	8	70	15
Warthog	0	4	29	4
Wild Dog	0	9	2	9
Bat-Eared Fox	0	3	4	3
Ratel	0	1	0	1
Ostrich	53	94	176	147

The distribution of game within the census blocks is important when analysing the figures given in Table 2.

The most noticeable feature of the census was the general absence of game in the central "pannerfeld" around Keir Dobe - Tsunkwe - Tjokwe - Makuri - Gansa - Grantscha areas (Beyster, 1984, Blocks 6, 7, 8, 9, 11). Low game numbers were also noted in the Naye-Naye pans areas and the western boundary area. This distribution represents a significant change when compared with the 1984 census. During the 1984 census period 42% of the game counted was found in the area described above. During the 1988 census the proportion was considerably lower - c. 20%. Most significant were the low numbers of Elephant and Wildbeest in these areas (discussed in detail under the species accounts).

The large areas of Terminalia sericea scrub north of Keir Dobe, in the north-east and south of the Aha hills had very low game numbers as expected. Game numbers are kept low due to the lack of surface water in these areas, as well as the poor forage quality.

With regard to the census in general,

It was felt that most species were well accounted for. Species such as Kuduu, Roan, Steenbok and Duiker were, however, undercounted due to the fact that they do not move readily, especially during the heat of the day. The significance of the undercount of these species is discussed under the individual species accounts.

3.2. Species accounts.

Elephant:

The total number of Elephant in eastern Bushmanland has not changed significantly during the 4 year period between censuses. There have however been significant shifts in the population structure and general distribution in eastern Bushmanland.

The Elephant population censused can be broken down as follows:

(a) Breeding herds: (Total = 324)

Southern section: 15 individs, young in herd.

28 " " " "

20 " " " "

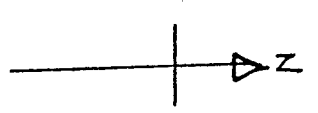
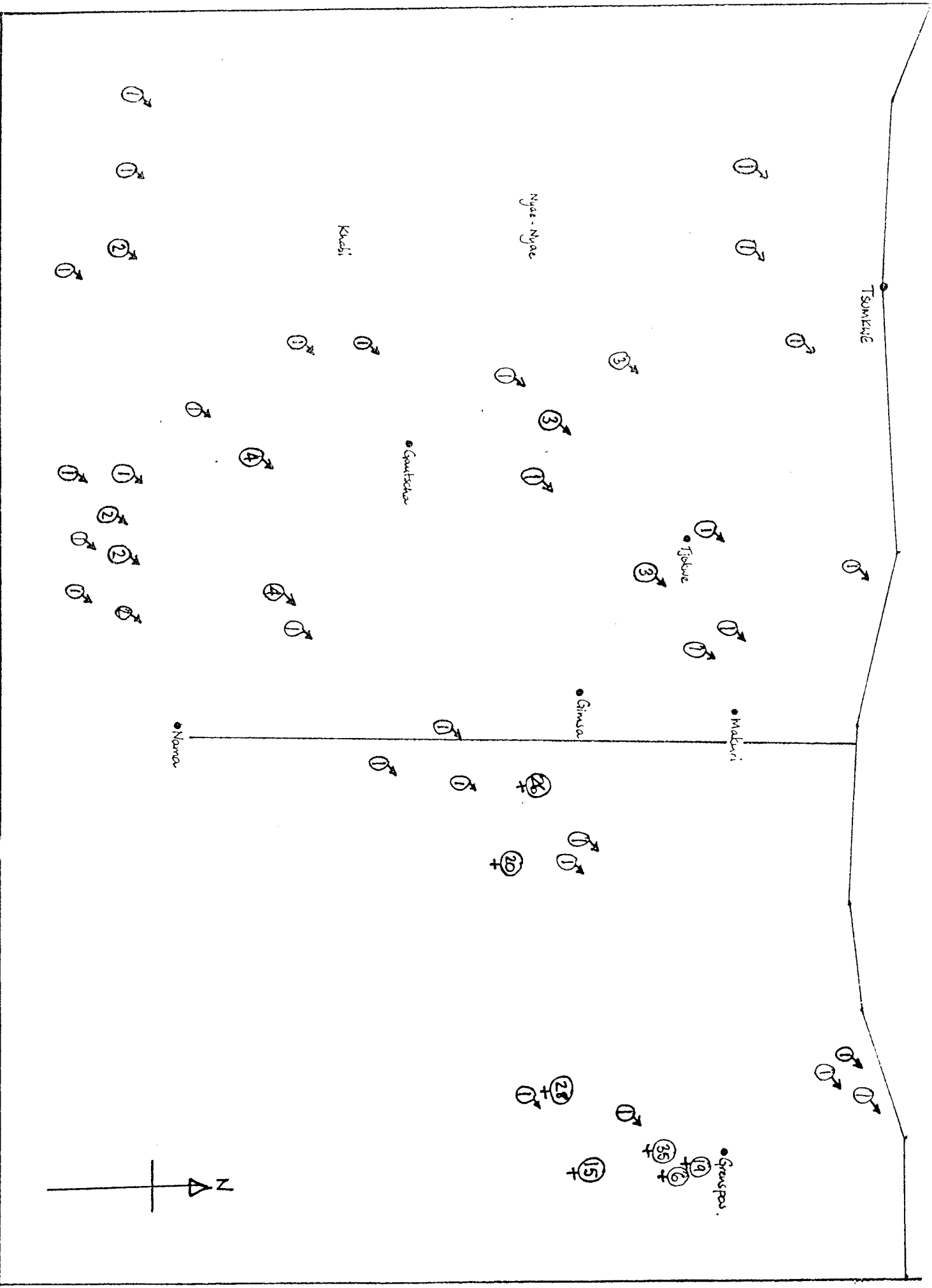
26 " " " "

19 " " " "

6 " " " "

35 " " " "

Fig. 2. Approximate distribution of Elephant in Southern Section of eastern Bushland.



Northern section: 26 individuals, young in herd
 15 " " "
 11 " " "
 28 " " "
 6 " " "
 10 " " "
 27 " " "
 48 " " "

4 individuals, 1 young animal.

b) Bulls (TOTAL = 77)

Southern section: 29 x single individuals
 6 x 2 individuals
 3 x 3 individuals
 2 x 4 individuals

Northern section: 7 x single individuals
 4 x 2 individuals
 1 x 4 individuals.

The distribution of Elephant in the southern section of the census area is given in Fig. 2. Fig. 2. serves to illustrate the relative change in distribution and demography of the Elephant population when compared to the 1984 census. In the 1988 census none of the breeding herds were found west of the Gimsa-Nama N-S cleft, and herds were observed in the Aha hills for the first time. The breeding population, therefore, seems to be highly localised in the vicinity of Gumpod and Gimsa waterholes. Local inhabitants

at Tjokwe and Gantscha indicated that breeding herds seldom visited these waterholes at present. This shift is probably due to the high degree of disturbance in the central areas due to increased settlement by the Bushman Foundation, cattle farming and the high incidence of fire.

The population of bull Elephant (adult) has changed significantly since the 1984 census and this should be taken into account when assigning hunting quotas in the future. Beyl (1984) reports on 126 bull Elephant for the southern section of Bushmanland, largely from the Gantscha - Nama - Naye - Naye area (Blocks 9 & 11). The 1988 census found only 58 bulls in the southern section with a generally random distribution. This represents a 50% decrease in numbers. The reasons for this decrease remain unclear.

The Elephant population of the northern section of the census area is not given in a figure as their distribution is largely limited to the area west of Klein Dobe and Nkhoma Pos. A small herd of 10 animals was seen near Lin Po and another of 3 animals with 1 youngster was seen near the Kavango border in the vicinity of Xawashe. The bull population in the northern section has remained much the same between censuses.

24 individuals - 1984, 19 individuals - 1988.

It is not known how the quota for elephant was arrived at for the 1988 hunting season, except that it was based on the number of bull elephant censused in 1984 (160 individuals, Bejtell 1984). The shift in population structure as described above for the bull elephant population should be taken into account when assigning the hunting quota for the 1989 season. If 10 animals are to be assigned for the 1989 season (as recommended by Theron, 1988), this represents a take-off of 13% of the total bull population (77). This is well above any possible recruitment into the population. If it is the policy of the Directorate to maintain a long term sustainable yield of animals this figure (10) is unacceptable, and it is recommended that hunting quotas should be cut accordingly i.e. to five animals or fewer for the 1989 season. Whether trophy quality can be maintained with high quotas is questionable.

Roan:

Roan antelope were found to be limited in their distribution and their numbers seem to have decreased significantly since 1984. Bejtell (1984) reports on 106 animals censused with an estimated population of 150. Only

56 animals were counted during the 1988 census, a 50% reduction in censused numbers. This substantiates the feeling of both management and research staff that the population has undergone a significant reduction in the past number of years (based on general field observations). This reduction in numbers is probably due to disturbance around the waterholes Tjokwe, Giusa and possibly Gautecha due to cattle farming developments. The total population is estimated at some 70 individuals and it is recommended that no animals be put out on the hunting quota for the area. (2 recommended, Theron 1988)

The structure of the observed population was:

10	individuals	, 6 under 18 months	, nr. Gura
9	individuals	, young at foot	, nr. Gura
4	individuals	, —	, Giusa/Makuri
5	individuals	, —	, nr. Giusa
10	individuals	, young at foot	, nr. Xini Xuri
5	individuals	, young at foot	, nr. Klein Dobe
2	individuals	, —	, nr. Cin Go.
1	single bull	in southern section.	
4	single bulls	in northern section.	

Blue Wildebeest:

The change in the wildebeest population from 1984 to 1988 is significant and alarming. The reduction in a censused population from 368 to 59 must be regarded as real, as this species is easily counted from the air. Even if there was a 100% undercount for the species, the reduction in numbers is significant.

Beyffel (1984) reports on 12 herds with numbers ranging from 8 to 102 individuals, with the majority of animals being seen in the south (Block 9 - 193 individuals or 53% of total) or in the Klein Dobe / Ximi Xuri area (80 individuals or 22% of total). Nowhere were wildebeest observed in these numbers during the 1988 census. The approximate distribution and structure of the observed population is:

- 8 individuals, nr Gura / Gantscha
- 12 individuals, nr Gimsa
- 22 individuals, nr Nenihim.
- 5 individuals, nr Ximi Xuri
- 2 individuals, nr Gimsa
- 2 individuals, nr Naye-Naye.
- 8 individual animals, random distribution.

No large herds as reported in 1984 were seen in the south, and the population

seems to be restricted to the central "pannetjes veld".

This reduction in numbers should be treated as significant and caution should be taken in the allocation of a hunting quota for this species. 10 animals have been proposed for the 1989 season. This is regarded as high for a population obviously on the decrease and a recommendation is made here for no more than 2 animals for the 1989 hunting season.

Buffalo:

Only a small herd of 11 animals was found during the 1988 census, a significant reduction from the 40 seen in 1984. This herd was found well south of Ginisa pan during the census, and again on the ground at Ginisa pan (20/9/88). The group is thought to comprise a single large bull, 3 younger bulls, 6 cows and a single young calf. The population in eastern Bushmanland is known to have been significantly reduced by disease in late 1985 when 9 animals were found dead in the field. The population should be regarded as being severely stressed and their continued survival in eastern Bushmanland is in the balance at present. Whether 11 animals represents

a viable gene pool for a population is not known.

It is recommended that the population be left strictly alone and that no animals are placed on the hunting quota in the near future.

Red Hartebeest:

The Red Hartebeest population in eastern Bushmanland remains small. Although there is a large difference between numbers counted in 1984 (116) and 1988 (65), this is not believed to represent a significant reduction in numbers. Hartebeest were observed in small herds only (4-13) and were largely distributed in the south and west of the census area.

Caution should be applied to the allocation of a hunting quota for this species. As recommended by Theron (1988) only 2 animals should be allocated for the 1989 hunting season.

Kudu:

The Kudu population in eastern Bushmanland remains healthy. Although there is a large difference between census periods (see Table 2)

This is not seen to be significant. The discrepancy is seen to be a function largely of the time of day flying took place. The 1984 census was conducted in the morning only. The 1988 count was conducted during both the morning and afternoon. Kudus are well known for being difficult to census due to their habit of standing and not flushing easily. This is especially pronounced during the heat of the day.

The hunting quota recommended for 1989 (10 animals) is supported by the census figures for 1988.

Gambok:

As with Kudus the discrepancy between census years is not regarded as significant. The population is well distributed throughout the area and is regarded as being in a healthy state. Large herds of up to 36 animals were found during the census.

The hunting quota recommended for 1989 (10 animals) is supported by the census figures for 1988.

Giraffe:

The Giraffe population of eastern Bushmanland is subject to considerable movement and the large discrepancy between census years is seen as a function of this movement. Migrations are known to take place in both a N-S and an E-W direction. Large numbers of Giraffe (7600) were reported in Hereroland north of the Eiseb fence.

The hunting quota recommended for 1989 (10 animals) is supported by the census figures for 1988.

Eland:

Only 8 Eland (7 adults, 1 young calf) were counted during the 1988 census, thus confirming the impression that the population in eastern Bushmanland is small. The large numbers counted in 1978 (155) in the vicinity of the Ana hills and the north-east have not been recorded in eastern Bushmanland since. These large numbers may have been as a result of a number of good rain years, with an increase in forage quality and available water.

It is recommended that no Bands are put on the hunting quota & in the near future.

4. Conclusions.

It is felt that the census conducted from the 14/9/88 - 20/9/88 was accurate and reflected the general trends within the game populations of eastern Bushman land well.

In general game populations seem to be reasonably stable with the exception of the Roan, Wildebeest and Buffalo populations, which have undergone marked declines in recent years. All these species are to some extent water dependant, and the developments in the central "panned" are thought to have been responsible to some degree for the decline in numbers. These populations should be closely monitored during the forthcoming year.

Fires are a definite factor in altering the distribution of game in eastern Bushmanland. These should be discouraged and closer co-operation with the Bushman

Foundation in this regard ~~is~~ is recommended.

It is recommended that the census in eastern Bushmanland takes place on an annual basis during September so that the hunting quotas can be based on some sort of real data. This will complement the figures received from full-moon counts and the grid-based record system being developed for Bushmanland.

5. REFERENCES.

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C. J. H. HINES

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