A brief gerbil trapping survey in an inter-dune valley in the Namib Desert

by
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INTRODUCTION

In July, 1972 a preliminary trapping survey was conducted in a dune valley south of the Kuiseb River and ten kilometres west of Gobabeb, to determine the feasibility of a study of the ecology of *Gerbillus paeba* in the sand dunes of the Namib.

Baited traps gave 100% capture results (until jackals started emptying the traps), and the abundance of tracks in the area implied that the gerbil population in the valley was high. Predation was incidental and did not then appear to be a serious problem. It was concluded that the valley would be a good area for research on these rodents.

This valley, bounded on the NNW and SSE by high dune ridges, was chosen for study because of the well developed "nara" (*Acanthosicyos horrida*) community, extending 3,5 kilometres down the valley from the Kuiseb River. Other plants in the area are *Trianthema hereroensis* (a succulent), *Stipagrostis sabulicola* and *S. lutescens* (stoloniferous grasses with rolled blade leaves).

METHODS

Snap trapping, to obtain samples for post mortem analysis of reproductive state and stomach contents, was started in February, 1973 with a snap line of 30 traps at each end of the valley. Measurements were taken of head-body, tail, and hind-foot lengths, and of gross, clean and gonad weights.

A grid of 150 x 150 metres, subdivided into 100 squares of 15 x 15 metres was marked out ca. two kilometres from the river, and live trapping commenced in late March with 100 traps. Animals caught in these traps were marked by toe-clipping, measurements were taken of head-body, tail and hind-foot lengths and weight, and the reproductive state was noted.

TRAPPING RESULTS

Over the six month period February—July, 1973, 85 gerbils (43♀ 42♂) were caught in snap traps. Of these 4♂ and 6♀ were immature, 17♂ were scrotal and 2♀ were perforate. 6 non-perforate females had placental scars and 9 adult males were partially scrotal, see Table 1.

In March and April 45 gerbils (23♀, 22♂) were captured, marked and released on the live trapping grid. 16 of these were captured more than once (see Table 2). Of a total of 61 captures, 17 were from the first March trapping session, 24 from the second session in March (which followed the rainfall of March, 26th) and 20 were from the first two days of the April session. 13 recaptures of individuals (5 adult ♂, 5 non-perforate ♀ and 3 perforate ♀) were

obtained in the second session and 3 recaptures (non-perforate adult ♀) were obtained in April. Recaptures of animals in the same trapping period that they were marked were noted for evidence of range, but not considered as "recaptures". Details of measurements taken from these animals are given in Table 3.

No gerbils were retrieved from the traps in the latter half of the April session, or in May, June or July. From the partially chewed peanuts in the traps, and tracks around the traps it appeared that gerbils were caught in live traps during this time, but none were retrieved before predators, mainly jackals, visited the traps and removed the contents. Checking the traps every three hours during the night and chasing the jackals had no effect in lessening the effect of predators on the trapping. When trapping commenced in 1973 jackals were occasional visitors to the area, but by the termination of the study a group of seven jackals appeared to be resident in the vicinity of "Nara Valley".

RANGES AND ACTIVITY

The maximum range of a gerbil marked and recaptured was 75 metres. From tracks in the area and observations of gerbils on the lower slopes of the dunes, the foraging range appears to be much greater than this. The abundance of tracks in the valley supported the trapping evidence that gerbils were more active in the early morning than early evening, and least active between 22h00 and 02h00 hours. Activity was greatest on warm nights when there was no wind.

BURROW EXAMINATION

Seven burrows situated in the open, away from clumps of *Acanthosicyos*, were excavated by hand. The burrows were found to cover an area of at least 2,5 x 2 metres and had an average depth of 70 cms. Each burrow had three or more entrances, although three had only one entrance open. The main entrance extended down for about 30 cms at an angle of 45°, to a small chamber from which other exits and the main tunnel led off. The main tunnel frequently branched only 8—12 cms from this chamber and was found to have several blind alleys leading off it. Several of these alleys ended in small chambers which often had remains of "nara" melons in them. As none of the burrows were traced to their full extent due to collapsing sand, no nest chambers were found. "Nara" melon pips were found throughout the burrows and three times stalks of *Trianthema* were found. In two burrows there were remains of scorpions of the family Scorpionidae (either *Protophtalmus holmi* or *Opisthopthalmus sp.*), curculionids (*Brachtcherus opatrinus*) and tenebrionids (*Lepidochora sp.*).

DIET

Analysis of stomach contents together with materials collected from burrows and food preferences of captive gerbils showed gerbils to be omnivorous but primarily herbivorous.

DISCUSSION

The main aims of the trapping census in the valley were to examine population density and composition, home range and territoriality, reproductive cycles and stomach contents, and environmental effects on these.

From the live trapping results it appeared that the population in the area was composed of an ever-changing group of individuals with marked animals moving out of the area and unmarked animals moving in.

No difference in the trapability of males and females was shown in the live or kill-trapping results. Although 29 gerbils marked on the grid were not recaptured, while 12 of the 16 recaptures were caught three and more times, it is probable that this was due to trapped, marked animals being taken by jackals, not that some animals were trap-shy and others trap-prone.

SUMMARY

A preliminary trapping survey in July, 1972 in a dune valley south of the Kuiseb River was followed by a six month trapping survey in 1973 from February to July.

Data obtained from trapping on population size, activity and home range was supplemented by tracking observation. The structure of seven burrows was examined, and materials collected from these burrows together with an analysis of stomach contents and food preferences of captive gerbils showed gerbils to be omnivorous but primarily herbivorous. Reproductive state of gerbils caught in traps was examined.

Table 1. Gerbils caught in snap traps from February to July 1973:

S♂ = scrotal male; NS♂ = non-scrotal male
I♂ = immature male; I♀ = immature female
P♀ = perforate female; NP♀ = non-perforate female
NP♀ = non-perforate female with placental scars

Month	S♂	NS♂	I♂	P♀	NP♀	NP♀+	I♀	Total
February	5	1			4			10
March	12				9	2	2	25
April	8	1	4	1	7	5	2	28
May	8	2		1	4	1	4	20
June	1				1			2
July								
Total	34	4	4	2	25	8	8	85

Table 2. Captures and recaptures of gerbils on the live trapping grid in March and April 1973.

Date	S♂	NS♂	I♂	P♀	NP♀	I♀	Total
Marked 16.3.73	3	4			10		17
	2	3			3		
Recapt. 27.3.73 and 24.4.73	5			3	5		13
Marked 27.3.73	4	2	1		4		11
Recapt. 24.4.73					2		2
Marked 24.4.73	2	4	2		7	2	17
Total marked	9	10	3		21	2	45
repat.				3	8		15

Table 3. Average measurements of gerbils from the snap traps and the live trapping grid; (gonad weight and clean weight from snap traps only).

Group	HB	T	HF	Gross wt.	Gonad wt.	Clean wt.
S♂	95.19	129.48	33.72	29.69	1.06	26.78
NS♂	90.5	124.2	34	26.48	0.29	24.27
I♂	74.5	106.31	31.85	17.39	0.12	12.6
P♀	93.15	130.5	33.8	27.13	0.15	27.41
NP♀	91.75	126.79	33.46	26.16	0.06	24.81
NP+	91.60	125.2	33.2	28.06	0.29	23.9
I♀	76.9	112.8	31.29	18.59		16.99