NOTE BRÈVE

POPULATION DENSITY AND DIET OF THE SPINY MOUSE
ACOMYS CF. CAHIRINUS (RODENTIA)
IN A DESERTIC AREA OF NORTHERN KENYA

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Spiny mice of the genus Acomys are common and widespread in Africa (Kingdon, 1974). Their taxonomic status has recently been reviewed by Janecek et al. (1991) who found significant biochemical differences among Acomys from different regions of Africa. Unfortunately, these authors did not study specimens from the northern district of Kenya. Therefore, we will provisionally consider the spiny mice we studied as Acomys cf. cahirinus.

Despite the abundant data available on the behaviour and reproductive physiology of laboratory individuals of this species (Young, 1976; Petz, 1981), little is known about its ecology in the wild. In this note we describe the diet of a wild population living in a desertic area of Northern Kenya.

STUDY AREA AND METHODS

The study was carried out near Loyengalani (Lake Turkana, Northern Kenya) from 15 January to 25 February 1992 in a semi-desertic plain surrounded by volcanic rocky hills; near the lake the soil is covered with pebbles and sand. The climate is characterized by rainy periods of short duration, averaging less than 200 mm per year (Edwards et al., 1979; Sombroek and Brown, 1982). The vegetation depends on soil composition: there is a sparse cover of Acacia tortilis and doum palms Hyphaene thebaica in the areas flooded by temporary rivers (« wadis ») and in the « oases », while scattered A. tortilis are found in desertic and rocky plains. Along the former shores of Lake Turkana there are small palm groves, while the sandy plain that surrounds the lake, currently exposed due to persistent drought, has a thin covering of forb clumps (Herlocker, 1979; Wyant and Ellis, 1990). After a preliminary unsuccessful attempt to catch mice with snap

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and live traps we resorted to a method proposed by Spitz (1969) for small mammals population sampling. Three palm groves (0.16 ha each) were dug intensively, with the help of local people, in order to catch all the mice living in the plot. The three palm groves were located at increasing distances from the village of Loyengalani; the first inside the settlement, the second at 400 m from it, and the third at 700 m. Since most catches (mice and their nests) were made close to the soil surface, we are confident that most of the mice living within each plot were captured.

After capture, individuals were sexed, weighed and measured, and their stomach was removed and preserved in alcohol. Diet analysis followed routine techniques: two slides were prepared from each stomach and ten fields per slide were examined at medium magnification. Five food categories were identified: leaves, stems, seeds, roots and animal food. The relative proportion of each food category was assessed by estimating the percentage of the field covered by each food item, in order to obtain quantitative information.

RESULTS AND DISCUSSION

Table I shows the number of captures in each palm grove; the population density did not significantly differ between groves ($\chi^2 = 0.14$, df = 2, $P = 0.93$). The sex ratio was biased towards females, but not significantly so ($\chi^2 = 2.4$, df = 2, $P = 0.29$); 14 of the 19 females trapped were lactating or pregnant (mean litter size $= 2.1 \pm 0.57$).

<table>
<thead>
<tr>
<th>Sample</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>male : female</td>
<td>1 : 2.4</td>
<td>1 : 3.3</td>
<td>1 : 2.7</td>
</tr>
</tbody>
</table>

Table II shows the results of the dietary analysis. The population studied fed mainly on seeds, which were the most important food source, and on animal food (mainly millipedes, spiders and small scorpions), the second most important food resource. The other food categories were less important and their relative proportion ranged from 12.9% for green leaves to 2.8% for stems. The relative proportion of roots was less than 0.01% of the whole diet. No significant differences were found between female and male diets ($\chi^2 = 0.78$, df = 4, $P = 0.94$).

Table III shows the differences in diet composition between the individuals trapped at increasing distances from the human settlement. The relative propor-


TABLE II

Food composition for the whole population.

expressed as the relative proportion of each food category.

<table>
<thead>
<tr>
<th>Seeds</th>
<th>Leaves</th>
<th>Stems</th>
<th>Animal food</th>
<th>Roots</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.7</td>
<td>12.9</td>
<td>2.8</td>
<td>37.6</td>
<td>0.01</td>
</tr>
</tbody>
</table>

tion of animal food in the diet significantly increased with increasing distance from the settlement, while the amount of seeds and leaves significantly decreased with increasing distance.

TABLE III

Differences in diet composition of groups trapped at increasing distances from the village.

A = inside the village, B = at 400 m, C = at 700 m. Numbers are relative proportions, H = Kruskal-Wallis test, * = P < 0.01, ** = P < 0.001, ns = not significant.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>H</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds</td>
<td>70.2</td>
<td>45.8</td>
<td>24.0</td>
<td>18.2</td>
<td>*</td>
</tr>
<tr>
<td>Leaves</td>
<td>20.9</td>
<td>14.1</td>
<td>3.4</td>
<td>17.7</td>
<td>*</td>
</tr>
<tr>
<td>Animal food</td>
<td>5.9</td>
<td>38.1</td>
<td>69.0</td>
<td>24.5</td>
<td>**</td>
</tr>
<tr>
<td>Stems</td>
<td>0</td>
<td>0.03</td>
<td>0</td>
<td>4.1</td>
<td>ns</td>
</tr>
<tr>
<td>Roots</td>
<td>3</td>
<td>2</td>
<td>3.6</td>
<td>3.1</td>
<td>ns</td>
</tr>
</tbody>
</table>

Our data agree with the limited information available, which considers the Spiny mouse as an omnivore with a preference for seeds and vegetation (Kingdon, 1974; Delany, 1975). In the population studied animal food was, however, very important (relative proportion: 37.6%, Tab. II), and ranged from 5.9% for spiny mice living inside the town to 69% for wild individuals (Tab. III). We suggest that commensal mice may exploit food stored by people, made easily available around human settlements, while wild mice exploit animal prey more easily available in their environment.

This hypothesis seems to be supported by the fact that the natural habitats of wild individuals is overgrazed, due to the huge numbers of cattle and goats feeding on the scanty vegetation, and depleting the food resources left available to other primary consumers. Moreover, the persisting drought that affected the area over the last three years may have contributed to damaging the trophic environments of these rodents. The clear difference in diet between wild and commensal
populations (Tab. III) should be considered as an adaptation of spiny mice to local conditions, and confirms the highly opportunistic habits of these rodents (Kingdon, 1974).

**SUMMARY**

Commensal and wild populations of the Spiny mouse *Acomys cf. cahirinus* were trapped in a desertic area of Northern Kenya. Spiny mice had opportunistic diets, seeds and arthropods being the most important food resources exploited. Diets of commensal and wild individuals differed: wild individuals were mainly insectivores, while commensal individuals mainly fed on seeds, leaves and stems. Food was scarcer in the wild, due to overgrazing by cattle and goats, and to the persistant drought. These differences in diet probably reflect adaptations to the local conditions.

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**REFERENCES**


