

FOOD OF THE INDIAN GERBILLE
TATERA INDICA CUVIERI (WATERHOUSE)

BY

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(With one histogram)

In an earlier paper (Prasad, 1954) the natural history of the gerbille, *Tatera indica cuvieri*, has been described. In spite of its occurrence in large numbers and the admitted knowledge of its depredations on field crops, we have no adequate account of its food and feeding habits.

Gerbilles are nocturnal and seldom venture out during the day. Blanford (1891) states that these animals store a part of the grain in their burrows, but my examination of their burrow systems presented no indication of such a tendency. Consequently one has to adopt the expedient of examining the stomach contents to ascertain the type as well as the variety of food eaten. If the stomach contents are examined within an hour after feeding, the different constituents can be identified with little effort. Seeds are recognised by their hard outer coats, insect remains by wings, fragments of appendages, tracheal tubes and exoskeletons, while leaves and stems of plants which serve as food are made out by their colour and vascular structure. Rhizomes of grasses can be identified by their outer coats and roots attached to them.

Stomach contents were examined soon after the gerbilles were captured in the morning. The animals feed during the night and return to their burrows at dawn. The stomach was split and emptied of its contents into a trough containing a little water. The mixture was agitated and allowed to settle down, when the separation of the components could be effected easily. The volume of each kind of food was estimated to the nearest 10 per cent. More accurate estimation did not seem necessary since in a natural population there is generally a slight variation in the food items consumed.

The environment and vegetation of the area under investigation (Shivanahalli village, 3 miles from Bangalore, Mysore State, India) have been described in the earlier paper referred to. The concentration of the gerbilles in a given area depends to a great extent on the availability of food in sufficiently large quantities throughout the year.

TABLE I

Food of the gerbille, *Tatera indica cuvieri*, in Shivanahalli village, Bangalore District, India, in 1953. Volume—per cent. The figures

in parentheses indicate the number of gerbille stomachs examined in each month and the percentage represents the average of the total number of animals examined.

Food	January (10)	February (11)	March (9)	April (10)	May (8)	June (11)	July (8)	August (12)	September (12)	October (10)	November (13)	December (12)
Seeds ...	60	50	25	10	00	20	25	10	00	15	25	50
Stems and Leaves.	10	10	15	15	10	10	10	20	15	15	10	10
Rhizomes-grasses.	10	20	35	45	50	45	35	40	50	40	35	20
Insects ...	10	10	15	20	25	25	30	20	25	20	20	10
Miscellaneous ...	10	10	10	10	15	00	00	10	10	10	10	10

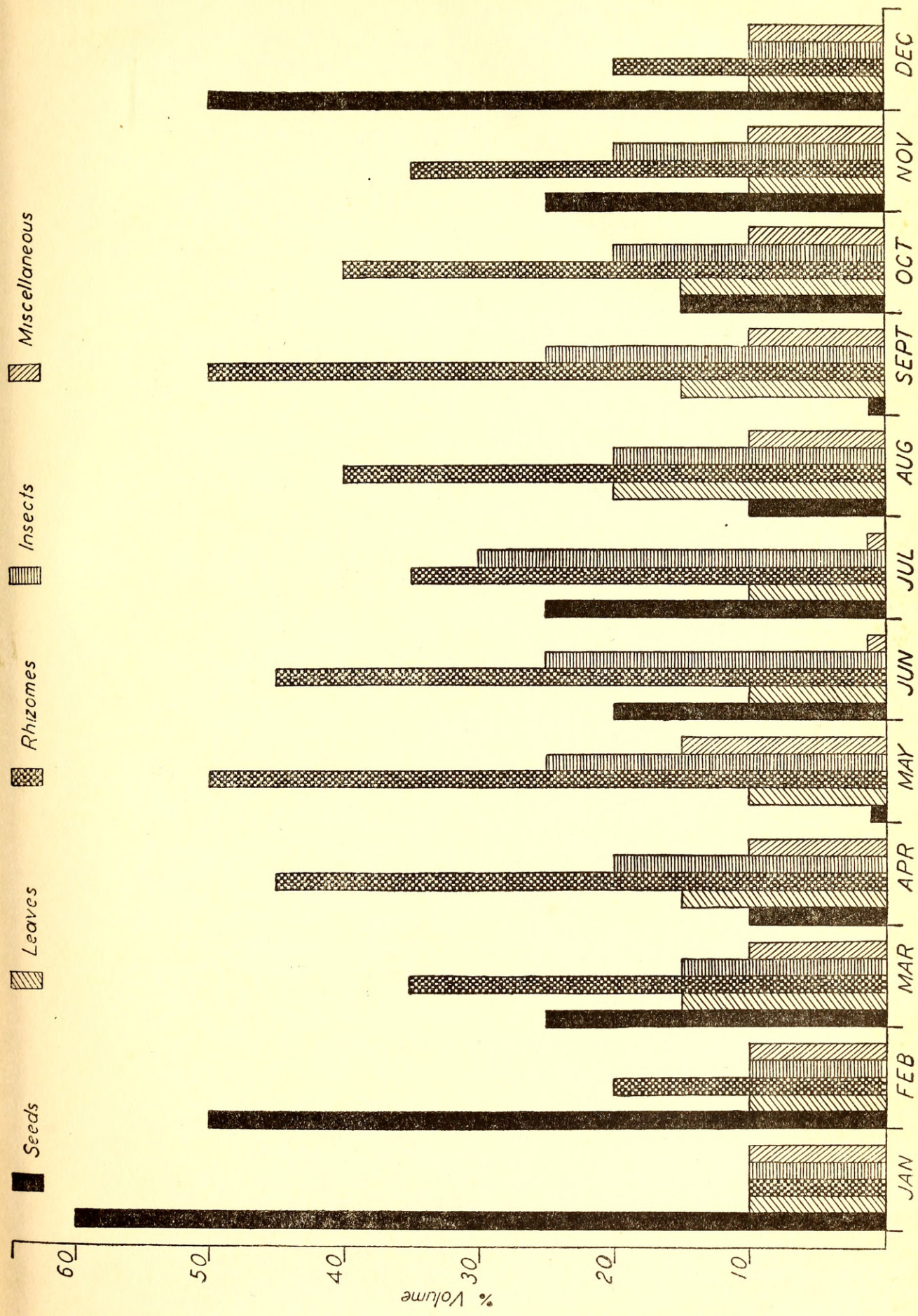
It will be seen both from the table as well as the histogram that the relative food constituents vary in the different seasons of the year and with the food material available in the neighbourhood.

June to August:

At the end of the hot weather period the fields are bare and bereft of vegetation. With the onset of the south-west monsoon in the last week of May brisk farming activity is initiated and sowing operations begin by the third or fourth week of June. Sown seeds offer a good source of food during this period. The food also consists of rhizomes of a variety of grasses growing in and around the fields, namely: *Cynodon dactylon*, *Brachiaria distachya*, *Urochloa reptans*, *Setaria intermedia*, *Sporobolus* sp., *Eragrostis bifaria*, etc. The advent of the monsoon and accompanying strong winds bring large numbers of dragonflies and these form an important constituent of the gerbille stomach for a fairly long period. It was not possible to identify the genera of the dragonflies. In July the sprouted seeds form the food. With the emergence of the saplings a little later, a new kind of food becomes available and the fields are also full of the different varieties of grasses already listed.

September to November:

During this period seeds form a rather small percentage of the food. Since all the seeds have either sprouted or been eaten up by now, the gerbilles become more and more dependent on other food like the rhizomes of grasses and insects. A large number of cutworms belonging to the species *Laphygma exigua* and *Euxoa sagetum* which



Histogram showing Seasonal Food Constituents of the Indian Gerbille.

cause damage to Ragi (*Eleusine coracana*) appear at this time and the gerbilles consume them in considerable numbers, thus helping in their control. In the middle of October a few of the early earheads of ragi and jola (*Andropogon sorghum*) ripen and the gerbilles feed on them. The percentage of seeds in the stomach increases gradually from now on, as ripening of the earheads progresses. This is the beginning of the breeding season and the first litters are brought forth in the third week of September. Intra-specific struggle and evidences of cannibalism are evidenced in the stomachs of a few gerbilles examined during October and November.

December to February:

This is the period of plenty and the fields are all full of crops ready for the harvest. Gerbilles cut the earheads of ragi and jola and gather the seeds. With this increase in the percentage of seeds taken, other items normally consumed in the earlier seasons show a gradual decline, though a considerable variety is still maintained. The grain crops are harvested in the middle of December. Since a mixed crop of the following plants, i.e. avare (*Dolichos lablab*), red gram (*Cajanus indicus*), Bengal gram (*Cicer arietinum*), horse gram (*Dolichos biflorus*), black gram (*Phaseolus mungo*), green gram (*Phaseolus radiatus*), cow peas (*Vigna catieng*), sesame (*Sesamum indicum*), ground nuts (*Arachis hypogaea*), and castor (*Ricinus communis*), is always grown in the same fields along with the main food crops, the harvesting of *Eleusine coracana* and *Andropogon sorghum* in the middle of December does not deprive the gerbilles of their food. The other plants continue to provide for them till the end of January, when the harvesting of all the crops is completed. Cannibalistic remains are also common in the stomachs of a few well-grown adults. Insects are always found mixed with the other items of food. The animals show an increase in body weight and they appear to accumulate fat around the internal organs.

March to May:

These are the hottest months of the year; the fields are bare and there is a general shortage of food in the neighbourhood. The gerbilles readily take to an omnivorous diet during this season and miscellaneous unidentifiable items of the stomach contents increase. Scattered seeds are available in the fields till the end of March and early April, after which period the main items of food include the rhizomes of grasses and insects. Most insects were so finely masticated that their identification was impossible.

ECONOMIC CONSIDERATIONS

Records available for a number of rodents show definite trends in population fluctuations which exhibit a periodic or cyclic change. Most of the apparently periodic fluctuations in year-to-year populations of mammals occur with either a $3\frac{1}{4}$ -year rhythm or a 10-year rhythm.

It has been pointed out by Errington (1951) that the number of animals in a population are the result of a number of factors . . . 'Important in the regulation of numbers of a wide variety of vertebrates may be inter- or intra-specific competition or the density factor, plant



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