

Short Communication

DIET OF MOLE RAT (*NESOKIA* Sp.) IN DATE-PALM ORCHARDS OF NOK KUNDI, BALOCHISTAN

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ABSTRACT

In this study, the mole rat, *Nesokia* sp. faecal pellets were collected from the infested date-palm orchards of Nok Kundi, District Chaghai, Balochistan. The short-tailed mole rat fed mainly on date-palm fruits (37.6%) and date-palm stem (pith) (18.0%) which jointly accounted 55.6% of the fruiting season. Insects, and grass leaves were consumed much less. About 34% of the faecal pellets contents were not identified. Insects were eaten only sparingly.

Keywords: *Nesokia* sp., date-palm, diet, nok kundi, balochistan.

INTRODUCTION

The short tailed mole rat (*Nesokia indica* Gray, 1832) is largely a palearctic rodent pest and is widely distributed in Pakistan, India, Iran, Iraq, Egypt, Syria, Northern Arabia, Chinese Turkistan and Southern Russian Turkistan (Walker, 1975). In Pakistan, it is a rodent pest of economic importance and inflicts extensive damage to wheat, rice and sugarcane crops (Greaves *et al.*, 1975; Beg *et al.*, 1981; Fulk *et al.*, 1981). It also causes considerable losses to irrigation water through burrowing in the bank of canals and water courses (Shafi *et al.*, 1992). To ascertain the food variability in *Nesokia* sp. its stomach contents has been studied by a number of workers (Smiet *et al.*, 1980; Fulk *et al.*, 1980,1981; Tousif *et al.*, 1985; Mian *et al.*, 1987; Al-Robaae 1977; Poche *et al.*, 1982). This paper describes the analysis of faecal pellets of mole rat *Nesokia* sp. in date-palm orchards of Nok Kundi Chaghai, Balochistan, where its distribution appears to be largely tied with the distribution of date-palm orchards.

MATERIALS AND METHODS

Each month, during July 2005 to December 2005, 10 gm faecal pellets of *Nesokia indica* were collected from the infested date-palm orchards of Gwalishtap, Wadiyan and Rajay of Tehsil Nok Kundi, Balochistan. Collections of faecal pellets were made randomly. Faecal pellets were thoroughly washed and mixed in water over a 0.1 mm mesh screen and were preserved in combination of formalin, acetic acid and alcohol (Hercus, 1960). Reference slides of eight different species of plants (Table 3) from the study area were prepared by following the procedure (Hansen *et al.*,1971). From 10gm mixed faecal pellets samples, 3 gm samples were suspended in 100 ml

of water and three sub samples of 1 gm each, was used for slide preparation. Twenty slides each of 1gm sub-sample were then made by the same procedure as described for reference material. From the 20 slides of each sub-sample of faecal pellets, 15 best slides were chosen. Forty-five slides to each month were studied in detail. On each slide, 12 points or field were located in a pre-determined manner such that the points were evenly distributed over the slides. The diameter of each point was 2mm. Each location was studied in detail with a trinocular tube version (Olympus) model HFT 533 at 100x magnification. The percent relative frequency of each of the 6 categories including date fruit, date stem, grass roots, grass leaves, insects and unidentifiable fragments were calculated and results were shown at 95% confidence limits (mean \pm 2 S.D), Sokal and Rohlf (1969). To determine the degree of dominance of the individual food items in the sample, Berger-Parker index was used (Magurran, 1988).

RESULTS

An analysis of 60 gm faecal pellets of *Nesokia* sp. showed that only five different food item were represented in the contents. Table 1 shows the relative frequency of food item in the faecal pellets of *Nesokia* sp. by month. Highest frequency of date-palm fruit was recorded in the month of August i.e. 40.2% alongwith grass 13.7% and insect material 19.5%. July to September were the fruiting season of date-palm. In the month of October, when fruit was not available, *Nesokia* sp. ate date-palm stem especially the soft part of the stem (pith) i.e. 42.6% of the content was date-palm stem. It has been observed that throughout the season, *Nesokia* sp. depends on date-palm stem and grasses which are the chief of the diet (Table 1). Grass roots played a very important role in the diet of

Table 1. Relative frequency of various food items in the faecal pellets of mole rat (*Nesokia* sp.) in date-palm orchards, Nok Kundi Balochistan. In parenthesis are percentages of fragments examined.

Food Items	Part eaten	July	August	September	October	November	December
<i>Phoenix dactylifera</i>	Fruit	9.42±8.41 (30.07)	11.64±18.23 (40.24)	7.81±8.12 (20.0)	0.6±1.9 (4.8)	(0)	(0)
<i>Phoenix dactylifera</i>	Stem (soft part) Pith	7.67±15.35 (24.09)	2.90±7.05 (10.04)	6.77±7.69 (17.31)	5.37±3.42 (42.6)	4.93±4.11 (37.6)	6.31±3.51 (38.8)
Grass	Leaves	3.12± 9.86 (9.94)	3.98±6.82 (13.74)	2.93±10.94 (6.23)	1.93±2.71 (15.3)	3.42±2.88 (26.1)	3.2±2.65 (19.7)
Grass	Root (bulb)	0	0	0	1.64±1.71 (13.03)	1.78±1.66 (13.6)	2.69±3.83 (16.6)
Insects	-	0.14±0.69 (0.44)	5.64±9.63 (19.51)	4.62±6.24 (11.83)	0	0	0
Unidentifiable fragments	-	10.98±13.29 (35.00)	4.76±17.71 (16.46)	17.46±20.37 (44.6)	3.06±3.00 (24.3)	2.98±1.98 (22.7)	4.04±2.85 (24.9)
Identifiable fragments	-	875 (65.0)	1015 (83.54)	1039 (55.9)	430 (75.7)	477 (77.3)	549 (75.1)
Total fragments examined	-	1347	1215	1877	568	617	731

Result shown at 95% confidence limits (Mean ± 2.S.D).

Table 2. Berger-Parker index of diversity for the seasonal samples of the faecal pellets of mole rat (*Nesokia* sp.)

S. No.	Food items eaten	Number of identified fragments in faecal pellets during	
		Fruiting season (date-palm)	Non-fruited season (date-palm)
1	Dates-Palm (Fruit)	1669	218
2	Dates-Palm (Stem)	797	758
3	Grass Root	0	279
4	Grass leaves	418	201
5	Insects	45	0
6	Unidentifiable fragments	1510	460
7	Total fragments examined (N)	4439	1916
8	Maximum abundant food (n)	1669	758
9	Berger-Parker index (d)	0.376	0.396
	1/d	2.66	2.53

Nesokia sp. In the absence of fruit, they preferred the roots of grasses. Highest percentage of root was observed in the month of December i.e. 16.6% of the content were roots. Insects were also eaten during the fruiting season of the date-palm and accounted 0.44%, 19.5% and 11.8% in the month of July, August and September respectively.

The summer diet (fruiting season of date-palm) of the rat was relatively least diversified than those of winter diet [non fruiting season] (Table 2). A little higher diversity index value for summer diet was related to the better consumption of date-palm fruits, date-palm stem, grass leaves and unidentified plants. The data of the present study showed that mole rat has a narrow feeding niche.

DISCUSSION

The results of the present study showed that mole rat in the non-crop land of Balochistan is largely herbivorous in diet. This is an agreement with Smiet *et al.* (1980), Tousif *et al.* (1985) and Hussain *et al.* (1995). The chemical composition of date fruit which was consumed 37.60% is energy rich in protein and carbohydrate etc. The major diet in non-fruited season was juicy stem (pith) of palm which accounted for 18%. The mole rat, *Nesokia* sp. being largely a subterranean species has to do a lot of digging to link with far apart wild growing palm trees which is an energy consuming act (Hussain *et al.*, 1995). Due to narrow choice in food sampling, *Nesokia* sp. is

fully depending on date-palm fruits and stem (pith) for subsistence in that area.

In the agricultural fields, crop plants seem to be chief source of diet for mole rat *Nesokia indica*. In the sugarcane field of Sindh, as much as 89% of the rat's diet comprised of the cane alone (Smiet *et al.*, 1980), Similarly in the paddy fields, the rat intensively consumed the rice grain at harvest (Fulk *et al.*, 1980, 1981). In the orchards of Balochistan about 93% of the diet of the rat was due to plants and the remaining 7% was due to insects. Here two grasses namely *Hordeum murinum* and *Cynodon dactylon* were consumed round the year and were the main staples of the rat's diet (Mian *et al.*, 1987). On the basis of this study, it is concluded that *Nesokia* sp. is fully depending on date-palm and its damage to date-palm is a serious threat to livelihood of the farmers of these area. The losses may be intensified if control measures will not be undertaken immediately.

Table 3. List of reference plants collected from date-palm orchards, Nok Kundi, Balochistan.

Name	Local name
<i>Phoenix dactylifera</i> L.,	Khajoor
<i>Fagonia ovalifolia hadidi</i>	Shinz
<i>Colligonum polygonoides</i>	Poge
<i>Tamarix aphylla</i>	Guz
<i>Tribulus terresteris</i>	Toraat
<i>Cyperus aucheri</i>	Guzzuk (grass)
<i>Cyperus longus</i>	do
<i>Danthoniopsis stocksii</i>	Kandal (grass)
<i>Stipagrostis</i> sp.	Muz (grass)

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