Daily Food Consumption of Captive Moles

Dobowe zużycie pokarmu przez krety w niewoli

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Funmilayo O., 1977: Daily food consumption of captive moles. Acta theriol., 22, 29: 389—392 [With 1 Table].

The quantity of earthworms consumed daily by 4 captive moles was measured for 10 weeks. The gut contents of large earthworms were removed before they were fed to moles and all moles were fed at the same period of the day and *ad libitum*. The lightest mole consumed a significantly smaller amount of food than each of the heavier ones while each female consumed significantly more food per unit of body weight than males.

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I. INTRODUCTION

Few previous workers have measured the food consumption of captive moles. Skoczeń (1957) found that captive males fed on meat consumed 50% of their body weight while captive females fed on earthworms consumed 100% of their body weight daily. Hawkins & Jewell (1962) found that a captive mole consumes between 33.3% to 50% of its body weight daily when fed on earthworms. Mellanby (1967) estimated the daily food intake to be 50% of the body weight when a captive mole was fed only on demand.

The only record of the quantity of food consumed by wild moles in their natural habitat is that of Godfrey & Crowcroft (1960). They found the maximum weight of food in a full stomach to be 16 g and that wild moles have three daily periods of activity. They then estimated that if a mole fills its stomach six times daily, at the beginning and end of each active period, the maximum weight of food consumed will be 96 g which is roughly equivalent to the body weight of an adult mole.

The discrepancies in previous estimates suggest a need for further critical study of food consumption in this species. The present study measured food consumption in four captive moles.

II. MATERIALS AND METHODS

The design of the cages was adapted from those of Skoczeń (1961) and Rudge (1966). Moles were housed individually in wooden cases comprising of a sleeping compartment and a feeding compartment linked together by two tunnels each one meter long by 5 cm in diameter. The cages were kept in an unheated out-house and cleaned regularly.

Seven moles were kept in captivity between 30th July 1968 and 9th July 1969 of which only 4 survived for up to 10 weeks. The gut contents of large earthworms

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were removed before they were fed to moles while the heads of smaller earthworms were crushed to minimise the chances of their escape from the feeding compartment. Each mole was provided with 100 g of earthworms twice daily at 9.00 *a.m.* and 6.00 *p.m.* so that the quantity of fresh earthworms available was always in excess of what a mole could eat. The weight of earthworms consumed by each mole was recorded daily for ten weeks.

III. RESULTS

The daily consumption of earthworms was relatively high in the first week in all moles and also in the second week in mole Nos. 2, 3 and 4 (Table 1). Data for this period was therefore excluded in further

Table 1

Daily earthworm consumption in grams (Mean ± S.E.) of captive moles during 10 weeks.

Weeks	No. 1 Adult Male 107.7 g	No. 2 Juvenile Female 76.5 g	No. 3 Adult Female 81.0 g	No. 4 Adult Male 95.0 g
1	91.0±4.3	84.6±2.2	85.6±2.2	89.3±3.2
2	77.2±4.5	74.0±2.4	85.3±4.2	82.9±4.3
3	76.2±1.8	62.4±1.1	65.4±5.3	66.9±2.9
4	82.0±2.2	60.0±1.0	74.6±4.7	67.3±3.2
5	82.9±1.8	65.1±1.6	75.9±3.9	67.6±2.7
6	79.3±4.7	67.0±1.4	72.3±3.7	67.0±2.7
7	80.0±1.9	65.0±1.5	68.1±7.5	68.1±1.5
8	81.0±2.7	65.0±1.5	67.0±0.6	71.0±2.4
9	76.0±1.9	62.3±1.8	73.4±2.0	76.4±2.5
10	75.1±1.7	65.3±1.4	77.0±2.1	76.1±2.5
3—10	79.1±1.2	64.0±1.5	71.7±1.5	70.1±1.00
In per cent of Body wt.	73.5±0.9	83.4±1.0	88.6±1.9	73.6±1.5

calculations. On the other hand, daily earthworm consumption was relatively less variable in subsequent weeks which suggests that each mole should be allowed to adapt to artificial confinement for two weeks before measurement of food consumption commences (cf. also Hawkins & Jewell, 1962).

Mole No. 1 was heavier (Table 1) and ate significantly ($P > 0.05$) more earthworms than each of the other moles while mole No. 2 was lighter and ate significantly less than each of the others. Mole Nos. 3 and 4 ate approximately equal quantities of earthworms (Table 1).

The two females each consumed significantly ($P > 0.05$) more food per unit of their body weight than the two males but food consumption per unit of body weight was equal in both males and in both females indicating that the differences in food consumption per unit of body weight was related to sex rather than the differences in body weight (Table 1).

IV. DISCUSSION

The estimates of food consumption obtained in the present study agree with those obtained by Skoczeń (1957) and Godfrey & Crowcroft (1960). The results of Mellanby (1967) could not be compared with the present estimate because he measured basically the minimum food intake of a mole.

Hisaw (1923) has shown that in *Scalopus aquaticus machrinoides* the daily food intake is normally 32.1% of the body weight but a hungry mole may consume up to 66.6% of its body weight daily. This suggests that captive moles whose food consumption is to be compared should be fed at the same period of the day to ensure that they are under similar gastronomic conditions. Also, food consumption should be compared only in moles fed on the same diet because according to Hawkins & Jewell (1962) the calorific value of the diet may influence food consumption in moles. It is further suggested that the gut contents should be removed from large earthworms fed to moles whose food intake is being measured. This is because the gut of a large earthworm like *Lumbricus terrestris, Lumbricus festivus* and *Octalasium cyaneum* contains soil particules and food debris which may account for up to 10% of its fresh weight. Moles squeeze out and reject the gut contents of large earthworms but swallow small and medium-sized earthworms whole with the gut contents. Therefore, if a mole is fed exclusively on large earthworms from which the gut contents were not removed its food consumption may be exaggerated by about 10%.

The present results indicate that heavy moles may consume more food than light ones, a tendency which has been observed in field data (Larkin, 1948; Godfrey & Crowcroft, 1960; Skoczeń, 1966; Funmilayo, 1970). Also, the present results supply new evidence to the extent that captive females consume significantly ($P > 0.05$) more food per unit of body weight than males, because earlier results from field data (Funmilayo, 1970) indicated that food consumption per unit of body weight was equal in the sexes except in May when lactating females consume more food per unit of body weight than males. The discrepancy between laboratory and field results may arise from the fact that captive moles with unlimited food supplies ate to their full capacities while many wild moles were trapped when their stomachs were empty or only partially filled.

Confinement in solitary cages may alter the feeding behaviour and food consumption of a normally sociable and free-ranging animal. Southwick (1955) in fact found that food consumption in mice decreases as population size increases. However, moles are solitary (Godfrey & Crowcroft, 1960) so that confinement in individual cages largely simulates the social conditions obtaining among wild moles and should therefore not affect their food intake except in the first one or two weeks in confinement when the moles were adjusting to human presence and handling.

In conclusion, it will appear that most of the factors affecting food consumption in a mole have been taken into account in the collection and

interpretation of the present data which could therefore be regarded as a reliable estimate of food consumption in this species.

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