

## Biological Notes on Jerboas *Allactaga euphratica* and *Jaculus jaculus* from Iraq

A. H. KADHIM, A. M. MUSTAFA & H. A. JABIR

Kadhim A.H., Mustafa A.M. & Jabir H.A., 1979: Biological notes on jerboas *Allactaga euphratica* and *Jaculus jaculus* from Iraq. Acta theriol., 24, 8: 93—98 [With 1 Table & 3 Figs.]

Activity and moulting of two species of jerboas, *Allactaga euphratica* Thomas, 1881 and *Jaculus jaculus* (Linnaeus, 1758) were studied in the vicinity of Samara (122 km. N of Baghdad) in Iraq during the period from January to December 1977. The differences in the circadian rhythm of activity of these two species were stated. *Jaculus jaculus* was seldom active during the warm season (June-August), whereas *Allactaga euphratica* was inactive during the cold season (November — January). Both species moult once a year, i.e. during July in *A. euphratica* and September–October in *J. jaculus*.

[Sci. Res. Found., Biol. Res. Centre, Adhamiya, Baghdad, Iraq].

### I. INTRODUCTION

Rodent family *Dipodidae* is represented in Iraq by two species: the Euphrates Jerboa, *Allactaga euphratica* Thomas, 1881 and the Lesser Jerboa, *Jaculus jaculus* (Linnaeus, 1758).

*A. euphratica* is distributed in the central and probably in the southern region of Iraq (Kadhim *et al.*, 1977). The authors collected specimens from Samara, Dholuiya, Dour, Tikrit, Baiji and Hatra. Harrison (1972) noted specimens collected in Baqubah, Bahdad and Ramadi. Hatt (1959) noted a specimen from Abureb preserved in the Natural History Museum in Baghdad. Typical biotopes of the Euphrates Jerboa are shores of wadis and grassy fragments of hamada-type desert in hilly regions (Atallah, 1967). Wherever it coexists with the Lesser Jerboa it is less common (Harrison, 1972).

The northern limit of distribution of *Jaculus jaculus* runs through Iraq, where it populates all the flatland of this country. The authors collected specimens from Al-Zubair, Safwan, Salman, Afaq, Badir, Niffar, Samara, Dholuiya, Dour, Tikrit, Baiji, Annajaf Sahara and Hatra. Harrison (1972) reported specimens from Haur al Hasa, S of Habaniya and Zobair. This rodent can be met in sandy desert but also in stony steppes (Lewis *et al.*, 1965).

Studies on the biology and ecology of these Dipodids have not been



done so far in Iraq. The aim of this work was the study of some aspects of their biology, mainly moulting, activity and behavior.

## II. MATERIAL AND METHODS

Eighty five specimens of *Allactaga euphratica* and forty five of *Jaculus jaculus* were collected in Samara (122 km N of Baghdad) from January to December 1977. Small insect nets (32 cm in diameter) were used for catching the jerboas. When the animal runed away and entered the burrow we poured water in it in order to get the jerboa to go out. Catching was done in four-hours periods one hour after sunset (2—4 nights monthly). The car was driven along the tracks until a jerboa was seen in the head-light. As the car slowed down the catchers jumped out, one of each side and attempted to surround the animal. Sometimes it was easy to place the net over it, but more often the jerboa (especially *Jaculus jaculus*) run off. This procedure was repeated until the jerboa was either captured

Table 1

Number of seen and trapped individuals of *Allactaga euphratica* and *Jaculus jaculus* in particular months of 1977 in Samara.

Months	<i>A. euphratica</i>		<i>J. jaculus</i>	
	Seen	Trapped	Seen	Trapped
January	0	0	7	3
February	17	9	11	4
March	16	15	8	3
April	18	12	8	1
May	18	10	13	4
June	27	7	6	4
July	21	10	5	2
August	21	7	6	5
September	17	7	9	4
October	11	8	8	6
December	0	0	9	4
November	0	0	11	5
Total	169	85	101	45

or lost. The individuals which were sighted but not captured were also counted. The capture of *A. euphratica* was easier than that of *J. jaculus*. More than 40% of the total number of *A. euphratica* was caught by pouring water into burrows, but only 15% of *J. jaculus* was captured by this way. Captured jerboas were placed in cages and given some food. The next morning they were killed, weighed and sexed and the standard body measurements were taken. The skins were cleaned from fat and the moulting as indicated by black patches on the inside of the skin was studied. Some of the animals were kept in the cages for one week in order to observe the behavioral attitudes.

## III. RESULTS AND DISCUSSION

1. Activity. The activity during the different months of the year was expressed by the number of animals seen and trapped during the four-hours periods of observations. Number in Table 1 indicates, that in the

region under study the dominant jerboa is *Allactaga euphratica*. The high number of *A. euphratica* were observed during the period February–October. No Euphrates Jerboas were observed from November to January.

The seasonal activity of *Jaculus jaculus* shows quite a different picture. This species is seldom active during the warm months and only few specimens were sighted or trapped during warm period. It may be explained by the resistance of *Allactaga euphratica* to high temperature and this of *Jaculus jaculus* to the low temperature (Fig. 1 shows the temperature, relative humidity and rainfall during 1977 in the studied area). Happold (1967) in his study of *Jaculus jaculus* in Sudan mentions that it seemed to be abundant in October to December. This pattern of activity during the year can be explained as an adaptation

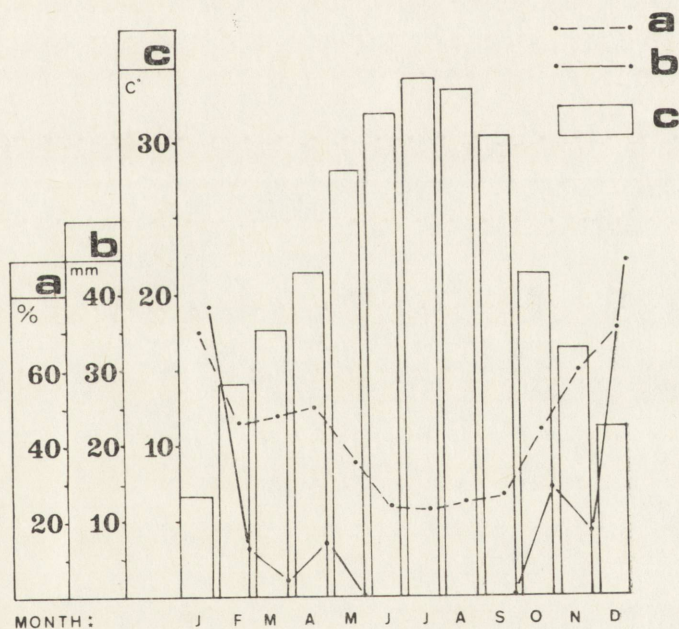


Fig. 1. Climatic factors during 1977 in Samara.

a. Monthly average relative humidity in %; b. Monthly rainfall in mm; c. Monthly average temperature in centigrades.

to the life in the desert either by aestivation or by spending the days in burrows without summer sleep.

It has to be noted that first meetings of *Allactaga euphratica* were 1.20–2 hours after sunset, whereas for *Jaculus jaculus* they were seen already one hour after sunset. At the beginning of the dark period *A. euphratica* could not run fast and was very easy to catch, while *J.*



*jaculus* was active and could run quickly during all periods of observations.

2. Moulting. All the skins from each month were studied in order to demonstrate the monthly situation of the process. It can be seen from Fig. 2 that the moulting in *Allactaga euphratica* begins centrally and progresses forward and backward. True moulting was observed only in July. This means that the animals were moulting once a year.

Fig. 3 shows the moulting in *Jaculus jaculus*. No moulting was observed during all the months except in September and October.



Fig. 2. Moulting in *Allactaga euphratica*. Typical picture of the inner side of the skin in different months.

Moulting begins rather on the back and progresses anteriorly. The Lesser Jerboa was moulting also once a year. During other months we observed small black spots on the inner surface of the skin, but these spots cannot be taken as an indicator for moulting during another time of the year because of their limitation.

3. Fighting and aggressiveness. To study this aspect of behavior the animals were put into cages in four different combinations:

- (a) *Allactaga euphratica* only in the cage;  
 (b) *Jaculus jaculus* only in the cage;  
 (c) *A. euphratica* and *J. jaculus* in one cage;  
 (d) *A. euphratica*, *J. jaculus* and *Meriones lybicus* Lichtenstein, 1823 in one cage.

In the first and second combination new animal introduced in the cage stopped in one place waiting for attack. In this time the old inhabitant began to move from one place to another without physical

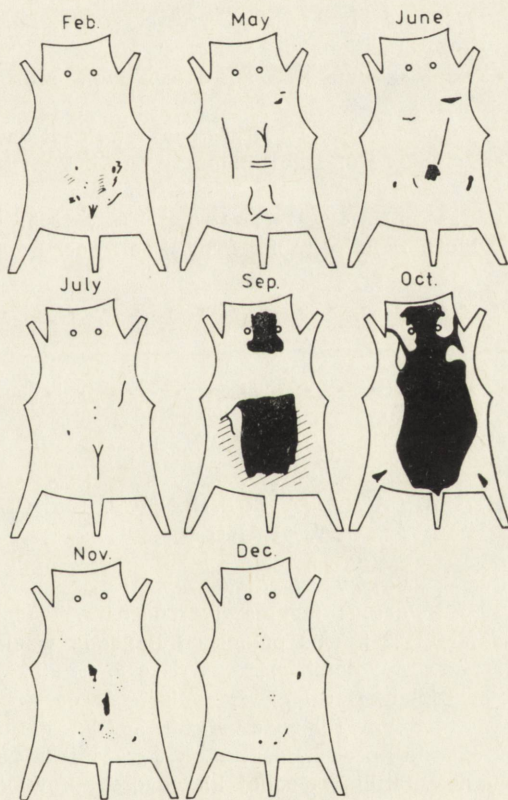


Fig. 3. Moulting in *Jaculus jaculus*. Typical picture of the inner side of the skin in different months.

contact with the new individual. Then they began to emit different types of sounds. After about 30 min. the jerboas became peaceful. Several times during the night we heard sounds but fighting did not occur.

In the third and fourth combination fighting was observed and the next morning wounded, killed and partly eaten animals were found. The killed and sometimes eaten animals were *Jaculus jaculus* only and



the wounded were *Allactaga euphratica*. The wounds were on the thigh and abdomen. *Meriones libycus* seemed to be the most aggressive, followed by *A. euphratica*.

## REFERENCES

1. Atallah S.I., 1967: International Jordan Expedition 1966. IBP/CT Section, Mammalia, London, 56—63.
2. Happold D.C.D., 1967: Biology of the jerboa, *Jaculus jaculus butleri* (Rodentia: Dipodidae) in the Sudan. J. Zool., London, 151: 257—275.
3. Harrison D.L., 1972. The Mammals of Arabia, vol. 3. *Lagomorpha, Rodentia*. Ernest Benn Ltd.: 1—670. London.
4. Hatt R.T., 1959. The Mammals of Iraq. Misc. publ., Mus. of Zool., Univ. of Michigan, 106: 1—113.
5. Kadhim A.H., Nadachowski A. & Rzebik-Kowalska B., 1977: Review of present knowledge of Iraqi mammals. Bull. Biol. Res. Cent., Baghdad, 6: 1—31.
6. Lewis R.E., Lewis J.H. & Harrison D.L., 1965: On a collection of mammals from Northern Saudi Arabia. Proc. Zool. Soc. London, 144, 1: 61—74.

Accepted, September 4, 1978.

A. H. KADHIM, A. M. MUSTAFA i H. A. JABIR

UWAGI O BIOLOGII *ALLACTAGA EUPHRATICA* I *JACULUS JACULUS*  
W IRAKU

Badano biologię dwu gatunków *Dipodidae* występujących w Iraku: *Allactaga euphratica* Thomas, 1881 i *Jaculus jaculus* (Linnaeus, 1758). Badania przeprowadzono w okolicy Samary, 122 km na północ od Bagdadu w ciągu roku 1977. Co miesięczne obserwacje nad aktywnością wykazały, że *J. jaculus* jest rzadko aktywny w okresie gorącym (lipiec—sierpień), natomiast *A. euphratica* nie wykazuje aktywności w okresie chłodnym (listopad—styczeń). Oba gatunki linieją raz w roku, *A. euphratica* w okresie lipca, *J. jaculus* od września do października. Obserwacje polegające na umieszczaniu w jednej klatce osobników każdego z dwu badanych gatunków, osobników różnych gatunków i osobników *Dipodidae* z gryzoniem *Meriones libycus* Lichtenstein, 1823 wykazały, że wśród osobników tego samego gatunku nie dochodziło do walk. Przy kombinacji różnogatunkowej miały miejsce walki prowadzące niekiedy do śmierci, przy czym najbardziej agresywny był *Meriones libycus*, a najmniej *Jaculus jaculus*, który zwykle padał ofiarą agresywności pozostałych. Przeprowadzone badania są pierwszymi obserwacjami nad biologią *Dipodidae* w Iraku. Autorzy przytaczają także nowe dane o rozmieszczeniu tych gatunków.