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## Observations on the Reproductive Biology of *Gerbillus dasyurus* (Wagner, 1842) (Mammalia: Rodentia) in Turkey

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**Abstract:** The reproductive data along with some ecological observations of *Gerbillus dasyurus* are reported based on field studies and investigations in captivity. The findings indicate that the favorable habitat of *G. dasyurus* is rocky areas with sparse vegetated soil and that the reproduction period extends from January to September. According to the reproductive data, the average weight at birth is 2.22 g., litter size ranges from 3 to 9, with an average of 5.66, a female gives three litters during a reproduction period. The eyes and ears also open at 16 days, weaning takes place at 32 days, and they become free at 41 days.

**Key Words:** *Gerbillus dasyurus*, reproduction biology, ecology, Turkey

### Türkiye'deki *Gerbillus dasyurus* (Wagner, 1842) (Mammalia: Rodentia)'un Üreme Biyolojisi Üzerinde Gözlemler

**Özet:** Bu çalışmada, *Gerbillus dasyurus*'un bazı ekolojik bilgilerle birlikte üreme verileri arazi ve laboratuvar araştırmalarına dayanarak kaydedildi. Bulgular *G. dasyurus*'un seyrek vejetasyonlu kayalık alanlarda yaşadığını, üreme periyodunun ocak ayından eylül ayına kadar sürdüğünü gösterdi. Üreme verilerine göre, ortalama doğum ağırlığı 2, 22 gr., yavru sayısı 3-9, ortalama yavru sayısı 5, 66 dır ve bir dişi bir üreme periyodunda üç kez doğum yapmaktadır. Ayrıca gözler ve kulakların açılması 16 günde, süten kesilme 32 günde gerçekleşmekte ve 41 günde serbest yaşamaya başlamaktadırlar.

**Anahtar Sözcükler:** *Gerbillus dasyurus*, üreme biyolojisi, ekolojisi, Türkiye

### Introduction

*Gerbillus dasyurus* is essentially endemic to Arabia (1). Yiğit et al. (2) examined the karyology and taxonomy of specimens of *Gerbillus*, recording the species *dasyurus* from Kilis. In Saudi Arabia and more recently in Israel, the biology of this species was studied in detail (3, 4). Although there are many studies on the distribution and taxonomy of *dasyurus*, no information has been published on its biology and ecology in Turkey.

The aim of this study was to report data collected from field studies and captivity, and to contribute to the biological and ecological characteristics of this species.

### Materials and Methods

This study was performed from 1994 to 1997, and 52 specimens captured from four localities in Kilis as well as observations in captivity were evaluated. In 1995, a breeding colony was established in the laboratory with cages 30x40x30 cm. A nest box 15x15x15 cm was placed in each cage as a shelter. A female and a male were

transferred together to cages 30x40x30 cm for reproduction. These cages were inspected daily and the nests checked for newborns. All young were measured and weighed during a period of 15 days. They were not handled so as not to cause their deaths. The animals were fed on fresh green material apple, wheat, sunflower seeds and water. The colony was kept in a room with uncontrolled temperature and day-night regimes.

### Results

**Habitat:** We surveyed 28 various localities in southeastern Anatolia and found *Gerbillus dasyurus* only in rocky, sparsely vegetated steppe areas in Kilis (Figs. 1, 2). It is not found in moist biotopes and cultivated areas. There are many holes in the areas inhabited by *Gerbillus dasyurus*.

**Co-occurring rodent species:** *G. dasyurus* was recorded with *Apodemus mystacinus*, *Meriones tritrami*, *Microtus guentheri*, *M. irani*, *Mus. sp. Cricetulus migratorius* and *Mesocricetus auratus*.

Reproductive	Date	Total length	Tail length	Hind foot	Ear length	Weight (g)
Lactating	19 April 1996	210	120	25	14	30
Scrotal testes	19 April 1996	209	116	26	15	26
Scrotal testes	19 April 1996	213	115	24	14	26
7 embryonal sacs	20 April 1996	202	120	25	14	25
Juvenile	23 April 1996	154	82	23	13	10
9 embryonal sacs	24 April 1996	205	105	25	14	29
6 embryonal sacs	24 May 1996	204	104	24	14	31
Scrotal testes	27 May 1996	211	115	25	15	28
4 embryos	27 August 1995	221	124	24	14	29
Scrotal testes	27 August 1995	220	115	25	14	23
3 embryos	27 August 1995	215	125	27	14	22
Scrotal testes	27 August 1995	234	125	24	14	26

Table 1. Specimens of *Gerbillus dasyurus* with reproductive signs captured from 1994 to 1997 (measurements in mm).

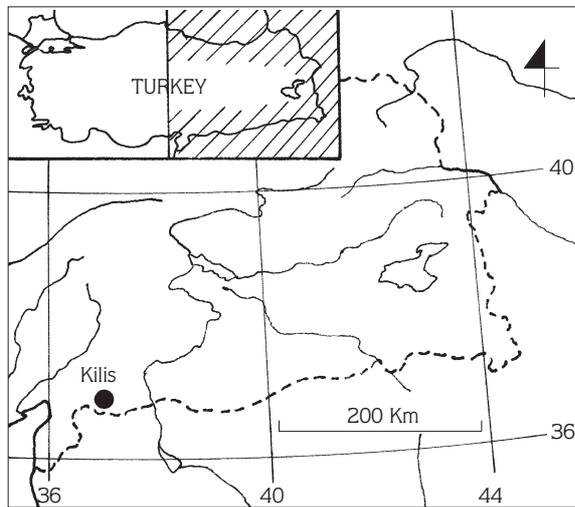


Figure 1. The map showing the recorded locality of *Gerbillus dasyurus* in Kilis

**Reproduction:** In the laboratory, *G. dasyurus* gave four litters from 30 January 1997 to 14 May 1997, and in the field we captured one lactating and two reproductive females with 7 and 9 embryonal sacs, and two males with reproductive signs (scrotal testes) in April; and a female with 6 embryonal sacs and a male with scrotal testes in May; and two females with 3 and 4 embryos, and two males with scrotal testes on 27 August. In 24-26 September, we collected 32 specimens without any reproductive signs. The litter size ranged from 3 to 9 with an average of 5.66 (Tables 1 and 2). A subadult trapped on 23 April had measurements of total length 154 mm., tail 82 mm., hind foot 23 mm., ear 13 mm. and weight of 10 g., and according to our postnatal developmental data it was possibly about three months old.

Table 2. Birth date and litter size belonging to four births of *Gerbillus dasyurus* in the laboratory.

Birth	Litter size	Birth date
1	3	30 January 1997
2	4	20 March 1997
3	4	8 May 1997
4	7	14 May 1997

According to these findings, *G. dasyurus* has a long reproduction period from January to September with a interruption from October to December.

**Postnatal development:** We observed the birth of four litters in captivity (Table 2). Young are born naked, blind and with closed ears. Hairs begin to grow on dorsal side when the pups are 6 days old and on the ventral side on day 9. The incisors erupt on day 9. The toes of the forefeet begin to separate on day 6 and those of the hind feet on day 9. The eyes and ears open at 16 days. Pups are weaned when they are 32 days old, and become free by 41 days. Average weight of pups at birth is 2.22 g. We measured and weighed the pups up to 15 days and five young of 94 days which did not attain the measurements of adults (Table 3).

Table 3. Some data on the postnatal development of *Gerbillus dasyurus* (measurement in mm).

Days	n	Total length	Tail length	Hind foot	Ear length	Weight (gr)
Birth	18	53.7	13.05	9.29	2	2.22
8	14	67.7	25.86	12.5	4.41	3.06
17	12	74.43	34.78	14.92	6.42	5.05
94	5	158.21	91.64	23.75	12.4	18.1
Adults	25	210.22	112.41	25.36	15.14	27.1



Figure 2. Habitat of *Gerbillus dasyurus* in Kilis

**Sex ratio:** We determined the sex of 52 specimens collected in the field, and found 28 males and 24 females.

**Behaviour:** *G. dasyurus* is very timid in captivity. In order to communicate with the other individuals of the population, it makes sounds by kicking the ground with its hind feet. In contrast to *Meriones tritrami* which is another representative of the family Gerbillidae, *G. dasyurus* prefers to keep in its nest box during the day time, and its daily activity is very short.

**Feeding:** *G. dasyurus* feeds on wheat and sunflower seeds, apple, fresh *Trifolium* sp., and drinks water in captivity.

## Discussion

According to Harrison and Bates (1), *G. dasyurus* inhabits rocky steppe desert, moist, more vegetated biotopes, where it co-exists with *Apodemus mystacinus*. In general, these findings are consistent with habitat aspects of *dasyurus* in Turkey, but we did not encounter this species in moist biotopes outside its specific habitat such as dense vegetated and cultivated areas. Al-Khalili

## References

1. Harrison, D.L. and Bates, P.J.J., The Mammals of Arabia. Second Edition. Harr. Zool. Museum Pub. Kent, England. 1991.
2. Yiğit, N., Çolak, E., Kivanç, E. and Sözen, M., A new Gerbil from Turkey: *Gerbillus dasyurus* Wagner, 1836 (Rodentia: Gerbillinae). Israel J. of Zoology, 43: 13-18. 1997.

and Delany (3) stated that the reproductive activity extending from January to September. According to Shenbrot et al. (4), reproduction was observed almost all year round with a pause in December. In contrast, Lay (6) recorded pregnant and lactating females from late November to early January in Iran. Although all these findings are similar to each other, they also indicate slight geographical variation in the reproduction season of the Wagener Gerbil. We did not record reproductive signs from late September to early January. Harrison and Bates (1) collected a pregnant specimen from near Aleppo (Syria) on 2 April with seven embryos, two others from near Jerusalem on 21 April with six and four embryos. Searight (5) trapped a female specimen in Jordan in July with three embryonal sacs. In addition, Shenbrot et al. (4) stated that duration of pregnancy was 18-22 days and the litter size was 3-7 pups. These findings on the litter size are consistent with those of *dasyurus* in Turkey.

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3. Al-Khalili, A.D. and Delany, M.J., The postembryonic development and reproductive strategies of two species of rodents in south-west Arabia. Cimbebasia Ser. A, 8: 175-178, 1986.
4. Shenbrot, I.G., Krasnov, R.B. and Khoklova, S.I., Biology of Wagner's Gerbil *Gerbillus dasyurus* (Wagner, 1842) (Rodentia: Gerbillidae) in the Negev Highlands, Israel. Mamalia 61 (4): 467-486. 1997.

5. Searight, A., Some rodents of mammals from north-eastern Jordan, 311-317. In: Krupp, F. W. Shneider and R. Kinzelbach (eds). Proceedings of the Symposium on the fauna and zoogeography of the Middle East, Ludwig Verlag, Wiesbaden, 1987.
6. Lay, D. M., A study of the mammals of Iran, resulting from the Street expedition of 1962-63, Fieldiana Zool., 54: 1-282, 1967.