

Six New Localities for *Microtus guentheri* (Danford and Alston, 1880), (Mammalia: Rodentia) from Antalya Province, in Turkey

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Abstract

In this study, we reported additional records for *Microtus guentheri* (Danford and Alston, 1880) which trapped from the six localities; Yazır, Korkuteli, Sülekler, Alibeli, Akpınar and Taşkesiği, in Antalya Province. Also, some ecological characteristics of the localities, and some morphological measurements for samples were given this study. This is the first records for *Microtus guentheri* from this six localities.

Key words: *Microtus guentheri*, Levant Vole, New localities, Distribution, Antalya

INTRODUCTION

The first records of *Microtus guentheri* in Turkey are Kahramanmaraş [1], than, İzmir-Muğla-Tarsus-Mersin-Silivri and Havsa [2], Şanlı Urfa [3], Hatay/Tarsus [4], Bolu-İzmir-Ankara and Uşak [5], Kahramanmaraş [6], Antalya/Elmalı [7], Hatay-Kilis-Gaziantep [8]. The southern limit of distribution of *M. guentheri* in Turkey is through Kahramanmaraş and Mersin, eastern limit is Şanlı Urfa, western limit is İzmir and Muğla, and northern limit is Ankara that was reported in Anatolia at present literature.

In this paper we reported additional records for *M. guentheri* which trapped from the six localities; Yazır (980 m; 37°0'44.94"N, 30°16'59.47"E), Korkuteli (1010 m; 37°4'33.63"N, 30°12'17.91"E), Sülekler (1040 m; 37°7'56.38"N, 30°4'53.66"E), Alibeli (1610 m; 37°12'24.73"N, 30°5'46.59"E), Taşkesiği (1620 m; 37°12'49.74"N, 30° 6'6.19"E) and Akpınar (1630 m; 37°13'25.57"N, 30°5'27.91"E), in Antalya Province at Mediterranean Region (the south-western part of Anatolia Region) in Turkey (Fig.1). In addition to, some ecological characteristics of the localities, and some morphological measurements for samples were given in this study. This is the first records for *Microtus guentheri* from this localities.

MATERIALS AND METHODS

This research is based on 57 (28 ♀♀; 29 ♂♂) dead individuals, taken from the various habitats (agricultural land, roadside and grassland) found within the province of Antalya (Turkey), during April-August 2000 to April- August 2002 (Table 1). The specimens fixed with the standard processes. These fixed specimens are kept in the collection of the Faculty of Arts and Sciences, Department of Biology, Akdeniz University.

Field studies and observations

The samples were taken, for calculating density in habitats, in Antalya and surrounding areas by placing 100 snaptraps in

each site, specified according to the degree of its slope and its exposure. Fifty snaptraps were set on south-facing slopes and fifty snaptraps set on north-facing slopes at suitable locations two hours before sunset on the day of arrival in the field and checked the following morning one hour before sunrise or at sunrise (snaptrapping). Only one trap was placed in 10 m², approximately. The bait used in the traps consisted of roasted peanuts mixed with some chewed bread. Each site was surveyed for a total of twelve days (per four days x three years), for a total of 1200 snaptrap-nights in the study as a whole. The distribution by area and age groups of the samples of *M. guentheri* caught by snaptraps in localities are indicated in Table 1.

Table 1. Age groups and distributions for localities of specimens of *M. guentheri*

Localities and Altitude (m)	Individuals		Age Groups			
			Juvenile		Adult	
	n	%	♀♀	♂♂	♀♀	♂♂
Yazır 980	1	1.75	-	1	-	-
Korkuteli 1010	8	14.04	1	1	2	4
Sülekler 1020	4	7.02	-	-	2	2
Alibeli 1610	21	36.84	2	3	7	9
Taşkesiği 1620	20	35.09	1	-	12	7
Akpınar 1630	3	5.26	-	-	1	2
TOTAL	57	100	4	5	24	24

Laboratory studies

The age groups of the captured voles were determined by the morphology of the cranium as regards [9] and also, the age groups were determined by the morphology of the molars with constant growth for only snaptrapping method, according to [10]. Thus, by examining the molar teeth, the degree of wear in the youngest pregnant females was determined. The dead voles were then divided into two age groups, young and adult based on this degree of wear. Pregnant females were all classified as adult (Ognev 1947). Baculum preparations were made according to [11].

Measurements were taken from each of the body (total, hind foot, ear and tail length), skulls and bacula were made by micrometer with accuracy of up to 0.01 mm (weight were made by digital scale with accuracy of up to 0.1 g). The morphological measurements used in this study are as follows: Ow: Occipital width, Zb: Zygomatic width, Bw: Braincase width, Ic: Interorbital constriction, Nb: Nasal breadth, Bl: Basal length, Pl: Palatal length, Fl: Foramen incisivum length, Tbl: Tympanic bullae length, Lfcs: Length of facial region of the skull, Cbl: Condylbasal length, Ol: Occipito-nasal length, Hbb: Height of braincase in bullae, Hb: Heigh of braincase, C-M3: The maxillary tooth row, Dl: Diastema length, Nl: Nasal length, M: Mandible, (Fig. 2)

Bctw: Baculum tip width, Bcw: Baculum width, Bch: Baculum base height, Bcl: Baculum length, Dbcl: Distal Baculum length, (Fig. 3)

Table 2. Body, skull and baculum measurements of *M. guentheri*

Characters	Individuals (n)	Min-max	Mean± SE
Weight (g)	57	29.40-63.10	46.37±2.97
Total Length	57	129.03-169.40	150.09±15.54
Hind foot L.	57	18.50-27.30	21.58±2.31
Ear Length	57	08.10-13.07	10.11±1.21
Tail Length	57	18.21-28.13	21.67±3.20
Ow	50	12.51-14.78	13.61±0.71
Zb	50	15.08-17.08	16.27±0.20
Bw	50	6.11-8.04	7.06±0.24
Ic	50	3.15-4.25	3.85±0.34
Nb	50	3.08-3.90	3.61±0.21
Bl	50	25.33-29.66	28.02±0.17
Pl	50	12.95-15.16	13.97±0.48
Fl	50	3.45-4.78	3.65±0.24
Tbl	50	7.90-11.02	9.50±0.43
Lfcs	50	17.04-19.02	17.56±0.88
Cbl	50	25.11-30.81	28.43±1.05
Ol	50	26.60-31.90	29.13±0.18
Hbb	50	10.15-11.11	10.43±0.72
Hb	50	9.30-11.78	10.75±0.13
C-M3	50	5.95-6.99	6.32±0.08
Dl	50	7.80-9.37	8.84±0.12
Nl	50	6.73-8.92	8.01±0.37
M	50	14.91-17.86	16.14±0.54
Bctw	12	0.34-0.86	0.55±0.16
Bcw	12	1.65-2.20	1.87±0.18
Bch	12	0.56-0.91	0.73±0.11
Bcl	12	2.95-3.98	3.44±0.23
Dbcl	-	-	-

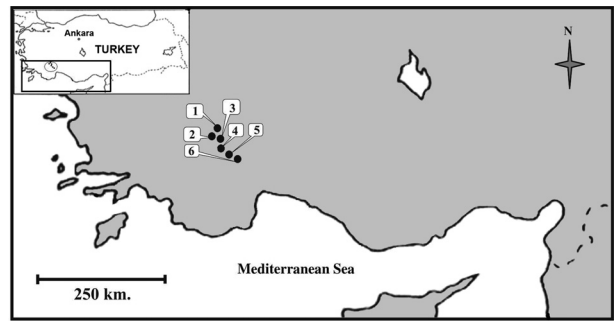


Figure 1. Map of Southern Turkey showing locations of study sites. (1: Akpınar, 2: Taşkesiği, 3: Alibeli, 4: Süleklar, 5: Korkutelı, 6: Yazır)

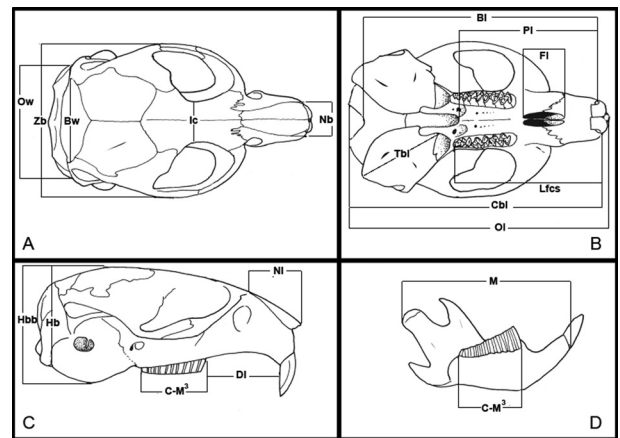


Figure 2. Measurements of cranial and mandibular variables of *Microtus guentheri*: Dorsal (A), Ventral (B), Lateral (C) view of cranium and Internal (D) view of mandible.

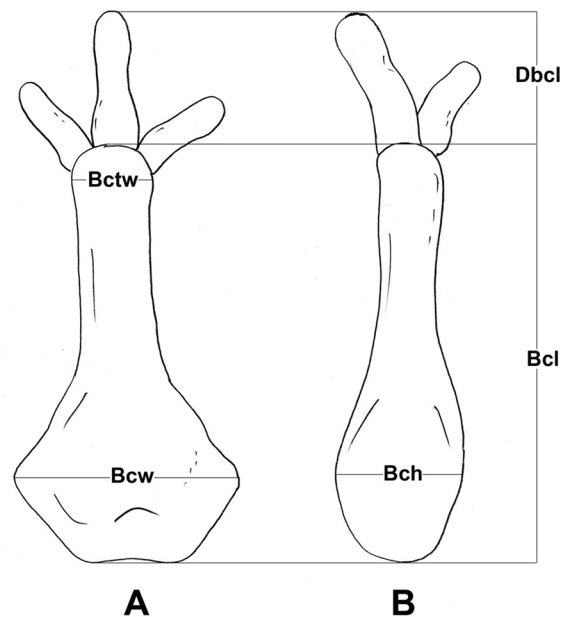


Figure 3. Measurements of baculum variables of *M. guentheri*. dorsal view (A) and Lateral view (B)

RESULTS AND DISCUSSION

Arvicola guentheri, Author: Danford and Alston, 1880.

Citation: Proc. Zool. Soc. Lond., 1880: 62.

Common Name: Guenther's Vole

Type Locality: Turkey, Maraş Province, Taurus Mountains, near Maraş. [12]

Morphological Features

Diagnosis: Total length is min=129, max=169 mm and mean; 150.09±25.54 (n=57), also tail length/total length is mean= 0.16±0.02 (Table 2). Fur, on dorsal aspect is dark brown, light on flanks. Underparts are dark grey with a whitish tinge. There is no line of demarcation along flanks (Fig. 4). The tail is bicoloured, there is short dark brownish hair dorsally and dirty white hair ventrally. The upper side of the forefeet is covered with paler hair than the dorsal fur, but the under parts are darker.

The skull exhibits general peculiarities of the genus *Microtus*. The rostrum is not markedly long and the nasals are rounded off posteriorly. The maxillary process of the zygomatic arc is slightly, laterally widened. So, the orbital construction is broad. The superior surface of the braincase is swollen. The mastoid portion of the tympanic bullae is poorly developed and invisible in dorsal view (Fig. 2).

The incisive foramina are moderate size and their posterior ends do not reach the front of the M¹ and the incisors are orthodont.

Baculum: We examined 12 bacula of *M. guentheri*. The baculum consists of a tapered proximal bone with a bulbous tip, its distal part connected to the proximal bone. Distal baculum was removed in preparation. The proximal bone is min=1.75, max=1.86 mm, mean; 1.81 mm (n = 12) in length and min=0.71, max=0.81 mm, mean; 0.77 mm (n = 12) across the base. There is a poorly developed concavity on the base that is pointed in lateral view (Fig. 3). All of the results of the morphological characters were given in the table 2.

Ecological Observations at The Localities

M. guentheri lives in cultivated areas and meadows for habitat in Turkey. It was observed that vole's burrow systems are generally made in the unplowed strip at the edge of agricultural fields and on roadsides. At snaptraps, a total of 26 (45.61%) individuals were caught in agricultural areas, 25 (43.86%) from roadsides near to agricultural areas, and 6 (10.53%) were caught in grasslands. *M. guentheri* was not encountered in other habitat types.

M. guentheri was found in particularly high numbers in clover and wheat fields and their neighbouring roadsides. In addition, they were also observed in grasslands containing herbaceous wild plants. It can be said that, As voles generally prefer to live in colonies in areas with dense vegetation, especially steppe, grassy plains and agricultural or fallow fields, they were seen to have concentrated on the edges of crop fields or fallow fields.

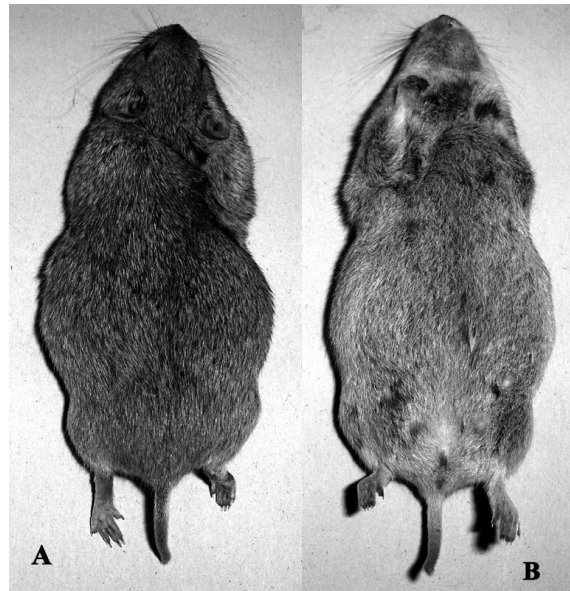


Figure 4. *M. guentheri*: dorsal (A) and ventral (B) views.–

The average temperature of the sites were recorded as 20, 22, 18, 18, 17, 14 C ° respectively, in study seasons. In addition, *Mus musculus* and *Apodemus sylvaticus* was trapped in the same locality. Such as *Prunus domestica*. and *Pyrus communis*., and also *Crataegus sp.* and *Populus sp.*were observed at sites.

Conclusion

According to our results, the skull and baculum morphometry, colour and pattern characteristics of specimens of *M. guentheri* were in agreement with data published by Misonne (1957) and Osborn (1962). Also the skull and baculum results of the morphometric measurements of *M. guentheri* were in agreement with [9, 13]

Consequently, in this paper we reported first records from this six localities for distribution of *Microtus guentheri* on Turkey.

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