

***Apodemus mystacinus* (DANFORD & ALSTON, 1877) (Muridae, Rodentia) from Al Hermon and Al Arab Mountains, southern Syria**

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Abstract. Additional records of *Apodemus mystacinus* are given from southern Syria (Al Hermon and Al Arab Mountains). The biometrical measurements, skull structure, and cheekteeth percentage index are given.

Key words: *Apodemus mystacinus*, Muridae, Rodentia, Hermon, Syria.

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I. INTRODUCTION

The genus *Apodemus* is represented in the East Mediterranean region by two species; the Broad-toothed mouse *A. mystacinus* and the Yellow-necked mouse *A. flavicollis*. The Broad-toothed mouse *A. mystacinus* is known from Syria and the neighbouring countries; Palestine, Jordan, Lebanon, Iraq and Turkey (HATT 1959; LEWIS et al. 1967; ATALLAH 1968; FILIPPUCCI et al. 1989; NADACHOWSKI et al. 1990; HARRISON and BATES 1991). The occurrence of the Broad-toothed mouse, *A. mystacinus* is well known from a number of localities in western Syria (HARRISON 1972). LEWIS et al. (1967) recorded it from Kassab in the costal region. Von LEHMAN (1965) found it at Kastel Maaf and Slenfe (the forested mountains of the costal region). AHARONI (1932) described *Apodemus flavicollis pohlie* from Kafrun, from Nassarieh Mts. and from El Kariatein (central Syria); BODENHEIMER (1958) considered Aharoni's specimens from Kafrun to be *A. mystacinus*. ALLEN (1915) recorded it from the base of Mt. Hermon (Lebanon side). The studies stopped at the southern part of Syria, especially after 1948 when it was declared the security area. This paper is the first from intended contributions to the knowledge of the mammalian fauna of the mentioned area.

II. MATERIAL AND METHODS

Six specimens of *Apodemus mystacinus*: 5 adults (4 ♀♀ & 1 ♂), and 1 ♂ subadult, were collected from two localities in southern Syria:

- Al Karnah – near the summit of Al Hermon Mountain, 2700 m above sea level.
- Ain Arab (Agricultural Research Station) 20 km East of As'sweida city, 1500 m a. s. l.

The sex, biometrical measurements, date of collection and locality for each specimen are given in Table I, the skulls (except No 5) are stored in the collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Cracow under No M/11354-11358, while specimen No 5 is preserved in alcohol at Damascus Univ, Faculty of Agriculture, Rodents Lab. (*A. mystacinus*, No 5, 22. 8. 1998, Ain-Arab Agricultural Research Station).

The measurements for the subadult are given in Table I, but are excluded from the statistical analyses. The external measurements were taken by the caliper, to the accuracy of 0.05 mm. The cranial and dental measurements were taken using a measuring microscope with a cross-stage, to an accuracy of 0.01 mm. The description of the external characters and most of the measurements were taken as in HARRISON and BATES (1991), and some additional measurements usually mentioned by other scientists were used for comparison (e.g. NADACHOWSKI et al. 1991).

Abbreviations:

HB = Head and body, T = Tail; HF = Hind foot; E = Ear; GtL = Greatest length of skull; CoL = Condylbasal length; ZB = Zygomatic breadth; IC = Interorbital constriction; BB = Braincase breadth; BD = Braincase depth; NL = Nasal length; Dia = Diastema; MXC = Maxillary cheek-teeth; MDC = Mandibular cheekteeth; M = Mandible length (with incisor); MB = Mandible body (without incisor); ForI = Foramen incisivum; HS = Height of skull; LM1+2+3 = Sum of the length of particular teeth in the row; LM1-3 = Length of the tooth-row.

III. RESULTS AND DISCUSSION

External characters. A large sized mouse, with the tail longer than the head and body, covered with short dark hairs on the upper side, with white hairs on the under part, and very clear demarcation line along the tail. The muzzle is pointed, with a naked spot at each side. The eyes are large, the ears are also large, broadly ovate above, and covered with fine gray hairs, but naked at the inside basis. The forefoot has four toes and vestigial thumb, and five tubercles on the palm. The hindfoot is relatively long and slender, with five toes; there are six tubercles on the sole. The pelage is long, soft and fine, its coloration is greyish brown on the back and sides, while the under parts are white. The demarcation line of the back and flanks is darker on the specimens collected from Ain Arab also for the dorsal part of the tail. The demarcation line along the cheeks and upper parts is distinct.

External, cranial and dental measurements of *Apodemus mystacinus* (mm);

N ^o	sex	Date	Locality	HB	T	HF	E	GtL	CoL	ZB	IC
1	F	30.8.1997	Al Karnah	120	135	25	21	31.94	29.60	15.99	4.70
2	F	18.6.1998	Ain Arab	116	127	23	19	31.05	28.14	14.36	4.45
3	F	28.4.1998	Ain Arab	122	133	24	20	29.63	27.87	—	4.60
4	M.	22.8.1998	Al Karnah	105	119	24	17	—	—	—	4.38
5	F	22.8.1998	Al Karnah	104	117	20	16	Preserved in alcohol			
6	M.	26.6.1998	Al Karnah	97	102	20	16	25.01	23.51	13.17	4.10
Mean				113.4	126.2	23.2	18.6	30.87	28.54	15.18	4.53
Minimum				104	117	20	16	29.63	27.87	14.36	4.38
Maximum				122	135	25	21	31.94	29.60	15.99	4.70

Mammæ: 1 Pr. thoracic , 2 Prs. inguinal: 6

C r a n i a l c h a r a c t e r s . The skull is relatively long (30.87mm), and flask shaped. The braincase is smooth and unridged. The nasals project in front of the incisors, more than the width of the incisors tips combined, and curve downwards in front. The zygomata are slender. The incisive foramina attain the level of M1. The tympanic bullae are relatively large.

D e n t i t i o n . The upper incisors are strongly curved, their anterior surface is smooth and pigmented orange. The length of the crown of M¹ is less than the length of those of M² and M³ combined, and its T6 is connected with T9.

The length of right MXC is less than that of MDC; 4.25 , 4.56 respectively, also the length of (L M¹⁺²⁺³) is less than that of (L M₁₊₂₊₃); 4.25 - 4.42 respectively (Table II).

We used the percentage index, mentioned by PRADEL (1981), a parameter describing a row of molars which shows the relationship between the sum of the lengths of particular teeth in the row (L M1+2+3) and the length of the tooth-row (L M1-3).

In our material the length of the upper tooth-row forms 104.71 per cent of the sum of the length of particular teeth, the lower tooth-row forms 103.18 per cent; this is due to the separated crowns of the successive teeth. The difference in the percentage index seems to be small. This index can be usefull when applied for quick check of the results of own measurements and those given in publications, and may be used as a character in the general key to identify different species found in owl pellets usually represented by skulls only.

IV. CONCLUSIONS

The external, cranial and dental measurements of the Syrian specimens presented in Table I agree with the measurements of *A. mystacinus* mentioned by HARRISON (1972), HARRISON and BATES (1991), and especially well with the reported measurements of the specimens from Lebanon; the Natural Bridge, Faraya (1950 m), and Laklouk (1680 m), with the exception of the hind foot, where the claw was included in the measurements of that specimens mentioned by LEWIS et al. (1967) (Table I).

In regards to the results found by FILIPPUCCI et al. (1989), concerning a new species of *Apodemus* in the Hermon Mountain (*A. hermonensis*) it must be mentioned that they represent the external measurements only; unfortunately the cranial and the dental measurements were not mentioned.

Table I

the subadult measurements are excluded from the statistical analyses.

IC	BB	BD	NL	Dia	FoRI	HS	MXC	MDC	M	MB
4.70	12.73	9.80	11.35	8.26	6.75	6.95	4.64	4.69	19.15	16.49
4.45	12.30	10.35	11.11	7.99	6.40	7.00	4.64	4.60	19.18	16.35
4.60	12.79	10.00	10.95	7.98	6.41	7.00	4.60	4.60	19.40	16.00
4.38	11.91	9.65	10.00	6.65	5.53	5.90	4.28	4.34	16.50	14.20
4.10	11.66	9.38	8.59	6.41	4.77	6.13	3.38	3.49	16.03	13.72
4.53	12.33	9.35	10.85	7.72	6.27	6.71	4.45	4.56	18.56	15.76
4.38	11.91	9.65	10.00	6.65	5.53	5.90	4.28	4.34	16.50	14.20
4.70	12.79	10.35	11.35	8.26	6.75	7.00	4.64	4.69	19.40	16.49

Table II

Right cheekteeth measurements and percentage of M2, M3 in regard to M1 for 4 adult specimens (the percentage of M1 considered as 100 %)

	MXC						MDC					
	M ¹	%	M ²	%	M ³	%	M ₁	%	M ₂	%	M ₃	%
N° 1	1.88	100	1.45	77.13	0.98	52.13	2.06	100	1.46	70.87	0.86	41.75
N° 2	1.93	100	1.49	77.20	0.99	51.30	2.18	100	1.45	66.51	0.94	45.19
N° 3	1.87	100	1.40	74.87	0.99	52.94	2.08	100	1.37	65.87	0.96	46.15
N° 4	1.68	100	1.39	82.74	0.94	55.95	2.06	100	1.41	68.47	0.82	39.81
mean	1.84	100	1.43	77.99	0.98	53.08	2.10	100	1.42	67.93	0.90	42.86
Sd	0.11	0	0.05	3.35	0.03	2.03	0.058	0	0.04	2.25	0.07	2.96
min	1.68	100	1.39	74.87	0.94	51.30	2.06	100	1.37	65.87	0.82	39.81
max	1.93	100	1.49	82.74	0.99	55.95	2.18	100	1.46	70.87	0.96	46.15

Table III

The mean length, percentage and sum of the particular teeth; the mean length of tooth-rows and percentage indexes

	M1	%	M2	%	M3	%	L M1+2+3	L M1-3	Percentage index
MXC	1.84	100 %	1.43	77.99 %	0.98	53.08 %	4.25	4.45	104.71
MDC	2.10	100 %	1.42	67.93 %	0.90	42.86 %	4.42	4.56	103.18

In accordance with the paper by STORCH, (1977; fig. 35, p. 177) we suggest that our specimens belong to the nominative subspecies *A. m. mystacinus* (DANFORD and ALSTON 1877), in which tubercles T6 and T9 in M¹ are connected, while they are separated in *A. m. epimelas* (NEHRING, 1902).

A pregnant female (N° 1) collected on 30. 8. 1997 at Al Karnah (2700 m.) bred five young in captivity on 6. 9. 1997 and ate them immediately after the parturition. The subadult individual (No 6) collected on 30. 8. 1998 in Al Karnah indicates that the reproduction season may begin at the end of April in the summit of Hermon Mt. and extend throughout the warmer months until the end of October. It was found around the apple orchards and vineyards in Ain Arab Agricultural Research Station (1500 m), where it shared the habitat with the Social Vole *Microtus socialis* and *Crocidura* sp. It occurs above the tree line in Al Karnah (2700 m), where it shares its habitat with the Snow Vole *Microtus nivalis*.

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