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Biometrical remarks on the Golden Hamster *Mesocricetus auratus* (WATERHOUSE, 1839) (Cricetidae, Rodentia) from Ebla (northern Syria)

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Abstract. Additional record of *Mesocricetus auratus* found in pellets of *Tyto alba* is given from Ebla ruins (northern Syria). The cranial and dental measurements are given, skull structure and cheekteeth are illustrated.

Keywords: *Mesocricetus auratus*, Golden Hamster, Cricetidae, Rodentia, Syria.

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I. INTRODUCTION

The genus *Mesocricetus* is represented by four species: *M. brandti* in Asia Minor, Caucasus, northwestern Iran, Syria and Palestine; *M. auratus*, apparently restricted to the vicinity of Aleppo in northwestern Syria and recently discovered in the southern Asia Minor (DOĞRAMACI et al. 1994), *M. raddei* to the north of the Caucasus between the Black and Caspian seas; *M. newtoni* in eastern parts of Romania and Bulgaria. NOWAK (1991) mentioned that *M. auratus* has the smallest natural range. This genus is represented in Arabia by only one species; the Golden Hamster, *M. auratus*, known only from few localities in the northwestern part of the Arabian Peninsula (HARRISON and BATES 1991). In Syria it has been collected from Aleppo (type locality), Blirimun and Azaze (AHARONI 1932). This species is the best-known species of the genus, because it has become common in the captivity throughout the world (NOWAK 1991); while it is still one of the least known mammals of Arabia in the wild state (HARRISON and BATES 1991).

This paper is the additional contribution to the knowledge of the mammalian fauna in Syria and to the knowledge of *M. auratus* in the wild state near its type locality.

A c k n o w l e g m e n t s. Thanks are due to Dr T. TOMEK for identifying *Tyto alba* skull collected in the nesting site.

II. MATERIAL AND METHODS

Ebla is situated in Tal Mardiekh, 70 km to the south of Aleppo and 26 km to the south east of Idlib (northern Syria). The study material were complete owl pellets found under the nesting site of the Barn Owl *Tyto alba*, at Ebla ruins. The nest of owls did not occure before 1964, the date when an

Italian expedition excavated the hill of Tal Mardech and discovered the ruins of Ebla civilization (EL KALAA 1989); that means the pellets collected have not accumulating there more than thirty years before the first visit to the nesting site on 3.8.1998. The pellets were collected also completely for the second time from the same place on 30.9.1998, and finaly on 17.12.1998 to be sure of the recent presence of *M. auratus* in the hunting territory of the owls. The dimentions of the pellets were recorded in mm, and their content was investigated. The skulls of *M. auratus* were separated and became the material of this study. In the majority of the skulls the posterior part was missing; therefore no measurements have been taken for that region. The cranial and dental measurements were taken using a measuring microscope with a cross-stage, to the accuracy of 0.01mm. The measurements were taken as in HARRISON and BATES (1991), but we used also some additional measurements, mainly those mentioned by other scientists (e.g. NADACHOWSKI et al. 1991).

The material of this study is stored in the collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences in Cracow, under No. M/11359.Adwan H. SHEHAB,

The measurements for left and right mandibles and mandibular cheekteeth were taken to confirm the results obtained by PRADEL (1981) for *Cricetulus migratorius* found in owl pellets from Krak des Chevaliers in Syria.

Abbreviations:

GtL = Greatest length of skull; CoL = Condylobasal length; ZB = Zygomatic breadth; IC = Interorbital constriction; BB = Braincase breadth; TB = Tympanic bullae length; NL = Nasal length; Dia = Diastema; MXC = Maxillary cheekteeth; MDC = Mandibular cheekteeth; M = Mandible length (with incisor); MB = Mandible body (without incisor); ForI = Foramen incisivum length; HS = Height of skull.

III. RESULTS AND DISCUSSION

P e l l e t s d e s c r i p t i o n. The pellets which contain at least one hamster skull, usually are easy to recognize from the first look, because there are many cereal grains on their surface (wheat and barley); this indicates that the critical time for hamster to be a prey for owls is during the nocturnal foraging when the cheek punches of hamsters are filled with food.

Other mammalian species were represented in the pellets: the Social Vole *Microtus socialis*, the Gray Hamster *Cricetulus migatorius*, the House Mouse *Mus domesticus*, and *Crocidura* sp. The predominant species represented in the pellets was *Microtus socialis*, and it was common to find two skulls in the pellet; one of them belonging to *Microtus socialis* and the other to *Mesocricetus auratus*.

C r a n i a l m e a s u r e m e n t s. The posterior part of the skull was missing in the majority of *M. auratus* material. The measurements of the available elements are present in Table I. Only one skull of *M. auratus* was intact, the measurements for this skull are as follow: Gtl = 35.12, Col = 34.38, ZB = 18.30, BB = 14.17, TB = 6.73 , IC = 4.06, NL = 12.20, SH = 8.25, ForI = 4.72, Dia = 8.86, MXC = 5.72, MDC = 5.75 (the crown measurements), M. = 21.99, MB = 19.82 (mm).

Dentition:

The mean of the grinding surface length of the upper cheekteeth row is less than that of the lower one, while the range of this length is greater in upper cheekteeth row. Values of the Standard Deviation for MXC (Sd = 0.19) is greater than that of MDC (Sd = 0.13). This can be explained by the fact that in *M. auratus* the rate of wearing is greater in the upper cheekteeth than in the lower one (Table II). The number of the complete maxillary cheekteeth rows is higher than that of the mandibular one, and the main losses concern M3, while the most persistent molar is M2 for both upper and lower toothrows.

Data in Table III show that there is a slight difference between the measurements of the right and left mandible and mandibular cheekteeth, that means it is justified to use the measurements of both right and left cheeckteeth to compare new results with the literature; especialy in the case of mate-

Table I

The measurements of the available cranial elements of *M. auratus*

		Mean	Min	Max	Sd	N
	IC	4.14	3.79	4.66	0.19	36
	NL	11.15	9.76	12.83	1.05	17
	SH	7.45	6.15	8.58	0.55	35
	ForI	4.45	3.38	5.31	0.49	33
	Dia	8.15	6.12	9.58	0.93	33
	MXC	5.40	5.03	5.9	0.19	31
	M^1	2.22	2.02	2.54	0.12	35
	M^2	1.75	1.58	1.95	0.08	35
	M^3	1.43	1.11	1.63	0.13	31
Right mandible and mandibular cheekteeth	MDC	5.46	5.16	5.82	0.13	24
	M_1	2.10	1.87	2.20	0.07	30
	M_2	1.82	1.69	1.93	0.07	32
	M_3	1.69	1.51	1.79	0.08	25
	M.	20.37	17.82	23.02	1.34	26
	MB	17.99	15.74	21.54	1.20	32
Left mandible and mandibular cheekteeth	MDC	5.50	5.12	5.82	0.15	25
	M_1	2.01	1.84	2.19	0.08	28
	M_2	1.83	1.72	1.94	0.06	32
	M_3	1.7	1.5	1.86	0.09	28
	M.	20.22	16.48	22.98	1.45	27
	MB	17.72	14.31	19.68	1.33	31

Table II

Measurements of the right maxillary and mandibular cheekteeth of *M. auratus*

	MDC	M_1	M_2	M_3	MXC	M^1	M^2	M^3
Mean	5.46	1.99	1.82	1.69	5.40	2.22	1.75	1.43
SD	0.13	0.07	0.07	0.08	0.19	0.12	0.08	0.13
Min	5.16	1.87	1.69	1.51	5.03	2.02	1.58	1.11
Max	5.82	2.2	1.93	1.79	5.9	2.54	1.95	1.63
N	24	30	33	26	32	36	36	31

Note: The measurements of the cheekteeth row and of the particular cheekteeth were taken for the grinding surface of the crown.

Table III

Measurements of the right and left mandibles and mandibular cheekteeth of *M. auratus* from Ebla

	MDC	M_1	M_2	M_3	M.	MB	MDC	M_1	M_2	M_3	M	MB
Mean	5.46	1.99	1.82	1.69	20.37	17.99	5.49	2.01	1.83	1.69	20.22	17.72
SD	0.13	0.07	0.07	0.08	1.34	1.20	0.15	0.08	0.06	0.09	1.45	1.33
Min	5.16	1.87	1.69	1.51	17.82	15.74	5.12	1.84	1.72	1.5	16.48	14.31
Max	5.82	2.20	1.93	1.79	23.02	21.54	5.82	2.19	1.94	1.86	22.98	19.68
N	24	30	32	25	26	32	25	26	32	28	27	31

rial collected from owl pellets where there is high probability of the loss of molars. This agree with the results obtained by PRADEL (1981) for *Cricetulus migratorius* collected from owl pellets in Krak des Chevaliers in Syria.

IV. CONCLUSIONS

The results of this study indicate the recent presence of *Mesocricetus auratus* in the wild state in northern Syria, and move the limit of the distribution of the Golden Hamster in Syria about 70 km to the south from its type locality. The measurements of *M. auratus* in northern Syria seem to be smaller than the measurements mentioned by HARRISON (1972) and HARRISON and BATES (1991) for *M. auratus* from the same region. This may be due to the small sample of the Golden Hamster that was studied by HARRISON (2 or 3 alive idividuals). It will be usefull to study alive specimens of this species in the future to improve its recent knowledge in the wild state.

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