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**DATA ON THE PRESENCE OF THE SPECIES *MESOCRICETUS
NEWTONI* (NEHRING, 1898) (MAMMALIA: MURIDAE:
CRICETINAE) IN DOBROGEA (ROMANIA)**

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Abstract. As a Balkan endemic species, *Mesocricetus newtoni* became a vulnerable species. The lack of results in our previous collecting attempt, using the traps, was compensated by finding some skeleton remains of the species, in „La Adam” Cave from Dobrogea. Probably, they reached there when the cave galleries were flooded and “washed”, followed by infiltration of the bone carrying water in the upper levels of the cave galleries. Measurements of the jaw fragment with six upper molars and six mandibles led us to the identification of this species. Taking into consideration the national and international legislation on species protection, we propose the extension of the surface already declared protected (from 5 ha to 10 ha, around “La Adam” Cave), for offering the individuals of this species several chances to shelter and to resist to the fragmentation and destroying of the habitats, to the pressure of the birds of prey and of the carnivores.

Résumé. Etant un endémite balkanique, *Mesocricetus newtoni* est devenu une espèce vulnérable. L'absence de résultats dans nos essais de la collecter à l'aide de pièges, au cours des années précédentes, a été compensée en trouvant des restes du squelette de l'espèce, dans la grotte „La Adam” en Dobrogea. Leur présence dans la grotte a probablement été due à l'inondation et au „lavage” des galeries de l'espèce, suivie de l'infiltration de l'eau avec les os entraînés par elle, dans les étages supérieurs de la galerie de la grotte. Les dimensions du fragment de maxillaire avec six molaires supérieures et de six mandibules nous ont permis l'identification de l'appartenance des os à l'espèce mentionnée. Tenant compte de la législation nationale et internationale qui protège l'espèce, nous proposons l'extension de la superficie déjà déclarée d'aire protégée (de 5 ha à 10 ha, autour de la grotte „La Adam”), afin d'offrir aux individus de l'espèce plusieurs chances de refuge et de résistance à la fragmentation et à la destruction des habitats, à la pression des oiseaux rapaces et des mammifères carnivores.

Key words: bones, Balkan endemic species, vulnerable species, protected area.

INTRODUCTION

Romanian hamster (*Mesocricetus newtoni*) is an endemic species for the eastern part of Bulgaria. Originating in Minor Asia, it reached only Dobrogea in its North-westward distribution (before the appearance of the Bosphorus Strait as a natural barrier). Peshev and col. (2004) mentioned the following localities of Bulgaria: Plevna, Nicopole, Ruse, Silistra, Oriahovo, Balcic, Novi Pazar, Kaspician, Kabiuk, Dobrich-General Toșevo. In Romania, it was occurred only in Dobrogea. That is why it was also called the Dobrogean hamster.

Călinescu (1931) reported Romanian hamster from Malcoci-Tulcea and Cernavodă-Constanța. Vasiliu & Șova (1968) reported *Mesocricetus auratus*, with its subspecies *M. a. newtoni*, with a distribution only in Dobrogea. Besides Malcoci and Cernavodă, the last authors reported it also from Negru Vodă, Medgidia, Tulcea, Măcin and Valul lui Traian.

Because the species was not reported from the other regions of Romania, we consider that the Danube River is a natural barrier against its northern distribution.

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In the absence of this barrier, *M. newtoni* could reach Bărăgan, at least, where there are preferred habitats as the pea, lucerne and clover cultures (from Leguminosae), of cereals, vine and vegetable gardens, and even the fallow surfaces, especially after 1990.

If in 1901 and 1903, populations of the Romanian hamster recorded huge increasing in Dobrogea (Dombrowski, 1907), within the last 3–4 decades the species recorded a drastic decline because of the deep changes of its habitats, beginning with their fragmentation by the urban development and high way construction, but especially of the destroying of its habitats by the opening of numerous quarries and by the complex pollution forms. Another cause of the population diminishing, almost to its extinction, is man's hostile attitude towards rodents in general, using any kind of control method, in fact against to a species which is protected nowadays.

In spite of the lack of results of our repeated attempts, of collecting using traps, the species is still present in Dobrogea, in very small and isolated populations. The purpose of this paper is just the recording of the most recent occurrence of *Mesocricetus newtoni* in Dobrogea. It is about the discovering of several bones of the species in the “La Adam” Cave (Fig. 1).

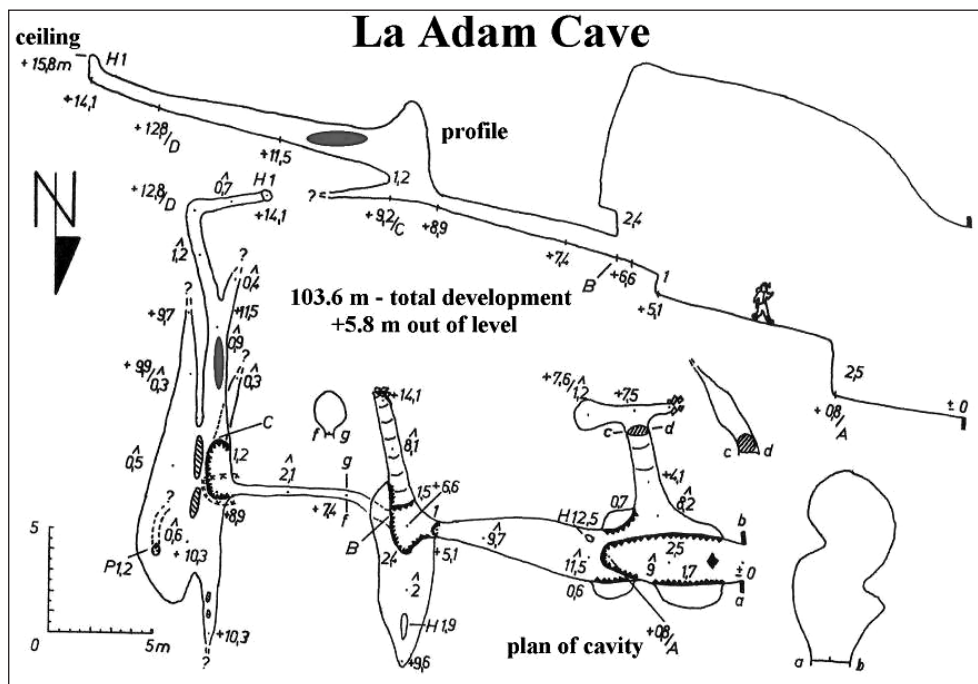


Fig. 1 - The draught with profile (up) and plan (down) of „La Adam” Cave – Târgușor locality.

MATERIAL AND METHOD

When visiting the „La Adam” Cave in the summer of 2008, one of the authors (C. R. Stanciu) found several long bone fragments (femur, humerus, radius, cubitus, fibula), remains of the sacral bones, ribs, teeth – all belonging to several individuals of the species *Mesocricetus newtoni*. Some of them remained intact and could be certainly assigned to the fore and hind limbs, thoracic cavities, dentition (Fig. 2).

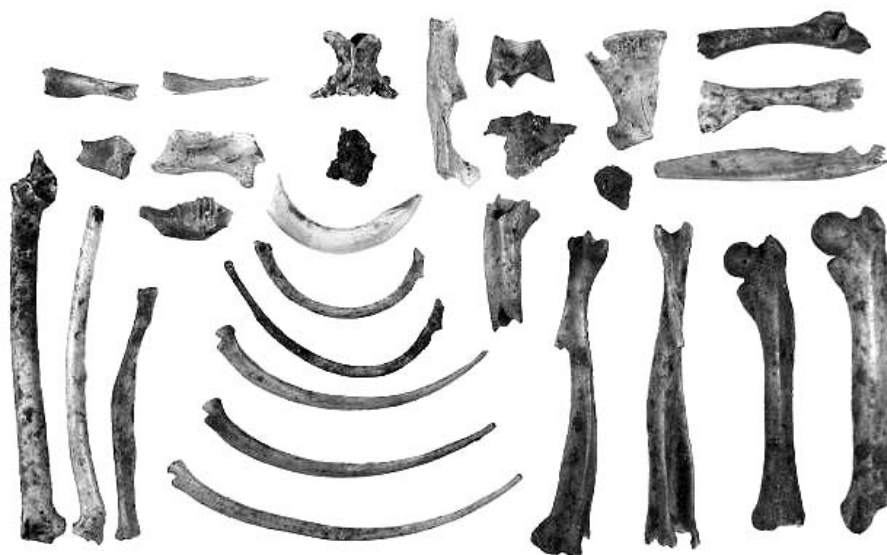


Fig. 2 – Long bones and ribs of *Mesocricetus newtoni* from “La Adam” Cave.

Beside them, in the same bone heap, six mandibles, a maxillary fragment with the jugal teeth and a small part of the zygomatic arch were identified, studied and measured for identifying the species (Fig. 3).



Fig. 3 – Part of the maxillary bone with upper molars (left) and two mandibles (right) of *Mesocricetus newtoni*.

Because at the cave entrance there is a *Buteo buteo* nest, and the *Mesocricetus newtoni* skeleton remains were grouped, in the beginning we considered that those bones are from the pellets of the respective bird of prey. At least temporarily, we presumed that the bird withdrew in the cave, after hunting in the surroundings of the locality Târgușor.

Examining the cave sketch (Fig. 1) and establishing that the gallery, where the bones of *M. newtoni* were found grouped, is ascending, we thought of the possibility this species gallery to be flooded and the bones to be carried in the cave. As a matter of fact, how the mandibles, long bones and the ribs could have been grouped if it hadn't been so! An additional argument for the explanation of the bone

carrying by pluvial water from surface, through the rodent galleries is the high wear degree of the coronary surface of the molar.

The mentioned mandibles belong to the present species of *Mesocricetus newtoni*, some of them having different wear degree of teeth or even with absent teeth. Yet, on a side of the mandible, a complete row of molars remained, and from it as well as from the skulls of *M. newtoni* from the collections of “Grigore Antipa” National Museum of Natural History (București), comparable data with those from literature were obtained (Tab. 1).

RESULTS AND DISCUSSIONS

Romanian hamster (*Mesocricetus newtoni*) is smaller in size than European Hamster (*Cricetus cricetus*) and larger than another cricetin of the Romanian fauna, i.e. Migratory hamster (*Cricetulus migratorius*). This third species was well represented in Pleistocene within the entire present territory of Romania (Hamar, 1967). Today, only small populations remained, in the steppes of Moldavia. Up to now, it was not reported from Dobrogea, and basing on its reports from Bulgaria (Peshev and col., 2004), we consider that it might be occurred in Dobrogea, too, where there are sufficient steppe habitats.

M. newtoni has a characteristic black strip, oblique on a yellowish background, from the cheeks base till the shoulders level. Ventrally, there is a black spot which runs from the chest level, on the abdomen, till the fore limbs; the rest of the abdomen is greyish-smoky coloured, and the back is light brown.

Because the long bones and isolated mandibles, collected in 2008 from „La Adam” Cave can be easily confounded with those of *Cricetus cricetus*, we compared the measurements of the similar skeleton parts of the two species.

The skull shape is similar in both species. The brain pan is shorter and higher in *M. newtoni*. Interorbital constriction is narrower than the rostral width. Zygomatic arches have the greatest width at the level of the glenoid joint. Coronoid process of the mandible is longer in comparison with the same formation in *C. cricetus* (Fig. 4).

Upper incisor in *M. newtoni* does not reach and doesn't generate a swelling in front of the infraorbital foramen as in *C. cricetus*, and its anterior-posterior diameter is greater than the transversal one and that is why the two incisors do not seem being parallel from outside. Cutting surface is oblique in the upper incisors. Lower incisors are flattened in its anterior and inner side. The row of lower molars is almost 2/3 of the diastema length. Measurements are comparable with those from literature for *M. newtoni* (Tab. 1).

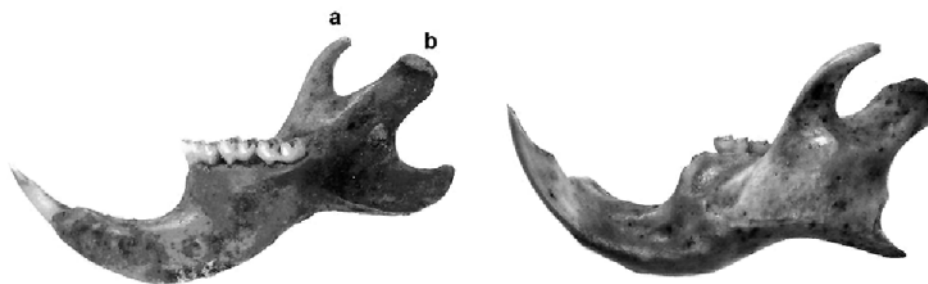


Fig. 4 – Inner view (left) and external view (right) of the *Mesocricetus newtoni*'s mandible. See length of the coronoid process (a) compared with condyloid one (b).

Table 1

Measurements of available skulls of *Cricetus cricetus* and *Mesocricetus newtoni* (parts) for comparison the collected materials with literature data.

Ms.* No.	CB	OB	IC	ZB	D	UT	LT	LM	Cat. No.	Observation on teeth
<i>Cricetus cricetus</i> from GANMNH collections										
1	46.04	19.30	6.13	25.34	14.95	7.50	7.66	32.96	5929	
2	44.04	18.06	6.15	25.17	14.56	7.31	7.73	32.61	357/7	
3	42.28	17.83	6.00	23.42	13.29	7.02	7.40	29.36	5676/8	
<i>Cricetus cricetus</i> from Miller (1912) – specimen from Bucharest										
4	43.60	18.00	6.20	25.80	13.80	7.80	7.60	28.00	122100	moderately worn
<i>Mesocricetus newtoni</i> from „La Adam” Cave - Dobrogea										
1						6.16	6.88	22.67		slightly worn
2							6.83	26.87		slightly worn
3							5.93	21.57		slightly worn
4							6.41	22.51		moderately worn
5							6.05			much worn
6							6.89			much worn
<i>Mesocricetus newtoni</i> from Miller (1912) – specimens from Malcoci, Dobrogea										
7	33.60	13.2	4.20	19.00	10.00	6.60	6.20	22.00	122098	moderately worn
8	36.80	14.2	3.80	21.00	10.80	6.60	6.40	23.60	122097	much worn
9	33.80	13.2	4.00	18.40	12.80	6.40	6.20	21.80	122095	moderately worn
10	32.80	13.2	4.00	18.20	12.20	6.40	6.40	21.80	122096	moderately worn

*Abbreviations: Ms. – measurements; No. – number; CB – condylobasal length; OB – occipital breadth; IC – interorbital constriction; ZB – zygomatic breadth; D – diastema; UT – upper tooth row; LT – lower tooth row; LM – length of mandible; Cat. No. – Catalog number; GANMNH – „Grigore Antipa” National Museum of Natural History.

Also, both the skull measurements from the collections of the “Grigore Antipa” National Museum of Natural History and the data published by Miller (1912) are comparable with the few measurements which could be made for the mandibles of *Mesocricetus newtoni* from Dobrogea, collected in 2008.

The row of the lower teeth is between 6.05 – 6.89 mm – lower values than those obtained for *Cricetus cricetus*, in which the same measurements have values of over 7.40 mm (Tab. 1). The mandible length is smaller in *M. newtoni* (21.57–26.87 mm) than in *C. cricetus*, to which values are between 28.00–32.96 mm.

From figure 4 it can be observed that the coronoid process of the mandible of *M. newtoni* is longer, and the ratio between it and the condiloid process is smaller than in *C. cricetus*. Also, the outer mandibular foramen is more anterior placed than in the second species. As a matter of fact, we underline again that *C. cricetus* was not reported from Dobrogea, till now.

Thus, having all elements which lead us to the identification of *Mesocricetus newtoni*, between the collected skeleton remains from „La Adam” Cave, we confirm its presence in Dobrogea, mentioning that we did not catch any specimen during our trap collecting.

Besides these bone agglomerations, carried by water flows, we point out the analysis importance of the pellets of the birds of prey. In comparison with the faunal situations reported only according to the trap collecting, the pellet studies offer a more complete specific structure and allow a more correct estimation of the faunal situation from a certain area. We remind the case of *Cricetulus migratorius*, once considered vanished from the Romanian fauna. First, the species was reported by Hamar (1967), from pellets of *Athene noctua* and *Asio otus*, collected from Moldavia and later some individuals were caught by traps.

On the other hand, no matter the adopted methods for the study on the spot are, we consider that *Mesocricetus newtoni* is rarer. If at the beginning of the 20th century the species was represented by numerous populations in the years with an explosive development, in the last 3–4 decades its populations were in a drastic numerical decline. That is why *M. newtoni* is included in the European legislation today (Annex I of the Bern Convention/1979) and it is considered *vulnerable* in the Red List of the International Union of Nature Conservation (IUCN Red List). At the national level, the species is included in Annex 3 of the Urgent Order of the Romanian Government no 57/29th of June 2007, with plant and animal species whose conservation needs special preservation avifaunal areas.

Basing on this, we propose and support the necessity of declaring the area of the surroundings of the Târgușor locality (Constanța county) as a „Natura 2000” protected area, both for the protection of the species *Mesocricetus newtoni*, and for the control on the entrances in the caves „Gura Dobrogei” and „La Adam”. Now, they have the statute of speleological reservations, but not only the protection need of the karstic formations must be understood. In both caves the bat colonies, with „Natura 2000” species, diminished drastically: *Miniopterus schreibersii* – vulnerable species; *Rhinolophus mehelyi* – extinct within the last 30 years, together with other bat species, also protected by continental and national legislation.

The two caves are already included in the list of the protected natural areas (of 5 ha each), by the Law no 5/2000 on the approval of the organization of the national territory (section III – Protected areas) and by the Governmental Resolution 230/2003. Other 170 ha, with the statute of natural reservation, are from the village Cheia, Târgușor commune, for the Jurassic coral reefs. Under these circumstances, we propose the extension of the 5 ha surface for „La Adam” Cave, to 10 ha, in order to offer an optimum refuge to the species *Mesocricetus newtoni*.

Conclusions

1. *Mesocricetus newtoni* remained in Dobrogea with very small and isolated populations, reason why no attempt of collecting, using the traps, had a result.
2. The report of this species in this paper bases on the identification of the skeleton remains collected from „La Adam” Cave, near locality Târgușor.
3. The measurements of the mandible and the lower rows of molars are according to the value classes characteristic to *Mesocricetus newtoni*.
4. The species is protected being included in the annexes of the continental and national legislations, and according to the IUCN Red List it is vulnerable.
5. For Dobrogea, we consider it critically endangered and we propose the extension of the area from the surroundings of Târgușor locality – Constanța county, as a „Natura 2000” protected area, which has to include the caves “Gura Dobrogei” and „La Adam”, where there are bat species, also protected.

DATE PRIVIND PREZENȚA SPECIEI *MESOCRICETUS NEWTONI* (NEHRING, 1898)
(MAMMALIA: MURIDAE: CRICETINAE) ÎN DOBROGEA (ROMÂNIA)

REZUMAT

Grivanul cu coadă scurtă sau hamsterul dobrogean (*Mesocricetus newtoni*) este endemit balcanic și a fost reprezentat în Dobrogea prin populații mari, cu înmulțiri explozive, în urmă cu 100 de ani. În ultimele 3 – 4 decenii, ca urmare a practicării agriculturii intensive după încheierea cooperativizării agriculturii, specia a cunoscut un declin drastic al populațiilor sale, iar încercările noastre repetate de colectări cu ajutorul capcanelor au fost fără succes. Cu ocazia vizitării Peșterii „La Adam” de către unul din autori, în vara anului 2008 au fost colectate câteva resturi de schelet de *M. newtoni*. Resturile osoase grupate au ajuns probabil în peșteră, printr-o antrenare de apele pluviale de la suprafață (probabil prin galerii de *M. newtoni*). Astfel se confirmă existența certă a hamsterului dobrogean, chiar dacă apreciem că a rămas în populații mici și izolate.

Pentru situația din Dobrogea, specia este critic periclitată, atât din cauza fragmentării și distrugerii habitatelor preferate, cât și din cauza presiunii prădătorilor, grivanul cu coadă scurtă intrând între componentele hranei mamiferelor carnivore și păsărilor răpitoare din zonă. De aceea, în lucrare se face propunerea de extindere a ariilor naturale protejate din comuna Târgușor, de exemplu suprafața de 5 ha destinată în prezent Peșterii „La Adam” să fie extinsă la 10 ha – ca refugiu optim într-un habitat preferat, fără perturbări antropice.

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