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CONTRIBUTIONS TO THE KNOWLEDGE OF THE MAMMAL FAUNA FROM DOBROGEA (ROMANIA)

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Abstract. The paper presents the results of the studies made between 1996-1998 in Dumbrăveni, Hagieni, Negureni forests (Constanța County) and Celic Dere (Tulcea County) - Dobrogea. The studied focused especially on the insectivorous micromammals, chiropterans and rodents. From a total of 106 mammal species existing in Romania, I report 16 species: 2 insectivores, 4 chiropterans and 10 rodents. It is also reported the European brown hare, *Lepus europaeus* (Pallas, 1778), in all 4 forests and also the Common Jackal, *Canis aureus* Linnaeus, 1758, only in Hagieni Forest. Also data on the biology, the frequency of the species in the studied area and references on the Romanian legislation are made.

Résumé. Le travail présente les résultats des études effectuées entre 1996-1998 dans les forêts Dumbrăveni, Hagieni, Negureni (Constanța Département) et Celic Dere (Tulcea Département) - Dobrogea. L'étude est concentré particulièrement sur les micromammifères insectivores, chiroptères et rongeurs. D'un total de 106 espèces de mammifères existant en Roumanie, sont rapportées 16 espèces: 2 insectivores, 4 chiroptères et 10 rongeurs. Dans chacune des 4 forêts il est rapporté également le lièvre européen, *Lepus europaeus* (Pallas, 1778). Le chacal, *Canis doré* Linnaeus, 1758, est rapporté seulement dans la forêt de Hagieni. On présente aussi des données sur la biologie, la fréquence des espèces dans le secteur étudié et des références sur la législation roumaine.

Key words: Mammalia, Insectivora, Chiroptera, Rodentia, faunology, Dobrogea, Romania.

INTRODUCTION

Previous studies on the mammals of Dobrogea dealt with: game of Dobrogea (Hogguer, 1879); fauna of Dobrogea (Lepși, 1929); mammals of Dobrogea (Călinescu, 1934); hunting in Dobrogea (Oprescu, 1936); ecology of the rodents (Gliridae) from Bărăgan and Dobrogea (Hamar & Șutova, 1963); natural reservations of Dobrogea (Băcescu & Rudescu, 1965); ecological remarks on the micromammals from Valu lui Traian (Ausländer & Hellwing, 1957 a; Hellwing & Schnapp, 1960; Schnapp, 1968, 1971; Popescu et al., 1974); variability and biology of *Sicista subtilis* (Pallas, 1773) (Ausländer & Hellwing, 1957 b); food of the ground squirrels in the steppe and forest steppe of Dobrogea (Popescu, 1972); intestinal parasites in 3 murine species and *Citellus citellus* from Dobrogea (Suciu & Popescu, 1962); rodents from NV Dobrogea (Popescu, 1968); food variations in *Asio otus* (Barbu & Popescu, 1965); shelter and food of *Meles meles* (Linnaeus, 1758) (Popescu & Sin, 1968); injurious acarions of the micromammals from Dobrogea (Solomon, 1968); faunal dynamics from the cultivated lots and forest plantations from Valu lui Traian (Boguleanu et al. 1969); distribution and scientific and practical importance of the mammals of Dobrogea (Marcheș, 1970); faunistic novelties from southern Dobrogea (Iana, 1970); “canara” (large valleys bordered by stony walls) fauna of Dobrogea (Iana, 1973); general data on the anatomy of the jackal (Angelescu, 2003).

English translation by Mihaela Barcan Achim.

Other scientists studied especially the bats, approaching themes as: Peștera de la Gura Dobrogei (Dumitrescu et al., 1958); distribution of the chiropterans in Romania (Dumitrescu et al., 1962-1963); Limanu Cave (Dumitrescu et al., 1965); study on the skull dimensions in chiropterans (Valenciuc & Ion, 1970); nocturnal activity of the bats from Gura Dobrogei Cave (Valenciuc & Ion, 1971); microclimate of their winter roosts, structure of the colony (Valenciuc & Valenciuc, 1973); distribution and biology of *Myotis capaccinii* (Bonaparte, 1837) (Răduleț, 1994); present state of the mammals from southern Dobrogea (Răduleț & Stănescu, 1996); *Pipistrellus savii* (Bonaparte, 1837) to its first report in Romania (Răduleț, 1996).

MATERIAL AND METHOD

The study was made during 1996 - 1998 in the forest: Dumbrăveni (18-25.VI.1996, 3-6.VII.1998) (near the villages Tufani and Furnica), Hagieni (24-27.X.1996), Negureni (28-29.X.1996), Celic Dere (21-25.V.1997), but also in the surrounding localities (Fig 1). Using big and small spring traps, I collected micromammals (insectivores and rodents) of 9 species. Bats of 4 species were collected or observed in the grotto from Urluia, church steeple of Tufani village, the tunnel from Hagieni Reserve and Peștera de la Moară (Izvoarele commune, Constanța County) (Tab. 1).

According to my observations I established also the presence of other species as: *Talpa europaea* Linnaeus, 1758 (Dumbrăveni, Negureni, Celic Dere forests); *Lepus europaeus* (Pallas, 1778) (Dumbrăveni, Hagieni, Negureni, Celic Dere forests); *Spermophilus citellus* (Linnaeus, 1766) (the lawn near Dumbrăveni forest, of Tufani village, in Urluia Valley); *Spalax leucodon* Nordmann, 1840 (skirts of Celic Dere and Dumbrăveni forests); *Canis aureus* Linnaeus, 1758 (Hagieni Reserve).

After collecting, the micromammals (insectivores, rodents, chiropterans) were identified, measured with the sliding callipers and SuperSamson balance (0-50 g), then some of them were released and others were preserved in 70% alcohol. Later, the last ones were inventoried and now belong to the scientific collection of "Grigore Antipa" National Museum of Natural History (Bucharest).

In the scientific collections of "Grigore Antipa" National Museum of Natural History there are 1,780 specimens of 17 species (12 rodents and 5 insectivores). *Mus musculus* Linnaeus, 1766 and *Apodemus sylvaticus* (Linnaeus, 1758) are prevalent.

RESULTS AND DISCUSSIONS

Our studies required several field trips between 1996-1998, in Dumbrăveni, Negureni, Hagieni forests (Constanța County), Celic Dere (Tulcea County) and in some surrounding localities (Fig 1). The study was made mainly on the micromammals: insectivores, chiropterans and rodents. During this period I collected or observed 2 insectivorous species, 4 chiropteran ones, and 10 of rodents. Thus, from a total of 106 mammal species reported for Romania, I report 16 micromammal species for the above-mentioned period, including *Spalax leucodon* Nordmann, 1840, *Spermophilus ctellus* (Linnaeus, 1766) (Tab. 1).

Talpa europaea Linnaeus, 1758 lives in all kind of soils with enough humus from the deciduous forests, plains. It avoids the too wet stony compact soils, with a very acid pH. The species is largely distributed in Romania but it is less occurred

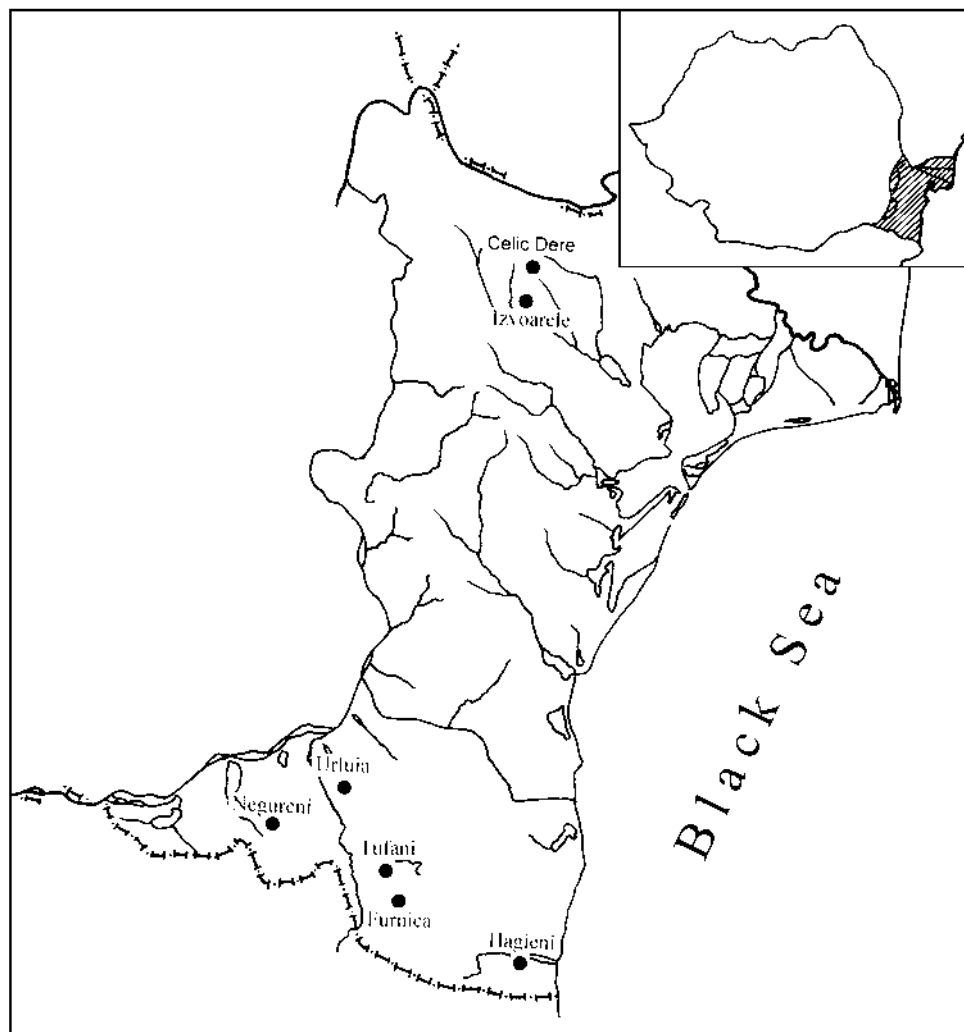


Fig. 1 - Collecting or observation localities of the small mammals from Dobrogea.

along the Carpathian chain. I report the presence of the species by a female collected (on 24th of May 1997) in Celic Dere forest, but also by the fresh hills from Dumbrăveni and Negureni Forests (Fig. 2) (Tab. 1).

Crociodura leucodon (Hermann, 1780) is a species with decreasing populations, that is why it was proposed to be included in the “Red Book” (Murariu, 2000). I report the presence of the species by 8 specimens (5 ♀♀, 3 ♂♂) collected between 25 – 27.X.1996, only from Hagieni Reserve (Tab. 1).

Dumitrescu et al., 1962-1963 reported *Rhinolophus ferrumequinum* (Schreber, 1774), as isolated individuals, in the two caves from Consul Mountain (Izvoarele commune, Constanța County), in Peștera de sub Stâncă (on 25.IX.1958) and in Peștera de la Moară (on 12.IX.1956), and *Myotis nattereri* (Kuhl, 1818) only in Peștera de sub Stâncă (on 26.XI.1957).

Table 1

Small mammals collected from Dobrogea during the period 1996-1998.

Crt. No.	Order/Species	Year/Locality						
		1996, 1998 Dumbrăveni	1996 Hagieni	1996 Negureni	1997 Celic Dere	1996, 1998 Tufani	1996 Urluia	1997 Izvoarele
1.	INSECTIVORA <i>Talpa europaea</i> Linnaeus, 1758	X		X	X			
2.	<i>Crocidura leucodon</i> (Hermann, 1780)		X					
1.	CHIROPTERA <i>Rhinolophus ferrumequinum</i> (Schreber, 1774)							X
2.	<i>Rhinolophus hipposideros</i> (Bechstein, 1800)						X	
3.	<i>Plecotus austriacus</i> (Fischer, 1829)					X		
4.	<i>Miniopterus schreibersi</i> (Kuhl, 1819)		X					
1.	RODENTIA <i>Spermophilus citellus</i> (Linnaeus, 1766)	X				X	X	X
2	<i>Dryomys nitedula</i> (Pallas, 1778)	X			X			
3	<i>Microtus subterraneus</i> (de Selys-Longchamps, 1841)				X			
4	<i>Microtus arvalis</i> (Pallas, 1778)	X	X		X			
5	<i>Micromys minutus</i> (Pallas, 1771)		X					
6	<i>Apodemus sylvaticus</i> (Linnaeus, 1758)	X	X	X	X			
7	<i>Apodemus flavicollis</i> (Melchior, 1834)	X	X	X	X			
8	<i>Apodemus agrarius</i> (Pallas, 1771)	X						
9	<i>Mus musculus</i> Linnaeus, 1766	X	X					
10	<i>Spalax leucodon</i> (Nordmann, 1840)	X	X	X	X			

X – localities where the collecting and observations were made.

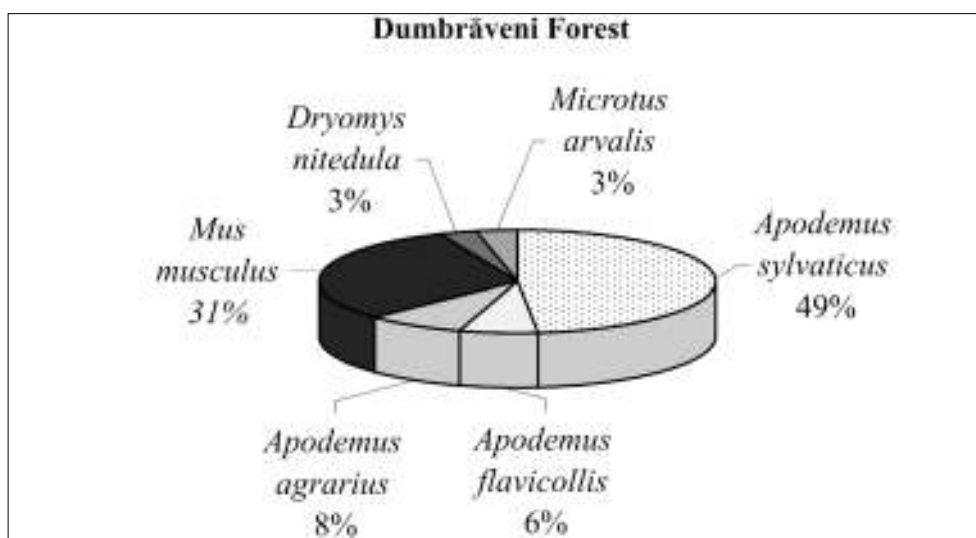


Fig. 2 - Cyclogram with % of each collected small mammal from Dumbrăveni Forest.

On 21.V.1997 I studied the two caves but I occurred only 2 isolated individuals of *Rhinolophus ferrumequinum* (Schreber, 1774) in Peștera de la Moară. (Fig 1) (Tab. 1). The local people's lack of education on the protection of the fauna led to the killing of many bats, some weeks before.

In the tunnel from the Hagieni Reserve, Răduleț (1994, 1996) remarked the following species: *Rhinolophus ferrumequinum* (Schreber, 1774), *Rhinolophus mehelyi* Matschie, 1901, *Myotis capaccinii* (Bonaparte, 1857), *Plecotus auritus* (Linnaeus, 1758), *Miniopterus schreibersi* (Kuhl, 1819).

On 24. X.1996, in the same tunnel, I found a hibernation colony of the long-winged bat, *Miniopterus schreibersi* (Kuhl, 1829). The temperature from the central corridor was of 11°C (Fig. 1) (Tab. 1).

On 22.VI.1996, around 12 a. m., I studied the grotto from Urluia Valley, where the inner temperature was of 19°C, and the outer one was of 31°C. The grotto had 3 openings, the main one directed to SE, and two secondary ones, to SW. On the ceiling of the grotto, in a small cavity, some pregnant females of *Rhinolopus hipposideros* (Bechstein, 1800) sheltered (Fig 1) (Tab. 1).

From the church steeple of the Tufani village (19.VI.1996) I report the presence of the grey long-eared bat, *Plecotus austriacus* (Fischer, 1829), by an isolated individual (Fig. 1) (Tab. 1).

A colony of ground squirrels, *Spermophilus citellus* (Linnaeus, 1766), was present in each of the lawns near the Dumbrăveni forest, of Tufani village (June 1996, July 1998), Izvoarele (May, 1997) and in the fallow land of the Urluia Valley (July, 1996, 4th of July 1998) (Tab. 1). It is a species with decreasing populations, and it was proposed to be included in the "Red Book" (Murariu, 2000).

As the ground squirrel, the forest dormouse, *Dryomys nitedula* (Pallas, 1778), is a threatened species, with small populations, but which found good conditions for feeding and shelter in the Dumbrăveni and Celic Dere forests (Tab. 1).

In Romania, the populations of *Microtus subterraneus* (de Sélvs-Longchamps, 1841) are small, that is why its reports are rarer. From the skirt of the Celic Dere forest I collected two specimens (σ , ♀) on 25.V.1997 (Tab. 1) (Fig. 3).

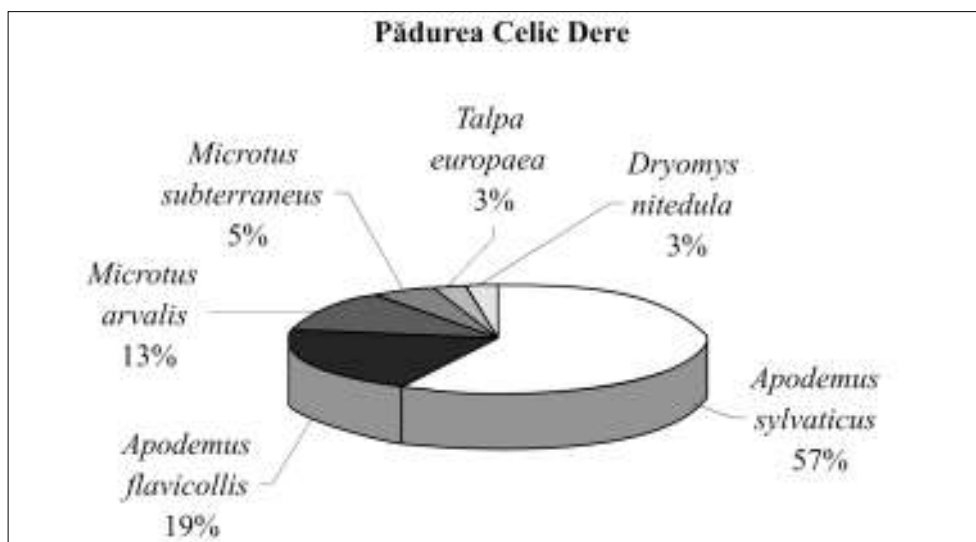


Fig. 3 – Cyclogram with % of each collected small mammal from Celic Dere Forest.

Microtus arvalis (Pallas, 1779) is a common species, especially in the field areas, characteristic to the fallow lands and to the fodder plants cultures. I report it from the skirt of Hagieni Reserve (26.X.1996), of the forests from Celic Dere (25.V.1997) and Dumbrăveni (3.VII.1998) (Fig 1) (Tab. 1).

Micromys minutus Pallas, 1771 prefers the areas with a higher humidity, as the reed plots around the pools, the lawns with high vegetation, the forest clearings and the cereal cultures. On 25.X.1996, the species was occurred in the reed plots near the pools of the Hagieni Reserve (Tab. 1).

Spalax leucodon Nordmann, 1840 is a species with a distribution limited to southern Europe. It prefers the commons, fallow lands, the clearings and the skirts of the rare forests. It digs superficial and deep galleries. It was occurred in Celic Dere forest (May, 1997), near the skirt and in a rarer area of the forest, and in Dumbrăveni, Hagieni, Negureni forests (June 1996, July 1998), in clearings. Being a species with decreasing populations it was proposed to be included in the “Red Book” (Murariu, 2000).

Apodemus sylvaticus (Linnaeus, 1758) and *Apodemus flavicollis* (Melchior, 1834) are frequent in the deciduous forests, bushy areas and they are prevalent in all forests studied by us. In Dumbrăveni forest *Apodemus agrarius* (Pallas, 1771) is also present, therefore the 3 species exceed 60 % from the total of the collected species (Fig 2). In Celic Dere forest the first two species exceed even 70% from the total of the collected species (Fig. 3).

Mus musculus Linnaeus, 1766 was collected both from Dumbrăveni forest and Hagieni Reserve. The presence of the species underlines the greater anthropic influence in these forests. In Dumbrăveni forest it reaches a percentage of 31%, much greater than *Apodemus agrarius* (Pallas, 1771) (8%) and *Apodemus flavicollis* (Melchior, 1834) (6%), (Fig. 2). Its absence from Negureni and Celic Dere forests does not mean that the species does not exist in these forests, taking into account that the human settlements are near enough. Making a comparison between the reports

from the four forests, is not present I remarked a larger variety of species in Dumbrăveni and Celic Dere forests (Tab. 1, figs 2, 3).

Both the species and their habitats are protected by the Law 462/2001, and the Law 13/1993 deals with the strict protection of the ground squirrel, *Spermophilus citellus* (Linnaeus, 1766) (Rodentia), of all bat species (Chiroptera), excepting *Pipistrellus pipistrellus* (Schreber, 1774). Other reported species, as *Crocidura leucodon* (Hermann, 1780), *Dryomys nitedula* (Pallas, 1778) and *Spalax leucodon* (Nordmann, 1840) are only protected.

Conclusions

It is necessary to reduce the extension of the human settlements, agricultural lands, grazing, forest cuttings, factors which favoured the diminishing of the natural habitat of the "wild" species (*Apodemus sylvaticus*, *Apodemus flavicollis*, *Apodemus agrarius*) with the extension of the synanthropic species habitat, as *Mus musculus* and *Rattus norvegicus*.

Romanian legislation protects the species and their habitats but it has to be implemented.

Either they are considered rare threatened or vulnerable species in Dobrogea, they still find optimum conditions for feeding and shelter.

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CONTRIBUȚII LA CUNOAȘTEREA FAUNEI DE MAMIFERE DIN DOBROGEA (ROMÂNIA)

REZUMAT

În lucrare se prezintă rezultatul cercetărilor efectuate între anii 1996 – 1998 în pădurile Dumbrăveni, Hagieni, Negureni (Județul Constanța), Celic Dere (Județul Tulcea) - Dobrogea. Studiul a fost axat, mai ales, asupra micromamiferelor insectivore, chiroptere și rozătoare. Dintr-un total de 106 specii de mamifere prezente în România sunt semnalate 16 specii de mamifere mici, dar și a speciilor *Lepus europaeus* (Pallas, 1778), *Canis aureus* Linnaeus, 1758. Se prezintă câteva date despre biologia, frecvența speciilor semnalate și specii propuse pentru "Cartea Roșie": *Crocidura leucodon* (Hermann, 1780), toate speciile de lilieci, *Spermophilus citellus* (Linnaeus, 1766), *Dryomys nitedula* (Pallas, 1778) și *Spalax leucodon* (Nordmann, 1840).

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