

CONTRIBUTIONS TO THE KNOWLEDGE OF MAMMAL FAUNA (MAMMALIA) FROM SOUTH WEST ROMANIA*

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Abstract. South western Romania shelters 50% of the mammal species known in all the country. They belong to 5 orders and 17 families, the most important being the Order Chiroptera, from the numerical point of view. The numerous karst formations and other types of shelter attract almost 2/3 of the bat species reported for the whole country in this region. The tendencies of the population dynamics of the 52 mammal species show an important decreasing of the number of the individuals (e.g. *Erinaceus concolor*, *Pitymys subterraneus*, *Lynx lynx*, *Rupicapra rupicapra*), this thing leading to the necessity of hardening the protecting laws and a proper exploitation of the species of a hunting and economical interest.

Résumé. Le sud-ouest de la Roumanie détient 50% des espèces de mammifères connues dans le pays. Elles font partie de 5 ordres et 17 familles, le plus important sous l'aspect du nombre étant l'ordre Chiroptera. Les nombreuses formations carstiques et d'autres types d'abris attirent dans cette zone presque 2/3 des espèces des Chauves-souris rapportées dans le pays tout entier. Les tendances de la dynamique des populations des 52 espèces de mammifères indiquent une réduction sensible du nombre d'individus (ex. *Erinaceus concolor*, *Pitymys subterraneus*, *Lynx lynx*, *Rupicapra rupicapra*) ce qui devrait supposer un raffermissement des lois de protection et l'exploitation adéquate de celles qui présentent un intérêt cinégetique et économique.

Key words: habitats, mammal species, shelters, conservation, south west Romania.

South west Romania has a varied relief, beginning with the Timișului Plane, hilly areas, Dognecei, Semenicului and Almajulului mountains (Fig. 1).

Specific geomorphology of this area also created the specific structure of flora and vegetation, under the complex influence of the Mediterranean and continental climate, on a substratum, mainly limy, from the Banatulului Mountains.

If the other animal groups (invertebrates, in general, and lepidopterans, particularly, fishes, amphibians, reptiles and birds) were reported before from the south western Romania, the mammal fauna was less studied by the mammalogists, most of the mentions being made by hunters.

That is why the mammals of this area are mostly known from the hunting point of view. This knowledge implies only some species, the others, especially small mammals practically being unmentioned, without the population estimation and its dynamics.

But Călinescu (1931), based on some Romanian and foreign mammalogists' mentions, noted (for example) Timiș Pass for the Romanian hedgehog – *Erinaceus roumanicus*, a species still unaccepted by the scientific community. That means that, for a few mentions from the past, it is necessary to update the systematical statute, at least for some species.

The bat group knew a more exact report (Order Chiroptera), for example Greater horseshoe bat (*Rhinolophus ferrumequinum*), which was cited by Călinescu (op. cit.) from Băile Herculane, Gaura cu muște, Coronini, Pecenișca and Ada Kaleh. A synthesis of bat distribution in Romania was made by Dumitrescu et al. (1962 – 1963), reporting the above-mentioned species also from the south western

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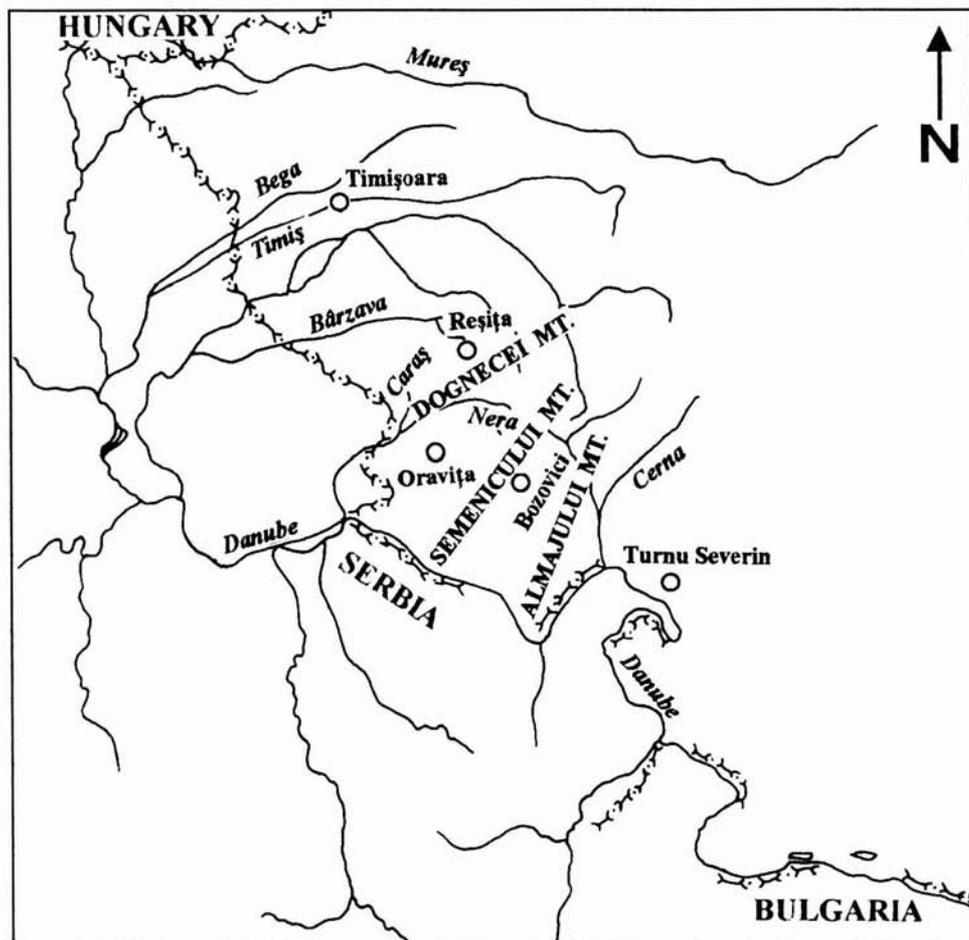


Fig. 1 – South western part of Romania.

Romania, from Ada Kaleh – Turnu Severin, Cireșu, Pecenișca – Herculane, Orșova, Plavișevița, Moldova Nouă, Anina, Gârliștea Gorges, Carașova and Reșița. Murariu (1984, 2000) published a list of the recent Romanian mammals with scientific and vernacular names as well as fauna of insectivores. In 2001 Popescu & Murariu published a book of the Romanian rodents.

A recent paper, of a monographic type as regards the systematical review and bat bio-geography (110 species from 25 genera and 8 families) from the Palearctic Region, signed by Horáček et al. (2000), underlines that: "...the palearctic bat fauna is rather poor in comparison either with the original state or with the situation in the neighbouring Paletropic regions but, at the same time, it is rather modern and rich in fine modifications..."

By this paper we proposed a synthetical report of the present mammal species from the south western Romania, with some ecological data, in some cases making a population estimation, or of the density/surface unit and their dynamics.

MATERIAL AND METHODS

The trips in south western Romania have been organized since 1972 (in Turnu Severin, Ostrovul Mare, Băile Herculane, etc.), when collectings were made for preparing the thesis for the doctor's degree (1975) and continued between 2000 and 2001.

Besides the remarks noted during all seasons, 360 specimens of small mammals (insectivores and rodents) were collected. The rodents were measured and weighed on the spot, provisionally identified and preliminary preserved.

Collectings were made with several types of traps, killing or catching ones, with a buried sheet iron cylinders.

Final identification of the species was made in the laboratory, according to the comparison of external morphology, the study of the skull and dentition using the stereomicroscope.

Among the studied species those belonging to the order Chiroptera were prevalent, for them being also used the Detector Peterson 200.

RESULTS

There are some species of order Insectivora Bowdich, 1821 which are distributed all over the country, i.e. also in south western Romania.

Family Erinaceidae Bonaparte, 1838

Erinaceus concolor Martin, 1838 bears difficultly the anthropic impact from this area, its populations having a low number of individuals. An estimation of the number of the individuals per unit of surface shows only 2 – 3 individuals/10 ha of forest and lawn. In the cultivated surfaces, their density is smaller than a unit, for the same surface. Local people from Caraşova, Gârlişteia, Anina, Bozovici, Oraviţa were used to occur the hedgehog, 30 – 40 years ago.

The species was mentioned for the Romanian fauna as *Erinaceus roumanicus* Barret-Hamilton, 1900 and as *Erinaceus danubicus* Matschie, 1901. Gavrilă et al. (1998) analyzed the mitochondrial DNA and established that in the Romanian fauna there is the species of eastern hedgehog *Erinaceus concolor* ($2n = 48$ chromosomes).

Family Talpidae Gray, 1825

Talpa europaea Linnaeus, 1758 should be driven away only from vegetable gardens and the yards from localities. More than that, in the largest part of south western Romania, moles don't find good places for digging their galleries, especially because of the rocky land, with a superficial bedrock. For instance, we mention the lawn inside the Gârliştei and Caraşului Gorges, where the grass is only grazed, it couldn't be mown just because the rocks. In these lawns, the mole hills are totally absent – a sign of the presence of this species. Within these conditions, the mole hills are very rare, about one pair/10 – 15 ha and only at low altitudes. In the gorges of the rivers of the region (Caraşului, Gârliştei, Nerei, etc.), the mole hills appear only along the narrow beaches of the lower river flow. Even there they don't stay all along the year, because in spring, during the floods they have to go in places above the water level. During the rest of the year the alluvial deposits allow the development of the invertebrate fauna, especially earthworms, which represent the base food of moles.

Family Soricidae Gray, 1821

Sorex araneus Linnaeus, 1758 is the shrew species which requires the most modest habitats. We observed and collected it from forests, lawns and meadows but also from ruderal vegetation. In spite of this the species is in a numerical decline of its populations, on the one hand because of human disturbing and even destroying of all natural habitats, and on the other one, because of the complex pollution, especially in the cultivated lands. That is why the results of our collectings were very poor (only two specimens from the surroundings of locality Gârliștea), they leading us to an estimation of only 1.5 – 2 individuals/ha. In the cultivated lands, it prefers the field ways or the fallow section, if these lands are not next to forests.

Sorex minutus Schinz, 1837 has more reduced populations than the previous species in the south western region of Romania. We make a comparison with *S. araneus*, because, in spite of the opinions that *S. minutus* prefers the mountains habitats (we ourselves collecting it near the spring of Nera), we also occur it in lower altitudes, where there is thick grass and a water flow nearby. But the collectings of *S. minutus* are only incidental, the density of the species not exceeding 0.5 individuals/ha.

Neomys fodiens (Pennant, 1771) is more dependent on the water flows, a part of its food consisting of the fish youngs, but also some aquatic invertebrates. In the researched area there are optimum life conditions, any kind of industry polluting the surroundings of the river. At about 500 m downstream the springs of Nera (in Semicului Mountains) we collected a single specimen, at the boundary of a raspberry bushes with a stream which flows through the beech forest. The density of the species is about 0.5 individuals/ha in the optimum habitats.

Neomys anomalus Cabrera, 1907 is less dependent on the water flows than the previous species. But the collectings were made also near the water, at about 75 m, at the boundary between the little plain of the river Gârliștea and the deciduous forests from upstream, at only 3 km far from the locality with same name. Estimated density of the species seems to be one individual/ha.

Crocidura suaveolens (Pallas, 1811) has an ununiform distribution, according to the structure of the soil in which it can dig its galleries and to the food availability. At 4 km downstream the locality Gârliștea, at the boundary between the hayfield and the forest, a single specimen was collected. The approximate density of the species is one individual/ha.

Order Chiroptera Blumenbach, 1779 is reported only on the base of the observations of the flights and identifications made with the detector, according the frequency in kHz. In this case, we haven't made an estimation of the number of individuals from the colonies of every species, but we remain at the mentioning stage for the south western Romania.

Family Rhinolophidae Bell, 1836

Rhinolophus ferrumequinum (Schreber, 1774) appears frequently in the reports of the area, but, in spite of them, we can easily observe the lack of present data on its populations. We remarked it in Carașului Gorges, near the Peștera Liliecilor (Cave of Bats) from these gorges, at the street lights of locality Carașova and of the trout pond, placed on the bank of the Caraș River, from the same locality, this thing doesn't mean that it uses some other shelters than the surrounding caves.

R. hipposideros (Bechstein, 1800) was identified in Caraşului, Gârliştei and Nera Gorges, near the forest range "Damian"; much rarer than the previous species, sometimes being reported in the Romanian literature from mixed colonies with the previous species.

R. mehelyi Matschie, 1901 is much rarer, being observed only near the surroundings of Peştera Liliecilor, from Caraşului Gorges. There, probably, the individuals of this species mix with individuals of other rhinolophids. The presence of this species in south western Romania must be clarified, because, as yet, it was mentioned only from the south eastern Romania and from Bucharest.

R. blasii Peters, 1867 is a strictly cave species, remarked by us only from the Gârliştei Gorges.

R. euryale Blasius, 1853 was observed on the top of Semenicului Mountains, at the boundary between the beech forest and the lawn surrounding the Nera spring. It flew around the bulb from the lawn for several times, for catching butterflies, but the insect hunting was also extended under the canopy. In the area, there are enough shelters in caves and in other rocky hollows.

Family Vespertilionidae Gray, 1821

Myotis myotis (Borkhausen, 1797) is relatively common in south western Romania, practically being observed from all points: Caraşova, Gârlişteia, Anina, Bozovici, Oraviţa, Semenicului Mountains. It hibernates in caves, but the maternal colonies migrate towards localities, for sheltering in garrets, and towards forests, for sheltering in tree hollows.

M. bechsteini (Kuhl, 1818), although it is a Palaearctic species, from the Circummediterranean regions, going northwards up to Sweden, it is a rarity for the Romanian fauna, in general. We have observed only one specimen in Gârliştei Gorges.

M. mystacinus (Kuhl, 1819) is another rarity for the Romanian fauna, although its distribution covers all Palaearctic region. Northwards it reaches up to 60° - 62°, Romania being probably the southern limit of its range. We have remarked only one specimen in Nerei Gorges, around the forest range "Damian".

M. capaccinii (Bonaparte, 1837) occurs very rarely, south western Romania being, probably, the northern limit of its range, as a Mediterranean species. Some west European authors (e.g. Van den Brink, 1967) mentioned Bohemia as the northern limit of this species' range.

M. dasycneme (Boie, 1825), from northern and western Europe, up to Ienisei, probably has as southern limit of its distribution range the south western Romania. It is a cave species, but during summer it shelters in tree hollows. We observed it only in the surroundings of locality Oraviţa.

Eptesicus serotinus (Schreber, 1774), a rare cave species, observed by us only near the locality Oraviţa. According to the citations from literature, it seems to be more frequent in northern Europe.

Eptesicus nilssonii (Keyserling and Blasius, 1839) is also a species whose range is southwards limited by the Romanian territory, its mentionings being very rare. We mentioned it from the surroundings of locality Bozovici.

Plecotus auritus (Linnaeus, 1758) occurs very rarely. We observed only one specimen near locality Oraviţa. It is known that it doesn't form large colonies, especially that it was often mentioned from tree hollows. For hibernation it is

mentioned from caves, “... only isolated individuals” (Dumitrescu et al., 1962 – 1963).

Nyctalus noctula (Schreber, 1774) was cited from Orșova and Oravița (Dumitrescu et al., op. cit.), but we can say that it is a common species in south western Romania. We remarked it in Carașului Gorges and in locality Carașova, in Gârliștei Gorges, near Anina and in Nerei Gorges, near forest range “Damian”.

Pipistrellus pipistrellus (Schreber, 1774) is the first species which occurs with 10 – 15 minutes before sunset. Its flight above Gârliștei Gorges is easily confounded with that of the swallow, if we don't take into consideration the fast flight of the last one. It is a cave species, but it also shelters in the garrets, especially in summer.

Barbastella barbastellus (Schreber, 1774) is a rare species in the Romanian fauna, with more numerous populations in northern part of the range (south Scandinavia and western Ukraine), although the species was also reported from the Caucasian area till China. In Romania, studies on the migration of this species were not made, but it is surely known that, during summer, its individuals leave the caves, mine galleries, rocky clefts and look for the tree hollows, pantries and garrets. We observed only one individual of this species, in the summer of 2000, in locality Carașova.

Miniopterus schreibersi (Kuhl, 1819) is also reported as a reconfirmation of Dumitrescu et al. (op. cit.), mention from Gârliștei Gorges and near Peștera Liliecilor, from the right bank of Caraș River. The differences between our remarks is the report of the rarity of the individuals 40 years ago, when it was “... interesting to mention, for our country, the large number of *Miniopterus* sp., on the one hand, and, on the other one the individuals' density from these populations” (Dumitrescu et al., op. cit.).

For Order Lagomorpha Brandt, 1855, we report only one species for the researched area.

Lepus europaeus Pallas, 1778 has a discontinuous distribution, the rocky regions, without vegetation not offering it optimum conditions for food and shelter. That is why we observed and reported it only from the open places, with hayfields, orchards and cultivated lands, in which, the density of the individuals is not larger than one individual/2 – 3 ha.

Order Rodentia Bowdich, 1821 is considered well represented in south western Romania, both in the afforested areas and in lawns, cultivated lands, even in localities.

Family Sciuridae Gray, 1821

Sciurus vulgaris Linnaeus, 1758 is a good example to represent the effect of the species protection laws. Thus, if till 1976, when Law no 26/1976 on the economy of game and hunting appeared, according to which the hunting of the squirrel was illegal, the squirrel populations were decreasing, since then they were remaking. The effects of this law are also pointed out by the provisions for the protection of the species, of the Law no 103/1996 – of the hunting fond and game protection. So, we explain ourselves that the squirrels spread in the compact forests, in plum orchards from over locality Carașova, in the park from Anina or in the surroundings of town Reșița.

Their density is greater in the mountain forests (2 – 3/ha) and smaller near the localities (0.5 individuals/ha).

Family Arvicolidae Gray, 1821

Clethrionomys glareolus (Schreber, 1780) makes shelters under the stones, so the rocky areas covered with grass of this region offer it good conditions for food and shelter. We collected it from beech forests, from the Semenicolui Mountains and from Nerei Valley, 3 km upstream the forest range "Damian". The density of the populations is relatively low, unexceeding 4 individuals/ha.

Pitymys subterraneus (De Selys-Longschamps, 1836) was observed and collected from the hayfield from above Gârliștei Gorges, around 7 km south of locality Carașova. Observing an active individual at 7 p.m. (in August 2001), we studied the grassy thicket and we found the specific paths, along them being fragments of cut grass and fresh excrements. From 10 spring traps, put in the identified net of paths, only one caught a specimen. The estimated density is of 6 individuals/ha.

Microtus arvalis (Pallas, 1779) was collected from 3 km downstream the locality Gârliștei, in a fallow among wheat field. An approximate density is of 4 individuals/ha.

Ondatra zibethicus (Linnaeus, 1766), although it has become an usual presence along the water flows of Romania, in the south western region it is still rare. We remarked it in the valley of Nera, 4 km upstream the forest range "Damian". The estimated density is of one individual/5 km of a water flow.

Family Muridae Gray, 1821

Mus musculus Linnaeus, 1758 was collected from the surroundings of locality Carașova, in a thicket of ruderal plants, i.e. in the margin of a path, along the Caraș River. The slightly redish colour on its back made us to believe, in the beginning, that it is about *M. spicilegus*, but both the absence of swarming and the subsequent examination, in laboratory, showed that it is about *M. musculus*. The estimated density is of 8 individuals/ha.

Apodemus agrarius (Pallas, 1778) – it is known that it prefers the places with a high humidity level; it was collected only from the Nera Gorges. About 4 km upstream the forest range "Damian", from Carașului Gorges, at 2 km upstream locality Carașova and at 4 km downstream locality Gârliștei. The estimated density is of 2 individuals/ha.

A. flavicollis (Melchior, 1834) is present in all places reached by us from the south western Romania, where the forests are compact, with a thick layer of leaves, fallen trees and moved stones, under which it can find easily the refuges and build the nests. It is interesting to mention that, at least in some specimens, a complete red collar is absent, this thing leading to wrong identifications at the first examinations. Thus, sending 2 specimens in Portugal, (one of *A. flavicollis* and the other one of *A. sylvaticus*), collected from the surroundings of locality Carașova, the researcher from the Institute of Biological Sciences established that both specimens belonged to the species *A. flavicollis*. Using its researches in molecular genetics, it was established their origin in different centers, a specimen being from the Balkans and the other one from Siberia. This thing reminding us the repopulation ways of the present territory of Romania after the Pleistocene glacial periods. The density of the species *A. flavicollis*, in the afforested areas, is of 10 individuals/ha.

Apodemus sylvaticus (Linnaeus, 1758) can be considered the prevalent species in the rodent fauna of south western Romania. It shows an unusual adaptive

plasticity, easily leaving the forests and populating the narrow beaches of the rivers of the area, the hayfields and fallows, orchards and even the cultivated lands. The approximate density is of 12 – 14 individuals/ha.

Family Gliridae Thomas, 1897

Muscardinus avellanarius (Linnaeus, 1758) was collected by us from the summit of the Semenicolui Mountains, at the limit between the lawn and the beech forest, near the springs of Nera. The density of the species, in the forest of south western Romania, is of 2 individuals/ha.

According to the foresters' reports (e.g. *in verbis* Vasile Disagă and Ion Balca, from Nera Gorges, the forest range "Damian"), in the area it might be present the species *Dryomys nitedula* (Pallas, 1779) and *Myoxus glis* (Linnaeus, 1766), unremarked by us.

Order Carnivora Bowdich, 1821, in comparison with its total number of species (17) in the Romanian fauna, seems to be less represented in this region.

Family Canidae Gray, 1821

Canis lupus Linnaeus, 1758 is present in the compact forests of the mountain massives of Semenicolui, Anina, Neman, Almăj and Locva. On the top of Semenicolui Mountains there are periodically sheep flocks for summer grazing – an irresistible attraction for wolves and a defending test for shepherds. The density of the wolves in this area is of one individual/10 ha.

Vulpes vulpes (Linnaeus, 1758) is a common species of carnivores, important for the sportive hunting, but also for the biological control of the injurious rodents. It occurs in the Timișului Plain and the hills from Bozovici, Moldova Nouă and Oravița, up to 1200 – 1500 m altitude. The approximate density is of 2 individuals/10 ha.

Family Ursidae Gray, 1825

Ursus arctos Linnaeus, 1758 is accidentally mentioned, mostly because of its leavings from Țarcului and Godeanu Mountains, to Banatului Mountains. The density is of one individual/30 ha of compact forest.

Family Mustelidae Swainson, 1835

Meles meles (Linnaeus, 1758) resides in the hilly areas from Anina, Carașova, Gârliște, in spite of the rocky ground. It succeeded in digging its burrows among the limy rocks. It has an important role in the equilibrium of injurious rodents. The estimate density is of one individual/15 ha.

Martes martes (Linnaeus, 1758) – rare in hilly forests and frequent in those of Dognecei, Semenicolui and Almajului mountains. Besides small rodents (*Apodemus* sp., *Clethrionomys* sp.) it also hunts squirrels successfully. The estimate density is one individual/20 ha.

Martes foina (Erxleben, 1777) goes down from the mountain forests, especially from rocky areas to the human settlements of the region. Local people of Carașova, Gârliște, Bozovici observe the more and more frequent presence of the beech marten in lofts and garrets. The approximate density is of one individual/15 ha.

Mustela nivalis Linnaeus, 1766 occurs at the level of the Timișului Plain, as well in the hilly and mountain areas from south western Romania. It is important in the rodent control, but when it shelters near farms, it hunts fowls. The approximate density is of one individual/20 ha.

Mustela putorius (Linnaeus, 1758) is mentioned more by the local people from south western Romania, because of its attacks to the hen coops. The approximate density is of one individual/20 ha.

Family Felidae Gray, 1821

Felis silvestris Schreber, 1777 is reported by hunters and foresters as being more frequent in the hilly forest of the south western Romania and rarer in the mountain forests, mixed, i.e deciduous and coniferous trees, or only coniferous trees. The approximate density is of one individual/30 ha of forest.

Lynx lynx (Linnaeus, 1758) is reported on the basis of the foresters' communication, only for Semenicultui Mountains. Having the statute of Natural Monument, the hope of preserving of this species in Romania still exist. Its density is only one individual/100 ha of compact forest.

Order Artiodactyla Owen, 1821 consists of only the species of a great economical and hunting interest.

Family Suidae Gray, 1821

Sus scrofa Linnaeus, 1758 doesn't have preferred habitats, being present from the plain level to the top of the mountains from south western Romania. We found fresh tracks of rooting on the Semenicult Summit, near the springs of Nera. It is known that it prefers the muddy places for its mud baths. The approximate density is of 2 individuals/50 ha.

Family Cervidae Gray, 1821

Cervus elaphus Linnaeus, 1758, although it is very important, especially as a hunting species, it is not frequently occurred in south western Romania. The foresters know it from the forests near Reșița, Anina and Oravița. The approximate density is of one individual/100 ha.

Capreolus capreolus (Linnaeus, 1758) is rarer in the forests from the Timișului Plain and more frequent in the hilly and mountain forests of south western Romania. Oravița, Semenicultui, Aninei and Almajului mountains are the places where the density of the deer is of 2 individuals/ha.

Family Bovidae Gray, 1821

Rupicapra rupicapra (Linnaeus, 1758), known as a glacial relict, today it is negatively influenced because of the climatic changes, of warming, and that is why it looks for the alpine areas. But, south western Romania is repopulated periodically with specimens of chamois, not always successfully (*in verbis*, the forester Vasile Disagă). During the last six years 4 individuals of chamois were brought (one male and 3 females) in the Semenicultui Mountains. We cannot talk here about a natural density of the species.

Conclusions

1. The mammal species from the south western Romania represent 50% of the total number of the known species of the Romanian fauna.

2. From the representatives of the five orders, Chiroptera represents almost 2/3 of all the Romanian bat species, this thing meaning that the frequent karst formations and another type of shelters are offering good conditions for food and shelter for the 17 bat species in this region.

3. The density estimation of the individuals of some species (*Erinaceus concolor*, *Sorex minutus*, *Neomys fodiens*, *N. anomalus*, *Microtus arvalis*, *Pitymys subterraneus*, etc.) shows their presence in the area, but in small and isolated populations, this thing presuming some protection measures.

4. The species of an economical and hunting interest (*Lepus europaeus*, *Canis lupus*, *Vulpes vulpes*, *Ursus arctos*, *Meles meles*, *Felis silvestris*, *Lynx lynx*, *Nus scrofa*, *Cervus elaphus*, *Capreolus capreolus*, *Rupicapra rupicapra*) need protection further on, especially because some of them (*Ursus arctos*, *Capreolus capreolus*, *Rupicapra rupicapra*) are in the south western Romania as a result of the colonizations from the neighbouring Southern Carpathians.

CONTRIBUȚII LA CUNOAȘTEREA FAUNEI DE MAMIFERE (MAMMALIA) DIN SUD VESTUL ROMÂNIEI

REZUMAT

Pe baza observațiilor și colectărilor de mamifere din sud vestul țării, timp de mai mulți ani se raportează 52 specii – unele numai pe seama informațiilor localnicilor și pădurarilor (ex. *Dryomys nitedula*, *Myoxus glis*, *Ursus arctos*, *Rupicapra rupicapra*).

Cele 52 de specii aparțin la cinci ordine, cu 17 familii, după cum urmează: Insectivora cu 3 familii = 7 specii; Chiroptera cu două familii = 17 specii; Lagomorpha cu o singură familie = o specie; Rodentia cu 4 familii = 12 specii; Carnivora cu 4 familii = 10 specii; Artiodactyla cu 3 familii = 4 specii.

Din această situație reiese mai slabă reprezentare a ordinului Rodentia – cu cele mai numeroase specii în restul țării și situarea pe primul loc, aici, a ordinului Chiroptera. Speciile de lilieci găesc în această zonă suficiente refugii (peșteri, galerii de mină, fisuri în stânci, scorburile arborilor, poduri de locuințe și anexe gospodărești), pentru ca aproape 2/3 din speciile raportate pentru țară să fie semnalate numai din sud-vest.

Estimările asupra densității indivizilor fiecărei specii sunt relative, dar constituie un indiciu în aprecierea tendințelor dinamicii populațiilor.

LITERATURE CITED

- CĂLINESCU, R., 1931 – Mamiferele României. Repartiția și problemele lor biogeografice – economice. Buletinul Ministerului Agriculturii și Domeniilor, 1 (251): 1-103. (in Romanian)
- DUMITRESCU, M., J. TANASACHI, TR. ORGHIDAN, 1962 – 1963 – Răspândirea chiropterelor în R. P. Română. Lucrările Institutului de Speologie "Emil Racoviță", I – II: 509-575. (in Romanian)
- GAVRILĂ, L., D. MURARIU, I. REBEDEA, L. MIRCEA, M. ȘTEFAN, AL. VLADIMIRESCU, S. BUCUR, 1998 – Preliminary results of the molecular cytogenetics study on hedgehog (*Erinaceus concolor* Martin, 1838) (Mammalia: Insectivora) in Romania. Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa", 40: 431-448.
- HORÁČEK, I., V. HANÁK, J. GAISLER, 2000 – Bats of the Palearctic region: a taxonomic and biogeographic review. Proceedings of the VIII-th European Bat Research Symposium (EBRS), I: 11-157.

- MURARIU, D., 1984 – La liste des Mammifères actuels de Roumanie; noms scientifiques et roumains. Travaux du Muséum d'Histoire Naturelle "Grigore Antipa", 26: 251-261.
- MURARIU, D., 2000 – Fauna României. Mammalia, Insectivora. Editura Academiei Române, București, 16 (1): 1-142. (in Romanian)
- POPESCU, A., D. MURARIU, 2001 – Fauna României. Mammalia, Rodentia. Editura Academiei Române, București, 16 (2): 1-211. (in Romanian)
- VAN DEN BRINK, F. H., 1967 – Guide to the Mammals of Britain and Europe. Ed. Collins, London: 1-221.
- x x x 1976 – Statutul Asociației Generale a Vânătorilor și Pescarilor Sportivi din Republica Socialistă România. Legea Nr. 26/1976 privind economia vânatului și vânatoarea. Reglementări privind organizarea și practicarea vânătorii: 1-84. (in Romanian)
- x x x 1996 – Legea Nr. 103/1996. Legea fondului cinegetic și a protecției vânatului. Monitorul Oficial nr. 235/27 septembrie 1996: 1-13. (in Romanian)

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