SMALL MAMMALS (INSECTIVORA AND RODENTIA) AS PREY OF LITTLE OWL (*ATHENE NOCTUA* SCOP.) IN THE SOUTH-WESTERN PART OF ROMANIA

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The diet of the little owl, *Athene noctua* Scop., was studied using pellets collected from Grădinari Village, Caraş-Severin county, Romania. Eleven small mammal species were found in the samples, with a total amount of 91 prey items belonging to Vertebrates. The most abundant were rodent species, especially voles. Shrews and bats were also present. The variety of small mammal species identified in the pellets suggests that the little owl is an opportunistic species, it's diet being a good indicator for small mammal distribution around Grădinari Village and allows the extension of the results to the south-western part of the country.

Key words: prey birds, pellets, small mammals, distribution, Romania.

INTRODUCTION

The south-western part of Romania has scarce published information regarding small mammal fauna (insectivores and rodents). Few data were reported by Murariu (1985 and 1988) during a complex survey of mammal fauna from Ostrovul Mare Island (Mehedinţi county), along the Danube River, where "Porţile de Fier II" Hydropower Plant was built. Back then, the main interest was about the influence of the anthropic pressure on small mammal species and how the dynamics of their communities was affected after their habitats were fragmented and destroyed.

Other contributions, close to the area, concerned the mammals along the Ialomiţa River (Murariu, 1989) and from the Romanian Plain – between the Ialomiţa and Olt Rivers (Murariu *et al*., 1982b).

The prey composition of night raptor birds (Strigiformes**)** identified from pellets is well studied in Romania. More than 4000 pellets of Long-eared Owl (*Asio otus*) from Dolj county were examined to identify the winter food and from these more than 95% were small mammal species (Murariu *et al*., 1982a). Petrescu (1994) examined 272 pellets from *Athene noctua* collected in Turnu Măgurele – Teleorman county. A number of 298 pellets of *Athene noctua* collected from Solonţ village – Bacău county, were examined by Laiu & Murariu (1997). Laiu & Murariu (1998) analyzed 698 *Asio otus* pellets from Bucharest and, surprisingly, identified as winter food small mammal species, like *Crocidura suaveolens* (Pallas, 1811),

C. leucodon (Hermann, 1780), *Pitymys subterraneus* (de Sélys-Longchamps, 1836), *Microtus arvalis* (Pallas, 1778), *Micromys minutus* (Pallas, 1771), *Apodemus agrarius* (Pallas, 1771) and *A. microps* Pallas, 1811. A similar analysis was done by Laiu *et al.* (2002) on 553 pellets collected from Long-eared Owl colonies from Bacău and Iaşi. Another analysis of 489 Little Owl pellets collected near Bucharest, was reported by Laiu & Murariu (2000) and in addition to the small mammals species identified, they mentioned for the first time the coleopteran *Leptinotarsa decemlineata* Say, 1824.

The aim of our paper is to offer new information on small mammal species found in little owl's pellets, collected from Grădinari Village, Caraş-Severin county.

MATERIAL AND METHODS

The pellets were collected during a field trip, in October 2015, from Grădinari village, Caraş-Severin county. They were found under an old church tower, "Turnul de pe Deal", near the village's graveyard (Fig. 1). Probably belonging to a Little-owl (*Athene noctua*), because the complete pellets had approximately 4 cm in length, they were spread on the ground between small mammal bones and other debris. The coordinates of the tower are: N 45°120'30''; E 021°587'05'' (Fig. 2).

Fig. 1. "Turnul de pe Deal", the Old Church tower of Grădinari (photo Ioana Nae).

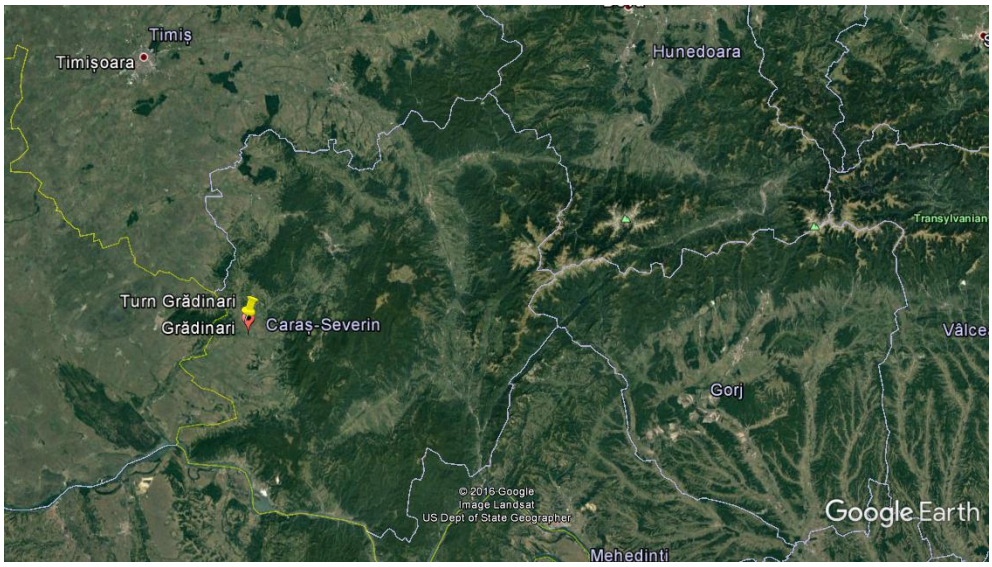

Fig. 2. Location of Grădinari Village.

A number of 38 samples, pellets and scattered bones – mainly skulls or only mandibles, were collected from the floor of the isolated tower, located on Cuca or "The Old Church Hill" in the southern part of Grădinari village.

We examined the collected material with a stereomicroscope and identified 91 mammal specimens (40 shrews, two bats and 51 rodents). Only 12 pellets were still entirely preserved. In some of them we identified four, five, six and maximum seven specimens of small mammals. The other 26 samples were isolated bones, usually attributed to only one specimen.

RESULTS

The small mammal species belonged to three orders: Insectivora, Chiroptera and Rodentia. Order Insectivora was represented only by Soricidae family with four species from two genera (*Neomys* and *Crocidura*). There were four specimens of *Neomys fodiens* (4.5%) and of *N. anomalus* (4.5%), both of them representing 9% from the total identified preys. *Crocidura leucodon* and *C. suavelens* had 17, respectively 15 specimens (17.19%, respectively 15.17%) (Fig. 3). Usually, mammalogists estimate *Sorex araneus* as the most common insectivore species, but not a single specimen was identified in our samples.

Order Chiroptera was represented only by Vespertilionidae family with two specimens of *Pipistrellus pipistrellus* (2.2%) (Fig. 3).

From order Rodentia, Microtidae and Muridae families were represented by three, respectively four species each: Microtidae – with *Microtus arvalis*

(14 specimens – 14.15%), *M. agrestis* (4 specimens – 4.4%) and *M. subterraneus* (2 specimens – 2.2%); Muridae – with *Apodemus agrarius* (1 specimen – 1.1%), *A. microps* (2 specimens – 2.2%), *Micromys minutus* (7 specimens – 7.8%) and *Mus musculus* (19 specimens – 19.21%) (Fig. 3).

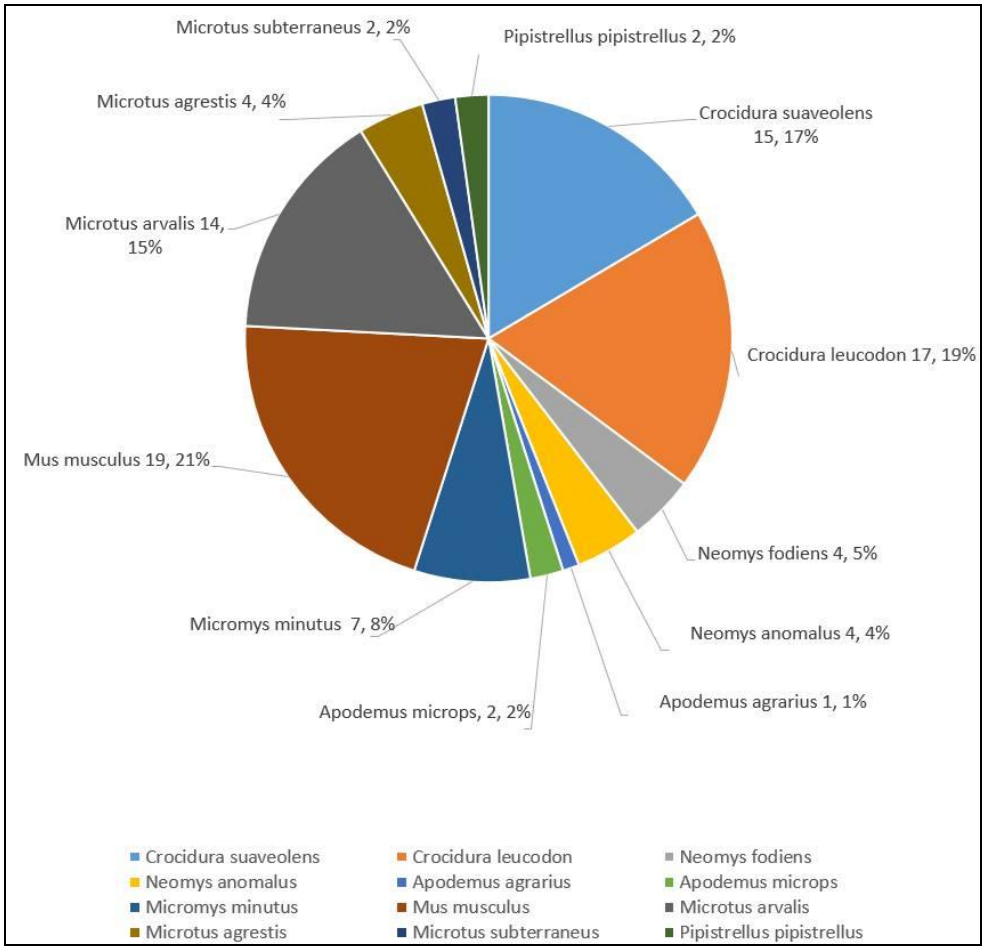

Fig. 3. Total number of small mammal species
and specimens identified from Grădinari Village.

It is obvious that for the Little-owl hunting small insectivores is easier, as we identified seven specimens in one pellet. The highest number of preys was represented by the house mouse (*Mus musculus*).

With a body mass comparable with that of the harvest mouse (*Micromys minutus*), *P. pipistrellus* was the only bat species identified in the samples. This species is represented with a low number of specimens, because it is hunted occasionally, when it is roosting close to Little-owl's place of rest or vice versa.

In the case of medium-sized rodents (e.g. *Microtus arvalis* which is weighing more than 14 g) a number of 14 specimens (14.15%) were found in our samples, because, on one side, individuals are moving more slowly (compared with Muridae species) and are easier to be hunted, and on the other, this species usually has a higher density (up to 150 individuals/ha). Our conclusion is proved by the lower number of individuals belonging to other *Microtus* species (*M. agrestis* and *M. subterraneus*) – both represented by much smaller populations (and lower individual density) all over the country.

As mentioned before, the Long eared-owl winter food also contains small bird species, more in the years with few rodents and less when small mammal populations were flourishing (Murariu *et al*., 1982 a).

Barbu & Sorescu (1970) reported as food components of *Athene noctua*, small mammals, Passeriformes, and a large number of insect and spider body parts. Almost similar results were reported by Petrescu (1994).

Laiu & Murariu (1997) analyzed 281 Little Owl pellets, collected close to Solonţ village, Bacău county and identified only one bat specimen (*Rhinolophus hipposideros* = 0.3%), 4.9% of the prey was represented by Passeriformes and 94.8%, by rodents; not a single specimen of insectivores was collected.

We identified only small mammal species and Order Insectivora represented 40.44% from the total preys. These results can be explained by the high density of these small mammals over the autumn, but were influenced by the low number of samples collected from the site.

CONCLUSIONS

1. In the surveyed area (south-west of Romania), small mammals are the main prey for *Athene noctua.*

2. The presence in high numbers of only four insectivore species (40.44% from total analysed preys) in the Little Owl pellets allows us to estimate that in the surveyed area, during 2015, species of *Neomys* and *Crocidura* had a high density.

3. From seven rodent species (51.55% of total analyzed preys), only *Microtus arvalis* represented 14.15%, the others being less than 10%.

4. The presence of *Athene noctua* in the surveyed area helps controlling the small mammal population density, especially for Muridae species, known as agricultural pests.

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Received July 14, 2016

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