

Data on the distribution of terrestrial small mammals in the Southern Region of Albania

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Abstract

This study presents data on the distribution of small terrestrial mammals in the Southern Region of Albania (Prefecture Gjirokastrë and Vlorë). Data have been obtained during eight year period of time (2004-2012) field investigations, from which 3216 specimens of small mammals have been collected. Concerning the district of Gjirokastrë, the material has been collected in most cases at the area of the Drinos valley and at the slopes of the Lunxheria mountain at the altitude 180 – 750 m above the sea level. The specimens were collected from the analysis of the pellets of three owl species (*Tyto alba*, *Asio otus* and *Athene noctua*), as well as through direct trapping campaigns. Altogether, fifteen species were identified, of which ten rodents and five insectivores. Small mammal species that resulted to be more common and widely spread in the Southern Region of Albania were the rodents *Microtus thomasi* and *Mus macedonicus*, with a relative frequency 36% and 20%, respectively, followed by insectivores *Crocidura suaveolens* and *C. leucodon*, with 17% and 12%, respectively. The widespread distribution of the *M. thomasi* and *M. macedonicus* species is closely related mainly to the cultivated habitats. This is mainly observed at the Vurgu (Delvine) field which for the most part has been intensively cultivated and planted with cereals and fodders that are much preferred for the above species. Species of a limited distribution in the study area were *Neomys anomalus*, *Suncus etruscus* and *Micromys minutus*. For the water shrew, *Neomys anomalus*, the study area represents one of the two sites the species is recorded up to date in Albania.

Key words: *small mammals, distribution, Southern Albania*

Introduction

As part of the Balkan peninsula, Albania is a country of high diversity in small mammals (Kryštufek & Griffiths, 2002; Kryštufek, 2004). However, until the end of 20th century the mammalofauna of Albania was least studied in Europe (Prigioni, 1996; Mitchell-Jones et al., 1999). This was due to the fact that data on small mammals published in Albanian language (Bego, 1997, 2001, 2003) were not well known to mammalogists outside the country. Bego et al. (2008) in their review paper on the small mammals of Albania provide records for 24 species of small terrestrial mammals, of which 17 rodents and 7 insectivores. Studies on small mammals of Albania, including those of the southern region, are intensified after years 2000, and parts of them have been known through previous publications (Bego, 2003; Bego et al., 2008; Paspali et al., 2008, 2013; Rogozi et al., 2012).

The aim of this paper is to provide new and additional data on species distribution of small terrestrial mammals belonging to orders Rodentia and Soricomorpha from the southern region of Albania.

Material and Methods

The study area includes the southern region of Albania, administratively the prefectures of Gjirokastra and Vlora. In the prefecture of Gjirokastra, the majority of the data is collected in the Drinos valley, Përmeti and Tepelena, while in the prefecture of Vlora the material is mainly collected in the Vurgu Field (district of Delvina).

The main method to gather the biological material on the small mammals has been searching, collection and analysis of owls pellets produced by three species: barn owl (*Tyto alba*), long-eared owl (*Asio otus*) and little owl (*Athene noctua*). All three owl species have as their most preferable prey small terrestrial mammals. Remains of small mammals bone material that are not digestible mixed with hairs of the mammal prey are compacted in ball's shape (pellet) inside the owl's stomach and regurgitated regularly in the vicinity of the owl's nest, almost throughout the year's time. During our eight years (2004-2012) survey some hundreds of owls pellets are collected, including all four seasons of the year. Pellets are collected in abandoned houses, chapels, old mills, and castles.

Identification of the prey item in the pellets was made through careful examination of the remaining bones, primarily skulls and jaws. Each dried pellet is examined separately, with help of forceps. Care has been taken especially when working with pellets of the long-eared owl and little owl, whose pellets are smaller and remaining bones of prey species are more fragile. Bones remaining from each pellet were put in separate plastic bags, labeled, with relevant information about the site location and date.

Prey items were determined at genus and species level, with the help of papers and relevant publications (Niethammer & Krapp, 1977, 1982, 1983; Yalden, 1977; Erfurt, 2003). To distinguish species of genus *Mus* reference was made to relevant papers of Macholán (1996) and

Kryštufek & Macholán (1998). Species determination was supported by the use of a stereomicroscope and digital camera incorporated in it.

Apart from collection of pellets, trapping small terrestrial mammals was applied as well, especially for voles (*Microtus thomasi*) and mice (genus *Apodemus* and *Mus*). Live trapping was applied in Spring and Autumn. Carrot was as bait for voles, while for trapping mice a mixture of peanut butter, salami, and hard cheese was used as bait.

Biological material on small terrestrial mammals is collected in 23 stations, situated from 0-10m above sea level (Vurgu Field) to 750m asl (in Saraqinishtë-Antigone) (Figure 1).



Figure 1. Stations where small mammals were found. (1.Pal , 2.Konispol, 3.Dhrovjan, 4.Mesopotam, 5.Shijan, 6.Dukat, 7.Bodrishtë, 8.Bularat, 9.Sofratikë, 10.Libohovë, 11.Lazarat, 12.Gjirokastrë, 13.Arshi Lengo, 14.Krinë, 15.Tranoshishtë, 16.Saraqinishtë, 17.Serat e Mashkullorës, 18.Ura e Kardhiqit, 19.Luftinjë, 20.Ballaban, 21.Sukë, 22. Bual, 23. Tre Urat-Përmet).

All collected and examined material is preserved in the mammal collection of the Museum of Natural Sciences (University of Tirana) and in the Research Laboratory of the Department of Biology and Chemistry of the Gjirokastra University.

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During 8 years field (2004-2012) there are collected and identified 3216 prey items from the owls' pellets and 70 specimens in traps. Altogether, they belong to 15 small mammal species, of which 5 are from order Soricomorpha and 10 species are Rodents.

Annotated list of small mammals.

Crocidura leucodon (Hermann, 1780)

Pal	Mesopotam	Shijan	Bodrishtë	Sofratikë	Libohovë	Lazarat	Gjirokastër	Arshi Lengo	Ser.e Mashkullorës	Ura e Kardhiqit	Sukë	Total number of individuals
7	30	14	17	4	22	42	28	84	41	75	6	370

C.leucodon is identified from the pellets of barn owl (*T.alba*) during 2004-2011. It represents 12% of the prey items.

Crocidura suaveolens (Pallas, 1811)

Pal	Dhrovjan	Mesopotam	Shijan	Bodrishtë	Sofratikë	Libohovë	Lazarat	Gjirokastër	Arshi Lengo	Saraqinishtë	Ser. e Mashkullorës	Ura e Kardhiqit	Luftinjë	Sukë	Ballaban	Total number of individuals
4	1	5	4	13	4	30	31	28	189	1	127	87	1	12	1	538

C. suaveolens was found in the pellets of barn owl (*T. alba*), long-eared owl (*A. otus*) and little owl (*A. noctua*) during the period 2004-2012. This species represents 17% of the prey items and together with *C. leucodon* is widely distributed in the southern region of Albania.

Neomys anomalus (Cabrera,1907)

Sofratikë	Libohovë	Lazarat	Arshi Lengo	Serat e Mashkullorës	Ura e Kardhiqit	Total number of individuals
2	18	1	15	25	39	100

Miller's water shrew (*N. anomalus*) was found in the pellets of *T.alba* and *A.noctua* during the period 2006-2011. It forms 3% of the total prey items. So far, this species is reported in the

Drinos valley, Gjirokastër (Bego et al., 2008; Paspali et al., 2008, 2013) and Drin i Zi valley (18 April, 2013), in proximity of Maqellarë, Dibër (Bego, *personal comment*). In the Balkans this water shrew species is more widely distributed than the other water shrew species, *N.fodiens* (Petrov, 1992).

Suncus etruscus (Savi,1822)

Mesopotam	Bodrishtë	Sofratikë	Libohovë	Lazarat	A.Lengo	S.Mashk.	U.Kardhiqit	Sukë	Total number of individuals
3	1	1	9	5	19	23	12	2	75

Etruscan shrew (*S. etruscus*) was found in the pellets of *T.alba* during 2006-2011, with some 2% of the total prey items of the barn owl. All individuals are collected below 400 m above sea level, the same as in other parts of Albania the species is recorded to date (Bego et al., 2008).

Talpa stankovici (V. Martino and E. Martino, 1931)

This mole species is recorded in the Drinos valley recently: one individual was found in the pellet of *T. alba*, in 2011, Lazarat (350 m asl). This is the first record of *T.stankovici* in the southern region of Albania. Signs of mole's presence are reported in the Çajupi field (moles's soil piles, 20-30 cm in height). In Albania the Balkan blind mole (*T. stankovici*) is reported in the Central and South-Eastern Albania in the altitude 0-890 m asl (Bego et al., 2008).

Microtus thomasi (Barrett-Hamilton, 1903)

Konispol	Pal	Dhrovjan	Mesopotam	Shijan	Dukat	Bodrishtë	Sofratikë	Libohovë	Lazarat	Gjirokastër	Arshi Lengo	Krinë	Saraqinishtë	Ser. e Mashkullorës	Ura e Kardhiqit	Luftinjë	Sukë	Ballaban	Tre Urat-Përmet	Total number of individuals
25	7	3	95	73	40	75	5	61	150	98	221	1	48	89	102	13	47	1	10	1164

Thomas Pine vole (*M. thomasi*) is the most common vole species in the Southern Region of Albania. It represents some 36% of the total prey items in the owls pellets. During 2004-2012, there were identified 1099 individuals of *M. thomasi* from the pellets of *T.alba*, *A.otus* and *A. noctua*, while 65 specimens are trapped in Konispol, Mesopotam, Dukat, Drinos field, Tre Urat-Përmet. Voles were captured in altitudes 0-750 m asl.

Mus macedonicus (Petrov and Ruži , 1983)

Pal	Mesopotam	Shijan	Bodrishtë	Sofratikë	Libohovë	Lazarat	Gjirokastër	Arshi Lengo	Tranoshtitë	Saraqinishtë	Ser. e Mashkullorës	Ura e Kardhiqit	Luftinjë	Sukë	Ballaban	Bual	Total number of individuals
6	29	5	36	1	20	50	22	155	1	6	74	191	4	30	2	1	633

Specimens of *M. macedonicus* were found in the pellets of the three owl species *T. alba*, *A. otus* and *A. noctua*. 3 specimens were trapped in Mesopotam. This species is widespread in the Southern Region of Albania and represents some 20% of the total prey items, coming second after *M. thomasi*.

Mus domesticus (Rutty,1772)

Ten specimens of this species are identified in the pellets of *T. alba* collected in Arshi Lengo, Lazarat, Ura e Kardhiqit and Sukë. To distinguish this species from the *M. macedonicus* is rather difficult, and further investigation is needed.

Micromys minutus (Pallas, 1771)

Only one specimen of this small rodent species was found in 2005 in the pellet of *T. alba*, in Gjirokastër. This species has been recorded in the central section of the Adriatic coastal area of Albania (Bego *et al.*, 2008). Being too small, makes it a not preferable prey item for owls and difficult to catch. Its presence in pellets is very rare and therefore it is still not clear whether this species is well established in the southern region of Albania.

Apodemus sylvaticus (Linnaeus 1758)

Pal	Mesopotam	Shijan	Bodrishtë	Libohovë	Lazarat	Gjirokastër	Arshi Lengo	Saraqinishtë	Ser. e Mashkullorës	Ura e Kardhiqit	Luftinjë	Sukë	Ballaban	Total number of individuals
2	23	1	3	9	6	4	18	2	26	35	1	13	1	144

Specimens of *A. sylvaticus* were found in the pellets of *T.alba* and *A.noctua* (2004-2012). This species represents 4,5% of the total small mammals prey items. Two other specimens were trapped nearby Viroi lake, Gjirokastër. *A. sylvaticus* prefers various types of habitat, from grasslands to woodlands, therefore it is well established in the Southern region of Albania.

Apodemus flavicollis (Melchior,1834)

Mesopotam	Bodrishtë	Sofratikë	Lazarat	Arshi Lengo	Serat Mashkullorës	Ura e Kardhiqit	Sukë	Total number of individuals
4	1	2	5	2	3	6	1	24

Some 24 specimens (only 1% of the total small mammals items) of *A. flavicollis* have been found in the pellets of *T.alba* (2006-2011). This species is more related to forest habitats, which are scarce in the Southern region of Albania.

Apodemus epimelas (Nehring, 1902).

Three specimens of *A. epimelas* were found in the pellets of *T. alba* (year 2006) in Shijan. Likewise *A. flavicollis*, this species prefers limestone's woodland, which is a very rare type of habitat within our study area.

Rattus rattus (Linnaeus,1758)

Bodrishtë	Libohovë	Lazarat	Arshi Lengo	Saraqinishtë	Ura e Kardhiqit	Sukë	Total number of individuals
2	6	1	1	1	2	2	15

Specimens of *R. rattus* were found in the pellets of *T.alba* and *A.otus* during 2006-2012, and they represents 0.5% of the total prey items. Most of the specimens were captured in lower altitudes, below 400 m asl; only one specimen was captured in 750 m asl (Saraqinishtë, 2012). According to Bego et al. (2008) *R. rattus* is a widespread species in Albania in rural and sub-urban areas, in altitude 0-1200 m asl. Rats are a preferable prey to *T. alba*, especially during winter (Paspali et al., 2013).

Muscardinus avellanarius(Linnaeus,1758)

Mesopam	Shijan	Libohovë	Lazarat	Arshi Lengo	Saraqinishtë	Ser.e Mashkullorës	Luftinjë	U.ra e Kardhiqit	Sukë	Total number of individuals
15	2	3	1	4	1	7	2	16	2	53

This species was found in the pellets of *T.alba* and *A.otus* during 2006-2012. It represents less than 2% of the total prey items. Based on data collected, it is believed that *M. avellanarius* is well established in the Southern Region.

Glis glis (Linnaeus, 1766)

Only three specimens of *G. glis* were found in the pellets of *T. alba* and *A. otus* in two locations: Serat e Mashkullorës (1 ind., 2010) and Dhrovjan (2 inds., 2011). This species is recently recorded in this part of Albania (Paspali et al., 2013).

Conclusions

The Southern Region of Albania hosts a rich community of terrestrial small mammals. Geographical position, habitat richness and diversity (lowland, hilly and mountainous habitats, riverine habitats of Drinos and Vjosa river, presence of grasslands, shrubs, forests), arable lands with cereals and forage vegetation, and presence of rural and urban areas make this region very preferable for many small mammal species. *Microtus thomasi* represents the most common and

widespread small mammal in the region, followed by *Mus macedonicus* and *Crocidura suaveolens*.

Further studies in the future may provide additional data on the species distribution and density, including the records for new species for this part of Albania.

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