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NEW DATA ON THE PYGMY FIELD MOUSE (*APODEMUS URALENSIS*) DISTRIBUTION AND HABITATS IN LITHUANIA

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Abstract. Pygmy field mouse (*Apodemus uralensis*) was identified as a new mammal species in Lithuania only in 1999. Despite that, many new localities of this species were discovered in northwestern and western Lithuania during 1999–2000: in Žemaitija National Park, Kurtuvėnai and Varniai regional parks, Kamanos strict nature reserve and almost on all the territory of Mažeikiai administrative district. A total of 62 individuals of *A. uralensis* were captured in 33 localities in 1996–2000. The collected data on *A. uralensis* dwelling places prove that it is an 'ecotonic' species most often residing on the edges of forests and in open habitats bordering on forests. The greatest number of these mice were captured in the ecotones of forests and open habitats (meadows, cornfields and fallow fields) and in open habitats bordering on forests or situated close to them (natural meadows overgrown with shrubs, grass-covered reclamation canals, cornfields). Rather few mice of this species were captured in forests, most often close to their edges and in coppices. Solitary individuals of *A. uralensis* were detected in open places, at a distance of more than 0.5 km from forests.
Key words: *Apodemus uralensis*, localities, habitats, distribution, Lithuania

Introduction

Pygmy field mouse (*Apodemus uralensis* Pallas) is the species whose western limit of the distribution range is rather indeterminate. The southeastern part of Estonia, almost all Latvia, northern Belarus, southern Poland and some other countries of Central Europe should be mentioned among the countries contiguous to Lithuania where pygmy field mouse has been registered (Zagorodnyouk & Mezhzherin, 1992; Mitchell-Jones et al., 1999; Kashtalian, 2000).

The data on distribution of this species in Lithuania have been changing rapidly in recent years. It was only in 1999 that *A. uralensis* was identified as a new species of small mammals in Lithuania (Juškaitis, 1999) but not yet included into the second revised edition of 'Atlas of Lithuanian Mammals, Amphibians and Reptiles' (Balčiauskas et al., 1999b) published in the same year. However, already in 1999 a few new localities of this species in northwestern and western Lithuania were established (Mazheikyte, 2000a, b). The information on *A. uralensis* distribution in Lithuania has been considerably enriched while collecting data for the fauna atlas of Mažeikiai district (Juškaitis & Baranauskas, 2001).

The aim of this paper is to present the new data collected in 1999–2000 on distribution and habitats of *A. uralensis* in Lithuania.

Material and methods

The data on localities and distribution of *A. uralensis* in Lithuania were collected during small mammal studies in Kurtuvėnai Regional Park in 1995–1996, in Žemaitija National Park in 1997, while gathering data for the fauna atlas of Mažeikiai district in 2000, and during the small mammal monitoring in Kamanos strict nature reserve, Varniai Regional Park and Žemaitija National Park in 1999–2000. A total of 62 individuals of *A. uralensis* were caught in 33 localities in 1996–2000. The major part of the material was gathered in Mažeikiai district (northwestern Lithuania) in August 2000.

The method of trap lines was applied in catching the above mentioned rodents. Both live- and snap- traps were used for that purpose. In the course of fauna studies undertaken in August–October traps were kept for two days and during the monitoring carried out in May and October traps were kept for three days with one check-up daily. Relative abundance (number of individuals per 100 trap/days) was established according to the data of the first day capture.

Dimensions of the body and features of the skull (Mezhzherin & Zagorodnyouk, 1989; Zagorodnyouk & Mezhzherin, 1992) were used for the identification of the species. The skulls of all the specimens caught are kept by the authors of this paper. Localities of

A. uralensis were mapped on 10 × 10 km squares of the national grid 'Lithuania 94'. Two or more localities occurring in the same square were designated by one sign.

Results and discussion

In Lithuania, the first mouse, identified as *A. uralensis*, was captured in the northern part of Žemaitija National Park on 1 October 1997 (Juškaitis, 1999). The habitat of *A. uralensis* in this locality was a dry and pure meadow with tussocks in a large glade. The mouse was caught near the canal, where beavers (*Castor fiber*) lived. One more locality of *A. uralensis* in Žemaitija National Park is situated in Plokštinė forest. An adult male was trapped there on the small mammal monitoring site in a Norway spruce (*Picea abies*) stand, in a swampy valley of a stream in May 1999.

In 1999 and 2000 these mice were trapped on two more small mammal monitoring sites in protected areas. In Kamanos strict nature reserve *A. uralensis* was captured in three localities: in a transitional swamp with Scotch pine (*Pinus sylvestris*), birch (*Betula pendula*) and Norway spruce (n = 2), in an unmown meadow with some shrubs (n = 4) and in a mature oak (*Quercus robur*) wood with admixture of ash (*Fraxinus excelsior*), Norway spruce and birch, and a hazel (*Corylus avellana*) understorey (n = 1). In Stervas nature reserve of Varniai Regional Park *A. uralensis* (n = 4) was found in a natural marshy meadow with fragments of thick-stemmed grass close to an alder (*Alnus*) and Norway spruce groves. In Pabiržulis archeological reserve of this regional park *A. uralensis* (n = 1) was captured in a Norway spruce stand with young shrubs.

Three localities of *A. uralensis* situated at a range of 2–6 km from each other are known in Kurtuvėnai Regional Park at present. In the spring of 1999 one individual was captured southward from Kurtuvėnai village. Its habitat was a wet marshy meadow abounding in tussocks with a belt of shrubs. In 2000 on reviewing the skulls of the small mammals previously caught in Kurtuvėnai Regional Park, it turned out that two representatives of this species had been captured in this park as far back as 1996 in Vainagiai and Galvydiškė. The habitat of *A. uralensis* in Galvydiškė is the ecotone of a dry natural unmown meadow and the humid one. The latter is overgrown with willow (*Salix*) shrubs and birch-trees. In Vainagiai *A. uralensis* was trapped in a humid tussocky meadow merging into the drier one with meadow-sweets (*Filipendula ulmaria*) and birch-trees. In brief, all the three localities of *A. uralensis* in Kurtuvėnai Regional Park are situated in natural shrubby meadows.

More thorough data on *A. uralensis* distribution and its habitats in Lithuania were obtained in 2000 during the investigation of small mammals conducted in Mažeikiai district (Juškaitis & Baranauskas, 2001). The performed studies demonstrated that *A. uralensis* is distributed almost throughout Mažeikiai district. In 2000 these rodents were captured in 23 trap lines out of 45 (45 individuals in all), although they were not abundant. In most cases relative abundance of these mice equalled 4–8 individuals per 100 trap/days. The environs of Serbentavas, Jonaičiai and Dagiai forests were distinguished for the greatest abundance of *A. uralensis*: the relative abundance amounting to 20 individuals per 100 trap/days was established on the edge of a barley (*Hordeum vulgare*) and oat (*Avena sativa*) field close to Dagiai forest and the relative abundance amounting to 16 individuals per 100 trap/days was evidenced by the grass-covered reclamation canal in a reaped rye (*Secale cereale*) field close to Jonaičiai forest. In Mažeikiai district the greatest number of these mice was spotted in the ecotones of mixed or deciduous forests and open habitats (meadows, cornfields, fallow fields) and in open habitats (natural shrubby meadows, grass-covered reclamation canals, cornfields) adjacent to forests or bordering on them. Some mice were also trapped in forests close to their edges and in coppices. Solitary individuals of *A. uralensis* were trapped in open places at a distance of more than 0.5 km from the nearest forest (in reed *Phragmites communis* bed of the Vadakstis River valley and on the edge of meadow-sweet bed, on the edge of a cultivated pasture bordering on a fallow field).

Dense distribution of *A. uralensis* localities in north-western Lithuania as well as several scattered ones (Fig. 1) leads to the assumption that this species may be quite widespread in northwestern and western

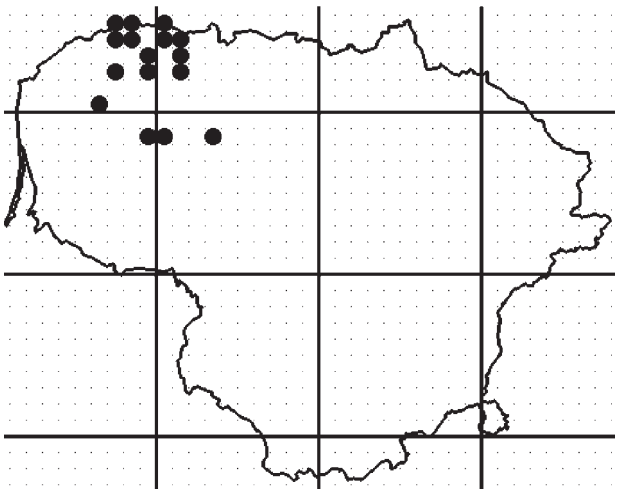

Figure 1. Localities of *Apodemus uralensis* in Lithuania.

Lithuania. New localities of this rodent are likely to be found in Skuodas, Kretinga, Plungė, Telšiai, Akmenė, Šiauliai and Kelmė districts. In this connection it should be noted that N. Likevičienė (1959) in her doctoral thesis referred to some wood mice (*Apodemus sylvaticus*) captured in 1954 in the present-day Plungė district near Lake Beržoras and in Telšiai district near Lieplaukė. Apparently, the detected mice represented the species of *A. uralensis*, and not that of *A. sylvaticus*. As *A. uralensis* has been spotted in a number of localities in southern Latvia (Mitchell-Jones et al., 1999), it is possible to assume that these mice reside in some districts of northern Lithuania (Joniškis, Pasvalys, Biržai) as well although one published report has not proved correct. A rodent caught on the edge of Biržai forest was expected to be a representative of *Apodemus microps* (= *A. uralensis*; Balčiauskas et al., 1999a). Yet on further examination of the skull of this mouse, this presumption was not confirmed.

So, the new data on distribution of *A. uralensis* in Lithuania testify that this species is widespread in the northwestern and western part of the country whereas another species of this genus – *A. sylvaticus* – is found only in southern and eastern Lithuania (Balčiauskas et al., 1999b; Mazheikyte, 2000a, b). Further investigations are expected to show if distribution range limits of the two species are communicated and what factors precondition such distribution of these rodents.

Table 1 presents the generalized data on *A. uralensis* habitats in Lithuania. They indicate that rather few mice of this species have been registered in forests (18% of the localities and 13% of the trapped individuals). These figures might have been affected by the fact that during the small mammal studies in Mažeikiai district rather few trappings were carried out in forests (Fig. 2): only six lines of traps were set in different places with five individuals of *A. uralensis* captured in three of them. However, on other sites of small mammal monitoring (Kamanos strict nature reserve, Varniai Regional Park), where the number of traps set in forests and meadows was the same, the number of *A. uralensis* trapped in 1999–2000 in meadows (n = 8) considerably surpassed that in forests (n = 2). During the small mammal studies in Kurtuvėnai Regional Park conducted in 1996 (Juškaitis & Lopeta, 1997) traps were set both in forests and in meadows six lines in each but it was only in meadows that two individuals of *A. uralensis* were trapped. It should be also pointed out that out of 11 mature females captured in Mažeikiai district (with embryos or placenta spots in their uterus) six were trapped in the ecotones of forests and open habitats, five were caught in open places and not a single one was trapped in a forest.

A. uralensis has been spotted in forests of different type: in mixed forests of Norway spruce and deciduous trees, spruce-stands (mature and young ones with shrubs), mature mixed oak forests as well as in coppices of mixed forests. Most often these mice were captured close to forest edges. Up to now only one representative of this species has been caught deep in the forest, far from the edge (Žemaitija National Park, Plokštinė forest) although on that monitoring site small mammals have been trapped for a number of years (1995–1999).

A considerably greater number of these rodents have

Table 1. Characteristics of *Apodemus uralensis* habitats in Lithuania.

Habitat characteristics	Number of localities, n (%)	Number of individuals captured, n (%)
Forests		
Mixed and coniferous forests, coppices	6 (18.2)	8 (12.9)
Ecotones		
Ecotones of forests (mixed, deciduous and coniferous) and open habitats (meadows, cornfields, fallow fields)	10 (30.3)	18 (29.0)
Forested shores of water bodies (rivers, ponds) bordering on open habitats	3 (9.1)	3 (4.8)
Open habitats		
Natural shrubby meadows bordering on mixed forests	7 (21.2)	14 (22.6)
Other open habitats (grass-covered reclamation canals in the fields, cornfields) close to forests	3 (9.1)	14 (22.6)
Open habitats (reed beds, meadow-sweet beds, cultivated meadows) situated at a distance of more than 0.5 km from the nearest forest	3 (9.1)	4 (6.5)
Other habitats		
Transitional swamps with pine-, birch- and spruce-trees	1 (3.0)	1 (1.6)
Total	33 (100)	62 (100)

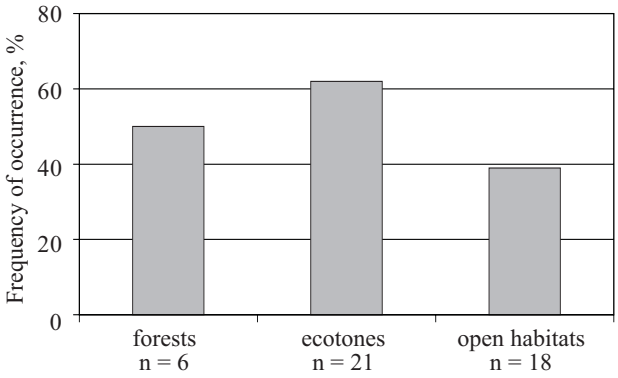

Figure 2. Frequency of occurrence (%) of *Apodemus uralensis* in separate habitat groups in Mažeikiai district (August 2000) according to catches in separate trap lines (n – number of trap lines in the distinguished habitat groups).

been captured in the ecotones of forests and open habitats – meadows, cornfields and fallow fields (39% of the localities and 34% of the caught individuals). In Mažeikiai district *A. uralensis* was captured in 13 cases (62%) out of 21 trap lines set in such ecotones (Fig. 2). Most often these were edges of mixed forests (spruce-stands with deciduous trees) and rarer – edges of deciduous groves. Shores of water bodies overgrown with forests and bordering on open habitats are attributed to this group as well (Table 1).

Even 45% of all individuals of *A. uralensis* were caught in open habitats bordering on forests or situated in the vicinity of the latter (Table 1). In most cases these were natural humid meadows with shrubs close to forests. However three localities (grass-covered reclamation canals in the fields, the edge of a barley-oat field) in which overall 14 individuals were captured prove that these mice are also adjusted to live in anthropogenic cultivated habitats.

Solitary individuals of *A. uralensis* (n = 4) were caught in open places at a distance of more than 0.5 km from the nearest forests. It should be pointed out that these were not just young, most probably migrating individuals. One mature female and one mature male were found among them. Still in habitats remote from forests *A. uralensis* was observed rather rarely. Due to this fact general occurrence of these rodents in open habitats is not so frequent (Fig. 2).

In general, the collected data on *A. uralensis* dwelling places in Lithuania prove it to be an 'ecotonic' species, in summer and in autumn most often residing on forest edges and in open habitats bordering on forests. However, to establish the *A. uralensis* habitat preference more precisely (preferable types of forests and open habitats, seasonal differences if any, etc.) special studies are indispensable.

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Nauji duomenys apie mažosios miškinės pelės (*Apodemus uralensis*) paplitimą ir gyvenamąsias vietas Lietuvoje

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Santrauka

Mažoji miškinė pelė (*Apodemus uralensis*) kaip nauja žinduolių rūšis Lietuvoje buvo identifikuota tik 1999 metais. Nepaisant to, 1999–2000 metais šiaurės vakarų ir vakarų Lietuvoje buvo aptikta daug naujų šios rūšies radimviečių. Mažosios miškinės pelės buvo sugautos Žemaitijos nacionaliniame parke, Kurtuvėnų ir Varnių regioniniuose parkuose, Kamanų rezervate ir beveik visoje Mažeikių rajono teritorijoje. Iš viso 1996–2000 m. 33 vietose buvo sugauti 62 individai. Nustatytų mažosios miškinės pelės radimviečių išsidėstymas leidžia daryti prielaidą, kad vakarų, šiaurės vakarų ir šiaurės Lietuvoje ši rūšis gali būti gana plačiai paplitusi. Surinkti duomenys apie mažosios miškinės pelės gyvenamąsias vietas Lietuvoje rodo, kad tai "ekotoninė" rūšis, dažniausiai gyvenanti miškų pakraščiuose ir su miškais besiribojančiuose atviruose biotopuose. Lig šiol daugiausiai šių pelių buvo sugauta miškų ir atvirų biotopų (pievų, javų laukų ir dirvonuojančių laukų) ekotonuose (39% radimviečių ir 34% sugautų individų) bei atviruose biotopuose, besiribojančiuose su miškais arba esančiuose netoli jų (natūralios krūmuotos pievos, žolių priaugę melioracijos kanalai, javų laukai) (30% radimviečių ir 45% sugautų individų). Palyginti nedaug šių pelių buvo sugauta miškuose, dažniausiai netoli jų pakraščių, atželiančiose kirtavietėse (18% radimviečių ir 13% sugautų individų). Pavieniai *A. uralensis* individai buvo sugauti atvirose vietose, nuo artimiausių miškų nutolusiose daugiau nei 0,5 km.

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