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REVISION OF BANK VOLE *CLETHRIONOMYS GLAREOLUS* (SCHREBER, 1780) (MAMMALIA, RODENTIA) DISTRIBUTION IN SERBIA AND MONTENEGRO

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Abstract - The present article represents a complete review of all published data (with corrections) on bank vole *Clethrionomys glareolus* distribution in Serbia and Montenegro. On the other hand, data of 63 unpublished records stored in the period from 1956 to 1983 in the Mammal Study Collection of the Natural History Museum, Belgrade had not been processed until now. In the period from 1992 to 2004, 29 new findings were recorded, 12 of them outside the currently known area of distribution. New data reveal a wider distribution of bank vole than was known until now, completing and partly modifying previous knowledge about this rodent's bionomy and ecology in Serbia and Montenegro. The occurrence of bank vole in the Prokletije Mountains, Kosovo and Metohija, represents its highest known altitude in Europe (2500 m). On the basis of these new data and observations, we can conclude that bank vole is continuosly present in small and linear fragments of autochthonous woodlands on plains and hills, and that there are no large discontinuities in its distribution in Serbia and Montenegro, as was assumed earlier.

In efforts to preserve overall biological diversity, the example of the bank vole underlines the need to intensify protection and management of woodlands, especially remaining fragments of forests on plains and in hills.

Key words: *Clethrionomys glareolus*, distribution, habitat, Serbia and Montenegro

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INTRODUCTION

Bank vole *Clethrionomys glareolus* (Schreber, 1780) is a typical forest-dwelling rodent species whose distribution encompasses woodlands of the Western Palearctic from France and Scandinavia to Lake Baikal, extends south to Northern Spain and Northern Italy, and includes the Balkan Peninsula (with the exception of most of Greece), Western Turkey, Northern Kazakhstan, and the Altai and Sayan Mountains, encompassing as well Great Britain and the southwestern part of Ireland (Musser and Carleton, 1993). It is distributed throughout Europe, with the exception of marginal areas in the northernmost and southernmost parts of the continent and a number of islands. Discontinuity in distribution, above all in its microcomponents, is caused by the species' exclusive preference for forest habitats (Mitchell-Jones *et al.* 1999). Such discontinuity was believed to exist in Vojvodina, in the northern part of peri-Pannonian Serbia, and in the main part of Kosovo and Metohija (Petrov, 1992).

The optimal habitats of bank vole are deciduous forests of various types, on plains and in moderately high mountains with well developed lower vegetation levels. Less frequently, it is found in mixed and coniferous forests, and in higher mountains. It has been recorded exceptionally rarely above the upper forest limit on high mountain pastures, in rocky habitats, and on talus slopes up to 2400 m of altitude (Viro and Niethammer, 1982; Mitchell-Jones *et al.* 1999).

The most comprehensive data on bank vole *Clethrionomys glareolus* distribution and bionomy in Serbia and Montenegro, were presented by Petrov (1992), while data summaries and a brief analysis were published by Savić *et al.* (1996). Since then, a considerable number of data have been collected that may si-

gnificantly complete and modify previous knowledge. The present paper aims to contribute to those efforts.

MATERIAL AND METHODS

The data and maps of P e t r o v (1992) served as the basis for revision of the distribution of bank vole in Serbia and Montenegro. During the present work, we noticed significant discrepancies of presented data, their UTM coordinates, and their graphic projection on the corresponding maps. Re-mapping was performed on the basis of the presented data, *i.e.*, locality position, which was later evaluated precisely on the map, including affiliation to the corresponding UTM square. This resulted in a modified map of recordings. For record mapping, we used the following four sheets of *The Universal Transverse Mercator, Grid Zone 34, Series 1404, Ministry of Defence, UK : 252-C, Zagreb; 251-D, Beograd; 321-B, Sarajevo;* and *322-A, Niš.*

The map presents data in 10x10 km UTM squares. In the event that a certain square encompassed a set of data, they have been marked cumulatively. Each sort of data has been labeled with a corresponding sign in an effort to gain insight into their distribution.

Previously unpublished data retrieved in the present paper, are given for two periods. They pertain mainly to specimens from the Mammal Study Collection of the Natural History Museum, Belgrade (BEO600.599.1). These specimens were collected from 1956 to 1983 by Dr. Đorđe Mirić[1], Curator of Mammals at that time, and were not cited by P e t r o v (1992).

In the period from 1992 to 2004 during our permanent field research on mammals in Serbia and Montenegro, specimens were obtained using snap-traps, and barn owl (*Tyto alba*) pellets were collected at the Mala Moštanica site. Osteological material was extracted in one case from undigested stomach contents of Caspian whip snake *Coluber caspius* (Mali Jastrebac) and once from red fox (*Vulpes vulpes)* scats (Mravinjci, Gornji Taor). The collected specimens of bank vole are preserved and stored in the Mammal Study Collection of the Natural History Museum, Belgrade, and at the Institute for Nature Conservation of Serbia, Novi Sad Branch Office, in the form of skins and skulls, as well as skull remains from pellets. In the period from 1998 to 2004, intensified analysis was performed on owl pellets, primarily ones belonging to long-eared owl (*Asio otus*), barn owl (*Tyto alba*) and tawny owl (*Strix aluco*), in the Siniša Stanković Institute for Biological Research in Belgrade, where bank vole skull remains are stored. In addition to this, all relevant references published after 1992, even though scarce, have been searched.

RESULTS

P e t r o v (1992) cites 62 localities for Serbia and Montenegro, 48 of them in Serbia and 14 in Montenegro (List 1). The bank vole distribution constructed according to those records excludes almost all of Vojvodina, peri-Pannonian Serbia with Podrinje, Posavina, the main part of Podunavlje, Šumadija, Stig and Braničevo, Kosovo and Metohija, the greater part of Southern Serbia, and sub-Mediterranean and Mediterranean Montenegro (*ibid*).

List 1 - Previous records according to P e t r o v (1992), corrected and modified:

Serbia - 48 localities:

CP61 Priboj on Lim: Krajčinovići - **CP66** Mt. Tara: Beli Rzav, Lake (Batura), 900 m; undefined, 935 m; undefined, 1000 m; Kameno Brdo, 1100 m - **CP76** Mt. Tara: Mitrovac, 1082 m - **CP86** Mt. Tara: chalet, 1050 m - **CP98** Valjevo: Mt. Povlen, Debelo Brdo - **CQ61** Krupanj: undefined; Kržava, 600 m - **CQ69** Srem: Šid, Adaševci, 84 m - **CQ79** Mt. Fruška Gora: Erdevik, 130 m - **CQ99** Mt. Fruška Gora: Papratni Do (Andrevlje), 200 m - **CR55** Bačka: Apatin, Doroslovo - **CR61** Bačka: Bačka Palanka, Karađorđevo, 82 m - **CR90** Mt. Fruška Gora: Crveni Čot, 450 m - **DM96** Prizren: Mt. Ošljak, Prevalac, 1400 m; Šar Mts: undefined, 1515 m - **DN19** Sjenica: surroundings - **DN22** Peć, Mt. Rugovo: Duga Njiva; Kućište, 1300 m; Lice (Lisac), 1700 m - **DN33** Peć, Mt. Žljeb: Kula 1700 m; Kula, Lučanski Stanovi, 1800-1850 m - **DN43** Peć: Beli Drim Spring - **DN54** Peć: Mokra Gora Mts., 1800 m - **DN59** Mt. Golija: Biservoda, 1200-1250 m; Crni Vrh, 1400 m - **DN89** Mt. Kopaonik: Suvo Rudište, 1700-1750 m - **DP00** Mt. Zla-

[1]Doctor Đorđe Mirić (1919-1994) was Curator of Mammals at the Natural History Museum, Belgrade in the period 1954-1977. During this period, he conducted intensive field collection of material and data, preparation of skins, and isolation of osteological material for the Mammal Study Collection and other collections of mammals. On leaving the Natural History Museum after being retired, Dr. Mirić continued his dedicated work on mammals until he passed away. According to his will, all the material he had collected was left to the Natural History Museum.

tar: Vodena Poljana, 145 m - **DP19** Valjevo: Petnica, 250 m - **DP22** Mt. Mučanj: Katići, 1200 m - **DP40** Mt. Golija: Bele Vode, 1500 m - **DP64** Kraljevo: Mrsač - **DP68** Mt. Rudnik: 1050-1100 m - **DQ09** Mt. Fruška Gora : Hopovo - **DQ19** Mt. Fruška Gora: Velika Remeta Monastery, 270 m - **DR00** Mt. Fruška Gora: Iriški Venac, 440 m; Zmajevac, 450 m - **DR10** Mt. Fruška Gora: Sremski Karlovci - **DR40** Banat: Zrenjanin, Knićanin (Titel), 76 m; Bačka: Titel, 84 m - **DR41** Banat: Mošorin, Tisa, left bank - **EM07** Šar Mts: Brezovica - Stojkova Kuća, 1100 m - **EM17** Šar Mts: Ljuboten, Crni Kamen, 1100 m; Veliki Tupan, 1500 m - **EN27** Kuršumlija: surroundings, 350-360 m - **EN47** Mt. Vidojevica: Beli Kamen, 900 m - **EN73** Vladičin Han: Mt. Kukavica, chalet Preka Voda, 1300 m - **EN82** Vladičin Han: surroundings - **EN98** Suva Planina Mts: 1600 m - **EP30** Mt. Jastrebac: Ravnište, 500 m - **EP47** Mt. Južni Kučaj: Troglan Bare, 800 m - **EP58** Mt. Beljanica: undefined; Mt. top, 1336 m - **EP78** Bor: Crni Vrh - **EP88** Bor: surroundings - **EQ62** Majdanpek, Blagojev Kamen: undefined, 250-300 m; undefined, 400-500 m; forest, 600 m; Salba - **EQ71** Majdanpek: Debeli Lug, 300 m - **EQ82** Đerdap: Oman, 770 m - **FN00** Vlasina: Mt. Besna Kobila, forest, 1600 m; Mt. Besna Kobila, 1650 m - **FN03** Vlasina: forest along the lake (SZ), 1400 m - **FN08** Suva Planina Mts: undefined; Mala Čkrvena, 1400 m; Tri Lokve, 1400 m - **FN38** Pirot: Mt. Basara, chalet, 1080 m - **FN39** Stara Planina Mts: Dojkinačka River, 1450 m - **FN48** Stara Planina Mts: Ponor (Lokve), 1400-1500 m - **FN58** Stara Planina Mts: Jelovička River, 1200 m - **FP07** Zaječar: Rgotina, Trnavac - **FQ03** Đerdap: Mt. Miroč, Pecka Bara - **FQ04** Đerdap: Veliki Štrbac, Ploča, 350 m.

Montenegro - 14 localities:

CN26 Nikšić: Mt. Golija, above Donja Brezna, 1200 m - **CN44** Nikšić: Mt. Gvozd, Vučje, 1300 m - **CN47** Mt. Durmitor: Žabljak - the lake Crno Jezero, resort; the lake Crno Jezero, Otoka, 1410-1415 m; The lake Crno Jezero, 1415 m; Mlinski Brook, 1420-1480 m; Čeline; below Crvena Greda, 1600-1650 m - **CN85** Mt. Bjelasica: the lake Biogradsko Jezero, 1100 m - **CN92** Komovi Mts: Kom Vasojevićki, Štavna, 1600-1800 m - **CN94** Mt. Bjelasica: Jelovica, 1300-1350 m; undefined, 1450 m; undefined, 2000-2050 m; the peak Zekova Glava, 2100 m - **DN22** Mt. Rugovo: Bjeluha, 1500 m.

The first data indicating a wider distribution of *Clethrionomys glareolus* in Serbia, outside the presumed areas were presented by Paunović *et al.* (1996). They recorded four new localities in Vojvodina and the Belgrade district, and stressed the significance of lowland forests and their residues, especially forests along larger rivers such as the Danube, Sava, and Tisa, ones beside swamps, and small forest fragments in hills, as these habitats represent the minimum required conditions for bank vole. Due to the relatively small area and disjunctive disposition of those habitats, the population density of this species is minor. The latest articles that mention *Clethrionomys glareolus* mainly present results of *Asio otus* pellet analysis (Kataranovski *et al.* 1996; Jovanović, 2002; Jovanović and Kataranovski, 2002; Jovanović *et al.* 2003). They report six new localities: in Vojvodina and the Belgrade district, but also on Mt. Maljen. Habijan-Mikeš and Štetić (2003) presented data indicating the finding of one specimen in an atypical habitat far from the upper forest limit on Velika Đeravica, Prokletije Mts, Kosovo and Metohija, at 2500 m of altitude, which represents the maximum elevation in Europe. The data mentioned, and unpublished authors' data presented in Table 1 were collected in the period from 1992 to 2004.

New records from the Mammal Study Collection of the Natural History Museum in Belgrade, reveal 63 localities, 44 in Serbia and 19 in Montenegro (List 2). All but a few of them are inside the presumed area of distribution.

List 2 - New records from the Mammal Study Collection of the Natural History Museum in Belgrade (1956-1983):

Serbia - 44 localities:

CP76 Mt. Tara: Gorušica, 1000 m; Kozje Stene 1000 m; Mitrovac, 1100 m - **CP86** Mt. Tara: Kaluđerske Bare, 1000 m - **CQ97** Mačva: village of Ševarice, Bitvino Polje, 80 m - **CQ99** Mt. Fruška Gora: Venac, Elektrovojvodina, 500 m - **CR51/61** Bačka: Bačka Palanka, Mladenovski bogland, 82 m - **CR62/63** Bačka: Bač, Ristovača, 85 m - **CR80** Mt. Fruška Gora: Mačkovac (Andrevlje), 250 m - **CR90** Mt. Fruška Gora: Čitluk Brook (Andrevlje), 180 m - **DM66** Prizren, Mt. Koritnik: Karaula Stojanović (Brezna village) 1500 m - **DM96/97** Prizren, Mt. Ošljak: Popovo Prase-Prevalac, 1650 m - **DM97** Šar Mts: Jažinačka River, 1400 m - **DN21** Peć, Prokletije Mts: Dečanska Bistrica River, Baba Loć - **DN23** Peć, Mt. Rugovo: Boge, 1600 m - **DN31** Peć, Prokletije Mts: Dečanska Bistrica River, Krši Fons, 1200 m - **DN33** Peć, Mt. Žljeb: Kula, 1750-1850 m - **DN49**

Table 1. New authors' records (1992-2004) - (a) by snap traps (16 records)

UTM	Locality	Altitude	Habitat
CN47	Mt. Durmitor: Crepulj Poljana (below Crvena Greda)	1700	Spruce forest
CP99	Valjevo: Poćuta	400	Devastated oak and hornbeam shrub
CP99	Valjevo: Debelo Brdo, near chalet	1000	Beech forest
CQ77/87	Mačva: Zasavica, Radenković, Vrbovac	80	Ash and oak forest fragment
DN20	Peć, Prokletije Mts: Velika Đeravica, between Malo Đeravičko and Veliko Jezero Lakes	2500	Rocky area with large stone blocks
DQ15	Srem: Obedska Bara, Matijevica Forest	85	Oak forest
DQ57	Banat: Pančevački Rit, Kovačićki Rit, Kubici	75	Willow, black poplar, and elm forest
DP19	Valjevo: Petnica	200	Oak and hornbeam forest
DP28	Valjevo: Mt. Maljen	800	Beech forest
DR51	Banat: Carska Bara-Stari Begej	80	Willow forest
EM06/07	Šar Mts: Brezovica, Stojkova Kuća	1650-1750	Beech forest; devastated rocky area near forest
EP57	Mt. Beljanica: Lisine, Suvaja (Kločanica) Gorge	400	Oak and hornbeam forest
EP58	Mt. Beljanica: Vučkova Livada (Trlište)	1150	Beech forest
EP58	Mt. Beljanica: Lisine, hill above chalet	400	Oak forest
FP08	Negotin: Salaš (Sovinačko Lake)	300	Oak forest
FP30	Stara Planina Mts: Babin Zub	1500	Beech forest

Mt. Golija: Studenica Spring, 1650 m - **DN89** Mt. Kopaonik: Suvo Rudište, Krst, 1650-1700 m; Suvo Rudište, Samokovska River (upper stream), 1700 m - **DP00** Mt. Zlatar: Kosa, 1400 m - **DP40** Mt. Golija: Tičar Lake, 1430 m - **DQ09** Mt. Fruška Gora: Vrdnik, 230 m - **DR20** Mt. Fruška Gora: Čortanovci, Karaš, 80 m; Čortanovci, 120 m - **EM07** Šar Mts: Brezovica, Muržička River, 1000 m - **EN91** Vlasina: Mt. Besna Kobila, next to chalet 1500 m - **EP47** Mt. Južni Kučaj: Troglan Bare, 800 m - **EP74** Mt. Rtanj: Jelak, 1300 m; Goleme Jele, 1430 m - **EP78** Bor: the lake Borsko Jezero, Marecov Brook, 450 m - **EP79** Bor: Crni vrh, Valja Žoni 450 - **EP88** Bor: the lake Borsko Jezero, Savača, 400 m - **EP89/99** Bor: Mt. Stol, 850 m - **EQ71** Majdanpek: Mali Pek, Poštanski Brook, 450 m; Debeli Lug, confluence of the Grabova River with the Pek, 330 m - **EQ72** Majdanpek: Mt. Starica, 500 m; Kapetanske Livade, 700 m - **FN07** Suva Planina Mts: Divljana, Veliko Konjsko, 1400 m - **FN08** Suva Planina Mts: Divljana, Vrtača, 1400 m - **FN12** Vlasina: Vlasina-Okruglica, 1200-1300 m - **FN38** Pirot, Mt. Vidlič: Planinica, Basarski Kamen, 1100-1200 m - **FP30** Stara Planina Mts: Babin Zub, 1700 m - **FQ04** Đerdap: Veliki Štrbac, Ploča, 600 m.

Montenegro - 19 localities:

CN47 Mt. Durmitor: The lake Crno Jezero, Otoka, 1400 m; the lake Crno Jezero, 1450 m; Mlinski Brook, 1480 m; the lake Zminje Jezero, 1520 m; below Crvena Greda, 1700 m - **CN82** Komovi Mts: Kom Kučki, Kurlaj River, 1250 m; Kom Kučki, Lučka River, 1400 m; below Konjic, 1670 m - **CN83** Kolašin: Tara River, Mateševo, 980 m - **CN84** Kolašin: Svinjača River, Mušovića Rijeka, Sretavac, 1180 m; Mt. Bjelasica: the lake Biogradsko Jezero, 1100 m; below Troglav, 1850 m - **DN12** Mt. Rugovo: Čakor, 1700-1800 m - **DN22** Mt. Rugovo: Pe-

Table 1. Continued. - (b) by diet analysis of predators (13 records)

UTM	Locality	Altitude	Habitat
CR71	Bačka: Bačka Palanka, center	84	*Asio otus*
DP08	Valjevo: Mravinjci, Gornji Taor	1000	*Strix aluco, Vulpes vulpes*
DP19	Valjevo: Petnička Pećina Cave	200	*Strix aluco*
DP19	Valjevo: Petnička Pećina Cave	200	*Strix aluco*
DP46	Čačak: Center	240	*Asio otus*
DQ25	Srem: Obedska Bara, Kupinovo	77	*Tyto alba*
DQ44	Beograd: Mala Moštanica, tunnel	145	*Tyto alba*
DQ55	Beograd: Čukarica	75	*Asio otus*
DQ56	Beograd: Ušće	76	*Asio otus*
DQ58	Banat: Pančevački Rit, Opovo	85	*Asio otus*
DQ66	Beograd: Zvezdara, Observatory	160	*Strix aluco*
DR01	Novi Sad: center	79	*Asio otus*
EP50	Mt. Jastrebac: Mali Jastrebac, Bačevište	700	*Coluber caspius*

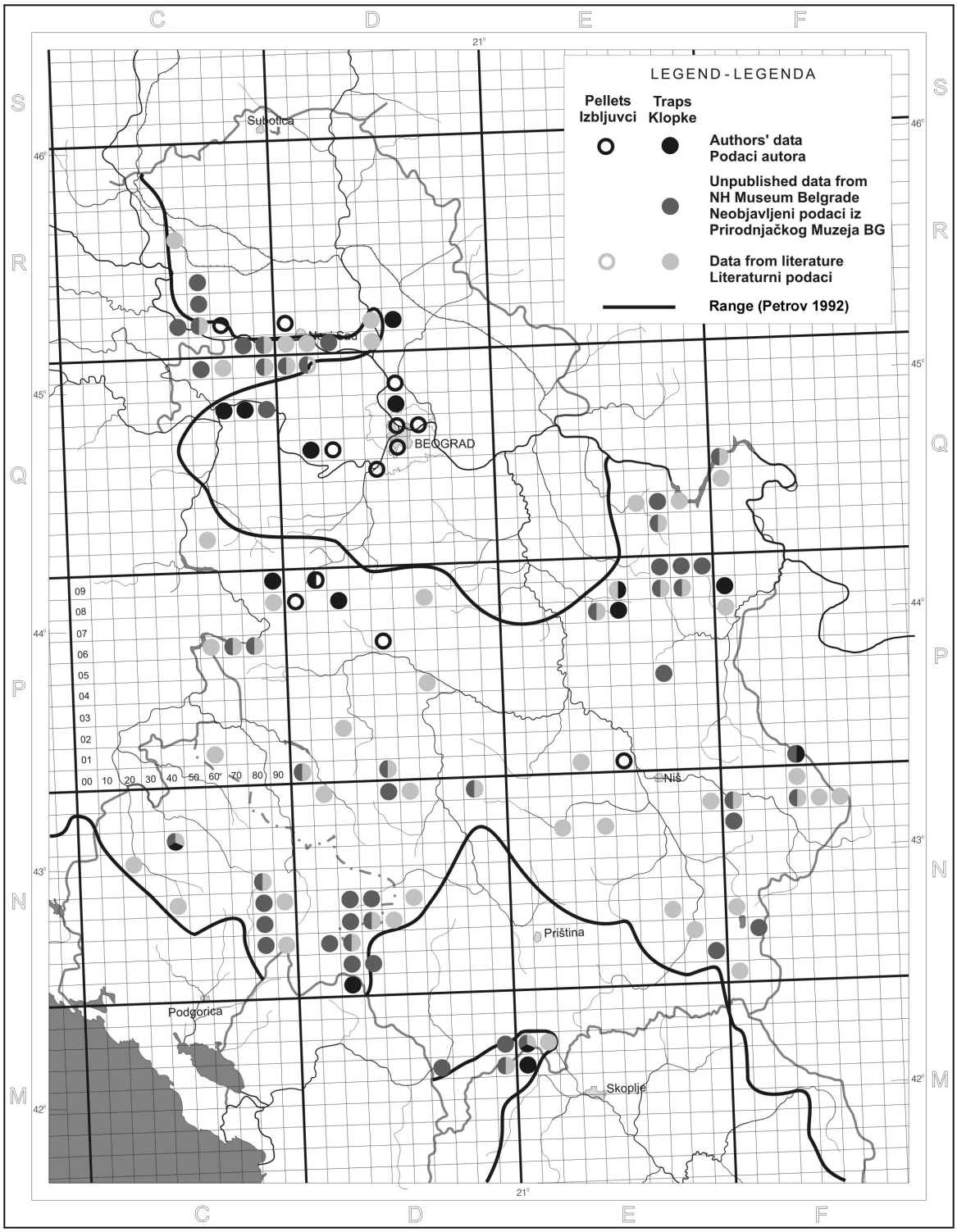
ćka Bistrica River, village of Kućište, Malji Nečinat, 1400 m; Bjeluha, 1500 m; Bjeluha, chalet Jelenak, 1730 m - **DN23** Rožaje: Ibar Spring, 1500 m - **DN24** Rožaje: Đuranovića Luke, Županica River, Marin Grob, 1150 m - **DN33/34** Rožaje: Mt. Hajla, Dacića Škola, 1500 m.

DISCUSSION

Through pooling of all available data, the pattern of distribution of *Clethrionomys glareolus* in Serbia and Montenegro has been completed. A considerable number of new records have been uncovered especially in the Belgrade microregion, Mačva, and several localities in Vojvodina (Southern Srem, Western Banat and Southern Bačka) (Map 1). Although most previously presumed limits and gaps in the range of bank vole seem almost unchanged, new data analysis and the fact that recent investigations were neither aimed at the distribution of bank vole, nor systematically performed indicate that wider presence of this species in Serbia is very probable.

As in the rest of its European range, the presence of *Clethrionomys glareolus* in Serbia and Montenegro is limited exclusively to forest habitats. According to the authors of previous works (P e t r o v, 1992), that is the sole reason why the bank vole was not recorded in most of Vojvodina and peri-Pannonian Serbia, where forest habitats are either missing or reduced to spatially and floristically very depleted fragments. The forest associations in which we found bank voles are of various configuration and represent residues of once large autochthonous forests. As for lowland woodlands, we found bank voles in both rarely flooded forests with domination of *Quercus robur* and *Quercus frainetto* and periodically flooded forests with domination of *Salix alba*, *Populus nigra*, and *Alnus glutinosa*. It may be assumed that in similar forest habitats (along rivers and channels, on reserves, in forest fragments, etc.) in Vojvodina and peri-Panonnian Serbia, *Clethrionomys glareolus* has optimal conditions, with disjunction and isolation of the habitat as the basic factors threatening the species and preventing population increase.

In hills bank vole is recorded in small mutually isolated forest reserves with domination of *Quercus cerris, Quercus frainetto,* and *Quercus petraea.* The size and



Map 1. Records of *Clethrionomys glareolus* in Serbia and Montenegro.

occurrence of those reserves have a negative trend. The results of our investigation, particularly in such forest patches and residues of lowland forests along rivers and channels (Table 1), confirm records of Mikeš and Habijan-Mikeš (1985) indicating that bank vole notwithstanding finds minimum requirements for survival in such habitats.The generally low numbers of bank vole in such forest habitats are frequently registered as "complete absence", and multiple and systematic sampling is therefore essential for its detection. Higher activity of sympatric species such as *Apodemus flavicollis* and *Apodemus sylvaticus* (Savić *et al.* 1976), whose representatives were most often dominant in our samples too, significantly contributes to the rather low number of bank vole recordings.

According to an interesting presumption that we think rather unlikely, bank vole detection in the cited habitats throughout most of the second half of the 20th century was impossible because in the early stages of development or recovery of devastated forest habitats, the minimum required conditions, ensuring its presence did not exist.

New data confirmed earlier records of Petrov (1992) indicating the presence of *Clethrionomys glareolus* presence in forest habitats of Serbia and Montenegro. Petrov (1992) stated that 67% of the findings were recorded in the immediate vicinity of water bodies of various size and characteristics. This statement is consistent with records in the rest of the European range of the species (Mitchell-Jones *et al.* 1999). At higher altitudes *Clethrionomys glareolus* has sometimes been found on talus slopes and in rocky habitats, among stone blocks in forests, or in their close vicinity. Worthy of our attention is the finding of bank vole at Velika Đeravica in the Prokletije Mountains of Kosovo and Metohija, at an exceptionally high altitude (2500 m) far from the upper forest limit in a rocky habitat with large stone blocks (Habijan-Mikeš and Štetić, 2003).

Analysis of the feeding habits of predators, among them *Asio otus*, provides a far larger sample. The portion of *Clethrionomys glareolus* in pellets of *A. otus* rarely exceeded 1%. This is a result of many factors, principally including the presence of optimal forest habitats, current size of the bank vole population, and the predator's preference for open hunting habitats. In pellets of tawny owl (*Strix aluco*), which, however, are less numerous than the long-eared owl samples, the percentage of *Clethrionomys glareolus* prey items exceeded 4%.

According to our data and observations, the bank vole has a continuous distribution in each of the investigated small and linear fragments of autochthonous woodlands of lowlands and hills. We now realise that it has a wider distribution than was previously known. This statement applies to Vojvodina and peri-Panonnian Serbia, especially the main part of Kosovo and Metohija, which were outside the presumed area of distribution. Even though in some parts of this range certain disjunctions are present, they seem to separate microcomponents, *i.e.*, reflect fragmentation of adequate habitats. It is not therefore probable that *Clethrionomys glareolus* is absent from certain major parts of the territory of Serbia and Montenegro, *i.e.*, the presence of a clear disjunction in distribution area, such as suggested by Petrov (1992), is highly unlikely. Our opinion rather is that more intensive and systematic new field research would prove the existence of a wider and more continuous distribution of bank vole *Clethrionomys glareolus* in Serbia and Montenegro.

Comparing the abundance of bank vole in Serbia and Montenegro with that of sympatric species at studied new localities during the period 1992-2004, we found that only once did the former exceed the latter.

The once considerable residues of forests have a significant role in survival of *Clethrionomys glareolus* populations. Protection and conservation of such small and /or linear forest fragments is an important requirement for protection and preservation of bank vole and other forest fauna elements, which would make a notable contribution to maintaining overall biological diversity in Serbia and Montenegro.

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РЕВИЗИЈА РАСПРОСТРАЊЕЊА РИЂЕ ВОЛУХАРИЦЕ *CLETHRIONOMYS GLAREOLUS* (SCHREBER, 1780) (MAMMALIA, RODENTIA) У СРБИЈИ И ЦРНОЈ ГОРИ

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У овом раду даје се комплетан преглед и исправка до сада објављених података о распрострањењу *Clethrionomys glareolus* у Србији и Црној Гори. С друге стране, подаци о 63 нова налаза депоновани су од 1956. до 1983. године у Студијској збирци сисара Природњачког музеја у Београду и до сада нису обрађивани. У периоду од 1992. до 2004. године забележено је 29 нових налаза, од чега 12 ван до сада познатог ареала. Нови подаци говоре о ширем распрострањењу риђе волухарице него што је то до сада било познато употпуњујући и донекле модификујући досадашња сазнања о биономији и екологији овог глодара у Србији и Црној Гори. Налазиште на Проклетијама, Косово и Метохија, налази се на највећој надморској висини у Европи, 2500 m.

На основу нових података и опсервација закључује се да је риђа волухарица континуирано присутна у малим и линеарним фрагментима аутохтоних шума у низијама и побрђу, као и да у ареалу ове врсте у Србији и Црној Гори не постоје велики дисконтинуитети како је раније претпостављано.

У циљу очувања укупне биолошке разноврстности, пример риђе волухарице указује на потребу интензивирања заштите и очувања шумских станишта, а нарочито преосталих малих и/или линеарних фрагмената низијских шума и шума у побрђу.