

DIVERSITY AND DISTRIBUTION OF THE FAMILY NABIDAE (HETEROPTERA) IN SERBIA

LJ. PROTIĆ

Natural History Museum, Njegoševa 51, P.O.Box 401, Belgrade, Serbia

ABSTRACT: The family Nabidae (Heteroptera) in Serbia is represented by 14 species. This paper includes a review of 1158 specimens from Serbia kept in the collections of the Natural History Museum in Belgrade. Also included are literature data on distribution of these species in Serbia, starting with the year 1874. The distribution of Nabidae species in Serbia was determined from records of their presence in certain regions.

KEY WORDS: Heteroptera, Nabidae, distribution, Serbia

INTRODUCTION

With respect to the number of species, the family Nabidae can be considered one of the smaller families within the Heteroptera. In Serbia, 14 species from this family have been recorded. Nabidae in Serbia are treated in certain faunistic papers (FRIVALDSZKY, 1877; HORVÁTH, 1903; DIVAC, 1907; KORMILEV, 1936; CSIKI, 1940; ŽIVOJINOVIĆ, 1950; PETRIK, 1958; BENEDEK, 1969; PROTIĆ, 1986, 1987, 1993) or collection catalogs (PROTIĆ, 1990, 1998, 2006).

The goal of this paper is to determine the representation of species in certain regions of Serbia. When the list of species in Heteroptera collections of Natural History Museum was compiled (PROTIĆ, 2006), certain species were accidentally omitted, so this is an opportunity to publish data on their distribution. Data on specimens of the family Nabidae, collected on the territory of Serbia and kept in the collections of the Natural History Museum in Belgrade are published together with literature data here for the first time.

MATERIAL AND METHODS

The number of specimens processed in this study was 1158 (501 males and 657 females). They belong to the family Nabidae, were collected on the territory of Serbia during the period of 1920-2005, and are currently kept in the Heteroptera collections of the Natural History Museum in Belgrade. The literature data mention some even older records of these species in Serbia, starting

with 1874 (FRIVALDSZKY, 1877).

According to MARKOVIĆ (1980), Serbia can be divided into the following areas, regions, and subregions: Banat, Bačka, Srem, "Posavska" Serbia (along the Sava River), "Podrinjska" Serbia (along the Drina River), Zapadno Pomoravlje [area around the western Morava (=Zapadna Morava) River], Šumadija, the Belgrade Microregion, Veliko Pomoravlje [area around the Morava (=Velika Morava) River], Stig and Braničevo, Carpathian Serbia, Balkan Serbia, Južno Pomoravlje [area around the South Morava (=Južna Morava) River], Vlasina and Krajište, Toplica and Jablanica, Stari Vlah and Raška, Ibar-Kopaonik area, Kosovo, and Metohija. Species density (Tab. 2) in different subregions was calculated by the formula:

$$r = \log(S) / \log(A)$$

S = number of species; A = area (km²)

RESULTS

The regional division of Serbia according to MARKOVIĆ (1980) is used in this paper. Within individual regions, species of family Nabidae are listed in systematic order. The notation "New" in front of the names of certain localities in the list indicates that these specimens were not included in our previous paper on the family Nabidae of former Yugoslavia (PROTIĆ, 2006).

PANNONIAN SUPERREGION

VOJVODINA

Banat

Prostemma sanguineum (Rossi, 1790)
Deliblato Sands: Dolina (PROTIĆ, 2006)

Himacerus (Himacerus) apterus (Fabricius, 1789)
Deliblato Sands. Dolina, Bavanište (PROTIĆ, 2006)

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Deliblato Sands (PAL, 1969)

Nabis (Nabis) brevis Scholtz, 1846
Banatski Karlovac (PROTIĆ, 2006)

Nabis (Nabis) ferus (Linnaeus, 1758)
Pančevo, Borča, Sakule, Deliblato Sands, Dubovac, Djavolji Most Dunav-Tisa-Dunav, Jasenovo (PROTIĆ, 2006).

New: Deliblato Sands: Devojački Bunar 07.06.2003 (two males), 09.08.2003 (two males, three females), 28.05.2005 (two males, two females) leg. A. Stojanović; Sakule 30.08.2003 (two males, two females), leg. A. Stojanović.

Nabis pseudoferus Remane, 1949
Deliblato Sands: Šušara (PETRIK, 1958); Deliblato Sands: Devojački Bunar, Korn, Jasenovo, Djavolji Most Dunav-Tisa-Dunav, Pančevo, Dubovac (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Deliblato Sands, Cardak, Grebenac, Korn (PROTIĆ, 2006).
New: Deliblato Sands 25.05.2005 (one male, one female), leg. A. Stojanović.

Nabis (Tropiconabis) capsiformis Germar, 1838

Deliblato Sands: Devojački Bunar, Jasenov, Borča (PROTIĆ, 2006).

Bačka

Alloeorhynchus flavipes (Fieber, 1836)
Petrovaradin (HORVÁTH, 1897)

Himacerus (Himacerus) apterus (Fabricius, 1789)
Lok (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)
Ljutovo (PROTIĆ, 2006).

Nabis (Nabis) pseudoferus Remane, 1949
Subotica, Biserno Ostrvo (PROTIĆ, 2006).

Nabis (Nabis) punctatus A. Costa, 1847
Horgoš (BENEDEK, 1969), Biserno Ostrvo (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Sombor (BENEDEK, 1969).

Srem

Prostemma aeneicolle (Stein, 1857)
Ruma (HORVÁTH, 1897); Jakovo: Jakovački Ključ, Fruška Gora: Stražilovo (PROTIĆ, 2006).

Prostemma. guttula guttula (Fabricius, 1787)
Galovica, Zemun (PROTIĆ, 2006).

Himacerus (Himacerus) apterus (Fabricius, 1789)
Fruška Gora: Brankovac, Jakovo: Bojčinska Šuma, Progar, Boljevci: Crni Lug (PROTIĆ, 2006).

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Zemun, Surduk, Stari Slankamen, Stari Slankamen: Koševac, Boljevci: Crni Lug (PROTIĆ, 2006).

Himacerus (Stalia) boops (Schiodte, 1870)
Ruma (HORVÁTH, 1907).

Nabis (Nabis) brevis Scholtz, 1846
Jakovo: Jakovački Ključ, Jakovo: Bojčinska Šuma, Boljevci-Progar (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)
Stara Pazova (LANGHOFFER, 1898); Zemun, Obedska Bara, Boljevci-Progar, Slankamen, Stari Slankamen: Koševac, Galovica, Surčin, Ledine, Boljevci: Crni Lug, Surduk, Dobanovci (PROTIĆ, 2006).
New: Stari Slankamen: Koševac 28.06.2003 (one female), 30.08.2003 (two males, two females), leg. A. Stojanović.

Nabis (Nabis) pseudoferus Remane, 1949
Zemun, Ledine, Obedska Bara, Surduk, Stari Slankamen: Koševac, Progar (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Obedska Bara, Boljevci-Progar, Jakovo, Ledine, Boljevci: Crni Lug, Surduk (PROTIĆ, 2006).

PERI-PANNONIAN SUPERREGION

“Posavska” Serbia (along the Sava River)

Himacerus (Himacerus) apterus (Fabricius, 1789)
Mala Moštanica: Žuto Brdo (PROTIĆ, 2006).

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Mala Moštanica: Žuto Brdo (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)
Konatice, Rajac, Mala Moštaniaca: Žuto Brdo (PROTIĆ, 2006).
New: Mala Moštanica: Žuto Brdo 06.07.2001 (one female), 22.06.2002 (one female), 16.08.2003 (two females), leg. A. Stojanović.

Nabis (Nabis) pseudoferus Remane, 1949
Obrenovac, Konatice, Mala Moštanica: Žuto brdo (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Makiš, Mala Moštanica, Mala Moštaniaca: Žuto Brdo, Konatice (PROTIĆ, 2006).

“Podrinjska” Serbia (along the Drina River)

Nabis (Nabis) ferus (Linnaeus, 1758)
Rajac (PROTIĆ, 2006).

Nabis (Nabis) pseudoferus Remane, 1949
Rajac: Jasenje (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Rajac: Jasenje (PROTIĆ, 2006).

CENTRAL SERBIA

Šumadija

Alloeorhynchus flavipes (Fieber, 1836)
Radmilovac (PROTIĆ, 2006).

Prostemma guttula guttula (Fabricius, 1787)
Begaljica (PROTIĆ, 2006).

Himacerus (Himacerus) apterus (Fabricius, 1789)
Radmilovac, Vinča, Vrčin, Popović, Kosmaj (PROTIĆ, 2006).

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Ripanj (HORVÁTH, 1903); Begaljica, Kosmaj, Ritopek, Vinča, Vrčin, Gornja Sabanta, Grocka, Radmilovac, Stepin Gaj, Avala (PROTIĆ, 2006).

Nabis (Nabis) brevis Scholtz, 1846
Beli Potok, Umčari, Vinča, Radmilovac, Stepin Gaj, Smederevo: Landal, Kosmaj (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)
Ripanj (HORVÁTH, 1903); Beli Potok, Šiljakovac, Djurinci, Radmilovac, Stepin Gaj, Begaljica, Avala, Vinča, Kosmaj, Pinosava, Ritopek, Vrčin, Salakovac, Dražanj, Popović, Rušanj, Sremčica, Kragujevac: Šumarice, Topola-Božurnja (PROTIĆ, 2006).

Nabis (Nabis) pseudoferus Remane, 1949
Grocka, Radmilovac, Šiljakovac, Begaljica, Kosmaj, Beli Potok, Vinča (PROTIĆ, 2006).

Nabis (Nabis) punctatus A. Costa, 1847
Vinča, Šiljakovac, Radmilovac (PROTIĆ, 2006).

Nabis rugosus (Linnaeus, 1758)

Radmilovac, Vinča, Grocka, Stepin Gaj, Vrčin, Kosmaj, Avala, Barajevo, Sremčica, Beli Potok, Rušanj, Begaljica, Pinosava, Popović, Lipovica, Dražanj, Kragujevac: Šumarice, Rudnik: Gradovi (PROTIĆ, 2006).

Nabis (Tropiconabis) capsiformis Germar, 1838

Topola (WAGNER 1962), Šiljakovac, Radmilovac, Salakovac, Djurinci (PROTIĆ, 2006).

Belgrade Microregion

Alloeorhynchus flavipes (Fieber, 1836)

Radmilovac, Belgrade: Dedinje (PROTIĆ, 2006).

Prostemma aeneicolle (Stein, 1857)

Belgrade: Ada Ciganlija (PROTIĆ, 2006).

Prostemma guttula (Fabricius, 1787)

Belgrade (HORVÁTH, 1903); Belgrade: Košutnjak (PROTIĆ, 1990); Belgrade: Novi Beograd and Topčidersko Groblje (PROTIĆ, 2006).

Prostemma sanguineum (Rossi, 1790)

Belgrade: Novi Beograd (PROTIĆ, 2006)

Himacerus (Himacerus) apterus (Fabricius, 1789)

Belgrade: Košutnjak (MARTINO, 1949); Belgrade: Ada Ciganlija, Topčider, and Resnik (PROTIĆ, 2006).

Himacerus (Aptus) mirmicoides (O. Costa, 1834)

Belgrade: Topčider, Rakovica (HORVÁTH, 1903); Belgrade (DIVAC, 1907); Belgrade: Pionirski Grad, Bubanji Potok, Košutnjak, Topčider, Ada Ciganlija, Resnik, and Novi Beograd (PROTIĆ, 2006).

Nabis flavomarginatus (Scholtz, 1847)

Belgrade: Avala (PROTIĆ, 2006).

Nabis (Nabis) brevis Scholtz, 1846

Belgrade: Topčider and Resnik (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)

Belgrade, Belgrade: Topčider, Žarkovo, and Rakovica (HORVÁTH, 1903); Belgrade: Košutnjak (MARTINO, 1949); Belgrade, Belgrade: Ada Ciganlija, Belgrade, Topčider, Košutnjak, Resnik-Kružni Put, and Rakovica (PROTIĆ, 2006).

New: Belgrade: Resnik: Kružni put 24.07.2004 (one male, three females), leg. A. Stojanović; Belgrade: Košutnjak 15.07.2004 (one male, one female) leg. A. Stojanović.

Nabis(Nabis) pseudoferus Remane, 1949

Belgrade: Ada Ciganlija, Košutnjak, and Resnik (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)

Belgrade (HORVÁTH, 1903); Belgrade: Topčider, Košutnjak, Ada Ciganlija, and Resnik (PROTIĆ, 2006).

New: Belgrade: Rakovica 11.08.1983 (two females), leg. Lj. Protić.

Veliko Pomoravlje [area around the Morava (=Velika Morava) River]

Himacerus (Himacerus) apterus (Fabricius, 1789)

Dobričevo (DIVAC, 1907).

Nabis (Nabis) ferus (Linnaeus, 1758)

Dobričevo (DIVAC, 1907).

Stig and Braničevo

Alloeorhynchus flavipes (Fieber, 1836)
Požarevac (KORMILEV, 1936)

Prostemma sanguineum (Rossi, 1790)
Rečica 13.6.1954, leg. J. Stančić (PROTIĆ, 1986)

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Požarevac (HORVÁTH, 1903).
New: Ponikve 27.3.1954, leg. J. Stančić (PROTIĆ, 1986)

Nabis (Nabis) brevis Scholtz, 1846
Požarevac, Golubac (HORVÁTH, 1903); Usje (PROTIĆ, 2006).

Nabis (Tropiconabis) capsiformis Germar, 1838
Požarevac (KORMILEV, 1936)

Nabis (Nabis) ferus (Linnaeus, 1758)
Požarevac (HORVÁTH, 1903); Usje, Vince, and Zatonje (PROTIĆ, 2006).

Nabis (Nabis) pseudoferus Remane, 1949
Ponikve, Veliko Gradište, Vince, Topolovnik, Požežena, Kusići, and Braničevo (PROTIĆ, 1986).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Požarevac (HORVÁTH, 1903); Usje (PROTIĆ, 2006).

HIGHLAND SUPERREGION

EASTERN SERBIA

Carpathian Serbia

Alloeorhynchus flavipes (Fieber, 1836)
Negotin 19.05.1942, leg. N. Kormilev (PROTIĆ, 1990)

Prostemma guttula guttula (Fabricius, 1787)
Negotin: Bukovo (DIVAC, 1907); Majdanpek: Vrtača (ŽIVOJINOVIĆ, 1950).

Prostemma sanguineum (Rossi, 1790)
Negotin: Bukovo (DIVAC, 1907)

Nabis flavomarginata (Scholtz, 1847)
Stara Planina Mts., Beljanica: Trlište (PROTIĆ, 2006)

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Golubač, Dobra (HORVÁTH, 1903), Negotin: Bukovo (DIVAC, 1907); Majdanpek (ŽIVOJINOVIĆ, 1950); Zagubica, Donji Milanovac, Beljanica (PROTIĆ, 2006)

Himacerus (Himacerus) apterus (Fabricius, 1789)
Majdanpek (ŽIVOJINOVIĆ, 1950).

Nabis (Nabis) brevis Scholtz, 1846
Majdanpek (ŽIVOJINOVIĆ, 1950)

Nabis (Nabis) ferus (Linnaeus, 1758)
Golubac, Tekija, Dobra (HORVÁTH, 1903); Majdanpek, Pek River (ŽIVOJINOVIĆ, 1950); Kladovo, Vratna, Veliki Krš: Gornjane, Stol, Kusjak, Miroč: Štenišće, Beljanica: Hajdučki Potok, Veliki Štrbac, Negotin: Rogljevo (PROTIĆ, 2006).

Nabis (Nabis) pseudoferus Remane, 1949
Kusjak, Stol (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Golubac (HORVÁTH, 1903), Majdanpek (ŽIVOJINVIĆ, 1950); Brnjica, Crni Vrh, Mokranje, Veliki Krš, Veliki Štrbac, Mali Štrbac, Plavna, Vratna (PROTIĆ, 2006).

Balkan Serbia

Nabis flavomarginatus (Scholtz, 1847)
Niš, Bela Palanka, Pirot, Sveta Petka (HORVÁTH 1903); Stara Planina Mts. (PROTIĆ, 2006).

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Niš, Bela Palanka, Pirot (HORVÁTH, 1903)

Nabis (Nabis) ferus (Linnaeus, 1758)
Niš, Bela Palanka, Pirot, Sveta Petka (HORVÁTH, 1903); Suva Planina: Lanište (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Bela Palanka (HORVÁTH, 1903)

SOUTHERN SERBIA

Južno Pomoravlje [area around the Southern Morava (=Južna Morava) River]

Prostemma sanguineum (Rossi, 1790)
New: Leskovac (KORMILEV, 1936)

Himacerus (Aptus) mirmicoides (O. Costa, 1834)
Jastrebac (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)
Vranje (HORVÁTH, 1903).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Ozren: Ripaljka (PROTIĆ, 2006).

Vlasina and Krajište

Nabis flavomarginatus (Scholtz, 1847)
Vlasina, Vlasina: Vrla, Lake Vlasina, Vlasina: Klisura, Mali Čemernik, Besna Kobila (PROTIĆ, 2006).

Nabis (Nabis) brevis Scholtz, 1846
Ruplje (HORVÁTH, 1903)

Nabis (Nabis) ferus (Linnaeus, 1758)
Trgovište (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)
Lake Vlasina (PROTIĆ, 2006).

SOUTHWEST SERBIA

Stari Vlah and Raška

Himacerus (Aptus mirmicoides) (O. Costa, 1834)
Užice (PROTIĆ, 2006).

Nabis flavomarginata (Scholtz, 1847)
Zlatar, Tara, Tara: Borovo Brdo, Tara: Kozje Stene, Tara: Kaluderske Bare, Tara: Mitrovac (PROTIĆ,

2006).

Nabis (Nabis) ferus (Linnaeus, 1758)

Tara: Manastir Srpski Svetitelji 31.07.2002 (one female), leg. Lj. Protić, Tara: Zaovine 22.07.2003 (one female), leg. Lj. Protić

Nabis (Nabis) pseudoferus Remane, 1949

Bioska: Djetinja, Tara: Jelisavčići (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)

Tara: Manastir Srpski Svetitelji, Tara: Zaovine, Tara: Kaludjerske Bare, Tara: Mitrovac, Tara: Šljivovica (PROTIĆ, 2006).

Ibar-Kopaonik Area

Prostemma aeneicolle (Stein, 1857)

Kopaonik: Ječmište (PROTIĆ, 2006).

Himacerus (Himacerus) apterus (Fabricius, 1789)

Kopaonik: Šanac, Goč (PROTIĆ, 2006)

Nabis (Nabicula) flavomarginatus (Scholtz, 1847)

Kopaonik: Treska (PROTIĆ, 2006).

Nabis (Nabis) ferus (Linnaeus, 1758)

Aleksandrovac: Lozovik (DIVAC, 1907); Kopaonik: Ječmište, Kopaonik: Srebrnac, Kopaonik: Milanov Vrh (PROTIĆ, 2006).

Kosovo

Nabis (Nabis) ferus (Linnaeus, 1758)

Šara: Suva Reka (PROTIĆ, 2006).

Nabis (Nabis) rugosus (Linnaeus, 1758)

Šara: Prevalac, Šara: Suva Reka (PROTIĆ, 2006).

Metohija

Prostemma guttula guttula (Fabricius, 1787)

Peć (CSIKI 1940).

Prostemma sanguineum (Rossi, 1790)

Kosovo Polje, Kosovska Mitrovica, Peć (CSIKI, 1940)

Himacerus (Aptus) mirmicoides (O. Costa, 1834)

Kosovska Mitrovica, Peć, Dečani. (CSIKI, 1940).

Himacerus (Stalia) boops (Schjødte, 1870)

Korab (CSIKI, 1940)

Nabis (Nabis) ferus (Linnaeus, 1758)

Kosovo Polje: Mitrovica, Peć (CSIKI, 1940).

Nabis (Nabis) rugosus (Linnaeus, 1758)

Kosovo Polje, Peć (CSIKI, 1940)

Table 1. Representation of species from the family Nabidae in the studied subregions in Serbia: 1 Banat, 2 Bačka, 3 Srem, 4 "Posavska" Serbia, 5 "Podrinjska" Serbia, 6 Šumadija, 7 Belgrade Microregion, 8 Veliko Pomoravlje, 9 Stig and Braničevo, 10 Carpathian Serbia, 11 Balkan Serbia, 12 Južno Pomoravlje, 13 Vlasina and Krajšje, 14 Stari Vlah and Raška, 15 Ibar-Kopaonik Area, 16 Kosovo, 17 Metohija

No	Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	<i>Alloeorhynchus flavipes</i> (Fieber, 1836)	-	+	-	-	-	+	+	-	+	+	-	-	-	-	-	-	-
2	<i>Prostemma aeneicollis</i> Stein, 1857	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+	-	-
3	<i>Prostemma guttula guttula</i> (Fabricius, 1787)	-	-	+	-	-	+	+	-	-	+	-	-	-	-	-	-	+
4	<i>Prostemma sanguineum</i> (Rossi, 1790)	+	-	-	-	-	-	+	-	+	+	-	+	-	-	-	-	+
5	<i>Himacerus (Himacerus) apterus</i> (Fabricius, 1798)	+	+	+	+	-	+	+	+	-	+	-	-	-	-	+	-	-
6	<i>Himacerus (Aptus) mirmicoides</i> (O. Costa, 1834)	+	-	+	+	-	+	+	-	+	+	+	+	-	+	-	-	+
7	<i>Himacerus (Stalia) boops</i> (Schiodte, 1870)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+
8	<i>Nabis (Nabacula) flavomarginatus</i> Scholtz, 1847	-	-	-	-	-	-	+	-	-	+	+	-	+	+	+	-	-
9	<i>Nabis (Nabis) brevis</i> Scholtz, 1847	+	-	+	-	-	+	+	-	+	+	-	-	+	-	-	-	-
10	<i>Nabis (Nabis) ferus</i> (Linnaeus, 1758)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11	<i>Nabis (Nabis) pseudoferus</i> Remane, 1949	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	-
12	<i>Nabis (Nabis) punctatus</i> A. Costa, 1847	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
13	<i>Nabis (Nabis) rugosus</i> (Linnaeus, 1758)	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+
14	<i>Nabis (Tropiconabis) capsiformis</i> Germar, 1838	+	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-
		8	6	9	5	3	10	11	2	8	10	4	4	4	5	4	2	6

Table 2. Density index (r) in Serbian subregions. Data on the area of each subregion (km^2), number of established species (sp.), and number of studied localities are given in separate columns.

Superregion	Region	Subregion	Surface area/ km^2	No of localities	No of species	Density index
PANNONIAN	Vojvodina	Banat	8997	16	8	0.228
		Bačka	8671	7	6	0.197
		Srem	3838	20	9	0.266
PERI-PANNONIAN	Western Serbia	“Posavska” Serbia	3276	5	5	0.198
		“Podrinjska” Serbia	3101	2	3	0.136
	Central Serbia	Zapadno Pomoravlje	52223	0	0	
		Šumadija	6070	28	10	0.264
		Belgrade microregion	3222	13	11	0.296
		Veliko Pomoravlje	2841	1	2	0.093
HIGHLAND	Eastern Serbia	Stig and Braničevo	1688	12	8	0.230
		Carpathian Serbia	8423	27	10	0.269
	Southern Serbia	Balkan Serbia	5184	6	4	0.160
		“Južno” Pomoravlje	5609	4	4	0.178
		Vlasina and Krajište	2334	8	4	0.153
		Toplica and Jablanica	4172	0	0	
	Southwest Serbia	Stari Vlah and Raška	8479	12	5	0.194
		Ibar-Kopaonik area	1780	8	4	0.185
		Kosovo	3991	2	2	0.083
		Metohija	4684	5	6	0.211

CONCLUSIONS

This paper for the first time combines data on specimens of the family Nabidae kept in the collections of the Natural History Museum with data gleaned from the literature. The study included 1158 specimens of the family Nabidae collected at 148 localities throughout Serbia. The examined papers mention 30 additional localities for Nabidae in Serbia not included in the list of localities for specimens in the Natural History Museum. The localities are presented on the UTM map of Serbia (Fig. 1). The value of the density quotient (r) is greatest for those subregions of Serbia that have been most studied, namely, Šumadija, the Belgrade Microregion, and Carpathian Serbia.

The following four species are the most abundant and have the widest distribution in Serbia: *Nabis ferus* (Linnaeus), *N. rugosus* (Linnaeus), *N. pseudoferus* Remane, and *H. mirmicoides* (O. Costa). *Nabis ferus* (Linnaeus) was recorded in all 17 subregions in Serbia. It is followed by *N. rugosus* (Linnaeus) in 15, *H. mirmicoides* (O. Costa) in 11, and *N. pseudoferus* Remane in 10 subregions (Tab. 1). *Nabis ferus* (Linnaeus) and *N. rugosus* (Linnaeus) are euryvalent species. The species *N. flavomarginatus* (Scholtz) is distributed at higher altitudes. In Serbia, it was recorded from Avala (500 m above sea level) to Kopaonik (2000 m above sea level).

For the species *Himacerus (Stalia) boops* (Schjødt), there are only two known localities in Serbia: Ruma (HORVÁTH, 1907) and Korab (CSIKI, 1940). These two localities are biogeographically completely dissimilar. The Ruma locality is in Srem and belongs to the biome of Sub-Mediterranean deciduous (mostly oak) forests, while Mt. Korab is at the tripoint of Serbia, Macedonia, and Albania and belongs to the zone of Holarctic boreal forests. It is known that this

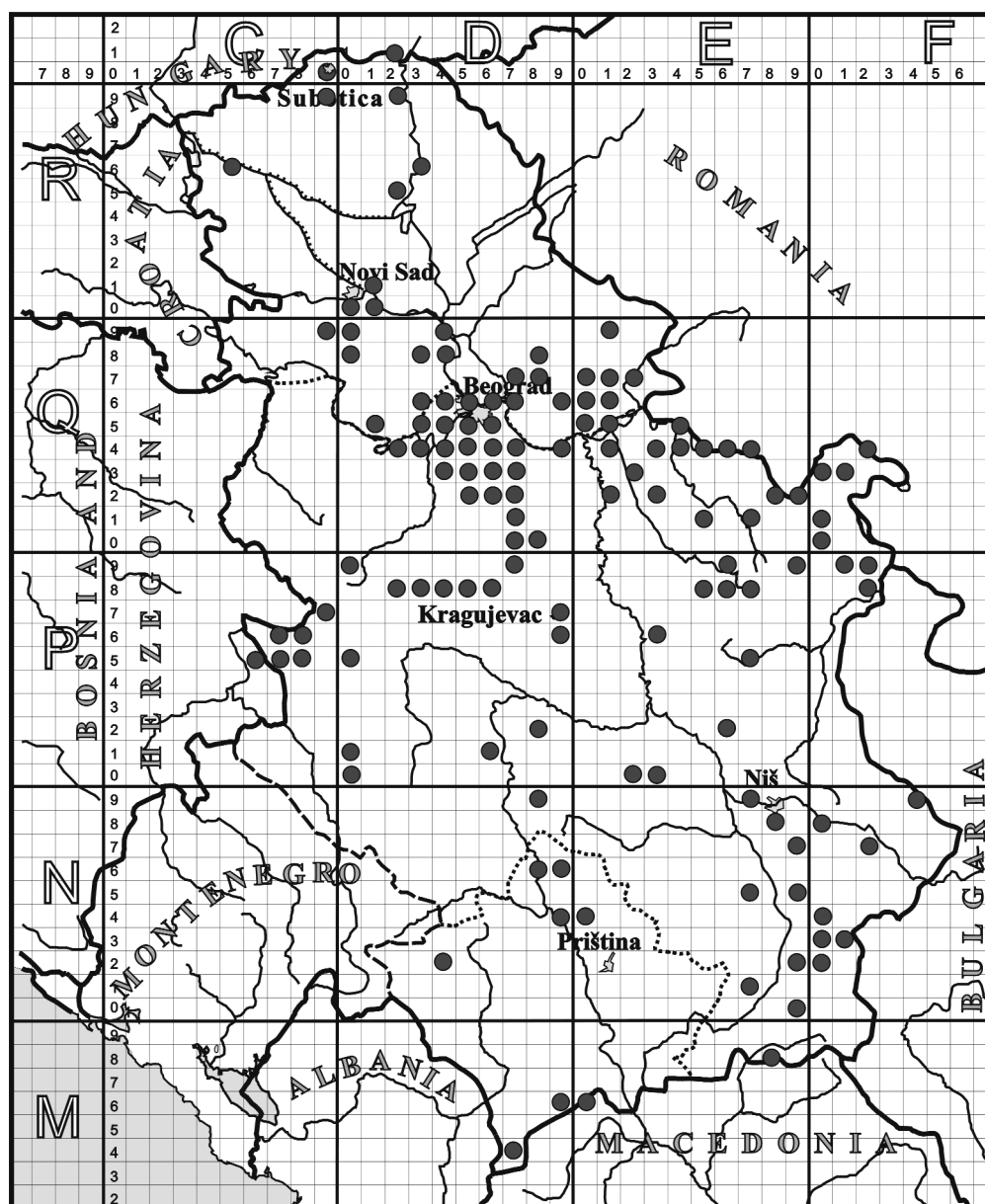


Fig. 1 Map of Serbia with UTM grid and studied localities where Nabidae were recorded.

species is euryvalent in relation to humidity, and the two Serbian records match this pattern. We assume that this species is found in small populations in nature, as after 1940 it was never again recorded. The author collected one specimen in 1985, on Mt Durmitor in Montenegro (PROTIĆ *et al.*, 1990).

The specimen of *Prostemma sanguineum* (Rossi) collected by Stančić in June of 1954 at the Rečica locality in the Ramsko-Golubačka Peščara (Sands) was originally identified as *P. bicolor* Rambur (PROTIĆ, 1986, 1998). However, after a review of the material and re-determination, it was identified as *P. sanguineum* (Rossi).

The following biogeographical elements are present among Serbian Nabidae species: Mediterranean (37.5%), Palearctic (18.75%), Eurasian (12.5%), Euro-Siberian (25%), and cosmopolitan (6.25%).

All these species are zoophagous and potentially important, as they might be useful for biological control of pestiferous insects and mites.

ACKNOWLEDGEMENT

I am very grateful to my associate and colleague, Aleksandar Stojanović, conservator-entomologist at the Natural History Museum in Belgrade, who collected a large number of specimens and prepared the map of Serbia.

REFERENCES

- BENEDEK, P., 1969. A Nabidae család (Heteroptera) fajainak elterjedése a Kárpát-Medencében. [Distribution of the species of the family Nabidae (Heteroptera) in the Carpathian Basin.] A Nabidae Család (Heteroptera) fajainak elterjedése a Kárpát-Medencében. *Allattani Közlemények*, 56, 1-4: 7-16.
- CSIKI, E., 1940. Félscsárnyúrovarok. Hemipteren. Csiki Ernő állattanikutatásai Albániában. *Explorationes zoologicae ab E. Csiki in Albaniaperactae* 17. *A Magyar Tudományos Akadémia Balkán-kutatásainak tudományos Eredményei*, Budapest 1: 289-315.
- DIVAC, N., 1907. Contribution to knowledge on Serbian hemipteran fauna. *Papers of the Zoological Institute*, University of Belgrade 1 (1): 4-14. [in Serbian].
- FRIVALDSZKY, I., 1877. Adatok Temesvármegye Faunájához. *Közlemények* 13: 371-377.
- HORVÁTH, G., 1897. *Fauna regni Hungariae*. Animalium Hungariae hucusque cognitorum enumeratio systematica 111. Arthropoda Ordo: Hemiptera. Budapest. [in Hungarian]
- HORVÁTH, G., 1903. Szerbia Hemiptera - faunája. *Annales Musei Nationalis Hungarici* 1: 3-28.
- HORVÁTH, G., 1907. Supplementum ad Faunam Hemipterorum regni Hungariae. *Annales Musei Nationalis Hungarici* 5: 500-506.
- KERŽNER, I. M. 1981: Poluzestokrylye semejstva Nabidae. *Fauna SSSR* (N.S. 124), Rhynchota 13 (2): 1-326.
- KORMILEV, N., 1936. I Beitrag zur Kenntnis der Verbreitung Jugoslawischer Hemiptera-Heteroptera (Süd Serbien und Serbien). *Glasnik skopskog naučnog društva* 17 (5): 29-54. [Serbian w. German sum.].
- LANGHOFFER, A., 1898. Contributions to entomological fauna of Croatia. *Rad JAZU* 141: 11-26. [in Croatian].

- MARKOVIĆ, J. Dj., 1980. *Regional geography of SFR Yugoslavia*. Gradjevinska knjiga, Belgrade. [in Serbian].
- PÉRICART, J., 1987. Hemipteres Nabidae d'Europe occidentale et du Maghreb. *Fauna de France* 71, Paris.
- PETRIK, A., 1958. Entomofauna of the Deliblato Sands. *Travaux des Musées de Voïvodina*, Novi Sad 7: 87-113. [Serbian w. German sum.].
- PROTIĆ, LJ., 1986. Contribution to knowledge on Hemiptera – Heteroptera of sand dunes of Ram and Golubac (Ramsko-Golubačka Peščara, NE Serbia). *Bulletin of the Natural History Museum*, Belgrade B, 41: 57-87. [Serbian w. English sum.].
- PROTIĆ, LJ., 1998. Catalogue of the Heteroptera fauna of Yugoslav countries. Part one.- *Natural History Museum*, Belgrade. Special issue 38: 1-215.
- PROTIĆ, LJ., 2006. Nabidae (Heteroptera) from former Yugoslavia in the collection of the Natural History Museum in Belgrade. *Acta ent. Slovenica*, 14, 1-2: 69-80.
- PROTIĆ, LJ., A. GOGALA, M. GOGALA 1990. *Heteroptera (Insecta)*. In: NONVEILLER, G. (ed.): The Fauna of Durmitor 3: 279-313. The Montenegrin Academy of Sciences and Arts Special Editions, 23 (14), Titograd.[Serbian w. English sum.].
- STICHEL, W., 1959. *Nabidae*, II, 3: 185-192. In: *Illustrierte Bestimmungstabellen der deutschen Wanzen (Hemiptera Heteroptera)*. Berlin-Hermsdorf.
- WAGNER, E., 1962. 2. Beitrag zur Heteropteren - fauna Macedoniens (Hem. Het.). *Fragmenta Balcanica. Musei Macedonici Scientiarum naturalium* Skopje 4, 15 (99): 115-122.
- ŽIVOJINOVIĆ, S., 1950. *La faune des insectes du Domaine foresiter de Majdanpek*. Monographie entomologique. Académie Serbe des Sciences, 160, 2: 211-225. [Serbian w. French sum.].

РАЗНОВРСНОСТ И РЕГИОНАЛНА РАСПРОСТРАЊЕНОСТ ФАМИЛИЈЕ NABIDAE (HETEROPTERA) У СРБИЈИ

Љиљана Протић

Природњачки музеј Београд, Његошева 51, П. фах 401, 11000 Београд, Србија

ИЗВОД

У Србији је фамилија Nabidae (Heteroptera) заступљена са 14 врста (Таб. 1). У раду је обрађено 1158 примерака, који су уловљени на 148 локалитета широм Србије. Истражени локалитети приказани су на UTM карти Србије (Фиг. 1). Наведени су и литературни подаци о распрострањењу ових врста у Србији, почевши од 1874. године на још 30 локалитета на којима су констатоване Nabidae у Србији, а који се не налазе на списку локалитета збирки Природњачког музеја.

Распрострањеност врста фамилије Nabidae у Србији урађена је према њиховој заступљености у појединим регионима и подрегионима. *Nabis ferus* (Linnaeus) нађена је у свих 17 подрегиона у Србији, затим *N. rugosus* (Linnaeus) у 15, *H. mirmicoides* (O. Costa) у 11, а *N. pseudoferus* Remane у 10 подрегиона. На основу израчунате вредности коефицијента густине (r) закључујемо да је она највећа за подрегионе у Србији, који су највише и истраживани, као Шумадија, Београдска микрорегија и Карпатска Србија.

У Србији су најбројније и најзаступљеније четири врсте: *Nabis ferus* (Linnaeus), *N. rugosus* (Linnaeus), *N. pseudoferus* Remane и *Himacerus mirmicoides* (O. Costa). Еуривалентне су *Nabis ferus* (Linnaeus) и *N. rugosus* (Linnaeus). *N. flavomarginatus* (Scholtz) распрострањена је на већим надморским висинама. У Србији је ловљена од Авале (500 m) до Копаоника (2000 m). Врста *Himacerus (Stalia) boops* (Schjødt) у Србији је позната на само два локалитета: Рума (Норвџић 1907) и Кораб (Сикић 1940). Предпостављамо да се ова врста јавља у малим популацијама у природи, јер после 1940. године више није нађена у Србији. Само један примерак уловљен је у Црној Гори на Дурмитору, 1985. године (Протић *et al.* 1990).

Припадност и процентуална заступљеност врста фамилије Nabidae из Србије појединим биогеографским областима је следећа: медитеранске (37,5%), палеарктичке (18,75%), евроазијске (12,5%), евро-сибирске (25%) и космополитске (6,25%).

Значај ових врста је у могућности да се примене у биолошкој борби против штетних инсеката и гриња, јер су све зоофагне.

Accepted June 15, 2006