

AQUATIC AND SEMIAQUATIC HETEROPTERA OF SERBIA

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This paper includes a list of 62 species of Heteroptera (Nepomorpha and Gerromorpha), categorized into 12 families: Nepidae (2), Belostomatidae (1), Corixidae (25), Naucoridae (1), Aphelocheiridae (1), Notonectidae (6), Pleidae (1), Mesoveliidae (1), Hebridae (3), Hydrometridae (2), Velidae (9) and Gerridae (10). Two species are new for the fauna of Serbia: *Hesperocorixa moesta* (Fieber, 1848) and *Velia (Plesiovelia) mancinii mancinii* Tamanini, 1947.

Key words: Heteroptera, Nepomorpha, Gerromorpha, checklist, Serbia

INTRODUCTION

Heteroptera of *aquatic and semiaquatic* habitats classified into two infraorders, Nepomorpha (aquatic bugs) and Gerromorpha (semiaquatic bugs). The highest diversity of aquatic and semiaquatic bugs is in tropical areas. There are about 4800 species described on the global scale and over 600 species in the Palearctic (Reduciendo Klementova *et al.* 2015). They

inhabit a wide range of habitats, from marine and shallow waters to arctic and high alpine. They are recorded on the water surface, on riverbanks in moss, aquatic and coastal vegetation. They are present in almost every freshwater biotope. Generally, they are predatory, while a smaller number of species is omnivorous.

Studies on aquatic and semiaquatic true bugs in Serbia has been neglected in comparison to terrestrial species. Individual records of aquatic and semiaquatic bugs are included in many faunistic papers (Divac 1907, Kormilev 1936, 1938, 1939, 1939a, 1943, Protić 1985, 1990, 1992, 1998, 2011a, 2011b, 2019, Protić *et al.* 2017, 2017a, Protić & Živić 2007, Protić & Živić 2012, 2013, Šeat 2011, 2013, 2017, Šeat & Nadaždin 2015, 2018, Šeat *et al.* 2016, Živić *et al.* 2007, Živojinović 1950).

The first check-list of Heteroptera of Serbia (Protić 1993/1994) and the Catalogue of the Heteroptera fauna of Yugoslav countries (Protić 1998) included lists of aquatic and semiaquatic true bugs in Serbia. After these publications, numerous new data were collected new species were recorded for Serbia, while other species were recorded in new localities.

The aim of this paper is to publish for the first time all-including data overview on species from infraorders Nepomorpha and Gerromorpha, stored at the Entomological Collection of the Natural History Museum in Belgrade (NHMBEO) and Alciphron database, along with an overview of references for previously published records. Most of specimens were collected by aquatic sampling net (benthic sampling or sweeping of aquatic plants) and some specimens were sampled in light trap.

In the Entomological Collection of the Natural History Museum in Belgrade, aquatic and semiaquatic true bugs are categorized by families and genera, but until recently there were some unidentified stored specimens. In the last few years, specimens from the collection were determined with help of our colleagues Ping-Ping Chen and Nico Nieser (Naturalis Biodiversity Centre, Leiden, The Netherlands) and Gavril Marius Berchi (West University of Timișoara, Romania).

The online database “Alciphron” a database for collecting data on insects in Serbia, was established in 2012 and it is available on the Internet since 2014 (HabiProt 2014–2019). The administrators for Heteroptera are Jelena Šeat and Bojana Nadaždin. There are numerous participants in the database, and they entering field data on a daily basis (locations where specimens were found and date and photograph of each specimen), while administrators identify or verify each recording. At the time of writing this paper, the database includes 233 records of aquatic and semiaquatic true bugs identified to species level. Most of the recorded specimens are stored in private collections of the second author and Jelena Šeat, while a few are

stored at the Faculty of Science at the University of Kragujevac. Certain specimens were identified only from photographs (such records are marked with "F" in the species list).

During the processing of the material and preparation for writing this paper, it was very useful to compare the papers on aquatic and semiaquatic bugs from neighboring and other European countries. All of these data are important for understanding biology and ranges of certain species: Andersen 1982, Benedek 1970, Berchi 2013, Berchi & Kment 2015, Berchi *et al.* 2016, Boda *et al.* 2015, Cianferoni 2013, 2019, Cianferoni & Nardi 2013, Csabai *et al.* 2017, Damgaard 2006, Fent *et al.* 2011, Gogala 2003, Jansson 1986, Josifov 1986, 1999, Josifov & Simov 2006, Kanyukova 2006, Kment & Beran 2011, Rabitsch & Zettel 2000, Schuster 1983, Soós *et al.* 2009, 2010, Tamanini 1959, Wróblewski 1980, Zimmermann 1982, Zimmermann & Scholl 1993.

The order of families and species follows the *Catalogue of the Heteroptera of the Palearctic Region* (Aukema & Rieger 1995; Aukema *et al.* 2013). Specimens were determined by using identification keys and individual taxonomic papers (Andersen 1996, Dahl 2005, Jaczewski 1962, Jaczewski & Wróblewski 1976, 1978, Jansson 1986, 1996, Poisson 1957, Savage 1989, 1990, Stichel 1955–1956, Wachmann *et al.* 2006).

RESULTS

List of aquatic and semiaquatic true bugs in Serbia

NEPOMORPHA

Nepidae Laterille, 1802

1. *Nepa cinerea* Linnaeus, 1758

NHMBO - Plavna: Zamna, r. 16.06.1987. 1ex. leg. Lj. Protić; Beograd: Bavanište 22.03.1990. 12ex. leg. M. Živković; Vlasinsko Jezero (lake): toward Crna Trava 28.07.1990. 3ex. leg. Lj. Protić; Avala: Čarapića Brest 01.06.1996. 2ex. leg. V. Žikić; Beljanica: Kanjon Suvaje 16.07.2004 1ex. leg. M. Vujanić; Mt. Jastrbac: Jezero (lake) 18.04.2007. 1ex., 07.05.2007. 1ex., 28.07.2007. 1ex., 16.09.2007. 1ex., 17.09.2007. 1ex. leg. I. Parezanović.

Alciphron database - Stara Pazova 03.04.2011. leg. B. Hric (F); Kosovska Kamenica: Berivojce 15.04.2013. leg. B. Milošević (F); Beograd: Babe 24.05.2019. leg. M. Popović (F); Beograd: Grocka 26.04.2014. leg. U. Vezenković (F); Beograd: Kaluderica 13.04.2017. leg. M. Vujić (F); Beograd: Beli Potok 12.10.2017., 20.05.2018. leg. D. Čoso (F); Avala: Čarapićev Brest 06.01.2018. leg. D. Čoso (F), 14.09.

2019. leg. M. Vujić (F); Knić: Boračka Reka, r. 03.05.2018. leg. F. Vukajlović; Kragujevac: Grošnička Reka, r. 09.05.2018. leg. F. Vukajlović; Kragujevac: Šumaričko Jezero (lake) 11.05.2019. leg. F. Vukajlović; Bačka Palanka: Tikvara 16.04.2015. leg. I. Tot (F); Bačka Palanka: Karadorđevo 03.09.2015., 17.10.2018. leg. I. Tot (F); Grocka: Vrčin 23.04.2016., 25.03.2017., 07.01.2018., 30.03.2018. leg. M. Vujić (F); Donji Tavankut 28.04.2011. leg. G. Mesaroš; Paličko Jezero (lake) 17.04.2014. leg. G. Mesaroš; Kovačica 07.04.2017. leg. A. Husarik (F); Loznica: Cikote 16.08.2017. leg. M. Šćiban (F); Bor 21.08.2017. leg. M. Šćiban (F); Stara Planina: Pokrevenik 28.07.2015. leg. I. Tot (F); Pčinja: Trgovište 21.07.2018. leg. B. Nadaždin; Vranje: Moštanica 17.09.2018. leg. M. Đurić (F); Vlasina: Polom 06.09.2019. leg. B. Nadaždin; Vlasina: Gadžini 03.09.2019. leg. M. Vujić; Vlasina: Veliki Čemernik 15.08.2019. leg. I. Tot.

Ref: Divac 1907, Kormilev 1936, Csiki 1940, Protić 1985, 1992, 1998, 2008, Protić & Živić 2007, Šeat 2011, 2013, 2017, Protić & Živić 2012, 2013, Protić *et al.* 2017, 2017a.

2. *Ranatra linearis* (Linnaeus, 1758) (Fig. 1)

NHMBO - Beograd: Topčider 07.1955. 1ex. leg. B. Salamon; Beograd: Ada Ciganlija 27.05.2000. 1ex. leg. S. Polak; Mt. Jastrebac: Jezero (lake) 07.05.2007. 1ex. leg. I. Parezanović; Kovin: Malo Bavanište 24.06.2007. 1ex., 08.07.2007. 1ex. leg. M. Obradović.



Fig. 1 – *Ranatra linearis* (photo Zoran Gavrilović).

Alciphron database - Bačka Palanka: Čarda "Florida" 10.10.2010. leg. I. Tot; Bačka Palanka: Tikvara 06.10.2016., 25.10.2016., 02.07.2018.,

17.07.2019. leg. I. Tot; Nadalj 18.06.2014. leg. R. Mirić (F); Kragujevac: Grošničko Jezero (lake) 25.03.2017. leg. F. Vukajlović; Vršac: Gradsko Jezero (lake) 16.05.2017. leg. Z. Gavrilović (F); Stari Begej: Traktor Bara 06.09.2018. leg. B. Nadaždin.

Ref.: Horváth 1903, Divac 1907, Protić 1998, 2008.

Belostomatidae Leach, 1815

3. *Lethocerus patruelis* (Stål, 1854)

Alciphron database - Raška: Supnje 10.06.2015. leg. F. Vukajlović.

Ref.: Kormilev 1936.

Corixidae Leach, 1815

MICRONECTINAE Jaczewski, 1924

4. *Micronecta (Dichaetonecta) pusilla* (Horváth, 1895)

Ref.: Horváth 1897.

5. *Micronecta (Dichaetonecta) scholtzi* (Fieber, 1860)

Ref.: Divac 1907, Kormilev 1936.

6. *Micronecta (Micronecta) carpatica* Wróbelowski, 1958

Ref.: Kment 2006.

7. *Micronecta (Micronecta) minutissima* (Linnaeus, 1758)

NHMBO - Kovin: Malo Bavanište 08.07.2007. 1ex. leg. M. Obradović.

Ref.: Protić 2011b.

8. *Micronecta (Micronecta) poweri poweri* (Douglas & Scott, 1869)

Ref.: Protić 1998, 2011a.

CYMATIAINAE Walton, 1940

9. *Cymatia coleoptrata* (Fabricius, 1777)

Ref.: Horváth 1897; Kormilev 1936, 1938; Protić 1985, 1998; Protić *et al.* 2017a.

10. *Cymatia rogenhoferi* (Fieber, 1864)

Alciphron database: Sombor 22.07.2016. leg. D. Vajgand.

Ref.: Horváth 1897, Kormilev 1936.

CORIXINAE Leach, 1815.

11. *Arctocorisa germari* (Fieber, 1848)

Ref.: Protić 2011a.

12. *Callicorixa praeusta praeusta* (Fieber, 1848)

NHMBO - Beograd: Veliko Selo 08.07.2006. leg. A. Stojanović.

Ref.: Protić & Živić 2013, Šeat 2013.

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13. *Corixa affinis* Leach, 1817

NHMBEO - Negotin: Mihajlovac, Djala Mare 19/20.07.2017. 1ex. legs. A. Stojanović & M. Jovanović. Attracted by light.

Ref.: Kormilev 1936; Protić 1985, 2011a; Protić *et al.* 2017a.

14. *Corixa panzeri* Fieber, 1848

Ref.: Protić 2011a.

15. *Corixa punctata* (Illiger, 1807)

NHMBEO - Beograd: Banjica 22.03.1999. 2ex. leg. M. Živković.

Ref.: Horváth 1897, Langhoffer 1899, Živojinović 1950, Protić 1998, 2011a, Protić & Živić 2012.

16. *Hespercorixa linnaei* (Fieber, 1848)

NHMBEO - Kovin: Malo Bavanište 08.07.2007. 1ex. leg. M. Obradović.

Alciphron database - Ridica 13.08.2015. leg. G. Mesaroš; Sombor 23.06.2016., 22.07.2016., 26.07.2016., 27.07.2016., 06.08.2016. leg. D. Vajgand; Čelarevo 20.09.2015., 30.07.2016. leg. D. Vajgand.

Ref.: Protić 2011b, Protić & Živić 2013, Protić *et al.* 2017a.

17. *Hesperocorixa moesta* (Fieber, 1848)

New species of the fauna of Serbia.

Alciphron database - Vlasina: Dejanova Reka, r. 26.05.2019. leg. M. Vujić.

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18. *Hesperocorixa parallela* (Fieber, 1860)

Ref.: Protić & Živić 2013.

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19. *Hespercorixa sahlbergi* (Fieber, 1848)

Alciphron database - Pešter: Braćak 13.10.2018. leg. B. Nadaždin; Pešter: Karajukića Bunari 14.10.2018. leg. B. Nadaždin.

Ref.: Kormilev 1936, Protić 2011a.

20. *Paracorixa concinna concinna* (Fieber, 1848)

NHMBEO - Deliblatski Pesak: Devojački Bunar 24.04.2006. 1ex. leg. A. Stojanović.

Alciphron database - Sombor 20.05.2015., 22.07.2016., 27.07.2016, 06.08.2016. leg. D. Vajgand; Gakovo 05.06.2015. leg. J. Šeat.

Ref.: Horváth 1897, Protić 2011a.

21. *Sigara (Pseudovermicorixa) nigrolineata nigrolineata* (Fieber, 1848)

NHMBO: Avala 13.07.1941. 2ex. leg. B. Petrov; Bavanište 22.03.1990. 4ex. leg. M. Živković; Mala Moštanica: Žuto Brdo 13.05.2006. 4ex., 14.04.2007. 1ex. leg. A. Stojanović; Stari Slankamen: Črnok 23/24.08.2019. 7ex. leg. A. Stojanović. Attracted by light.

Alciphron database - Pešter: Braćak 13.10.2018. leg. B. Nadaždin; Pešter: Karajukića Bunari 14.10.2018. leg. B. Nadaždin.

Ref.: Protić 2011a, Protić & Živić 2012, 2013, Šeat 2011.

22. *Sigara (Retrocorixa) limitata limitata* (Fieber, 1848)

Ref.: Horváth 1897; Kormilev 1936; Protić 1990, 1998, 2011a; Protić, Živić 2012; Šeta 2017.

23. *Sigara (Retrocorixa) semistriata* (Fieber, 1848)

NHMBO - Beograd: Veliko Selo 08.07.2006. 5ex. leg. A. Stojanović.

Ref.: Josifov 1986, Protić 2011b.

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24. *Sigara (Sigara) striata* (Linnaeus, 1758)

NHMBO - Beograd: Veliko Selo 08.07.2006. 1ex. leg. A. Stojanović; Kovin: Malo Bavanište 21.04.2007. 1 ex., 24.06.2007. 3ex., 30.06.2007. 3ex., 08.07.2007. 15ex., 18.07.2007. 3ex., 16.09.2007. 9ex., 30.06.2007.m 1ex., 15.07.2007. 18ex., leg. M. Obradović; Boljevci: Crni Lug 16.09.2016. 2ex. leg. A. Stojanović; Pančevo: Veliko Blato, Tamiš, r. 25/26.05.2019. 5 ex. leg. A. Stojanović; Stari Slankamen, Dunav, r. 18/19.06.2018. 1ex. leg. A. Stojanović; Beograd: Zuce, Malozučke Livade, meadows, 28/29.06.2019. 13ex. leg. A. Stojanović; Stari Slankamen: Črnok 23/24.08.2019. 6ex. leg. A. Stojanović. Attracted by light.

Alciphron database - Stari Slankamen 09.06.2012. leg. B. Hric (F); Stara Pazova 22.07.2012. leg. B. Hric (F); Ridica 13.08.2015. leg. G. Mesaroš; Gakovo 09.06.2013., 05.06.2015. leg. J. Šeat; Beograd: Beli Potok 24.05.2018. leg. D. Čoso (F); Sombor 20.05.2015., 23.06.2016., 22.07.2016., 26.07.2016., 27.07.2016., 01.08.2016., 02.08.2016., 06.08.2016. leg. D. Vajgand; Čelarevo 12.09.2015., 16.09.2015., 17.09.2015., 19.09.2015., 20.09.2015. leg. D. Vajgand; Fruška Gora: Stražilovo 29.06.2019. leg. B. Nadaždin; Pešter: Karajukića Bunari 14.10.2018. leg. B. Nadaždin.

Ref.: Kormilev 1936, Živojinović 1950, Protić 2011a, Protić & Živić 2012.

25. *Sigara (Subsigara) distincta* (Fieber, 1848)

Ref.: Kormilev 1936, Protić 1985, 2011a.

26. *Sigara (Subsigara) falleni* (Fieber, 1848)

NHMBEO – Stara planina: Kamenička Reka, r. 05.08.2001. 2ex. leg. I. Živić; Beljanica; Boljevci: Crni lug 16.09.2006. 2ex. leg. A. Stojanović; Kovin: Malo Bavanište 10.06.2007. leg. M. Obradović; Stari Slankamen: Čarnok 23/24.08.2019. 3ex. leg. A. Stojanović; Beograd: Zuce, Malozučke Livade (meadows) 28/29.06.2019. 3ex. leg. A. Stojanović. Attracted by light.

Alciphron database - Sombor 23.06.2016., 22.07.2016., 26.07.2016., 27.07.2016., 01.08.2016., 06.08.2016. leg. D. Vajgand; Čelarevo 20.09.2015. leg. D. Vajgand; Gakovo 05.06.2015. leg. J. Šeat; Bačka Palanka: Tikvara 10.06.2015. leg. I. Tot.

Ref.: Langhoffer 1899, Kormilev 1936, Protić 1985, 2011a, Protić & Živić 2007, Protić *et al.* 2017a.

27. *Sigara (Subsigara) iactans* Jansson, 1983

Ref.: Protić & Živić 2012.

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28. *Sigara (Vermicorixa) lateralis* (Leach, 1818)

NHMBEO – Bavanište 22.03.1990. 8ex. leg. M. Živković; Mala Moštanica: Žuto Brdo 14.04.2007. 1ex. leg. A. Stojanović; Pančevo: Veliko Blato, Tamiš, r. 25/26.05.2019. 6 ex. leg. A. Stojanović; Stari Slankamen 18/19.05.2018. 1ex. leg. A. Stojanović; Topola: Banja 17/18.08.2018. 2 ex. leg. A. Stojanović; Beograd: Zuce, Malozučke Livade, meadows 28/29.06.2019. 6 ex. leg. A. Stojanović. Attracted by light.

Alciphron database - Ridica 13.08.2015. leg. G. Mesaroš; Sombor 20.05.2015., 23.06.2016., 22.07.2016., 27.07.2016., 31.07.2016., 01.08.2016., 06.08.2016. leg. D. Vajgand; Sombor: Šikara 04.10.2013. leg. J. Šeat; Čelarevo 12.09.2015., 19.09.2015., 20.09.2015., leg. D. Vajgand; Gakovo 05.06.2015., 23.06.2015. leg. J. Šeat; Fruška Gora: Stražilovo 29.06.2019. leg. B. Nadaždin; Pešter: Braćak 13.10.2018. leg. B. Nadaždin.

Ref.: Divac 1907, Kormilev 1936, Živojinović 1950, Protić 1998, 2011a, Protić & Živić 2012, 2013, Šeat, Nadaždin 2015, Protić *et al.* 2017a.

Naucoridae Leach, 181529. *Ilyocoris cimicoides cimicoides* (Linnaeus, 1758)

NHMBO: Topčider 07.1956. 1ex. leg. B. Salamon; Beograd: Ilićev Dunavac 17.06.1994. 1ex. leg. V. Žikić; Beograd: Ada Ciganlija 05.2006. 2ex. leg. I. Parezanović; Kovin: Malo Bavanište 15.04.2007. 9ex., 21.04.2007. 5ex., 08.07.2007. 4ex., 15.07.2007. 2ex., 30.08.2007. 1ex., 16.09.2007. 15ex., 14.10.2007. 3ex. leg. M. Obradović; Novi Sad 04.11.2009. 1ex. leg. D. Savić.

Alciphron database - Stara Pazova 17.04.2010., 05.03.2012. leg. B. Hric (F); Bačko Gradište 08.03.2013. leg. M. Šćiban (F); Bačka Palanka: Tikvara 11.03.2014., 03.09.2015. leg. I. Tot; Bački Vinogradi 18.07.2014. leg. J. Šeat; Paličko Jezero (lake) 17.04.2014. leg. G. Mesaroš; Beograd: Veliko Ratno Ostrvo (island) 24.04.2017. leg. M. Vujić (F).

Ref.: Horváth 1903; Divac 1907; Kormilev 1936; Protić 1985, 1998, 2008; Protić *et al.* 2017a.

Aphelocheiridae Fieber, 185130. *Aphelocheirus aestivalis* (Fabricius, 1794)

Ref.: Živić *et al.* 2007, Protić & Živić 2007, Protić & Živić 2012.

Notonectidae Latreille, 180231. *Anisops sardeus* Herrich-Schaeffer, 1849

Alciphron database - Paličko Jezero (lake) 03.08.2019. leg. S. Čokić.

Ref.: Šeat *et al.* 2019.

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32. *Notonecta glauca glauca* Linnaeus, 1758 (Fig. 2)

NHMBO: Beograd: Topčider 01.06.1942. 1ex., 22.07.1942. 1ex., 04.08.1942. 1 ex. leg. B. Petrov; Mt. Jastrebac 18.07.1965. 1ex. leg. D. Čubrilović; Rajac 13.07.1979. 3ex. leg. Lj. Kašić; Vlasinsko Jezero (lake): toward Crna Trava 28.07.1990. 4ex. leg. Lj. Protić; Fruška Gora: Vrdnik 04.06.2000. 1 ex. leg. M. Mišković; Beograd: Resnik, Kružni Put 06.07.2002. 1ex. leg. A. Stojanović; Valjevo: Donji Taor 06.08.2003. 8ex. leg. M. Vujanić; Beljanica: Lisine 19.07.2004. 1ex. leg. M. Vujanić; Beljanička Reka, r. 21.07.2004. 1ex. leg. M. Vujanić; Boljevci: Crni Lug 16.09.2006 1ex. leg. A. Stojanović; Mt. Jastrebac: Jezero (lake) 18.04.2007. 1ex., 07.05.2007. 1ex., 08.07.2007. 3ex., 17.07.2007. 2ex., 28.07.2007. 3ex., 23.09.2007. 2ex., 14.10.2007. 2ex. leg. I. Parezanović; Kovin: Malo Bavanište 10.06.2007. 1ex., 24.06.2007. 1ex., 08.07.2007. 1ex. leg. M. Obradović; Beograd: Veloko Selo

21.04.2007. 1ex. leg. A. Stojanović; Lazarevac: Stubica 19.07.2008.
2ex. leg. A. Stojanović; Mala Moštanica: Žuto Brdo 10.07.2010. 2ex.
leg. A. Stojanović.



Fig. 2 – *Notonecta glauca* (photo Ivan Pančić).

Alciphron database – Cer: Planinarski Dom “Lipove vode” 06.07.2012.
leg. I. Radulović, 29.09.2017. leg. A. Đukić; Kosovska Kamenica:
Berivojce 25.10.2013., 02.11.2013. leg. B. Milošević (F); Kupusina
20.06.2014. leg. I. Kovač (F); Zrenjanin 22.04.2015., 07.06.2015.,
17.06.2018. leg. I. Pančić (F); Bačka Palanka: Tikvara 03.09.2015. leg.
I. Tot; Stara Pazova 31.03.2016. leg. B. Hric (F); Stara Planina:
Temska 21.07.2014. leg. M. Šćiban; Novi Sad: Kamenički Park
06.02.2018. leg. N. Milić (F); Pčinja: Šaprance 22.07.2018. leg. B.
Nadaždin; Pešter: Karajukića Bunari 14.10.2018. leg. B. Nadaždin;
Vlasina: Gadžini 03.09.2019. leg. M. Vujić.

Ref.: Protić 2008, Protić & Živić 2007, Protić & Živić 2012, 2013,
Protić *et al.* 2017, Protić *et al.* 2017a, Šeat 2011, 2017.

33. *Notonecta lutea* Müller, 1776

Ref.: Kormilev 1938, Protić 1998.

34. *Notonecta maculata* Fabricius, 1794

Ref.: Protić 1985, Protić & Živić 2013, Šeat, Nadaždin 2018.

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35. *Notonecta obliqua* Thunberg, 1787

NHMBO: Mt. Jastrebac: Jezero (lake) 08.07.2007. 1ex., 14.10.2007. 1ex. leg. I. Parezanović.

Ref.: Živojinović 1950.

36. *Notonecta viridis* Delcourt, 1909

NHMBO: Beograd: Topčider 22.07.1942. 2 ex. leg. B. Petrov; Beograd: Topčider 07.1959. 1ex. leg. B. Salamon; Barič 09.06.2008. 1ex. leg. S. Rauš; Miroč 19.07.2005. 3ex., 20.07.2005. 1ex. leg. M. Vujanić; Ljig: Kadina Luka 15.06.2013. 1ex leg. A. Stojanović; Beljanica: Lisine 16.07.2004. 9ex., 19.07.2004. 2ex. leg. M. Vujanić; Mt. Jastrebac: Jezero (lake) 08.07.2007. 2ex., 28.07.2007. 1ex., 17.09.2007. 2ex., 23.09.2007. 5ex., 14.10.2007. 1ex. leg. I. Parezanović; Beograd: Veliko Selo 21.04.2007. 1ex leg. A. Stojanović.

Ref.: Živojinović 1950; Protić 1990, 1998; Protić & Živić 2012.

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Pleidae Fieber, 1851**37. *Plea minutissima minutissima* Leach, 1817**

NHMBO: Zemun 25.08.1941 1ex. leg. B. Kodrič; Boljevci: Crni Lug 16.09.2006. 6ex. leg. A. Stojanović; Kovin: Malo Bavanište 08.07.2007. 5ex. leg. M. Obradović.

Alciphron database – Zrenjanin: Lukino Selo 30.06.2013. leg. I. Pančić (F); Sombor: Šikara 04.10.2013. leg. J. Šeat; Bački Vinogradi 18.07.2014. leg. J. Šeat; Pešter: Karajukića Bunari 14.10.2018. leg. B. Nadaždin.

Ref.: Horváth 1903, 1918, Divac 1907, Kormilev 1936, Csiki 1940, Protić 1998, Protić *et al.* 2017a.

GERROMORPHA**Mesoveliidae Douglas & Scott, 1867****38. *Mesovelia furcata* Mulsant & Rey, 1852**

NHMBO - Pančevački Rit: Kovilovo 02.09.2006. 1 ex. leg. A. Stojanović; Kovin: Malo Bavanište 08.07.2007. 2ex., 14.10.2007. 2ex. leg. M. Obradović.

Alciphron database - Zrenjanin 27.06.2013. leg. I. Pančić (F).

Ref.: Protić 2011b, Protić & Živić 2012, Protić *et al.* 2017a.

Hebridae Amyot & Serville, 1843**39. *Hebrus (Hebrus) montanus* Kolenati, 1857**

Ref.: Kment, Jindra 2005.

40. *Hebrus (Hebrus) pusillus pusillus* (Fallén, 1807)

NHMBO: Plavna: Reka Zamna, r. 16.06.1987. 1ex. leg. Lj. Protić;
Beograd: Topčiderski Park 24.06.2006. 5ex. leg. A. Stojanović.

Alciphron database - Bački Vinogradi 24.09.2012. leg. G. Mesaroš;
Novi Sad 02.04.2015. leg. M. Šćiban.

Ref.: Protić *et al.* 2017a.

41. *Hebrus (Hebrusella) ruficeps* Thomson, 1871

Alciphron database - Bačko Gradište 20.03.2013., 08.04.2013., 11.03.
2018. leg. M. Šćiban.

Ref.: Horváth 1897, Protić 1998, Protić *et al.* 2017a.

Hydrometridae Billberg, 182042. *Hydrometra gracilentata* Horváth, 1899

NHMBO: Kovin: Malo Bavanište 15.04.2007. 1ex.; 08.07.2007. 1ex.
leg. M. Obradović;

Ref.: Šeat *et al.* 2016.

New for Catalogue of the Heteroptera of the Palaearctic Region.

43. *Hydrometra stagnorum* (Linnaeus, 1758)

NHMBO - Plavna r. Zamna 16.06.1987. 3 ex. leg. Lj. Protić;
Smederevo 18.06.1988. 2ex. leg. G. Mesaroš; Đerdap: Mosna 19.07.
2005. 11ex. leg. Lj. Protić; Mala Moštanica: Žuto Brdo 22.06.2002.
4ex. leg. A. Stojanović; Beograd: Resnik 06.07.2002. 1ex. leg. A.
Stojanović; Mt. Jastrebac: Jezero (lake) 18.04.2007. 2ex., 07.05.2007.
3ex., 13.05.2007. 1ex., 17.09.2007. 2ex.; Mosna: Porečka Reka, r.
19.07.2005. 7ex. leg. Lj. Protić; Lazarevac: Stubica, 12.06.2010. 3ex.
leg. A. Stojanović.

Alciphron database – Sokobanja: Vodopad Ripaljka (fall) 17.06.2015.
leg. M. Popović (F); Novi Sad: Ledinci 06.04.2018. leg. M. Janković
(F); Fruška Gora: Paragovo 16.04.2016. leg. M. Vujić (F); Grocka:
Vrčin 09.10.2015. leg. M. Vujić (F); Loznica: Cikote 16.08.2017. leg.
M. Šćiban (F); Stara Planina: Oreovica 15.07.2013. leg. M. Šćiban;
Reljan 23.04.2019. leg. B. Nadaždin.

Ref.: Horváth 1903, 1918; Divac 1907; Schumacher 1918; Kormilev
1936; Protić 1985, 1992, 1998, 2008; Protić & Živić 2007; Šeat 2011,
2013; Šeat, Nadaždin 2015, 2018; Protić *et al.* 2017, 2017a.

Comment: Smederevo - unpublished record from the collection of
Moravian Museum, Brno [correspondence, Petr Kment].

Veliiidae Brullé, 1836

MICROVELIINAE China & Usinger, 1949

44. *Microvelia (Microvelia) pygmaea* (Dufour, 1833)

Ref.: Horváth 1903, Protić 1985, 1998.

New for Catalogue of the Heteroptera of the Palaearctic Region.

45. *Microvelia (Microvelia) reticulata* (Burmeister, 1835)

NHMBEO: Pančevački Rit: Kovilovo 02.09.2006. 1ex. leg. A. Stojanović.

Alciphron database - Zrenjanin 16.06.2013., 27.06.2013., 22.03.2015., 23.03.2015. leg. I. Pančić (F); Sombor: Šikara 04.10.2013. leg. J. Šeat.

Ref.: Horváth 1897, Protić 1990, 1998, Protić *et al.* 2017a.46. *Velia (Plesiovelia) affinis filippii* Tamanini, 1947

NHMBEO: Mt. Jastrebac Jezero (lake) 08.07.2007. 1ex. leg. I. Parežanović; Topola: Banja, Zmajevac 25/26.07.2014. 1ex. leg. A. Stojanović. Attracted by light.

Ref.: Protić & Živić 2007, Šeat 2013.

47. *Velia (Plesiovelia) caprai caprai* Tamanini, 1947

Ref.: Protić & Živić 2007, Protić & Živić 2012.

48. *Velia (Plesiovelia) currens* (Fabricius, 1794)

Ref.: Horváth 1897, Schumacher 1918, Kormilev 1936, Csiki 1940, Protić 1990, Šeat 2011.

49. *Velia (Plesiovelia) mancinii mancinii* Tamanini, 1947

New species in the fauna of Serbia.

Prokuplje 30.06.1941. leg. B. Petrov; Beograd: Avala 25.06.1941. leg. B. Petrov (Protić 1990, 2011a).

Comment: *Velia (Velia) rivulorum* (Fabricius) was misidentified in published records (Protić 1998, 2011a), they turned out to be *Velia (Plesiovelia) mancinii mancinii* Tamanini.

New for Catalogue of the Heteroptera of the Palaearctic Region.

50. *Velia (Plesiovelia) sauli* Tamanini, 1947

NHMBEO: Golubac 06.07.1956. 1ex. leg. J. Stančić; Beograd: Topčiderski Park 22.05.2004. 1ex. leg. A. Stojanović; Mala Moštanica: Žuto Brdo 22.06.2002. 1ex. 23.04.2011. 1ex. leg. A. Stojanović; Grocka: Vrčin 07.04.2007. 3ex. leg. A. Stojanović; Topola, s. Banja: Zmajevac 17.07.2015. 1ex. leg. A. Stojanović.

Comment: Specimens in collection by Nikole Kormilev (Protić 1990) collected at localities Prokuplje and Avala are not *V. rivulorum* but *V. sauli*.

New for Catalogue of the Heteroptera of the Palaearctic Region.

51. *Velia (Plesiovelia) serbica* Tamanini, 1951

NHMBO: Valjevo: Debelo Brdo 13.04.2002. 2ex, 14.04.2002. 1ex. leg. M. Vujanić; Rudnik: Gradovi 10.06.2003. 1ex. leg. Lj. Protić; Mt. Jastrebac: Jezero (lake) 08.07.2007. 1ex. leg. I. Parezanović; Goč 21.07.2011. 2ex. legs. M. Jovanović & A. Stojanović.

Alciphron database - Grocka: Vrčin 19.11.2017. leg. M. Vujić (F); Stara planina: Oreovica 15.07.2013. leg. M. Šćiban; Pčinja: Isposnica Prohora Pčinjskog 24.04.2019. leg. B. Nadaždin; Vlasina: Dejanova Reka, r. 26.05.2019., 02.09.2019. leg. M. Vujić, 24.07.2019. leg. B. Nadaždin; Vlasina: Polom 23.07.2019., 06.09.2019. leg. B. Nadaždin; Vlasina: Gadžini 03.09.2019. leg. M. Vujić.

Ref.: Šeat 2013, 2017, Šeat, Nadaždin 2015, 2018.

New for Catalogue of the Heteroptera of the Palaearctic Region.

52. *Velia (Velia) rivulorum* (Fabricius, 1775)!

Ref.: Horváth 1903; Kormilev 1936; Csiki 1940; Protić 1985, 1992, 1998.

Gerridae Leach, 1815

53. *Aquarius najas* (De Geer, 1773)

NHMBO: Mt. Jastrebac: Jezero (lake) 21.08.2007. 7 ex., 23.09.2007. 6 ex., 14.10.2007. 1 ex. leg. I. Parezanović.

Alciphron database - Brestovačka Banja 29.04.2013. leg. P. Petrović (F); Kosovska Kamenica: Berivojce 17.07.2011. leg. B. Milošević (F); Sokobanja 17.06.2015. leg. M. Popović (F); Stara Planina: Temska 27.07.2015. leg. M. Milković (F); Pirot: Dag Banjica 30.08.2015. leg. I. Medenica (F); Valjevo: Belić 04.05.2013. leg. G. Mesaroš; Loznica: Cikote 16.08.2017. leg. M. Šćiban (F); Bor 04.07.2017. leg. M. Šćiban (F); Brusnica 03.04.2018. leg. M. Miljević (F); Arilje: Roge 20.05.2018. leg. B. Nadaždin; Pčinja: Manastir Prohor Pčinjski 20.07.2018. leg. B. Nadaždin; Pčinja: Trgovište 21.07.2018. leg. B. Nadaždin; Pčinja: Dejanca 15.09.2018. leg. B. Nadaždin; Vlasina: Dejanova Reka, r. 26.05.2019., 02.09.2019. leg. M. Vujić.

Ref.: Protić 1992, 1998, 2008, Protić & Živić 2007, Šeat 2013, Šeat, Nadaždin 2015.

54. *Aquarius paludum paludum* (Fabricius, 1794)

NHMBO: Obedska Bara 1ex. 05.1954. leg. D. Čubrilović; Zlatar 6ex. 28.07.1979. Lj. Tričković Mt. Jastrebac: Jezero (lake) 18.04.2007. 4ex., 17.09.2007. 2ex. leg. I. Parezanović; Kovin: Malo Bavanište 23.07.2006. 1ex. leg. M. Obradović.

Alciphron database - Zrenjanin 14.08.2013. leg. I. Pančić (F); 05.08.2015. leg. M. Mareš (F); Kučaj: Dubašnica 03.05.2014. leg. P. Petković (F); Novi Beograd 23.06.2012. leg. M. Mareš (F); Žabalj 15.08.2015. leg. B. Budiša (F); Sopot 01.04.2016. leg. M. Đurić (F); Petničko Jezero (lake) 02.08.2014. leg. M. Jovanović (F); Vršac: Potporanj 09.06.2017. leg. Z. Gavrilović (F); Beograd: Ada Ciganlija 29.06.2019. leg. M. Mareš (F); Deliblato 13.04.2019. leg. I. Pančić; Carska Bara 06.09.2018. leg. B. Nadaždin.

Ref.: Horváth 1897, 1903, Kormilev 1936, Protić 1998, 2008, Protić & Živić 2007, Šeat, Nadaždin 2015, 2018, Protić *et al.* 2017a.

55. *Gerris (Gerris) argentatus* Schummel, 1832 (Fig. 3)

NHMBO: Deliblatski Pesak: Devojački Bunar 24.04.2006. 1 ex. leg. A. Stojanović; Kovin: Malo Bavanište 15.04.2007. 3ex., 21.04.2007. 2ex., 10.06.2007. 7ex., 24.6.2007. 8ex., 30.06.2007. 21ex., 08.07.2007. 9ex., 15.07.2007. 5ex., 23.07.2006. 3ex., 14.10.2007. 4ex. leg. Maja Obradović.



Fig. 3 – *Gerris argentatus* (photo Ivan Pančić).

Alciphron database - Zrenjanin 22.04.2015. leg. I. Pančić (F); Bački Vinogradi 24.09.2012. leg. G. Mesaroš; Zasavica 27.10.2018. leg. M. Šćiban.

Ref.: Horváth 1897, Kormilev 1936, Protić 1990, 1998, Šeat, Nadaždin 2018.

56. *Gerris (Gerris) costae fieberi* Stichel, 1938

NHMBEO: Mt. Jastrebac: Jezero (lake) 07.05.2007. 2ex., 08.07.2007. 1ex.; Mala Moštanica: Žuto Brdo 13.05.2006. 3ex. leg. A. Stojanović; Valjevo: Donji Taor 08.08.2003. 3ex. leg. M. Vujančić.

Alciphron database - Obrež 18.03.2012. leg. B. Hric (F); Povlen: Makovište 15.05.2005. leg. M. Jovanović (F); Brusnica 11.04.2015. leg. M. Miljević (F); Sopotnica 13.07.2015. leg. Đ. Petrović, 15.07.2015. leg. J. Šeat, 31.05.2016., 02.06.2016. leg. B. Nadaždin, 18.07.2016. leg. I. Parenta; Stara Planina: Rudinje 19.07.2013. leg. M. Šćiban; Stara Planina: Oreovica 15.07.2013. leg. M. Šćiban; Arilje: Roge 20.05.2018. leg. B. Nadaždin; Surdulica: Masurica 25.04.2019. leg. B. Nadaždin; Vlasina: Veliki Čemernik 25.05.2019. legs. I. Tot, M. Vujić, T. Tot, A. Đukić; Vlasina: Dejanova Reka, r. 26.05.2019. leg. M. Vujić, 24.07.2019. leg. B. Nadaždin; Vlasina: Apartman Filipović 27.05.2019. leg. M. Vujić; Vlasina: Vlasina Rid 23.05.2019. leg. I. Tot, 20.07.2019. leg. A. Đukić; Vlasina: Polom 06.09.2019. leg. B. Nadaždin; Vlasina: Gadžini 03.09.2019. leg. M. Vujić; Pčinja: Šaprance 24.04.2019. leg. B. Nadaždin; Tutin: Draga 02.07.2019. leg. B. Nadaždin.

Ref.: Divac 1907, Horváth 1903, Kormilev 1936, Protić 2011a, Šeat 2011, 2013, 2017, Šeat, Nadaždin 2015, 2018.

57. *Gerris (Gerris) gibbifer* Schummel, 1832

NHMBEO: Delliblatski Pesak: Devojački Bunar 24.04.2006. 2ex. leg. A. Stojanović; Mt. Jastrebac: Jezero (lake) 18.04. 2007. 1ex., 07.05. 2007. 3ex., 13.05.2007. 2ex., 21.08.2007. 1ex., 17.09.2007. 1ex., 23.09.2007. 3ex., 14.10.2007. 3ex. leg. I. Parezanović; Lazarevac: Stubički Vis 12.06.2010. 1ex. leg. A. Stojanović.

Alciphron database – Srbobran 08.06.2013. leg. M. Šćiban; Vlasina: Veliki Čemernik 25.05.2019. legs. I. Tot, M. Vujić, T. Tot, A. Đukić; Sopotnica 17.08.2019. leg. B. Nadaždin.

Ref.: Horváth 1903, Kormilev 1936, Živojinović 1950, Protić 1985, 1990, 1992, 1998, Protić & Živić 2007, Šeat 2013, Šeat, Nadaždin 2015.

58. *Gerris (Gerris) lacustris* (Linnaeus, 1758)

NHMBEO: Beograd: Topčider 28.07.1987. 1ex. leg. A. Stojanović; Mala Moštanica: Žuti Brdo 13.05.2006. 1ex. leg. A. Stojanović.

Alciphron database – Beograd: Banjička Šuma 17.02.2014. leg. M. Đurić (F); Brusnica 11.04.2015. leg. M. Miljević (F); Novi Sad: Ledinci 06.04.2008. leg. M. Janković (F); Sopotnica 15.07.2015. leg. J. Šeat; Stara Planina: Temska 15.07.2013., 22.07.2013. leg. M. Šćiban; Divčibare 05.05.2013. leg. G. Mesaroš; Vršac: Straža 09.06.2017. leg. Z. Gavrilović (F); Reljan 23.04.2019. leg. B. Nadaždin; Vlasina: Dejanova Reka, r. 26.05.2019. leg. M. Vujić; Vlasina: Suhi Dol 04.09.2019. leg. M. Vujić.

Ref.: Protić 1998, 2008, Šeat 2011, Šeat, Nadaždin 2015, Protić *et al.* 2017, 2017a.

59. *Gerris (Gerris) odontogaster* (Zetterstadt, 1828)

NHMBEO: Kovin: Malo Bavanište 10.06.2007. 1ex. leg. Maja Obradović.

Alciphron database - Kanjiža 19.05.2012. leg. G. Mesaroš.

Ref.: Protić 1990, 1998, Protić & Živić 2013.

60. *Gerris (Gerris) thoracicus* Schummel, 1832

NHMBEO: Beograd: Avala 25.06.1941. 15ex. leg. B. Petrov; Prokuplje 30.06.1941. 1ex. leg. B. Petrov; Beograd: Ada Ciganlija 06.1956. 4ex. leg. D. Čubrilović; Beograd: Topčider 28.07.1987. 2 ex. leg. A. Stojanović; Zlatar 28.07.1979. 3ex. leg. Lj. Tričković; Zlatar: Vilovo, Lošnica, r. 28.07.1979. 6 ex. Lj. Kašić; Tara: Kaluderske Bare 02.08.1988. 2ex., 04.08.1988. 3ex. leg. Lj. Protić; Obrenovac: Konatice 22.07.1992. 1ex. leg. Lj. Protić; Beograd: Ritopek 20.06.1998. 1ex. leg. A. Stojanović; Mala Moštanica: Žuti Brdo 29.04.2000. 1ex., 22.06.2002. 2ex., 13.05.2006. 2ex., 14.04.2007. 4 ex., 10.07.2010. 1ex. leg. A. Stojanović; Valjevo: Debelo Brdo 13.04.2002. 1ex., 14.04.2002. 3ex. leg. M. Vujanić; Progar: Bojčinska Šuma 22.03.2003. 1ex. leg. M. Vujanić; Avala: Trešnja 03.06.2003. 4ex. leg. Lj. Protić; Beljanica: Lisine 19.07.2004. 3ex. leg. M. Vujanić; Beljanica, Beljanička Reka, r. 21.07.2004. 4ex. leg. M. Vujanić; Miroč 19.07.2005. 2ex. leg. M. Vujanić; Deliblatski Pesak: Devojački Bunar 24.04.2006. 3ex. leg. A. Stojanović; Beograd: Veliko Selo 08.07.2006. 3ex. leg. A. Stojanović; Mt. Jastrebac: Jezero (lake) 13.05.2007. 1ex., 08.07.2007. 1ex. leg. I. Parezanović; Goč: Dobre Vode 10.05.2011. 2ex. leg. Č. Marković; Ljig: Kadina Luka 15.06.2013. 2ex. leg. A. Stojanović; Grocka: Vrčin 30.03.2014. 3ex., 07.04.2007. 5ex., 12.06.2014. 1ex., leg. A. Stojanović.

Alciphron database - Sopotnica 15.07.2015. leg. J. Šeat, 17.08.2019. leg. B. Nadaždin; Stara Planina: Rudinje 19.07.2013. leg. M. Šćiban; Pešter: Braćak 13.10.2018. leg. B. Nadaždin; Vlasina: Veliki Čemernik

25.05.2019. legs. I. Tot, M. Vujić, T. Tot, A. Đukić; Tutin: Draga
02.07.2019. leg. B. Nadaždin.

Ref.: Divac 1907, Horváth 1903, 1918, Kormilev 1936, Živojinović
1950, Protić 1998, 2008, Protić & Živić 2007, Šeat, Nadaždin 2015,
Protić *et al.* 2017a.

61. *Gerris (Gerriselloides) asper* (Fieber, 1860)

Ref.: Protić 1990, Protić & Živić 2013.

62. *Gerris (Gerriselloides) lateralis* Schummel, 1832

Alciphron database - Stara Pazova 20.03.2014. leg. B. Hric (F).

Ref.: Csiki 1940, Protić 1998, 2008, Protić *et al.* 2017a.

DISCUSSION AND CONCLUSIONS

Studies of aquatic and semiaquatic true bugs in Serbia started in the mid-19th century. The first data were included in papers by foreign entomologists (Fieber 1861, Horvath 1897), and later also in papers by own local experts (Divac 1907, Kormilev 1936, 1938, 1939, 1939a, 1943).

In recent years, online databases and photo-based data collection applications have been increasingly developed. Such tools turned out to be a very good method for collecting the basic data on species distribution, but we need to be very careful about photo-based identification and it should not replace the classic methods of identification through identification keys. This paper also includes a list of localities where true bugs were photographed, as an integral part of Alciphron database.

Summary of all analyzed data shows a list of 62 species recorded in Serbia, with 12 families: Nepidae (2), Belostomatidae (1), Corixidae (25), Naucoridae (1), Aphelocheiridae (1), Notonectidae (6), Pleidae (1), Mesoveliiidae (1), Hebridae (3), Hydrometridae (2), Velidae (9) and Gerridae (10).

Two new species were recorded for the fauna of Serbia: *Hesperocorixa moesta* (Fieber, 1848) and *Velia (Plesiovelia) mancinii mancinii* Tamanini, 1947.

In the old material in the Entomological Collection of the Natural History Museum, specimens of *Velia* sp. were mostly labeled as *Velia (Velia) rivulorum* (Fabricius, 1775). The review including checking and re-determining each specimen has shown presence of three species where none was actually *V. rivulorum*, and these were: *Velia (Plesiovelia) affinis filippii* Tamanini, *Velia (Plesiovelia) mancinii mancinii* Tamanini and *Velia (Plesiovelia) sauli* Tamanini.

For *V. rivulorum*, which is listed in the list of species, we only had data from very old papers (Horváth 1897, Csiki 1940, Kormilev 1936). According to Berchi & Kment (2015), the record for *V. rivulorum* from Bazijaš (Horváth 1897) pertains to *V. mancinii mancinii*. At the time it was the first record for Serbia, but today Bazijaš is within the borders of Romania. Therefore the official first records for Serbia are from Prokuplje and Avala – the mountain near Belgrade.

The original range of *V. mancinii* is the Mediterranean and the southern part of European Russia (Tamanini 1951, Josifov 1986, Aukema & Rieger 1995, Kment & Beran 2011, Berchi & Kment 2015). Records from Balkan Peninsula are generally quite old: Albania (Josifov 1986, Aukema & Rieger 1995); Bulgaria - Kresna Gorge June 24th 1938 (Tamanini 1949, Josifov 1963, 1999, Kment & Kolínova 2013); Croatia (Dalmatia) - Strobeč near Split April 12th 1937 (Novak & Wagner 1951); Republic of North Macedonia – Treska river in the north part October 26th 1959 (Wagner 1962); Serbia – Prokuplje, Beograd: Avala (this paper).

Hesperocorixa moesta was recorded at the site Dejanova Reka (river) at Vlasina (Fig. 4). This species mainly occurs in aquatic habitats that are temporary. Dejanova Reka is a narrow river that forms a humid peat habitat, and the whole area actually represents the remains of a former large peat bog. *H. moesta* was also recorded in the neighboring countries: Croatia, Bosnia and Herzegovina, North Macedonia and Slovakia (Protić 1998, Reduciendo Klementova *et al.* 2015).



Fig. 4 – River Dejanova Reka (Vlasina) - *Hesperocorixa moesta* habitat (photo Bojana Nadaždin).

The list of species includes one Balkan endemite - *Velia serbica*, as well as two glacial relicts - *Hesperocorixa sahlbergi* and *Arctocorisa germari* (Josifov & Simov 2006, Beron 2016, Gueorguiev *et al.* 1998).

Lethocerus patruelis has so far been found in Serbia at only one site – Obilić (Kormilev 1936). The record from Raška (locality Supnje) is only the second record after 79 years. This specimen is stored at the Entomological Collection of the Faculty of Science at the University of Kragujevac.

Some species were only mentioned in literature data, for example individual records of: *Micronecta (Dichaetonecta) pusilla* (Horváth) - Horváth 1897; *Micronecta (Dichaetonecta) scholtzi* (Fieber) - Divac 1907; *Sigara (Subsigara) distincta* (Fieber) - Kormilev 1936; *Microvelia (Microvelia) pygmaea* (Dufour) - Horváth 1903.

There are 13 new species for the Catalogue of the Heteroptera of the Palearctic Region: *Callicorixa praeusta praeusta* (Fieber), *Hesperocorixa moesta* (Fieber), *Hesperocorixa parallela* (Fieber), *Sigara (Retrocorixa) semistriata* (Fieber), *Sigara (Subsigara) iactans* Jansson, *Anisops sardeus* Herrich-Schaeffer, *Notonecta maculata* Fabricius, *Notonecta viridis* Delcourt, *Hydrometra gracilentata* Horváth, *Microvelia (Microvelia) pygmaea* (Dufour), *Velia (Plesiovelia) mancinii mancinii* Tamanini, *Velia (Plesiovelia) sauli* Tamanini and *Velia (Plesiovelia) serbica* Tamanini.

Within the Table S1 occurred in Hungary, and the neighbouring countries Boda *et al.* (2015) listed three species for Serbia that are not included neither in our database nor in the Catalogue of the Heteroptera of the Palearctic Region: *Arctocorisa carinata carinata* (C.R. Sahlberg), *Sigara dorsalis* (Leach) and *Mesovelina vittigera* Horváth.

We are witnessing the expansion of the range of individual Mediterranean species to a wider area of Europe, including Serbia (Rabitsch 2008, Protić 2011b, Šeat *et al.* 2019) and it is realistic to expect more of new species in national fauna in coming years. One good example is the expansion of *Anisops sardeus* Herrich-Schaeffer from the Mediterranean–Croatia, Island Šolta (Jaczewski 1934, Kment & Beran 2011) toward the Central Europe. This species was recorded in: Bulgaria (Josifov 1955, Stoianova & Simov 2014), southern Russia (Khatukhov *et al.* 2008), Hungary (Soos *et al.* 2010), Romania (Berchi 2011), northern Italy (Cianferoni & Pinna 2012, Cianferoni & Terzani 2013), Slovakia (Reduciendo & Svitok 2014) and Serbia (Šeat *et al.* 2019).

The existing data are the result of individual samples and only a small number of watercourses in Serbia have been systematically studied. However, by analyzing the localities of existing records we concluded that

most of Serbian territory has been covered and that diversity of aquatic habitats is high (Matvejev & Puncer 1989, Lakušić *et al.* 2005).



Fig. 5 – The Pčinja Valley (photo Bojana Nadaždin).

We believe that the number of 62 species is realistic for Serbia, considering the diversity of habitats from those at low altitudes (below 100 m) to those above 1000 m a.s.l. This number should increase in the near future, as several young entomologists have joined the studies of heteropterans in Serbia in the last few years. Studies on some insufficiently explored areas (Valley of Pčinja River (Fig. 5), Vlasina and Pešter highland Plateau) started in the last two years and visits to new sites are planned. Therefore we expect records of new species and to complement the distribution of aquatic and semiaquatic true bugs in Serbia.

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ВОДЕНЕ СТЕНИЦЕ У СРБИЈИ

ЉИЉАНА ПРОТИЋ И БОЈАНА НАДАЖДИН

РЕЗИМЕ

Истраживања стеница (Heteroptera) водених, влажних и мочварних станишта су годинама у Србији била запостављена у односу на терестрична станишта. Иако први подаци о воденим стеницама потичу из половине 19. века, систематских истраживања није било. Последњих година све је више истраживача у Србији који обрађају пажњу и на истраживање и сакупљање водених стеница (Nepomorpha и Gerromorpha).

Циљ рада је дати приказ врста водених стеница Србије на основу примерака из збирки Природњачког музеја у Београду, базе „Alciphron“ и литературе.

Састављен је списак који укључује 62 врсте. Пронађене су две нове врсте за фауну Србије: *Hesperocorixa moesta* (Fieber, 1848) и *Velia (Plesiovelia) mancinii mancinii* Tamanini, 1947. Од укупног броја наведених врста једна је балкански ендемит - *Velia serbica* Tamanini, 1951 а две су глацијални реликти - *Hesperocorixa sahlbergi* (Fieber, 1848) и *Arctocorisa germari* (Fieber, 1848).