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A checklist of the leeches (Annelida: Hirudinida) of Serbia, with new records

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Summary: Based on published records and original data from recent research, a list of the leeches (Hirudinida) of Serbia is presented. It includes 28 species and subspecies in 12 genera and 5 families. Numerous new records are reported, and 6 species i.e., *Alboglossiphonia hyalina* (O. F. Müller, 1774), *A. striata* (Apáthy, 1888), *Dina cf. lineata montana* Sket, 1968, *D. minuoculata* Grosser, Moritz & Pešić, 2007, *Erpobdella nigricollis* (Brandes, 1900) and *Trocheta dalmatina* Sket, 1968, are reported for the fist time for Serbia. The characteristics of the leech fauna in the treated area are briefly outlined.

Key words. Hirudinida, leeches, first record, faunistics, checklist, Serbia, Balkan.

1 – Introduction

The research of leeches biodiversity on the Balkans has a relatively long tradition (Augener 1925, 1926). Nevertheless, the fauna of Serbia is very incompletely known and only a few papers dealing with diversity of leeches of Serbia (e.g., Sket, 1968; Šapkarev, 1975). During the 20th century and in the beginning of 21th century more authors published informations on leeches mostly in faunistical table (and often without details on sampling localities), usually as part of a study of macroinvertebrate communities (e.g., Đikanović et al., 2008; Paunović et al. 2008 and etc.). Considernig biodiversity of Peštersko Polje, Lazarević et al. (2008) noted 5 leech species. However, despite a growing number of data published during the the last decades, leeches records including Serbia, as well the other Balkan countries, remain dispersed. Phylogeographic studies show that the Balkan Peninsula was a refuge of genetic diversity during the Pleistocene (Hewitt, 1999).

The aim of this paper is to compile data on the Serbian leeches and their current geographic distribution in Serbia, which helps to understand the major gaps in our knowledge on the leeches of Serbia.

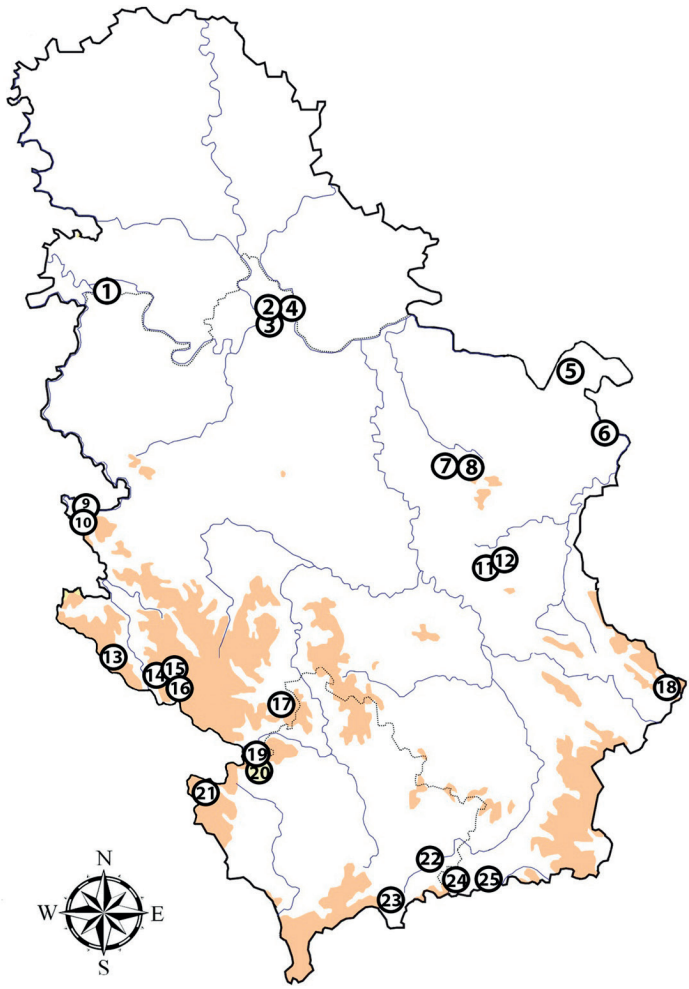

Fig. 1. Map of Serbia with marked sampling localities: **1** Zasavica (Valjevac), **2** Belgrade (Veliko ratno ostrvo, Danube-Forland), **3** Belgrade (Košutnjak), **4** Pančevo, **5** Mt. Miroč, **6** Prahovo (near Danube), **7** Mt. Beljanica (Lomnička bara), **8** Mt. Beljanica (Rečke), **9** Mt. Tara (River Vrelo), **10** Mt. Tara (Mala Batura), **11** Sokobanja (Bovansko lake), **12** Mt. Rtanj (Vrmdža gorge), **13** Mt. Kamena Gora, **14** Mt. Ozren (Milakovići), **15** Sjenica (Vapa river), **16** Pešter plateau (Karajukića Bunari, Veliko jezero, Trojan, Trojanska Česma, Suvi Do, Crveni Potok, Djerekare,Tepe, Stračijevac, Brdo od Ploča), **17** Novi Pazar, **18** Mt. Stara (Rsovci), **19** Mt. Prokletije-Mokra Gora (Crvene Lokve), **20** Istok, **21** Peć (Rugovo, Radovac, Beli Drim spring), **22** Gnjilane (Radivojce, Žegra, Donji Livoč), **23** Kačanik, **24** Preševo, **25** Mt. Rujan (between Šerbat and Svinjište).

2 – Materials and Methods

Leeches were collected by hand or with pincers from the underside of hard substratum (stones, wood, roods) and on submerged plants in the water, on the banks, as well as on shore (Fig. 1). The collected leeches were firstly transfered into 10 % ethanol, after which they were washed to remove the mucus and preserved in 70% to 75 % ethanol. The material is deposited in the author's collections and invertebrate collection of the Institute for Nature Conservation of Serbia, Belgrade. The nomenclature and taxonomy followed Nesemann & Neubert (1999).

3 – Results and Discussion

Family Glossiphoniidae Vaillant, 1890

Genus Alboglossiphonia Lukin, 1976

Alboglossiphonia hyalina (O. F. Müller, 1774)

Material examined: Mountain Beljanica, Lomnička Bara pond, 450 m asl, 14.06.2006, P. Lazarević, one specimen; Zasavica, Valjevac, marsh, 75 m asl, 09.06.2006, P. Lazarević, 4 specimens.

Remarks: New for Serbia. *Alboglossiphonia hyalina* was recorded together with *Alboglossiphonia striata* and *Erpobdella nigricollis* (both new for Serbia) hidden in the base of leaf rosettes of nationally protected plant species *Stratiotes aloides*. Zasavica is protected area.

Distribution: Central and eastern Europe.

Alboglossiphonia striata (Apáthy, 1888)

Material examined: Sremska Mitrovica, Zasavica, 44°57' N, 19°32' E, locality Valjevac, marsh, 75 m asl, 09.06.2006, P. Lazarević, 3 specimens.

Remarks: The taxonomical status of *Alboglossiphonia striata* is not clear. The leech was regarded as a variety of *Alboglossiphonia heteroclita* for a long time. New for Serbia.

Distribution: Recorded from Austria, Germany, Hungary, Poland, Serbia and The Netherlands.

Alboglossiphonia heteroclita (Linnaeus, 1761)

Remarks: Sket (1968) recorded *Glossiphonia heteroclita* from Novi Pazar. This species was subdivided in the past in three varieties, recently regarded as separate species within the genus *Alboglossiphonia*: *A. heteroclita* (Linnaeus, 1761) (syn. *G.*

h. var. *papillosa* (Braun, 1805)), *A. hyalina* (O. F. Müller, 1774) and *A. striata.* (Apáthy, 1888).

Sket (1968) not gave the information, which variety he found in Serbia. Therefore, we can not assign his finding of *G. heteroclita* to any of the aforementioned *Alboglossiphonia* - species.

Genus *Glossiphonia* Johnson, 1816

Glossiphonia complanata (Linnaeus, 1758)

Material examined: Pešter Plateau, Karajukića Bunari, Veliko Jezero meso-eutrophic lake, 1100 m asl, 21.06.2006, D. Pavićević, one specimen.

Remarks: This species is widely distributed in Serbia (Sket, 1968; Šapkarev, 1975; Đikanović et al., 2008; Marković et al., 2011; Paunović et al., 2008).

Distribution: Holarctic.

Glossiphonia concolor (Apáthy, 1888)

(Fig. 2)

Material examined: Pešter Plateau: Sjenica, marsh, 1000 m asl, 24.07.2006, P. Lazarević, 2 specimens; Sjenica, river Vapa, 19.05.2006, D. Pavićević, 3 specimens; Mt. Tara, Mala Batura, 1250 m. asl, (in the puddle), 20.06.2011, P. Lazarević, one specimen.

Remarks: First time recorded for Pešter Plateau (Lazarević et al., 2008).

Distribution: Northern, central and eastern Europe.

Glossiphonia nebulosa Kalbe, 1964

Material examined: Pešter Plateau, Sjenica, marsh, 1000 m asl, 24.07.2006, P. Lazarević, 2 specimens; Pirot, Mt. Stara, hamllet of village Rsovci, karstic spring, 800 m asl, 25.10.2008, I. Karaman, 2 specimens.

Remarks: First time recorded for Pešter Plateau (Lazarević et al., 2008).

Distribution: Central Europe, reported also from Great Britain and Turkey. Distribution is not known due to the former confusion with *Glossiphonia complanata*, *G. verrucata* and *G. concolor* (see: Nesemann & Neubert, 1999).

Genus *Helobdella* R. Blanchard, 1896

Helobdella stagnalis (Linnaeus, 1758)

Material examined: Sokobanja, Bovansko jezero-lake, 43°39'12,15'' N, 21°45´47,63'' E, 254 m asl, 26.09. 2009, V. Pešić, 4 specimens; Pešter Plateau,

Tutin, Djerekare, 1100 m asl, 20.06.2006, D. Pavićević, one specimen.

Remarks: The species is widely distributed in Serbia (Sket, 1968; Šapkarev, 1975; Marković et al., 2011; Paunović et al., 2012).

Distribution: Holarctic.

Genus *Hemiclepsis* Vejdovsky, 1884

Hemiclepsis marginata (O. F. Müller, 1774)

Material examined: Mt. Beljanica, Lomnička Bara pond, 350 m asl, 14.06.2006, P. Lazarević, 2 specimens; Zasavica, Valjevac, marsh, 75 m asl, 09.06.2006, P. Lazarević, 6 specimens.

Distribution: Palaearctic.

Family Piscicolidae Johnston, 1865

Genus *Caspiobdella* Epshtein, 1966

Caspiobdella fadejewi (Epshtein, 1961)

Remarks: Sket (1968) recorded one specimen of *Caspiobdella fadejewi* from Danube River near Prahovo.

Distribution: Northern and western tributaries of the Black Sea, including adjacent regions in Poland, the entire Danube Basin upstream towards to Germany (Nesemann & Neubert, 1999), North Germany.

Genus *Piscicola* Blainville, 1818

Piscicola geometra (Linnaeus,1761)

Remarks: This species was reported from the Sava River (Paunović et al., 2008, 2012), the Danube River (Iron Gate sector 849 - 1,077 rkm) (Marković et al., 2012) and the Morava River (Marković et al., 2011), but without additional informations. These records should be verified by additional material.

Distribution: The distribution of this species in the Holarctic remains unknown, and according to the Nesemann & Neubert (1999), the name *geometra* shoud refer to the taxon known from northern Europe. Records from the Neotropic region are doubtful.

Family Haemopidae Richardson, 1969

Genus *Haemopis* Savigny, 1822

Haemopis elegans Moquin – Tandon, 1846

Remarks: *Haemopis elegans* was confused with *H. sanguisuga* (Linnaeus, 1758) and *Limnatis nilotica* (Savigny, 1822) in the last 150 years. This species, recently redescribed by Grosser (2004), was reported from Serbia by Grosser & Pešić (2006) from a small stream near Preševo in southern Serbia.

Distribution: Certain records are known from Austria, South and North Germany, Hungary, Serbia, Slovenia and Switzerland.

Haemopis sanguisuga (Linnaeus, 1758)

(Fig. 2)

Material examined: Mt. Rtanj, Vrmdža Gorge, village Vrmdža, 700 m asl, 14.11.2007, D. Pavićević, 2 specimens; Beograd, Veliko Ratno Ostrvo, 70 m asl, 09.08.2006, P. Lazarević 2 specimens; Beograd, Dunav, Forland, 70 m asl, 10.04.2012, I. Njunjić, 2 specimens; Prijepolje, Kamena Gora, 1100 m asl, 12.06.2006, P. Lazarević, one specimen; Pešter Plateau: Crveni Potok mire, 1100 m asl, 17.05.2006, Pavićević, one specimen; puddle on other side of the bridge, Veliko Jezero, 1100 m asl, 17.05.2006, D. Pavićević, one specimen; near road to Trojan Peak, serpentinitic spring, 1350 m asl, 21.06.2006, P. Lazarević, one specimen; Suvi Do, stream, 1100 m asl, 17.05.2006, D. Pavićević, one specimen; Suvi Do, stream, 1100 m asl, 20.06.2006, P. Lazarević, 7 specimens; Tepe, 1100 m asl, 20.06.2006, D. Pavićević, 3 specimens; Trojan, Trojanska česma, 1200 m asl, 16.05.2006, P. Lazarević, 1 specimen.

Remarks: This species is widely distributed in Serbia (Sket, 1968; Šapkarev, 1975; Đikanović et al., 2008).

Distribution: Palaearctic.

Family Hirudinidae Whitman, 1886

Genus *Hirudo* Linnaeus, 1758

Hirudo medicinalis Linnaeus, 1758

Remarks: Sket (1968) reported this species from Pančevo (Beograd); latter on Šapkarev (1975) reported this species from Kačanik (Kosovo and Metohija). As this species was in the past confused with *Hirudo verbana*, all former records from the Balkan area are questionable.

Distribution: North, central and south-western Europe.

Hirudo verbana Carena, 1820

Material examined: Pešter Plateau: Crveni Potok mire, 1100 m asl, 17.05.2006, D. Pavićević, 2 specimens; Karajukica Bunari-Mrtvaja, mire, 1100 m asl, 21.06.2006, P. Lazarević, one specimen; puddle on other side of the bridge, Veliko

jezero, 1100 m asl, 17.05.2006, D. Pavićević, 2 specimens; Trojan, puddle above upper bridge, 1100 m asl, 16.05.2006, P. Lazarević, one specimen.

Remarks: First time recorded for Pešter Plateau (Lazarević et al., 2008). See Remarks under *H. medicinalis*.

Distribution: Autochtonous from south-eastern Europe to the Near East. It was introduced to North America.

Genus *Limnatis* Moquin-Tandon, 1826

Limnatis nilotica (Savigny, 1820)

Remarks: Šapkarev (1975) reported this species from Kosovo and Metohija (Radivojce, Žegra, Dolni Livoč, the vicinity of Gnjilane). According to the Šapkarev (1975) its the most northern finding of this species in the Balkan. However, as this species was in the past confused with *Haemopis elegans* (see above), all former records from the Balkan area are questionable.

Distribution: Circum-mediterranean species.

Family Erpobdellidae R. Blanchard, 1894

Genus *Dina* R. Blanchard, 1892

Dina absoloni Johansson, 1913

Material examined: Peć, Rugovo, spring 07.12.2013, V. Zuka, 6 specimens.

Remarks: Sket (1968) reported *Dina absoloni* from spring of Beli Drim near Peć.

Distribution: Known from the caves in the Dinaric carst.

Dina lineata lineata (O. F. Müller, 1774)

Material examined: Pešter Plateau, Tepe, karstic stream, 1100 m asl, 20.06.2006, D. Pavićević, 7 specimens.

Remarks: *Dina lineata* was recorded from many countries in the south-western Mediterranean part of the western Palaearctic (Spain, Italy, Balkan; see: Nesemann & Neubert, 1999). However, most records of *Dina lineata* in Serbia and in neighbouring countries should be ascertained to the following two subspecies: *Dina l. montana* and especially to *Dina l. dinarica*. The taxonomical status of the both taxa are not clear, and most probably they represents separate species. *D. l. lineata* is more common in the North Germany, Scandinavia and the Baltic countries.

Distribution: Widely distributed from northern and central Europe to the western Iran.

Dina lineata dinarica Sket, 1968

Material examined: Mt. Rujan, stream between Šerbat and Svinjište (near Preševo), 30.04.2006, V. Pešić, 8 specimens; Mt. Tara, River Vrelo, 43°57'27,26'' N, 19°25´43,85'' E, 238 m asl, 03.08.2009, V. Pešić, one specimen; Pešter Plateau: Stračijevac, karstic spring, 1200 m asl, 25.10.2006, D. Pavićević, 2 specimens; Tutin, Djerekare, 1100 m asl, karstic spring, 26.07.2006, D. Pavićević, 3 specimens; Tutin, Mokra Gora, Crvene Lokve, karstic pond, 1850 m asl, 8.06.2011, P. Lazarević, 6 specimens; Peć: Radovac, spring 01.12.2013, V. Zuka, 7 specimens; Rugovo, spring Hadaj, 15.11.2013, V. Zuka, 3 specimens; Istok, spring, 22.12.2013 V. Zuka, 2 specimens.

Distribution: Balkan.

Dina* cf. *lineata montana Sket, 1968

Material examined: Mt. Rtanj, Vrmdža Gorge, village Vrmdza, 800 m asl, 21.06.2006, D. Pavićević, 8 specimens.

Remarks: Due to the the similarity in the external morphology and the dark colour, the examined specimen show general conformity with *D. lineata montana*, but differs in its very small dimensions and a large cranial sucker. Additional material is necessary to clarify taxonomy of this species. New for Serbia.

Distribution: Montenegro, Serbia.

Dina minuoculata Grosser, Moritz & Pešić, 2007

Material examined: Brodarevo, Mt. Ozren, Milakovići, small fen, 1250 m asl, 26.09.2007, P. Lazarević & A. Zatezalo, 16 specimens.

Remarks: The species was originally described from the canyon of River Tara (Grosser et al., 2007). New for Serbia.

Distribution: Known from northern part of Montenegro and south-western part of Serbia.

Genus *Erpobdella* Blainville, 1918

Erpobdella octoculata (Linnaeus, 1758)

(Fig. 2)

Material examined: Sokobanja, Bovansko jezero-lake, 43°39'12,15''N 21°45´47,63''E, 254 m asl, 26.09.2009, V. Pešić, 14 specimens; Pešter Plateau: Karajukića Bunari-Mrtvaja, 1100 m. asl, 21.06.2006, D. Pavićević, 1 specimen;

Karajukića Bunari-Jezero, 1100 m asl, 22.06.2006, D. Pavićević, 8 specimens; Sjenica, Vapa river, 1000 m asl, 19.05.2006, D. Pavićević, 1 specimen; Veliko jezero, 1100 m asl, 21.06.2006, D. Pavićević & P. Lazarević, 12 specimens.

Remarks. This species is widely distributed in Serbia (Sket, 1968; Šapkarev, 1975; Đikanović et al., 2008; Marković et al., 2011; Paunović et al., 2012).

Distribution: Palaearctic species.

Erpobdella nigricollis (Brandes, 1900)

Material examined: Sremska Mitrovica, Zasavica, marsh, 44°57'N 19°32'E, locality Valjevac, 75 m asl, 09.06.2006, P. Lazarević, 2 specimens; Mt. Beljanica, Lomnicka Bara, pond, 500 m asl, 14.06.2006, P. Lazarević, 1 specimen.

Remarks: New for Serbia.

Distribution: Central to south-eastern Europe.

Erpobdella testacea (Savigny, 1822)

Material examined: Pešter Plateau, Trojan, 1200 m asl, karstic spring, 16.05.2006, Pavićević, one specimen.

Remarks: This species is widely distributed in Serbia (Šapkarev, 1975; Đikanović et al., 2008; Lazarević et al., 2008).

Distribution: Palaearctic.

Erpobdella vilnensis (Liskiewicz, 1925)

Material examined: Rujan Mt., stream between Šerbat and Svinjište (near Preševo town), 30.04.2006, V. Pešić, 4 specimens; Pešter Mt.: road to Trojan, karstic spring, 1200 m asl, 20.06.2006, D. Pavićević, one specimen; Tepe, 1100 m asl, 20.06.2006, P. Lazarević, 10 specimens; Trojan, upper bridge, 1100 m asl, 16.05.2006, D. Pavićević, 2 specimens; Trojan, karstic spring, 1200 m asl, 21.06.2006, P. Lazarević & D. Pavićević, 5 specimens; ibid., 25.07.2006, 3 specimens; Trojan, Trojanska česma, karstic spring, 1200 m asl, 16.05.2006, Pavićević, 2 specimens; Trojan, 22.06.2006, D. Pavićević, 9 specimens; Trojan, Brdo od ploča, Vrelo, karstic spring, 1200 m asl, 22.06.2006, D. Pavićević & P. Lazarević, 31 specimens; Tutin, Djerekare, 1100 m asl, 20.06.2006, D. Pavićević, one specimen; Mt. Beljanica, Rečke, Busovata, stream, 900 m asl, 14.06.2006, P. Lazarević, 8 specimens.

Remarks: First time recorded for Pešter Plateau (Lazarević et al., 2008).

Distribution: Palaearctic species. Known from central to the eastern Europe (Nesemann & Neubert, 1999). The recent finding of this species in Kyrgyzstan (Jueg et al., 2013) represents the easternmost spot of the species range known so far.

Genus *Trocheta* Dutrochet, 1817

Trocheta cylindrica Örley, 1886

Remarks: Sket (1986) recorded a questionable finding of *Trocheta bykowskii bykowskii* (syn. to *T. cylindrica* Örley, 1886, see Košel 2004) from Košutnjak (Belgrade). In the past, different Central and south European populations with heterogeneous morphology were ascertained to *T. bykowskii* (see Nesemann & Neubert, 1999). Additional material is necessary to confirm presence of this species in Serbia.

Trocheta dalmatina Sket, 1968

Material examined: West Serbia, Tara Mt., Šargan, near stream in *Pinus* wood, 14.08.1997, I. Karaman, 2 specimens.

Remarks: The record of this species in the western part of Serbia (Tara Mt.) is rather interesting, because its the northernmost finding of this large leech and far out of its known distribution. Due to the position of the genital pores and the shape and extension of the atrium, the shape of ovisacks and the vas deferens the specimens from Serbia are in a good agreement with the original description (Sket, 1968). New for Serbia.

Distribution: The species was known from the coastal spring and streams of Croatia (south of Dubrovnik) and Montenegro (Kotor, Herceg Novi).

Trocheta danastrica Stschegolew, 1938

(Fig. 2)

Remarks: This largest European leech species is exported from Serbia in different European countries under the name "Durdubak" (durbok or turbok) as a bait of *Silurus glanis* (Linnaeus, 1758). The taxonomical status of this species and the affiliation of the "Durdubak" to *Trocheta danastrica* was clarified by Grosser & Epshtein (2009). However, distribution of this species in Serbia is unknown. *Trocheta danastrica*, a species originally described from the Dnjestr River in the Ukraine near Odessa, was redescribed latter by Nesemann & Neubert (1999) as *Trocheta* sp.

Distribution: South-eastern Europe (Dnjestr/Ukraine, Danube and Raba/ Hungary).

Trochaeta haskonis Grosser, 2000

Remarks: Grosser (2013) recently reported this species from Mt. Miroč, E Serbia, based on a single specimen collected in a small puddle in the pit at the depth of 100 m. This is the first record of this species from a cave. *Trochaeta*

haskonis shows obviously a high tendency to a subterranean mode of life and prefers habitats which are directly influenced the ground water (Grosser, 2013). The leech was originally described from the flooded area of the river Elbe in Saxony-Anhalt (Germany), where it is prefer a small temporary puddles while is very rare in the waterbody of the river (Grosser, 2013).

Distribution: Central Europe (Germany; unpublished record from the area of Vienna, Austria). New for Serbia.

4 – Conclusion

The present study gives a complete survey of leeches of Serbia. It includes a total of 28 species and subspecies in 12 genera and 5 families. Serbia provides suitable habitats for almost 30% of 96 species and subspecies of freshwater and terrestrial leeches recorded from Europe. When looking at the distribution of the species it is clear that the current knowledge of the diversity of the leeches is far from complete. Large portions of Serbia remain unexplored for research and more research will undoubtedly increase the number of leeches species. Additional field work is highly needed for appropriate evaluation of extant leeches biodiversity in Serbia.

Its worth to note that the knowledge of taxonomy of some species (especially of the family Erpobdellidae) is not satisfactory, and sometimes genetic investigations are in collision with morphological and anatomical studies (e.g., *Dina bykowskii krasense* - see: Trontelj, 1997; Trontelj & Sket, 2000; *D. dalmatina* – see: Lokovšek, 2008). Further, records of some species (e.g. *Hirudo medicinalis*) are doubtful, and additional material and field work are necessary to confirm its presence. On other case, for some species known from the neighbouring countries (e.g., *Batracobdella euxina* Neubert & Nesemann, 1995 [Bulgaria - Grosser & Pešić, 2006], *Batracobdelloides moogi* Nesemann & Csányi, 1995 [Montenegro - Grosser & Pešić, 2005]), there is good reason to assume that these species are expected to be found in the future in Serbia.

The specific geographical position of the Balkans in Europe (existence of land-bridge connections to Asia Minor during the past, closeness to the Apennine Peninsula but also vicinity of Caspian sea region, etc.) compared to the other two southern European peninsular refugia (Iberian and Apennine) greatly influences the diversity of taxa present today. The present study is exhaustive and constitutes the most complete list of leeches in Serbia, including a complete bibliography of research on the subject. The publication of this checklist should help to stimulate further studies on this important group of invertebrates in Serbia.

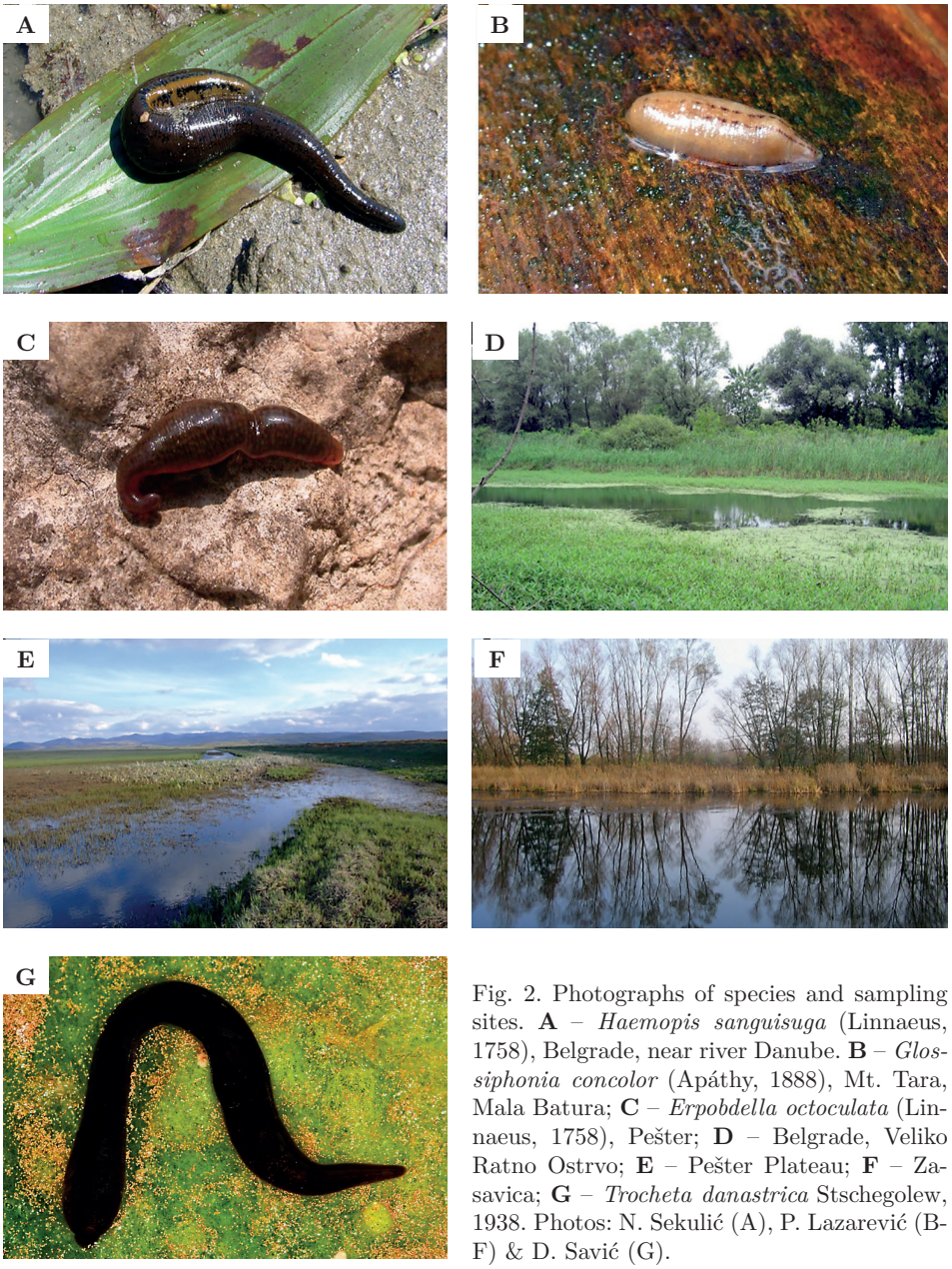

Fig. 2. Photographs of species and sampling sites. **A** – *Haemopis sanguisuga* (Linnaeus, 1758), Belgrade, near river Danube. **B** – *Glossiphonia concolor* (Apáthy, 1888), Mt. Tara, Mala Batura; **C** – *Erpobdella octoculata* (Linnaeus, 1758), Pešter; **D** – Belgrade, Veliko Ratno Ostrvo; **E** – Pešter Plateau; **F** – Zasavica; **G** – *Trocheta danastrica* Stschegolew, 1938. Photos: N. Sekulić (A), P. Lazarević (B-F) & D. Savić (G).

5 – Acknowlegments

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6 – References

Augener H., 1925. – Blutegel von der Balkanhalbinsel. *Zoologischer Anzeiger*, Leipzig, 62: 161-173.

Augener H., 1926. – Nachtrag zur Blutegelfauna der Balkanhalbinsel nebst Bemerkungen über Egel aus anderen Gebieten. *Zoologischer Anzeiger*, Leipzig, 68 (9/10): 239-247.

Djikanović V., Jakovčev-Todorović D., Nikolić V., Paunović M & Cakić P., 2008. – Qualitative composition of communities of Aquatic Macroinvertebrates along the course of the Golijska Moravica River (West-Central Serbia). *Archives of Biological Sciences*, Belgrade, 60 (1): 133-144.

Grosser C., 2004. – *Haemopis elegans* (Hirudinea: Haemopidae) – ein wiederentdecktes europäisches Egeltaxon. *Lauterbornia*, Dinkelscherben, 52: 77-86.

Grosser C., 2013. – First record of *Trocheta haskonis* Grosser, 2000 (Hirudinea: Erpobdellidae) in Serbia. *Lauterbornia*, Dinkelscherben, 76: 111-113.

Grosser C. & Epshtein V.M., 2009. – Zum Artstatus des Egels *Trocheta danastrica* Stschegolew, 1938 (Annelida, Hirudinea: Erpobdellidae). *Lauterbornia* Dinkelscherben, 67: 77-91.

Grosser C., Moritz G. & Pešić V., 2007. – *Dina minuoculata* sp. nov. (Hirudinea: Erpobdellidae) – eine neue Egelart aus Montenegro. *Lauterbornia*, Dinkelscherben, 59: 7-18.

Grosser C. & Pešić V., 2005. – First record of *Batracobdelloides moogi* (Hirudinea: Glossiphoniidae) in the Balkans. *Natura Montenigrina*, Podgorica, 4: 29-32.

Grosser C. & Pešić V., 2006. – First record of *Batracobdella euxina* (Hirudinea: Glossiphoniidae) in Europe. *Lauterbornia*, Dinkelscherben, 58: 97-99.

Grosser C. & Pešić V., 2006. – First record of *Haemopis elegans* (Hirudinea: Hirudinidae) in Serbia. In: Pešić V. & Hadziablahović S. (Eds.): Proceedings of the Symposium, II International Symposium of Ecologists of Montenegro. Kotor, 20. - 25.09.2006, 31-32.

Hewitt G.M., 1999. – Post-glacial re-colonization of European biota. *Biological*

Journal of the Linnean Society, 68: 87-112.

Jueg U., Grosser C. & Pešić V., 2013. – Bemerkungen zur Egelfauna (Hirudinea) von Kirgistan. *Lauterbornia*, Dinkelscherben, 76: 103-109.

Košel V., 2004. – Taxonomical position of two species of Trocheta (Hirudinea) described from Central Europe. *Biologica*, Bratislava, 59 (15): 25-28.

Lazarević P., Pavićević D. & Zatezalo A., 2008. – Biodiversity and conservation of the Pestersko Polje Peatland in South-West Serbia. In: Farrell C., Feehan J. (ed): After Vise Use – The Future of Peatlands, Proceedings of the 13th International Peat Congress, vol 2: 23-25, IPS, Tullamore, Ireland.

Lokovšek T., 2008. – Filogenija in Filogeografija Pijavke *Dina lineata* (Hirudinea) na Dinarskem Krasu, Phylogenie and Phylogeography of Leech Dina lineata (Hirudinea) on Dinaric Karst.- Diplomsko Delo. Ljubljana: Universa v Ljubljani Biotehniška Fakulteta Oddelek za Biologijo. 66 pp.

Marković V., Atanacković A., Tubić B., Vasiljević B., Simić V., Tomović J., Nikolić V. & Paunović M., 2011 – Indicative status assessment of the Velika Morava River based on aquatic macroinvertebrates. *Water Research and Management*, Belgrade, 1 (3): 47-53.

Marković V., Atanacković A., Tubić B., Vasiljević B., Kračun M., Tomović J., Nikolić V. & Paunović M., 2012. – Indicative status assessment of the Danube River (Iron Gate sector 849 - 1,077 rkm) based on the aquatic macroinvertebrates. *Water Research and Management*, Belgrade, 2 (2): 41-46.

Nesemann H. & Neubert E., 1999. – Annelida, Clitellata: Branchiobdellida, Acanthobdellea, Hirudinea.- Süßwasserfauna von Mitteleuropa 6/2, Heidelberg. 178 pp.

Paunović M.M., Borković S.S., Pavlović S.Z., Saičić Z.S & Cakić. P.D., 2008. – Results of the 2006 Sava survey – Aquatic Macroinvertebrates. *Archives of Biological Sciences*, Belgrade 60 (2): 265-271.

Paunović M., Tomović J., Kovačević S., Zorić K., Žganec K., Simić V., Atanacković A., Marković V., Kračun M., Hudina S., Lajtner J., Gottstein S & Lucić A., 2012. – Macroinvertebrates of the Natural Substrate of the Sava River – Preliminary Results. *Water Research and Management*, Belgrade, 2 (4): 33-39.

Šapkarev J., 1975 – Contribution to the knowledge the earthworms (Lumbricidae) and leeches (Hirudinea) of Kosovo, Yugoslavia. *Annuaire de la Faculté des Sciences de l'Université de Skopje,* Skopje 27-28: 39-54.

Sket B., 1968. – K Poznavanju Favne Pijavk (Hirudinea) v Jugoslaviji, Zur Kenntnis der Egel-Fauna (Hirudinea) Jugoslawiens.- Academia Scientiarum et Artium Slovenica Classis IV: Historia Naturalis et Medicina, Diss. Ljubljana, 9(4): 127-197.

Trontelj P., 1997. – Molekulare Systematik der Egel (Hirudinea): Phylogenetische Analyse nuklearer und mitochondrialer ribosomaler DNA-Sequenzen. Fakultät für Biologie der Eberhard-Karls-Universität Tübingen, Dissertation.

Trontelj P. & Sket B., 2000. – Molecular re-assessment of some phylogenetic, taxonomic and biogeographic relationships between the leech genera *Dina* and *Trocheta* (Hirudinea: Erpobdellidae). *Hydrobiologica*, Netherlands, 438: 227-235.