

# FIRST RELIABLE RECORDS OF *HIRUDO VERBANA* CARENA, 1820 (ANNELIDA: HIRUDINIDA) FROM SLOVAKIA AND NOTES ON ITS SYNTOPY WITH *HIRUDO MEDICINALIS* LINNAEUS, 1758

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## KEY WORDS

*Hirudo verbana*  
*Hirudo medicinalis*  
Hirudinida  
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## ABSTRACT

Records of the medicinal leech *Hirudo verbana* Carena, 1820 from two localities in southern Slovakia are presented. Syntopy with the sister species *Hirudo medicinalis* Linnaeus, 1758 in both of localities is also proved.

## INTRODUCTION

At present, the European medicinal leeches are considered to be a complex of three closely related species: *Hirudo medicinalis* Linnaeus, 1758, *Hirudo verbana* Carena, 1820, and *Hirudo orientalis* Utevsky & Trontelj, 2005 (Kutchera 2012). Since *Hirudo verbana* is considered to be a neglected, but distinct species (Nesemann & Neubert 1999, Trontelj et al. 2004), it has been often confused with *Hirudo medicinalis*. However *Hirudo verbana* seems to be a polymorphic taxon (Kutchera 2012), both of these species are well distinguished by external morphology (Kutchera & Elliott 2014, Utevsky & Trontelj 2005). In Slovakia, the checklist of Hirudinea was provided by Košel (2001, 2003) which refers to 22 species. After accepting *Hirudo verbana* as distinct species, its presence in the territory of Slovakia was mentioned by Majnholdová et al. (2001). Since that study was focused on physiology and ecology of medicinal leeches without taxonomic respect and, no documenting specimen exists (Schlarmannová in verb.), published data on caught specimens could be based on misidentification and may refer to *Hirudo medicinalis*. Here we present first reliable records of the occurrence of *Hirudo verbana* in Slovakia.

## MATERIAL AND METHODS

Within the project of monitoring *Hirudo medicinalis* in Slovakia we visited several localities where the presence of medicinal leeches was confirmed. One of these samples performed by B. Immerová contained specimens with unicoloured ventral part of the body, and these specimens were supposed by M. Janák as *Hirudo verbana*. Subsequent study of complete pigmentation, together with the comparison with the reliably identified material from collections of the Naturhistorisches Museum Wien provided by the first author, confirmed that specimens really belong to *Hirudo verbana*. The main differentiation marks of these specimens were more dark appearance of the dorsal side of the body, diffuse orange paramedian dorsal stripes and a unicoloured greenish venter, with a pair of black ventrolateral stripes (Figure 1, 2).

In both sites, collecting was realized using a method proposed by Stloukal (2015) – using hand net for cca 30 minutes of walking; disturbing the water on the litoral zone of the water body to attract the specimens of leeches. The collected leeches were firstly transferred into 10 % ethanol, afterwards washed to remove the mucus, and finally preserved



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in 70 % to 75 % ethanol. The material is deposited in the collections of the Slovak National Museum, Museum of Natural History, Bratislava, Slovakia, and in the collection of the Naturhistorisches Museum Wien, Austria.

## RESULTS AND DISCUSSION

The occurrence of *Hirudo verbana* was recorded in two localities in southern Slovakia (Table 1, Figure 5). Komárno – Nová Osada sampling site represents artificial temporary water body with muddy bottom and vegetation of *Carex* sp., *Lemna* sp. and *Trapa natans* (Figure 3). The second site, Ipeľské Predmostie – Ipeľské hony are remnants of native wetland of the Ipeľ river with a temporary, shallow water body with *Carex* sp., *Typha* sp., *Phragmites australis*, *Lemna* sp., *Phellandrium aquaticum* and *Spirodela polyrhiza* (Figure 4).

**Material examined:** 10 specimens of *Hirudo verbana*: Slovakia, Komárno, Nová Osada, 8. 8. 2014, B. Immerová leg., 47°47'52.06"N, 18°6'1.2204"E, 106 m a.s.l., artificial temporary water body with muddy bottom; 32 specimens of *Hirudo verbana* and 1 specimen of *Hirudo medicinalis*, the same locality, 25. 9. 2014, M. Janák, B. Immerová, R. Cséfalvay leg.; seven specimens of *Hirudo verbana* and one specimen of *Hirudo medicinalis*, the same locality, 19. 5. 2015, M. Janák, B. Immerová, R. Cséfalvay leg.; 52 specimens, the same locality, 20. 8. 2016, M. Janák, B. Immerová leg.; 49 specimens of *Hirudo verbana* and one specimen of *Hirudo medicinalis*, Slovakia, Ipeľské Predmostie, Ipeľské hony Nature Reserve, 25. 9. 2014, R. Cséfalvay leg., 48° 3' 51.28"N, 19°3'49.43"E, altitude 130 m, remnants of native

wetland of the Ipeľ river with a temporary water body; 29 specimens of *Hirudo verbana* and two specimens of *Hirudo medicinalis*, the same locality, 23. 4. 2015, R. Cséfalvay leg.

The distribution of *Hirudo verbana* is considered as Mediterranean and was summarized by Utevsky et al. (2009). It is known from Switzerland, Austria, Germany, Italy, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia, Greece,



**Figure 1.** *Hirudo verbana* (on the right) and *Hirudo medicinalis* (on the left), dorsal view, not to scale.

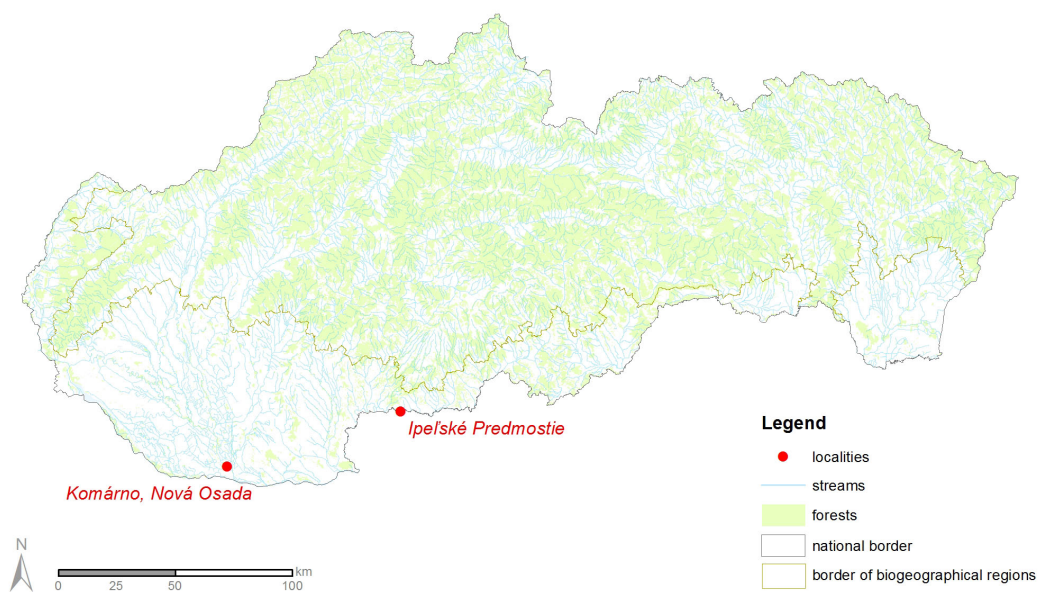


**Figure 2.** *Hirudo verbana* (below) and *Hirudo medicinalis* (above), ventral view, not to scale.



**Table 1.** Localities of the *Hirudo verbana* occurrence with numbers of collected specimens.

Site name	GPS coordinates [WGS 84] and altitude	Date	species with number of specimens (in brackets)
Komárno, Nová Osada	47° 47' 52.06" N, 18° 6' 1.2204" E, 106 m	8. 8. 2014	<i>Hirudo verbana</i> (10)
ibid.	ibid.	25. 9. 2014	<i>Hirudo verbana</i> (32), <i>Hirudo medicinalis</i> (1)
ibid.	ibid.	19. 5. 2015	<i>Hirudo verbana</i> (7), <i>Hirudo medicinalis</i> (1)
ibid.	ibid.	20. 8. 2016	<i>Hirudo verbana</i> (52)
Ipeľské Predmostie, Ipeľské hony	48° 3' 51.28" N, 19° 3' 49.43" E, 130 m	25. 9. 2014	<i>Hirudo verbana</i> (49), <i>Hirudo medicinalis</i> (1)
ibid.	ibid.	23. 4. 2015	<i>Hirudo verbana</i> (29), <i>Hirudo medicinalis</i> (2)

**Figure 3.** Komárno, Nová Osada, locality of cohabitation of *Hirudo verbana* and *Hirudo medicinalis*.**Figure 4.** Ipeľské Predmostie, Ipeľské hony, locality of cohabitation of *Hirudo verbana* and *Hirudo medicinalis*.**Figure 5.** Localities of first faunistic records of *Hirudo verbana* in Slovakia.

Hungary, Moldova, Ukraine, Russian Federation, Turkey and Uzbekistan. The species was later found in Romania as well (Gagiu 2010), and its occurrence in Bulgaria was summarized by Todorov et al. (2016). In Slovakia, all previous findings of medicinal leeches certainly refer to *Hirudo medicinalis* which population abundance in European range decline (Kutschera & Elliott 2014). Our records of *Hirudo verbana* from two localities in southern Slovakia represent northern border of the species range. In Europe, the overlap with the northern range of sister species *Hirudo medicinalis* contains only a few areas, and the cohabitation of these species is rare, but known from Hungary and Ukraine so far (Kovalenko & Utevsky 2012). Our results showed the syntopy of both species in both localities where *Hirudo verbana* was recorded (Table 1, Figure 5), as well as the higher abundance of *Hirudo verbana* in both sampling sites (Table 1).

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## REFERENCES

- Gagiu A, 2010. The first recorded occurrence of *Hirudo verbana* Carena, 1820 (Hirudinea: Arhynchobdellida: Hirudinidae) in Romania. *Travaux du Muséum National d'Histoire Naturelle Grigore Antipa*, 53: 7–11.
- Košel V, 2001. Hirudinológia pre hydrobiológov v praxi. In: Makovinská J & Tóthová L (Eds): *Zborník z hydrobiologického kurzu. Výskumný ústav vodného hospodárstva*, Bratislava, pp. 37–54.
- Košel V, 2003. Hirudinea. In: Šporka F (Ed.) 2003. *Vodné bezstavovce (makrovertebráta) Slovenska, súpis druhov a autekologické charakteristiky*. [Slovak aquatic macroinvertebrates. Checklist and catalogue of autecological notes]. Slovenský hydrometeorologický ústav, Bratislava, pp. 31–32.
- Kutschera U, 2012. The *Hirudo medicinalis* species complex. *Naturwissenschaften*, 99: 433–434.
- Kutschera U & Elliott JM, 2014. The European medicinal leech *Hirudo medicinalis* L.: Morphology and occurrence of an endangered species. *Zoosyst. Evol.*, 91 (2): 271–280.
- Kovalenko MV & Utevsky SY, 2012. Size structures and comparative phenology of syntopic populations of *Hirudo verbana* and *Hirudo medicinalis* in eastern Ukraine. *Biologia*, 67 (5): 934–938.
- Majnholdová A, Schlarmannová J & Marhevský I, 2011. Závislosť príjmu potravy od morfológie tela *Hirudo verbana* Carena, 1820. In: Galamboš M & Džugasová V. (eds): *Študentská vedecká konferencia 2011. Zborník recenzovaných príspevkov. Prírodovedecká fakulta UK Bratislava*, pp. 508–513.
- Nesemann H & Neubert E, 1999. Annelida, Clitellata: Branchiobdellidae, Acanthobdellea, Hirudinea. *Spektrum*, Heidelberg, 178 pp.
- Stloukal E, 2015. Metodika monitoringu druhu európskeho významu pijavica lekárska (*Hirudo medicinalis*). In: Saxa A, Černecký J, Galvánková J, Mútnanová M, Balážová A, Gubková Mihalíková M. (Eds): *Príručka metód monitoringubiotopov a druhov európskeho významu*. Banská Bystrica, Štátna ochrana prírody Slovenskej republiky. 148 pp.
- Todorov M, Grozeva S, Hubenov Z, Kenderov L & Trichkova T, 2016. Taxonomic status and distribution of medicinal leeches of the genus *Hirudo* L. (Hirudinea) in Bulgaria. *Acta zool. bulg.*, 68 (2): 171–182.
- Trontelj P, Sotler M & Verovnik R, 2004. Genetic differentiation between two species of the medicinal leech, *Hirudo medicinalis* and the neglected *H. verbana*, based on random-amplified polymorphic DNA. *Parasitol. Res.*, 94: 118–124.
- Utevsky SY & Trontelj P, 2005. A new species of the medicinal leech (*Oligochaeta*, *Hirudinida*, *Hirudo*) from Transcaucasia and an identification key for the genus *Hirudo*. *Parasitol. Res.*, 98: 61–66.
- Utevsky S, Zagmajster M, Atemasov A, Zinenko O, Utevska O, Utevsky A & Trontelj P, 2009. Distribution and status of medicinal leeches (genus *Hirudo*) in the western Palaearctic: anthropogenic, ecological, or historical effects? *Aquatic conservation: Marine and freshwater ecosystems*, 20 (2): 198–210.