

Original paper

First record of *Xerobdella anulata* Autrum, 1958 (Hirudinida: Xerobdellidae) from Serbia

Clemens GROSSER

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Summary. *Xerobdella anulata* Autrum, 1958 was described from Sarajevo and Bjelašnica (Bosnia and Herzegovina). Since, only a few additional records have been published. Recently, two specimens of this land leech were found on Tara Mountain (Serbia). This is the first record of *X. anulata* in Serbia and the most eastern finding of these species and the genus *Xerobdella* in total.

Keywords: first record, Hirudinida, land leech, Serbia, Tara Mountains, *Xerobdella*.

INTRODUCTION

The genus *Xerobdella* was established by Frauenfeld (1868) together with a description of *X. lecomtei* from a locality near Leoben/Styria in Austria. *Xerobdella anulata* Autrum, 1958, the second species of the genus, was described from Sarajevo and Bjelašnica (today Bosnia and Herzegovina) 90 years later. Minelli (1971) described *X. praealpina* from Vajodel Paradiso/Grezzana (northern Italy) as the third *Xerobdella* species. All three European land leeches are rarely found, therefore knowledge about their distribution is scarce. Dresscher et al. (1966) and Sket (1968) published a few more records of *X. anulata*. Recently, Jueg (2015) published findings of *X. praealpina* and *X. lecomtei*, which are distributed in the eastern and southern Alps, respectively.

Xerobdella anulata is known only from Bosnia and Herzegovina (Autrum 1958), Croatia (Dresscher et al. 1966) and Slovenia (Sket 1968) to date.

The aim of this paper was to report the first finding of *Xerobdella anulata* from Serbia.

MATERIAL AND METHODS

Locality: Serbia, Tara Mt., Rastište, 24. 05. 2019; leg. M. Horvatović; two specimens were found in one place. They were fixed and preserved in 10% and 70% ethanol, respectively. The specific identity was examined based on external morphology using a stereo microscope (Novex). Microphotographs were made using microocular as a camcorder. The size was determined by a ruler (length x width in millimeters).

RESULTS

Two specimens found at Rastište measured 29 x 4 mm and 70 x 3 mm, respectively.

Both specimens could be unequivocally identified as *Xerobdella anulata*. The material was determined according to the following five characteristics (1st through 4th are in the European fauna typical for genus *Xerobdella*; the 5th is a specific characteristic of *X. anulata*)

1st – The leeches were found on land.

2nd – The dorsal surface of living specimens is unicoloured black (Fig. 1A), ventrally are slightly brighter.

3rd – The body surface on the dorsal side (Fig. 1B) is covered with a distinct reticulate pattern of squarish elevations (latticed surface) in contrast with the ventral side, where that pattern is far less distinct. This characteristic is specific for land leeches and caused by longitudinal furrows which cross the annuli.

4th – The somites are quinqueannulate. A female accessory gonopore is available. Three genital openings are visible on the ventral side.

5th – Male and female gonopores are separated by 4.5 annuli. The male gonopore is located on the annulus and the female in the furrow. The female accessory gonopore is situated 3.5 annuli after the female gonopore on the annulus (Fig. 2A).

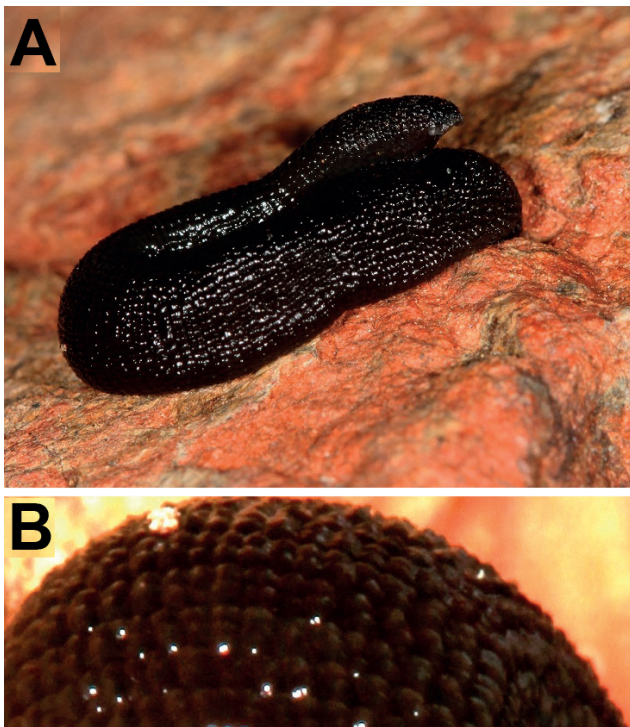


Fig. 1. *Xerobdella anulata*. Living specimen from Tara Mountain, Serbia. **A**, leech in toto; **B**, part of the dorsal surface with reticulate pattern of squarish elevations. (Foto: D. Savić).

DISCUSSION

The genus *Xerobdella* represents the European land leeches. All three species have been collected rarely. On the other hand, the species of tropical land leeches (e. g. *Haemadipsa*) are conspicuous and easy to observe. These leeches are blood sucking, inter alia, on humans. But the *Xerobdella* species live very covertly on the ground and feed on oligochaetes and other invertebrates, such as the larvae of Diptera and if necessary, also on Gastropods. The allegation of blood sucking on *Salamandra atra* is doubtful and Reisinger (1951) contradicts this frequent statement. Therefore, these leeches are collected most fortuitously. Thus, knowledge about their ecology, distribution and frequency is only fragmentary.

Xerobdella anulata was described from two localities in Bosnia and Herzegovina (Autrum 1958). Dresscher et al. (1966) reported this species from Croatia: 11 places in three separate areas south and northwest of Zagreb (Cesargradska Gora near Klanjec, surrounding the areas of Vrhovine, Gorski Kotar near Crni Lug and Snježnik). Sket (1968) found *X. anulata* on Snežnik in southern Slovenia. In Nesemann and Neubert (1999), there were no further records of this species. All records from Croatia (Dresscher et al. 1966) and Slovenia (Sket 1968) are west of the locus typicus and from the herein described first finding in Serbia (Fig. 3: 1-4), which is the most eastern known locality of this species.

Both specimens of *X. anulata* from Serbia were found under stones above a stream, in wet mixed wood (deciduous-conifer) in a part with only *Fagus* trees. The stones were shallowly buried. This habitat is similar to the 11 places where this species was found by Dresscher et al. (1966). They described the habitats as moist woods with typical plant associations of *Piceetum dolomiticum* 2x, *Fagetum croaticum (montanum* 1x, *abietetosum* 2x, *subalpinum* 1x), *Blechnum-Abietetum* 1x, *Helleboreto-Pinetum* 2x and *Pinetum mugho croaticum* 2x. Both of the last habitats of pine forests are more xerophilous but border with moist spruce forest. Reisinger (1951) found *X. lecomtei* primarily in beech forests in the Austrian part of the Alps.

According to present knowledge, *X. anulata* is a typically distributed land leech species of the western parts of Balkans (Dinarides), *X. lecomtei* of the Eastern Alps and *X. praealpina* of the south-eastern parts of Alps. Jueg (2015) reported *X. lecomtei* from Austria, near Graz (Pailgraben) and Slovenia (Krain/Dežela); *X. praealpina* from Austria (Obir in Carinthia/Karawanken Mountains) and Slovenia (Črna Prst). All three species have been reported from Slovenia. However, *X. lecomtei* and *X. praealpina* were found in the northern parts of the country (Krain/Dežela), whereas *X. anulata* was reported by Sket (1968) for the southern part with a note that it could be expected in the eastern part of the country.

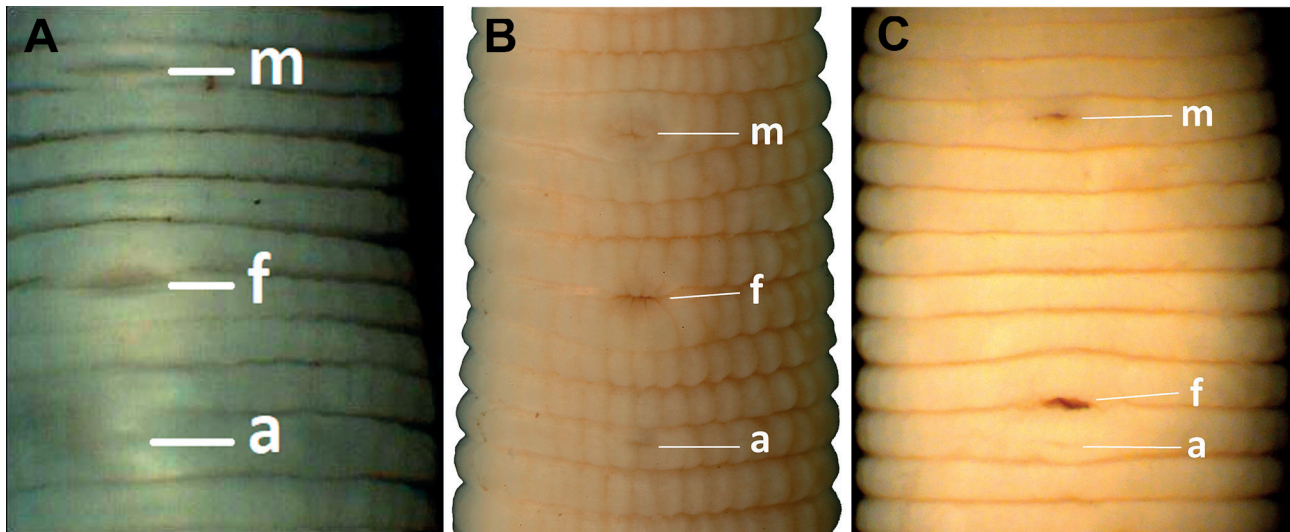


Fig. 2. Gonopores in the genus *Xerobdella* (m = male gonopore, f = female gonopore, a = accessory female gonopore). **A,** *X. anulata* -Tara Mt, Serbia (Photo: C. Grosser); **B,** *X. lecomtei*, Graz/Austria - (Photo: D. Fiege; In: Jueg 2015, p. 147, Fig. 4, slightly modified); **C,** *X. praealpina*, Carinthia/Austria (Photo: A. Schmidt-Rhaesa; In: Jueg 2015, p. 147, Fig. 2, slightly modified).

All three *Xerobdella*-species differ in the positions of the gonopores and/or the accessory female gonopore. The female and accessory female gonopores are separated in *X. lecomtei* and *X. anulata* by 3.5 annuli. The female gonopore is situated in the furrow of annuli and the accessory female gonopore is situated on the annulus (Figs 2A, 2B). But the distance of male and female gonopores differ in both species. In *X. anulata* the male and female gonopores are separated by 4-5 annuli (in the Serbian specimens by 4.5 annuli, see Fig. 2A). In *X. lecomtei* the male and female gonopores are

separated by 3.5 (Fig. 2B; rarely by 3) annuli. The positions of gonopores differ more in *X. praealpina*. The male and female gonopores are separated by 6.5 annuli and the accessory pore is situated 0.5 annuli behind the female pore (Fig. 2C). Thus, the three European land leeches can be clearly identified by means of the distances of gonopores and the accessory gonopore. Identification of further material and recognition of appropriate habitats will lead to more findings and expand our knowledge of the distribution of rare European land leeches in the future.



Fig. 3. *Xerobdella anulata*. Known distribution; 1 = records by Autrum (1958; locus typicus): 1a = Sarajevo, 1b = Bjelašnica; 2 = records by Dresscher et al. (1966): 2a = Vrhovine, 2b = Cesargradaska Gora, 2c = Gorski Kotar; 3 = record by Sket (1968): Snežnik; 4 = first record in Serbia: Rastište. BIH = Bosnia and Herzegovina, HR = Croatia, MNE = Montenegro, SLO = Slovenia, SRB = Serbia. (WCc 2019, map modified by C. Grosser).

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