

Short communication

***Barbronia weberi* (R. Blanchard, 1897) (Hirudinea: Salifidae), an Asian leech species new to Italy**

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Abstract

Barbronia weberi (R. Blanchard, 1897), an Asian leech with records of introductions to South and North America, Australia, New Zealand and Europe, was found in two small-size pedemontane streams in North-West Italy (Regione Lombardia) during macroinvertebrate bioassessment sampling. This is the first record of the species in this country, where the family Salifidae is not represented. The species can be distinguished from common native erpobdellids of similar general habitus by the presence of two accessory ventral pores, three pairs of pharyngeal stylets and the presence of minute papillae covering the body. Current distribution and effects of *B. weberi* on Italian freshwater ecosystems should be determined through further studies.

Key words: *Barbronia weberi*, Salifidae, species introduction, Italy

Leech species belonging to the families Erpobdellidae and Salifidae are typically freshwater predators of invertebrates (i.e. annelids, arthropods and molluscs). Members of the Erpobdellidae common in North America and Europe are characterized by having multiple testisacs per segment. Members of Salifidae common in Africa, Asia, and Australia have few large vesicular testes per segment and possess pharyngeal stylets; a dorsal gastropore and/or post-cephalic eyespots may be present (Sawyer 1986; Neseemann and Neubert 1999).

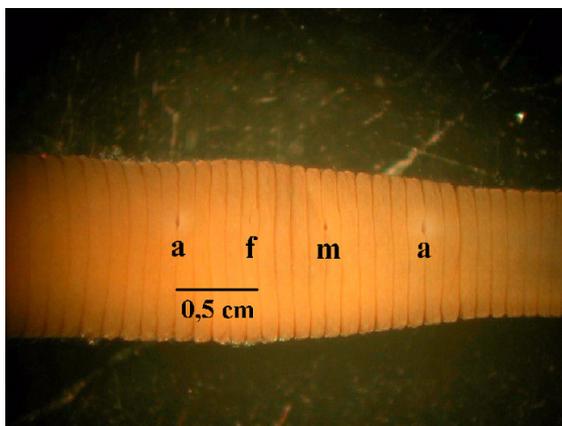
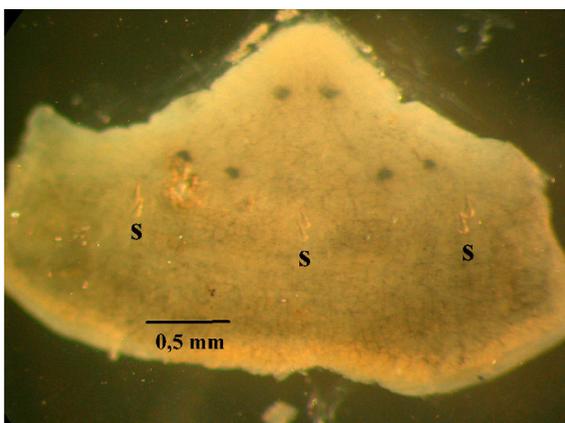
Barbronia weberi (R. Blanchard, 1897), a species of Salifidae formerly allocated to the family Erpobdellidae (Soós, 1966), has a native range from Afghanistan and Pakistan to Java, Sumatra, Borneo and Southern China. It is the most common leech of the Indian subcontinent

(Neseemann and Neubert 1999). This species has been introduced, probably through the aquarium trade to New Zealand (Mason 1976), England (Sawyer 1986), Austria and Germany (Neseemann and Neubert 1999), Brazil (Pamplin and Rocha 2000), United States of America (Rutter and Klemm 2001), and Australia (Govedich et al. 2002). Another species of *Barbronia* [*B. arcana* (Richardson, 1970)] was recently recorded in Mexico (Oceguera-Figueroa et al. 2005). According to Fauna Europaea Web Service (2004), *B. weberi* has never been reported in Italy.

In its native area, the species lives in small running waters as well as in ponds and eutrophic lakes. It is often associated with aquatic vegetation using plants as a substrate and for the attachment of cocoons. Its close association with

Table 1. Mean values (min-max) of chemical parameters (n=12) in the three sampling sites; data referred to year 2006.

Sampling site	pH	Conductivity at 20°C µS/cm	BOD5 mg/L O ₂	Ammonia mg/L N	Total phosphorus mg/L P
Seveso – Vertemate con Minoprio	7.8 (6.7-8.5)	943 (566-1,321)	7.8 (2.0-15.0)	1.24 (0.04-3.80)	0.5 (0.1-1.0)
Seveso - Cantù	7.9 (6.8-8.7)	945 (580-1,353)	6.3 (2.0-15.0)	0.72 (0.03-2.00)	0.4 (0.1-0.8)
Lura - Lomazzo	8.3 (7.6-9.2)	1,107 (713-1,600)	8.3 (3.0-21.0)	1.11 (0.02-7.20)	1.9 (0.6-3.5)

**Figure 1.** A specimen of *Barbronia weberi* in ventral view; (a): accessory pores; (m): male gonopore; (f): female gonopore. Photo by A. Fazzone.**Figure 2.** The three pairs of pharyngeal stylets (s) of *Barbronia weberi* after dissection. Photo by P. Genoni.

common aquarium plants such as *Hydrilla verticillata* (L. f.) Royle and *Elodea* spp. has favoured the introduction of this leech into new habitats (Govedich et al. 2003).

Barbronia weberi was collected in Seveso stream (2 sampling sites: 45°43'27"N, 9°05'3"E and 45°42'39"N, 9°06'08"E) and Lura stream (1 sampling site: 45°41'58"N, 9°02'37"E), two small-size pedemontane streams in the province of Como (Regione Lombardia, North-West Italy) during benthic macroinvertebrates samplings for biological quality assessment. Leeches were collected using a handnet (500 µm mesh) and kick-sampling technique or directly picked up from submerged substrates using forceps. Specimens preserved in 75% ethanol were identified in the laboratory using a Nikon SMZ-2T dissecting microscope (magnification: 10x to 130x) and a Nikon Labophot-2 optical microscope (magnification: 400x). Both streams show a poor to moderate chemical quality (Table 1), due to the presence of significant discharges from domestic and industrial (textile manufacture) wastewater treatment plants upstream of the sampling sites.

Specimens of *Barbronia weberi* were found on submerged substrates (cobble) in Seveso stream on four different occasions (16.X.06, 14.XII.06, 26.III.07, 26.XI.07; a total of 16 specimens), and in Lura stream on two different occasions (16.X.06, 26.XI.07; a total of 5 specimens). Given the frequent captures, it appears that this species is now well established in these streams.

Barbronia weberi is clearly distinguished from common autochthonous erpobdellids of similar general habitus (genera *Dina* and *Erpobdella*) for the presence of two accessory copulatory pores, one anterior and one posterior to the male and female gonopores (Figure 1). Three pairs of pharyngeal needle-shaped stylets (Figure 2) were also observed in fixed animals. The species can be distinguished in the field for the presence of minute papillae covering the body, so that the surface takes a rough appearance.

As in other countries, the aquarium trade is the most probable source of introduction of this species. The current distribution of *B. weberi* in Italian freshwater ecosystems is unknown since this is the first record for Italy. The high reproductive rate and tolerance to a wide range of environmental conditions makes *B. weberi* a very good colonizer, and once established, it can then be transported to new systems by natural vectors, such as waterfowl, or through connecting waterways (Govedich et al. 2003).

The consequences of the introduction of this new species on aquatic systems is not yet clear. Being a predator with rapid development, *B. weberi* has the potential to compete with and/or to feed on native invertebrate species (Govedich et al. 2002), but at present no field data are available on these effects.

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References

- Fauna Europaea Web Service (2004) Fauna Europaea Version 1.1. <http://www.faunaeur.org>
- Govedich FR, Bain BA, Davies RW (2002) First record of the Asian freshwater leech *Barbronia weberi* (Blanchard, 1897) (Euhirudinea: Erpobdellidae) in Australia. *The Victorian Naturalist* 119: 227–228
- Govedich FR, Bain BA, Burd M, Davies RW (2003) Reproductive biology of the invasive Asian freshwater leech *Barbronia weberi* (Blanchard, 1897). *Hydrobiologia* 510: 125–129, <http://dx.doi.org/10.1023/B:HYDR.00000008638.87536.b0>
- Mason J (1976) Studies on the freshwater and terrestrial leeches of New Zealand. 2. Orders Gnathobdelliformes and Pharyngobdelliformes. *Journal of the Royal Society of New Zealand* 6: 255–276, <http://dx.doi.org/10.1080/03036758.1976.10421474>
- Nesemann H, Neubert E (1999) Annelida, Clitellata: Branchiobdellida, Acanthobdellea, Hirudinea. Süßwasserfauna von Mitteleuropa 6/2. Spektrum Akademischer Verlag, Heidelberg, Berlin
- Oceguera-Figueroa A, León-Régagnon V, Siddall ME (2005) Phylogeny and revision of Erpobdelliformes (Annelida, Arhynchobdellida) from Mexico based on nuclear and mitochondrial gene sequences. *Revista Mexicana de Biodiversidad* 76: 191–198
- Pamplin P, Rocha O (2000) First report of *Barbronia weberi* (Hirudinea: Erpobdelliformes: Salifidae) from South America. *Revista de Biología Tropical* 48: 723
- Rutter RP, Klemm DJ (2001) The presence of an Asian leech, *Barbronia weberi*, in a home aquarium in South Florida (Hirudinea: Salifidae). *Florida Scientist* 64: 216–218
- Sawyer RT (1986) Leach biology and behaviour. Clarendon Press, Oxford
- Soós A (1966) Identification key to the leech (Hirudinoidea) genera of the world, with a catalogue of the species. III. Family: Erpobdellidae. *Acta Zoologica Academiae Scientiarum Hungaricae* 12: 371–407