

First Report of *Branchiobdella* Odier, 1823 from Belgium

Mitko Subchev

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 2 Gagarin Street, 1113 Sofia, Bulgaria;
E-mail: subchev@yahoo.com

Abstract: Fifty samples (including 31 from Belgium) from the collection of the Royal Belgian Institute of Natural Science were examined for the presence of branchiobdellidans (crayfish worms). These contained 198 crayfish individuals. The study included examination of the jar debris, crayfish surface and gills for *Branchiobdella* Odier, 1823 worms and cocoons. As a result, 81 crayfish worms were found, isolated and identified. The branchiobdellidans belonged to four species: *Branchiobdella astaci* Odier, 1823, *Branchiobdella parasita* Braun, 1805, *Branchiobdella pentadonta* Whitman, 1882 and *Branchiobdella hexadonta* Gruber, 1883. *Branchiobdella* spp. are reported for the first time from Belgium and include *B. parasita*, *B. pentadonta* and *B. hexadonta*. The fourth species, *B. astaci*, together with *B. pentadonta*, was found in a sample from France.

Key words: *Branchiobdella*, distribution, Europe, Belgium

Introduction

Five indigenous crayfish species are known from Europe: *Astacus astacus* (Linnaeus, 1758), *Astacus leptodactylus* Eschscholtz, 1823, *Astacus pachypus* Rathke, 1837, *Austropotamobius torrentium* (Schränk, 1803) and *Austropotamobius pallipes* Kessler, 1876 (SOUTY-GROSSET *et al.* 2006). They, with the exception of *A. pachypus*, are known to host crayfish worms belonging to the genus *Branchiobdella* Odier, 1823 (see SUBCHEV 2014). In Europe, this genus includes eight valid species: *Branchiobdella astaci* Odier, 1823, *Branchiobdella parasita* (Braun, 1805), *Branchiobdella pentadonta* Whitman, 1882, *Branchiobdella hexadonta* Gruber, 1883, *Branchiobdella italica* Canegallo, 1928, *Branchiobdella balcanica* Moszyński, 1938, *Branchiobdella kozarovi* Subchev, 1978 and *Branchiobdella papillosa* Neesemann and Hutter, 2002 (SUBCHEV 2014). So far branchiobdellids have not been reported from only a few European countries, including from Belgium (SUBCHEV 2014).

The crayfish collection (genera *Astacus* Fabricius, 1775 and *Austropotamobius* Skorikov, 1907) of the Royal Belgian Institute of Natural Science was examined. The branchiobdellidans

found in the jar debris and on the crayfishes were isolated and identified. The results of this study are reported here.

Materials and Methods

Fifty samples (including 31 from Belgium) containing 198 crayfish individuals were examined for branchiobdellidans (crayfish worms). This included examination of the jar debris of all samples and the crayfish surface for *Branchiobdella* worms and cocoons. In addition, the gills of the crayfishes were removed from the gill chambers and examined for worms and cocoons. The worms were identified using characteristic external features as described by SUBCHEV (2014). When further verification was needed, worms were infiltrated with glycerine and jaw structure was examined under light microscope.

Results and Discussion

Most of the branchiobdellidans were found on crayfish gills while very few worms were found in the debris of the jars containing crayfishes (Table 1). Absence

Table 1. *Branchiobdella* spp. found in the crayfish collection of the Royal Belgian Institute of Natural Science

Catalogue number of the crayfish sample	Location, year of collection or determination	Host, number	<i>Branchiobdella</i> species, number (found in)
84344	Villers-sur-Lesse; no date of collection; det. 1945, Belgium	<i>A. astacus</i> , 51*	<i>B. parasita</i> , 5 ad., 16 juv. (debris) <i>B. hexadonta</i> , 2 ad. (gills of 10 crayfishes)
84345	Villers-sur-Lesse; no date of collection; det. 1945, Belgium	<i>A. astacus</i> , 70*	<i>B. parasita</i> , 12 ad., 14 juv. (debris) <i>B. hexadonta</i> , 5 ad., (debris) <i>B. hexadonta</i> , 7 ad. (gills of 14 crayfishes)
84351	La-Roche-an-Ardenne; no date of collection; det. 1945, Belgium	<i>A. astacus</i> , 1	<i>B. hexadonta</i> , 1 ad. (gills)
84353	ach.a Bruxelles (purchased in Brussels); no date of collection; det. 1916, Belgium	<i>A. astacus</i> , 3	<i>B. hexadonta</i> , 6 ad. (gills)
84358	Marche de Bruxelles (Brussels market); no date of collection; det. 1935 Belgium	<i>A. astacus</i> , 1	<i>B. hexadonta</i> , 2 ad. (gills)
84360	Falaën, 1930, Belgium	<i>A. astacus</i> , 2	<i>B. pentadonta</i> , 1 ad. (debris)
115384	Saint-Quentin-sur-Coole, IX. 1936. France	<i>A. pallipes</i> , 1	<i>B. astaci</i> , 2 ad., 6 juv. (gills) <i>B. astaci</i> , 3 juv. (debris) <i>B. pentadonta</i> , 2 juv. (debris)

* The gills of only 20% of the crayfishes in these samples were removed from the gill chamber and examined for branchiobdellidans.

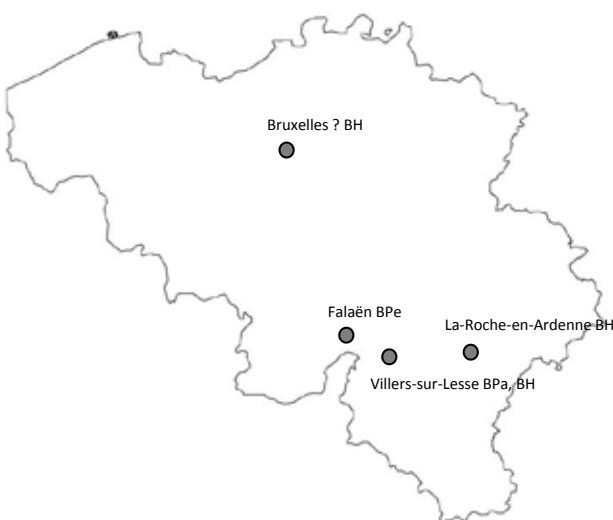


Fig. 1. Localities in Belgium where branchiobdellidans were found so far. Brussels, as marked on the corresponding labels, was not a locality where the crayfishes and branchiobdellidans were collected, but just a place where they were obtained. BPa – *B. parasita*; BPe – *B. pentadonta*; BH – *B. hexadonta*

of worms in the samples could be due also to earlier removal of crayfishes from their original jars when they were fixed. Transfer into new jars often results in original debris being discarded. In the 31 samples from Belgium, three *Branchiobdella* spp. were found: *B. parasita* and *B. pentadonta* in jar debris, and *B. hexadonta* mainly in gills (Table 1). On one of the two crayfishes in the sample where a single *B. pentadonta* worm was found, numerous *Branchiobdella* cocoons were observed on the crayfish pincers (*merus* and *carpus*). This is a preferred location on the crayfish surface by this species (SUBCHEV, 2014). No information on locality was present on the labels of samples 84353 and 84358 because the crayfishes were obtained at the Brussels market, but they are almost certainly Belgian and most probably collected close to the city. All Belgian crayfish samples, where branchiobdellidans were found, were collected during the last century (Table 1). The three Belgian localities (unfortunately no river or lake names were found on the labels), besides Brussels, are situated in the southern part of the country (Fig. 1).

Branchiobdellidans were found only in one of the samples that did not originate from Belgium. These were *B. astaci* and *B. pentadonta* in a sample from France (Table 1).

Belgium was one of the European countries where no branchiobdellidans had been reported (SUBCHEV, 2014). Thus, this is the first report of the genus *Branchiobdella* for the country.

The *Branchiobdella* species reported here for Belgium were already known from its adjacent countries: *B. parasita* from the Netherlands, Germany, Luxemburg and France; *B. pentadonta* and *B. hexadonta* from Germany and France (SUBCHEV 2008, 2014). Two further species, *B. astaci* and *B. balcanica*, are known from Germany, and France and Germany, respectively (SUBCHEV, 2014) so they could be expected to occur also in Belgium. The other two European species, *B. italica* and *B. kozarovi*, would not be expected to be found as indigenous species in Belgium. *Branchiobdella. italica* has a distribution restricted to Italy, Croatia and parts of Bosnia and Herzegovina (NESEMANN, NEUBERT 1999; SUBCHEV 2014) and its specific host, *A. pallipes*, does not occur in Belgium (HOLDICH 2002, KOUBA *et al.* 2014). The western boundary of the original distribution of *B. kozarovi* is Western Russia-Ukraine-(Romania?)-Bulgaria (FARD, GELDER 2011, SUBCHEV 2014). However, translocations of *A. leptodactylus* into Western Europe (SOUTY-GROSSET *et al.* 2006) for

human food and aquaculture were most probably accompanied by *B. kozarovi* (FARD, GELDER 2011) and reports of the species in this region should be anticipated. Confirmation of this came through the report of *B. kozarovi* from Poland (ŠMIETANA, WIERZBICKA 1999) and its unexpected recent finding in the Netherlands (KOLESNIKOVA *et al.* 2012). So far, the most recently described European species, *B. papillosa*, is known only from one location in Austria (NESEMANN, NEUBERT 1999, SUBCHEV 2014).

Both *B. astaci* and *B. pentadonta* were reported from France. The latter species was missed in SUBCHEV's (2014) review paper as occurring in this country but, actually, it had already been reported earlier by the same author in the Oligochaeta slide collection (a slide labelled '24 AP 208, 80 VI, Strassbourg') of the National Museum of Natural History, Paris (SUBCHEV, 2008). Therefore, this is the second report of *B. pentadonta* for France. Saint-Quentin-sur-Coole is located also in the north part of this country but not so close to the boundary with Germany as Strasbourg.

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