

## First records of *Branchiura sowerbyi* Beddard, 1892 (Oligochaeta: Tubificidae) in Greece

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### Abstract

The present work reports the findings of a new alien annelid, *Branchiura sowerbyi*, in freshwaters of mainland Greece. The species was found in August 2008 in Strymonas River near Neo Petritsi in Serres Prefecture, and in Aliákmonas River near Niselli in Imathia Prefecture.

**Key words:** invasive species, range extension, Balkan Peninsula, Southern Europe, freshwater

Of all 1100 valid species of freshwater oligochaete species known to date (Martin et al. 2008) only 15 are found on all six continents, excluding Antarctica (Timm 1979). *Branchiura sowerbyi* Beddard, 1892 is one of them, widespread in Europe and North America and also known from South-East Asia, South America, South Africa, Australia and Mauritius Island (Brinkhurst and Jamieson 1971). Beddard (1892) have described this species and its monotypical genus from a pond in Royal Botanical Society's Gardens, Regent's Park in London (UK). Although found all over the world, its earliest records were restricted only to South-East Asia and to botanical gardens in Europe (Brinkhurst and Jamieson 1971). In cooler temperate regions the species is found most frequently in artificially warmed waters (Aston 1968; Brinkhurst and Jamieson 1971; Cassellato 1984; Kasprzak 1981; Mann 1958). Such distribution pattern has led to a conclusion that *B. sowerbyi* is a species originating from the Sino-Indian region, spread elsewhere due to human activity (Nehring 2002; Timm 1979; Tobias 1972).

Fauna Europaea reports this species from 22 countries throughout entire Europe (Giani 2004).

In Southern Europe it is known from Hungary (Specziár and Bíró 1998), Romania (Rișnoveanu and Vădineanu 2003) Croatia (Giani 2004), Serbia (Paunovic et al. 2005), Bulgaria (Uzunov 1976), Italy (Gherardi et al. 2008), France (Giani 2004) and Spain (García-Berthou et al. 2007) where it occurs usually in shallow, very warm stagnant or slowly flowing waters. Its presence has never been recorded in southern parts of Balkan Peninsula, ie. Albania, Montenegro, Macedonia and Greece.

*Branchiura sowerbyi* (Figure 1) is 38-185 mm long with intense yellowish pink to bright red colour. It has dorsal anterior bundles with 1-3 short hair setae, 11-12 setae with bifid tips, rarely a single intermediate tooth, often the upper tooth is rudimentary or absent, ventral bundles with 10-11 similar bifid setae. What makes this species easy to recognize from all the other aquatic oligochaetes occurring in Europe is remarkable presence of long (longer than the body diameter) dorsal and ventral gill filaments (Figure 2) on 50-160 segments in the posterior part of its body (Brinkhurst and Jamieson 1971; Kasprzak 1981).

Fifty six individuals of this species were found on 23 August 2008 in the Strymonas River



**Figure 1.** *Branchiura sowerbyi* from Aliákmonas River (Photograph by Michał Grabowski)



**Figure 2.** *B. sowerbyi* – posterior part of the body with gill filaments (Photograph by Michał Grabowski)



**Figure 3.** Locations of first records of *B. sowerbyi* in Greece: (AR) Aliákmonas River in Imathia Prefecture, (SR) Strymonas River in Serres Prefecture

near Neo Petritsi village in Serres Prefecture (Central Macedonia) of Greece (Figure 3, coordinates 41°16.909'N, 23°19.940'). The sample of



**Figure 4.** Side branch of Strymonas River where *B. sowerbyi* was found (Photograph by Michał Grabowski)



**Figure 5.** Slowly flowing branch of Aliákmonas River where *B. sowerbyi* was found (Photograph by Michał Grabowski)

surface bottom sediments (ca. 120 cm<sup>3</sup>) was taken with hydrobiological hand net from a side branch of the river (Figure 4). The submerged vegetation was poor with only some green algae and scarce *Potamogeton* sp. plants, banks of the river were overgrown with grass, bottom sediments composed of gravel covered with thin layer of clay. Water temperature was 30.4°C and conductivity 395.4 μS. Other oligochaete species found in this site were: *Limnodrilus hoffmeisteri* Claparède, 1862, *Tubifex tubifex* (Müller, 1774), *Limnodrilus udekemianus* Claparède, 1862 and *Aulodrilus plurisetia* (Piguet, 1906).

Only one individual of this species was found on 22 August 2008 in the Aliákmonas River near Niselli village in Imathia Prefecture (Central Macedonia) of Greece (Figure 3, coordinates 40°35.013'N, 22°27.962'E). The sample of surface bottom sediments (ca. 120 cm<sup>3</sup>) was taken with hydrobiological hand net from a slowly flowing branch (Figure 5). The sampling site was overgrown with aquatic

vegetation (*Ceratophyllum* sp., *Elodea* sp., filamentous green algae), bottom sediments composed of thick layer of mud rich in plant detritus having noticeable odour of sulphur hydrogen. Water temperature was 25.4°C and conductivity 516.6 µS. Accompanying oligochaete species were *Limnodrilus hoffmeisteri* Claparède, 1862, *Limnodrilus profundicola* (Verrill, 1871) and *Nais variabilis* Piguët, 1906.

Presence of *B. sowerbyi* has already been known for a long time from the Struma River in Bulgaria (Uzunov 1976). The Strymonas River in Greece is the downstream section of Struma flowing to the Aegean Sea. The sampling site was located just some 15 km below Bulgarian-Greek border. Thus it is likely that *B. sowerbyi* has reached Greece with the river flow from Bulgarian territory and then spread throughout the country. Presumably, due to the warm mediterranean and submediterranean climate its presence may be expected on the entire territory of continental Greece.

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