

## First record of *Synurella ambulans* (Müller 1846) (Amphipoda: Crangonictidae) in Belgium

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Macroinvertebrates are one of the groups that are monitored to assess biological water quality. In Flanders (Belgium), they have been sampled during the past 20 years by the Flemish Environment Agency. As a consequence, a large collection of more than 20,000 samples is currently available. More than 2,500 samples containing crustaceans, from the period 1989-2008 and distributed all over Flanders, were investigated at the Laboratory of Environmental Toxicology and Aquatic Ecology (Ghent University) in the scope of an ongoing PhD related to the spread and impact of exotic macro-crustaceans in Flanders. Analysis of these samples revealed that *Synurella ambulans* (Müller 1846) was sampled for the first time in Belgium in 2003 and again in 2004. However, because identifications were previously limited to the family level, the species remained unnoticed until 2009. These samples with *S. ambulans* from 2003 and 2004 were taken by handnet, as described by Gabriels et al. (1) by the Flemish Environment Agency in three places in Snellegem (province Western Flanders). Two of the sampling locations were situated in a small stream (Walbeek) in Vloethemveld, which is in a former military domain that is currently classified as a nature reserve. The third location was in a stream (Kastanjebeek) directly connected to the first one. Both streams run dry during summer and contain dense vegetation in the riverbed. General characteristics of the water are a circumneutral pH (7.0-7.5), a low conductivity (310-395 µS/cm) and a high oxygen concentration (7.3-9.1 mg/L). The ecological water quality of both streams is moderate, with a MMIF of 0.55 (Multi-metric Macroinvertebrate Index Flanders, (1)). Some taxa sensitive to pollution, such as Trichoptera and Plecoptera, were also present in the samples. In total, the three samples contained 96 individuals (adults and juveniles) of *S. ambulans*. Two of the samples were collected at the beginning of May and one sample at the end of April. Several females of *S. ambulans* carried eggs and 18 juveniles were sampled, indicating that *S. ambulans* reproduces in these streams. It is unclear how *S. ambulans* reached this location. One of the possible avenues is anthropogenic introduction via fish ponds, which are situated nearby.

*S. ambulans* can be found in freshwater habitats in lowland as well as highland rivers, in small ponds, swamps, temporary pools and small streams (2). Moreover, subterranean populations of *S. ambulans* have been recorded (3). Common characteristics of all colonized habitats are a low flow velocity and a stable water temperature, which is often influenced by the inflow of groundwater. A typi-

cal biotic habitat characteristic is the presence of dead plant material. As observed and confirmed by others, this species can be found in surface waters that periodically run dry (4; 5). Although Arbačiauskas (5) hypothesized that *S. ambulans* has some type of diapause stage, enabling the species to survive in seasonal water bodies, a diapause stage may not be necessary, since many streams with dry periods have an understream all year long that may act as a refuge.

*S. ambulans* is an amphipod species which is native to the Ponto-Caspian region and Central and Eastern-Europe (4-8). Until now, this species has only been discovered at a few isolated places in Germany, Italy and Switzerland outside its natural range (3; 9). Despite the wide distribution of *S. ambulans*, the species rarely occurs in large numbers and usually only a few individuals are encountered (6).

The holarctic genus *Synurella* belongs to the family Crangonictidae. The genus *Synurella* consists of 18 species, 14 of which occur in Europe and Asia Minor, three in the southeast of the USA, two in northeastern Siberia and one species in Alaska (10; 11). *S. ambulans* is characterized by spot-shaped eyes, consisting of different ommatidia, a yellow spot at the apex of the head, fused urosome segments and a distinguishable third pair of uropods (12) (Fig. 1). The sex can be determined based on the presence of sternal papillae on segment seven of the pereonite in males and the presence of oostegites in females (6). The maximum size of females and males was found to be 7.0mm and 4.7mm, respectively (6). In the Belgian samples, the maximum size was 8.8mm for females and 5.3mm for males, with an average of 6.7mm (females) and 4.5mm (males), respectively, which is comparable to the published size variation (6). In Belgium, the species can only be confused with *Crangonyx pseudogracilis* Bousfield 1958, which originates from North America but has recently invaded Europe (13). However, the urosome segments of *C. pseudogracilis* are not fused. Research carried out by Konopacka & Blazewicz-Paszkowycz (6) about the life history of *S. ambulans* in Poland indicated that females were more abundant than males with seasonal changes in sex ratio throughout the year. In our samples, males were more abundant than females with a sex ratio of 1:0.7. This difference could be due to the relatively limited number of individuals that were encountered in Belgium. Moreover, seasonal changes in sex ratio could not be investigated since all samples were taken in spring. It has been reported that *S. ambulans* has an iteroparous, univoltine life cycle with a reproductive peak from May until July and a sexual maturation of the new generation in March of the consecutive year (6). The two samples collected in May contained juveniles and

gravid females. As a consequence, it can be concluded that the reproductive cycle of the Belgian specimens is similar to the one found in their native area.

Little is known about the feeding habits and the impact of this species on other macroinvertebrates. Therefore, additional research is needed to assess the impact of this new Ponto-Caspian invader on indigenous macroinvertebrate communities.

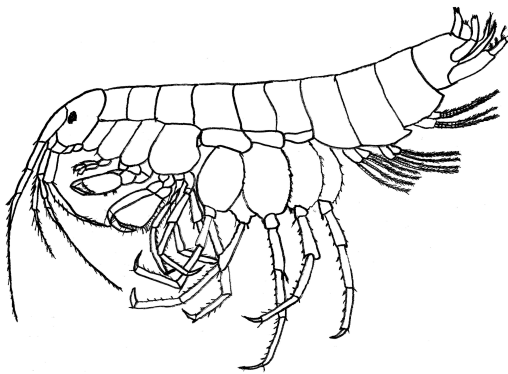


Fig. 1. – Photograph (above) and drawing (below) of *Synurella ambulans*.

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