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First records of trickle midges in Flanders (Diptera : Thaumaleidae)

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Abstract

Trickle midges (Thaumaleidae) are reported here for the first time for Flanders. Larvae of two species were found : *Thaumelea testacea* Ruthé,1831 in Remersdaal and *T. verralli* Edwards, 1929 in Brakel.

Keywords : *Thaumalea testacea*, *Thaumalea verralli*, Multimetric Macroinvertebrate Index Flanders.

Samenvatting

Bronmuggen (Thaumaleidae) worden hier voor het eerst uit Vlaanderen gemeld. De larven van twee soorten werden gevonden : *Thaumelea testacea* Ruthé, 1831 in Remersdaal en *T. verralli* Edwards, 1929 in Brakel.

Résumé

Des Thaumaleidae sont rapportés ici pour la première fois de Flandre. Les larves de deux espèces ont été trouvées : *Thaumelea testacea* Ruthé, 1831 à Remersdaal et *T. verralli* Edwards, 1929 à Brakel.

Introduction

Larvae of trickle midges (Thaumaleidae) are mostly found in films of water flowing over rocks in shaded situations, where they feed on biofilm, especially diatoms and other micro-organisms (DISNEY, 1999 ; Fig. 1). Larvae are long and cylindrical, with one pair of prolegs on the first segment of the thorax. They can be distinguished from midges (Chironomidae) by the numerous protuberances on the head capsule (Fig. 2).

Material and methods

To monitor the ecological water quality, the Flemish Environment Agency has been sampling macroinvertebrates in Flanders since 1989. If possible, sampling was performed by kick sampling with a standard handnet as described by GABRIELS *et al.* (2010). A stretch of 10-20 m was sampled for approximately five minutes. In addition, animals were manually picked from stones, leaves and branches. The Flemish Environment Agency identifies Diptera larvae only to family level. During the present study, larvae of Thaumaleidae were identified to species level using the identification key by DISNEY (1999). The different species can be distinguished by the shape of the protuberances on the head capsule (Fig. 2).

Results

In the more than 10,000 samples taken by the Flemish Environment Agency, only one specimen of *Thaumalea verralli* Edwards, 1929 was detected on 19.VII.2002 in the stream Slijpkotmolenbeek in

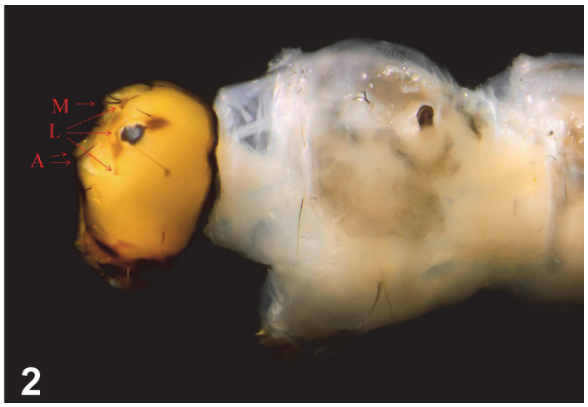

Fig. 1. *Thaumalea testacea* Ruthé, 1831 in the water film of a tufa-spring in Remersdaal on 26.VI.2013 (Photograph : Koen Lock).
Fig. 2. Head and first thorax segment of *Thaumalea testacea* Ruthé, 1831 (M : median protuberances ; L : lateral protuberances ; A : antennae) (Photograph : Koen Lock).

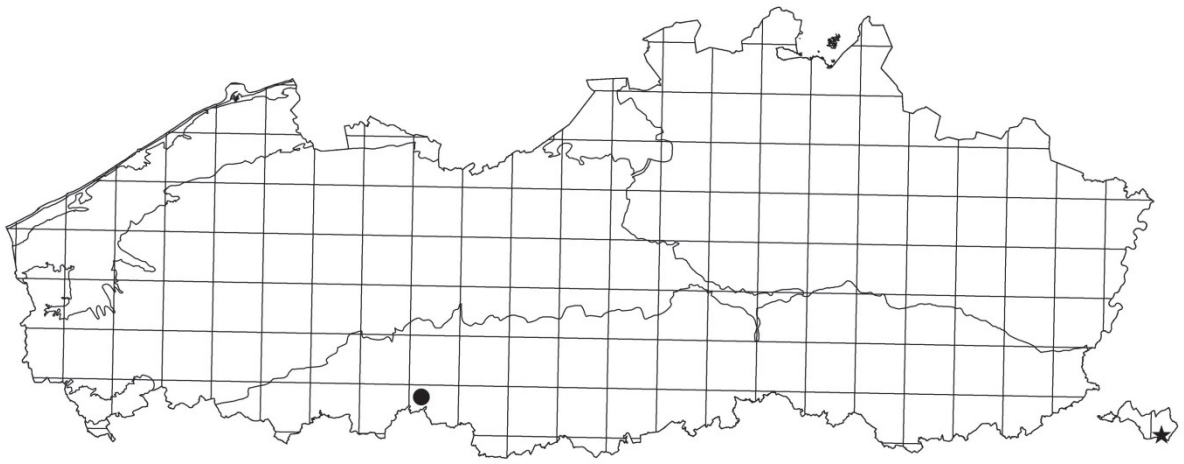

Fig. 3. Distribution of the encountered trickle midges (Thaumaleidae) in Flanders (*Thaumalea testacea* ★ ; *Thaumalea verralli* ●).

Brakel (UTM : 31UES5228 ; Fig. 3). However, it is possible that some Thaumaleidae have been overlooked in the samples of the Flemish Environment Agency, because they closely resemble the very abundant Chironomidae. On 24.III.2012, also *Thaumalea testacea* Ruthé, 1831 was discovered in a tufa-spring in Remersdaal (UTM : 31UGS0024 ; Fig. 3).

Discussion

Three species of trickle midges (Thaumaleidae) have been recorded for Belgium (GOSSERIES & GODDEERIS, 1991). Besides *Thaumalea testacea* and *T. verralli*, which are reported here from Flanders, also *Thaumalea truncata* Edwards, 1929 can be found in Wallonia. The latter species seems to be restricted to more acid waters, while *T. testacea* seems to prefer less acid waters and is characteristic for springheads on limestone and *T. verralli* seems to tolerate a greater pH range (DISNEY, 1999). Whenever species have been found coexisting, *T. verralli* has always been one of them (DISNEY, 1999).

For the calculation of the Multimetric Macroinvertebrate Index Flanders (MMIF), tolerance scores ranging from 1 (indicator of a bad water quality) to 10 (indicator of a very good water quality) have been assigned to all macroinvertebrate taxa and taxa with a score of at least 6 are considered to be sensitive (GABRIELS *et al.*, 2010). Thaumaleidae only received a tolerance score of 3 (GABRIELS *et al.*, 2010), however, their rarity and their habitat rather indicate that trickle midges are sensitive species that only occur in water with a high ecological water quality. They are also described as a family

which is characteristic for oligotrophic waters (TACHET *et al.*, 2000) and DISNEY (1999) indicated that they are restricted to unpolluted water. Their low tolerance score in the MMIF is thus undeserved, but as this family was only found in one sample so far, this will hardly matter in the calculations of the MMIF.

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