



Discriminatory matrix for the larvae of the European *Thremma* species (Trichoptera: Thremmatidae)

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Abstract

This synoptic paper is intended to summarize and supplement the information available on the larvae of *Thremma* McLachlan 1876 in Europe. We present information on the morphology of the larvae and illustrate the most important diagnostic features. This information is used for the construction of a comprehensive discriminatory matrix for the four European species of family Thremmatidae Martynov 1935 known in the larval stage so far. In the context of this matrix, larvae can be easily diagnosed by the shape of mesonotal sclerites, foretrochantins, forefemora and ventral sclerites on abdominal segment I, by head coloration patterns, by case morphology, and by distribution. In addition, ecological characteristics and distributions of the European taxa are briefly discussed.

Key words: larvae, description, identification, ecology, distribution

Introduction

Genus *Thremma* was established by McLachlan in 1876 when describing *Thremma anomalum*. During the following decades, the systematic position of genus *Thremma* changed frequently. Initially, the taxon was part of family Sericostomatidae Stephens 1836, and included in subfamily Brachycentrinae Ulmer 1903. This arrangement continued well into the 20th century (e.g., Ulmer 1909) until *Thremma* became part of family Thremmatidae, a new taxon created by Martynov in 1935, based on material sampled in the Amur region. Later revisions (e.g., Vinyard & Wiggins 1988; Vinyard *et al.* 2005) linked the Thremmatidae with the Neophylacinae Schmid 1955 and Uenoidae Iwata 1927b, the latter previously a subfamily of Sericostomatidae Stephens 1836 (Ross 1977; Holzenthal *et al.* 2007), making *Thremma* a genus of family Uenoidae, subfamily Thremmatinae. Nowadays, *Thremma* (5 species and 2 subspecies in Europe and North Africa; Malicky & Lounaci 1987), together with the Holarctic genus *Neophylax* McLachlan 1871 (41 species) and the North American genus *Oligophlebodes* Ulmer 1905 (7 species) is again included in family Thremmatidae, whereas *Uenoa* Iwata 1927a (12 species), *Farula* Milne 1936 (12 species), *Neothremma* Dodds & Hisaw 1925 (7 species), and the monotypic *Sericostriata* Wiggins, Weaver & Unzicker 1985 remain in family Uenoidae (Malm *et al.* 2013; Morse, 2019; Sheffield *et al.* 2019).

The European inventory of genus *Thremma* includes *T. anomalum* McLachlan 1876, *T. gallicum* McLachlan 1880 (with subspecies *T. g. arvernense* Giudicelli 1971), *T. martynovi* Malicky 1976, *T. sardoum* Costa 1884, and *T. tellae* González 1978. Another taxon, *T. fontium*, was described by Vallot in 1836 as *Phryganea fontium* using larval material collected in the fontaine de Jouvence (Suzon River catchment near Dijon, France); it was later transferred to *Thremma* (Ulmer 1955). According to Tachet & Morse (2003), *T. fontium* is not a species of *Thremma*, but possibly a species of Glossosomatidae or Psychomyiidae; as the larvae were never resampled since the original description, they suggested that the taxon should be suppressed as a *nomen dubium*. Malicky (2005) treated it as a species *nomen dubium* in *Thremma* of Uenoidae.

With respect to larval taxonomy of the European inventory, there exist descriptions of all taxa except *T. mar-*