Faunistic results of a light-trap survey of the Trichoptera from the Meuse river in Belgium

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Abstract

A light-trap survey of the Trichoptera from the Meuse river was carried out from April to mid-October 1991. Thirty-one species were identified, among which *Hydroptila angulata* MOSELY, 1932, new for the Belgian fauna, *Hydroptila sparsa* CURTIS, 1834 and *Hydroptila simulans* MOSELY, 1920, each with one single previous record in Belgium, and *Athripsodes leucophaeus* (RAMBUR, 1842), formerly thought to have disappeared from the Meuse river. Given the considerable variability observed in specimens of *Ceraclea alboguttata* (HAGEN, 1860), a previous record of *Ceraclea albimacula* (RAMBUR, 1842) in the Meuse river has been reconsidered, resulting in its withdrawal from the list of the Belgian Trichoptera.
Key-words: Trichoptera, light-trap, faunistics, Meuse river, Belgium.

Résumé

Un relevé faunistique des Trichoptères de la Meuse a été effectué au piège lumineux pendant la période s'étendant d'avril à mi-octobre 1991. Parmi les 31 espèces identifiées figurent *Hydroptila angulata* MOSELY, 1932, nouvelle pour la faune belge, *Hydroptila sparsa* CURTIS, 1834 et *Hydroptila simulans* MOSELY, 1920, qui n'avaient été mentionnées qu'à une seule reprise en Belgique, et *Athripsodes leucophaeus* (RAMBUR, 1842), qu'on croyait éteinte en Meuse. Suite à l'observation d'une considérable variabilité morphologique chez *Ceraclea alboguttata* (HAGEN, 1860), la citation antérieure de *Ceraclea albimacula* (RAMBUR, 1842) en Meuse a été vérifiée et a abouti au retrait de cette espèce de la liste des Trichoptères de Belgique.
Mots-clés: Trichoptères, piège lumineux, faunistique, Meuse, Belgique.

Introduction

Trichoptera are one of the most important groups of insects in many watercourses, including large rivers like the Meuse in Belgium, provided their water quality is sufficient. Until recently, only larvae have been surveyed in the Meuse river (MEURISSE-GENIN *et al.*, 1987), the sole data on adults referring to the older and isolated records gathered in STROOT (1985). However, due to the difficulties in adequately sampling and identifying larvae, studies using adult Trichoptera for river quality monitoring have been initiated in the Meuse river (STROOT & LEJEUNE, 1990; RICCIARDONE, 1991) as in other large European rivers (CHANTARAMONGKOL, 1983; USSEGLIO-POLARERA, 1989, ...). The faunistic results presented here bear on one season of sampling. They constitute the first systematic inventory of the adult Trichoptera from the Meuse river in Belgium.

Material and methods

The study area is the Belgian part of the Meuse river, from near its entry in belgium to the stretch below Namur. Three sampling sites, Waulsort, Tailfer and Andenne, were investigated from April to mid-October 1990.

In each site, sampling was carried out by means of a light-trap modified after FONTAINE (1982). The mixed UV-visible light was provided by a TL tube "Sylvania F8/350". Each light-trap (height 0.46 m) was placed on the infrastructure of a ward and oriented downstream, north-east and towards the middle of the river. The light-traps were operating one night every week from June to July, and one night every two weeks during the remaining of the sampling period.

Results

A total of 85,784 caddis flies belonging to 31 species (Tab. 1) were captured during this survey.

Of these species, one is new for the Belgian fauna: the hydroptilid *Hydroptila angulata* MOSELY. The closely related *Hydroptila sparsa* CURTIS and *H. simulans* MOSELY are other interesting captures, each with a single previous record in Belgium, respectively "Bruxelles 1907" and "Hoyoux river 1918" (MARLIER, 1949; STROOT, 1985). These three hydroptilid species are small (2.5-3.5 mm long) and have a more or less scattered palearctic distribution (MARSHALL, 1978, 1979). Their larvae are insufficiently known to allow distinction from other larvae of the genus. Under-reporting of hydroptilids is frequent, and the list of the hydroptilids from Belgium and adjacent areas is probably still far from complete.

The capture of the leptocerid *Athripsodes leucophaeus* (RAMBUR) is also of importance. It is a typical potamic species. Its only records in Belgium refer to sites located on the Meuse river (STROOT, 1985). However, these are old records, as well as most citations from other large European rivers, and *A. leucophaeus* was thought to be extinct in the river Meuse. Its larva is unknown.

Other species apparently rare in Belgium are *Athripsodes bilineatus* (LINNAEUS), *Oecetis notata* (RAMBUR) and *Oecetis testacea* (CURTIS).

Except for a few of the rarest ones, virtually all species captured in this survey had already been reported from the Meuse river, either at larval or adult stage, and are more or less exclusively potamophilous. The limnephilid *Limnephilus auricula* CURTIS is an exception; however, since this good flyer more typical of smaller water bodies was only represented in our samples by one individual, its presence there is attributed to contamination from other aquatic environments.

It is finally worth mentioning here the extreme variability observed in the characteristics of the genitalia of *Ceraclea alboguttata* (HAGEN) from the Meuse river. The shape of the median part of the trilobated apex of the Xth segment ranges for instance from typically short, round and barely incised to large and deeply subdivided, as recently observed by YANG & MORSE (1988) on Chinese specimens. Since the character was formerly presumed distinctive for the *Ceraclea* of the *alboguttata* group (see MORSE, 1975), this new observation prompted us to reconsider the status of the species of this group in Belgium. As a result, the nymph from "Houx (la Meuse), 14.09.1983" identified as *Ceraclea albimacula* (RAMBUR, 1842) in STROOT (1985) appeared to be a rather extreme form of *Ceraclea alboguttata*. Therefore, in absence of any further evidence of its presence in Belgium, *C. albimacula* should be withdrawn from the list of the Belgian Trichoptera.

Table 1. Check-list of the Trichoptera light-trapped on the Meuse river in Belgium, from April to mid-October 1990.

Rhyacophilidae
Rhyacophila dorsalis (CURTIS, 1834)
Glossosomatidae
Agapetus ochripes CURTIS, 1834
Hydroptilidae
Agraylea multipunctata CURTIS, 1834
Agraylea sexmaculata CURTIS, 1834
Hydroptila angulata MOSELY, 1932, **Belg. Fauna n.sp.**
Hydroptila simulans MOSELY, 1920
Hydroptila sparsa CURTIS, 1834
Hydropsychidae
Cheumatopsyche lepida (PICTET, 1834)
Hydropsyche contubernalis MCLACHLAN, 1865
Hydropsyche exocellata DUFOUR, 1841
Hydropsyche siltalai DÖHLER, 1963
Polycentropodidae
Neureclipsis bimaculata (LINNAEUS, 1758)
Polycentropus flavomaculatus (PICTET, 1834)
Cyrnus trimaculatus (CURTIS, 1834)
Psychomyidae
Psychomyia pusilla (FABRICIUS, 1781)
Lype reducta (HAGEN, 1868)
Tinodes waeneri (LINNAEUS, 1758)
Ecnomidae
Ecnomus tenellus (RAMBUR, 1842)
Limnephilidae
Limnephilus auricula (CURTIS, 1834)
Leptoceridae
Athripsodes albifrons (LINNAEUS, 1758)
Athripsodes aterrimus (STEPHENS, 1836)
Athripsodes bilineatus (LINNAEUS, 1758)
Athripsodes cinereus (CURTIS, 1834)
Athripsodes leucophaeus (RAMBUR, 1842)
Ceraclea alboguttata (HAGEN, 1860)
Ceraclea dissimilis (STEPHENS, 1836)
Mystacides azurea (LINNAEUS, 1761)
Mystacides longicornis (LINNAEUS, 1758)
Mystacides nigra (LINNAEUS, 1758)
Oecetis notata (RAMBUR, 1842)
Oecetis testacea (CURTIS, 1834)

Conclusions

The light-trap survey of the adult Trichoptera carried out on the Meuse river during the 1990 season revealed the presence of 31 species, of which 30 certainly originate from the Meuse river itself. Of these species, one is new for the Belgian fauna, two had only been reported once before

the present study and one other, now apparently rare in most European rivers, was nearly considered extinct in the Meuse river.
These data tend to indicate the efficiency of the light-trap as a tool to inventory caddis flies in large rivers.

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