Bulletin S.R.B.E./K.B.V.E., 146 (2010) : 30-02

Tinodes dives (Pictet, 1834) and *Synagapetus dubitans* McLachlan 1879: two caddisflies (Trichoptera) new for Belgium

by Koen LOCK & Peter L.M. GOETHALS

Laboratory of Environmental Toxicology and Aquatic Ecology, J. Plateaustraat 22, B-9000 Gent (e-mail : Koen.Lock@UGent.be).

Abstract

Caddisflies or Trichoptera are known to be useful indicators of the water quality, but nevertheless hardly received any attention in Belgium during the last decades. Here, two species are reported for the first time from Belgium: *Tinodes dives* (Pictet, 1834) and *Synagapetus dubitans* McLachlan, 1879. Both species were caught by sweeping the vegetation along some small streams in the Belgian Lorraine. These records indicate that there is still a lot to be discovered about the Belgian Trichoptera and in this way, we hope to convince more entomologists to collect caddisflies during sampling with light traps and while sweeping the vegetation.

Keywords : aquatic insects, Belgian fauna, caddisfly, macroinvertebrates.

Samenvatting

Hoewel kokerjuffers of Trichoptera bekend staan als goede indicatoren voor de waterkwaliteit, werden ze recent amper bestudeerd in België. De meeste soorten worden aangetrokken door licht en nachtvlinderliefhebbers kunnen dus gemakkelijk bijdragen tot een betere kennis van de verspreiding van de Belgische kokerjuffers. Ook entomologen die in de vegetatie slepen met een net zullen ze tegenkomen, vooral in de buurt van water. Hier worden twee soorten voor het eerst gemeld voor België: *Tinodes dives* (Pictet, 1834) en *Synagapetus dubitans* McLachlan, 1879. Beide soorten werden gevangen door het slepen van de vegetatie langs enkele riviertjes in de Belgische Lorraine. Deze waarnemingen tonen aan dat er nog heel wat te ontdekken valt over de verspreiding van Trichoptera in België en op deze manier hopen we om meer entomologen te overtuigen om kokerjuffers te verzamelen tijdens het vangen van nachtvlinders of bij het slepen van de vegetatie.

Résumé

Les Phryganes ou Trichoptera sont reconnues comme étant de bons indicateurs de la qualité de l'eau, mais en Belgique, ces dernières années, ces insectes n'ont suscité que très peu d'intérêts ! Pourtant, il serait assez facile d'accroître nos connaissances sur leur distribution, la plupart des espèces étant attirées par la lumière, elles peuvent être récoltées avec les mêmes techniques que celles utilisées pour capturer les papillons nocturnes et en outre, le fauchage de la végétation, surtout à proximité de l'eau, donne également de bons résultats. Ici, deux espèces sont rapportées pour la première fois de Belgique: *Tinodes dives* (Pictet, 1834) et *Synagapetus dubitans* McLachlan, 1879. Elles ont été récoltées par fauchage le long de ruisseaux en Lorraine belge. Ces observations montrent qu'il y a encore beaucoup à découvrir sur les trichoptères et leur distribution en Belgique et nous espérons qu'elles motiveront des entomologistes à porter un plus grand intérêt à ces insectes.

Introduction

During the last decades, Trichoptera hardly received any attention in Belgium. Since the publication of the distribution atlas (STROOT, 1984) and a checklist, listing 200 species occurring in Belgium (STROOT, 1987), only *Molannodes tinctus* (ZETTERSTEDT, 1840)

(STROOT & NEVEN, 1989), *Hydroptila lotensis* MOSELY, 1930 (COPPA, 2001) and *Limnephilus binotatus* CURTIS 1834 (LOCK *et al.*, 2010) were added to the Belgian fauna. In contrast to caddisflies, moths are recently becoming very popular. Because most species of caddisflies are attracted to light just like moths, the co-operation with moth catchers can be valuable to increase the knowledge about the distribution of Trichoptera in Belgium. Sweeping the vegetation with a net, which is a method commonly used to catch for example ladybirds, can also be a rewarding technique to catch caddisflies, especially along streams, lakes and wetlands. The records of *Tinodes dives* (Pictet, 1834) and *Synagapetus dubitans* McLachlan, 1879, which are reported here for the first time for Belgium, indicate that there is still a lot to be discovered about the Belgian caddisflies.

Description

T. dives belongs to the family Psychomyiidae. It is a small caddisfly with forewings of 5-6 mm length, which are black with a large oval white or greyish patch in the apical part. Adult caddisflies can, however, best be identified on the basis of their genitalia. Males have a phallus that is dilated in the middle and inferior appendices with three pointed processes at the tip, two of which are in a direct line with the rest of the appendix with the upper one downcurved, while the third is a long, slender, hairy process that is directed inward (Fig. 1A). Females are difficult to distinguish from some other species of the genus *Tinodes*.

S. dubitans belongs to the family Glossosomatidae. It is also a small caddisfly with forewings of 4-5 mm length. Males have slender superior appendices and inferior appendices which are attenuated in the middle (Fig. 1B). Females are hard to distinguish from related species.

In Belgium, adult caddisflies can be identified using the book of MALICKY (2004), while larvae can be identified using the keys of LECHTHALER & STOCKINGER (2005) or HIGLER (2005).

Habitat, distribution and co-occurring species

One male of *T. dives* as well as one male and two females of *S. dubitans* were captured along Rau de Rabais in Ethe (UTM: FQ8497) on 25.VI.2009. Co-occurring species were *Beraea maurus* (Curtis, 1834) of the family Beraeidae, *Wormaldia occipitalis* (Pictet, 1834) of the family Philopotamidae and *Tinodes rostocki* McLachlan, 1878. In addition, one female of *S. dubitans* was captured along Rau de Radru in Lamorteau (UTM: FQ8188) on 16.VII.2009. Co-occurring species here were *Rhyacophila pubescens* Pictet, 1834 of the family Rhyacophilidae and *W. occipitalis*.

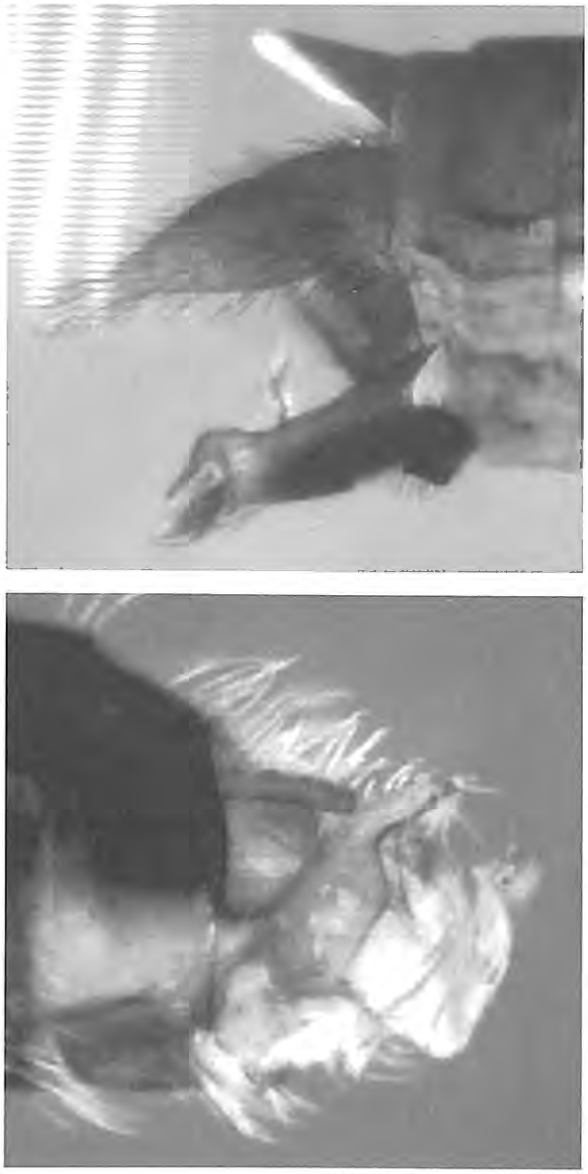

Fig 1. Male genitalia of *Tinodes dives* (Pictet, 1834), lateral view from the right (A) and male genitalia of *Synagapetus dubitans* McLachlan, 1879, lateral view from the left (B) (photographs by Koen LOCK).

Adults of both species can be found in May and June and *S. dubitans* can apparently still be found in July. Both species can be found in calcareous springs and streams (TOBIAS & TOBIAS, 1981; NEU, 2008). Their larvae are scrapers which feed on epilithic algae and

detritus and avoid sandy or muddy substratum (WARINGER & GRAF, 1997). Both species prefer clean water and are sensitive to organic pollution (LECHTHALER & STOCKINGER, 2005).

T. dives had already been found in Luxembourg (STROOT, 1984; MEYER *et al.*, 2000), northern France (TACHET & COPPA, 2005) and Rheinland-Pfalz in Germany (NEU, 2008). *S. dubitans* had already been observed in the Moselle basin (MEYER *et al.*, 2000) and northern France (TACHET & COPPA, 2005). The occurrence of both species in calcareous streams in the Belgian Lorraine is therefore not unexpected.

Discussion

Based on the distribution of Trichoptera in the surrounding countries, STROOT (1987) indicated that about 25 additional species are to be expected in Belgium. Due to the lack of recent observations, it is not possible to assess the present status of caddisflies. More data should therefore be collected about the distribution of Trichoptera, which are known as very good indicators of the water quality (GABRIELS *et al.*, 2010). These data can be gathered by collecting caddisflies during moth catches and also by sweeping the vegetation with a net along streams, lakes and wetlands. All collected material is very welcome and can be send to the first author.

Acknowledgments

Many thanks to Bert HIGLER for proofreading a draft version of this manuscript. Koen LOCK is currently supported by a post-doctoral fellowship from the Fund for Scientific Research (FWO-Vlaanderen, Belgium).

References

COPPA G., 2001. - *Hydroptila lotensis* MOSELY, 1930, une citation nouvelle pour la faune de Belgique (Trichoptera, Hydroptilidae). *Ephemera*, 3: 94.

GABRIELS W., LOCK K., DE PAUW N., GOETHALS P.L.M., 2010. - Multimetric Macroinvertebrate Index Flanders (MMIF) for biological assessment of rivers and lakes in Flanders (Belgium). *Limnologica*, in press.

HIGLER B., 2005. - *De Nederlandse koker-jufferlarven*. KNNV Uitgeverij, Utrecht.

LECHTHALER W. & STOCKINGER W., 2005. - *Trichoptera - key to larvae from Central Europe*. Entaxa, Vienna.

LOCK K., DE PRINS G. & GOETHALS P.L.M., 2010. - First record of *Limnephilus binotatus* Curtis 1834 in Belgium (Trichoptera Limnephilidae). *Phegea*, in press.

MALICKY H., 2004. - *Atlas of European Trichoptera* (second edition). Series Entomologica 24, Dr W. Junk Publishers, The Hague.

MEYER M, COPPA G., DOHET A., GEREND L., JACQUEMAIN G., KOHL R., LESS S., NEU P.J., POTEL S., SCHRANKEL I., VEIN D. & WEITZEL M., 2000. - *Atlas of Trichoptera of the Moselle bassin*. (http://www.mnhn.lu/recherche/proj_zoo_trichos.htm; 15/1/2010).

NEU P.J., 2008. - *Trichoptera Rheinland-Pfalz*. (http://www.trichoptera-rp.de; 15/1/2010).

STROOT P., 1984. - *Les trichoptères de Belgique et des régions limitrophes (225 cartes)*. in : LECLERCQ J., GASPAR Ch. & VERSTRAETEN Ch. ed, Atlas Provisoire des Insectes de Belgique, Institut royal des Sciences naturelles de Belgique, Bruxelles, 75pp.

STROOT P., 1987. - Faunistic and zoogeographic notes on Trichoptera from Belgium. *Archiv für Hydrobiologie*, 110: 195-216.

STROOT P. & NEVEN B., 1989. - A propos de la présence en Belgique de *Molannodes tinctus* (ZETTERSTEDT, 1840), trichoptère nouveau pour la faune belge. *Bulletin de l'Institut royal des Sciences Naturelles de Belgique, Entomologie*, 58 : 179-182.

TACHET H. & COPPA H., 2005. - *Trichoptères de France : première liste des espèces présentes*. (http://www.invfmr.fr/~invfmr/sommaireT.htm; 15/1/2010).

TOBIAS W. & TOBIAS D., 1981. - Trichoptera Germanica. Bestimmungstafeln für die deutschen Köcherfliegen. Teil I. Imagines. *Courier Forschungsinstitut Senckenberg*, 49 : 1-671.

WARINGER J. & GRAF W., 1997. - *Atlas der Österreichischen Köcher-fliegenlarven*. Facultas Univeritätsverlag, Wien.