

Holocentropus insignis Martynov, 1924 and *Micrasema setiferum* (Pictet, 1834) (Trichoptera) new to Denmark

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The study of museal collections has led to the discovery of two Trichoptera species, which have never been recorded previously from Denmark: *Holocentropus insignis* Martynov, 1924 (Polycentropodidae) and *Micrasema setiferum* (Pictet, 1834) (Brachycentridae). Male and female genitalia are figured. Notes on distributions and habitats are given. The occurrence of the *M. setiferum/nigrum* (Brauer, 1857) sensu auct. scand. complex in Fennoscandia is briefly discussed.

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During the study of the collections of the Freshwater Biological Laboratory, University of Copenhagen (FBLUC), the Zoological Museum, University of Copenhagen (ZMUC), the Museum of Natural History, Aarhus (MNHA), and the Royal Veterinary and Agricultural College, Copenhagen (RVACC), several interesting Trichoptera species have been found. Among these are two species, which have not been recorded previously from Denmark i.e. *Holocentropus insignis* Martynov, 1924 (Polycentropodidae) and *Micrasema setiferum* (Pictet, 1934) (Brachycentridae).

***Holocentropus insignis* Martynov, 1924**

Material: Eastern Jutland (EJ), Tyrso, Ryomgård, 2♂, 3. vi. 1917; *ibid.* 1♂, 2. vi. 1918 (MNHA); EJ, Pindstrup, 1♂, 7. vi. 1927 (MNHA); Northeastern Jutland (NEJ), Allerup Bakker, 1♂, 2. vi. 1909 (ZMUC); NEJ, Trangets Kær, 1♂, 11. vii. 1926 A. Chr. Thomsen leg. (ZMUC); Southern Jutland (SJ), Draved, 4♂, 4♀, 10. vi. 1929 (MNHA); Funen (F), Sønderby Mose, 1♂, 2. vi. 1904; *ibid.*, 1♂, 17. vi. 1905; *ibid.*, 3♂, 13. vi. 1906; P. Jørgensen leg. (RVACC).

The Funen specimens are actually labelled »Sønderby« or just »Mose«. However, these specimens are without doubt from Sønderby Mose like most of the P. Jørgensen collec-

tion. This locality, nowadays called Plovskær Mose (cf. Wiinstedt, 1920), was in the beginning of this century and still mainly is a *Sphagnum*-bog with small bog-pools and surrounded by a lagg. The vegetation of the *Sphagnum* mat is dominated by several *Carex* species, *Rhynchospora alba* (L.) Vahl, *Trichophorum caespitosum* (L.) Hartmann, *Eriophorum vaginatum* L., *E. angustifolium* Honckeny, *Empetrum nigrum* L., *Oxycoccus palustris* Pers. and *Drosera rotundifolia* L.

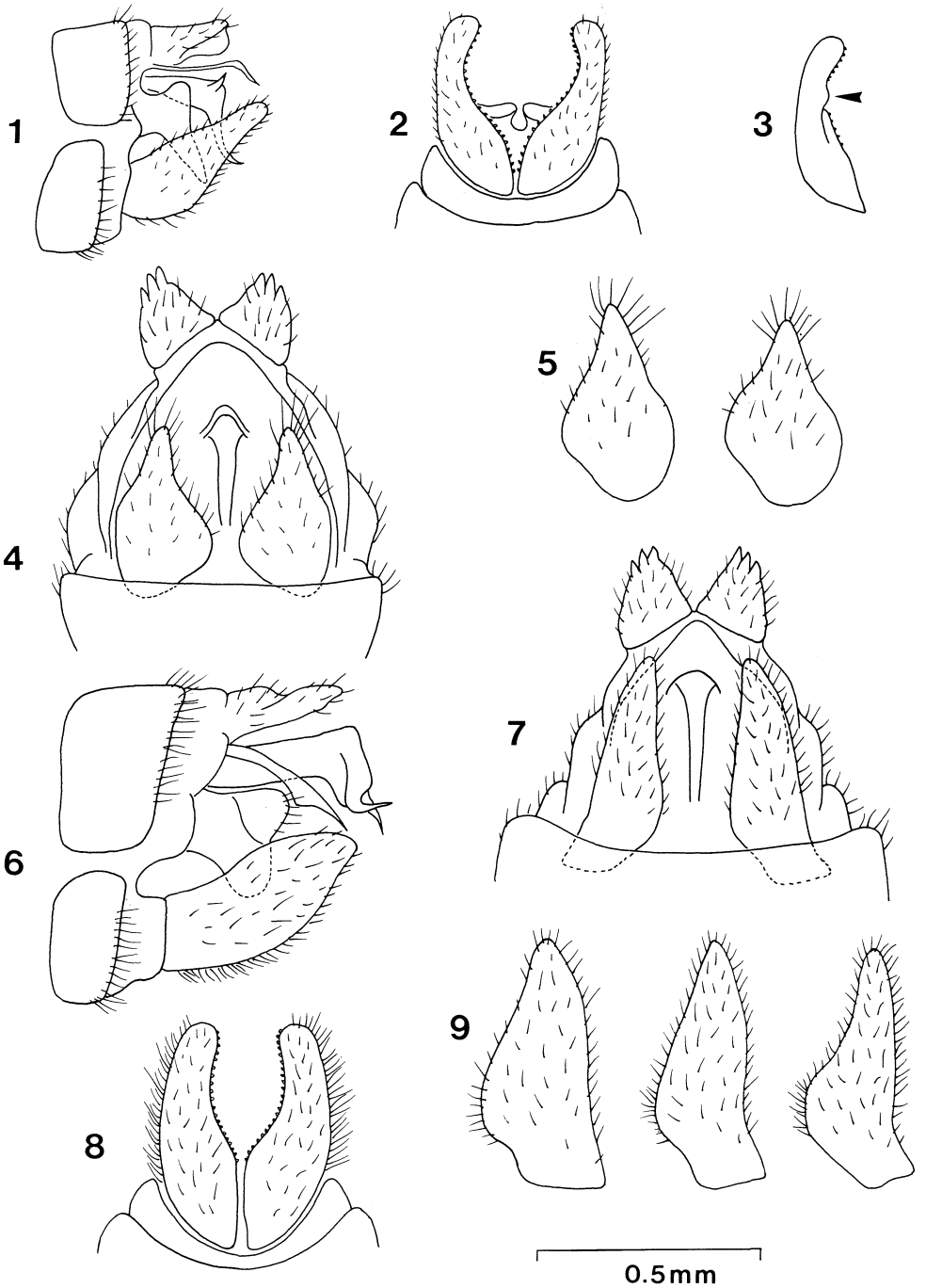
The remaining localities are probably also *Sphagnum*-bogs or oligotrophic ponds.

There seems to be very little knowledge of the habitat of *H. insignis*. Thus, Nybom (1960) merely reports it as rather common at ponds in Finland.

The discovery of *H. insignis* is a surprise, although it is reported from the Netherlands (Geijskes & Fischer, 1971), East-Germany (Tobias & Tobias, 1981) and the southern parts of Sweden (Tjeder, 1938). Thus, *H. insignis* has a northern distribution with records from Norway, Finland (Svensson & Tjeder, 1975b), northern Sweden and USSR including Siberia (Botosaneanu & Malicky, 1978).

H. insignis is no doubt very rare in Denmark.

In all four species of the genus *Holocentro-*



Figs. 1-9. Genitalia of *Holocentropus* spp. Figs. 1-5. *H. insignis*. 1. Male, lateral view. 2. Male, ventral view. 3. Male, inferior appendage, dorsal view. 4. Female, ventral view. 5. Female, appen-

dages (variation shown). Figs. 6-9. *H. picicornis*. 6. Male, lateral view. 7. Male, ventral view. 8. Female, ventral view. 9. Female, appendages (variation shown).

pus are found in Denmark and Europe. Besides *H. insignis*, these are *H. dubius* (Rambur, 1842), *H. picicornis* (Stephens, 1836) and *H. stagnalis* (Albarda, 1874) (see Wi-berg-Larsen et al., 1980).

Imagines of *H. insignis* show close resemblance to *H. picicornis*, but the two species can be separated by the characters indicated in Figs. 1-9. It should be noted, that the female genitalia of *H. insignis* have only previously been figured by Tobias & Tobias (1981). However, their figures differ considerably from the present and resembles some *Cyrnus* sp.. The genus *Holocentropus* is easily keyed out in Macan (1973).

The larva of *H. insignis* is hitherto undescribed.

Micrasema setiferum (Pictet, 1834)

Material: EJ, Funder Å, 4♂, 1♀, 2. vi. 1917 J. Kryger leg. (FBLUC); *ibid.*, 1♀, 2. vi. 1917 J. Kryger leg. (ZMUC); EJ, Gudenå, Gammelstrup Bro, 6♂, 9♀, 31. v. 1917 J. Kryger leg. (FBLUC).

According to the late Dr. A. Nielsen (cited in Svensson & Tjeder, 1975b) a second member of the genus *Micrasema*, *M. minimum* (McLachlan, 1876) occurs in Denmark (specimens from Funder Å at ZMUC). However, the stated material of *M. minimum*, 1♀, is actually *M. setiferum* (see above).

The only known Danish localities both belong to the River Gudenå system. Funder Å is characteristic by its almost constant flow (about 700 l s⁻¹) depending nearly exclusively on ground water supplies (Andersen et al., 1981), whereas Gudenå at Gammelstrup Bro is a somewhat larger river with larger variations in flow. In Funder Å, *M. setiferum* was found in association with trichopterans like *Rhyacophila nubila* (Zetterstedt), *Philopotamus montanus* (Donovan), *Adicella reducta* (McLachlan), *Oligopteryx maculatum* (Fourcroy), *Lasiocephala basalis* (Kolenati), *Sericostoma personatum* (Spence), *Ecclisopteryx dalecarlica* Kolenati, and *Potamophylax latipennis* (Curtis). The associated Trichoptera species in Gudenå were among others *Agapetus ochripes* Curtis, *Oligopteryx maculatum* and *Notidobia ciliaris* (Linnaeus).

Nothing is known about the larval habitats of *M. setiferum* at these localities. However,

in rivers of the French Jura Mountains, *M. setiferum* inhabits boulders and stones covered with mosses at current speeds of 20-70 cm s⁻¹ (Verneaux, 1972).

It is questionable if *M. setiferum* still occurs in Danish streams and rivers. At least one of the known localities, Funder Å, has since the 1950s been heavily polluted due to operation of several fish farms, which has led to the extermination of most of the original invertebrate fauna.

M. setiferum is widely distributed in central Europe (including the French Jura Mountains and southern part of Western Germany), Balticum and eastern Europe (Botosaneanu & Malicky, 1978; Tobias & Tobias, 1981). The distribution of *M. setiferum* in northern Europe has been debated for some time. Thus *M. nigrum* (Brauer, 1857), which has repeatedly been reported from Sweden, Norway and Finland (e.g. Forsslund & Tjeder, 1942; Nybom, 1960), is considered synonymous with *M. setiferum* (Pictet) by Botosaneanu (1974). However, Svensson & Tjeder (1975a) state that Swedish specimens differ from the figures of *M. setiferum* in Botosaneanu (1974) and therefore find it possible, that the species occurring in Scandinavia, Finland and northern USSR represents a different species, which they term *M. nigrum* (Brauer, 1857) *sensu auct. scand.*

I have studied *Micrasema* specimens (5♂, 5♀) from Vinnfarsån, Hälsingland, Sweden, sampled during the period 20. vi.-10. vii. 1983 (T. Olsson leg.). In my opinion they show close resemblance to the Danish *M. setiferum* and the figures of this species in Botosaneanu (1974). Moreover, Dr. H. Malicky (in litt.) has seen specimens with light brown forewings from Finland, which are apparently *M. setiferum*. However, Dr. Malicky has also seen Finnish specimens with gray forewings and a forewing length of 3.5-4 mm. Although these small gray-winged specimens have genitalia quite similar to those of *M. setiferum*, Dr. Malicky believes, that two distinct species occur in Fennoscandia: *M. setiferum* (Forewings 5-6 mm, light brown) and *M. nigrum* *s. auct. scand.* (forewings 3.5-4 mm, gray).

Danish specimens of *M. setiferum* show forewing lengths of 4.8-7.0 mm (4.8-5.2 mm in males), whereas forewing lengths of

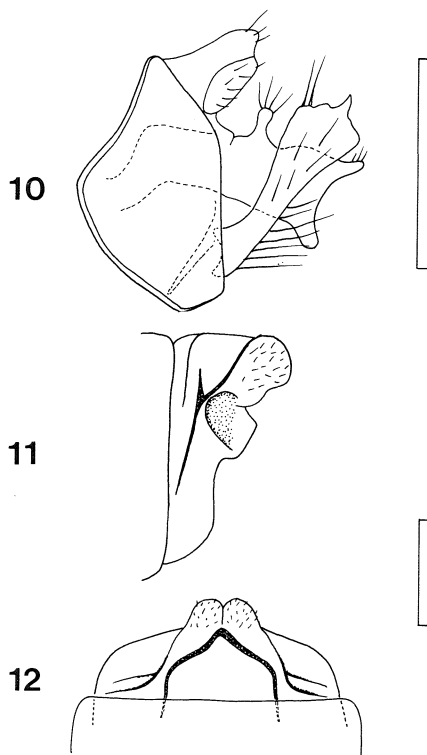
specimens from Vinnfarsån, Sweden, are 4.4-6.2 mm (4.4-4.9 mm in males). Therefore, as forewing length seems to vary considerably in populations of *M. setiferum* and much more than 5-6 mm, as indicated by Malicky (1983), I find it probable that *M. nigrum* s. auct. scand. is conspecific with *M. setiferum*. In my opinion, a study of several populations of *M. setiferum/nigrum* s. auct. scand. in Fennoscandia is needed to solve the matter.

Adults of the genus *Micrasema* should be identified by the following combination of characters: Spur formula (number of spurs of first, second and third tibia) 222, maxillary palps of male with 3 segments, no ocelli present, antennae about as long as forewings, radius in forewing almost straight (not distinctly bend as in *Oligoplectrum*). Genitalia of *M. setiferum* are shown in Figs. 10-12.

Larvae of *M. setiferum* show the general characteristics of the Brachycentridae: Mesonotum entirely sclerotized, no prosteral horn present, no dorsal and lateral humps present on abdominal segment 1. *Micrasema*-larvae should be separated from those of the brachycentrids *Brachycentrus* and *Oligoplectrum* by the following characters: Femur of meso- and metathoracic legs about the same length as the tibia, tibia of meso- and metathoracic legs without a ventral prolongation. The larva of *M. setiferum* is described in detail by Verneaux (1972).

Acknowledgements

I wish to thank Frank Jensen, Museum of Natural History, Aarhus, for his help in placing the FBLUC and RVACC collections to my disposal, and Dr. Tommy Olsson, Umeå University, for loan of specimens of *Micrasema setiferum*. I am also grateful for the permission to study the collections of Zoological Museum of Copenhagen and Museum of Natural History, Aarhus. Further, I should like to thank Dr. Hans Malicky, Biologische Station, Lunz, who supplied valuable informations on *M. setiferum*, and Aage Kristensen, Århus amtskommune, Vandvæsenet, who supplied informations about the fish farms at Funder Å. Finally, I am most grateful for the encouragement, supported by my wife Annette Sode, who also kindly criticized the manuscript.



Figs. 10-12. Genitalia of *Micrasema setiferum*. 10. Male, lateral view. 11. Female, lateral view. 12. Female, dorsal view. Scales 0.2 mm.

Sammendrag

Holocentropus insignis Martynov, 1924 og *Micrasema setiferum* (Pictet, 1834) (Trichoptera), nye for Danmark.

Ved studiet af samlinger ved Ferskvandsbiologisk Laboratorium, Zoologisk Museum, Den Kgl. Veterinær- og Landbohøjskole og Naturhistorisk Museum Århus er der fundet to vårfluearter, som ikke tidligere er angivet fra Danmark: *Holocentropus insignis* Martynov, 1924 (Polycentropodidae) og *Micrasema setiferum* (Pictet, 1834) (Brachycentridae).

Fundet af *H. insignis* i Danmark er overraskende, idet arten har en udpræget nordlig og nordøstlig udbredelse i Europa. Arten er dog påtruffet så tæt ved Danmark som Sydsvrige og Holland.

De danske findesteder synes at vise, at *H. insignis* lever i og ved vandhuller, som er bebyggende i tilknytning til fattigkær eller højmoser. Arten er sandsynligvis sjælden her i landet.

Imagines af *H. insignis* kan identificeres på baggrund af Fig. 1-5 og kan blandt de øvrige 3 danske *Holocentropus*-arter kun forveksles med *H. picicornis* (Stephens) (Fig. 6-9). Såvel selve slægten *Holocentropus* som de øvrige danske arter inden for denne slægt kan identificeres ved anvendelse af bestemmelsesnøglerne i Macan (1973). Larven af *H. insignis* er ikke beskrevet.

Slægten *Micrasema* har tidligere været angivet fra Danmark, idet Dr. Anker Nielsen angiver et fund af *M. minimum* (McLachlan) fra Funder Å (jf. Svensson & Tjeder, 1975b). Det fundne eksemplar (1♀, ZMUC) har imidlertid vist sig at være *M. setiferum*.

Blandt de to eneste kendte findesteder for *M. setiferum* i Danmark er Funder Å karakteristisk ved sin næsten konstante vandføring (omkring 700 l s⁻¹), medens Gudenå ved Gammelstrup Bro udviser væsentlig større variationer i vandføringen. Larvens levesteder i disse vandløb har sandsynligvis været mosbevoksede store sten i områder med moderate strømhastigheder. Medens *M. setiferum* i dag uden tvivl er forsvundet fra Funder Å, der siden 1950-erne har været stærkt forurenet som følge af dambrugsdrift, er det ikke umuligt, at arten stadig lever i Gudenå på en strækning omkring Vilholt og Vissingkloster.

M. setiferum er vidt udbredt i det centrale Europa, det baltiske område og Østeuropa. Desuden forekommer arten i Fennoskandien. Jeg har selv set eksemplarer fra Hälsingland (Sverige). Der hersker imidlertid usikkerhed om, hvorvidt der i Fennoskandien også findes en nærtstående art, *M. nigrum* (Brauer) s. auct. scand. (jf. Svensson & Tjeder, 1975a), en opfattelse som er fremført af Dr. Hans Malicky (in litt.). Dr. Malicky angiver, at de to arter adskilles ved forvingernes farve og længde. Efter min opfattelse er der dog næppe mere end én art, *M. setiferum*, i Fennoscandien, men afklaringen af dette spørgsmål kræver en omfattende undersøgelse af flere populationer af *M. setiferum/nigrum* s. auct. scand.

Imagines af *M. setiferum* kan bestemmes efter Malicky (1983) og Fig. 10-12. *Micrasema*-larver er særegne ved følgende kombination af karakterer: Mesonotum helt sklerotiseret, intet prosternalt horn til stede, ingen dorsal og lateral vorte til stede på abdominal segment 1, mellem- og bagbenenes fe-

mur omtrent så lang som tibia, tibia mangler desuden en ventral udvækst nær spidsen. En detaljeret beskrivelse incl. figurer af *M. setiferum* findes i Verneaux (1972).

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