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THE *falcata* SPECIES COMPLEX OF THE GENUS *Oxyethira* (TRICHOPTERA: HYDROPTILIDAE)

E. W. KELLEY

SUMMARY

The *falcata*-species complex of the genus *Oxyethira* is reviewed, with the conclusion that it includes a total of four species. One species name is synonymized and a new species is described. Known species are redescribed with illustrations of both males and females. A diagnostic section presents characters to distinguish each species.

INTRODUCTION

The *falcata*-species complex of the genus *Oxyethira* has been a source of much confusion for a number of years. I propose here to try to sort out the synonymy of this complex.

In 1884 MacLachlan described the species *Oxyethira spinosella* from Madeira. Several years later Morton (1893) described a closely related species, *O. falcata*, from the British Isles. He noted that *falcata* differed from *spinosella* in the nasal process at the posteroventral end of segment IX and in the spinous process of pleuron VIII. During the following decades *falcata* was found to have a very wide range throughout Europe and northern Africa. An apparent third new species of the complex was described by Nybom (1948) from the Azores. Originally named *dubitata*, a name preoccupied by Kimely (1908), it was renamed *dentata* Nybom (1958). Examination of specimens from the Zoological Museum, identified by Nybom, reveals *dentata* to be a synonym of *falcata*. Schmid described what he at first considered to be a new species of the *falcata*-species complex in 1968: *rhenana* from Switzerland. He later noted, however, that the posteroventral process of segment IX was moveable, being bifurcated in some specimens and folded inward in others. As a result he synonymized *rhenana* with *falcata* in 1969. At that time Schmid also reported a range extension of *falcata* into Central Asia. Two additional new species of the complex were described in the mid 1970's. Svensson and Tjeder (1975) described *barnella* from Sweden and Higler (1976) described *fischeri* from Greece. The latter is certainly a synonym of *spinosella*. *O. barnella* appears to be a valid species, distinct in both the males and females. Tobias examined specimens of "*fischeri*" from the Caucasus, Ukraine and Crimea in 1981. He found that the aedeagus was quite distinct, being truncated at the apex as were specimens of *fischeri*. However, in most other genitalic characters specimens from Greece are like *falcata*. Thus, in this paper I treat these two as new species, distinct from both *spinosella* and *falcata*.

In review, there are 4 distinct species of the *falcata* species complex. Three of them seem to have evolved in peripheral, isolated populations, while one, *falcata*, has a wide ranging *falcata*: *barnella* in Sweden, *spinosella* in Madeira and the Canary Islands.

A few remarks concerning morphological terminology need to be made. The median lobe at the posterior end of venter IX, as it has generally been referred to, is homologous to what is generally labelled as the inferior appendages in *Oxyethira*, but in a fused condition. Thus I refer to it as such. The sclerotized, downturned processes subtending the aedeagus have been referred to by both Botosaneanu (1981) and Kimmins (1958) as the inferior appendages. Although I agree that their origin is from the inferior appendages, they are homologous to what is generally referred to as the subgenital plate or processes in *Oxyethira*, and I prefer this terminology.

In this research I had the opportunity to look at type specimens of *borcella*, *fischeri* and *spinosella*. The specimens of *falcata* studied were from the British Isles. The description of *gomera* was made based on Botosaneanu's illustrations (1981).

SPECIES DESCRIPTIONS

Oxyethira borcella Svensson & Tjeder
(Figures 1-3, 12-14)

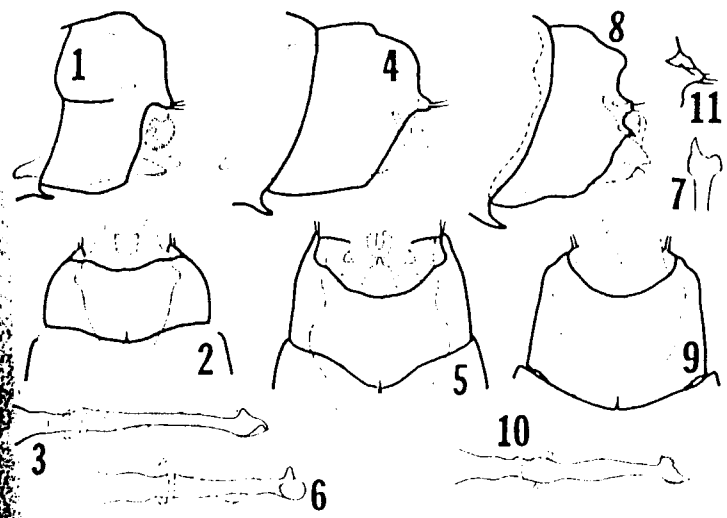
Oxyethira borcella Svensson & Tjeder, 1975:131; male holotype in Zool. Mus. Swedish Natn. Coll., Lund.

Male. Length 2.2 mm. Number of antennal segments unknown. Segment VIII dorsum with mesal excision; pleuron with anterior suture and posterior lobe with 2-3 spines subtended by rounded excision. Segment IX: venter protruded to posterior third of segment VII, with triangular lobes on each side of fused inferior appendages; pleuron with small, truncate, posterolateral process; dorsum with broad excision. Inferior appendages: fused into mesal process which is folded inward, bearing mesal lobe. Subgenital processes sharply downturned, protruded anteroventrally at tip. Aedeagus: apex with membranous lobe on right side, twisted dorsally on left side.
Female. Length 2.4 mm. Number of antennal segments unknown. Segment VIII apodemes parallel; tergum with dorsal knob. Internal genitalia: pair of sclerites of oviduct floor broadened caudally, not mesally connected.
Range. Northern Sweden.

Oxyethira falcata Morton
(Figures 4-6, 15-17)

Oxyethira falcata Morton, 1893:80; male holotype in collections of Univ. Edinburgh.
Oxyethira bidentata Nybom, 1948:9. (preoccupied by Mosely, 1930); renamed *dentata* by Nybom (1958:1), NEW SYNONYM.
Oxyethira rhodani Schmid, 1947:531; Schmid, 1960:99 (as syn. of *falcata*)

Male. Length 3.4 mm. Antennae 37-38 segmented. Segment VIII: dorsum with mesal excision; pleuron with symmetrical posterior lobe bearing 2-3 spines. Segment IX: venter protruded to midpoint of segment VII, with truncate lobe on each side of fused inferior appendage; pleuron with broad, truncate posterolateral lobe; dorsum with excision. Inferior appendages: fused into mesal process protruding caudally, with mesal lobe; flattened and distinctly lateral view; pair of setal lobes on dorsal side. Subgenital processes sharply downturned but turned horizontally at tip; bilobed process with broad



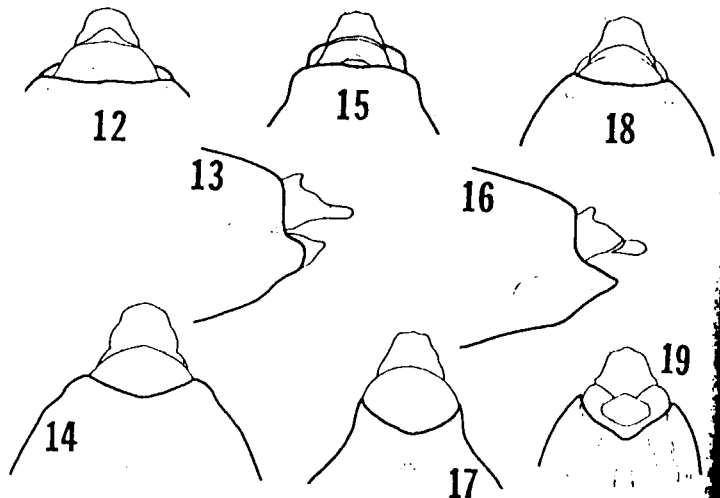
Figures 1-11. Male genitalia of the *Oxyethira falcata* species complex. 1-3, *O. borcella* Svensson and Tjeder; 4-6, *O. falcata* Morton. 7, *O. gomera* n. sp., ventral view of aedeagus; 8-11, *O. spinosella* MacLachlan. D, dorsal; V, ventral; L, lateral; A, dorsal view of aedeagus; V, lateral view of abdominal segment X. (bp, bilobed process; sp, spinoid process of segment VIII; i.a., inferior appendages; s.p., subgenital processes)

prominent lobes. Aedeagus: apex with membranous lobe on right side.
Female: Length unknown. Antennae 27 segmented. Segment VIII: apodemes divergent; tergum with knob. Internal genitalia: sclerites of oviduct floor narrowing caudally, attached to horizontal bacilla anteriorly; V-shaped structure connecting sclerites of oviduct floor.
Range: Throughout Europe except Sweden and Norway; Azores; Morocco; Algeria; Israel; Pakistan; Afganistan; Tibet; throughout India.

Oxyethira gomera n.sp.
(Figure 7)

Oxyethira fischeri Botosaneanu, 1981:186, nec Hagler; male holotype in Inst. of Taxonomic Zool. (Zool. Mus.), Amsterdam.

Male. Length unknown. Number of antennal segments unknown. Genitalia similar to *falcata* except for the following characters: fused inferior appendages distally trilobed; apex of aedeagus with serrate margin and ejaculatory duct protruding freely.
Female. Unknown.
Range. Canary Island.



Figures 12-19. Female genitalia of the *Oxyethira falcata* species complex. 12-14, *O. borcella* Svensson and Ueckermann, 15-17, *O. falcata* Morton; 18-19, *O. spinosella* MacLachlan. D, dorsal; V, ventral; L, lateral. (o.s. = ovidact sclerites; h.l. = horizontal lamella)

Etymology. The name is derived from the holotype locality.
Holotype, male. CANARY ISLANDS, Gomera, Chejelipes. January 1981. Mrs. Dr. A.C. Ellis and Dr. W.N. Ellis.
Paratype. Same as above. 1♂.

Oxyethira spinosella MacLachlan
(Figures 8-11, 18-19)

Oxyethira spinosella MacLachlan, 1888:162; male lectotype in British Museum (Natural History), London.
Oxyethira fischeri Higler, 1978:62. NEW SYNONYM

Male. Length 3.2 mm. Antennae 39-segmented. Segment VIII: dorsum not excised; pleuron with mesally protruding lobe bearing 1 spine subtended by a posterolateral lobe with 1 to 3 spines. Segment IX: venter reaching only to anterior margin of segment VIII, with triangular lobes on each side of fused inferior appendages; pleuron lacking posterolateral process; dorsum excised. Inferior appendages: fused into attenuate mesal process which may or may not be folded inward. Subgenital processes: sharply downturned; bilobed processes small. Aedeagus: apex asymmetrical and serrate.
Female. Length 3.3 mm. Antennae 27-segmented. Segment VIII: apodemes divergent; sternum with mesal sclerite. Internal genitalia: sclerites of oviduct

narrow, continuous with horizontal lamella anteriorly and sternum VIII posteriorly.
Range. Madeira.

DIAGNOSIS

There are a number of genitalic characters which can be employed in distinguishing species of the *falcata* species complex. These characters are summarized below. Segment VIII: dorsum with mesal excision in all species except *spinosella*; pleuron with variable number of spines, usually 2-3 in *borcella* and *falcata* and 3-4 in *spinosella*; and lateral process bearing spines symmetrical in *falcata*, with mesally directed lobe bearing single spine in *spinosella* and having a much deeper excision ventrally than dorsally in *borcella*. Segment IX: anterior excision of dorsum wider than long in *borcella* and equal in width and length in other species; venter IX reaching midpoint of segment VII in *falcata* and *gomera*, posterior third of segment VII in *borcella* and anterior margin of segment VIII in *spinosella*; posterolateral process broad with ventral point in *falcata* and *gomera*, narrower and truncate in *borcella* and absent in *spinosella*; posteroventral lobes bounding fused inferior appendages truncate in *falcata* and *gomera*, triangular in other species. Inferior appendages: fused as mesal process which may be protruded posteriorly or folded inward; distally trilobed in *gomera*, with mesal lobe in *falcata* and *borcella*, attenuate in *spinosella*. Subgenital processes pointed anteroventrally in all species but *falcata* in which they are turned horizontally at tip; bilobed process broad and long in *falcata*, reduced in *spinosella* and *gomera*, not visible in *borcella*. Aedeagus: apex serrate in *spinosella* and *gomera*, not so in other species; ejaculatory duct protruding from apex in *gomera*, ending subdistally in other species. Females may be distinguished by use of species descriptions and illustration.

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TRICHOPTERA IN AN INTERMITTENT RILL OF THE BÜKK MOUNTAINS, NORTH HUNGARY

O. KISS

SUMMARY

Caddis larvae in the intermittent and permanent springs and rill reaches in the trias-ladinic and clay shale Vöröskő Valley of the National Park of the Bükk Mountains were studied for a year. In the spring regions the number of species and individuals of caddis larvae is relatively large, while they only get into the intermittent reaches by drifting. It is noteworthy that where the surface of the stream is of clay shale, the water is permanent and the number of species and individuals is greater.

INTRODUCTION

This study was carried out on the Trichoptera in the Vöröskő Valley of the Bükk Mts, because of the paucity of records for the fauna of their intermittent springs and rill reaches (Kiss, 1979). In the southern area of the valley, caddis imagos were sampled incidentally by Olah and Varga. During the recent research, which is a part of the survey initiated by the Hungarian Academy of Sciences, the quantitative and qualitative species composition was studied on the basis of the ecological factors, the mosaic pattern theory and the longitudinal division of the stream (Higler, 1976; Botosaneanu, 1979; Bournaud et al., 1980).

STUDY AREA AND METHODS

The Vöröskő Valley (320-460 m a.s.l.) can be found at the southern edge of the central part of the limestone Bükk Mts. (Figure 1). The Vöröskő stands as high as 691 m, and at its southern foot originate those intermittent and permanent springs and rills (Toth, 1978) which determine the faunal distribution through their typical drainage (Malicky, 1983). The intermittent rheocrene karst Vöröskő-alsó Spring is active from mid February to mid May, although occasional winter thaws or heavy autumn rains may cause an additional period of activity. Altogether twelve sampling stations were chosen, nine of them in the intermittent reach. Trichoptera larvae were sampled monthly from April to October 1981 using the methods of Kamler and Riedel (1960) and Macan (1958), and adults with a light-trap. A profile diagram of each sampling station (e.g., Figures 2,4) and diagrams for the occurrence of species (e.g., Figure 3) were also made.

RESULTS AND DISCUSSION

The number of species (Table 2) and individuals (Table 1) is relatively high in