

## About *Rhyacophila hirticornis* McLachlan, 1879, and two closely related taxa

(Insecta, Trichoptera, Rhyacophilidae)

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Botosaneanu, L. (1999): About *Rhyacophila hirticornis* McLachlan, 1879, and two closely related taxa (Insecta, Trichoptera, Rhyacophilidae). – Spixiana **22/2**: 167-172

Revision of a complex of three closely related taxa in the *philopotamoides*-group of *Rhyacophila*. *R. hirticornis* McLachlan, a rhithrobiont with wide distribution in the Alpine countries and the Mittelgebirge, is illustrated with more details than in previous publications. *R. hirticornis orobica* Moretti, a crenobiont probably with restricted distribution in the Prealps of Bergamo, is elevated to specific status. What was illustrated as *R. hirticornis* from a locality in the Velebit mountains (Dinarids, Croatia) is either an extreme form of the variable *R. hirticornis*, or a distinct taxon needing description.

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### Introduction

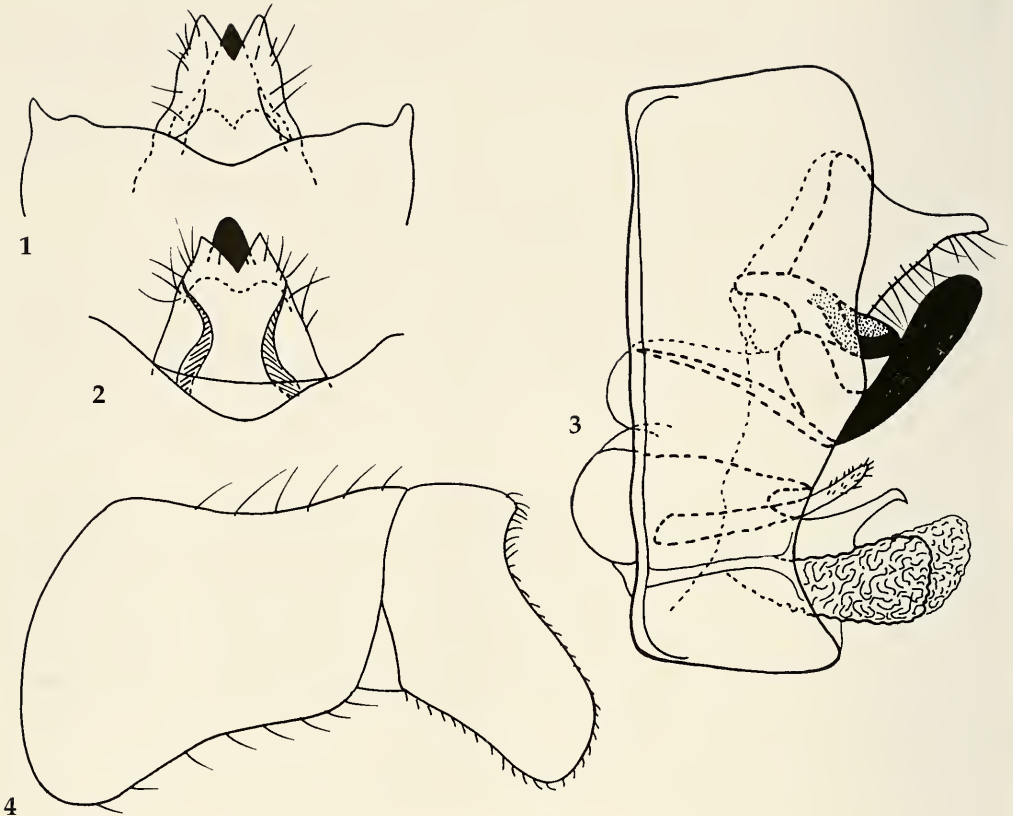
*Rhyacophila hirticornis* (male) was described by McLachlan in his Monographic Revision and Synopsis (p. 464 and Pl. XLIX, published 1879), the type specimen being from Zürich and belonging to H. Hagen's collection (it is probably this specimen which is mentioned – as cotype kept in the M.C.Z., Harvard University – in Weaver 1993). McLachlan's description, also based on examination of male specimens from "Austria", "Steyer", "Carinthia", "Carniola", and "Görz", is illustrated with a simple lateral view of the genitalia, correctly showing segment X and the gonopod but nothing else.

Subsequently (Fischer 1960, 1971) the species was repeatedly recorded from various countries in western and central Europe, but the only additional illustration was published in Eidel (1968) based on specimens from Baden-Württemberg: an equally incomplete lateral view, and also a dorsal view of segment X + tip of the "apical band".

Schmid (1970: 56, 124, Pl. XIX) illustrates, only with very brief comments, a male of the group of *philopotamoides* from "Brusanje, Alpes Dinariques, Yougoslavie" as being *hirticornis*; these very explicit drawings show that this is either an extreme form of the variable *R. hirticornis*, or a distinct taxon needing description. Schmid's drawings were subsequently considered as being *hirticornis*, and sometimes used for comparisons, by various authors (Tobias & Tobias 1981, Malicky 1983, Moretti 1991).

Moretti (1991) described *R. hirticornis orobica*, subsp. nov. (male) from a locality in the Alps of Bergamo/Lombardia. This well illustrated description (it should be noted that fig. 2 does not represent segment X, but the anal sclerites!), as well as examination of additional specimens, clearly show that *orobica* is an abundantly distinct species: it will be here elevated to species status.

Finally, the female of *R. hirticornis* was described in Novák (1963) based on specimens from Bohemia.



**Figs 1-4.** Genitalia, male of *Rhyacophila hirticornis* McLachlan from Zürich (June 1888; McLachlan det.: NHM, London). 1. Segment X in „perfectly dorsal“ view. 2. Idem, slightly tilted anteriorad. 3. Lateral view. 4. Inferior appendage, lateral.

In the present paper the terminology for male genitalia in Schmid (1970) will be used. The following warnings are necessary: for comparisons, segment X should be examined in a “perfectly dorsal” position (i. e. the position obtained when, in lateral view, segment X is horizontally – not obliquely – placed), even a slight tilting rather strongly modifying the aspect; and it should be taken into account that the structures below segment X, and especially the “apical band”, are subject to strong seesaw which can cause radical modification in the view from behind.

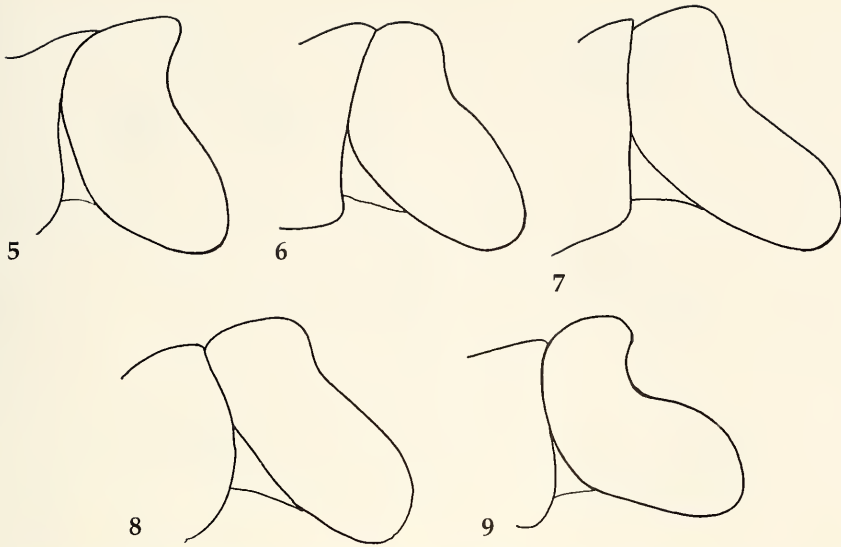
*Rhyacophila hirticornis* McLachlan, 1879

Figs 1-9

**Material examined.** Male specimens from Switzerland (“Zürich” – the type locality for the species –, and “Lucerne”); Italy (Venzone-Udine), and “Trbiž” – presently Tarvisio, in Friuli – Venezia; Austria (Lunz am See); Slovenia (“Ljubljana”). Moreover, Dr. P. Chvojka has examined, at my request, specimens from Klapálek’s collection at the National Museum of Prague (from Bohemia and the Alps of Austria, Switzerland, Slovenia, and Italy), as well as specimens from Bohemia (Sumava Mts.) made available by Dr. K. Novák.

Concerning the type of this species: see Introduction.

**Description of most distinctive parts of male genitalia.** Segment X in “perfectly dorsal” view conical, with slightly sinuous margins, apically deeply split in two pointed lobes, it is well elongate, not allowing observation – in dorsal view – of the subjacent structures (when segment X is strongly tilted



**Figs 5-9.** *Rhyacophila hirticornis* McLachlan, male, variability of the harpago. Specimens from Lucerne/Switzerland (5); Venzone-Udine/Italy (6); "Trbiž" = Tarvisio, Friuli-Venezia (7); Lunz am See/Austria (8); Ljubljana/Slovenia (9).

antერიად, the shape becomes more thick-set, the margins strongly sinuous, and the apical split shallower). Lateral arms of the apical band pale, not sclerotized. Harpago generally only with shallow or very shallow distal excision, upper lobe only slightly or very slightly protruding (there is variability in the shape of harpago, the deepest excision being observed in the specimen from Ljubljana). Dorsal appendage of phallic apparatus of variable shape, sometimes pointed (fig. 3) but sometimes bluntly ending.

**Distribution, habitat.** The incomplete available evidence shows that *R. hirticornis* is widely distributed in the Alpine countries, and also in (parts of) the eastern and western Mittelgebirge of central Europe. It is a rhithrobiont.

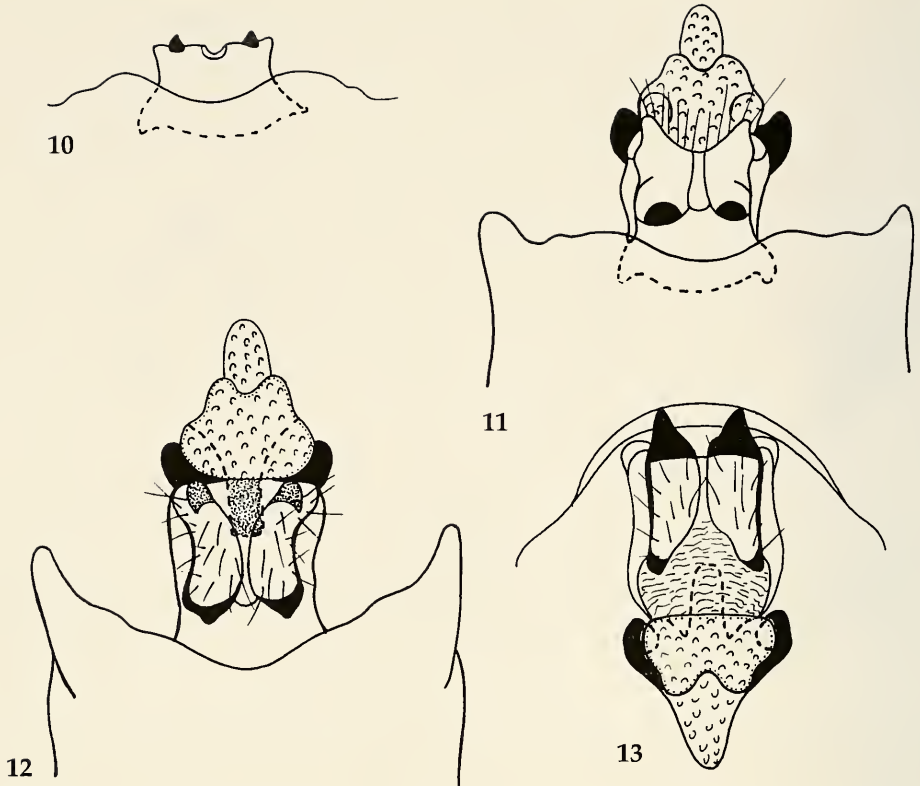
*Rhyacophila orobica* Moretti, 1991 (stat. nov.)

Figs 10-13

**Material examined.** Two male specimens from Lombardy: Monasterolo (BG) Val Torrezzo Fontanello; 13.V.1996, leg. Cornali Gozzini; collected at light; coll. Museum of Natural Sciences Bergamo; det. M. Valle "*R. hirticornis orobica* Mor.". The holotype is kept in the Moretti collection at the Institute of Zoology, University of Perugia.

**Description of most distinctive parts of male genitalia.** Segment X in „perfectly dorsal“ view very short, allowing good observation of the subjacent structures: anal sclerites and distal part of the apical band; it has a characteristic shape (fig. 10) with a small medio-distal sinus (but with a deep and wide emargination when it is even slightly tilted anteriorly: fig. 11) and slightly produced distal angles. Lateral arms of the apical band heavily sclerotized, blackened. Harpago (fig. 1 in Moretti 1991) with very deep distal excision, and narrow and long upper lobe.

**Distribution, habitat.** All existing evidence (Moretti 1991, Bertuetti, Moretti & Valle 1996) shows that *R. orobica* has a restricted distribution, being possibly an endemite of the Prealps of Bergamo ("Orobic"). It seems to be either a true crenobiont or, at least, a distinctly crenophilous species.



Figs 10-13. Genitalia, male of *Rhyacophila orobica* Moretti from Monasterolo, Bergamo/Italy; May 13, 1966; Mus. Nat. Sci., Bergamo). 10. Segment X in „perfectly dorsal“ view. 11-12. Idem, slightly and more strongly tilted anteriorad, with subjacent “anal sclerites”, tip of “apical band” and its lateral arms (blackened). 13. Segment X, “anal sclerites”, and “apical band” with its lateral arms, from behind.

*Rhyacophila spec.*

Fig. 14

No material could be examined. The location of the male specimen illustrated by Schmid (1970: Pl. XIX) as *R. hirticornis*, is unknown; it could be in the “National Canadian Collection of Insects”, Ottawa, but my attempts to obtain information from that institution remained unsuccessful; and, unfortunately, Fernand Schmid, the famous trichopterist, passed away on Nov. 22, 1998. The locality was published as “Brusanje, Alpes Dinariques, Yougoslavie”; its correct name is probably Brušane (in the Velebit mountains, between Karlobag and Gospic, N. from Zadar/Croatia).

The illustration published by Schmid (1970) shows that possibly a taxon slightly distinct from *hirticornis* is involved. But it is also possible that we have here only a rather extreme variant of that species.

**Description of the most distinctive parts of male genitalia.** Segment X in dorsal view (probably illustrated in the position obtained when the segment is like in the lateral figure) thick-set, short, with wide and rather deep distal sinus and distal angles obliquely cut and slightly bilobed. Harpago with rather deep distal sinus, upper lobe strongly protruding, narrow, with blunt apex.

**Distribution.** Possibly endemic in (parts of) the Dinarids.

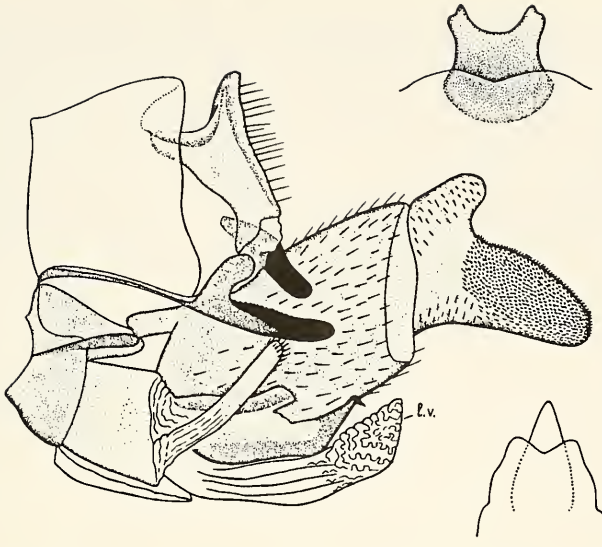


Fig. 14. Genitalia of *Rhyacophila* sp. from "Brusanje", Velebit/Dinaric Alps. Drawings from Schmid 1970. Lateral view; segment X, dorsal (right, above); and "anal sclerites" with "apical band" (right, below).

#### Final notes

*Rhyacophila hirticornis*, *R. orobica* and – if distinct – *R. spec.* from the Velebit mountains are closely related species of the *philopotamoides*-group. They share several characters of the male genitalia: segment X well rooted under tergite IX; presence of parameres; aedeagus with hooked tip, with well developed but membranous dorsal appendage; and strongly developed, fleshy, bilobed "ventral lobe" (lobes upturned). The most reliable differences can be found in the shape of segment X observed in a "perfectly dorsal" position (compare figs 1 and 10) and in that of the harpago in lateral view (compare figs 4-9; fig. 1 in Moretti 1991; and fig. 14).

#### Acknowledgements

This study has been made possible by co-operation of several colleagues. Dr. M. Valle (Museo Civico di Scienze Naturali, Bergamo) has sent for study, and donated, specimens of *R. hirticornis* and *R. orobica*, this being an incentive for starting the present study. Dr. P. C. Barnard arranged a loan of several specimens of *R. hirticornis* from the MNH, London, identified by R. McLachlan, F. Klapálek, or M. E. Mosely. Dr. P. Chvojka (Museum of Natural History – Entomology, Prague) has examined, at my request, additional specimens, including some from the collection of Dr. K. Novák (Institute of Entomology, Česke Budějovice), and offered valuable comments.

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Jahr/Year: 1999

Band/Volume: [022](#)

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