

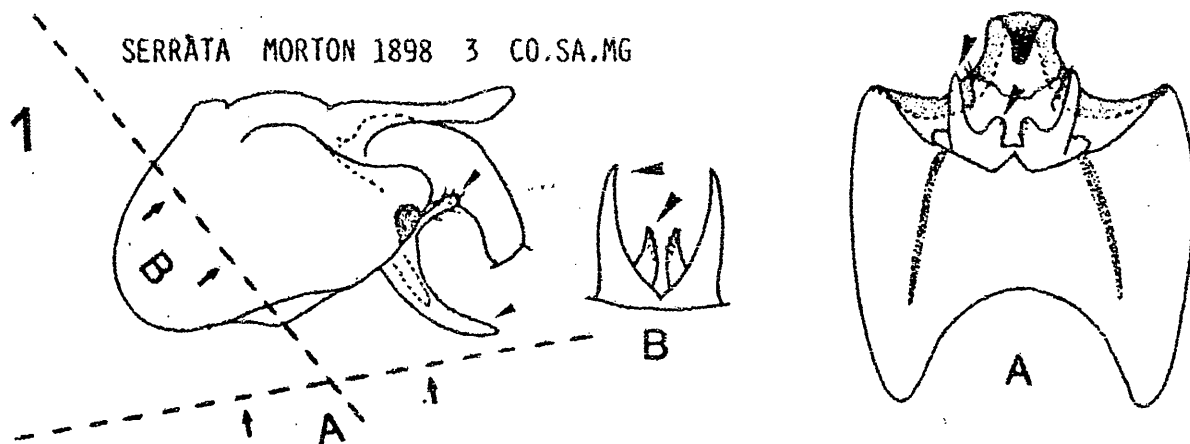
A COMMENT ON FIGURING THREE-DIMENSIONAL STRUCTURES

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The drawing of three-dimensional structures, in particular the male genitalia of Trichoptera, is sometimes difficult. Allowing for the different drawing styles of authors, some simplification is always necessary which may cause problems. It is not always easy to decide which bristles, scales or hairs may be included and which may be left out. Some may be of taxonomic importance, but others may confuse the reader. - There may also be other, rather unexpected, problems.

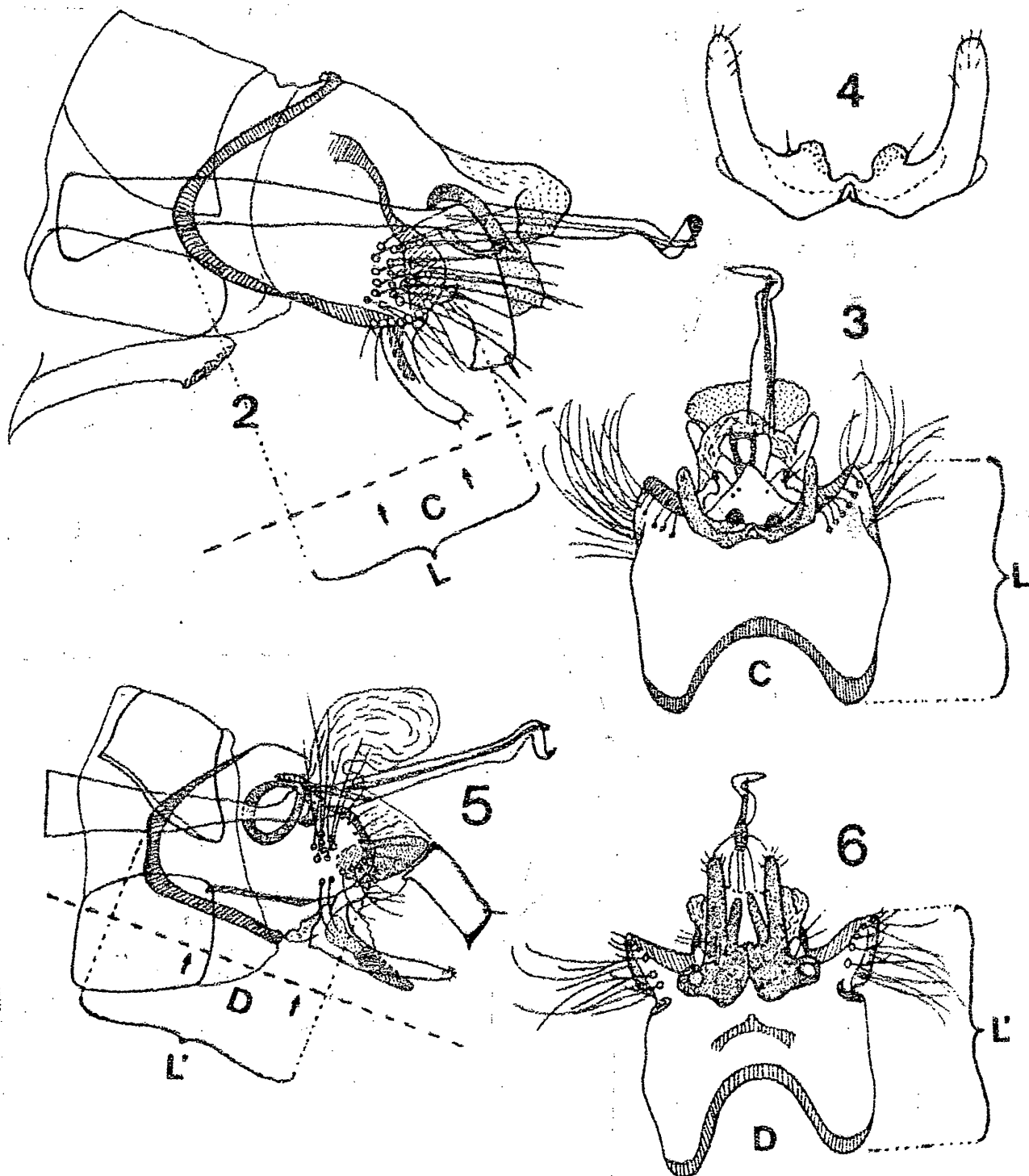
Hydroptila serrata Morton 1898 and H.bifurcata Mosely 1930.

After having compared one paratype of H.serrata from the collection of the British Museum (Natural History) with specimens of H.bifurcata from Sardinia, I have considered these two to be conspecific (Malicky 1981). In my opinion the minor differences are due to individual variability. I have figured this paratype in my Atlas of European Trichoptera (Malicky 1983:44) (1). Botosaneanu (1982) insisted on the specific difference and showed this in drawings of the lectotype of H.serrata (2,3,4) and one paratype of H.bifurcata (5,6). - Botosaneanu (in Botosaneanu & Dumont 1987) comments: "On peut soupçonner que les figures des gonopodes qu'il donne sont réalisées, l'une d'après un exemplaire de serrata, l'autre d'après un de bifurcata, ...": One might suppose that the figures of the gonopods, which he gives, are one from a specimen of serrata and the other from a specimen of bifurcata.



I can only assume that all these figures were made from one and the same specimen, which is the above mentioned paratype. Botosaneanu refers mainly to the inner branch of the bifurcated gonopods (inferior appendages) which should be, according to his figures, relatively long and styliform in bifurcata (5,6), but roundish and button-like in serrata (3,4). In my figures (1) both possibilities are apparent because the figure on the right was made in the aspect A, the second figure in the aspect B. Seen in the aspect B, the branches appear as stick-like structures, but in the aspect A they appear roundish. Exactly the same is the case in Botosaneanu's

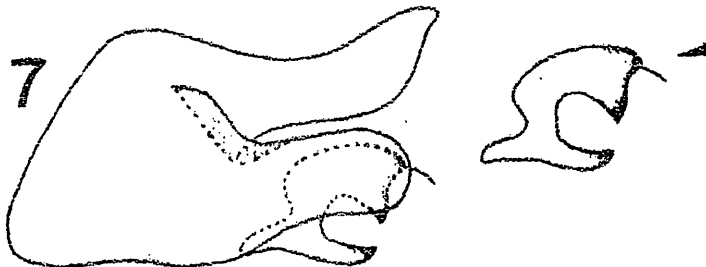
own figures. In figs. 3 and 4 the inner branches are button-like because they are seen from the aspect C. This becomes clear also from the coincidence of the lengths of the distances indicated as L and L'. From fig.2 it is evident that the (movable !!) inferior appendages in this specimen are bent down at an approximate angle of 45°. In the specimen of *bifurcata* in fig.5, the inferior appendages are not bent down but they project in direct continuation of the ventral edge of segment 9; fig.6 is drawn in the aspect D, so that the inner branches of the inferior appendages appear as sticks. However in both of the lateral aspects (2,5) it is clear that these (shaded) inner branches are stick-shaped. It may be conceded that their length in both specimens is slightly different, but I consider this as an individual or geographical variation. In both specimens they are not button-shaped, as figured in figs.3 and 4.



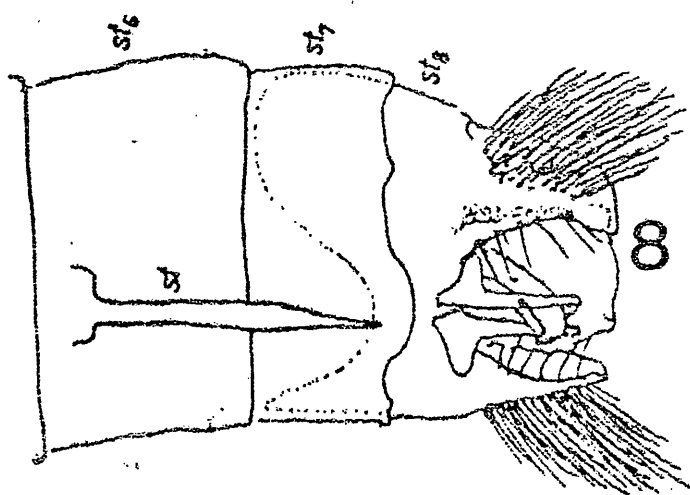
Hydroptilla fortunata Morton 1893 and H. juba Enderlein 1929.

H. fortunata (described from Gran Canary, Tenerife and Madeira) and H. juba (described from Tenerife) have been considered by several authors as conspecific (Botosaneanu & Dumont 1987:120). In the course of years I have obtained some material from the Canary Islands and from Madeira which made clear that there are two species which belong to the same group. In the Vienna Museum I found a specimen, collected in the last century, with the label "Palma" which probably meant the island of Palma and not the city of Las Palmas de Gran Canaria, nor the city of Palma de Mallorca. I have figured this specimen (7) in my Atlas (Malicky 1983:44). This species is characterized

FORTUNATA MORTON 1893 2.5 MA, CA



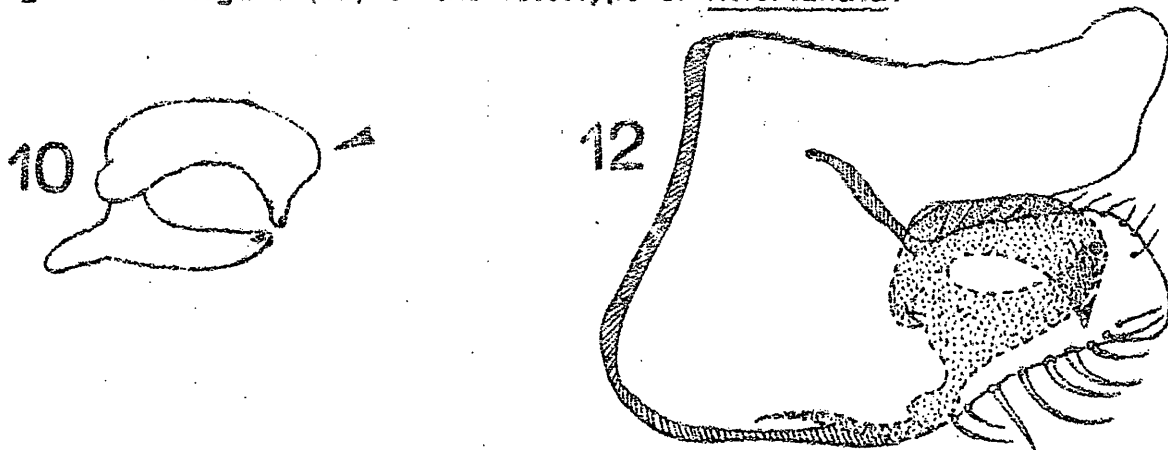
by the striking dorsal hook-like dilatation of the dorsal part of the forceps-like structure. All the other known species of the group are lacking this dilatation, and so it is also lacking in the second species from the Canary Islands. I tried to find the types of H. juba for some years, but was not successful. Perhaps they are lost. From the figure (8) in the original description by Enderlein however it may be taken that the dorsal part of the forceps-like structure is slender and without dilatation, but because the apparatus is figured in an unusual ventrolateral aspect this is not fully clear. Moreover, the second figure (9) shows a slight dilatation. It may be that this second figure was made from another specimen which could belong to H. fortunata, and a selection of a lectotype would be necessary. Enderlein mentioned a series of specimens from which he had described this species.



ESPADA MALICKY 1981 2-3 1B



I therefore asked Dr.P.C.Barnard (British Museum, Natural History) about the shape of the relevant structure in the lectotype of *H.fortunata*. His answer was clear enough, and he sent me the pencil sketch (10), and wrote on 19 January 1984: "All the paratypes examined (from Gran Canaria, Tenerife and Madeira) are exactly the same." So I concluded that the other species, i.e. the one without dilatation, could be *H.juba* (or perhaps a third one). In addition, I found that these insects from the Canary Islands are obviously the same as those which I had described from Portugal under the name *H.espada* (11) which therefore would become a synonym of *juba* (unless the types of *juba* can be found and turn out to be *fortunata*). Botosaneanu (in Botosaneanu & Dumont 1987) doubts this interpretation and gives the figure (12) of the lectotype of *H.fortunata*.



If one compares this figure (12) with the sketch by Dr.Barnard (10) which was made from the same specimen, only would hardly see the identity. Obviously the fig.(12) is not shown in a real lateral aspect but is somewhat inclined, and possibly it was also deformed by the preparation. This is the explanation of the doubts expressed by Botosaneanu (l.c.): "Situation impossible à expliquer pour l'instant, l'image obtenue est nettement différente de celle donnée par Malicky."

To allow an objective comparison it is essential that the preparations are arranged in a correct lateral position. This may sometimes be difficult, especially if they are mounted in a slide preparation (which should be avoided if possible), but as these structures normally are symmetric, one may shift the position until the corresponding structures of both sides (edges of segments, insertion points or distal edges of strongly sclerotized structures, etc.) are covering each other when the tube of the microscope is moved up and down.

Another example of an inclined position of the preparation may be seen in the lateral aspect of *H.bifurcata* (fig.5): The lower edge of the lateral lobes of segment 9 forms an angle of almost 30° with the ventral edge of the segment. In an exact lateral position both edges would be in direct continuation. In addition, the inner branch of the inferior appendages protrudes slightly, but in reality it is on the inner side of the main branch, and therefore it would be covered by it as in fig.(2).

One may think that these considerations are trivial, but as the examples show, they are not.

References: Botosaneanu, L., 1982, Étude de quelques Trichoptères Ouest-Paléarctiques intéressants appartenant au British Museum (Natural History). - Bull.Zool.Mus.Amst.8:177-188. -- Botosaneanu, L., Dumont, B., 1987, Notes sur quelques espèces d'Hydroptila du groupe uncinata (Trichoptera:Hydroptilidae). - Annis Limnol.23:115-120. -- Malicky, H., 1981, Neues über mediterrane, vorderasiatische und europäische Köcherfliegen (Trichoptera). - Entomofauna (Linz) 2:175-188. -- Malicky, H., 1983, Atlas of European Trichoptera. The Hague:Junk.

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Artikel/Article: [A comment on figuring Three-Dimensional Structures 21-24](#)