

***Bethylus hyalinus*: a freak after all!**

(Hymenoptera: Bethylinidae)

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Abstract: A reexamination of the holotype of *Bethylus hyalinus* led to the conclusion that the species is based on a deformed specimen of the common *Bethylus fuscicornis*.

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Introduction

Bethylids are closely related to the cuckoo-wasps (Chrysididae) (Carpenter, 1986). Most species lead a concealed life and are hard to find; therefore little is known about their biology or distribution, and many taxonomic problems still have to be resolved.

The species of the subfamily Bethylinae appear to be external parasites on the larvae of small moths, and in order to reach even the narrowest hiding places of borers and leaf-rollers, the adult females possess remarkably flat bodies.

Five species of the genus *Bethylus* have been found in western Europe. Two of these, *B. fuscicornis* (Jurine) and *B. cephalotes* (Förster), are relatively common, while two others, *B. nitidus* (Thomson) and *B. dendrophilus* Richards, are quite rare. The fifth species, which is discussed below, has to be regarded as a mystery. Its name is still being brought forward, but only for the sake of completeness. Ever since Marshall introduced *Bethylus hyalinus* (as *Perisemus hyalinus*) in 1874, a second specimen has never been reported again in Europe.

Status of the holotype

In 1988 the holotype of *Bethylus hyalinus* was presented to me by coincidence, among a number of partly unidentified bethylid specimens from the National Hungarian Museum

of Natural History in Budapest. The holotype, collected by the author himself (June 1873 near St. Albans, Herts, Great Britain) proved to be still in good condition and fits the original description in every detail. Marshall (1874) admitted a resemblance to *Bethylus fuscicornis* (known to him as *Perisemus triareolatus*) and one of the differentiating characteristics he gave in relation to that species would be the colour of the wings. Comparison of large numbers of *B. fuscicornis* specimens however shows that the ones collected in early summer have wings that are just as hyaline as the wings of the holotype of *B. hyalinus*. The most significant difference with the other European *Bethylus* species is therefore limited to the structure of the propodeum. According to Marshall the propodeum is bisected by a carina, forking at three-fourth's of its length and enclosing a smooth triangular space. He could not have foreseen that his description might easily be misinterpreted and lead to confusion with another British bethylid: *Goniozus claripennis* Förster, from which Marshall had seen no more than a drawing of its wing at the time (Marshall, 1874).

These suspicious circumstances urged Richards (1939) to express his doubts about the status of *Bethylus hyalinus*. In his opinion it had to be either a structural freak or a misidentification, and thus he decided to omit the species from the list of British insects.

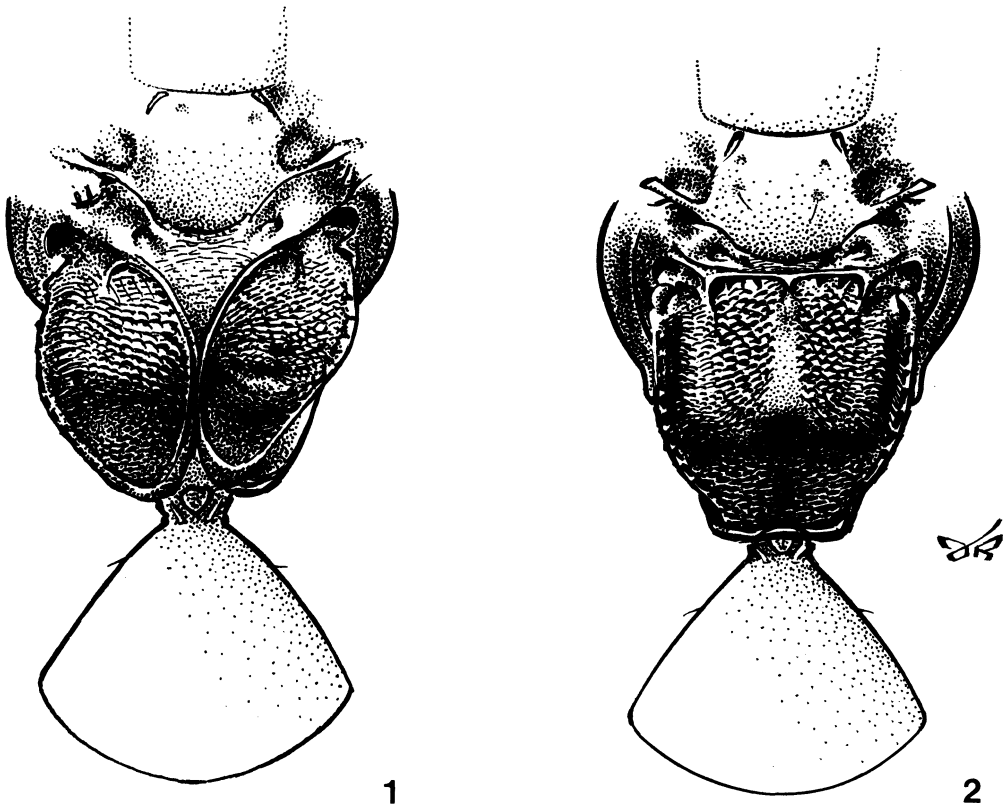
Although Kieffer (1905) mentioned that the type was kept in Budapest, Richards (1939) assumed it to be lost. After the Marshall collection was rediscovered by Móczár (1966), Perkins (1976) was able to examine the holotype. He disagreed with Richards' opinion and reintroduced *B. hyalinus* as a valid species in 1976.

Reexamination

The holotype of *Bethylus hyalinus* is definitely of the female sex and shows all features of the most common form of *Bethylus fuscicornis*. The venation of the wing is typical for the genus *Bethylus*. The head was never a matter of discussion; it is of the same size, shape and sculpture as in *Bethylus fuscicornis*, and even the ocellar triangle has exactly the same proportions and position.

The propodeum is not just divided by a carina as in *Goniozus*: it seems to be completely split by a longitudinal incision bordered by two shiny rims that give the impression of one single carina (fig. 1). The rims diverge just as Marshall observed, and the area that remains between the rims and the scutellum has a relatively smooth surface.

After a critical examination a few more details came to my attention. The triangular area shows a fine transverse sculpture, identical to the part of the metanotum that is usually covered by the scutellum in *B. fuscicornis* (fig. 2). On both sides of the triangle one can still recognise the shallow pits that normally are present in the lateral areas of the metanotum. There is also no trace of the suture between metanotum and propodeum, which is highly unusual in cases where wings are not reduced. Perhaps it is even more important to mention



Figs. 1-2. Dorsal aspect of metathorax, propodeum and first abdominal tergite. 1, *Bethylus hyalinus* (Marshall); 2, *Bethylus fuscicornis* (Jurine).

the asymmetry of the propodeum. The right section is smaller than the left, with an irregular surface and sculpture.

This must lead to the conclusion that the holotype has suffered damage in the pupal stage from a mechanical or chemical cause, resulting in a deformation of the propodeum and metanotum. In my opinion the anterior propodeal border has been connected to the posterior one, thus creating the longitudinal furrow. The central part of the metanotum has been pulled backwards and stretched into a triangular shape.

It is very unlikely that any inheritable genetic influence is involved. Hence I have to conclude that *Bethylus hyalinus* (Marshall) is a junior synonym of *Bethylus fuscicornis* (Jurine).

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