



SWEDISH TAXONOMY INITIATIVE PROJECT REPORT

Project period: 2005–2008

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INSECTS:

Taxonomy of eulophids

Abstract

The project funded was a taxonomic study of the European species of the genus *Omphale* Haliday (Hymenoptera: Eulophidae). After an initial successful retrieval of material of this group, an initial sorting of morphospecies, and a very successful presentation of the project during the “Systematics Days” in Lund in 2007, the project changed direction.

While studying and sorting material of *Omphale* and related genera E.S. discovered that transparent wings in small wasps had a colour pattern if viewed against a dark background. The colours were due to interference between two kinds of reflected light beams and the different colours were the effect of different thickness of the wing membrane. The patterns were called “wing interference patterns” (WIPs). These patterns occur in wings with a thin enough membrane, i.e. mainly in wings of small insects.

The size of species of Eulophidae, to which *Omphale*, the focus group of the PhD-project belongs, was perfect. After a survey of eulophids some species of one particular genus, *Achrysocharoides*, were found to have distinct and specific patterns. Three complexes of sibling species in this genus, involving seven species, could be resolved and species separated through WIPs. Five of the species were new and were described in two separate papers. However, most species of *Achrysocharoides* did not have a specific pattern but instead had the same basic pattern. In this group, species distinct patterns were found only in cases where two or more species occurred together, i.e. in sympatric species. Species that occurred alone, i.e. allopatric species, had the same basic pattern.

WIPs proved more difficult to interpret in the focus group, the genus *Omphale*. The patterns in this genus showed some variation but it was difficult to define distinct patterns. Instead we focused on another character set, the male genitalia. This structure is used for classification in many insect groups but is of little importance for this purpose in the Hymenoptera. However, as had been shown earlier in American *Omphale*, male genitalia did show high interspecific variation and could be used for e.g. the separation of species. This

was shown to be the case also for European *Omphale*, but since males were known only for 2/3 of the species, not all species could be included in the manuscript study. The PhD thesis was focused on WIPs and was defended in February 2012. The revision of European *Omphale*, including all new finds for the Swedish fauna, was not included in the thesis but was published at a later date.

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