

Chalcidoidea (Hymenoptera) in flower heads of *Artemisia absinthium* (Asteraceae)

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Abstract: Five species of Chalcidoidea were collected from *Artemisia absinthium* in France: *Mesopolobus brevinervis* spec. nov., a species belonging to a distinct species group within the genus; *Pteromalus brachygaster*, the male of which is described; *P. intermedius* (Pteromalidae, Pteromalinae) of which two forms are discussed, and *Torymoides kiesewetteri* (Torymidae, Monodontomerinae). These species are parasites in pupae of Tephritidae (Diptera). *Aprostocetus viridinitens* is probably a parasite of a gall midge.

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Introduction

In September 1991, while visiting the Vercors region (France, Drôme), my wife and I found a good stand of *Artemisia absinthium* L. near Vassieux en Vercors at an altitude of 1440 m. Five species of Chalcidoidea: *Aprostocetus viridinitens* Graham, *Pteromalus intermedius* (Walker), *P. brachygaster* (Graham), *Mesopolobus brevinervis* spec. nov., *Torymoides kiesewetteri* (Mayr), appeared to be associated with the plants, as we found by sweeping.

We collected a bunch of flowering stems, and kept these in fine meshed nylon gauze sacs. Within a few days, several species of Chalcidoidea emerged. Tephritid flies appeared later. Besides two species of tephritids, five species of chalcids could be identified. The occurrence of a new species of *Mesopolobus*, belonging to a distinct species group and related to *M. adrianae* Gijswijt from the Canary Islands, and two forms of *Pteromalus intermedius* (Walker) will be discussed below. Many capitula contained a dipterous puparium. I dissected some of the flower heads and kept the puparia separately in glass tubes to obtain some information on host relationships. As usual, the situation appeared to be more complicated than was expected: two species of flies were involved: *Campiglossa misella* (Loew) and *Tephritis dioscurea* (Loew), the latter representing about

80% of the population. Unfortunately the puparia of the two species could not be separated by morphological characters, so that the specific host of the parasites could not be ascertained. *Campiglossa misella* seems to be confined to *Artemisia* species, *T. dioscurea* is polyphagous on Asteraceae like *Achillea*, *Crepis* and *Artemisia*.

Mesopolobus brevinervis spec. nov. (figs. 1-3)

Material: Holotype: ♀, (Instituut voor Taxonomische Zoölogie (Entomologie) Amsterdam): “FRANCE-26, 28.iii.1992, M. J. Gijswijt”, “VASSIEUX en V. 1440 m, /puparium in capitulum *Artemisia absinthium* coll. ix 1991.”

Paratypes: 43 ♀ and 33 ♂, (Instituut voor Taxonomische Zoölogie (Entomologie) Amsterdam, Nationaal Natuurhistorisch Museum, Leiden and in my collection).

2 ♀ “FRANCE-26, 3-6.ix.1991, M. J. Gijswijt; VASSIEUX en Vercors 1440 m, on *Artemisia absinthium*”; 1 ♂ “FRANCE-26, 20.ix.1991, M. J. Gijswijt, VASSIEUX en Vercors, 1440 m reared from infloresc. *Artemisia absinthium*”; 7 ♀ and 5 ♂ same data 21.ix.1991; 1 ♀ and 8 ♂ same data 24.ix.1991; 5 ♀ and 2 ♂ same data 16.ix.1991; 5 ♀ same data 28.ix.1991; 5 ♀ and 1 ♂ same data 1.x.1991; 2 ♀ same data 6.x.1991; 2 ♂ “FRANCE-26, 21.ii.1992, M. J. Gijswijt; VASSIEUX en V. 1440 m, /infloresc. *Artemisia absinthium*, coll. 6.ix.1991”; 1 ♂ and 1 ♀ same data 25.ii.1992; 2 ♂ same data 27.ii.1992; 1 ♀ and 4 ♂ same data, 1.iii.1992; 1 ♀ same data 3.iii.1992; 2 ♀ and 2 ♂ same data 5.iii.1992; 3 ♀ same data 11.iii.1992; 2 ♀ same data

18.iii.1992; 1 ♀ and 1 ♂ same data, 3.iv.1992; 1 ♀ "FRANCE 20.ix.1991 M. J. Gijswijt; VASSIEUX en V. 1440 m, /puparia in infloresc. *Artemisia absinthium*, coll. 6.ix.1991"; 1 ♀ same data 26.ix.1991; 2 ♀ and 4 ♂ same data 19.iii.1992; 1 ♀ "VASSIEUX en V. /puparium in capitulum *Artemisia absinthium* 11.iii.1992"; 1 ♀ same data 13.iii.1992.

Female: Head and thorax green with brassy reflections in places, gaster more blue green. Antennae ochraceous, dorsally darkened. Femora brown with metallic sheen, tibiae and tarsal segments I-IV yellow. Pleurae and coxae dark bluish black, wing veins light yellow. Length: 2.3-2.8 mm.

Head dorsally 2.0-2.2 times as broad as long, POL:OOL = 1.90-2.25. In frontal view (fig. 1), mouth 2.0-2.2 length of malar space, clypeus strongly incised, toruli inserted slightly above lower eyeline. Antennae (fig. 3): scape 0.8-0.9 length of eye, pedicellus+flagellum 0.7-0.8 times breadth of head; flagellum 1.6-1.8 times as long as scape, flagellar segment 1 (F 1) 1.0-1.2 times as long as broad, F 6 1.2-1.4 times as broad as F 1. Left mandible with 3, right with 4 dents.

Thorax 0.3-0.55 times as long as broad. Pronotum long, 0.2-0.3 times as long as mesoscutum, front margin sharply carinated; sides of pronotum reticulated as dorsal surface, with a deep fovea and a frontal margin with a sharp and high carina. Median area of propodeum about twice as long as broad, nearly smooth, shiny. Median carina complete, plicae often effaced in the middle. Forewing with basal cell and basal vein bare, speculum large, extending till stigmal vein (St). Marginal vein (M) 1.3-1.6 St, St about as long as postmarginal vein.

Gaster 1.3-1.9 times as long as broad.

Male: Colour as in female except for the hind femora, which are yellow, and the antennae, which have a darker clava. Gaster with a yellow spot indicated. Length: 1.9-2.5 mm. Morphological differences between the sexes are present in the antennae (fig. 2): flagellum 1.6-1.8 times as long as scapus, F1-F3 longer than broad. Mouth 6 times malar space. Between base of mandible and gena the oral fossa is widened, forming an oval pit with a membraneous bottom (fig. 2).

Host relationships: parasitic in pupae of *Campiglossa* (= *Paraxyna*) *misella* and/or *Tephritis dioscurea* (Diptera, Tephritidae) in capitula of *Artemisia absinthium*.

Discussion

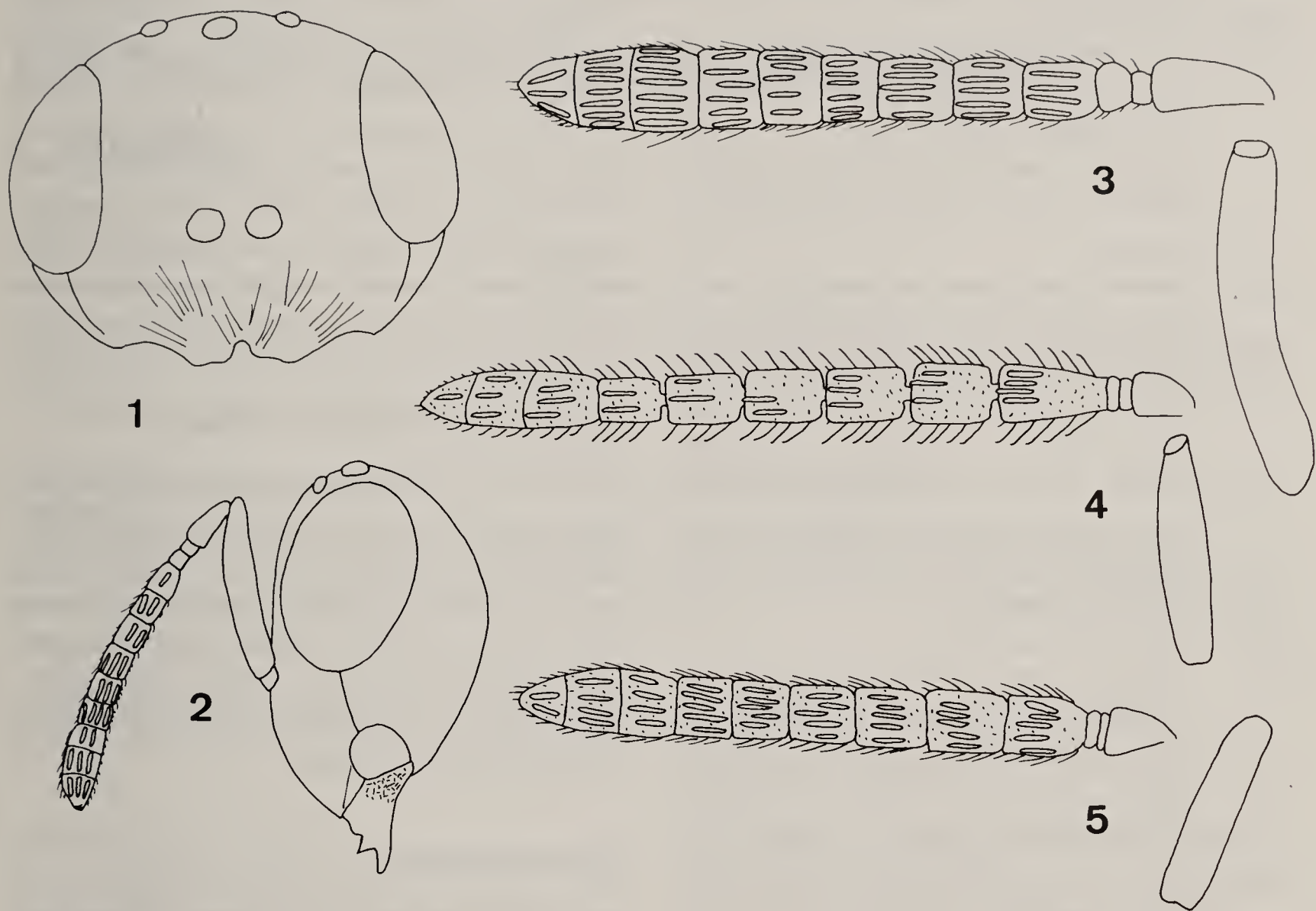
Mesopolobus brevinervis is closely related to *M. adrianae* Gijswijt. The main distinguishing characters in females are the shape of the antennae and the colour of the femora. In *M. brevinervis* the flagellum is 1.6-1.8 times as long as the scapus and filiform, the femora are dark with a metallic shine. The flagellum of *M. adrianae* is 1.4-1.5 times as long as the scapus and strongly clavate. The femora are yellow. The males of *M. brevinervis* have more filiform antennae with longer funicle segments. The antennae of male *M. adrianae* are distinctly clavate and the first funicle segments are at most quadrate.

The short postmarginal vein and the rather filiform antennae make it difficult to recognise *M. brevinervis* as a species of *Mesopolobus*, but the shape of the propodeum and the low position of the toruli on the face, and also its similarity to *M. adrianae*, which is exemplary for the genus, indicate its generic status. Moreover, Dr. J. van den Assem, of Leiden, observed courtship behaviour of several pairs. Though no complete displays were performed, in his opinion the component movements were very like those of species belonging to *Mesopolobus* and related genera. Both *M. adrianae* and *M. brevinervis* belong to a species group in *Mesopolobus*, which can be characterised by the short postmarginal vein which is as long as the stigmal, the sharply carinated side margins of the pronotum, the incised clypeus and the relatively long pronotum. The species are parasites of Tephritidae which is unique in *Mesopolobus*.

The species cannot be identified with the existing keys to genera of Pteromalidae. I noticed already (1990) the correct place in Graham's (1969) key. It should be inserted in that of Bouček & Rasplus (1991) as follows:

138 (136) As in original key

As in original key, however138a



Figs. 1-5. 1-3, *Mesopolobus brevinervis* spec. nov.; 1, female face frontally; 2, male head laterally; 3, female antenna; 4, *Pteromalus brachygaster* (Graham), male antenna; 5, *Pteromalus albipennis* Walker, male antenna.

- 138a Clypeal margin deeply incised; pronotal collar 0.2 times as long as mesoscutum, sides of pronotum with sharply carinated frontal margin*Mesopolobus* (part) see 168
 M. adrianae Gijswijt, and *M. brevinervis* Gijswijt.
- Clypeal margin at most slightly emarginate; pronotal collar shorter, with side margins rounded139

In my opinion there is no reason to erect a new subgenus for these two species: I have seen an undescribed *Mesopolobus* from the Canary Islands with an equally short postmarginal vein. However, it has rounded side margins of the pronotum and an only slightly emarginate clypeus. It is a parasite in cecidomyid galls. Therefore the only differential character would be the kind of host. Host preferences as only

differential character cannot be regarded as essential for separating subgroups in this genus.

***Torymoides kiesenwetteri* (Mayr)**

This well known species was reared from a pupa of one of the tephritid species as well as from the bulk of inflorescences.

***Pteromalus brachygaster* (Graham)**
(fig. 4)

About 80 specimens, males and females, emerged from the capitula, some of them from the selected puparia. This species was described as *Habrocytus brachygaster*, collected by sweeping from *Artemisia vulgaris* (L.) in England. The males were not described by Graham (1969), but they were inserted in his key to

males in couplet 34 with a question mark. This appears to be correct, but I propose the following improvements:

- 27 (25) Antenna with combined length of pedicellus and flagellum about 1.3 times the breadth of the head28
- Combined length of pedicellus and flagellum at most 1.2 times the breadth of the head29
- 28 Forewing with row of hairs on lower surface of costal cell widely interrupted in the middle. Funicular segments relatively long, the first 1.7-2 times, the sixth about 1.5 times as long as broad*P. tripolii* (Graham)
- Row of hairs on lower surface of costal cell complete. Funicle segments often relatively shorter39
- 29-33 as in Graham 1969
- 34 Antenna with first funicle segment not or hardly longer than pedicellus, at most 1.3 times as long as broad; funicle segments, except for the first and sometimes the second one, quadrate*P. ? decipiens* (Graham)
- Antenna with first funicle segment 1.2-1.6 times as long as pedicellus, 1.4-1.6 times as long as broad. Several funicle segments, in addition to the first and the second one longer than broad35
- 35 Smaller species, 1.5-2.1 mm. Median area of propodeum nearly uniformly reticulate; costula absent or hardly indicated. Hairs on funicle segments distinctly outstanding and nearly half as long as the diameter of the segment (fig. 4)*P. brachygaster* (Graham)
- Larger species, 2.2-2.8 mm. Median area of propodeum less uniformly reticulate; costula, except in very small specimens, usually distinct. Most of the hairs on funicle segments more adpressed and shorter than half on the segment (fig. 5) *P. albipennis* Walker

Pteromalus intermedius Walker

A large number of specimens of this species was both swept from the plants and reared from the inflorescences. I obtained one specimen from a puparium. Two forms seem to exist: the first one is usually larger, often greenish and has a sharp, more or less elevated carinated front margin of the pronotum. The second one is usually slightly smaller, dark blue, and with a more rounded front margin.

Aprostocetus viridinitens Graham

A number of specimens emerged from the capitula, none from the puparia. I suppose that this species is parasitic on a cecidomyid in the flowers. Graham (1988) swept several specimens from *Artemisia vulgaris* and suggests that the species may have a host on this plant. Obviously, *A. viridinitens* is not restricted to one species of *Artemisia*.

Acknowledgements

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