Masnerium wellsae gen. nov., sp. nov.
(Hymenoptera, Platygastridae, Sceliotrachelinae)
a parasitoid of Aleuroduplidens wellsae Martin
(Hemiptera, Aleyrodidae) in Australia

Andrew Polaszek

Department of Entomology, the Natural History Museum, London SW7 5BD, UK; Imperial College of Science, Technology & Medicine, London SW7 2AZ, UK.


Corresponding author: Andrew Polaszek (ap@nhm.ac.uk)

Academic editor: Norman Johnson | Received 27 April 2009 | Accepted 25 June 2009 | Published 14 September 2009


Abstract

Masnerium wellsae Polaszek, gen. nov., sp. nov. is described from Merbein, Victoria, Australia. It is a primary endoparasitoid of the whitefly Aleuroduplidens wellsae Martin, described from the same type locality with identical collection data. Masnerium is most closely related to the genera Aleyroctonus Masner & Huggert, and Aphanomerus Perkins, but differs from both these genera in several morphological characters that are of primary importance at genus level in the Sceliotrachelinae.

Keywords
parasitoids, taxonomy, Proctotrupomorpha, whiteflies, egg parasitoids, ooparasitoids

Introduction

Masner and Huggert’s (1989) revision of the platygastrid “subfamily” formerly called Inostemmatinae is a landmark work in the taxonomy of this relatively poorly-studied group. “Platygastrids”, in the broad sense, are a group of major economic importance,
especially as parasitoids of gall midges (Diptera: Cecidomyiidae) which constitute the majority of their hosts. A handful of genera, *Platygaster*, *Synopeas*, *Leptacis* and a few others, probably contain 90% of platygastrid species. Prior to Masner and Huggert, platygastrids were divided by most authors into Inostemmatinae and Platygastrinae, based on the presence (Inostemmatinae) or absence (Platygastrinae) of a reasonably well-developed submarginal vein. Masner and Huggert (1989) showed that in these two former subfamilies, the submarginal vein is lost independently in several lineages, and is not an informative character at higher (tribe, subfamily) levels. *Masnerium*, described below, is no exception having its two closest relatives with well-developed submarginal veins in all their known species.

*Masnerium* is described below because its morphological character suite and host data are informative for our understanding of generic and higher relationships within this important group.

Morphological terminology broadly follows Masner and Huggert (1989) with modifications following Johnson et al. (2008). The holotype specimen was photographed initially as an unprocessed card-mount, using AutoMontage software, and later partially bleached using hydrogen peroxide and potassium hydroxide, and photographed as a slide mount in Canada Balsam. The unique holotype (dissected under six coverslips on a single microscope slide) is deposited in the Australian National Insect Collection, Canberra, Australia.

**Masnerium Polaszek, gen. n.**

urn:lsid:zoobank.org:act:D7DAEABB-8E4E-4B1B-A6FB-EDD7342E1E10

Figs 1–9

*Type species:* *Masnerium wellsae* gen. n. (described below), by present designation.

**Description.** Male: Colour: Black (melanic), legs and antennae yellow-brown, wings hyaline. Morphology: Head globose with mouthparts strongly directed backwards. Ocellar-ocular line much shorter than lateral-ocellar line, lateral ocelli contiguous with inner orbits. Eyes without setae. Malar region/gena without striae, with reticulate-coriaceous sculpture only. Clypeus small and rounded. Mandibles small. Eight antennomeres present, with compact clava (possibly fused A8-A10).

Mesosoma moderately flattened dorso-ventrally. In dorsal view appearing about 1.5× broader than head. Pronotal shoulders well-developed and angular. Notauli very well-developed, deep and broad posteriorly, narrow anteriorly, extending the length of the mesoscutum (percurrent). Parapsidal lines absent. Mesoscutellum (scutellum) approximately semicircular, with broad transscutal articulation consisting of approximately 16 large foveae. Propodeum densely setose, with foamy structures moderately developed. Wing fully-developed, without any trace of a submarginal vein; marginal cilia short. Tibial spur formula 1-1-2, with fore spur bifid and tarsal formula 5-5-5.

Metasoma short and dorsoventrally depressed, with 8 visible tergites. T1 strongly transverse, with an anterior transverse carina and a pair of central longitudinal carinae.
**Masnerium wellsae gen. nov., sp. nov.** a parasitoid of *Aleuroduplidens wellsae* Martin in Australia

1. **Derivatio nominis.** Named for Lubomír Masner, pioneering expert on “proctos”.

2. **Comments.** The closest relatives of *Masnerium* are *Aleyroctonus* and *Aphanomerus*. The following combination of characters makes *Masnerium* unique among these and other genera of Sceliotrachelinae: Submarginal vein completely absent (always present in *Aleyroctonus* and *Aphanomerus*); Eight antennomeres present in male (as in *Aleyroctonus* and *Aphanomerus*; 10 antennomeres in all other Sceliotrachelinae, except nine in *Allotropa*); Propodeum with some development of so-called “foamy structures” (absent in *Aleyroctonus* and *Aphanomerus*).

---

**Masnerium wellsae Polaszek, gen. n.**

urn:lsid:zoobank.org:act:291D8883-A6DE-4460-8B69-D0BF0F84F31C

**Description.** Male: Length: 0.89 mm. Colour. Black (melanic), legs and antennae yellow-brown, wings hyaline.
Figures 3–8. *Masnerium wellsae* 3 Head, frontal view 4 dorsal mesosoma and metasoma 5 antenna 6 fore wing 7 detail of head showing mandibles 8 detail of head showing maxillary and labial palps

**Morphology.** Malar region / gena broad, approximately equal to eye width. Scul-
ture of occiput and malar region / gena reticulate-coriaceous. Sculpture of frons reticu-
late, central keel arising from the inter-antennal process to about half the eye height.
Mandibles small, with two teeth, and weakly sclerotised apically. Maxillary and labial
apals both 1-segmented. Antennal scape elongate, with evident reticulate sculpture,
slightly shorter than A1-A8 combined. Radicle short, approximately equal in length
to A6. Pedicel equal to A3+A4; A3 (F1) half the length of A4 (F2); A5-A7 the smallest
flagellomeres, gradually increasing in size and each as long as broad; A8 (club / clava)
composed of three (or possibly four) fused segments, without any visible sutures (as
Masnerium wellsae gen. nov., sp. nov. a parasitoid of Aleuroduplidens wellsae Martin in Australia

in Aleyroctonus). An elongate ovoid sensory area clearly present, occupying ¾ of the length of the clava (clearly present in both antennae).

Mesosoma dorso-ventrally flattened. Pronotal shoulders angular, with raised reticulate sculpture. Notauli very well-developed, deep and broad posteriorly, narrow anteriorly, extending the length of the mesoscutum. Mesoscutum with shallow reticulate sculpture, less conspicuous centrally.

Mesoscutellum (scutellum) approximately semicircular, with broad transscutal articulation consisting of approximately 16 large foveae. Propodeum densely setose, with foamy structures moderately developed. Wing fully-developed, without any trace of a submarginal vein; marginal cilia short. Tibial spur formula 1-1-2.

Metasoma short and dorsoventrally depressed, with eight visible tergites. T1 strongly transverse, with an anterior transverse carina and a pair of central longitudinal carinae diverging posteriorly (as in Helava alticola Masner & Huggert, 1989). T2 with two shallow transverse hairy pits anteriorly; strongly longitudinally striate laterally. T3–T8 setose. Genitalia with three teeth per digitus; aedeagal lobe apparently truncate.

Figure 9. Masnerium wellsae dorsal metasoma.
**Derivatio nominis.** Named for Alice Wells, discoverer of this new genus and its host.

**Material examined.** Holotype ♂ AUSTRALIA: Victoria: Merbein South, near Mildura. 27.1.1997 (A. Wells) ex Aleurodupidens wellsae Martin on Acacia melvillei (ANIC). The holotype has been dissected and mounted under six cover slips.

**Biology.** Masnerium wellsae is a primary endoparasitoid in the larvae of the aleyrodid Aleurodupidens wellsae Martin.

**Discussion**

The structure of the male antenna strongly indicates that Masnerium is clearly closely related to both Aleyroctonus and Aphanomerus. It shares with Aphanomerus the completely fused clava, without any traces of sutures, but the position of the claval sensilla is possibly indicative of a plesiomorphic 4-segmented clava. This would suggest a plesiomorphic 11-segmented male antenna in this lineage. Aleyroctonus and Masnerium are, as far as is known, exclusively parasitoids of Aleyrodidae.

Masner and Huggert (1989: 37, 58) drew attention to the close relationship between Aleyroctonus and Aphanomerus, although they placed them in different genus “clusters” (Amitus-cluster and Aphanomerus-cluster, respectively; Masner and Huggert, 1989: 14). This study suggests strongly that both Aleyroctonus and Masnerium are more closely affiliated to Aphanomerus, despite sharing the hosts of Amitus.

These three closely-related genera, Masnerium, Aleyroctonus and Aphanomerus share hemipteran hosts, albeit whitefly immatures in the case of the first two genera, and hemipteran (fulgoroid) eggs in the latter. Host-switching between insect eggs and the immature stages of sessile Sternorrhyncha (Coccoidea, Aleyrodidae and some Aphididae) appears to be very common in many lineages among the Proctotrupomorpha. Within the chalcidoid family Aphelinidae alone it has occurred at least five times (Polaszek 1991), and may also be a common phenomenon in basal platygastroids. Acquisition of hosts that are more complex than eggs, especially if this involves overcoming host defence systems, could lead to rapid radiation, with these lineages consequently preadapted for the acquisition of increasingly resistant hosts, such as the developmental stages of Holometabola.

**Acknowledgements**

I am grateful to Alice Wells and Jon Martin for making the single specimen of Masnerium wellsae available to me for study, and to Norm Johnson for inviting me to make this contribution to the celebration of Lubo Masner’s great achievements. I am very grateful to Istvan Miko and an anonymous reviewer for improving this paper.
References


