

# A Remarkable New Species of Scuttle Fly and First Record of *Microselia* Schmitz (Diptera: Phoridae) from Australia

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**ABSTRACT.** A remarkable new species, *Microselia lorien*, from northern coastal New South Wales, Australia is described and illustrated. This is the first record of the genus *Microselia* in Australia. With the previously described species occurring in the Afrotropical (6), Neotropical (1), Palaearctic (7), Nearctic (1) regions (Systema Dipterorum, 2022). The species discovered in Australia is new to science.

## Introduction

Scuttle flies (Diptera: Phoridae) are a large family of small flies with about 4,444 species that range between 0.4–5 mm in body length (Brown, 2022). They are believed to exhibit the most diverse life histories, unrivalled by any other insect family (Disney, 1994) and yet they are profoundly understudied in Australia.

This is true, in part, because no Australian entomologist has ever specialized in the study of Phoridae (Disney, 2003). The few who made this venture were Arthur White (two species); Arthur Mills Lea (one species), and Mary Ellen Fuller and David Joseph Lee (one species), though Fuller may have contributed far more but for her early, tragic death (Evenhuis, 2010). These authors were active prior to the Second World War, over three generations ago.

Consequently, Australia has one of the least described phorid fauna for any major region of the world with a current list of 141 valid species (Australian Faunal Directory, 2022). Such a poor showing when compared to 75 species collected in Buckingham Palace Garden (17 hectares) in England (Disney, 2001).

Also, given that in 2010 there were 195 phorid workers worldwide (Evenhuis, 2010), and that this number has increased to 489 (Neal Evenhuis, personal communication), it is almost inconceivable that an Australian dipterist has not taken up the mantle.

Without a doubt, it will be contentious that we author a single species description, based on a single specimen. Should we wait until more material presents itself for a generic revision, or until a long series is available? An unlikely event, given that no other specimen has been found from the thousands of specimens collected over the last six decades.

The Australian phorid fauna is so large that attempts to make a taxonomic contribution can easily be thwarted at the very outset by the enormity of the task. Undaunted, we have chosen to start here by focusing on just one small genus and a single rare species.

In the present paper the genus *Microselia* Schmitz is reported for the first time from Australia, with the description of one species new to science (Table 1).

**Keywords:** *Microselia*, Phoridae, Diptera, new species, taxonomy, Australia  
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## Materials and methods

The unique specimen was collected in a Malaise trap, with ethanol as the preserving agent. It was dehydrated in 97% alcohol, then prepared using HMDS (Brown, 1993), and double mounted on a micropin. The specimen was examined using a Leica Microscope. Photographs were taken on a Leica stereo microscope M205 A, stacked in Zerene Stacker v. 1.04, processed in Adobe Photoshop v. 22.3.1 and sharpened in Topaz Labs Sharpen AI v. 3.3.1.

## Results

### Genus *Microselia* Schmitz

*Microselia* Schmitz, 1934: 11. Type-species: *M. rivierae* Schmitz, 1934.

**Recognition.** Specimens of this genus, including this specimen, key correctly in Disney's (1994) key to genera (females) to couplet 207, where the choices are *Epacteon* Borgmeier and *Microselia* Schmitz.

The placement of this specimen in *Microselia*, and not *Epacteon*, is based on the third antennal segment being bean-shaped with a dorsal, pre-apical, arista and with the conus of the second antennal segment being inserted into the base of segment in normal way. *Epacteon* specimens have a pear-shaped third antennal segment, with an apical arista and with the conus of second segment inserted into the side, and not the base, of the third antennal segment.

Most species of *Microselia* are described from females only. Phoridae genera are often known only from the morphology of specimens of one sex.

High variability of characters for *Microselia* has been

noted in the literature: absence, presence of vein 2 (Disney & Shaw, 1994; Carles-Tolra, 2006); absence, presence of supra-antennal bristles and the variable configuration of last tarsal segment of the foreleg (Disney, 1991) which is particularly relevant and morphologically similar to this specimen.

Based on existing definitions of Phoridae genera, and with the understanding that *Microselia* is closely related to *Pseudacteon* (Delage et Lauraire, 1971; Disney, 1988, 1994), and *Epacteon* is perhaps a synonym of *Microselia* (Brian Brown, personal communication), the authors place this species in *Microselia* as identified by the world key to genera of female Phoridae (Disney, 1994).

### Family Phoridae

#### Subfamily Metopininae

Tribe *Gymnophorini*, *sensu* Disney (2021).

#### *Microselia* Schmitz, 1934

Type species: *Microselia rivierae* Schmitz, 1934

#### *Microselia lorien* sp. nov.

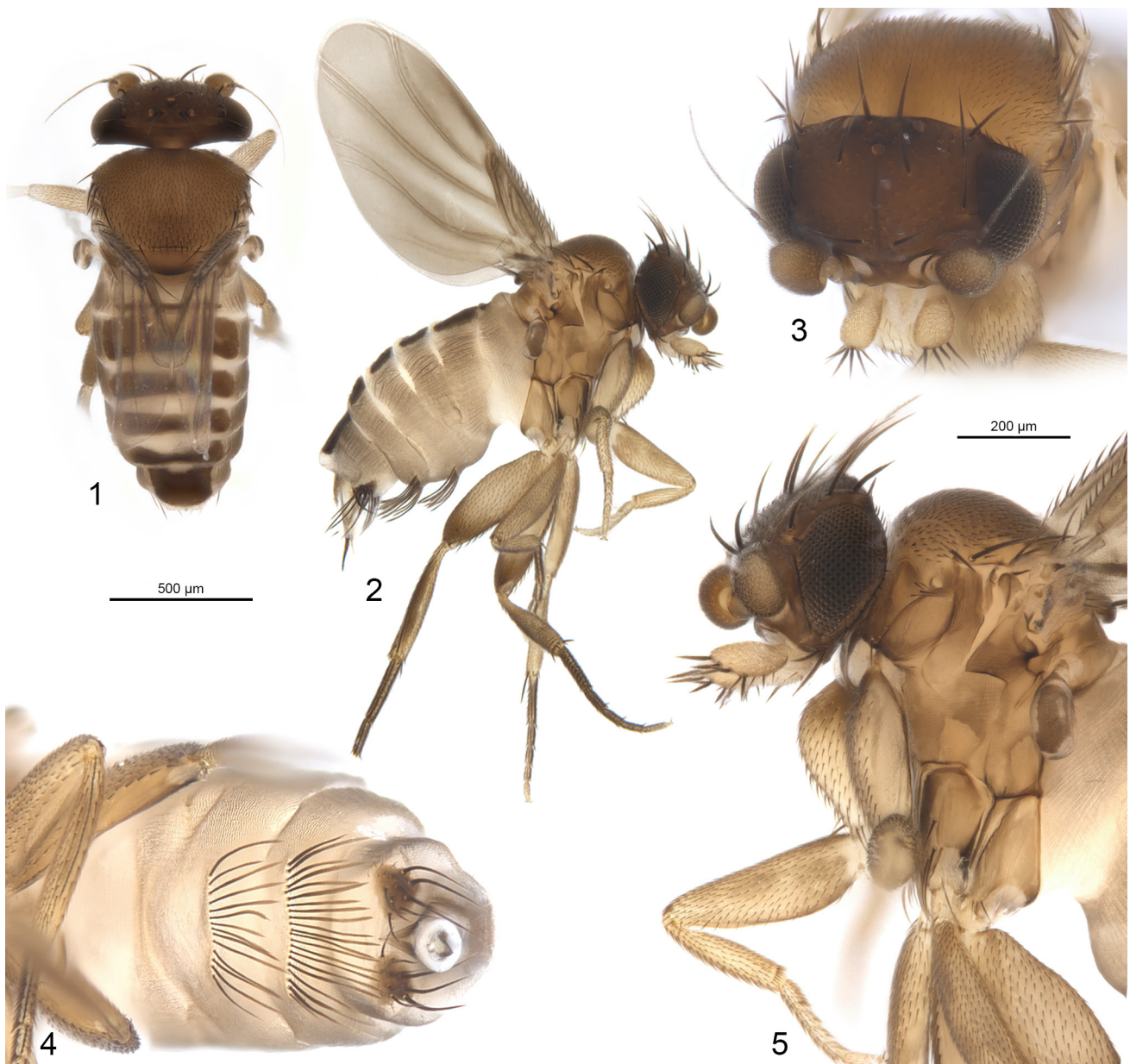
urn:lsid:zoobank.org:act:2F1BB1CD-DE66-4B21-B162-D313B275B7EF

Figs 1–13

**Holotype:** 1 female, Australia, NSW, 3 km N of Lansdowne nr Taree, "Lorien" Wildlife Refuge, 31°45'10"S 152°32'20"E, elevation 61 m, January 2018, Malaise trap over creek, K. M. Bayless, D. Bickel and G. A. Williams collectors, subtropical rainforest; deposited in the Australian Museum: registration number: K.398211.

**Table 1.** Geographical distribution of *Microselia*.

species	biogeographical region
<i>Microselia aduncus</i> (Borgmeier, 1969)	Neotropical: South America: Brazil
<i>Microselia beaveri</i> Disney, 1983	Afrotropical: Africa: Zambia
<i>Microselia bingana</i> Disney, 1991	Afrotropical: Africa: Zimbabwe
<i>Microselia cuspidata</i> Beyer, 1965	Afrotropical: Africa: Congo
<i>Microselia daccordii</i> Gori, 1999	Palaeartic: Europe: Italy
<i>Microselia deemingi</i> Disney, 1983	Afrotropical: Africa: Nigeria
<i>Microselia espanaensis</i> Disney, 2006	Palaeartic: Europe: Spain
<i>Microselia forsiusi</i> (Schmitz, 1927)	Palaeartic: Europe: Finland
<i>Microselia longarista</i> Liu, 2022	Palaeartic: China
<i>Microselia lorien</i> sp. nov.	Australasia: Australia, NSW
<i>Microselia prescherae</i> Disney, 2010	Afrotropical: Canary Islands
<i>Microselia rivierae</i> Schmitz, 1934	Palaeartic: Europe: France, Spain
<i>Microselia southwoodi</i> Disney, 1988	Palaeartic: Europe: France, Spain, Italy
<i>Microselia texana</i> Disney, 1982	Nearctic: America: USA-Texas
<i>Microselia yanjingensis</i> Liu, 2022	Palaeartic: China
<i>Microselia yemenensis</i> Disney, 2006	Asia: Yemen



**Figures 1–5.** *Microselia lorien* sp. nov. (1) dorsal habitus, (2) lateral habitus flipped horizontally, (3) anterior view of frons and antennae, (4) ventral view of abdomen, and (5) lateral view of head and thorax. Scale bars: 500 µm for Figs 1–2, 200 µm scale for Figs 3–5.

**Diagnosis.** *Microselia lorien* is readily differentiated from other described species of *Microselia* by the two rows of long, posteriorly curved, ventral, abdominal bristles (Fig. 4).

**Description (female).** *Body length.* 1.5 mm.

*Head.* Median furrow present and complete (Figs 3, 6). Supra-antennal setae absent; interfrontal setae occupy this position. Frontal bristles as per Fig. 6 with numerous hairs. Third antennal segment with dorsal, pre-apical, 3-segmented arista (Fig. 3). Conus of second segment inserted into base of third segment in normal way (Fig. 3); not inserted into side of third segment as seen in specimens of *Epacteon*. Palps with pigmented bristles (Fig. 5). Eyes: facets uniform. Post pedicel: pear-shaped.

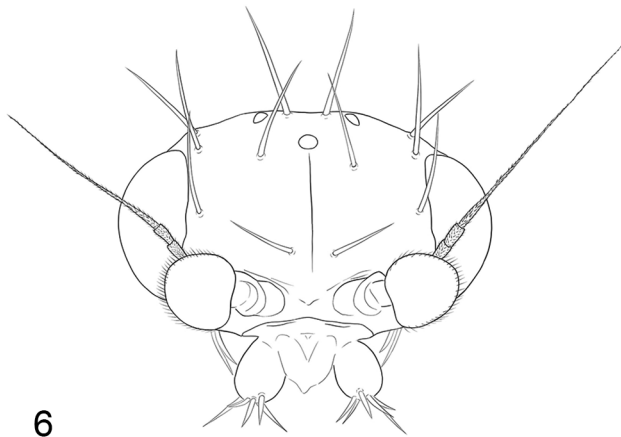
*Thorax.* Anepisternum bare; anepisternal furrow present (Fig. 5). Scutellum with four bristles: two strong, inner, posterior bristle and two weaker, outer, anterior bristles (Fig. 1).

*Abdomen.* Abdominal sclerotised tergites (Fig. 1) uniformly brown and entire. Tergites I–V longer than wide; tergite VI approximately square.

*Ovipositor.* Consisting of parasitic type oviscape and stylet as per Figs 7–8.

*Legs.* Hind tibia with a single, near dorsal, longitudinal, hair palisade (Figs 10–11); absent on mid and fore tibia. Hind tibia with postero-dorsal row of differentiated hairs (Fig. 10); antero-dorsal row of differentiated hairs absent. Mid tibia without bristles in basal half (Fig. 12). All tarsi five segmented. Last tarsal segments on both front and middle legs longer than fourth segments; tapered but not pointed (Figs 12–13).

*Wings.* Fully developed. Infuscated. Vein 3 without hairs at base or along upper face. Subcostal vein strongly developed fusing with  $R_1$ . Costa, uniform in thickness. Axillary ridge with two bristles (Fig. 9). Vein 3 ( $R_{2+3}$  present) forked (Fig. 9).



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**Figure 6.** *Microselia lorien* sp. nov., line drawing of anterior view of head showing bristles and antennae.

*Male.* Unknown.

*Biology.* Host unknown. However, all described species of *Microselia* and *Epacteon* are ant parasitoids: *Microselia rivierae* is reported to parasitize *Camponotus cruentatus* Latreille; *M. southwoodi* Disney parasitizes *C. vagus*; *M. deemingi* Disney parasitizes *C. acvapimensis* Mayr, *M. texana* Disney parasitizes *Paratrechina melanderi* Wheeler and *Pheidole constipata* Wheeler (Disney & Shaw, 1994), *Epacteon latifrons* Brown & Oliver attacking *Technomyrmex jocosus* Forel, and *E. armatus* Borgmeier—host unknown.

*Habitat.* The “Lorien” type locality is in the Manning River drainage on the New South Wales northern coast. Vegetation is predominantly subtropical rainforest (Figs 14, 15) and wet sclerophyll forest, with a small representation of dry sclerophyll forest at the base of the escarpment cliff marking the northern boundary with Coorabakh National Park.

*Etymology.* The species is named in recognition of the “Lorien” Wildlife Refuge and Conservation Area—a natural sanctuary established by Geoff and Thuselda Williams. The “Lorien” site is the source of thousands of specimens collected over the past six decades and deposited in the Australian Museum. The specific epithet *lorien* is a noun in apposition to the generic name.



**Figures 7–13.** *Microselia lorien* sp. nov. (7) caudal view of ovipositor, (8) dorsal view of ovipositor, (9) base of wing showing axillary bristles and forked vein, (10, 11) hind leg showing hair palisade, (12) mid leg, and (13) foreleg.



Figures 14–15. The type locality, Lorien, NSW of *Microselia lorien* sp. nov.

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