A new genus of apterous scelionid from Lord Howe Island (Hymenoptera; Scelionidae)

A. D. AUSTIN Commonwealth Institute of Entomology, British Museum (Natural History), London

ABSTRACT. *Psyllobaeus pecki* gen. and sp.n., is described from Lord Howe Island, Australia. This genus is unique in the Baeini in that both sexes (not just the female) are apterous, have a sessile metasoma and have a pair of long spines on the apex of the hind femur. The relationships of *Psyllobaeus* and its biology are discussed.

**Introduction**

Lord Howe Island is a small oceanic island situated approximately 800 km east-northeast of Sydney, in the Tasman Sea. The long isolation of the island from mainland Australia is reflected in its unique flora and fauna. This is especially so for some insect groups, such as Coleoptera, which has 56% endemic species, while others, such as Diptera, appear to be less characteristic (Paramonov, 1963). The microhymenopteran fauna of the island is of variable interest. Dodd (1924) found that the Chalcidoidea showed a close relationship to the mainland, with many species common to both locations. However, the Proctotrupoidea contained a high proportion of endemic forms, with many wingless and brachypterous species, as one might expect for an isolated island. This trend is further strengthened by the recent description of two genera of Scelionidae from the island (Galloway, 1982).

Intensive collecting by G. B. Monteith in 1979 and S. and J. Peck in 1980, produced a species of Scelionidae belonging to the Tribe Baeini, that could not be placed in any known genus. This species is here described in a new genus and its relationships within the Baeini and its biology are discussed.

The terminology of Masner (1980) and Galloway & Austin (1984) have been adopted in this paper. The following abbreviations are used: T, metasomal tergite; S, metasomal sternite; L, length; W, width; H, height; ANIC, Australian National Insect Collection, CSIRO, Canberra; CNC, Canadian National Collection, Ottawa; QDPI, Queensland Department of Primary Industries, Brisbane.

**Psyllobaeus** gen.n.

**Type-species:** *Psyllobaeus pecki* sp.n.

Moderately compressed laterally so that body is higher than wide; short and stocky in appearance (Figs. 1 and 3).

**Head** much wider than long, wider than mesosoma, posteriorly emarginate so that it arches around anterior mesosoma; eyes large; lateral ocelli touching margins of eyes; frons flat; frontal carina present; occipital carina very sharp so that it forms angle of less than 90° between occiput and vertex; mandibles tridentate; palpal formula 2–1; female and male antennae 11 segmented, female with 5 funicle segments and 4 segmented club.
Mesosoma. Scutum wider than long; notauli absent; scutellum rectangular, covering posterior elements of mesosoma; metanotum and propodeum only visible in lateral view, metanotum represented by a small triangular sclerite below scutellum; mesepimeron, metanotum and propodeum compressed into narrow dorsoventrally elongated sclerites (Fig. 5); netrion and mesopleural depression absent; posterior wall of mesosoma comprised of semi-elliptical metanotum and circular propodeum (seen only when metasoma removed) (Fig. 9); apterous; apex of hind femur with 2 long spines, the longest approximately three-quarters the length of hind basitarsus (Fig. 4).

Metasoma sessile, appearing to be fused onto mesosoma, rounded dorsally with distinct crest along mid-line of T1 and T2 in female (Fig. 3), crest almost absent in male (Fig. 6); T2 more than twice the length of T1; T1 and T2 comprising approximately three-quarters the surface area of metasoma; T3–T6 transverse; T7 triangular, with a pair of long setae at each basal corner; sternites expanded ventrally into a pronounced bulge.

ETYMOLOGY. The generic name *Psyllobaeus* refers to the small flea-like shape of this animal. Gender masculine.

DIAGNOSIS. Both sexes of *Psyllobaeus* come out at couplet 3 (i.e. females of *Mirobaeoides* Dodd and *Baeus* Haliday) in the most recent key to genera of Australian Scelioninae (Galloway & Austin, 1984). Females can be easily distinguished from these genera by the presence of a crest along the mid-line of the metasoma, and the relatively large size of T1 and T2. The male of *Psyllobaeus* is totally

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*FIGS. 1-4. Psyllobaeus pecki* 9: 1, lateral view, X125; 2, sculpturing pattern on T1, X 330; 3, dorsal view, X1 30 (femoral spines arrowed); 4, femoral spines, X 520.
unlike those of *Mirobaeoides* and *Baeus*. Males of the latter genera have a flattened metasoma, a distinct constriction behind the propodeum (i.e. not sessile) and fully developed wings.

**Psyllobaeus pecki** sp.n. (Figs. 1–9)

**Female**

Length 0.75 mm; body brown, head slightly darker, legs and antennae uniformly light yellow, eyes black; dorsal body except head covered with scaly-spinose sculpturing, most scales with a short stiff recumbent seta protruding posteriorly (Fig. 2).

**Head.** L:W:H (1.2:3.0:2.7), near circular in anterior view; lower frons smooth and shining; frontal carina reaching a little more than half the distance from antennal insertions to median ocellus; shortest distance between eyes more than half width of head; area between occipital carina and horizontal line across top of frontal carina finely granulate, sparsely covered with short hairs; ocelli small, in high triangle, base: sides (1.3:1.0); in lateral view, carina bounding gena prominent, near parallel; vertical part of occipital carina behind eyes moderately rounded; cheek with 7–8 striae radiating from corners of mouth to lower margin of eye; antenna (Fig. 7) short with markedly transverse funicle segments, outer surface of club with 4 large sensory pits (Figs. 5 and 7).

**Mesosoma.** In dorsal view, pronotum visible at anterior lateral corners; scutum L:W (1.5:2.0); scutellum (0.6:2.5), slightly narrower in mid-line; mesopleuron and metapleuron shining, with fine horizontal striae (Fig. 5).

**Metasoma.** In dorsal view, length of T1:T2 (1.0:2.5), T1 and T2 widest in mid-line (Fig. 3); S1 and S2 coarsely striate.

**Male**

Same as female except as follows: length 0.68–0.70 mm; setae covering dorsal surface slightly longer; head circular in anterior view, L:W:H (1.2:3.0:3.0); antenna (Fig. 8), with apical half darker in colour than basal half; metasoma slightly shorter, posterior segments broader; T1 much shorter when compared to T2, length T1:T2 (0.6:1.8).

**TYPE MATERIAL.** Holotype ♀. AUSTRALIA, Lord Howe Island, Intermediate Hill, Big Creek, 50 ft, 17–31.v.1980 (S. & J. Peck), ANIC. Paratypes, 1 ♂, 2 ♀, Intermediate.
Hill; 3 ♀ (1 gold coated), 2 ♂ (antenna of 1 ♀, 1 ♂ on slide), Transit Hill, 350 ft, 17–31.v.1980 (S. & J. Peck), CNC; 1 ♂ Intermediate Hill, 6.xi.1979, 1 ♀, 'Beyond Goat House', 11.xi.1979 (G. B. Monteith), QDPI.

HOST. Unknown, but probably the eggs of a spider associated with grass or litter.

Discussion

The Baeini represent one of the most specialized groups of scelionid wasps (Galloway & Austin, 1984; Masner, 1976). The round squat body, apparent fusion of the mesosoma and metasoma, and aptery in female makes them unlike any other scelionids. These characters probably represent adaptations to living in litter or grass, where most specimens have been collected, or to burrowing through the silken egg sacs of their spider hosts.

Two genera of Baeini were previously known from the Australian region, viz Baeus and Mirobaeoides. They differ in several important characters: female Baeus totally lack a metanotum, so that the posterior wall of the mesosoma is formed by the propodeum; the laterotergites of the metasoma are excised over the sternites, and the antennal club is unsegmented. Female Mirobaeoides, however, have an obvious metanotum, laterotergites that are incised under the sternites, and an antennal club that is clearly 4 segmented. Psylobaeus shares all these characters with Mirobaeoides, along with having a pair of spines on the apical hind femur (absent in Baeus), and hence these two genera are more closely related to each other than to Baeus.

The femoral spines in Psylobaeus are long and stout, whereas in Mirobaeoides they are short and sometimes almost as fine as the surrounding setae. Such spines are found in very few scelionid genera, Mirobaeus Dodd being the only known example outside the Baeini. The function of these spines is unknown, however Masner (1983) has proposed that similar spines found on the base of the hind tibia in the myrmecophilum-group of Gryon (termed genual spines) have a locomotory function.

The most striking feature of Psylobaeus is the absence of the sexually dimorphic characters found in Baeus and Mirobaeoides. Apart from being fully winged, males of the latter genera have a normal body form and lack the rounded sessile metasoma of females (Galloway & Austin, 1984). Not only are

FIGS. 7–9. Psylobaeus pecki, scales = 100 μm: 7, antenna, ♀; 8, antenna, ♂; 9, posterior wall of the mesosoma, ♀, (see Fig. 5 for legend).
males of *Psyllobaeus* apterous, but they also have the same characteristic body form as female members of the Baeini. Aptyry in male *Psyllobaeus* is probably an adaptation to living on a small isolated island, but this does not explain why they do not display the normal body shape of other male Baeini. Further research on the biology and relationships within this tribe will be required before this question can be approached.

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