

## Five New Species of *Leioproctus* (*Protomorpha*) Rayment (Hymenoptera: Colletidae)

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**ABSTRACT.** Five new species of *Leioproctus* (*Protomorpha*) Rayment from western Queensland are described: *Leioproctus crispus* n.sp., *L. gibber* n.sp., *L. gurneyi* n.sp., *L. latifrons* n.sp. and *L. nix* n.sp. Females of all the new species, except *L. nix*, have specialized setae on the clypeus, frons or vertex of the head. A revised key to species is provided.

BATLEY, MICHAEL, AND TONY J. POPIC. 2013. Five new species of *Leioproctus* (*Protomorpha*) Rayment (Hymenoptera: Colletidae). *Records of the Australian Museum* 65(2): 39–50.

**KEYWORDS:** Anthophila, Colletidae, *Leioproctus*, *Protomorpha*, systematics, facial setae, Simpson Desert, nototribic flowers.

In the most recent revision of the subgenus *Leioproctus* (*Protomorpha*) (Maynard, 1991), nine species were recognized, but only five were named. The remaining four were known from females only. In a recent study of plant-pollinator networks in the arid-zone grassland of the north-eastern Simpson Desert (Popic *et al.*, 2013), seven *L. (Protomorpha)* species were found, five of them undescribed. Four of the new species are the first in the subgenus to have specialized hairs on the head, a feature that has been suggested as indicative of particular pollen collecting behaviour (Müller, 1996; Thorp, 2000; Gonzalez & Chavez, 2004; Rightmyer *et al.*, 2011; Alqarni *et al.*, 2012).

### Terminology, methods and measurements

The morphological terminology follows that used by Michener (Michener & Fraser, 1978; Michener, 2007) including use of the word hair and description of legs in their normal positions. Relative dimensions quoted in the

descriptions were measured using an eye-piece graticule on a stereomicroscope with the zoom objective set to give a reading of 50 divisions for the head width. Abbreviations used for the measurements are those used by Houston (1990) and are as follows: *AOD*, antennocular distance; *ASD*, antennal socket diameter; *FL*, flagellum length; *HL*, head length; *HVO*, height of vertex above lateral ocelli; *HW*, head width; *IAD*, interantennal distance; *LID*, lower interorbital distance; *OOD*, ocellocular distance; *SL*, scape length; *SW*, scape width; *UFW*, upper width of face; *UID*, upper interorbital distance; *WOC*, width of ocellar cluster. Metasomal terga are referred to as *T1*, *T2* etc. and sterna as *S1*, *S2* etc. The “hidden sterna” of males, *S7* and *S8*, exhibit useful diagnostic characteristics and were extracted for examination. Geospatial coordinates are GPS readings. The following abbreviations are used for collections in which the specimens are lodged: *AM*, Australian Museum, Sydney; *ANIC*, Australian National Insect Collection, Canberra.

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