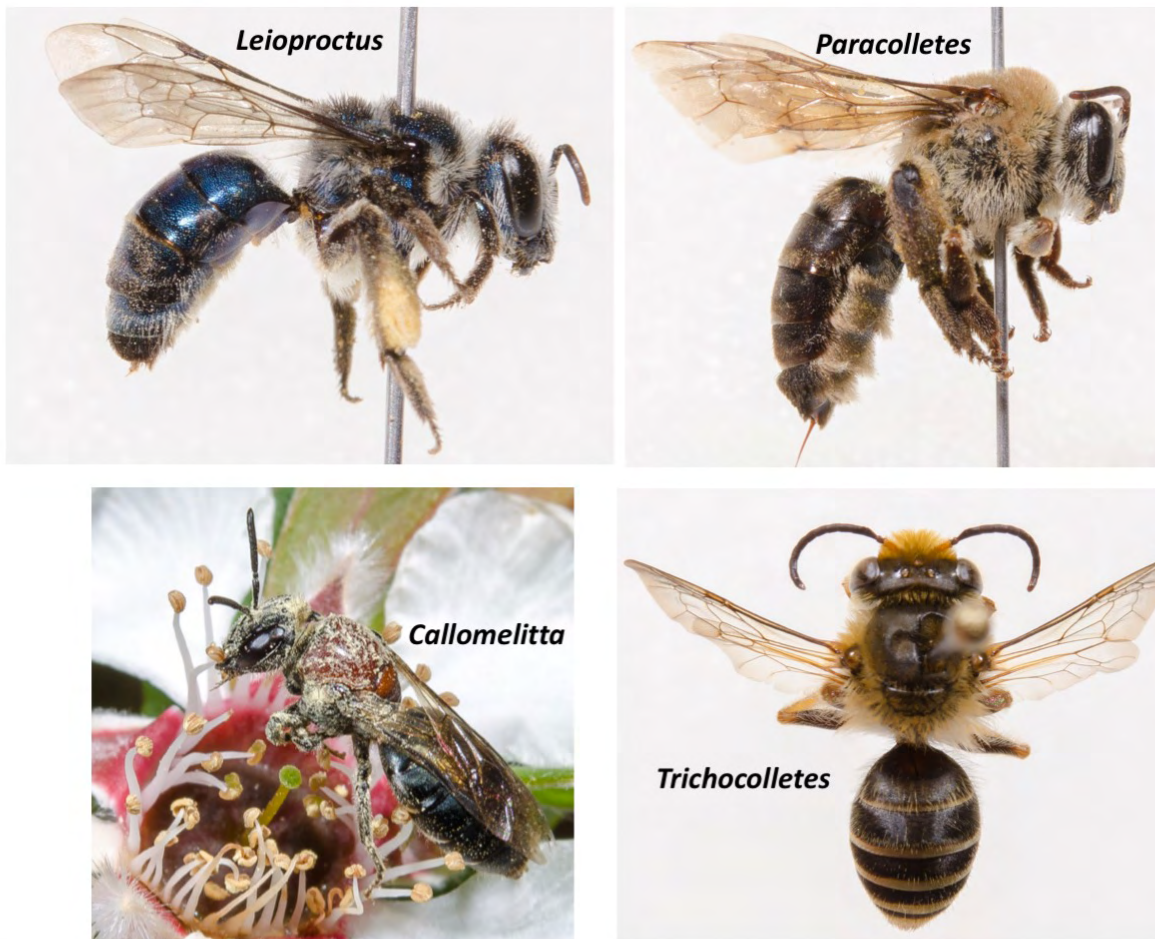


# Colletidae: Subfamily Colletinae

The subfamily Colletinae includes 10 genera\*, with approximately 277 described species. Most of these species are ground nesting bees. The genus *Leioproctus* is the largest, with 177 species. The following couplets are an adaptation of keys by Michener (2007), Maynard (2013) and Houston (2018).

## Colletinae examples

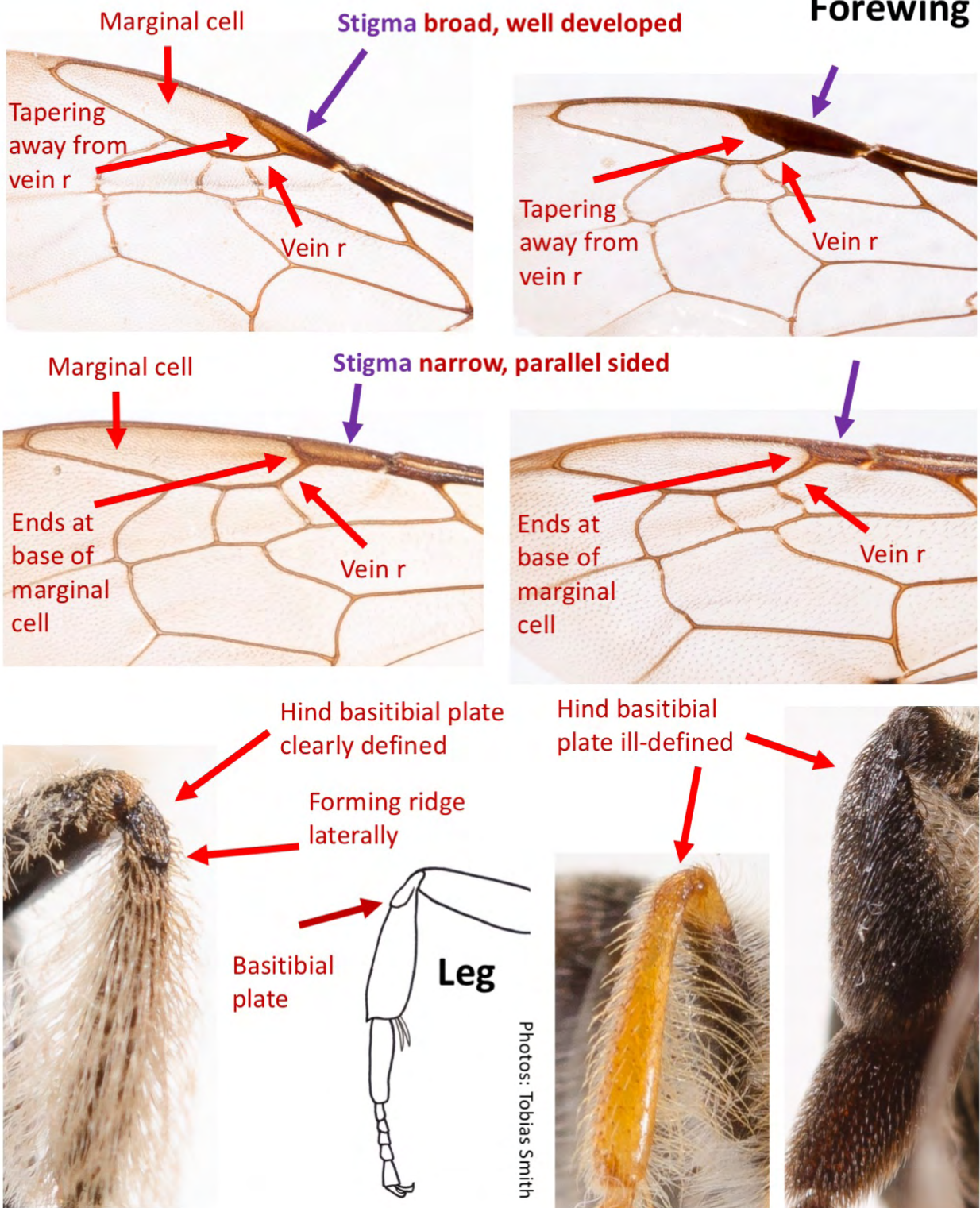


\* Two genera are omitted from the following couplets, Firstly, *Hesperocolletes*, which is known only from a single male specimen of a single species, collected in 1938. This specimen is labelled as being collected at Rottnest Island, WA, but doubt remains as to whether that was the true locality, although it is thought to be likely that it did come from WA. *Hesperocolletes* has unusual tarsal claws, as described by Michener (1965). The second omitted genus is *Glossurocolletes*, which will key out here as *Leioproctus*, but can be identified as the true genus using the *Leioproctus* subgenera key of Maynard (2013), as it was previously treated as a *Leioproctus* subgenus. *Glossurocolletes* is known only from Western Australia.

Photos by Tobias Smith

# Colletinae – Couplet 1

- ❖ Stigma broad, well developed, tapering gradually along marginal cell to wing margin, ending away from vein r; hind basitibial plate clearly defined, forming ridge laterally ... 2
- ❖ Stigma narrow, parallel sided, ending at base of marginal cell near vein r; hind basitibial plate ill-defined or hidden by dense hairs, not forming a clear ridge laterally ... 7



Line drawing by Tobias Smith

## Colletinae – Couplet 2 (1)

- ❖ Metasoma with yellow integumental bands, broken or narrowed sublaterally;  
clypeus yellow; males with enlarged scape (on antenna) ... ***Neopasiphae***
- ❖ Metasoma without coloured integumental that are broken or narrowed sublaterally ... **3**

**Note:** Males of *Leioproctus (Andrenopsis)* (5 species) also have yellow integumental bands, although they are not broken or narrowed sublaterally as in *Neopasiphae*, and they do not have the enlarged scape. If unsure here, check *Leioproctus (Andrenopsis)* images.

### Yellow bands, broken or narrowed sublaterally (just in from the sides)



Photo: PaDIL - Sarah McCaffrey

Photo: PaDIL - Clare McLellan

Photo: PaDIL - Sarah McCaffrey

***Neopasiphae***  
3 species  
Only known from Western Australia & north-western NSW & south-western QLD

Photo: PaDIL - Clare McLellan

**Enlarged scape in male**

Photo: PaDIL - Clare McLellan

**Integumental bands unbroken, not narrowed**

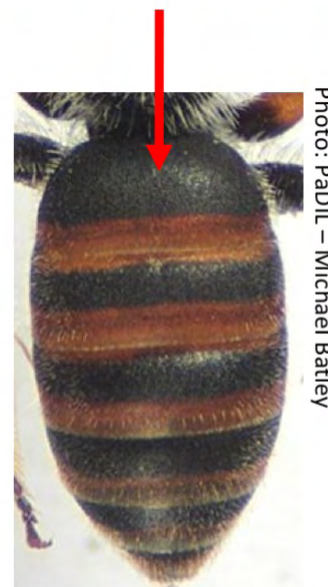


Photo: PaDIL - Michael Batley

*Leioproctus (Andrenopsis)* example

## Colletinae – Couplet 3 (2)

- ❖ Apex of the marginal cell of forewing on wing margin; wings reaching end of metasoma ... *Callomelitta*
- ❖ Apex of the marginal cell of forewing divergent from wing margin; wings reaching middle of metasoma ... 4

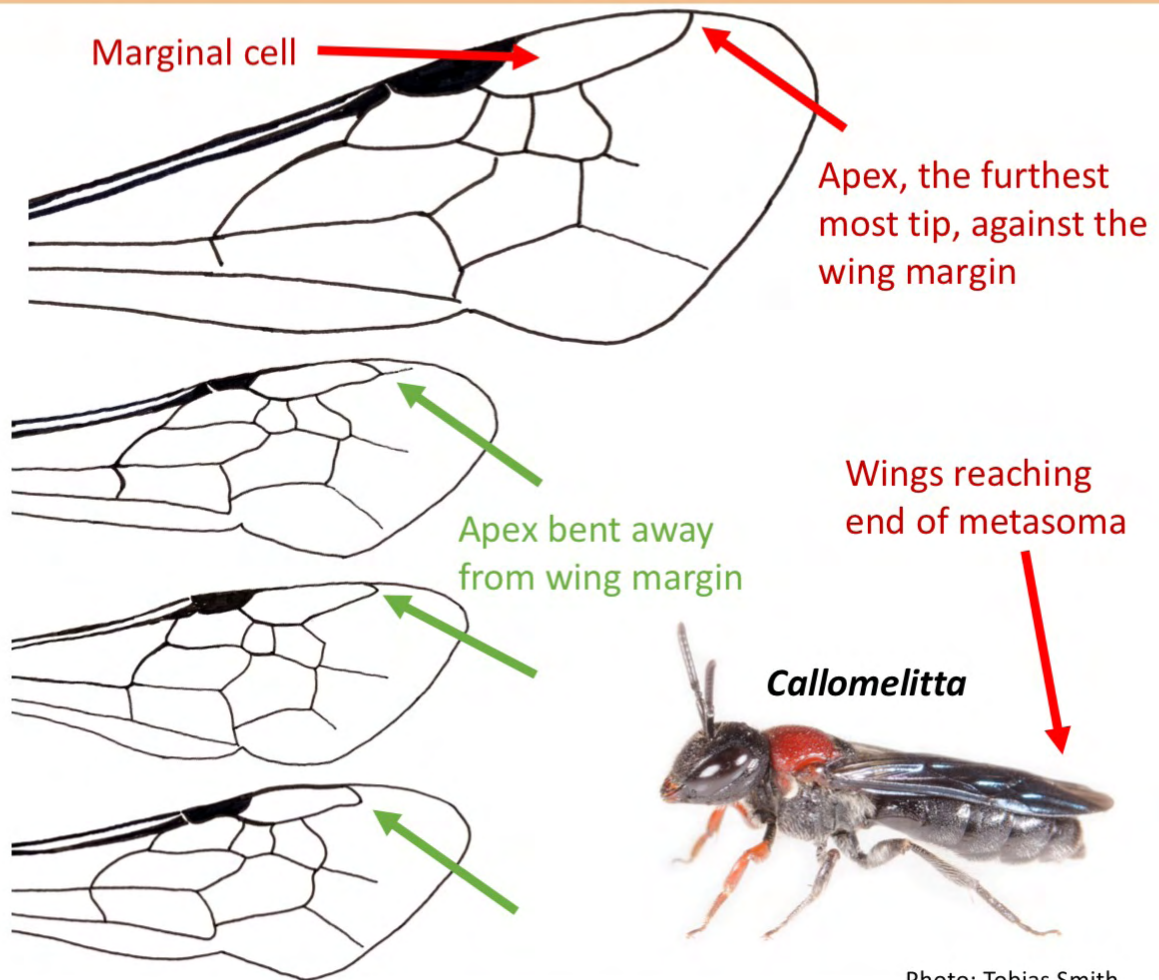
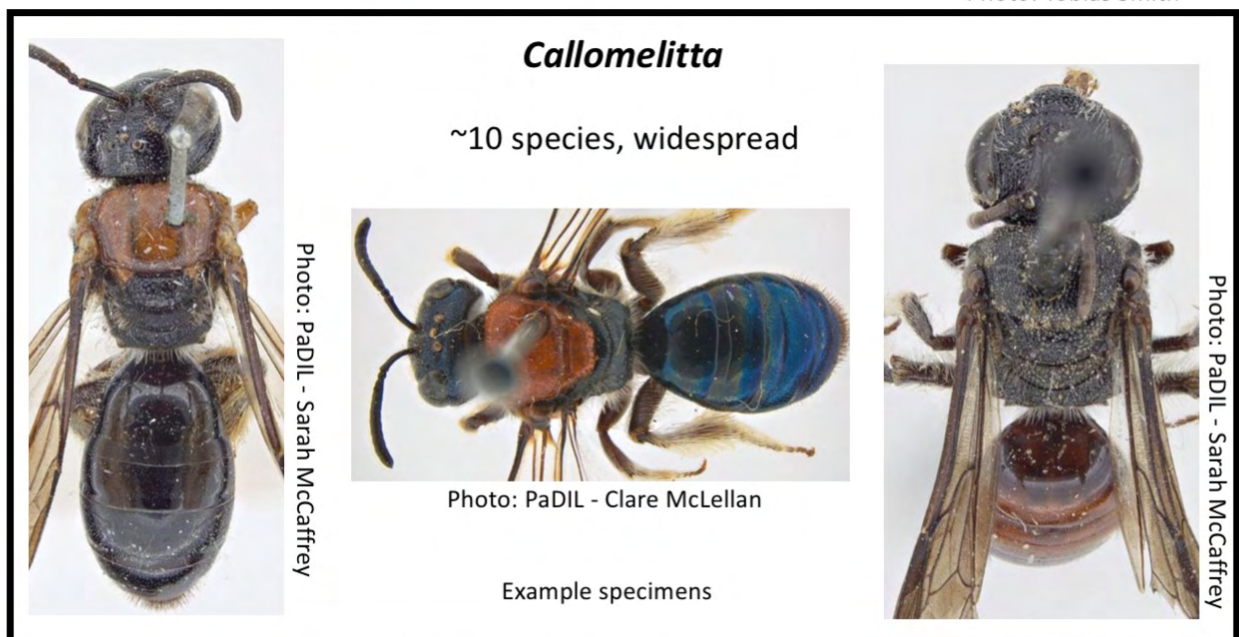


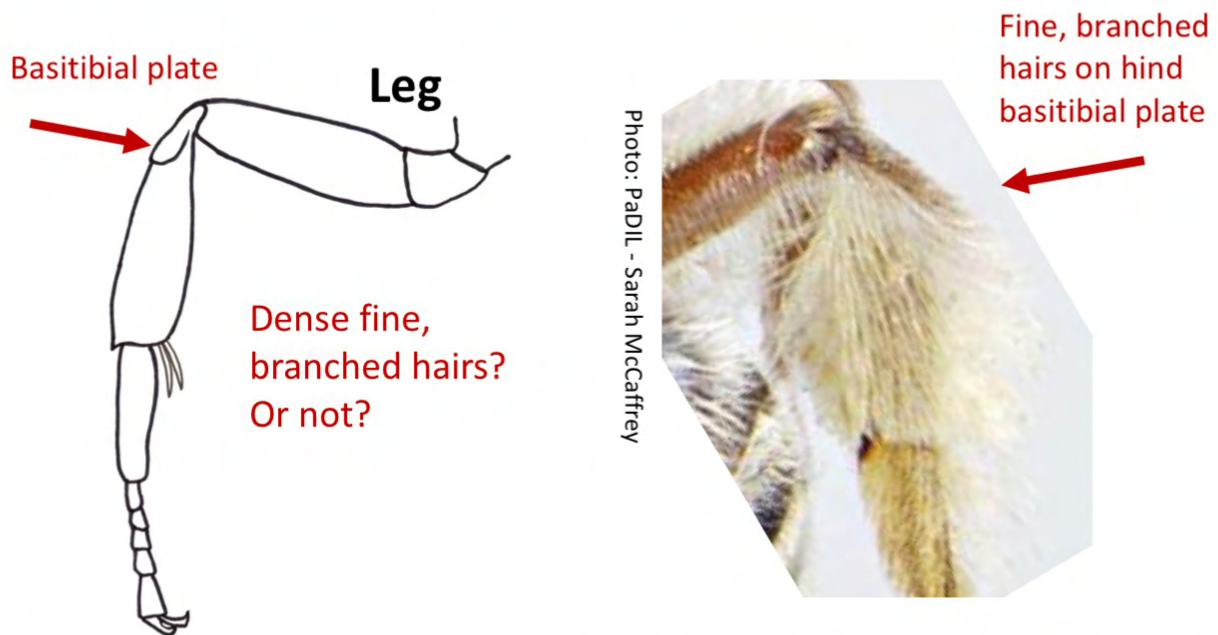
Photo: Tobias Smith



Line drawings by Tobias Smith (based on diagrams in Michener 1965)

## Colletinae – Couplet 4 (3)


- ❖ Female hind basitibial plates covered in dense fine, branched hairs; median process of S8 of males confluent with the rest of segment (this trait in the males is a difficult one, and not shown here. See below) ...*Goniocolletes*\*
- ❖ Female hind basitibial plates not covered in dense, fine, branched hairs; median process of S8 of males distinctly narrower than the rest of segment ... 5




**Note:** If you have a male bee, then this is a tricky trait. It requires an internal characteristic of the male (S8), and you need to extract the body part while the specimen is fresh. Unless you are experienced, I suggest you have a look through the PaDIL images of *Goniocolletes* to see if your specimen looks like it might belong to the genus. There are <10 species, although there are not PaDIL images for all of them. For more on S8 in males, see Michener 2007.

***Goniocolletes*\***


<10 species, widespread



Photos: PaDIL - Sarah McCaffrey



Example specimens (but note, appearance varies quite a lot)



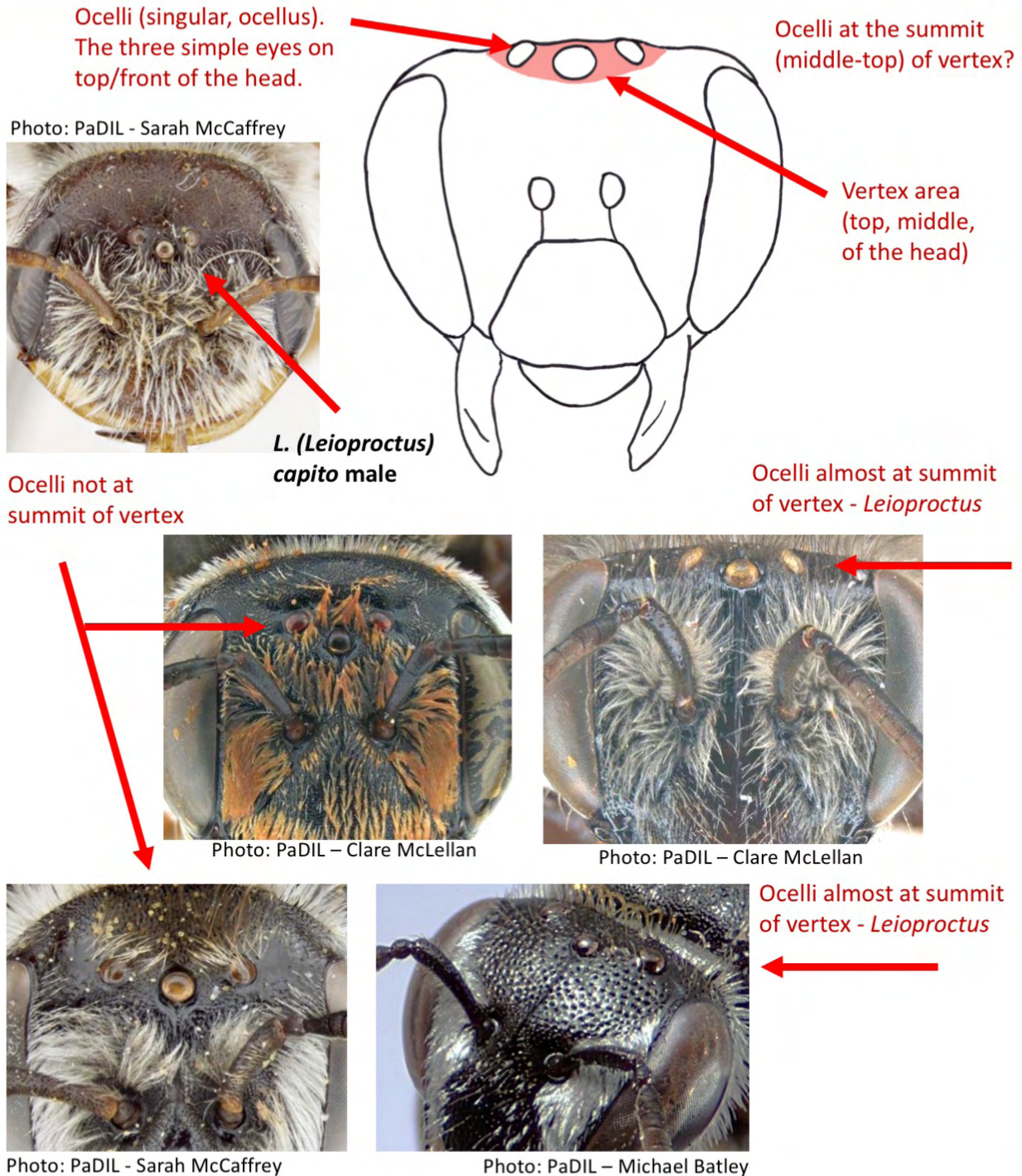
\*In his new book (page 4), Houston (2018) retains *Goniocolletes* as a subgenus of *Leioproctus*

Maynard, G. (2013) Revision of the *Goniocolletes* and seven Australian subgenera of *Leioproctus* (Hymenoptera: Apoidea: Colletidae), and descriptions of new taxa. *Zootaxa*, 3715 (1): 1–114.

Line drawing by Tobias Smith

## Colletinae – Couplet 5 (4)

- ❖ Ocelli almost at summit of vertex (except for males of *Leioproctus* (*Leioproctus*) *capito* species-group – WA only) ... ***Leioproctus***
- ❖ Ocelli not at summit of vertex ... **6**

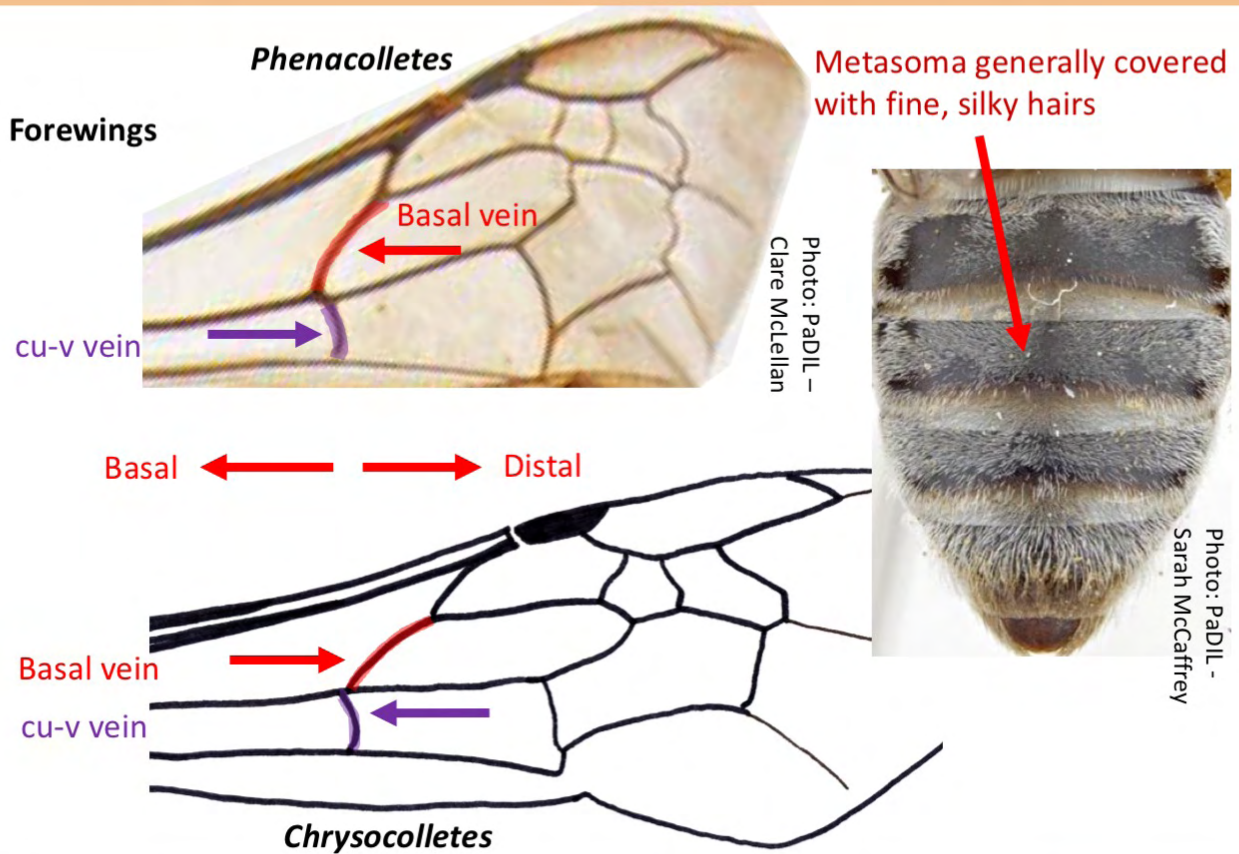






***Leioproctus*, ~177 species, widespread**

Maynard, G. (2013) Revision of the *Gonicolletes* and seven Australian subgenera of *Leioproctus* (Hymenoptera: Apoidea: Colletidae), and descriptions of new taxa. *Zootaxa*, 3715 (1): 1–114.

## Colletinae – Couplet 6 (5)

- ❖ Basal vein meeting or distal to cu-v vein of forewing; surface of metasoma covered with fine silky hair ... ***Chrysocolletes***
- ❖ Basal vein basal to cu-v vein of forewing; surface of metasoma not covered with fine silky hair ... ***Phenacolletes***



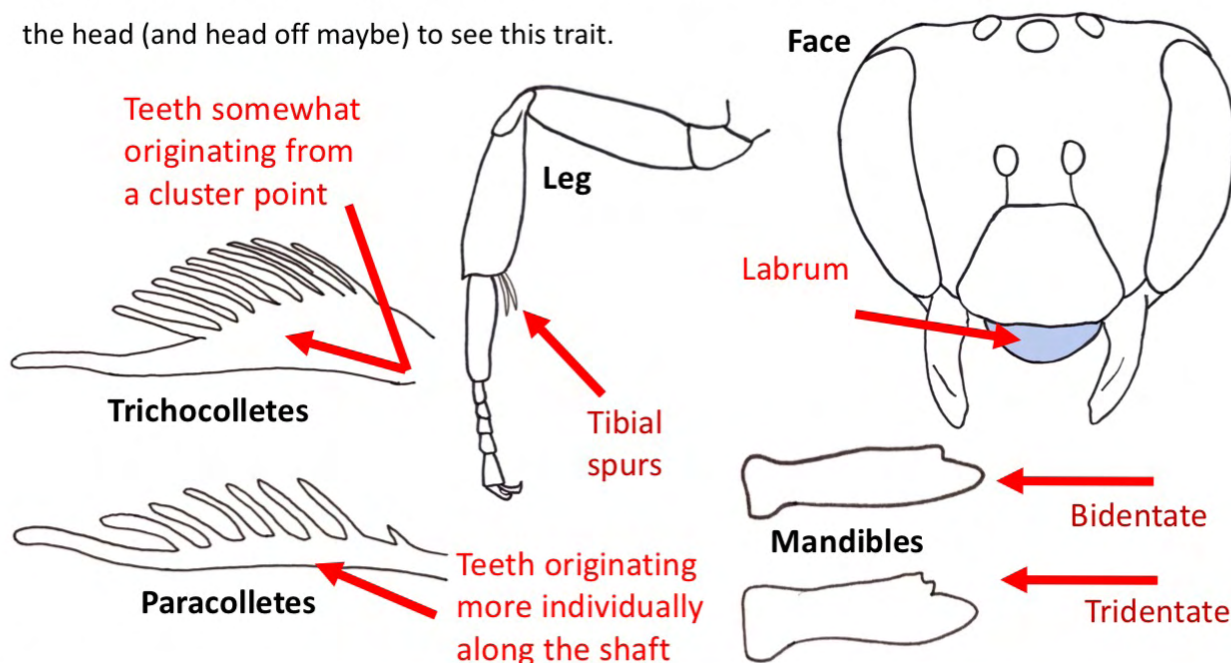
<p>Photos: PaDIL - Sarah McCaffrey</p> 	<p><b><i>Chrysocolletes</i></b></p> <p>~5 species</p> <p>Widespread</p> <p>Example specimens</p>	
 <p>♀</p>	<p><b><i>Phenacolletes mimus</i></b></p> <p>This is the only <i>Phenacolletes</i> species.</p> <p>Only known from Western Australia</p> <p>Photos: PaDIL - Clare McLellan</p>	 <p>♂</p>



Line drawing by Tobias Smith (based on diagram in Michener 2007)

## Colletinae – Couplet 7 (1)

- ❖ Labrum as long as or longer than width; female inner hind tibial spur with several long, fine teeth originating from more or less the one point (almost palmate); female mandibles bidentate; some species with hairy eyes; may have golden or silver bands on metasoma ... **Trichocolletes**
- ❖ Labrum shorter than width; female inner hind tibial spur ciliate, teeth originating individually along the length of the shaft (serial); female mandibles tridentate; males without hairy eyes; without golden or silver bands on metasoma ... **Paracolletes**

**Note:** The labrum can often be tricky to see as it is often tucked backwards below the clypeus and blocked from view by the mandibles. In fresh specimens you can manipulate this, but in dry specimens you will likely break bits. Look from underneath, or be willing to break parts of the head (and head off maybe) to see this trait.



<p><b>Trichocolletes</b></p> <p>~40 species, widespread</p> <p>Batley, M. &amp; Houston, T. (2012) Revision of the Australian bee genus <i>Trichocolletes</i> Cockerell (Hymenoptera: Colletidae: Paracolletini). Records of the Australian Museum, 64: 1–50.</p>	 <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Photo: Tobias Smith</p>
<p><b>Paracolletes</b></p> <p>~17 species, widespread</p>	 <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Photo: Tobias Smith</p>

Line drawings by Tobias Smith (spurs & mandibles based on diagrams in Michener 1965)



