

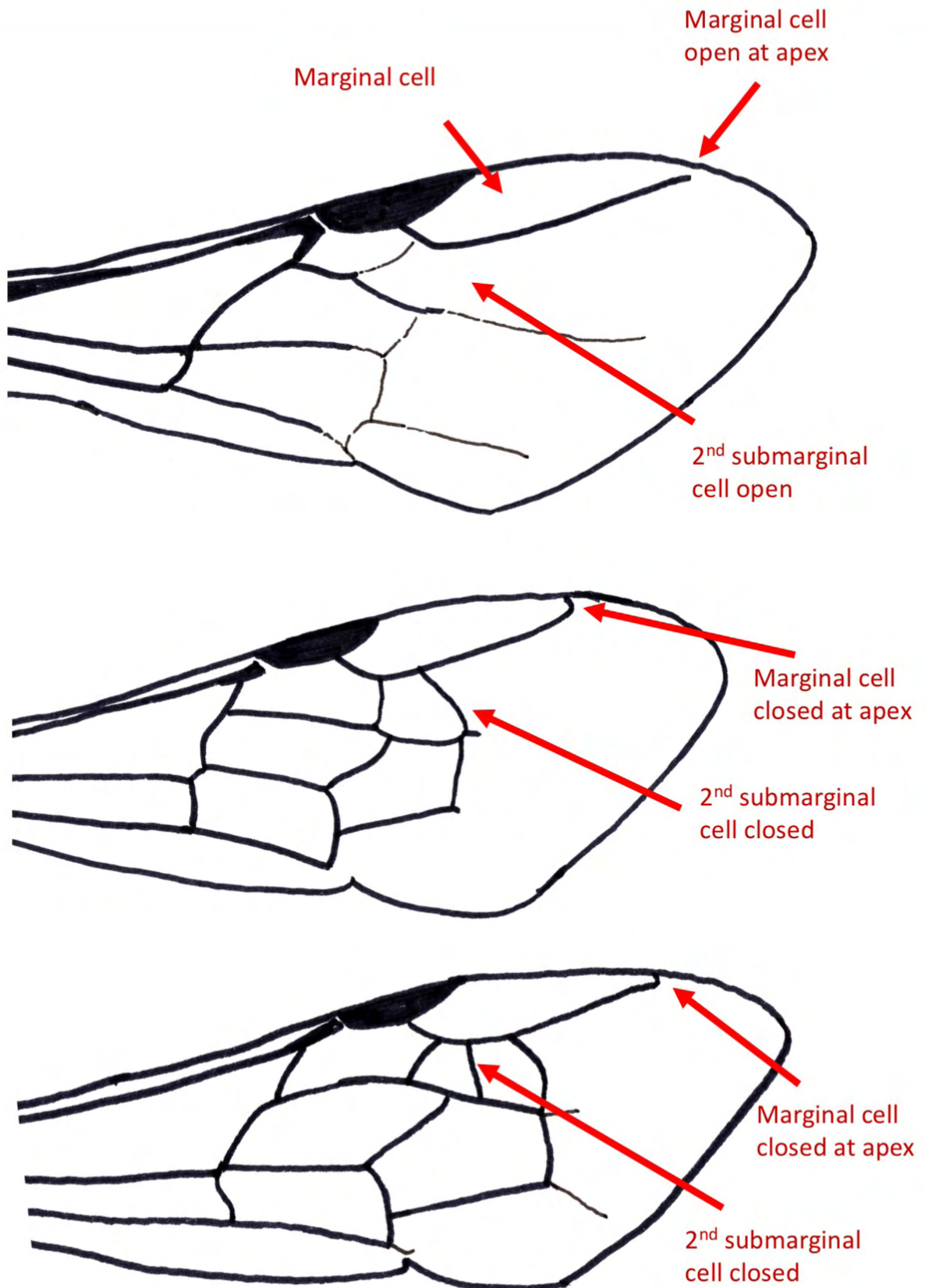
Family Apidae

The family Apidae in Australia is made up of 13 genera, within which there are approximately 173 described species. There are three subfamilies in Australia: the Apinae, Nomadinae, and Xylocopinae. Species in the Apidae vary widely in their nesting strategies and levels of sociality. Nesting strategies include both above- and below-ground nesters, and all levels of sociality from truly solitary to highly eusocial are represented among the species. The following couplets are based, in part, on keys by Michener (1965; 2007).



Apidae – Couplet 1

- ❖ Marginal cell open at apex, and second submarginal cell open ... 2
- ❖ Marginal cell closed at apex, and second submarginal cell closed ... 3



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

Apidae – Couplet 2 (1)

- ❖ Usually with pale integumental markings on mesosoma, rounded apex of scutellum when viewed from side; inner hind tibia with keirotrichiate area broad

... *Austroplebeia*

- ❖ No pale integumental markings on mesosoma, pointed apex of scutellum when viewed from side; inner hind tibia with keirotrichiate area narrow, with depressed, shining, smooth area on margin

... *Tetragonula*

Pale markings

Rounded apex of scutellum

No pale markings on mesosoma

Pointed apex of scutellum



Austroplebeia



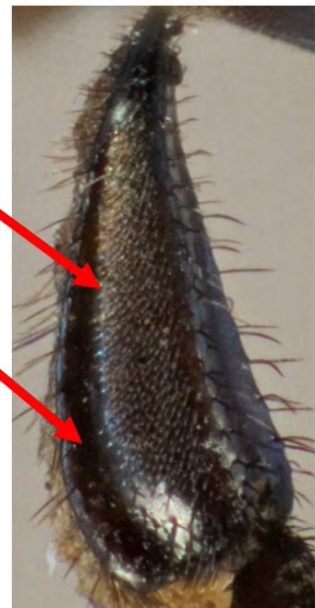
Tetragonula



Keirotrichiate area broad

Keirotrichiate area narrow

Depressed, shining area on margin



The **keirotrichiate area** on the inner hind tibia is the middle area that looks like it is a carpet of tiny branched hairs (keirotrichiata).

Note: The inner hind tibia is the back side of the corbicula (pollen basket) on hind leg.

Austroplebeia, 5 species

Subtropical and tropical only

Dollin, A.E., Dollin, L.J., & Rasmussen, C. (2015) Australian and New Guinean stingless bees of the genus *Austroplebeia* Moure (Hymenoptera: Apidae)—a revision. *Zootaxa*, 4047: 1–73.

Tetragonula, 6 species

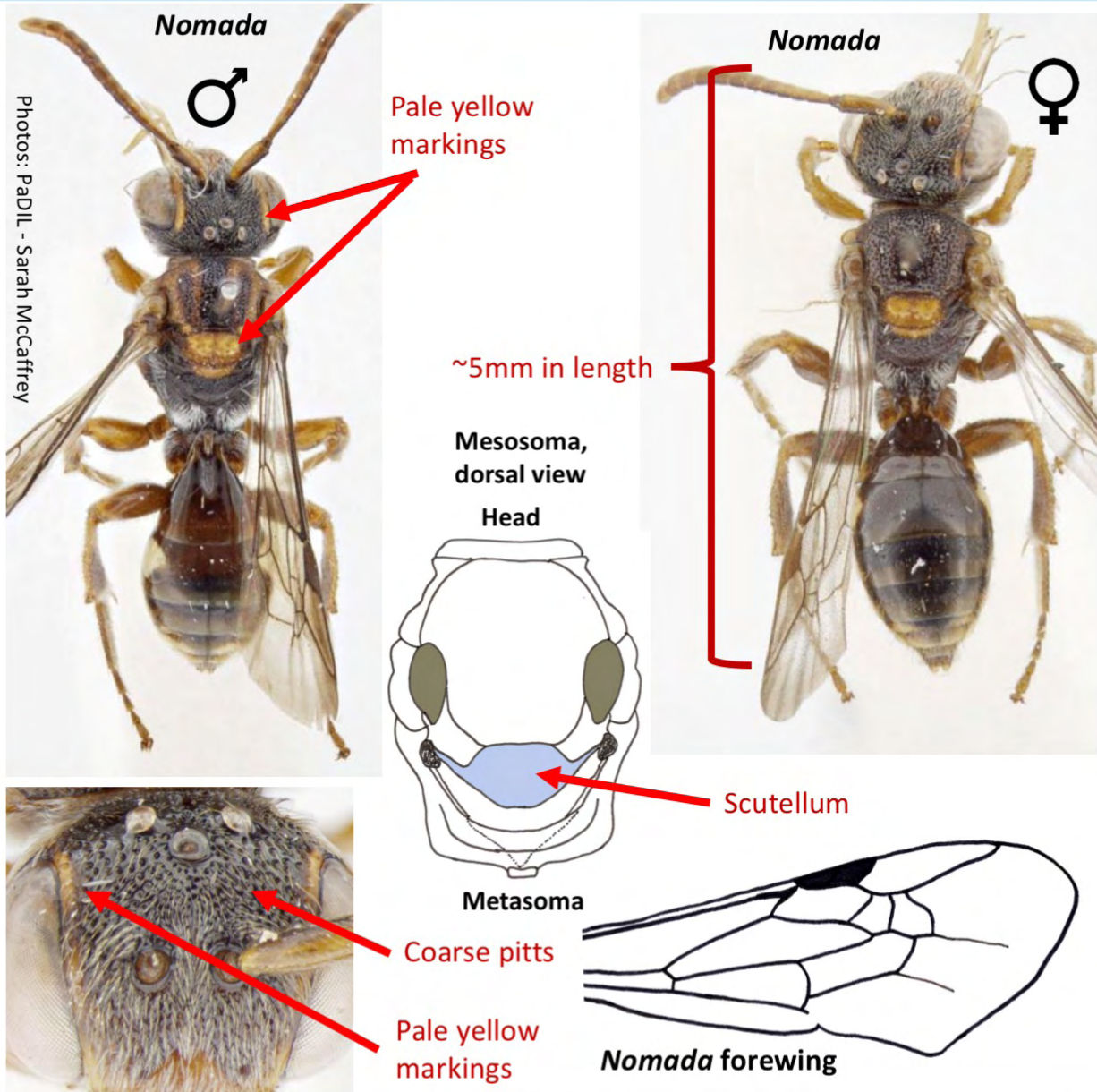
Subtropical and tropical only

Dollin, A.E., Dollin, L.J., & Sakagami, S.F. (1997) Australian stingless bees of the genus *Trigona* (Hymenoptera: Apidae). *Invertebrate Taxonomy*, 11: 861-896.

Note: This paper uses the old genus name, *Trigona*. Australian *Trigona* are now *Tetragonula*.

Apidae – Couplet 3 (1)

- ❖ Small, wasp-like bees, with strong constriction between mesosoma and metasoma; pale yellow integumental markings on inner margins of eyes (particularly pronounced towards the top) and on scutellum (head and mesosoma coarsely pitted) ... *Nomada*
- ❖ Constriction between mesosoma and metasoma normal; no pale yellow integumental markings on inner margins of eyes and scutellum (but may have pale markings elsewhere on face) ... 4



Nomada

1 species, *N. australensis*

Only known from QLD

Nomada are thought to be nest parasites of *Lasioglossum* or some other small bees.

Line drawings by Tobias Smith (based on diagram by E.R.S. Hodges in Michener, McGinley & Danforth, 1994 (mesosoma) and diagram in Michener 1965 (wing))

Apidae – Couplet 4 (3)

- ❖ Black bees with white or iridescent blue patches of hair on all body parts (darkened wings) ... *Thyreus*
- ❖ Not black with white or iridescent blue patches of hair on all body parts ... 5

Thyreus nitidulus nitidulus



Thyreus lugubris



White or blue hair patches

Thyreus waroonensis



Thyreus caeruleopunctatus



Photos: PaDL - Caroline Harding

Note: Colour may fade, particularly in specimens that have been stored in ethanol, but otherwise the appearance of *Thyreus* is obvious, so if it doesn't look like one of these, then it is not *Thyreus*.

Thyreus

5–10 species, widespread
on mainland

Photo: Tobias Smith



Thyreus species are nest parasites of *Amegilla*.

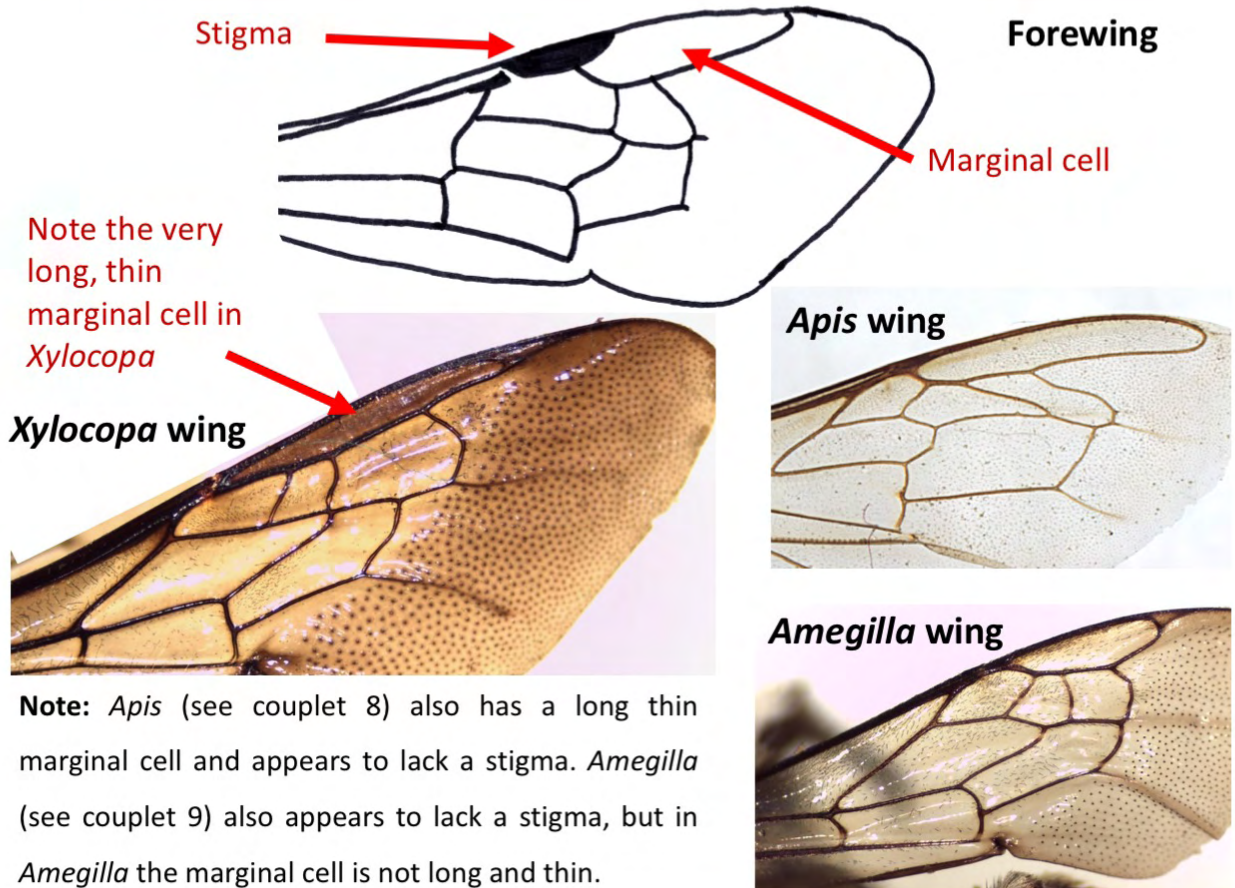
Apidae – Couplet 5 (4)

- ❖ Marginal cell long and thin, almost parallel-sided; stigma always almost absent (large, robust bees that lack any obvious banding/stripes on metasoma)

... *Xylocopa*

- ❖ Marginal cell not long and thin, not parallel-sided; stigma usually distinct, longer than broad

... 6



Note: *Apis* (see couplet 8) also has a long thin marginal cell and appears to lack a stigma. *Amegilla* (see couplet 9) also appears to lack a stigma, but in *Amegilla* the marginal cell is not long and thin.

Xylocopa (Koptortosoma)

Subtropical and tropical only



Photos: Tobias Smith



Xylocopa (Lestis)

Eastern Australia

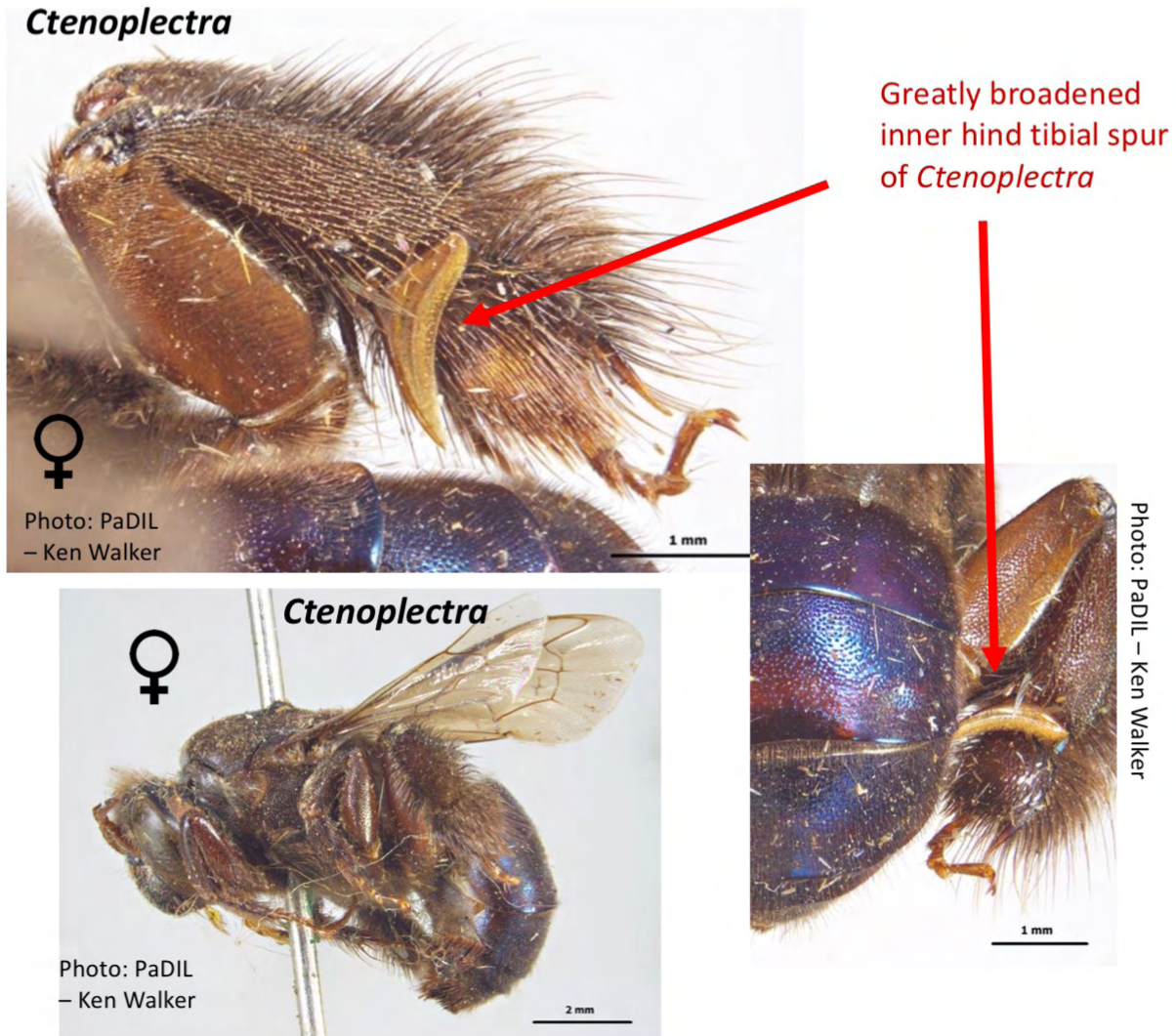


Leys, R. (2000) A revision of the Australian carpenter bees, genus *Xylocopa* Latreille, subgenus *Koptortosoma* Gribdo and *Lestis* Lapeletier & Serville (Hymenoptera: Apidae). *Invertebrate Taxonomy*, 14: 115-136.

Line drawing by Tobias Smith (based on diagram in Michener 1965)

Apidae – Couplet 6 (5)

- ❖ Inner hind tibial spur in female greatly broadened; large, metallic blue bees
... *Ctenoplectra*
- ❖ Inner hind tibial spur not greatly broadened; not large and metallic blue
... 7



Note: This broadened spur is for collecting oil, and is only present in the female. Males of *Ctenoplectra* will not be recognised in this key. So, if you are working in the Iron Range region, Far North Queensland, and you have a male bee with blue metasoma from the family Apidae it could be it, if it is nothing else.

Ctenoplectra

Ctenoplectra is represented in Australia by a single species,
C. australica, and is only known from Iron Range, Far North QLD.

Apidae – Couplet 7 (6)

- ❖ Corbicula (flattened tibia, fringed with scopal hairs) in female; eyes hairy or large, densely hairy bees with yellow/orange hair bands on both mesosoma and metasoma (pictured below, on right) ... 8
- ❖ No corbicula in female; eyes not hairy, body hair and size not fitting the above description ... 9

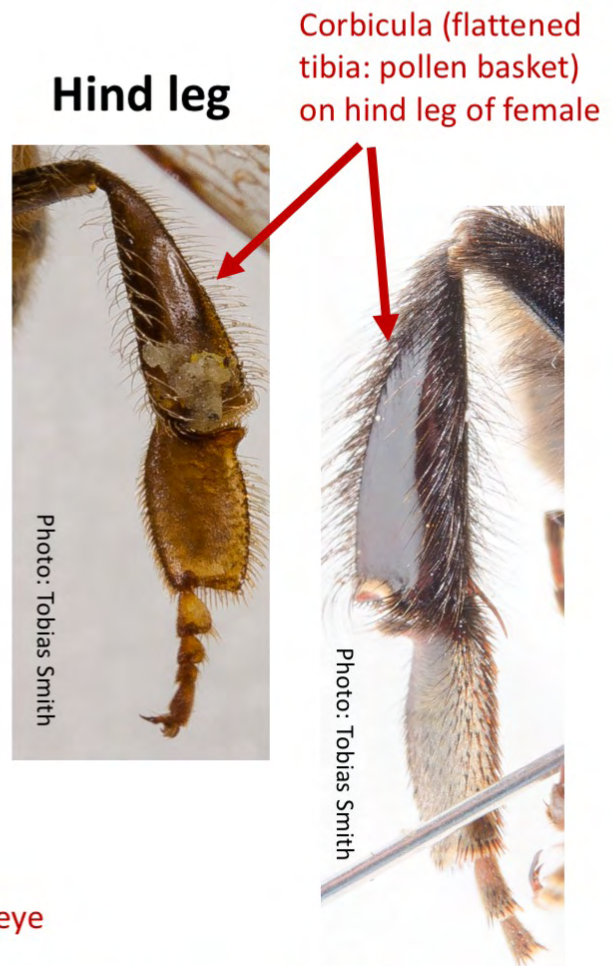
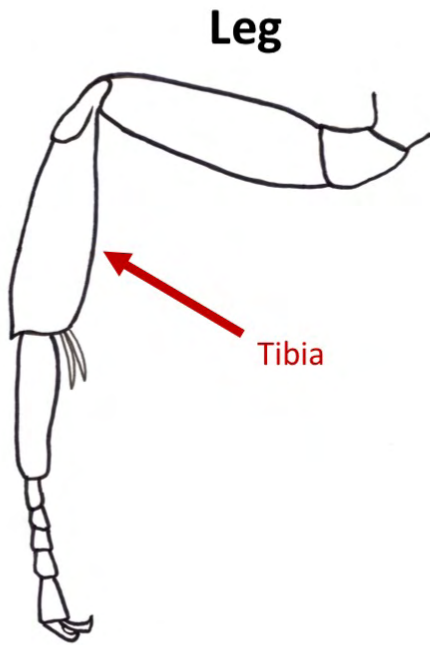


Photo: Tobias Smith

Densely hairy, with yellow/orange bands on mesosoma and metasoma



Line drawing by Tobias Smith

Apidae – Couplet 8 (7)

- ❖ Large, densely hairy bees; first two metasomal terga with yellow hairs, third and fourth black, fifth and sixth tergum pale/white; eyes not hairy ... **Bombus**
- ❖ Medium sized bees; hairy mesosoma, but no dense hairs on metasoma; eyes hairy ... **Apis**




Photo: Tobias Smith

Bombus

Introduced

Only known from Tasmania

1 species, *B. terrestris*




Photo: Tobias Smith




Photo: Tobias Smith

Apis

Introduced

2 species

Apis mellifera - widespread




Photo: Tobias Smith

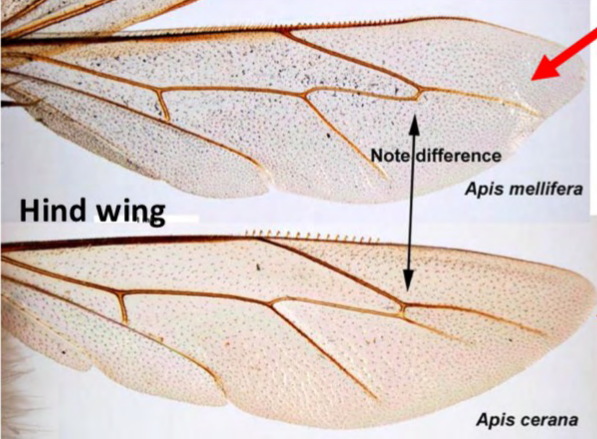


Photo: PaDIL – Ken Walker

Apis cerana – QLD wet tropics only




Photo: Tobias Smith

Apidae – Couplet 9 (7)

- ❖ Pygidial plate present in female; robust bees, usually with dense, coarse hair present on top surface of metasoma (often in obvious bands); stigma of forewing appearing absent ... ***Amegilla***
- ❖ No pygidial plate in female; largely hairless top surface of metasoma; stigma of forewing distinct ... **10**

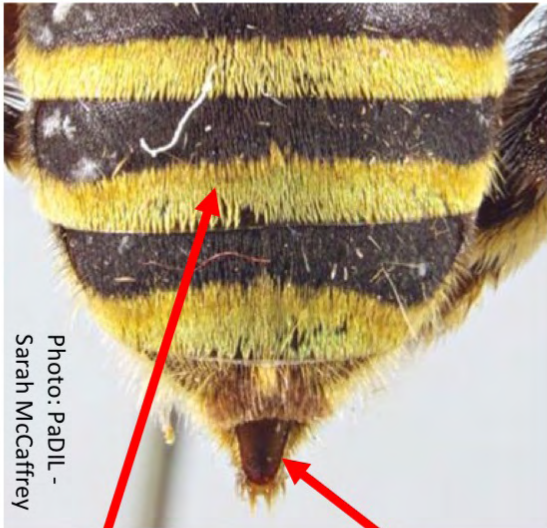
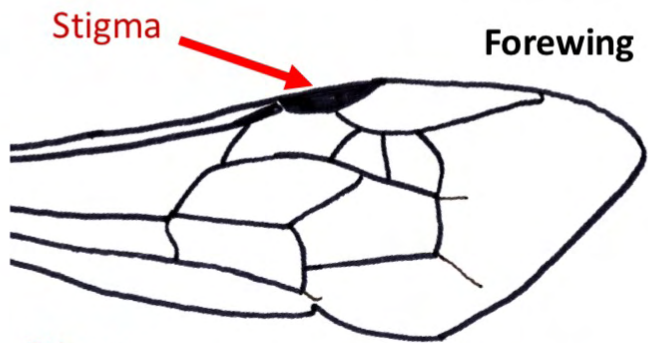


Photo: PaDIL - Sarah McCaffrey

Dense hair on metasoma (in this case with obvious bands)

Pygidial plate



Stigma

Forewing

Stigma appearing absent

Amegilla wing

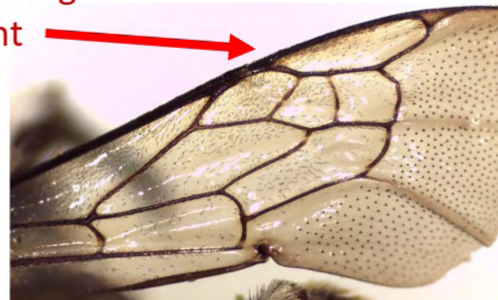


Photo: Tobias Smith



Photo: PaDIL – Ken Walker



Photo: PaDIL - Sarah McCaffrey

Amegilla

~40 species

Widespread



Photos: Tobias Smith

Leijs, R., Batley, M., & Hogendoorn, K. (2017) The genus *Amegilla* (Hymenoptera: Apidae: Anthophorini) in Australia: A revision of the subgenera *Notomegilla* and *Zonamegilla*. *ZooKeys*, 2017: 79-140.

Line drawing by Tobias Smith (based on diagram in Michener 1965)

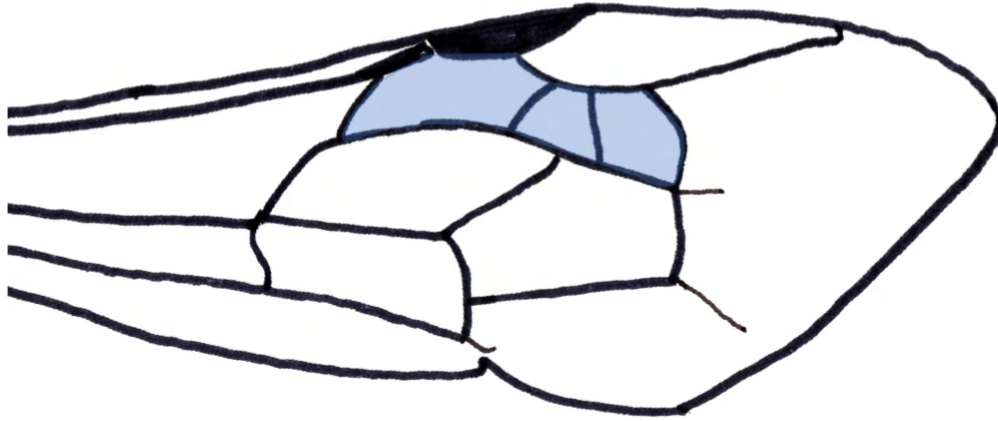
Apidae – Couplet 10 (9)

- ❖ Three submarginal cells
- ❖ Two submarginal cells

... *Ceratina*

... 11

Three submarginal cells



Two submarginal cells

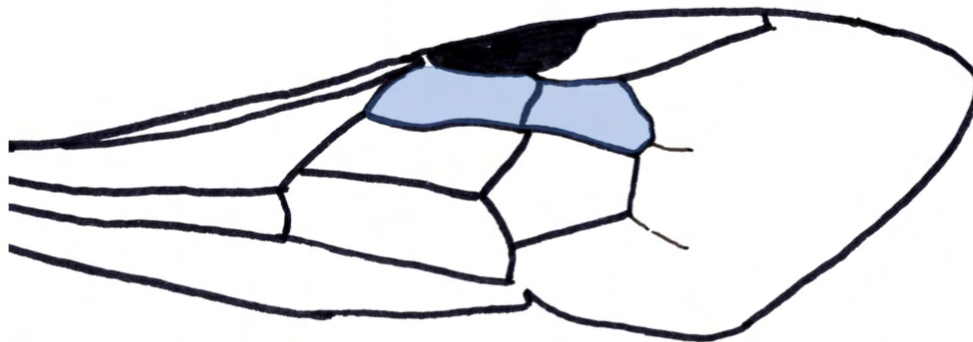


Photo: PaDIL - Sarah McCaffrey



Photo: PaDIL – Marc Newman

Ceratina

1 species, *C. australensis*

Eastern Australia



Photo: Tobias Smith

Apidae – Couplet 11 (10)

- ❖ Second recurrent vein of forewing present
- ❖ Second recurrent vein of forewing absent

... *Braunsapis*

... 12

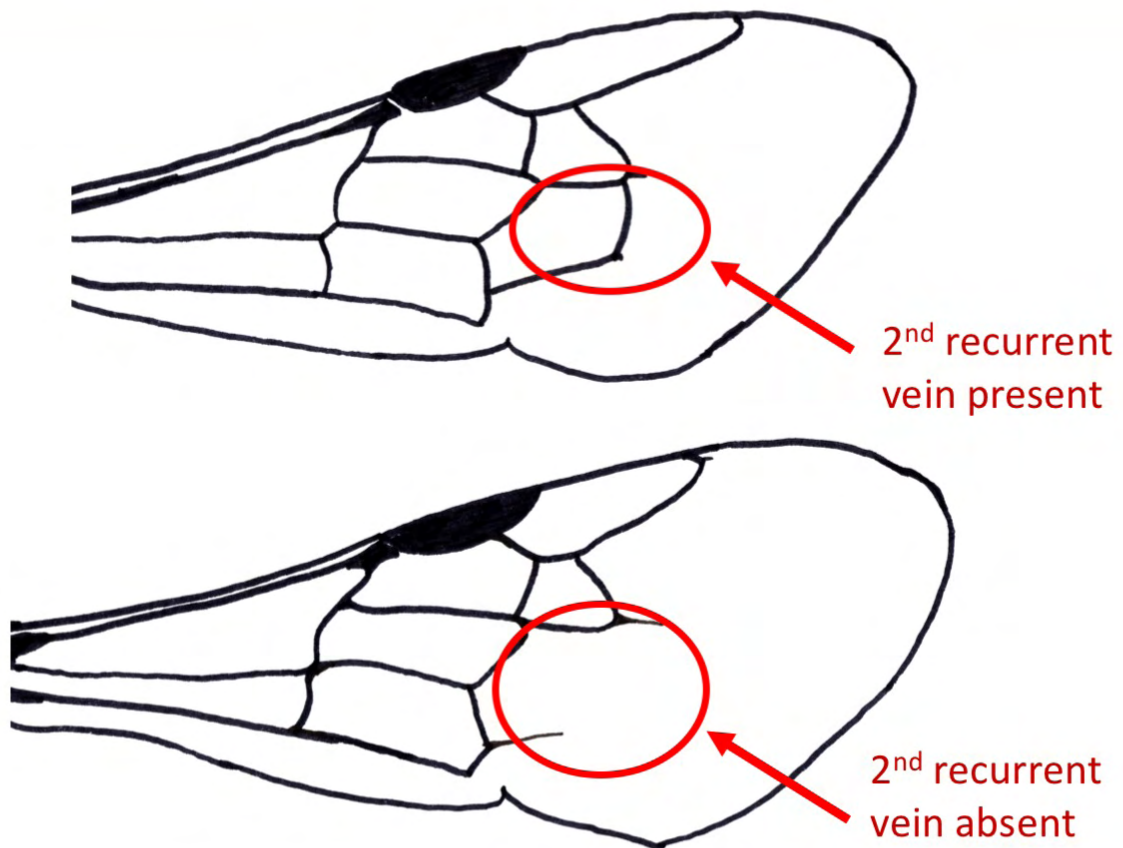


Photo: PaDIL - Sarah McCaffrey



Photo: PaDIL - Sarah McCaffrey

Braunsapis

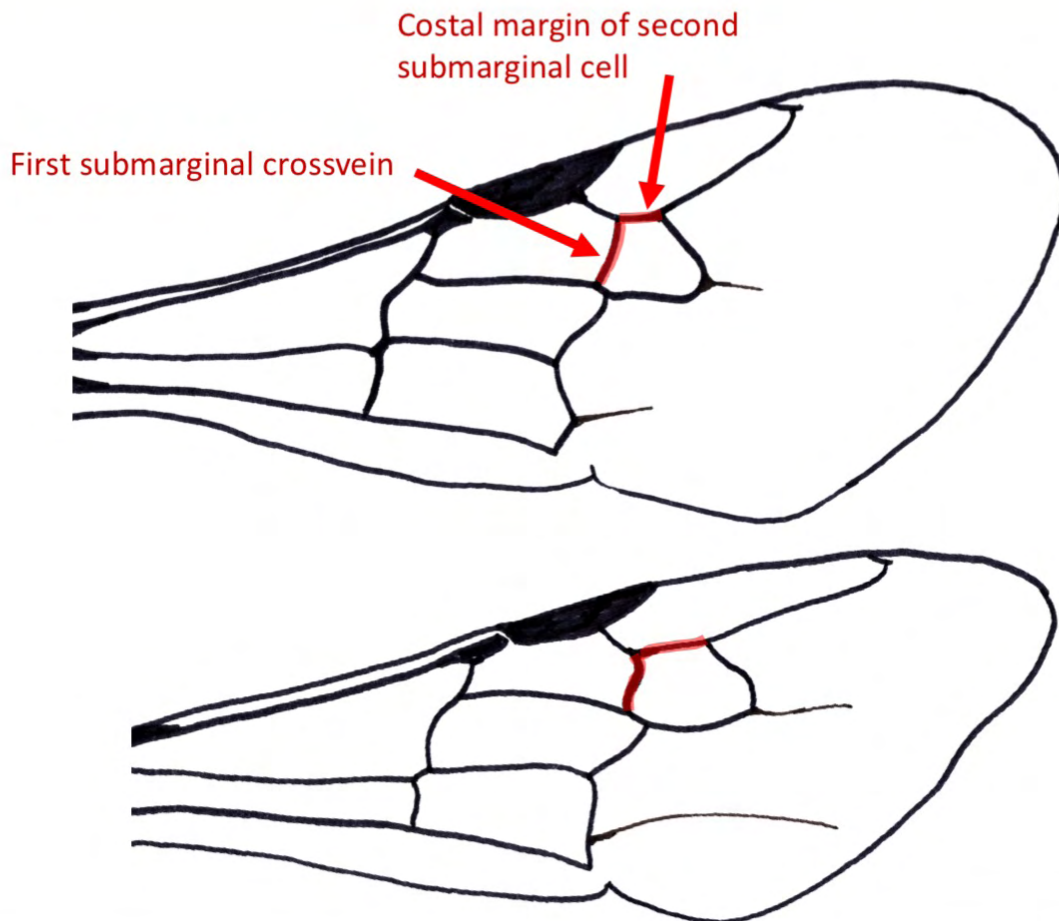
22 species

Widespread

Reyes, S. (1993) Revision of the bee genus *Braunsapis* in the Australian region (Hymenoptera: Xylocopinae: Allodapini). *The University of Kansas science bulletin*, 55: 97-121.

Apidae – Couplet 12 (11)

- ❖ Costal margin of second submarginal cell short, often less than half as long as first submarginal crossvein ... *Exoneurella*
- ❖ Costal margin of second submarginal cell usually as long as first submarginal crossvein ... *Exoneura*



Exoneurella, 4 species, widespread

Photo: PaDIL -
Caroline Harding



Dew, R.M., Stevens, M.I., & Schwarz, M.P. (2018) Taxonomy of the Australian Allodapine bee genus *Exoneurella* (Apidae: Xylocopinae: Allodapini) and description of a new *Exoneurella* species. *Insect Systematics and Diversity*, 2: ixx013-ixx013.

Exoneura, ~68 species, widespread



Photo: PaDIL - Sarah McCaffrey

Houston T.F. (1976) New Australian allodapine bees (subgenus *Exoneurella* Michener) and their immatures (Hymenoptera: Anthophoridae). *Trans. R. Soc. S. Aust.* 100: 15-28.



Photo by Tobias Smith

Meroglossa