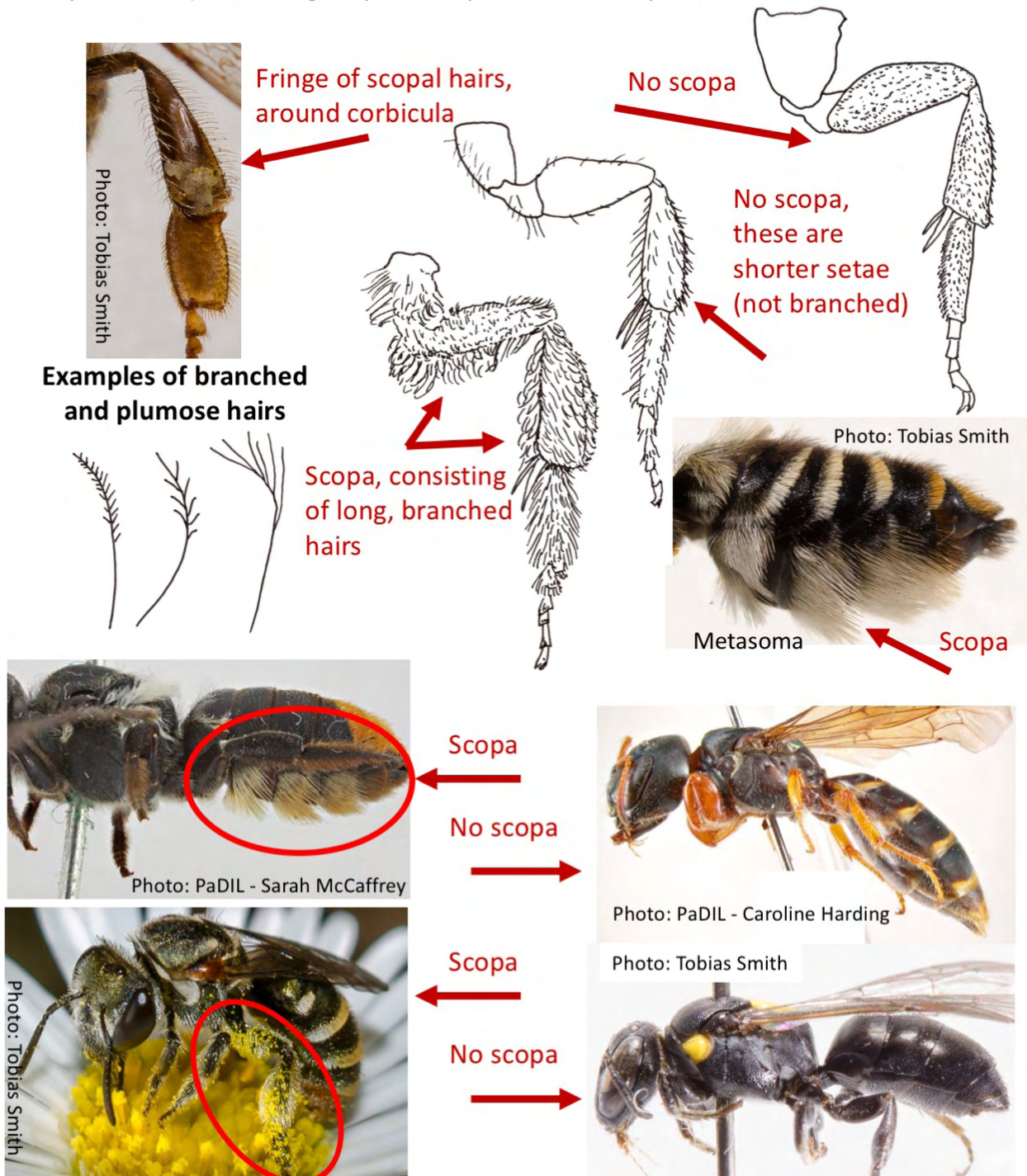


Family/Subfamily (Females) – Couplet 1

- ❖ Scopa, consisting of hairs for carrying pollen, present on female ... 2
- ❖ Scopa absent on female ... 6

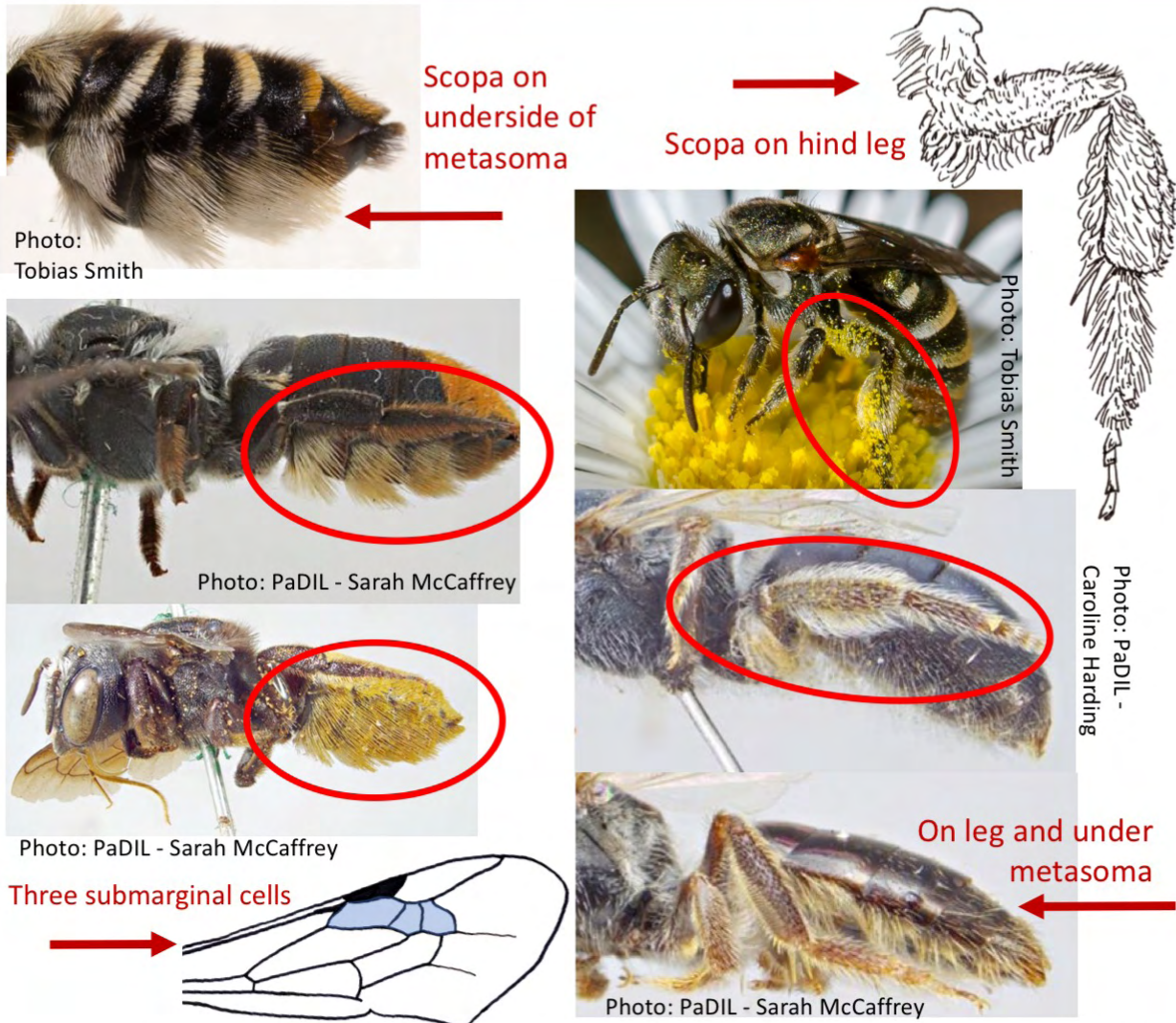
Scopa (plural scopae) are dense clusters of branched or plumose (or sometimes simple) hairs on the bodies of some female bees that are used for carrying pollen back to the nest. Scopa are found on various parts of the hind leg, and/or the underside of the metasoma. In some genera, scopal hairs are seen only as a fringe around the corbicula (modified, flattened hind tibia). Female bees in our region that do not have scopa are the Hyleainae and Euryglossinae (both family Colletidae), and a range of parasitic species from multiple families.



Line drawings by Tobias Smith (based on diagrams in Michener 2007)

Family/Subfamily (Females) – Couplet 2 (1)

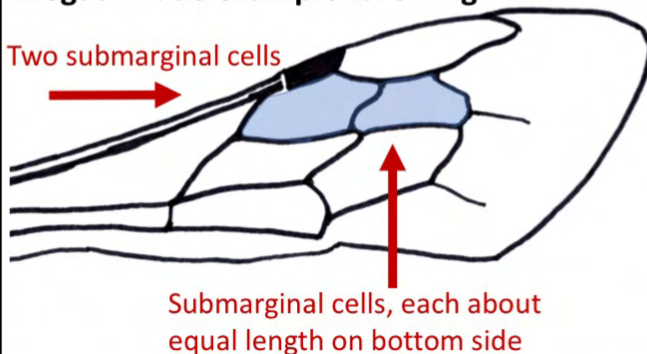
- ❖ Scopa well developed on underside of metasoma, consisting of rows of simple, stiff hairs (two submarginal cells in forewing, usually about equal in length)
... **Megachilidae** (page 99)
- ❖ Scopa on hind legs, sometimes also on underside of metasoma (if with scopa also on underside of metasoma, then also with forewing with three submarginal cells, except in *Ctenoplectra* – page 39)
... **3**



Note: While two submarginal cells is a character of the Megachilidae, it is not unique to this group and is seen in a range of other bee groups.

Megachilidae example forewing

Two submarginal cells

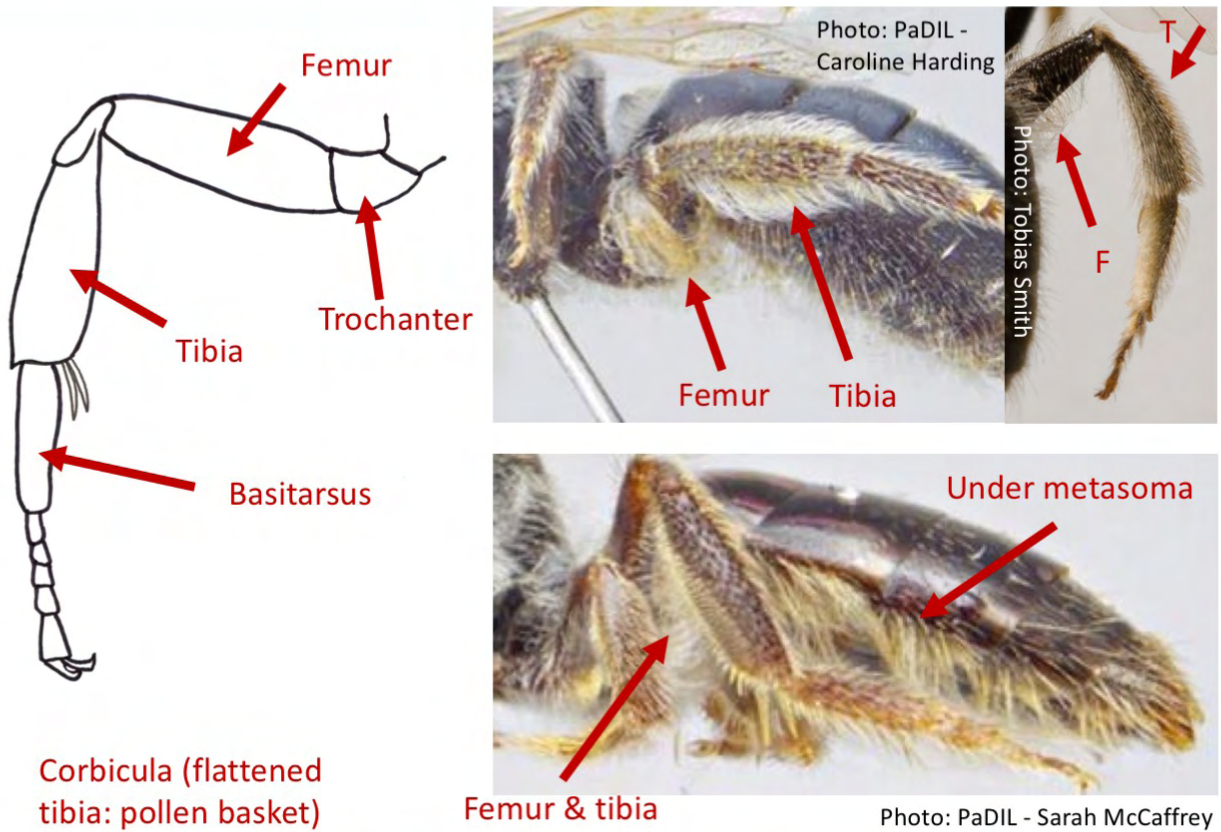


The **Megachilidae** is a family of about 170 species in Australia. It comprises two subfamilies, the Lithurginae and the Megachilinae. There are six genera in total, including one introduced. This family includes the common leaf cutter and resin bees.
...**Proceed to page 99 for key**

Line drawings by Tobias Smith (based on diagrams in Michener (2007 scopa and 1965 wings))

Family/Subfamily (Females) – Couplet 3 (2)

- ❖ Scopa (sometimes as tibial corbicula) on hind tibia & usually basitarsus, elsewhere not well developed, tibial scopa thus looking considerably larger than that of femur ... 4
- ❖ Scopa on hind femur, scopal hairs usually also present on trochanter, tibia, and basitarsus and sometimes on metasomal sterna ... 5



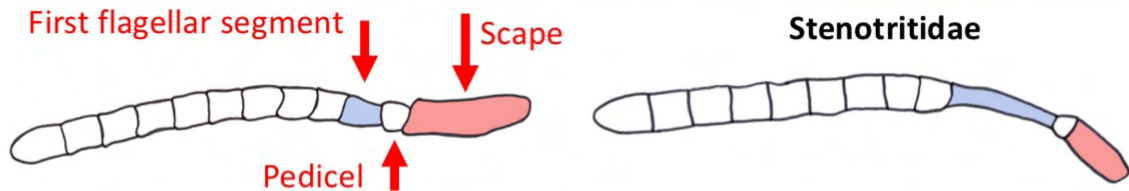
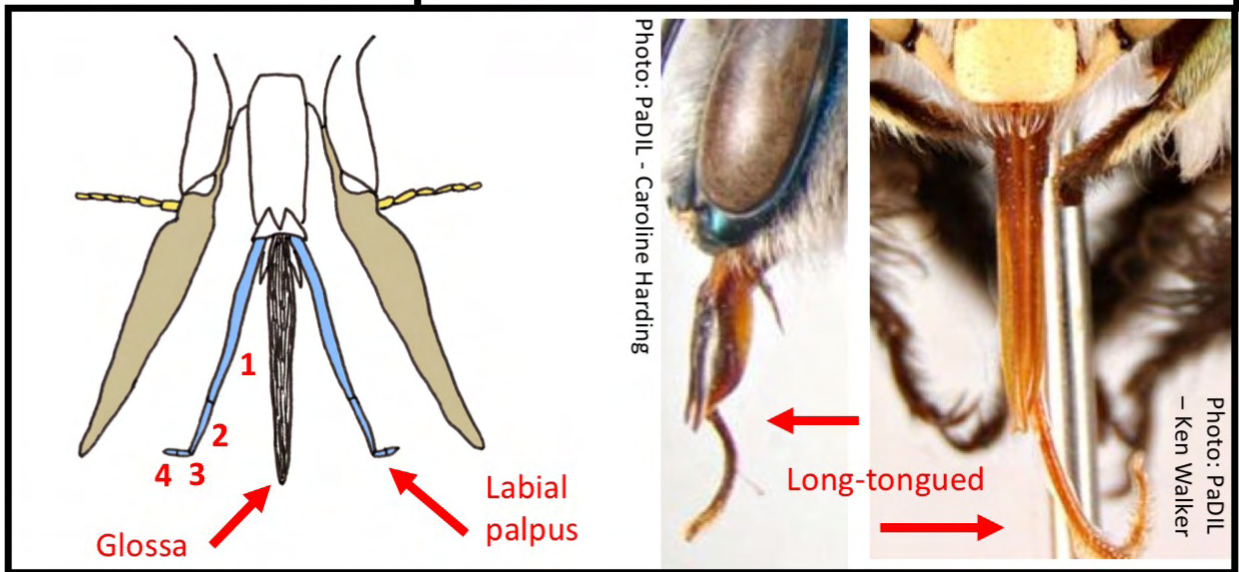
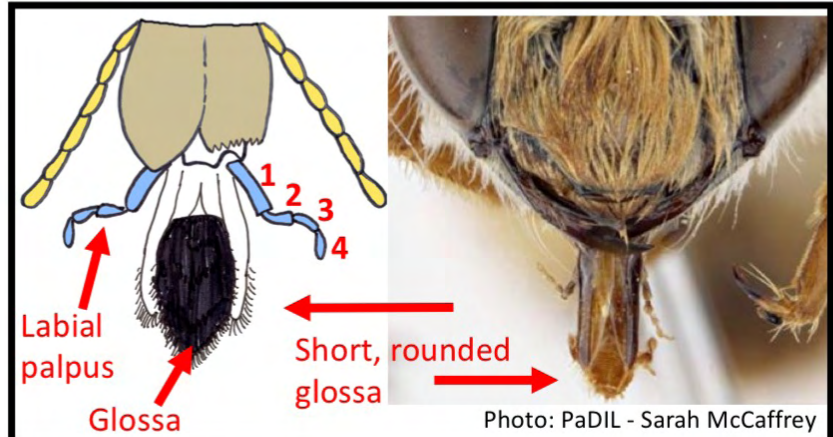
Line drawing by Tobias Smith

Family/Subfamily (Females) – Couplet 4 (3)

- ❖ Glossa short, apex broadly rounded, first two segments of labial palpus not elongate; first flagellar segment longer than scape on antennae ... **Stenotritidae** (page 105)
- ❖ Long-tongued bees, first two segments of labial palpus elongate, flattened (except labial palpus not elongate in *Ctenoplectra*. Large blue bees, see page 39); first flagellar segment not longer than scape on antennae ... **Apidae** (page 33)

The **glossa** and **labial palpus** are mouth parts. These are sometimes difficult to see in dried specimens as they may be folded backwards, under the head. In these cases, try looking at your specimen upside down.

See pages 9–11 for more information on mouthparts



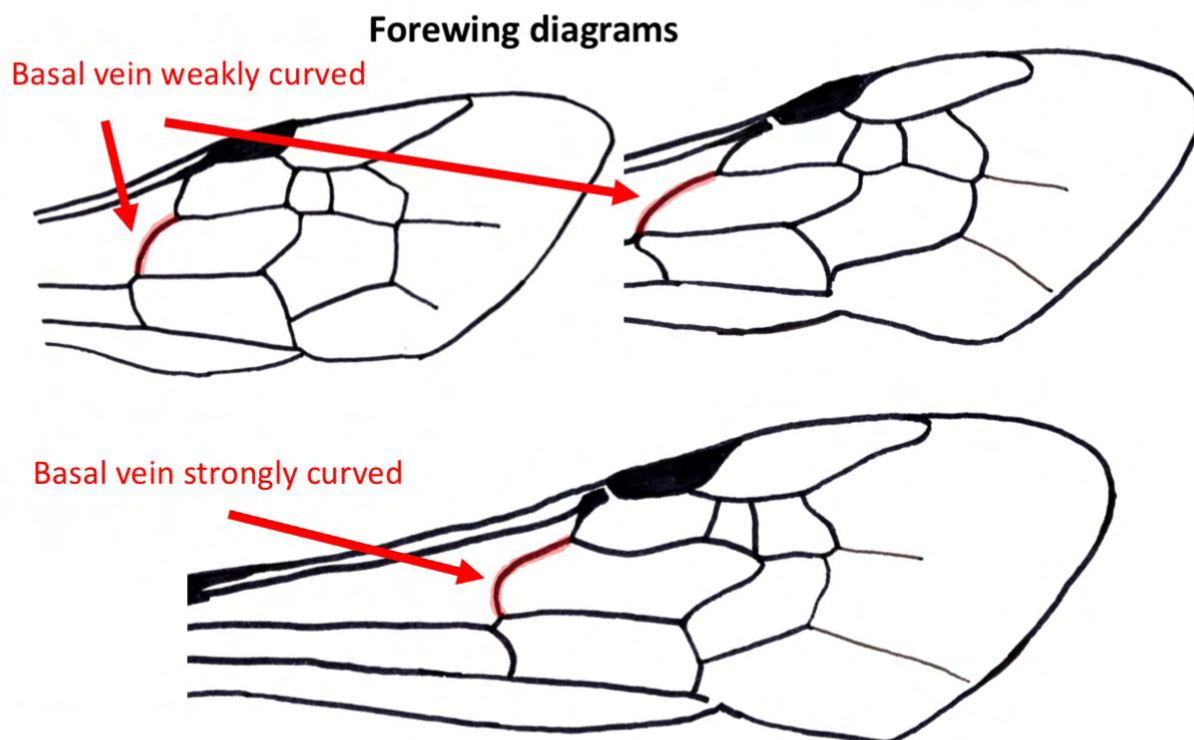
The **Stenotritidae** is a small family of about 21 species, endemic to Australia. The family consists of two genera: *Ctenocolletes* and *Stenotritus*. All species in this family are ground nesting bees. ...**Proceed to page 105 for key**

The **Apidae** is a family of about 173 species in Australia. Australia has three subfamilies, and 13 genera. The family includes both above- and below-ground nesting species. ...**Proceed to page 33 for key**

Line drawings by Tobias Smith (mouthparts based on diagram by E.R.S. Hodges in Michener, McGinley & Danforth, 1994 (long tongue) and diagram in Michener 2007 (short tongue))

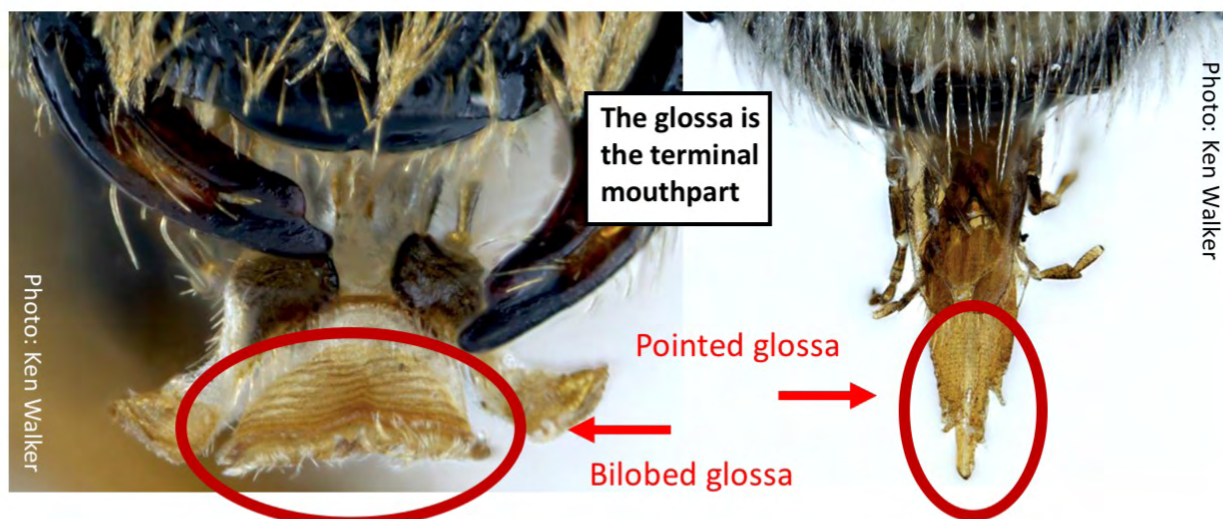
Family/Subfamily (Females) – Couplet 5 (3)

- ❖ Basal vein only weakly curved; glossa bilobed ... **Colletinae (Colletidae)** (page 48)
- ❖ Basal vein strongly curved; glossa acutely pointed ... **Halictidae** (page 87)



*A strongly curved basal vein is characteristic of the family Halictidae

See pages 9–11 for more information on mouthparts



*A bilobed glossa is characteristic of the family Colletidae

The **Colletinae** is a subfamily within the family Colletidae. The subfamily has 10 genera, with about 277 species. The Colletinae are ground nesting bees. ...**Proceed to page 48 for key**

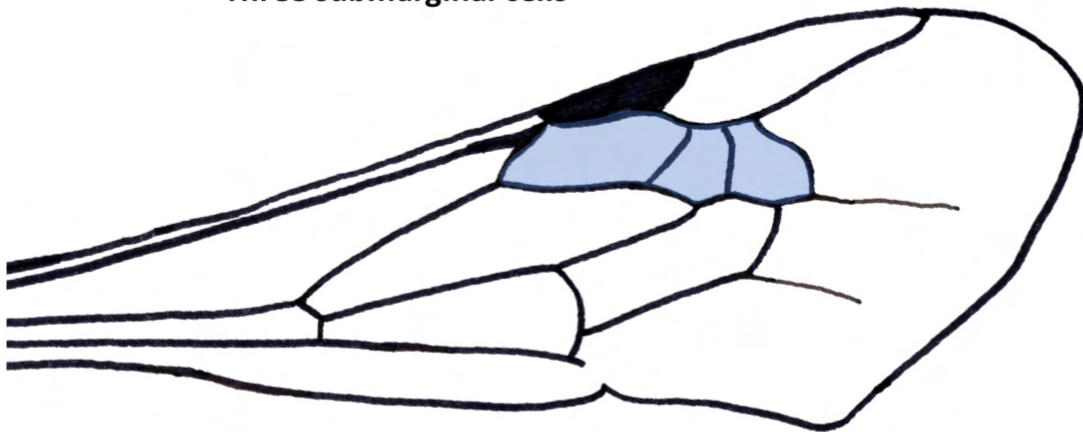
The family **Halictidae** is the second largest of the Australian bee families, with approximately 383 described species. ...**Proceed to page 87 for key**

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

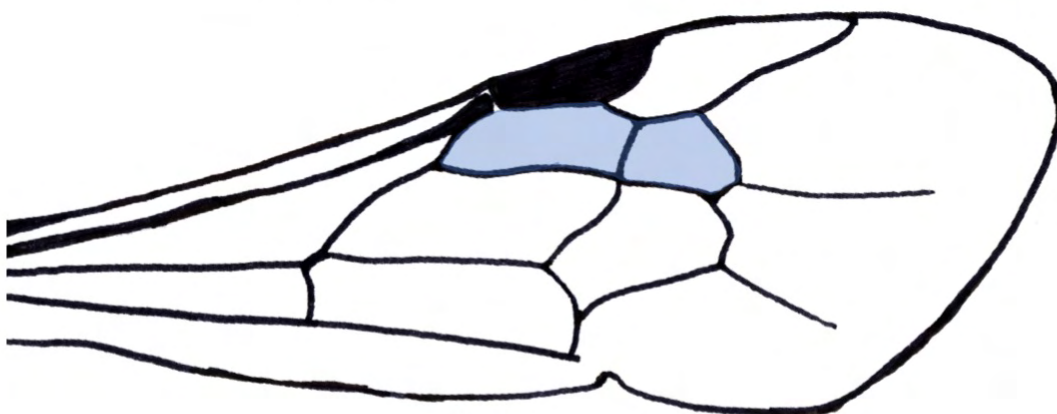
Family/Subfamily (Females) – Couplet 6 (1)

- ❖ Forewings with three submarginal cells ...7
- ❖ Forewings with two submarginal cells ...9

Three submarginal cells



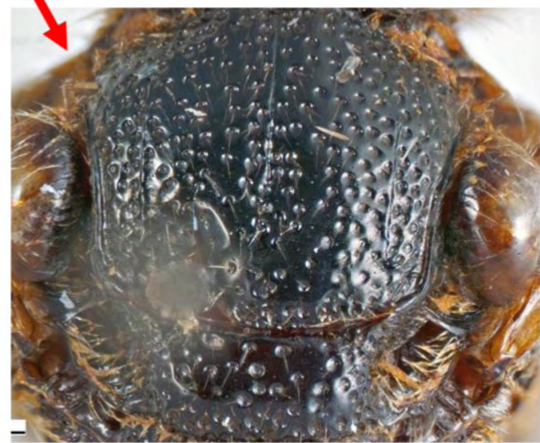
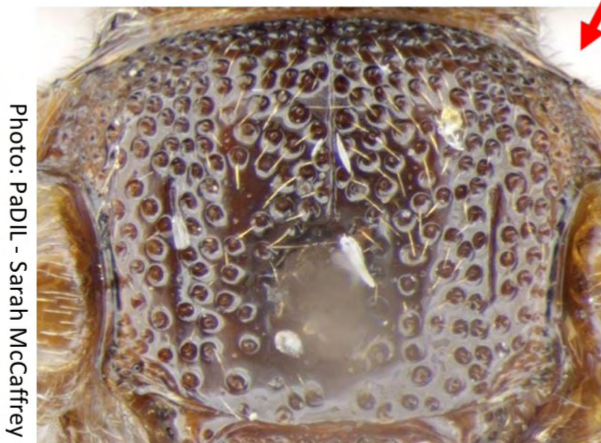
Two submarginal cells



Family/Subfamily (Females) – Couplet 7 (6)

- ❖ Black bees with white or iridescent blue patches of hair on all body parts;
mesosoma not coarsely pitted ... *Thyreus* (page 37)
- ❖ Not as above; mesosoma coarsely pitted ... 8

Coarsely pitted mesosoma



Thyreus nitidulus nitidulus



Thyreus lugubris



Thyreus waroonensis



Thyreus caeruleopunctatus



The genus *Thyreus*, family Apidae, is represented in Australia by 5–10 species. *Thyreus* species are nest parasites of *Amegilla*.

Family/Subfamily (Females) – Couplet 8 (7)

❖ Basal vein strongly curved

...*Sphecodes* (page 96)

❖ Basal vein almost straight

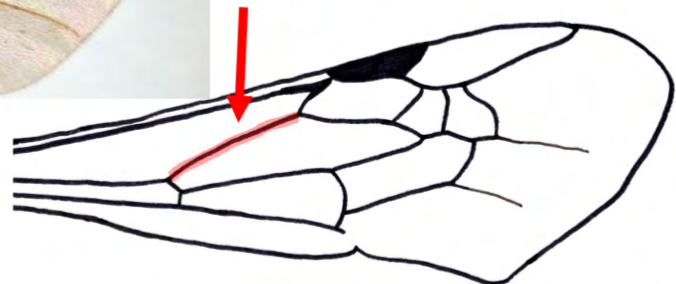
...*Nomada* (page 36)

Basal vein strongly curved



Photo: PaDIL – Ken Walker

Basal vein almost straight



The genus *Sphecodes*, family Halictidae (subfamily Halictinae), is represented in Australia by two species. These bees are nest parasites of other Halictine bees. *Sphecodes* is only known from Queensland in our region.

Sphecodes (Sphecodes) profugus



Photo: PaDIL – Ken Walker

Sphecodes (Callosphecodes) manskii



Photo: PaDIL -
Claus Rasmussen &
Charles Michener

Photo: PaDIL - Sarah McCaffrey



The genus *Nomada*, family Apidae, is represented in Australia by two species. The example here is *Nomada australensis*. *Nomada* is known only from QLD, and are thought to be nest parasites of *Lasioglossum* or some other small bees.



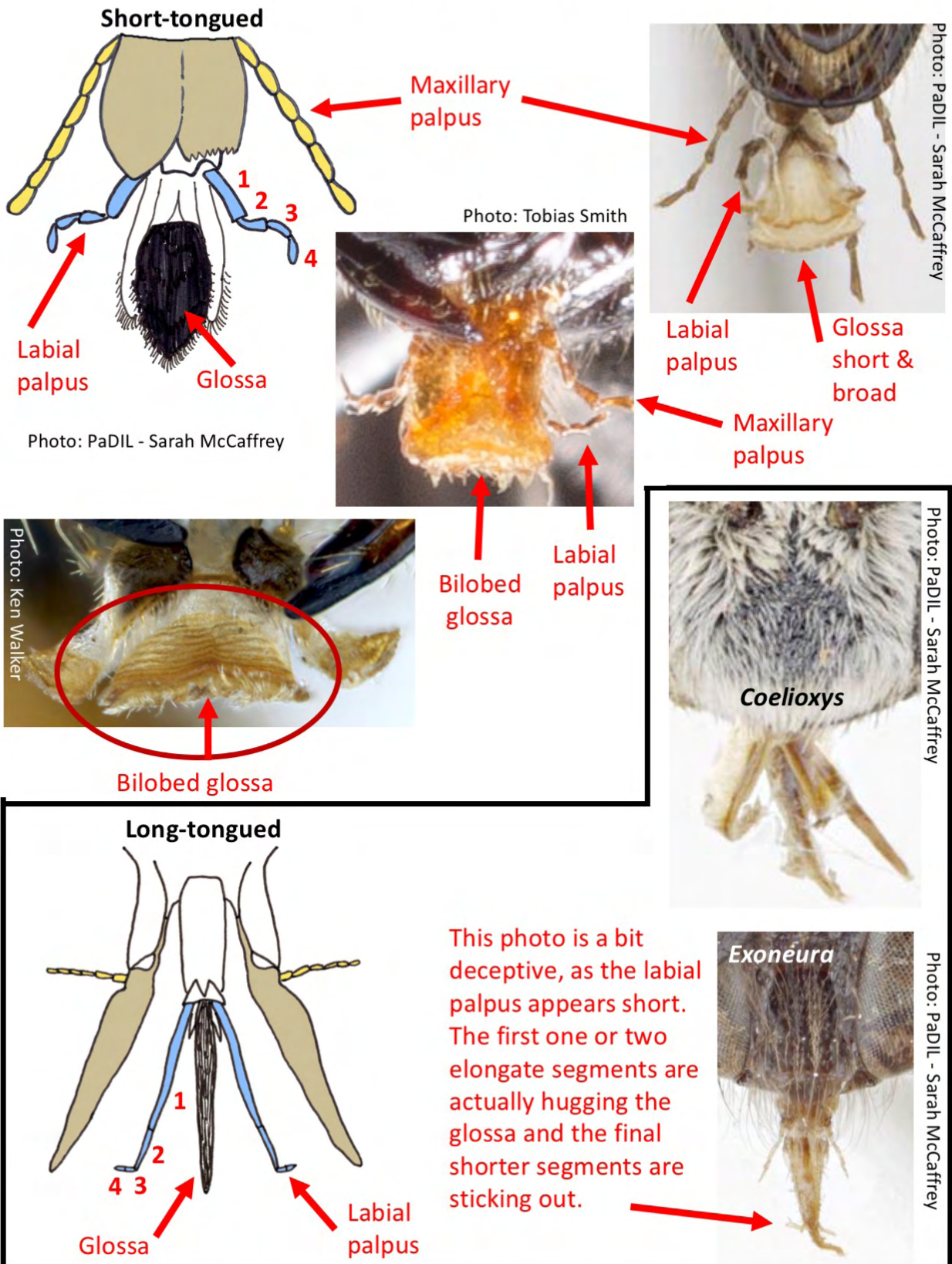
Photo: PaDIL - Sarah McCaffrey

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

Family/Subfamily (Females) – Couplet 9 (6)

- ❖ Short-tongued bees, glossa bilobed or short and broad, labial palpus with the four segments similar to one another ...10
- ❖ Long-tongued bees, first two segments of labial palpus elongate, flattened ...11

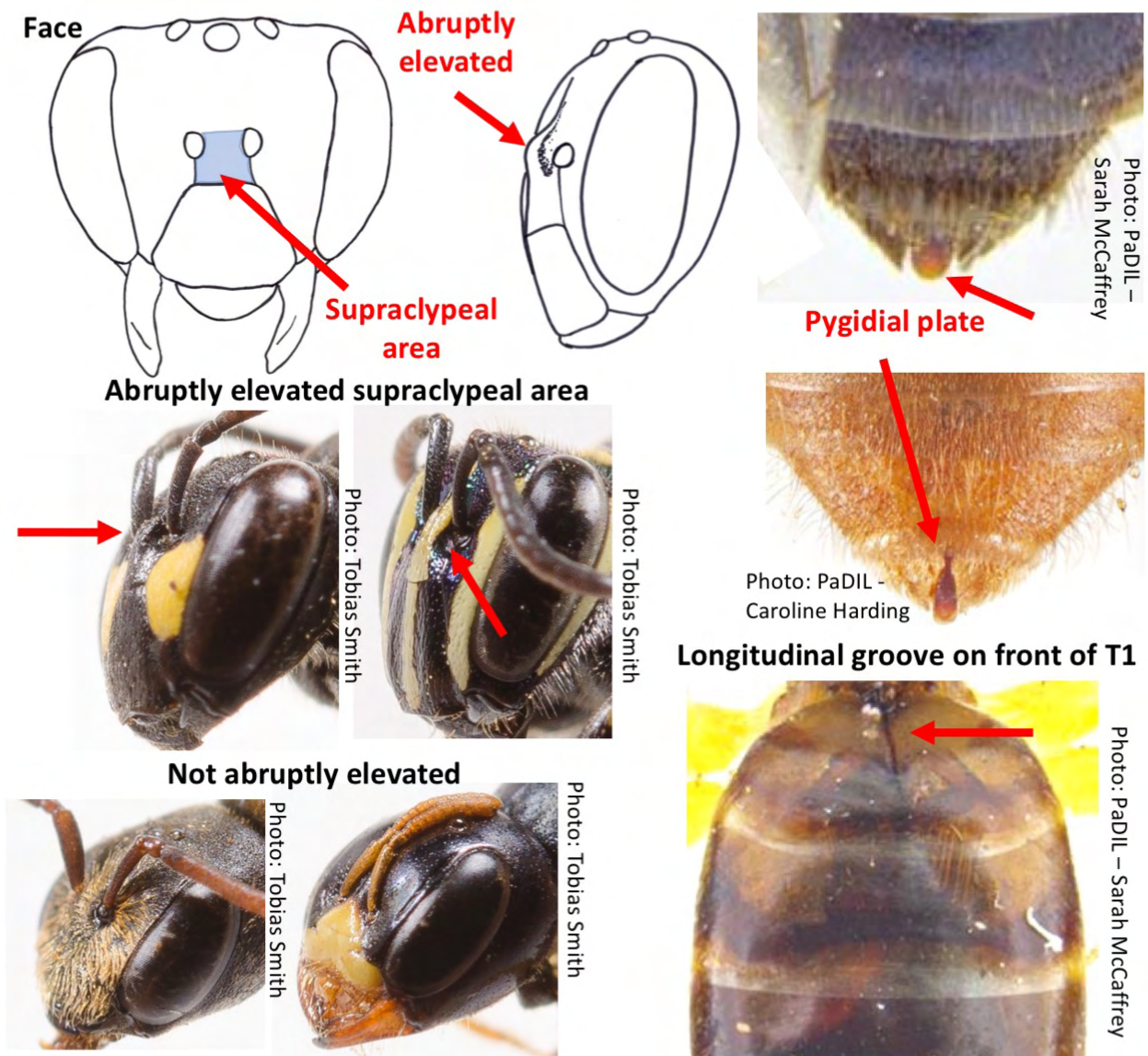
See pages 9–11 for more information on mouthparts



Line drawings by Tobias Smith (based on diagram by E.R.S. Hodges in Michener, McGinley & Danforth, 1994 (long tongue) and diagram in Michener 2007 (short tongue))

Family/Subfamily (Females) – Couplet 10 (9)

- ❖ Supraclypeal area elevated abruptly above level of antennal sockets; pygidial plate usually absent, but *if* present, then broad, its margins converging posteriorly (except in some *Hyleoides*, page 74); front surface of T1 usually lacking longitudinal median groove or ridge
...Hylaeinae (Colletidae) (page 73)
- ❖ Supraclypeal area sloping up from level of antennal sockets; pygidial plate present, the apical part slender, parallel-sided or spatulate; front surface of T1 with longitudinal median groove or ridge
...Euryglossinae (Colletidae) (page 57)



The subfamily **Hylaeinae**, family Colletidae, consists of seven genera. These bees carry their pollen internally, in the crop. Most species are above-ground nesting bees.

...Proceed to page 73 for key

The subfamily **Euryglossinae**, family Colletidae, consists of 15 genera. These bees carry their pollen internally, in the crop. There are ground nesting species and above-ground nesting species.

...Proceed to page 57 for key

Family/Subfamily (Females) – Couplet 11 (9)

- ❖ Metasoma conical, widest in first segment, tapering from near base to narrow, acutely pointed apex; eyes often hairy ...***Coelioxys*** (page 100)
- ❖ Metasoma parallel-sided for most of length, last three metasomal terga somewhat flattened; eyes not hairy ...***Exoneura (Inquilina)*** (page 45)

