

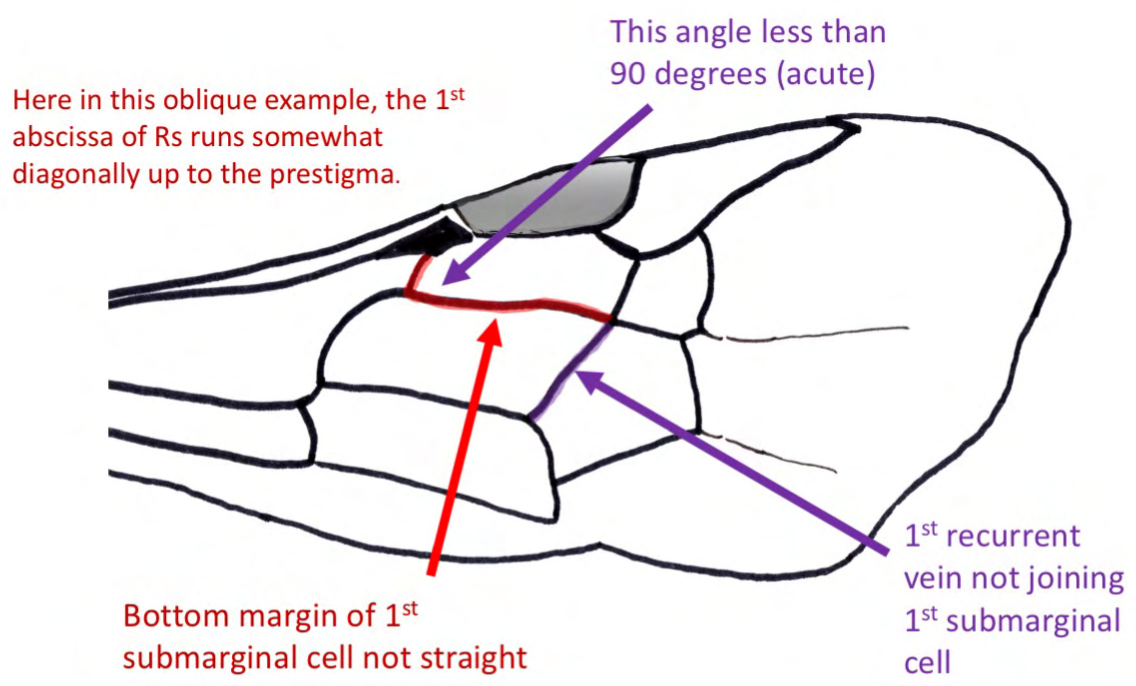
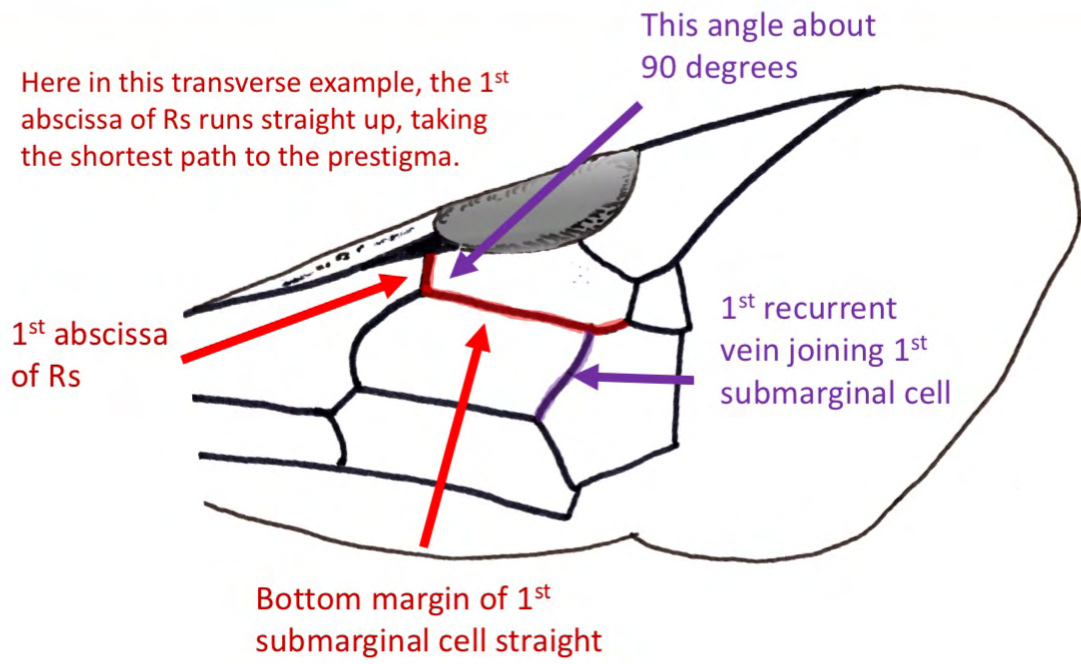
Colletidae: Subfamily Euryglossinae

The Euryglossinae is a large subfamily of the family Colletidae. They are mostly small to tiny bees, including the smallest bees in the world, although some species are up to 10mm in length. There are 400+ species. Females of this group carry their pollen internally, in the crop. There are ground nesting species and above-ground nesting species. The following couplets are an adaptation of a key by Michener (2007).



Euryglossinae – Couplet 1

- ❖ First abscissa of vein Rs transverse, so that posterior (bottom) inner corner of first submarginal cell has an angle of about 90 degrees; bottom margin of first submarginal cell straight; first recurrent vein joining first submarginal cell or rarely meeting first submarginal crossvein ... 2
- ❖ First abscissa of vein Rs oblique, so that bottom inner corner of first submarginal cell is nearly always acute; bottom margin of first submarginal cell curved [except in *Brachyhesma* and *Euhesma hemixantha*]; first recurrent vein not joining first submarginal cell ... 4

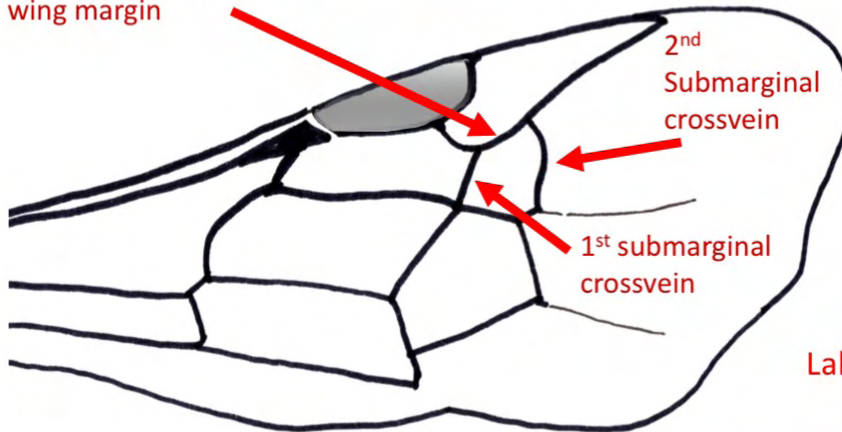


Line drawings by Tobias Smith (based on diagrams in Michener 2007)

Euryglossinae – Couplet 2 (1)

- ❖ Second submarginal crossvein about one-third longer than first; costal (top) margin of second submarginal cell sloping strongly towards end of upper wing margin; labrum of female nearly always with strong apical spine ... ***Pachyprosopis***
- ❖ Second submarginal crossvein usually little longer than first or absent; top margin of second submarginal cell subparallel to costal margin of stigma; labrum of female usually without apical spine (minute species) ... **3**

Top margin of 2nd submarginal cell sloping strongly towards end of upper wing margin



Face

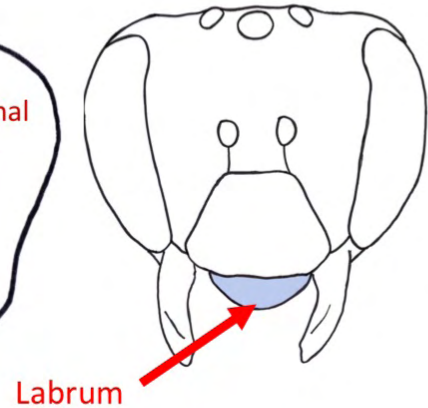
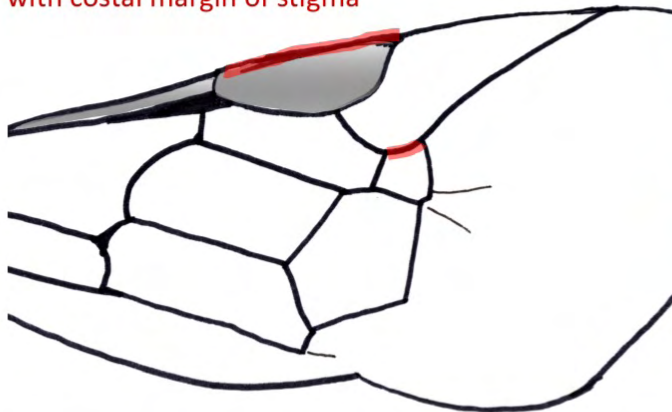
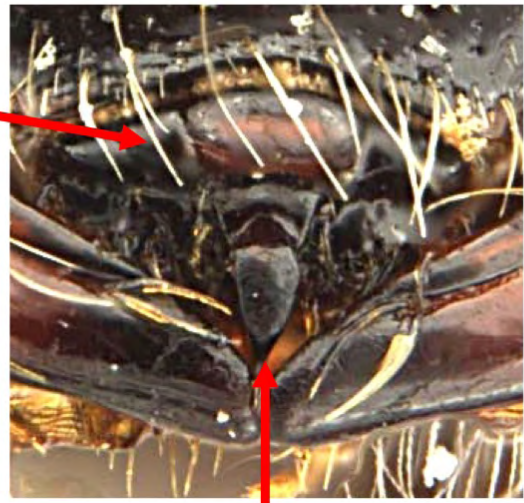


Photo: Michael Batley

2nd submarginal cell subparallel with costal margin of stigma



Labrum



Labrum with apical spine

Pachyprosopis

~23 species, widespread

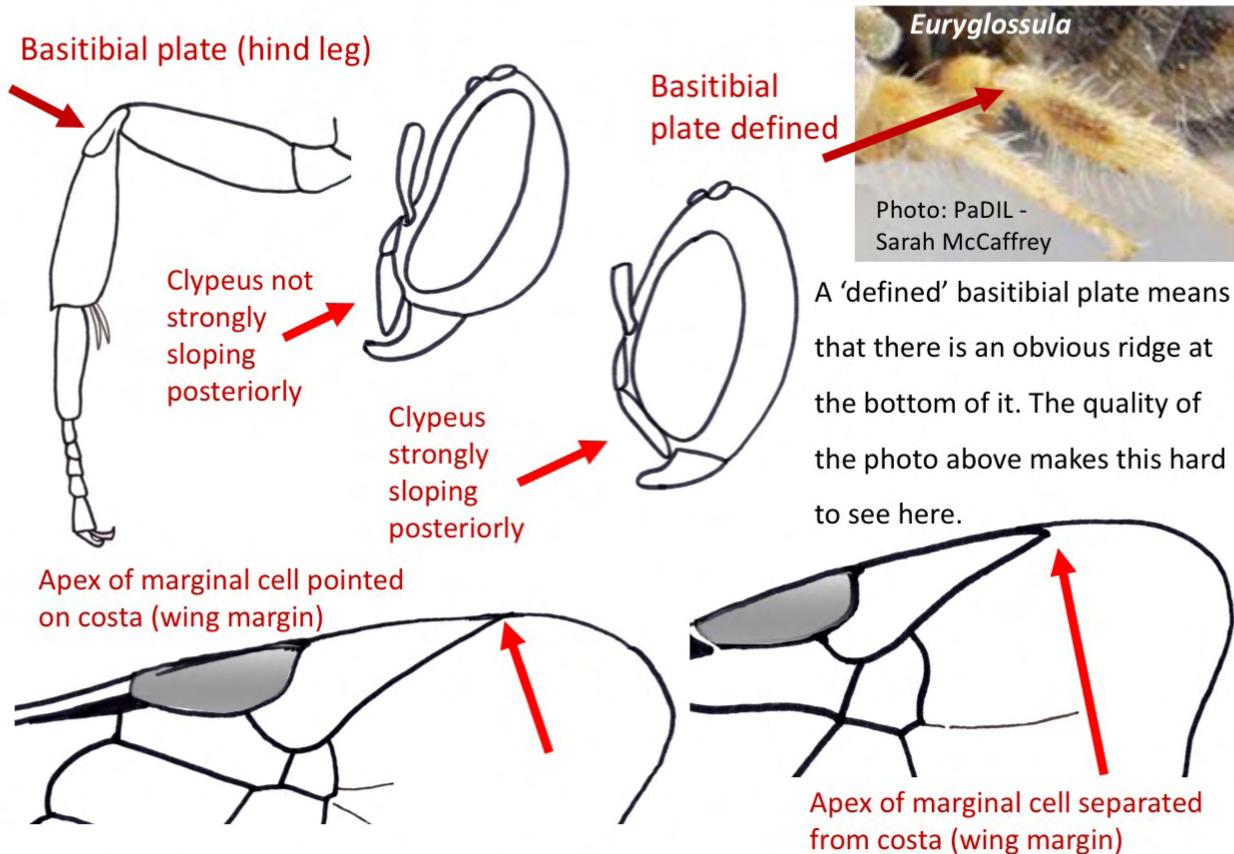


Exley, E. M. (1972) Revision of the genus *Pachyprosopis* Perkins (Apoidea: Colletidae).

Australian Journal of Zoology Supplementary Series 10: 1–43 [15].

Euryglossinae – Couplet 3 (2)

- ❖ Basitibial plate of female defined (though in some cases very indistinctly and incompletely), one-fourth to one sixth of length of tibia; clypeus of female not strongly sloping posteriorly, as seen in profile; apex of marginal cell pointed on costa
... ***Euryglossula***
- ❖ Basitibial plate of female not clearly defined, but margin indicated (often vaguely) by tubercles and ending near middle of tibia; clypeus of female sloping posteriorly, at least below; apex of marginal cell often separated from costa, sometimes by less than width of a vein (except in at least two species)
... ***Euryglossina***



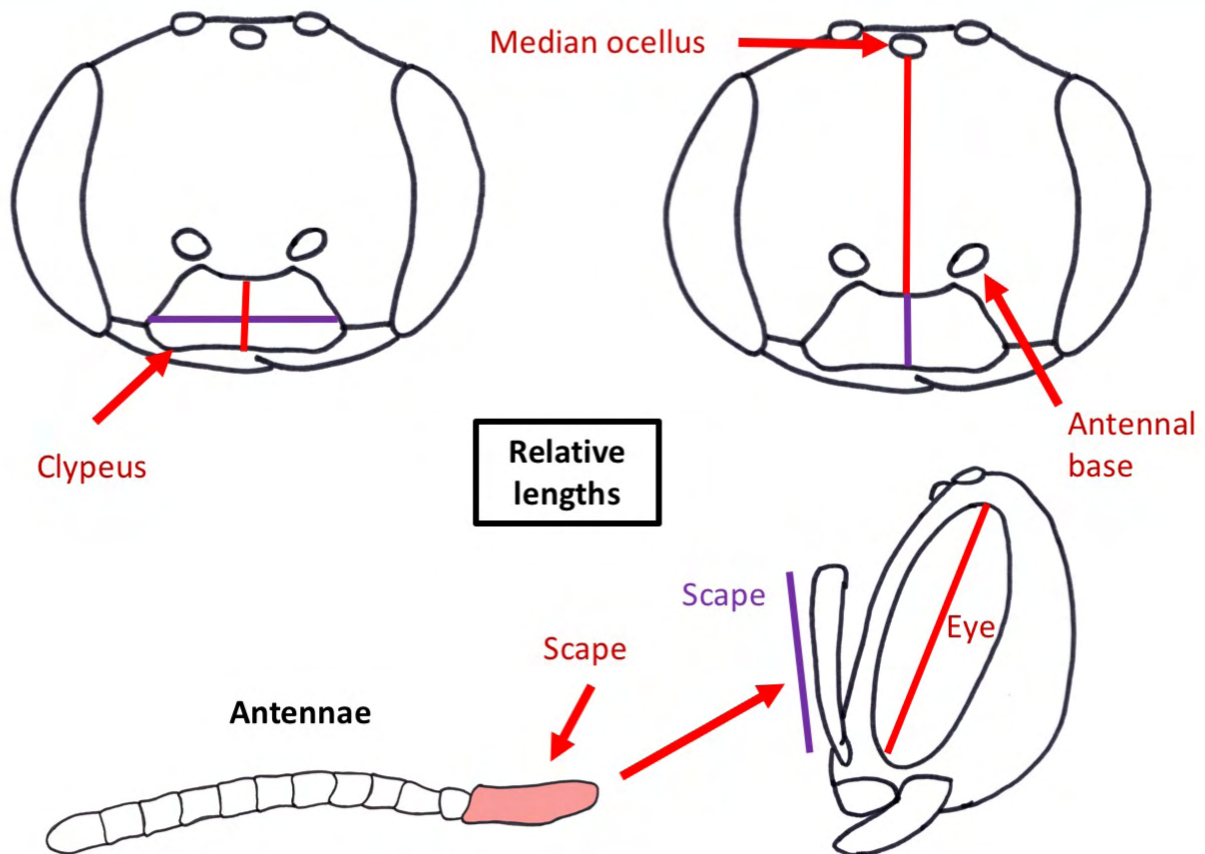
Note: While the apex of marginal cell character is useful to help separate some species in each of these two genera, it is not useful in others. In some species of *Euryglossula* there are also dense hairs in the wing that seem to make the vein appear longer, and thus not fitting the description above.

<i>Euryglossula</i>	<i>Euryglossina</i>
<20 species, widespread	<75 species, widespread
Batley, M. (2016) New species of <i>Euryglossula</i> Michener (Apoidea: Colletidae). <i>Rec. Aust. Mus.</i> 68(6): 245–261.	Exley E.M. (1968) Revision of the genus <i>Euryglossina</i> Cockerell (Apoidea: Colletidae). <i>Australian Journal of Zoology</i> , 16: 915–1020.

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

Euryglossinae – Couplet 4 (1)

- ❖ Clypeus more than 3.5 times as broad as long, as seen from front; and folded under the head; scape at least two-thirds as long as eye; antennal bases more than three times as far from median ocellus as from lower edge of clypeus (antennal bases touching the clypeus) ... ***Brachyhesma***
- ❖ Clypeus usually less than 3.5 times as broad as long, not folded under the head; scape usually not much more than one-half as long as eye; antennal bases not much more than twice as far from median ocellus as from lower edge of clypeus ... **5**



Brachyhesma

~40 species, widespread



Photo: PaDIL - Sarah McCaffrey

Example specimens



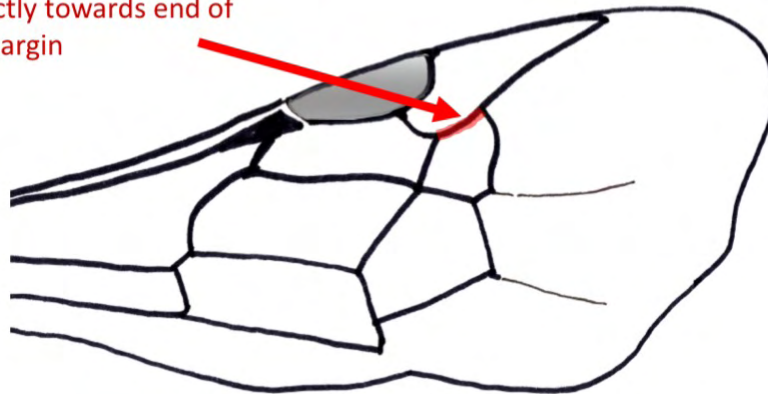
Photo: PaDIL - Sarah McCaffrey

Exley E.M. (1977) The Australian genus *Brachyhesma* (Apoidea: Colletidae) revised and reviewed. *Australian Journal of Zoology Supplementary Series* 25: 1-54.

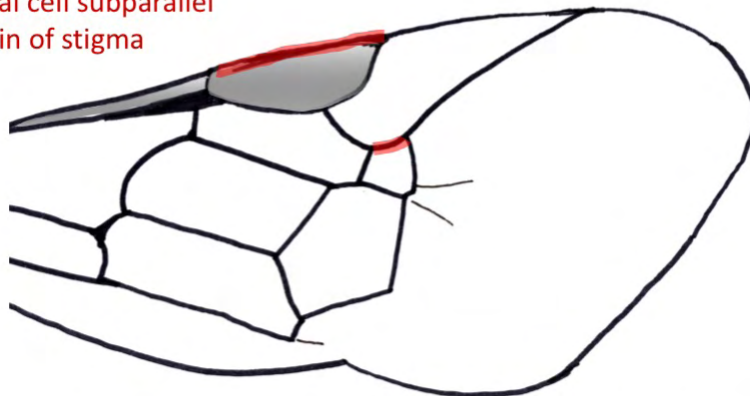
Euryglossinae – Couplet 5 (4)

- ❖ Costal (top) margin of second submarginal cell distinctly sloping apically towards costa (body black, without yellow markings; subantennal sutures absent, see page 71) ... *Hyphesma*
- ❖ Costal (top) margin of second submarginal cell usually sub-parallel to costal margin of stigma ... 6

Top margin of 2nd submarginal cell sloping distinctly towards end of upper wing margin



2nd submarginal cell subparallel with top margin of stigma



Note: What is a 'distinctly' sloped? This can be tricky. For example, *Sericogaster fasciata* (couplet 8) is fairly sloped, but actually keys out here as sub-parallel. If you run into trouble at or beyond this couplet, try coming back and taking the alternate path here.

Photo: PaDIL - Caroline Harding



Example specimen

Hyphesma

<10 species, widespread

Exley, E. (1975) Revision of the genus *Hyphesma* Michener (Apoidea: Colletidae). *Australian Journal of Zoology*, 23: 277–291.

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

Euryglossinae – Couplet 6 (5)

- ❖ T1 about as broad as long, as seen from above (not yellow bodied) ... *Heterohesma*
- ❖ T1 much broader than long or body largely yellow ... 7



Photo: PaDIL - Caroline Harding

T1 (highlighted in red here), as broad as long

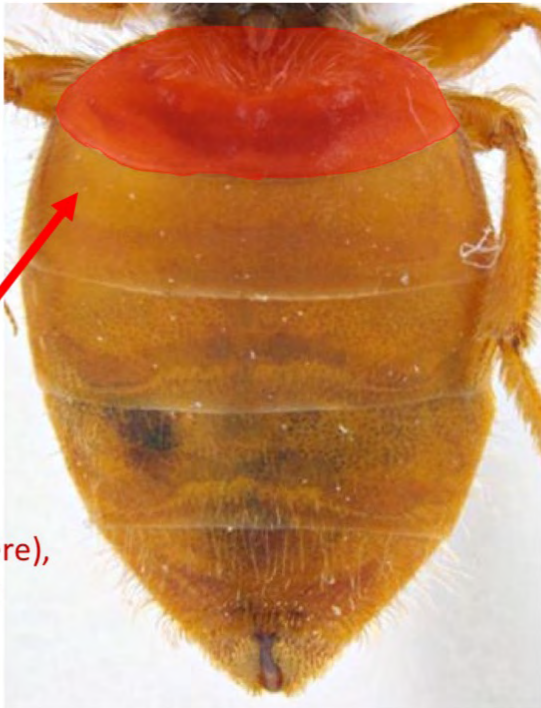


Photo: PaDIL – Clare McClellan

T1 (highlighted in red here), much broader than long




Photo: PaDIL - Caroline Harding

Heterohesma
2 species, east coast




Photo: PaDIL - Caroline Harding

Euryglossinae – Couplet 7 (6)

- ❖ Second submarginal cell strongly narrowed towards costa (top), about half as long on anterior side as on posterior side; second submarginal crossvein strongly curved or sinuate and at an angle of about 45 degrees to first; head and mesosoma strongly and closely punctate, metasoma dull with dense, minute punctures
... ***Dasyhesma***
- ❖ Second submarginal cell only a little shorter on anterior side than on posterior side; second submarginal crossvein only gently curved and subparallel to first or at an angle of less than 40 degrees to first; head and mesosoma with punctures fine or well separated, metasoma not dull with minute, dense punctures, although sometimes dulled by other sculpturing
... **8**

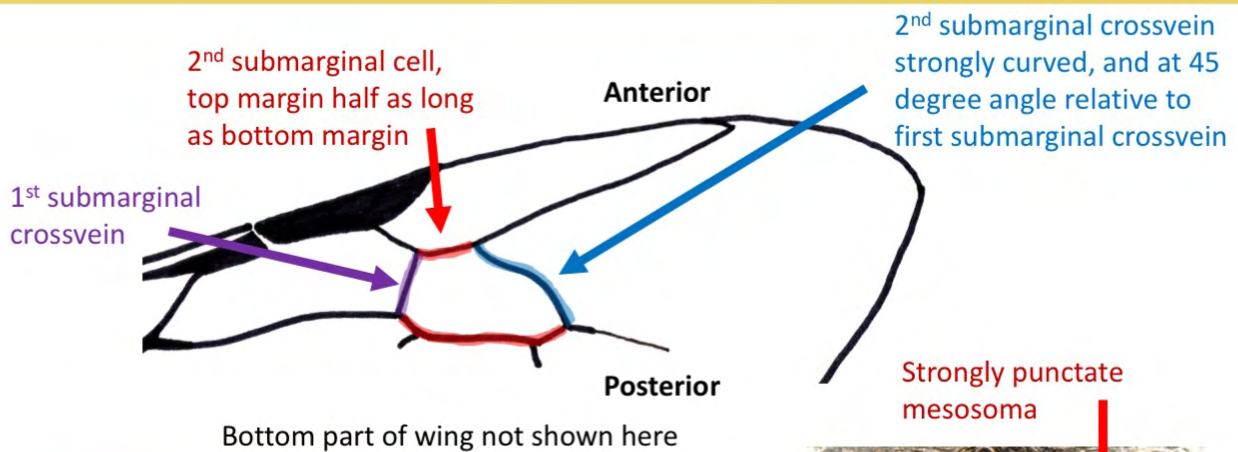


Photo: PaDIL - Caroline Harding

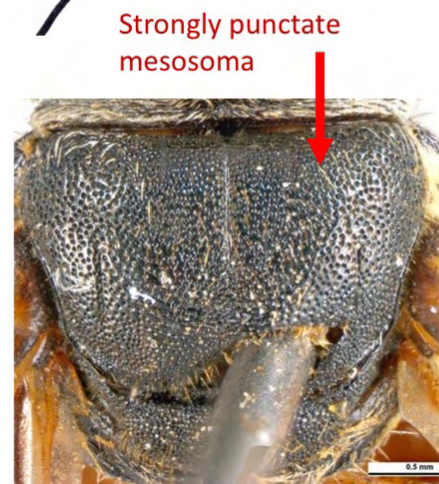


Photo: PaDIL - Caroline Harding

Photos: PaDIL - Caroline Harding

Example images

Dasyhesma

~20 species

Only known from WA

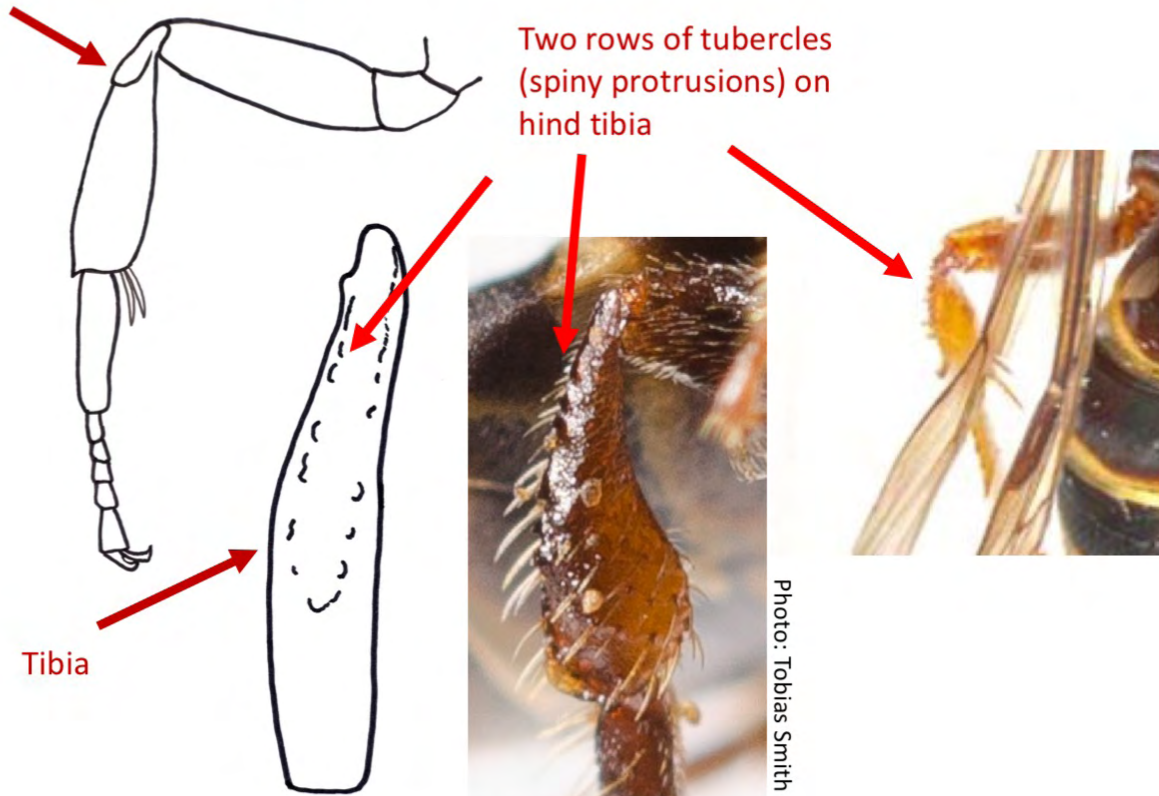
Exley, E. (2004) Revision of the genus *Dasyhesma* Michener (Apoidea: Colletidae: Euryglossinae). Records of the Western Australian Museum, 22 (2): 129–146.

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

Euryglossinae – Couplet 8 (7)

- ❖ Basitibial plate in both sexes indicated by two rows of large tubercles, the rows nearly meeting and terminating the “plate” well beyond middle of tibia
... *Sericogaster*
- ❖ Basitibial plate not extending beyond middle of tibia, although a single row of tubercles may extend beyond middle
... 9

Basitibial plate (hind leg)



Sericogaster

1 species, *S. fasciata*

Only known from east coast

Unusually broad vertex area on top of head

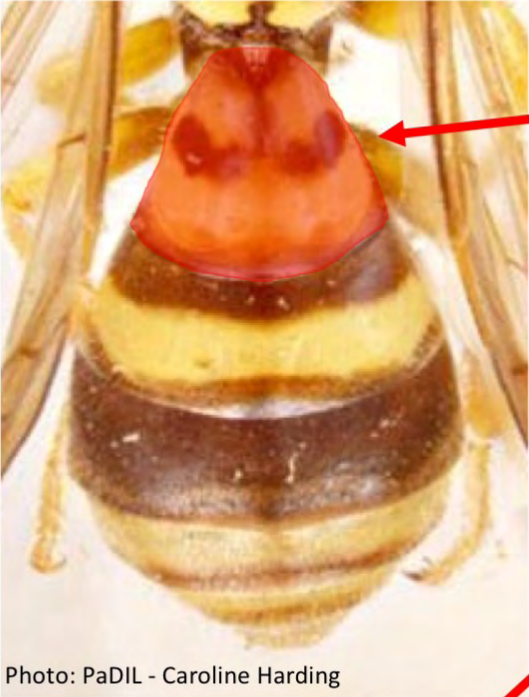


Photos: Tobias Smith

Line drawings by Tobias Smith (basitibial plate based on diagram in Michener 2007)

Euryglossinae – Couplet 9 (8)

- ❖ Body slender, T1 seen from above little broader than long (extensive yellow pattern on body; mandible simple in both sexes) ... ***Stenohesma***
- ❖ Body of ordinary form, T1 seen from above much broader than long ... **10**



T1 (highlighted in red here), about as broad as long

Photo: PaDIL - Caroline Harding



Photo: PaDIL - Caroline Harding

T1 (highlighted in red here), much broader than long



Photo: PaDIL - Caroline Harding

Stenohesma

1 species, *S. nomadiformis*

Only known from north QLD



Photo: PaDIL - Caroline Harding

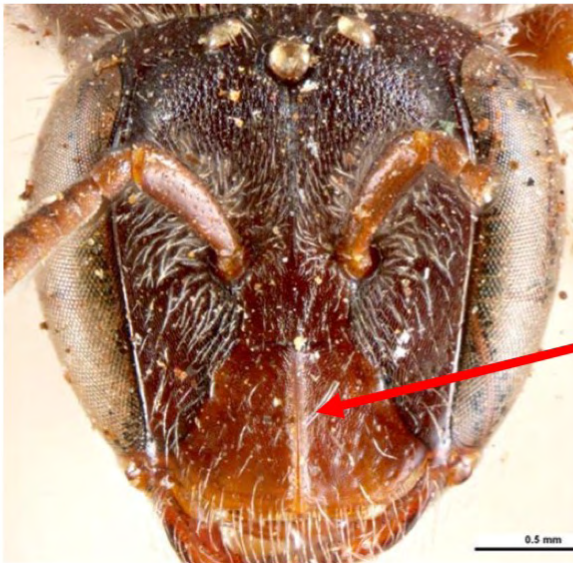
Euryglossinae – Couplet 10 (9)

- ❖ Clypeus with strong longitudinal median carina (ridge); mandible simple
... *Melittosmithia*
- ❖ Clypeus without longitudinal carina
... 11

Mandible simple



Photo: PaDIL - Caroline Harding



Clypeus with strong carina (ridge)



Photo: PaDIL - Caroline Harding

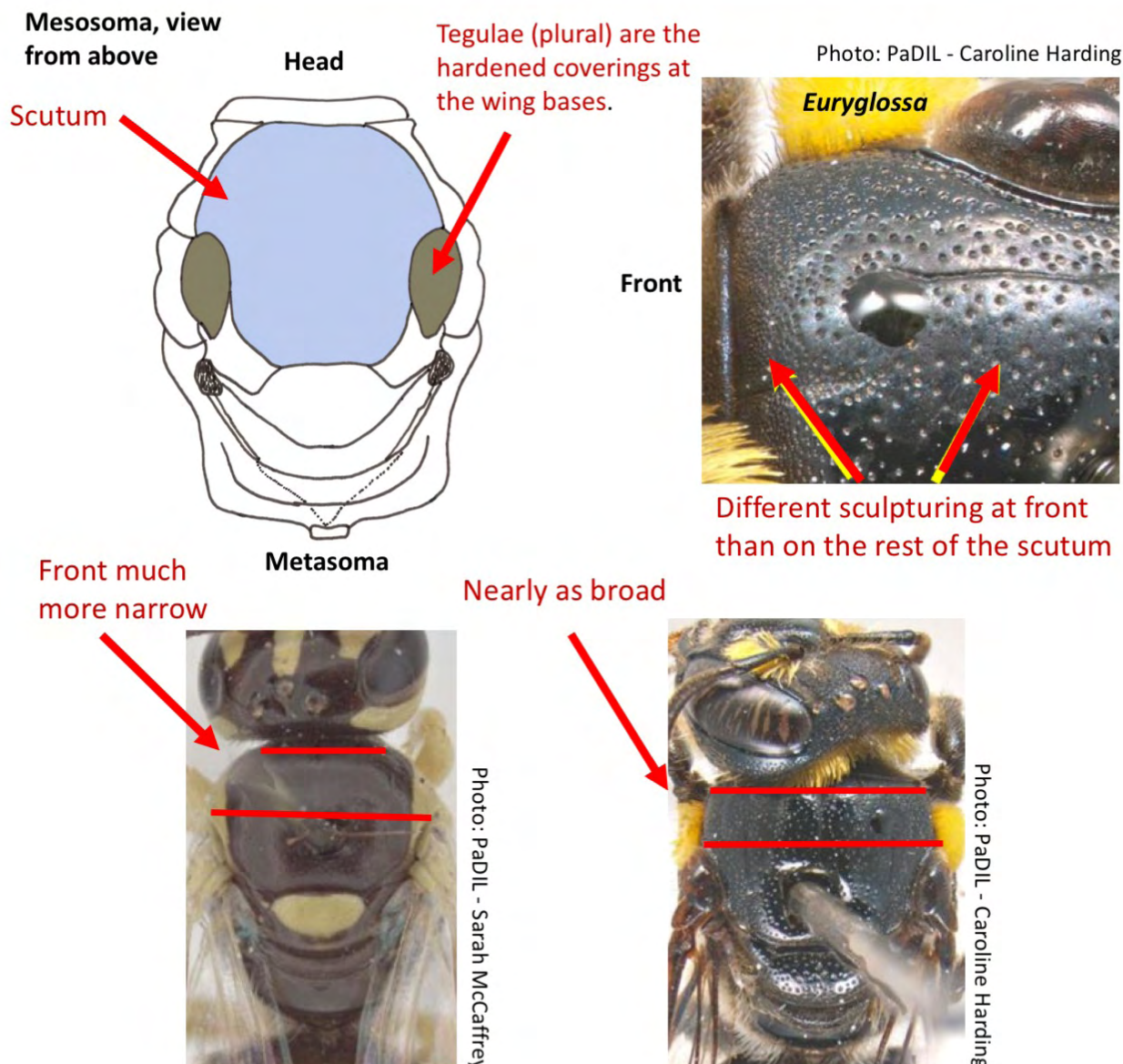
Melittosmithia

4 species

South-eastern Australia

Euryglossinae – Couplet 11 (10)

- ❖ Front end of scutum, especially in female, nearly as broad as scutal width at front ends of tegulae; front of scutum curved down rather sharply and usually differently sculptured than rest of scutum; scutum coarsely punctured, in female; body usually without yellow markings
... **Euryglossa**
- ❖ Front end of scutum much narrower than width at front ends of tegulae; front of scutum curved down rather uniformly and usually not sculptured differently than rest of scutum; scutum shining and almost impunctate, or usually dull, minutely lineate or roughened, its punctation variable
... **12**



Euryglossa

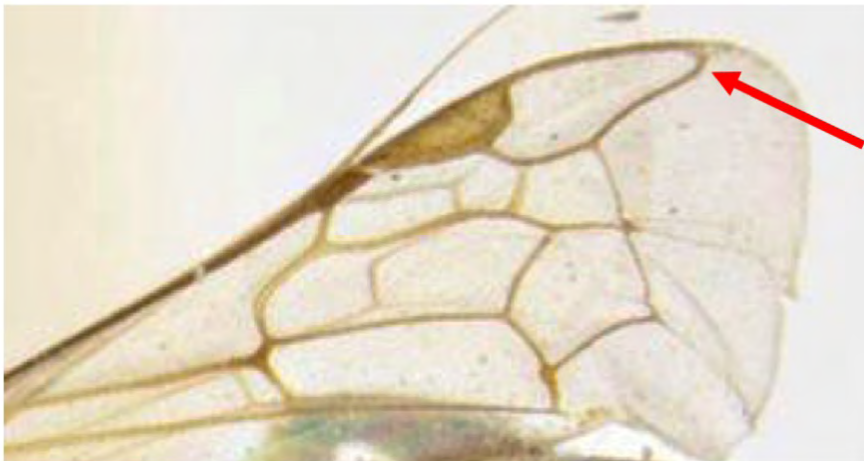
~40 species, widespread

Exley E.M. (1976) Revision of the subgenus Euryglossa Smith (Apoidea: Colletidae: Euryglossinae). *Australian Journal of Zoology Supplementary Series*, 24: 1-72.

Line drawing by Tobias Smith (based on diagram by E.R.S. Hodges in Michener, McGinley & Danforth, 1994)

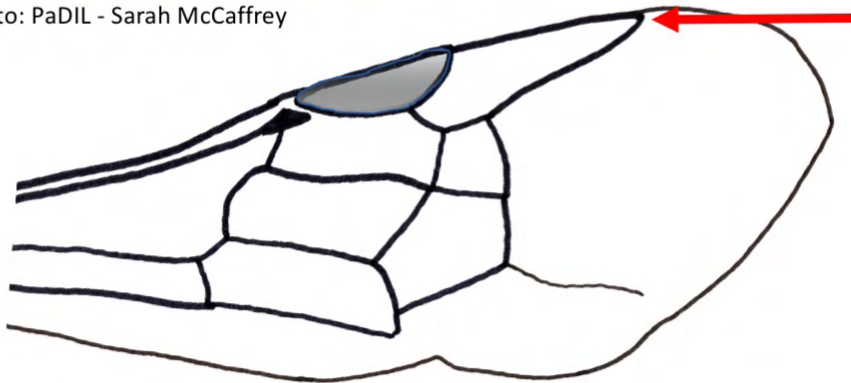
Euryglossinae – Couplet 12 (11)

- ❖ Apex of marginal cell rounded or somewhat pointed, bent well away from wing margin; outer surface of hind tibia of female covered with simple bristles
... *Callohesma*
- ❖ Apex of marginal cell pointed on or almost on wing margin; outer surface of hind tibia of female usually with some plumose hairs in addition to simple bristles
... 13





Apex of marginal cell rounded, bent away from wing margin

Photo: PaDIL - Sarah McCaffrey



Pointed apex, and almost on wing margin

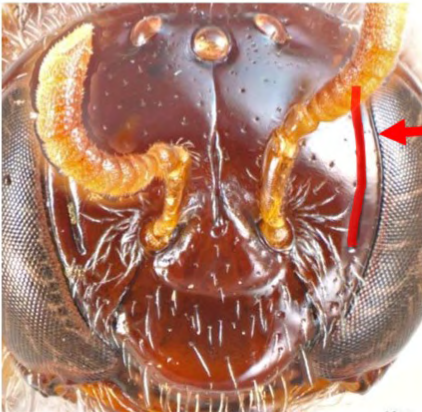
<p>Example specimen</p>  <p>Photo: PaDIL - Sarah McCaffrey</p>	<h3><i>Callohesma</i></h3> <p>~35 species, widespread</p> <p>Exley, E. (1974) Revision of the subgenus <i>Callohesma</i> Michener (Apoidea: Colletidae). <i>Australian Journal of Zoology Supplementary Series</i>, 22: 1-58.</p>  <p>Photo: Tobias Smith</p>
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Line drawing by Tobias Smith (based on diagram in Michener 2007)

Euryglossinae – Couplet 13 (12)

- ❖ Mandible of female tridentate (male unknown); facial foveae linear, not bent towards ocelli ... *Tumidihesma*
- ❖ Mandible simple or bidentate; facial foveae broader, or, *if* narrowly linear, then upper end bent toward ocelli ... 14

Photo: PaDIL - Caroline Harding



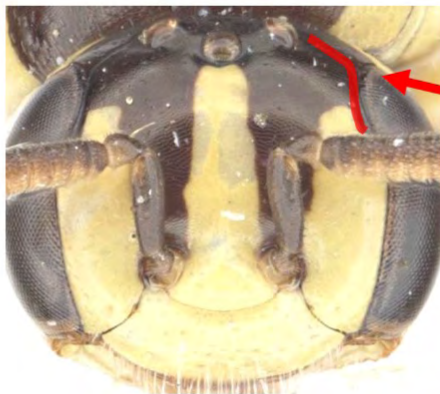
A groove/channel in the cuticle is a fovea (plural foveae). In the face they come in pairs, and are called facial foveae. In this case they are linear and narrow.

Photo: PaDIL - Caroline Harding



In this case, the facial foveae are broad, not thin, and not linear.

Photo: PaDIL - Sarah McCaffrey



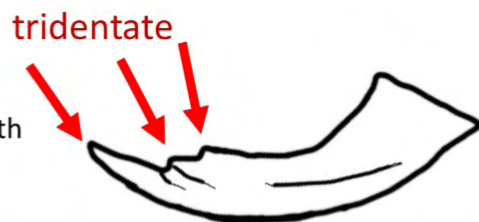
In these two cases, the facial foveae are also narrow and linear, but they bend inwards towards ocelli at the top end.

Photo: PaDIL - Sarah McCaffrey



Note: It can help to use light from one side, and look for the shadow here.

Note: A tridentate mandible is one with three teeth at/near the end. Bidentate is two, simple is none.



Tumidihesma

2 species
~6mm long
Not known from eastern states



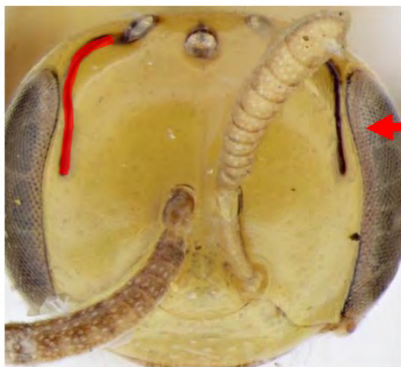
Photos: PaDIL - Caroline Harding

Line drawing by Tobias Smith

Euryglossinae – Couplet 14 (13)

- ❖ Facial foveae of female slender, linear, upper fourth or more bent inwards towards ocelli; mandible of female simple (with small preapical tooth in subgenus *Chaetohesma*); subantennal suture absent, upper lateral part of clypeus usually produced upward to antenna; body commonly with extensive yellow markings
... *Xanthesma*
- ❖ Facial foveae of female broad or broadly linear, upper end commonly not bent inwards; mandible of female with preapical tooth on upper margin; subantennal suture usually present, but upper lateral angle of clypeus sometimes attaining antennal base, eliminating subantennal suture; body usually without extensive yellow markings
... *Euhesma*

Photo: PADIL - Sarah McCaffrey

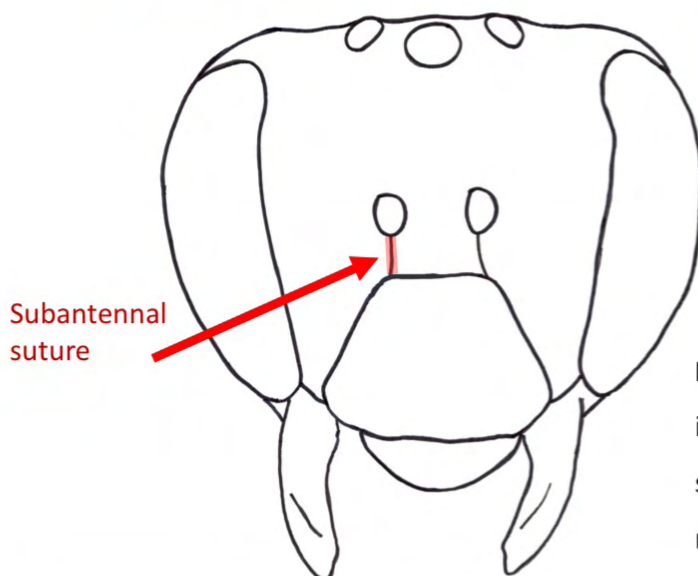


Facial foveae of female slender, linear, and bent towards ocelli

Facial foveae of female broad, not usually bent towards ocelli



Photo: PADIL - Caroline Harding



Subantennal suture

Note: The subantennal suture is absent in *Xanthesma* because the antennal sockets touch the clypeus, leaving no room to see a suture in between the two.

<i>Xanthesma</i>	<i>Euhesma</i>
~50 species, widespread	~90 species, widespread
Exley, E. (1974) A contribution to our knowledge of the bee fauna (Colletidae: Euryglossinae) of remote areas of Australia with descriptions of new species. <i>Proceedings of the Royal Society of Queensland</i> , 85 (9): 95–110.	<p>PART: Exley, E. (2001) The <i>walkeriana</i> species-group of <i>Euhesma</i> Michener (Hymenoptera: Colletidae: Euryglossinae). <i>Austral Entomology</i>, 40: 102–112.</p> <p>PART: Hogendoorn, Stevens, & Leijs (2015) DNA barcoding of euryglossine bees and the description of new species of <i>Euhesma</i> Michener (Hymenoptera: Colletidae: Euryglossinae). <i>ZooKeys</i>, 520: 41–59.</p>

