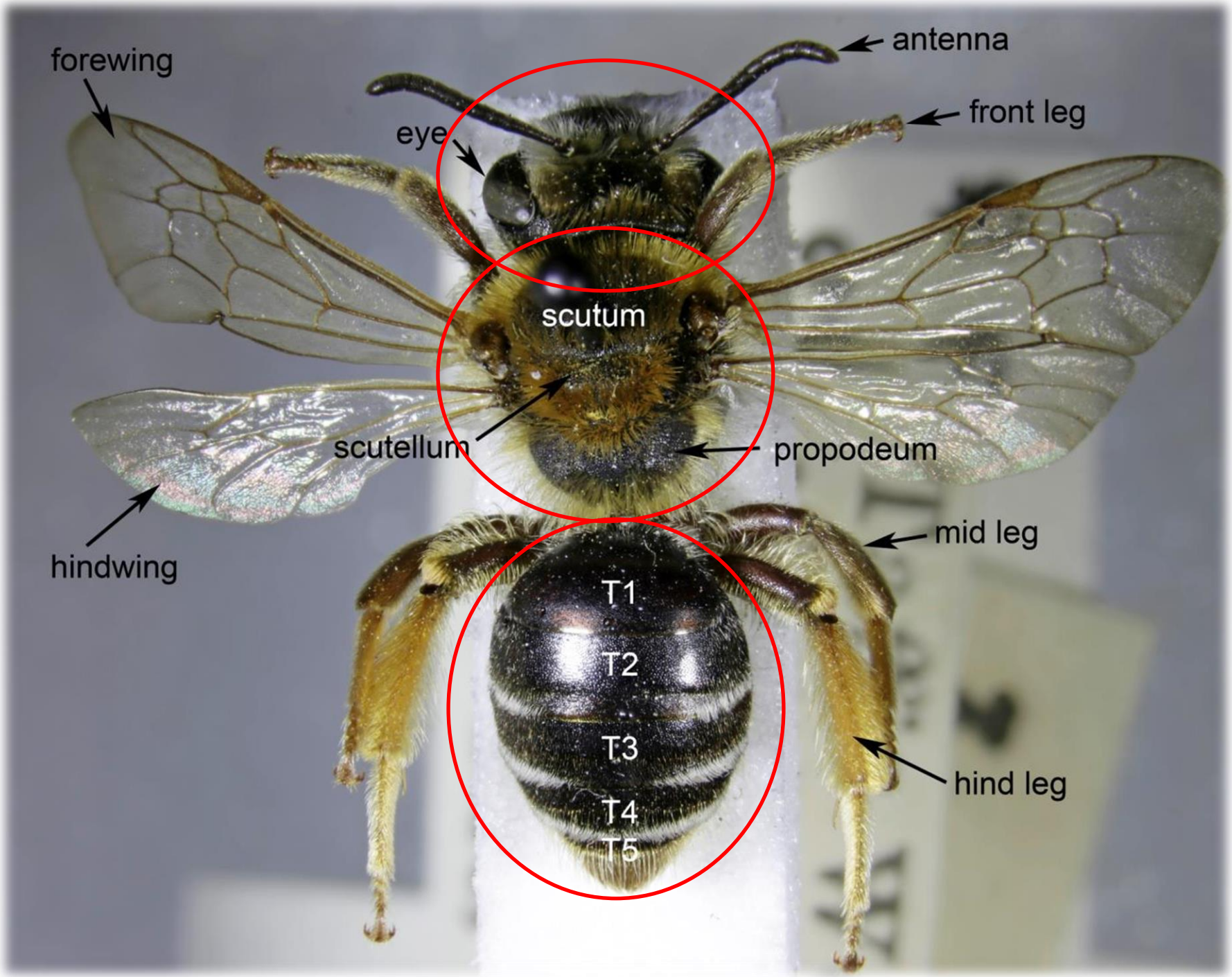
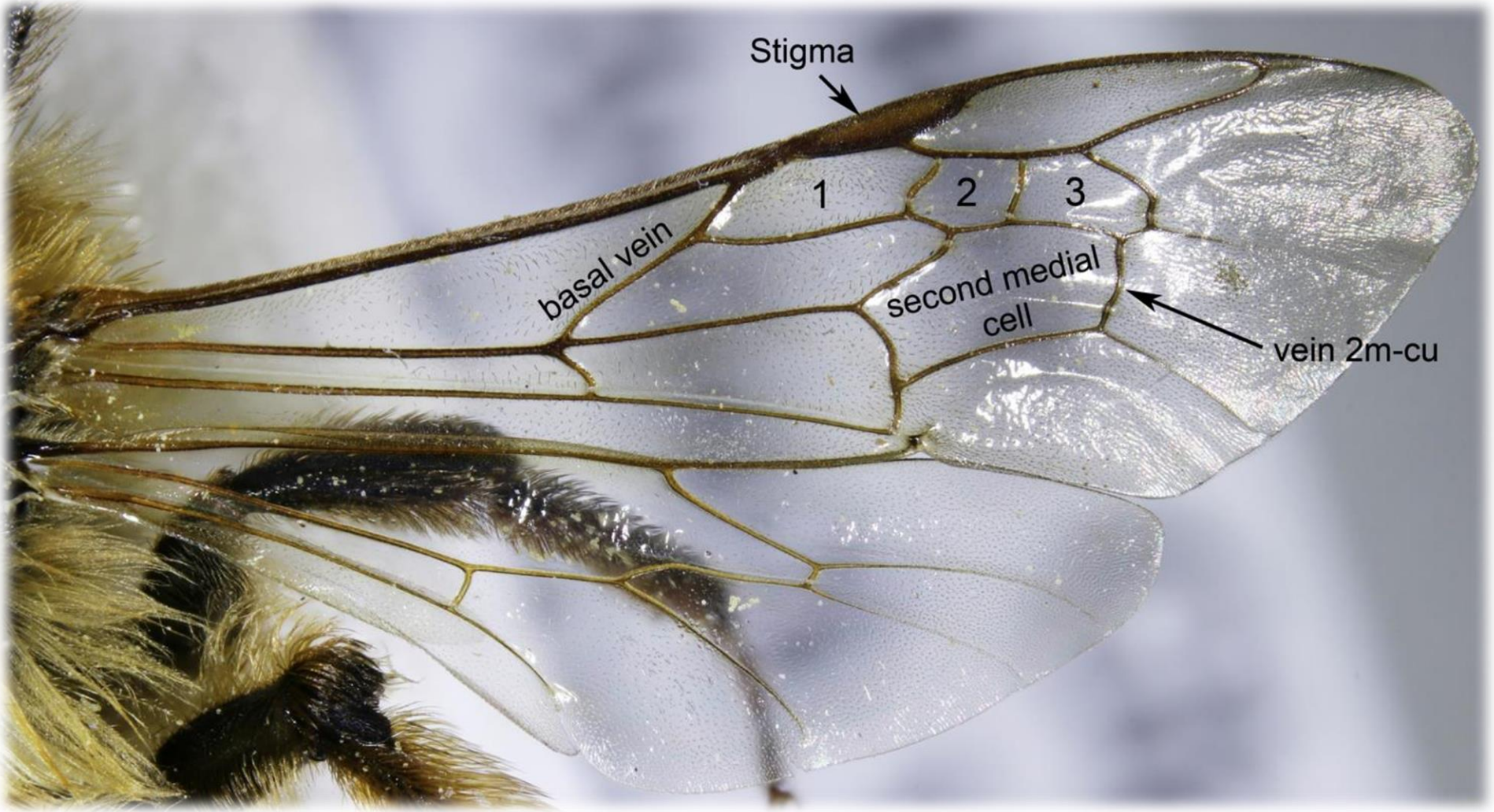
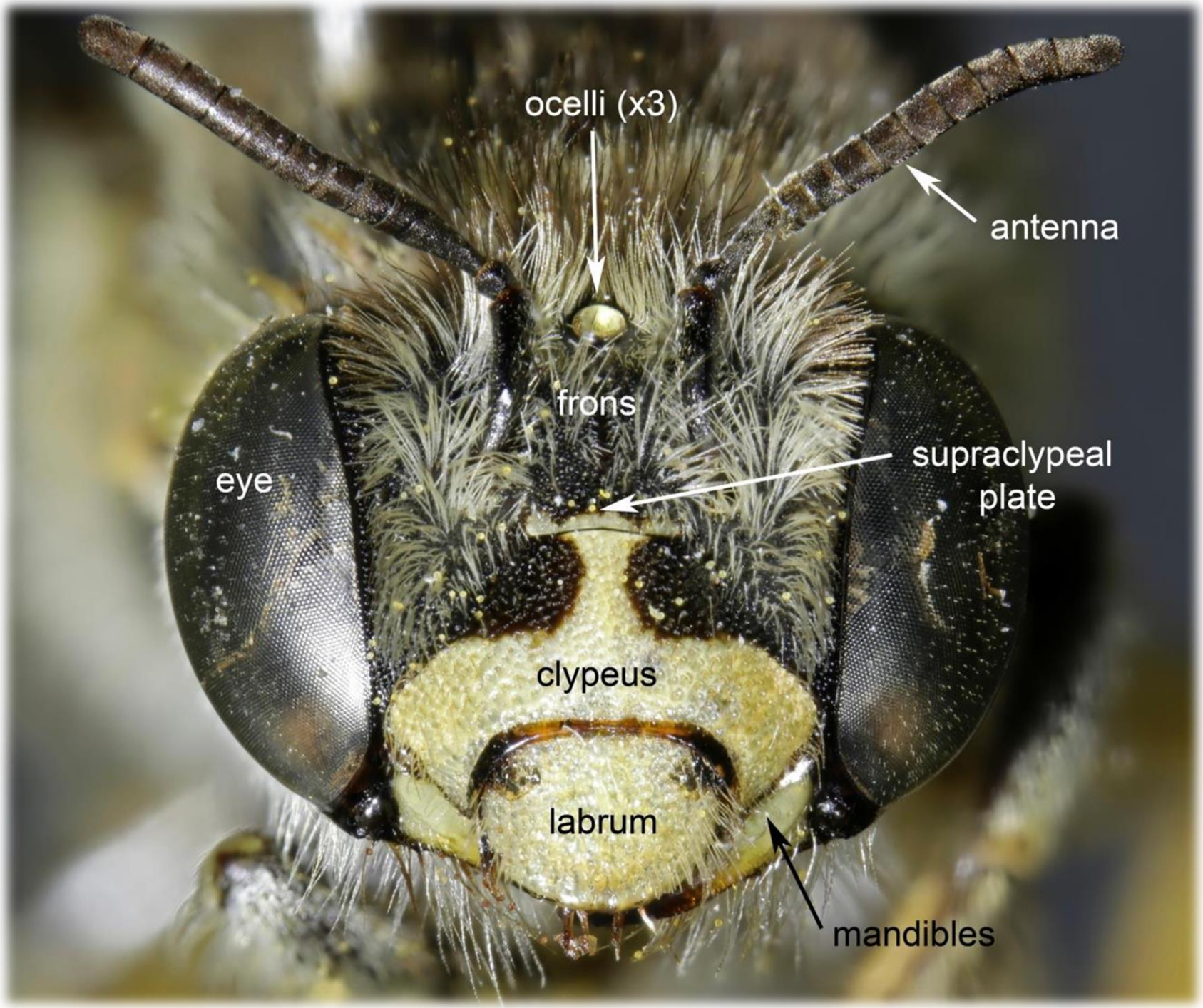
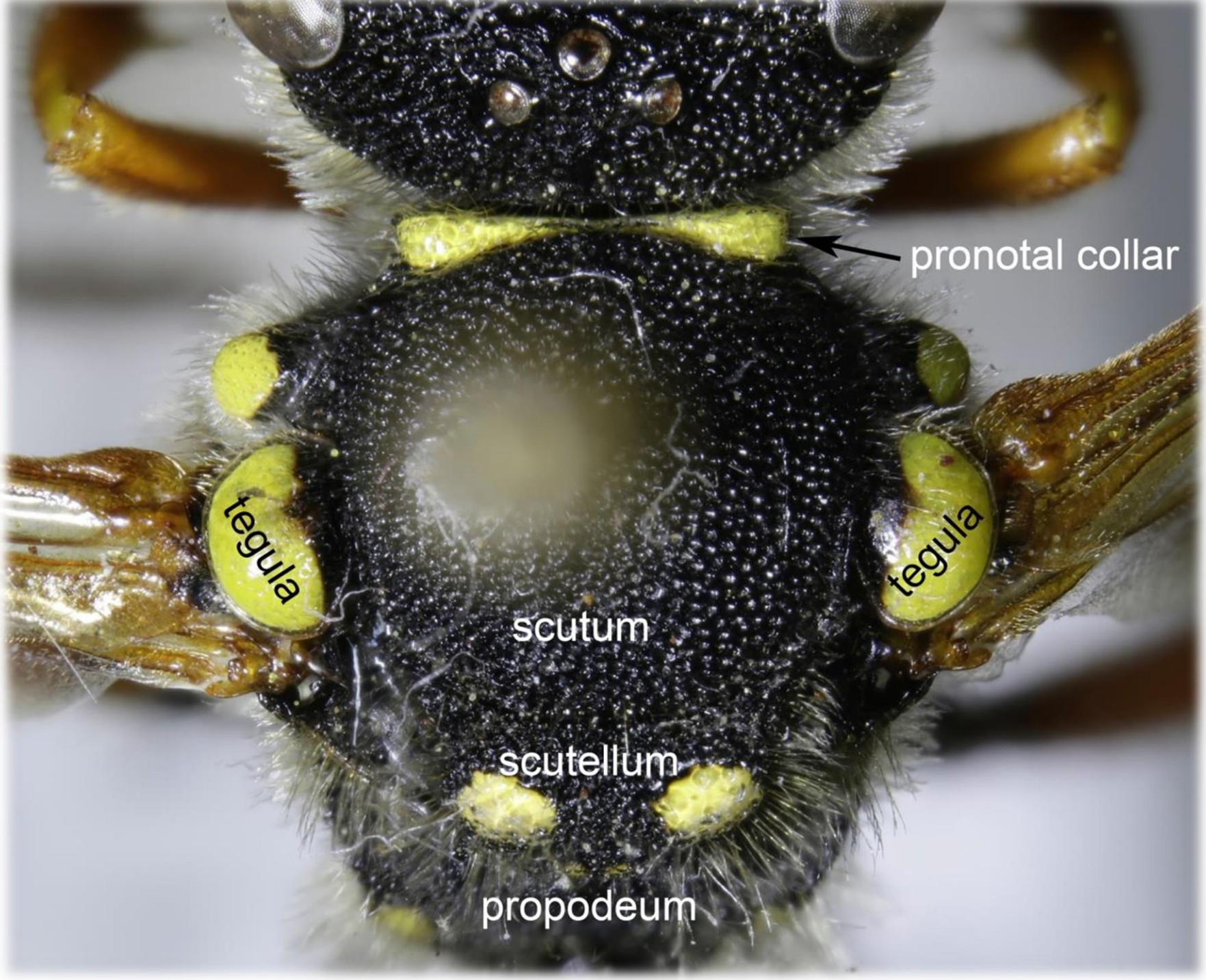
Key to bee genera

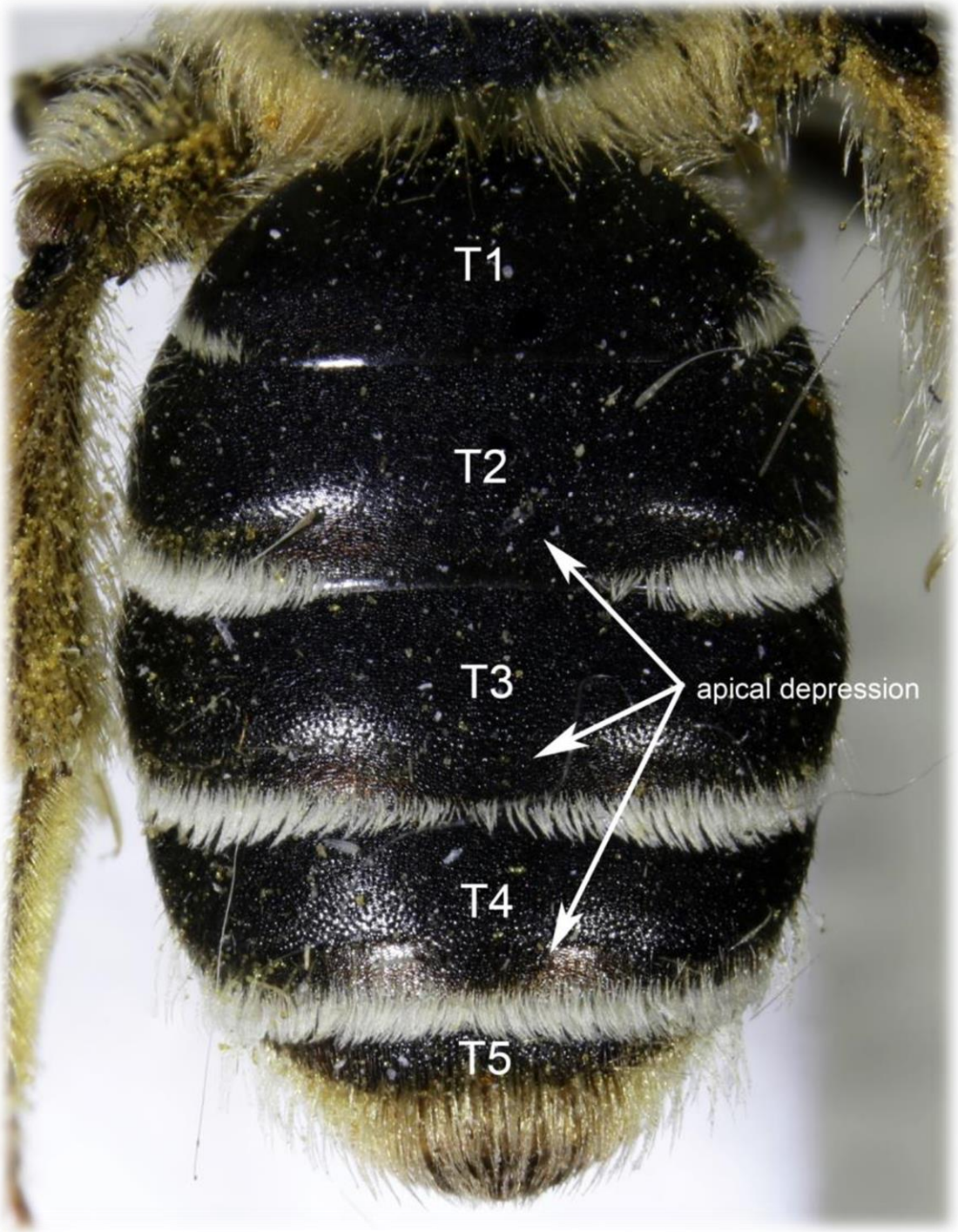
By Liam Olds

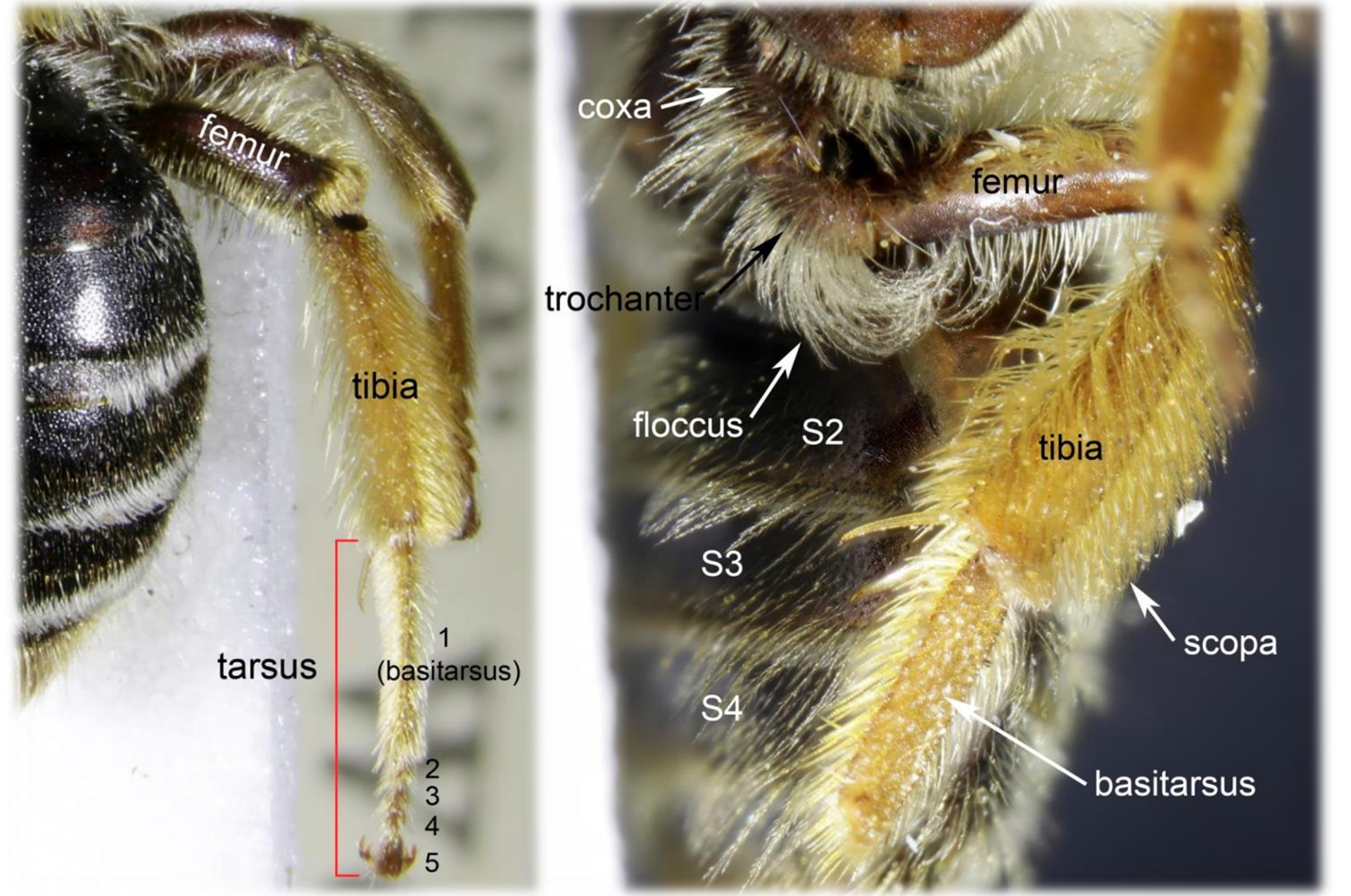

forewing
antenna
front leg
eye
scutum
scutellum
propodeum
hindwing
mid leg
T1
T2
T3
T4
T5
hind leg


Stigma
1
2
3
basal vein
second medial cell
vein 2m-cu


ocelli (x3)
antenna
frons
eye
supraclypeal plate
clypeus
labrum
mandibles


pronotal collar
tegula
tegula
scutum
scutellum
propodeum


T1
T2
T3
T4
T5
apical depression


femur
tibia
tarsus
1
(basitarsus)
2
3
4
5
coxa
femur
trochanter
floccus
S2
tibia
S3
scopa
S4
basitarsus

Andrena fulva female
© Steven Falk

- Antenna shorter with **12** segments.
- Abdomen usually with **6** visible tergites.
- **Densely haired pollen brush** present on hind legs or under the abdomen (except *Hylaeus* & in cuckoos).
- **Often larger, more robust and more colourful.**

Andrena fulva male
© Steven Falk

- Antenna longer with **13** segments.
- Abdomen usually with **7** visible tergites.
- No obvious pollen brush present.
- **Surface of face yellow or whitish** in certain genera or species.
- **Mandibles often slimmer or longer.**

Male or female?

12 antennal segments = **female** bees (+ male *Apis*)

Male or female?

13 antennal segments = **male** bees

Caution – Pedicel can be partially or completely recessed into the end of the scape in male *Nomada*.

- **Densely haired pollen brush** present on hind tibia*****
- Hind tibia typically **broader** and **outer surface convex.**

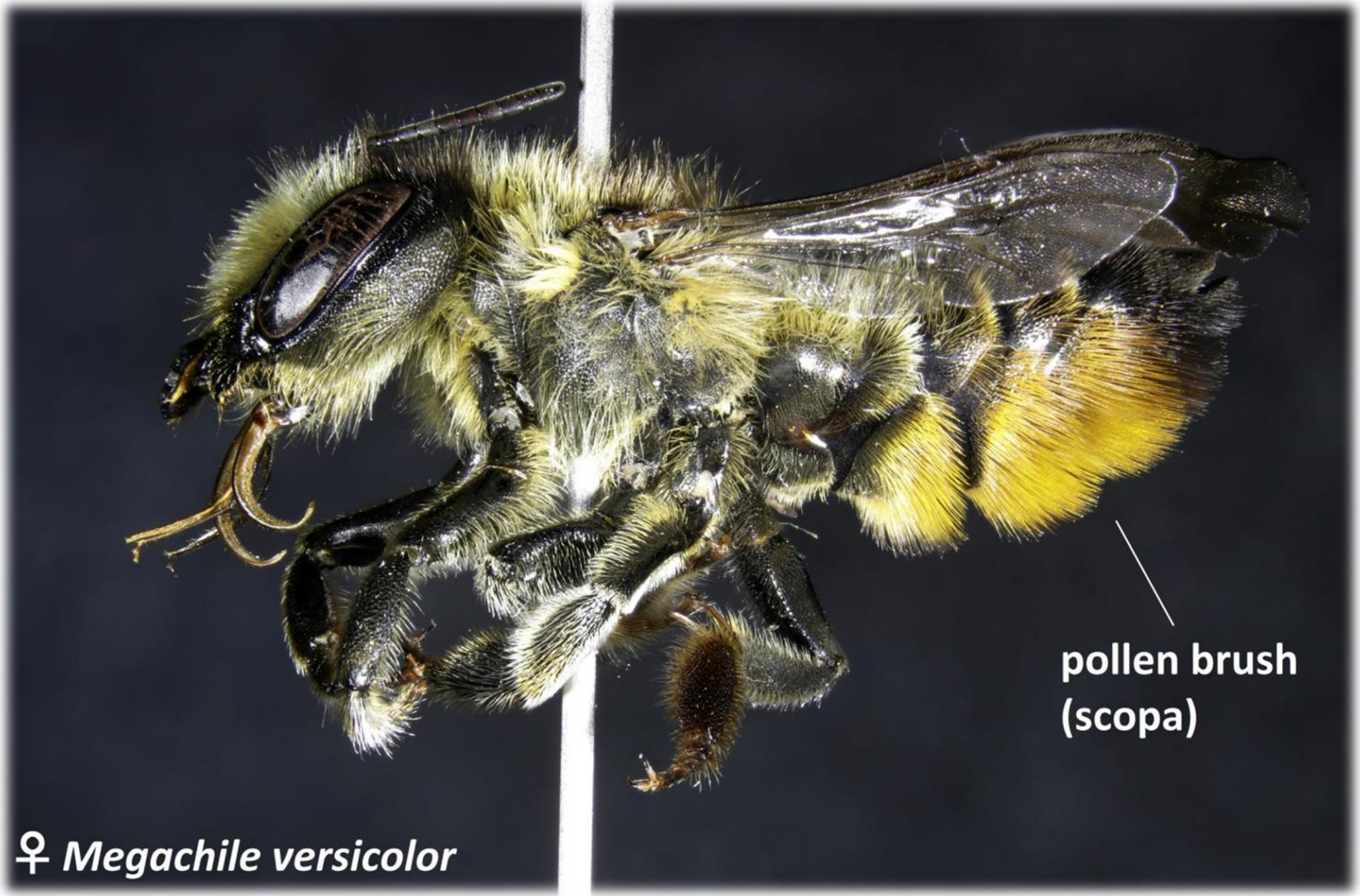
***** except *Hylaeus* and cleptoparasitic species

- **No obvious pollen brush** present on hind tibia **–** hairs sparse.
- Hind tibia typically **slimmer** and **outer surface straighter.**

- **Pollen basket** present on hind legs***** – i.e. **flattish, shiny, hairless** outer face fringed with long hairs.
- Hind tibia typically **broader** and **outer surface convex.**

- **No pollen basket** present on hind legs – i.e. **less shiny** and **hairs present** on outer face.
- Hind tibia typically **slimmer** and outer surface **straighter.**

***** *Apis* and social *Bombus* only


pollen brush
(scopa)
♀ Megachile versicolor

Social *Bombus* ♀

Pollen basket present on hind legs – i.e. **flattish, shiny, hairless** outer face **fringed with long hairs**.

Cuckoo *Bombus* ♀

No pollen basket present on hind legs – i.e. **duller** and **hairs present** on outer face.

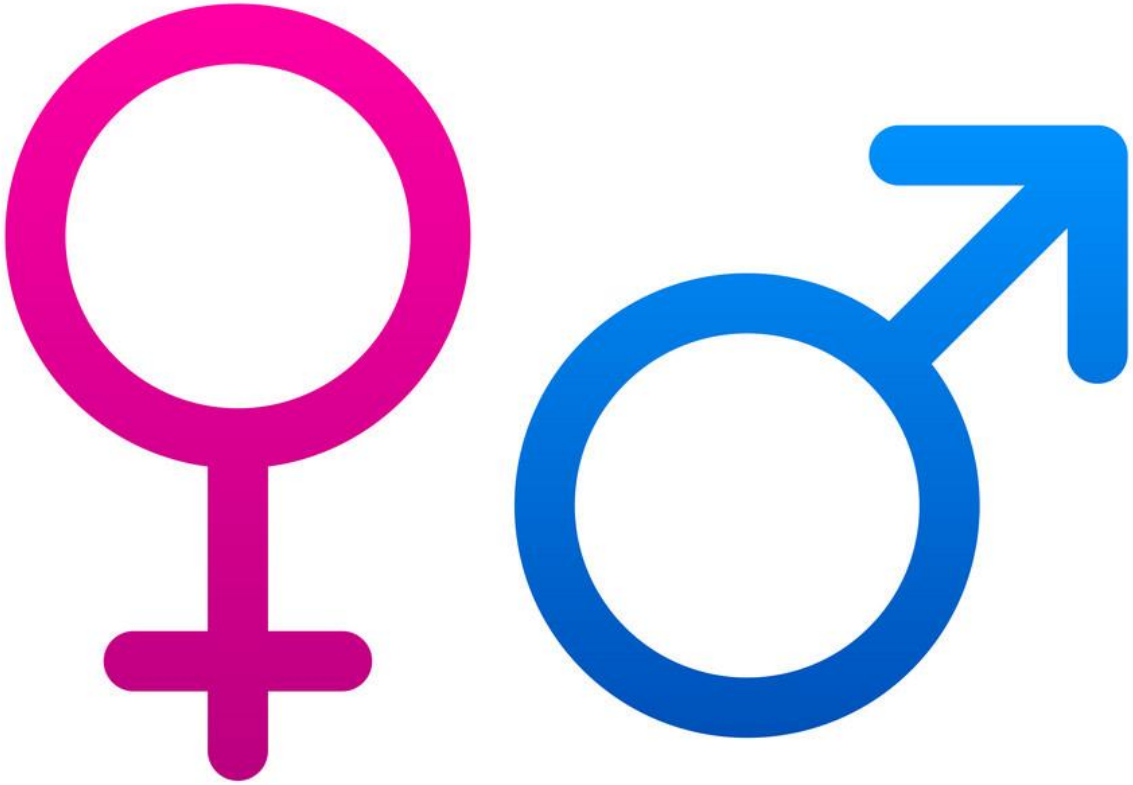
Social *Bombus* ♂

Outer face of hind tibia **extensively bare or only sparsely haired**, and typically **more shiny.**

Cuckoo *Bombus* ♂

Outer face of hind tibia **densely hairy throughout**, and **typically dull.**

Exercise 1: Male or female?



KEY TO GENERA (FEMALES)

Please note that this key follows that used in the ‘Field Guide to the Bees of Great Britain and Ireland’ by Steven Falk (2015)

→ **(2)**

(1) Forewing with two or three submarginal cells

→ **(16)**

Check both wings as sometimes drop a marginal cell!

(2) Underside of abdomen **with** a dense, usually continuous pollen brush of dense hairs

↓

(3)

Underside of abdomen **without** a dense pollen brush; some species with a distinct pollen brush on hind legs

↓

(8)

(3) Tarsi with or without an arolium between the claws

↓ **(4)**

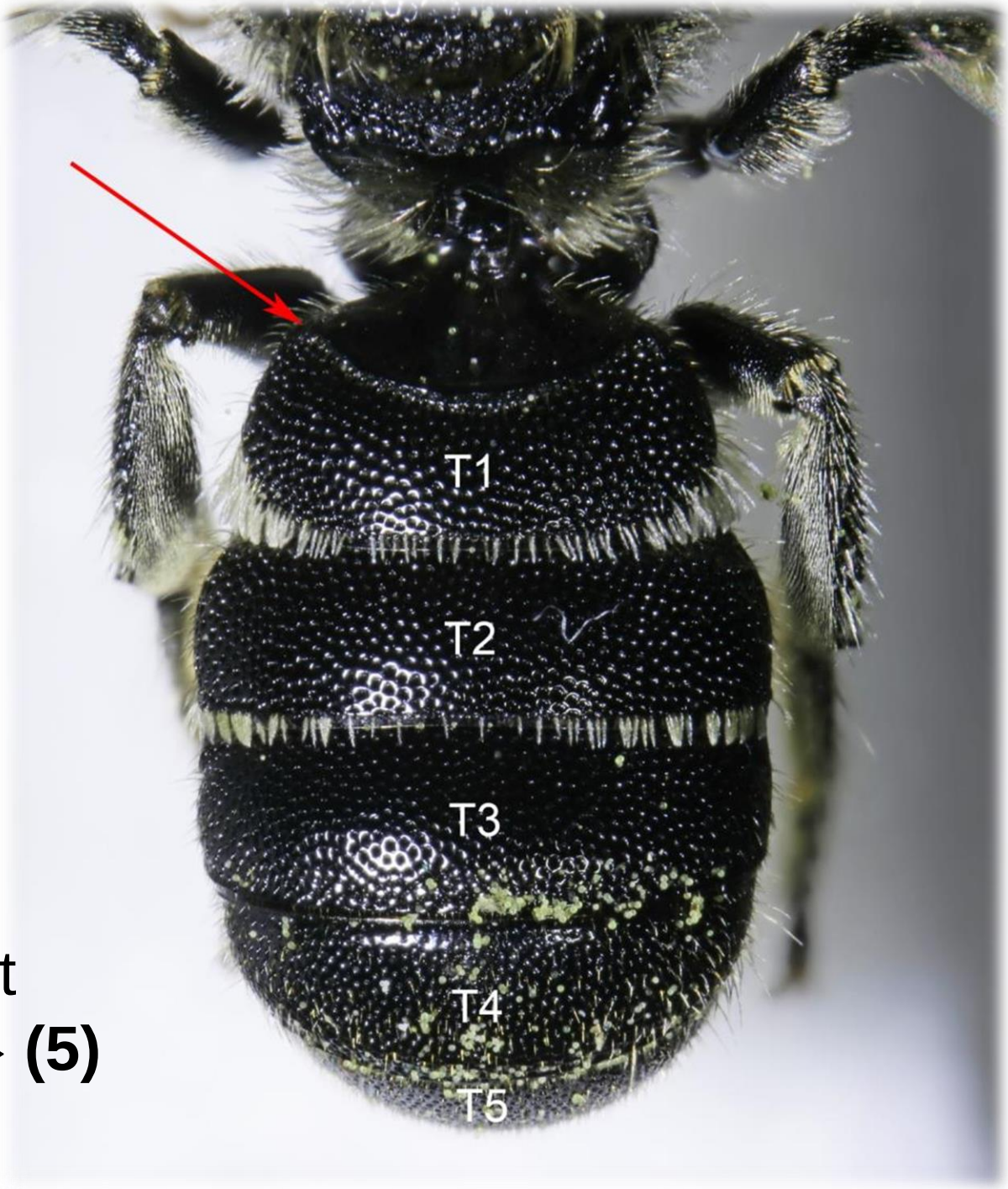
↓ **(7)**

(4) Tergite 1 with a strong curved transverse ridge across the top (red arrow)

↓

Heriades
Resin bees
2 species

Tergite 1 without transverse ridge → **(5)**



(5) Body very slim, the thorax in top view almost twice as long as wide = ***Chelostoma*** Scissor bees (2 species)

Chelostoma florisomne © Steven Falk

Body broader, the thorax in top view about as wide as long

↓

(6)

(6)

Osmia leaiana
© Steven Falk

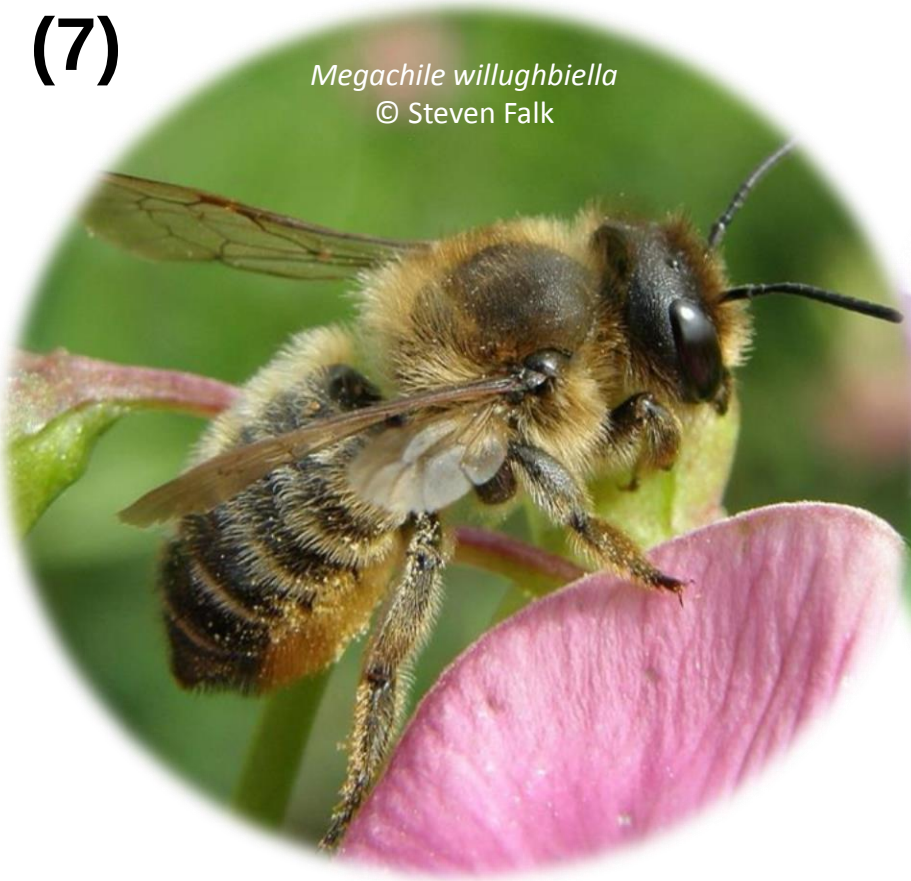
Hoplitis claviventris
© Liam Olds

Pollen brush beneath abdomen **black or orange** **= *Osmia*** Mason bees (12 species)

Pollen brush beneath abdomen creamy-white = ***Hoplitis*** Lesser mason bees (1 species)

Beware of pollen on the pollen brush!

(7)



Megachile willughbiella
© Steven Falk

Anthidium manicatum
© Steven Falk

Surface of tergites, legs and face (beneath any hairs) entirely **dark**
= ***Megachile*** Leafcutter bees (7 species)

Surface of tergites, legs and face (beneath any hairs) with **yellow** markings
= ***Anthidium*** Wool carder bees (1 species)

Eucera longicornis © Steven Falk

(8) Hind tibia and barsitarsi usually with an **obvious dense pollen brush**

↓

(9)

Hind legs **without** a pollen brush, the **hairs short or sparse**

↓

(14)

Stelis punctulatissima © Steven Falk

(9) Hind legs with particularly dense, orange and pantaloon-like pollen brushes

Dasypoda hirtipes © Steven Falk

Thorax with conspicuous brown pile; abdomen with white hair bands
= ***Dasypoda*** Pantaloon bees (1 species)

Panurgus banksianus © Steven Falk

Body shiny black with a inconspicuous pile of mostly black hairs
= ***Panurgus*** Shaggy bees (2 species)

(9) Hind legs with pollen brush less dense and not so bright

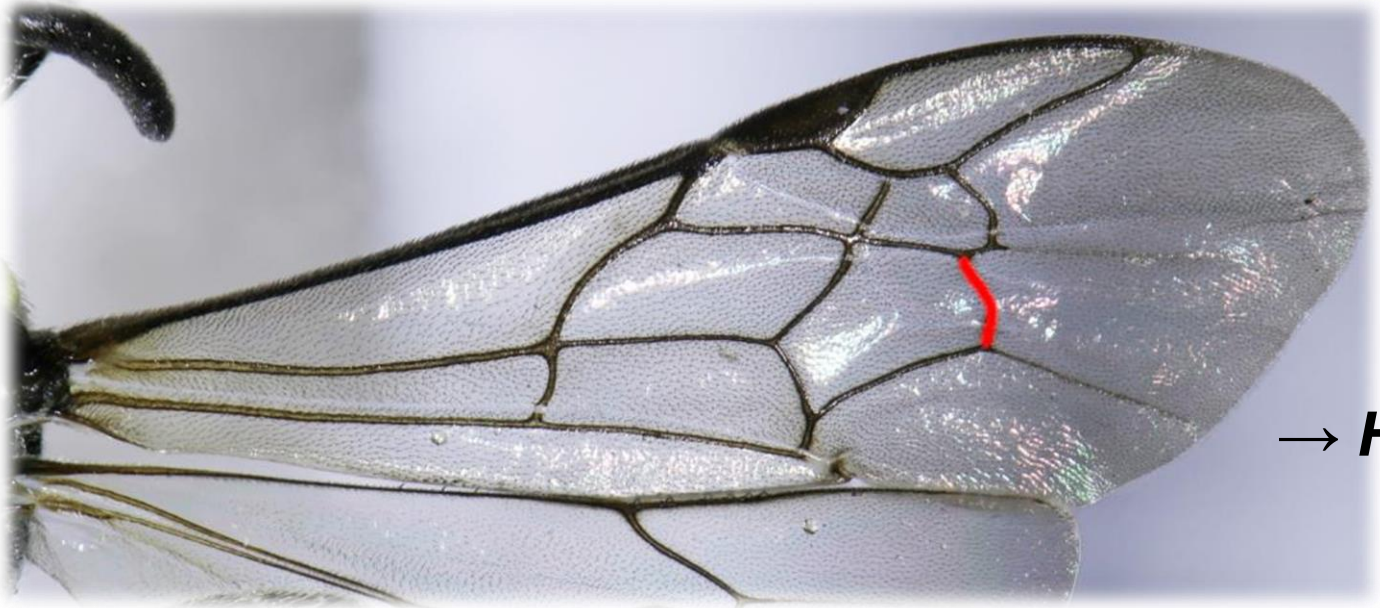
Macropsis europaea © Steven Falk

Pollen brush with dense white hairs on the hind tibia contrasting with black hairs on basitarsus; the basitarsi very broad in side view
= ***Macropsis*** Oil-collecting bees
(1 species)

Eucera longicornis © Steven Falk

Pollen brush on hind tibia mostly buff-haired; the basitarsi not expanded
= ***Eucera*** Long-horned bees
(1 species)

(14) Eyes hairy; abdomen narrowing to a pointed tip and with white hair patches on most tergites
= ***Coelioxys*** Sharp-tailed bees (7 species)



→ ***Hylaeus***

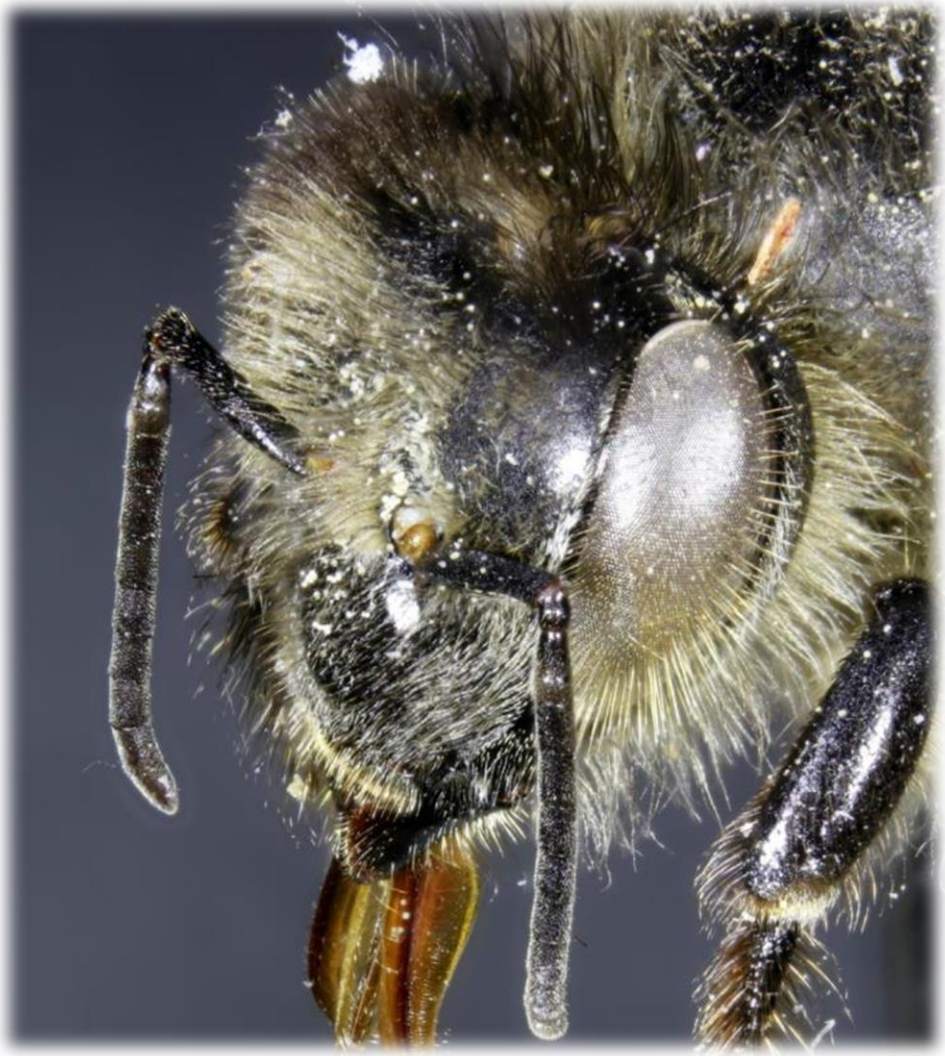
(15) Forewings with vein 2m-cu **entering** 2nd submarginal cell or **meeting beyond** the end of 2nd submarginal cell

→ ***Stelis***

Hylaeus Yellow-faced bees (12 species)

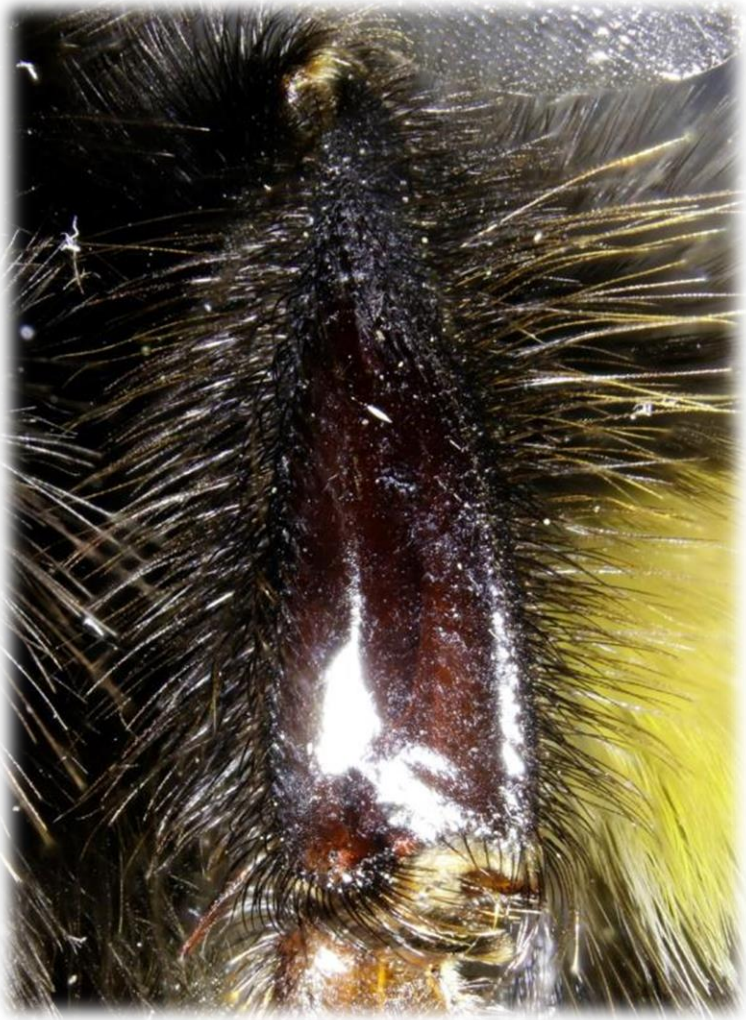
Face typically with two yellow/whitish markings

(16) Eyes hairy; workers with pollen basket
= ***Apis*** Honeybees (1 species)



Eyes bare → **(17)**

(17) Hind tibia **with pollen basket**
= ***Bombus*** Bumblebees
(social species – 19 species)

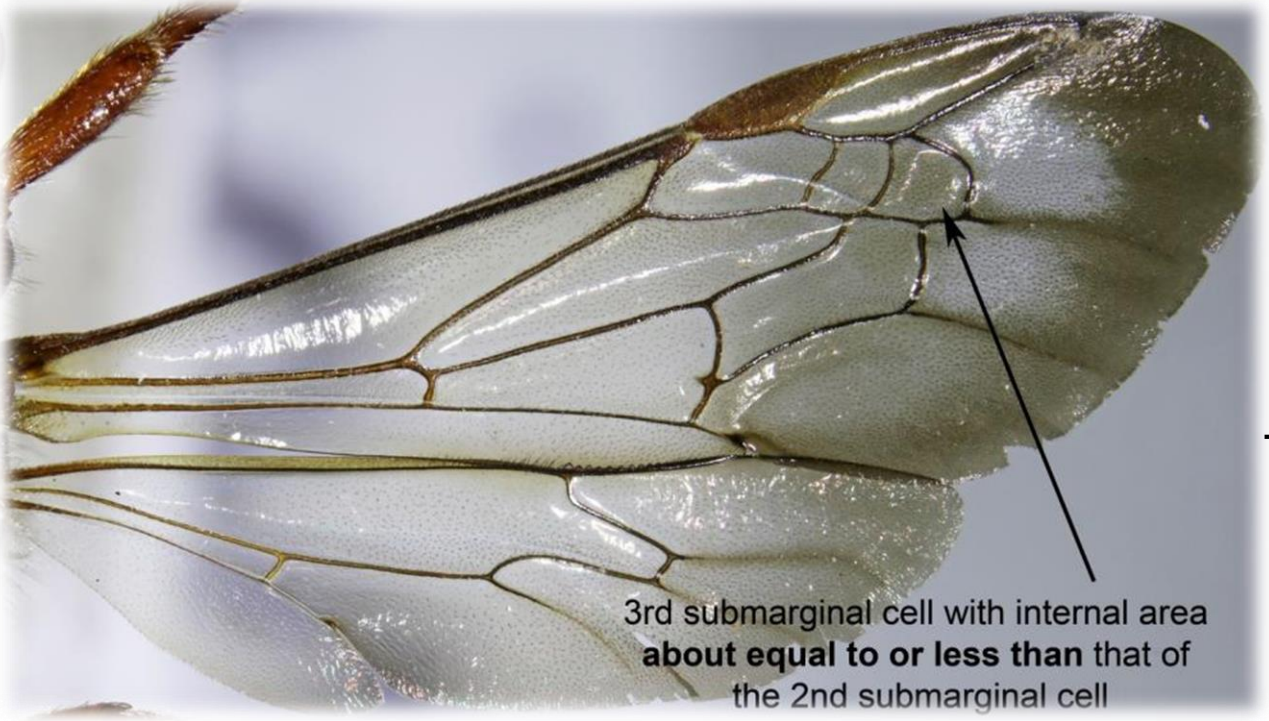


Hind tibia **more cylindrical**
without a bare, shiny outer face,
often with dense pollen brush
→ **(18)**

(18)

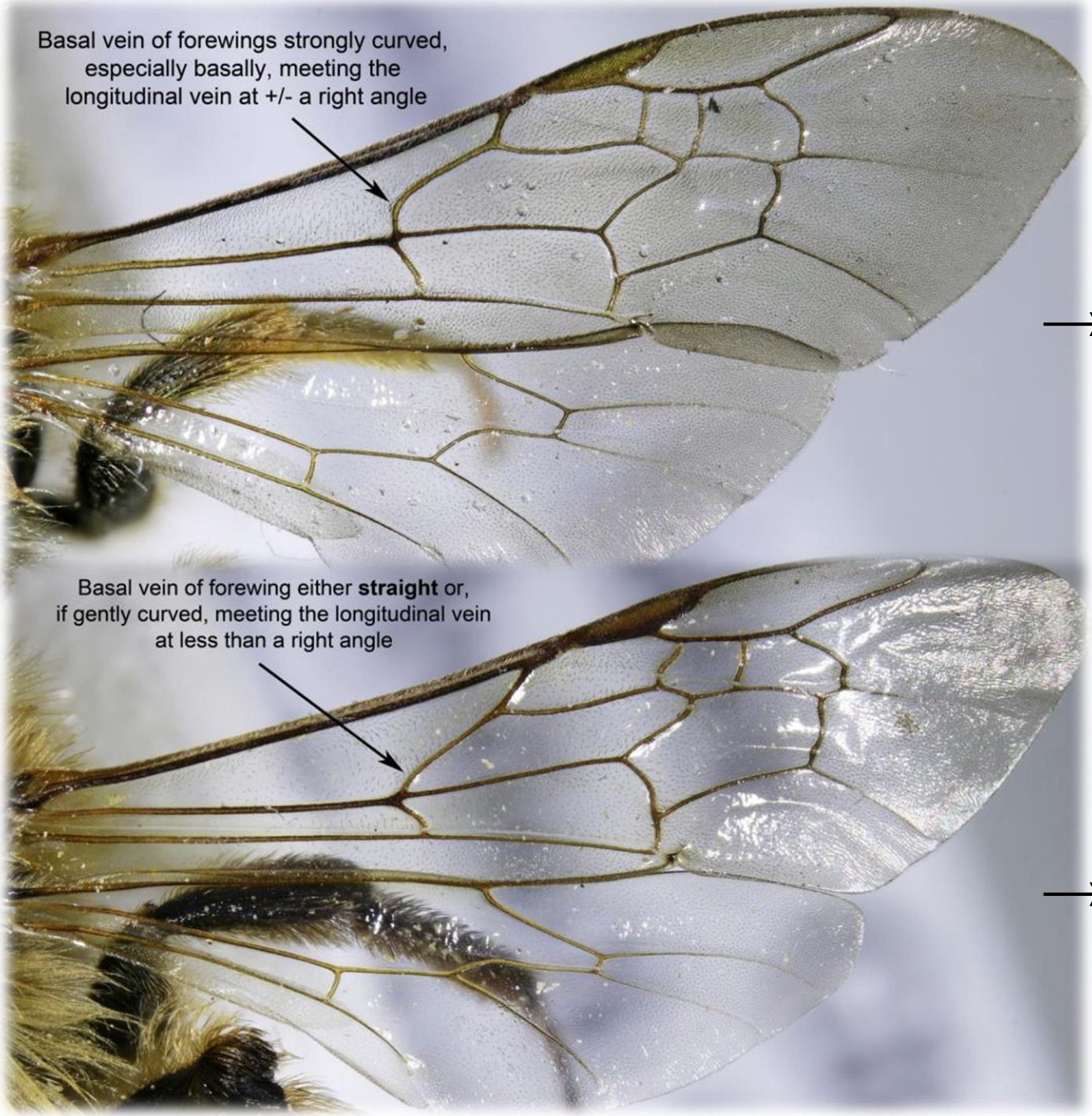

3rd submarginal cell with internal area
greater than that of 2nd submarginal cell

→ (19)


3rd submarginal cell with internal area
about equal to or less than that of
the 2nd submarginal cell

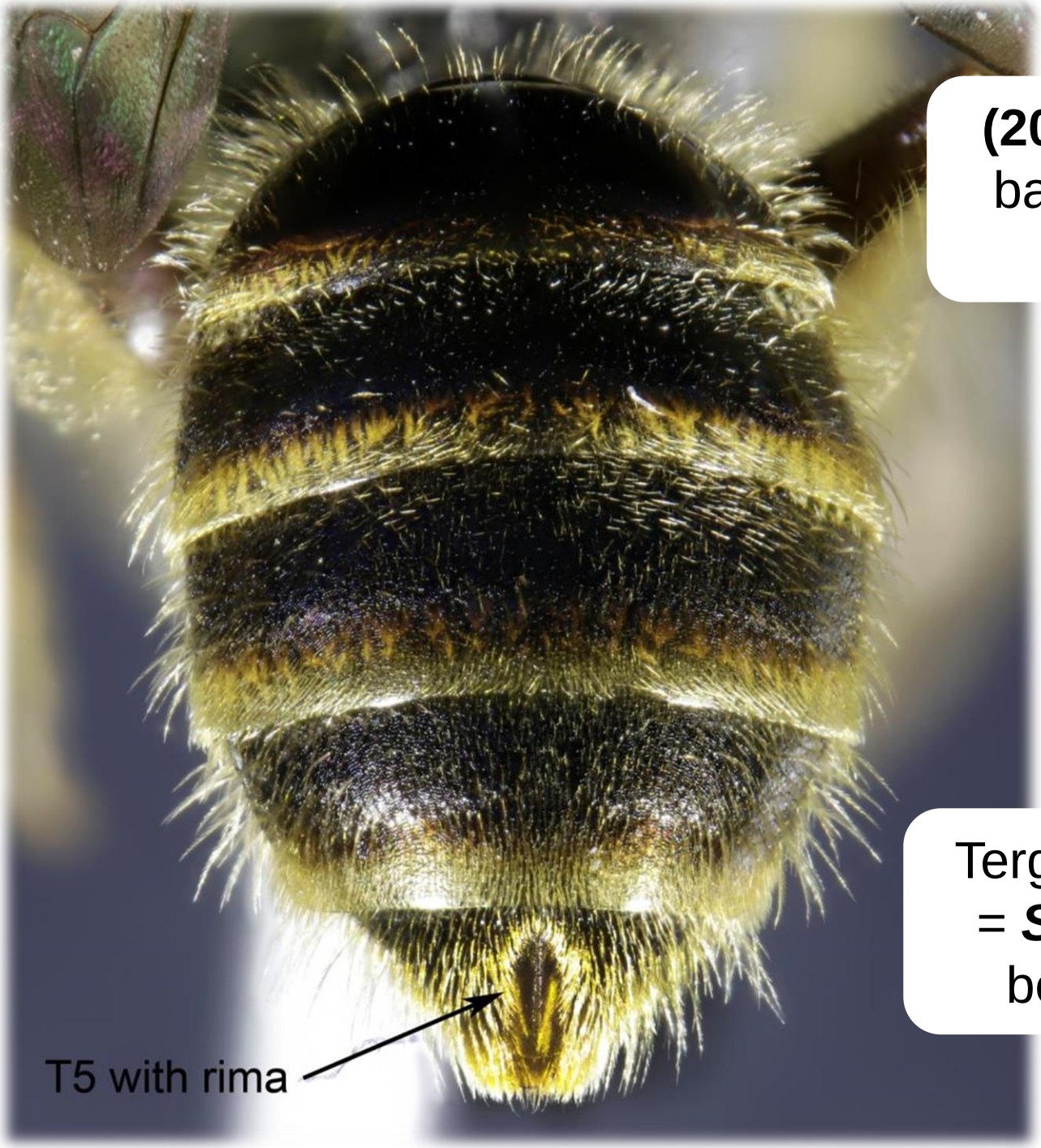
→ (26)

(19)


Basal vein of forewings strongly curved, especially basally, meeting the longitudinal vein at +/- a right angle
Basal vein of forewing either **straight** or, if gently curved, meeting the longitudinal vein at less than a right angle

→ (20)

→ (22)



(20) Tergite 5 **with** a bare-looking furrow (rima)

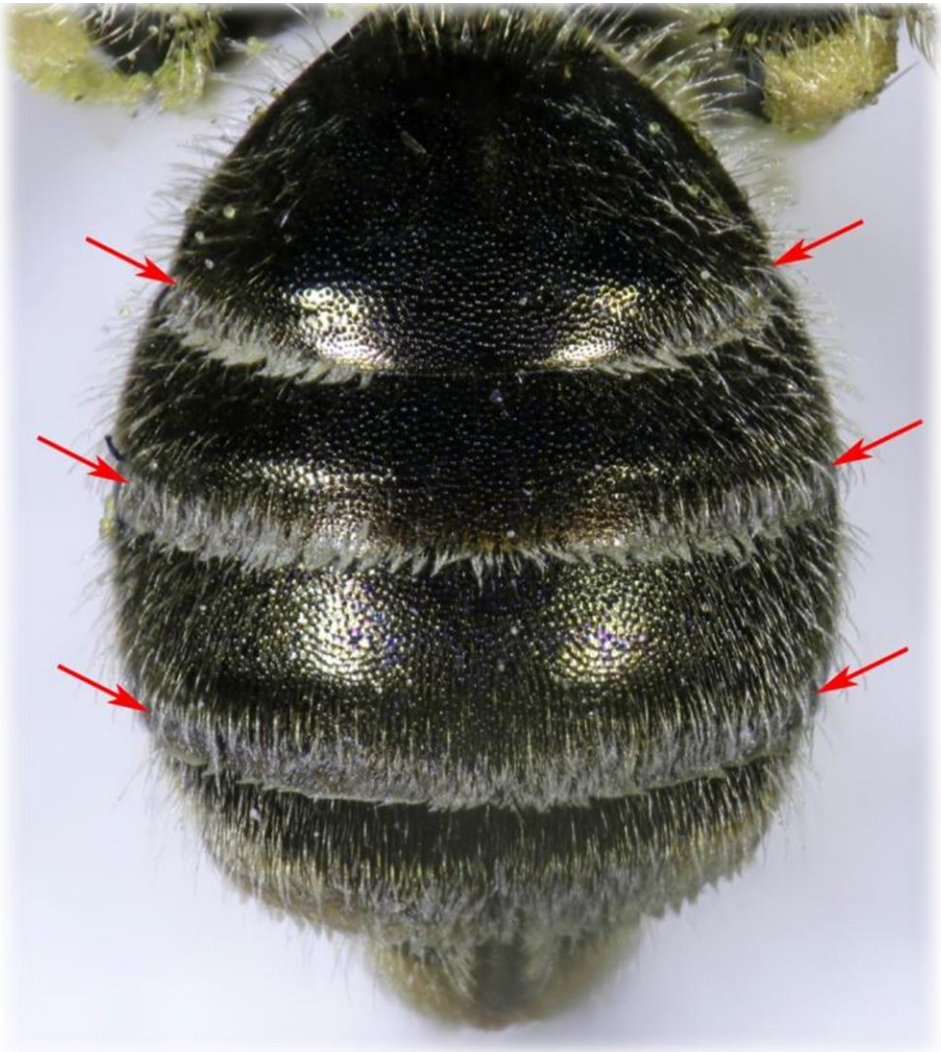
↓

(21)

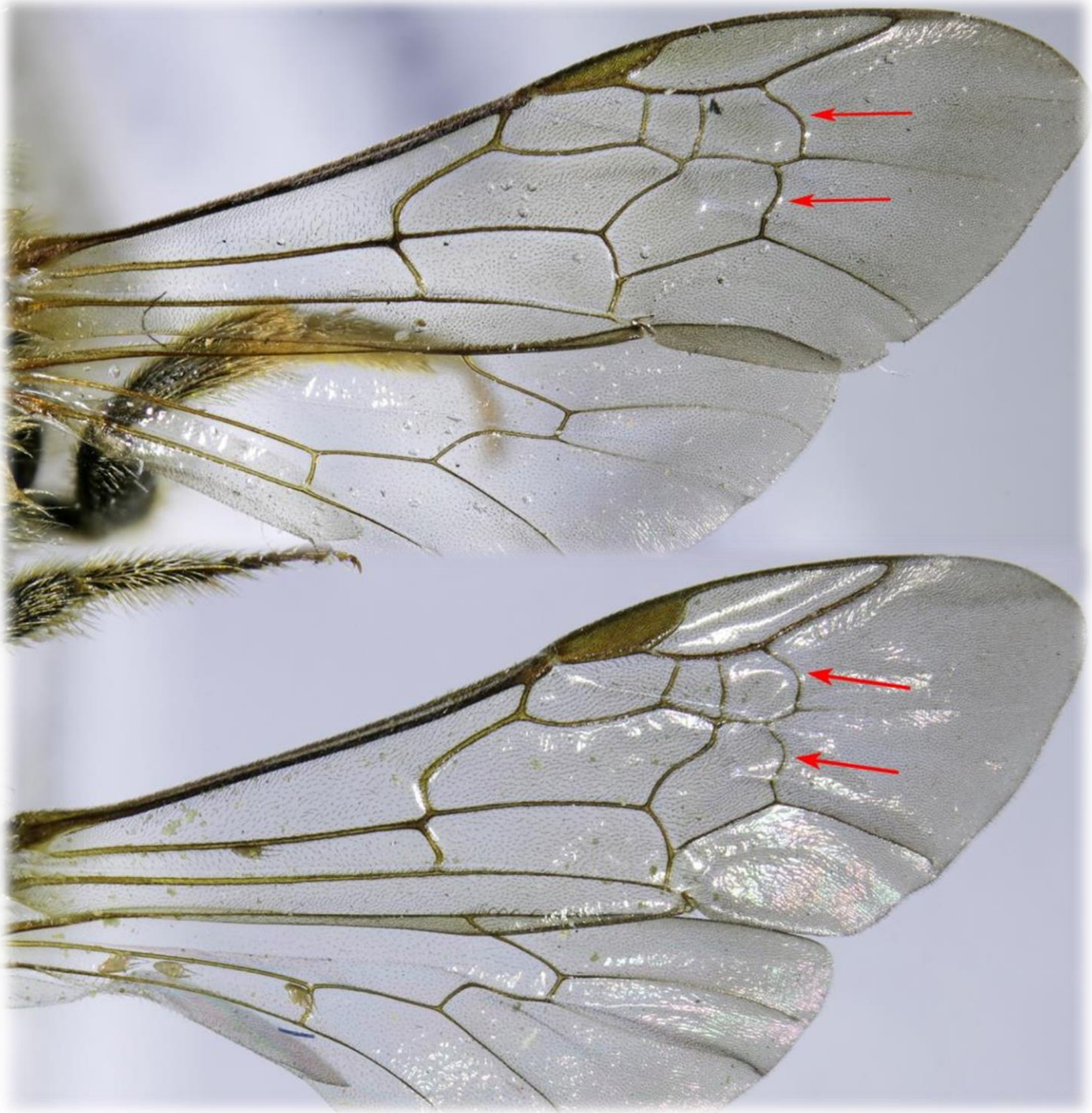
Tergite 5 **without** rima = ***Sphecodes*** Blood bees (17 species)

(21) Tergites with bands or lateral streaks of **adpressed whitish hairs** along….

the apical margin (i.e. end) – **red arrows**
= *Halictus* End-banded furrow bees
(7 species)



the basal only – black arrows
= *Lasioglossum* Base-banded furrow bees
(33 species)

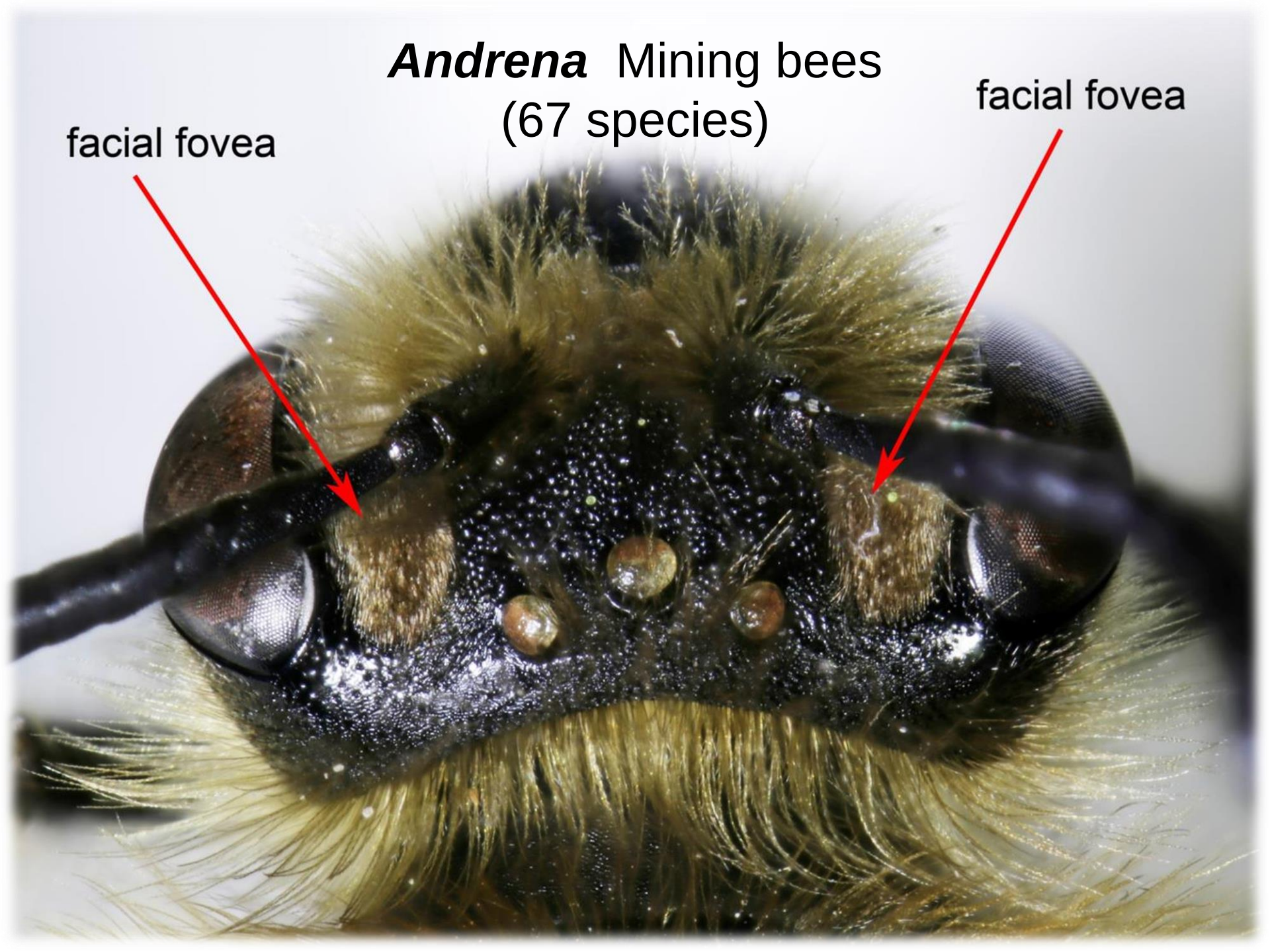


Outer cross veins of **similar thickness** and colour to other wing veins = ***Halictus***

Outer cross veins **thinner** and often paler than other wing veins = ***Lasioglossum***

(22) Body metallic blue and inconspicuously haired
= ***Ceratina*** Small carpenter bees (1 species)

Body not usually metallic blue but if so, body has obvious hairs → **(23)** (***Andrena***, ***Melitta***, ***Melecta*** & ***Xylocopa***)


Andrena Mining bees
(67 species)
facial fovea
facial fovea

facial foveae **present**;
antenna with tips **pointed**
= *Andrena* Mining bees
(67 species)

facial foveae **absent**;
antenna with tips **blunt**
= *Melitta* Blunthorn bees
(4 species)

Xylocopa violacea © Steven Falk

Extremely large with darkened iridescent wings = ***Xylocopa*** Large carpenter bees (1 species – vagrant or introduction)

Medium-sized without darkened wings; body usually with a pattern of white or grey hairs = ***Melecta*** Mourning bees (1 species)

Melecta albifrons © Steven Falk

(26)

Vein 2m-cu strongly
S-shaped
= ***Colletes*** plasterer bees
(9 species)

Vein 2m-cu **not**
S-shaped

↓

(27)

(27) Inconspicuously haired, rather **wasp-like** bees; legs extensively red or yellow (if black, abdomen is mostly red) → **(28)**

Nomada panzeri © Steven Falk

Epeolus cruciger © Steven Falk

Furrier bees; legs entirely dark beneath hairs; abdomen ground colour entirely black → **(29)**

(28)

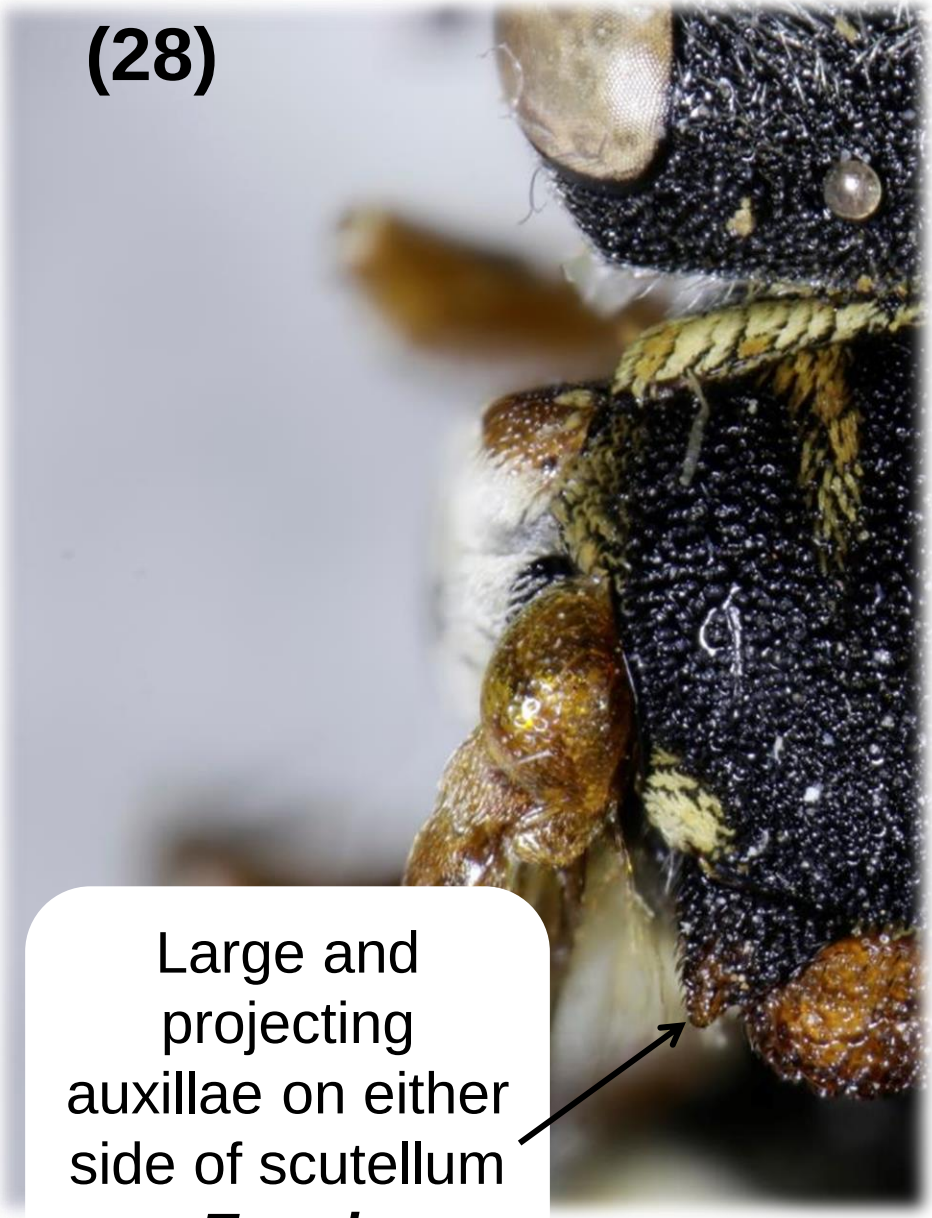
Nomada panzeri © Steven Falk

Epeolus cruciger © Steven Falk

Tergites **without** whitish patches of tiny hairs = ***Nomada*** Nomad bees (37 species)

Tergites **with** paired whitish spots composed of tiny adpressed hairs = ***Epeolus*** Variegated cuckoo bees (2 species)

(28)



Large and projecting auxillae on either side of scutellum = ***Epeolus***

Auxillae small and inconspicuous = ***Nomada***

(29)

Bombus sylvestris
© Steven Falk

Anthophora plumipes
© Liam Olds

No pollen brush i.e. hind legs with outer face and basitarsus with short black hairs
= ***Bombus*** Bumblebees (cuckoo species) – 6 species

Hind legs with outer face and basitarsus with an **orange or buff-coloured pollen brush**
= ***Anthophora*** Flower bees (5 species)

Exercise 2: Key females to genus

KEY TO GENERA (MALES)

Please note that this key follows that used in the ‘Field Guide to the Bees of Great Britain and Ireland’ by Steven Falk (2015)

→ **(2)**

(1) Forewing with two or three submarginal cells

→ **(16)**

Check both wings as sometimes drop a marginal cell!

(2) Surface of face and/or legs with yellow or whitish markings; front tarsi never expanded

↓

(3)

Anthidium manicatum
© Steven Falk

Surface of face and legs entirely dark (except for 3 species of *Megachile* which have expanded front tarsi)

↓

(6)

(3) Very long antennae = ***Eucera*** Long-horned bees (1 species)

Eucera longicornis
© Liam Olds

Antennae much shorter

↓

(4)

(4) Tergites with **yellow** markings; tip of abdomen with a series of **spines**
= ***Anthidium*** Wool-carder bees (1 species)

Anthidium manicatum © Steven Falk

Tergites entirely **dark**; **no spines** at tip of abdomen

↓

(5)

(5)

Hylaeus confusus © Steven Falk

Macropsis europaea © Steven Falk

Small, **slim**, **black** and **inconspicuously haired**
= ***Hylaeus*** Yellow-faced bees (12 species)

Medium-sized, **robust** with an **obviously hairy thorax** and **white hair fringes** on T3-T5
= ***Macropsis*** Oil-collecting bees (1 species)

(6) Eyes hairy; abdomen with conspicuous patches of adpressed white hairs and bearing series of **spines** = ***Coelioxys*** Sharp-tailed bees (7 species)

Eyes bare → **(8)**

(8) Tarsi with or without an arolium between the claws

↓

(9)

= ***Megachile*** Leafcutter bees (7 species)

(9) Either sternite 2 **with a large, protruding welt** and T7 **lacking** a pair of square-ended lobes, **or** apical antennal segment **strongly hooked**
= ***Hoplitis*** Lesser mason bees (1 species)

Hoplitis claviventris © Steven Falk

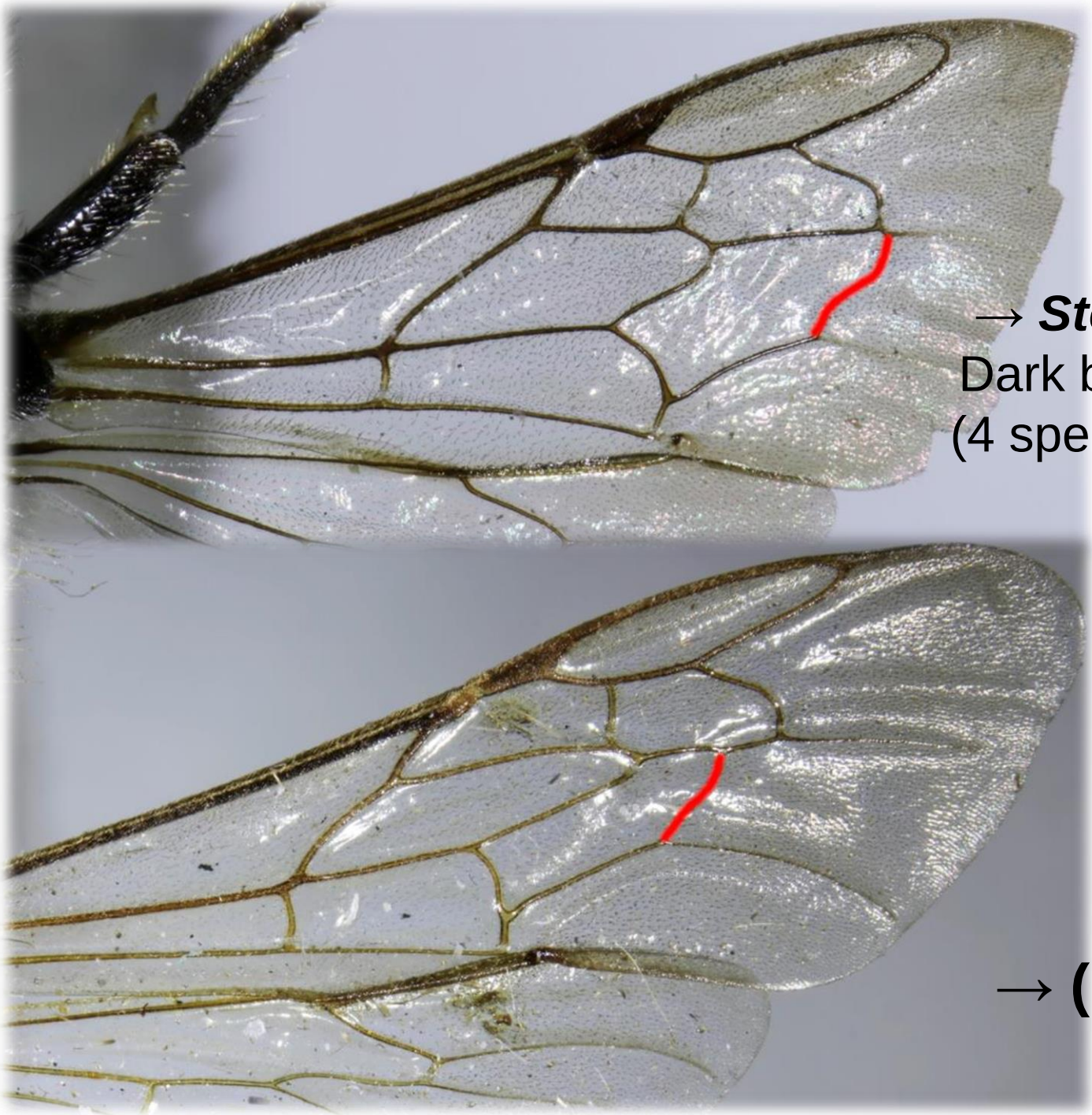
Sternite 2 **lacking** a large projecting welt (except *Chelostoma florisomne* where T7 bears a pair of square-ended lobes apically, see opposite) **and** apical antennal segment **never strongly hooked**

↓

(10)

Chelostoma florisomne © Liam Olds

(10)



→ ***Stelis***
Dark bees
(4 species)

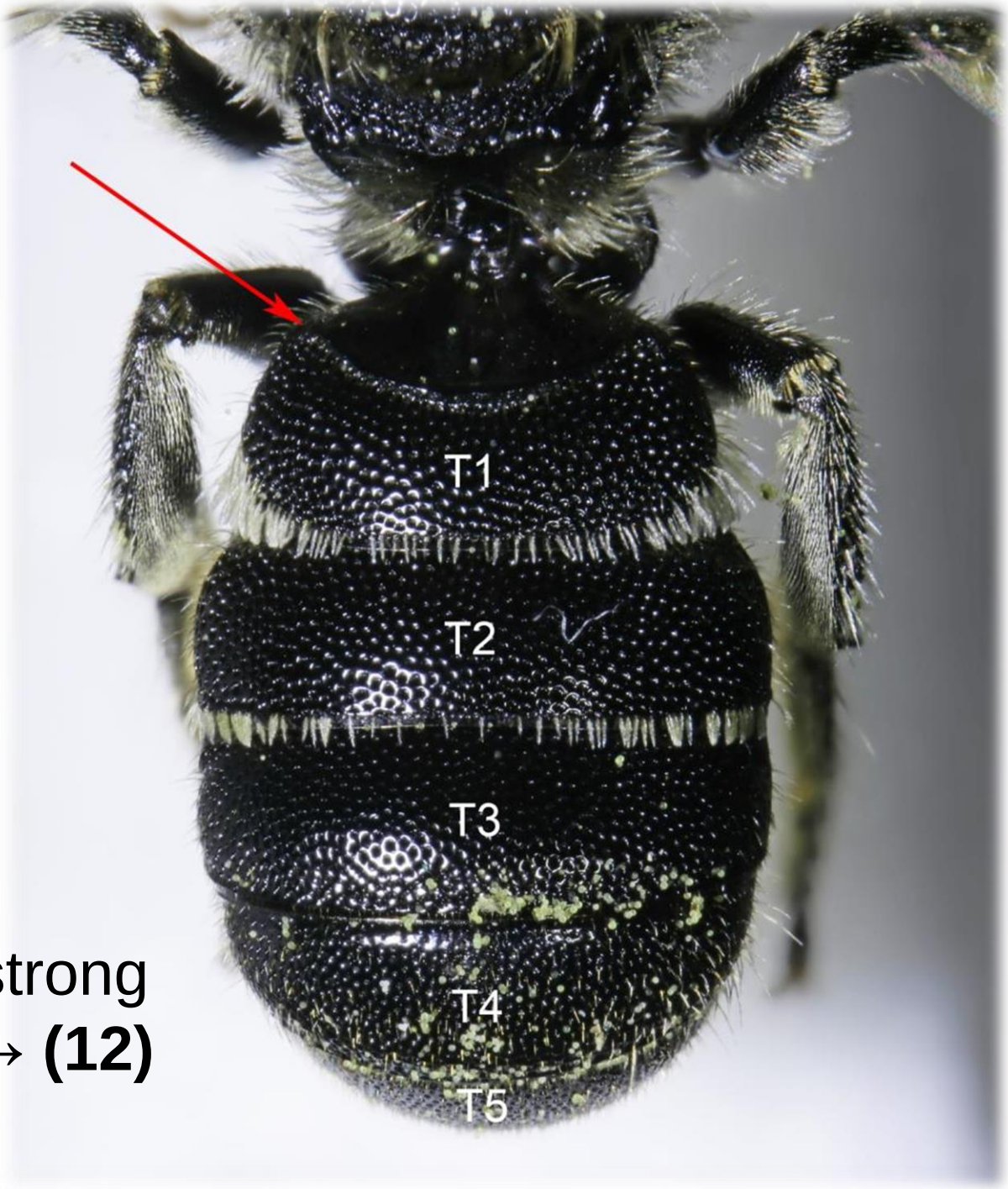
→ **(11)**

(11) Tergite 1 with a strong curved transverse ridge across the top (red arrow)

↓

Heriades
Resin bees
2 species

Tergite 1 without strong transverse ridge → **(12)**



(12) Body **very slim**, the thorax in top view almost twice as long as wide; T7 bears a pair of **square-ended lobes** = ***Chelostoma*** Scissor bees (2 species)

Chelostoma florisomne © Steven Falk

Body broader, the thorax in top view about as wide as long

↓

(13)

(13) Face in front view **wider than high**; mandibles longer than the length of an eye; shining black species with body hairs mostly **black**
= ***Panurgus*** Shaggy bees
(2 species)

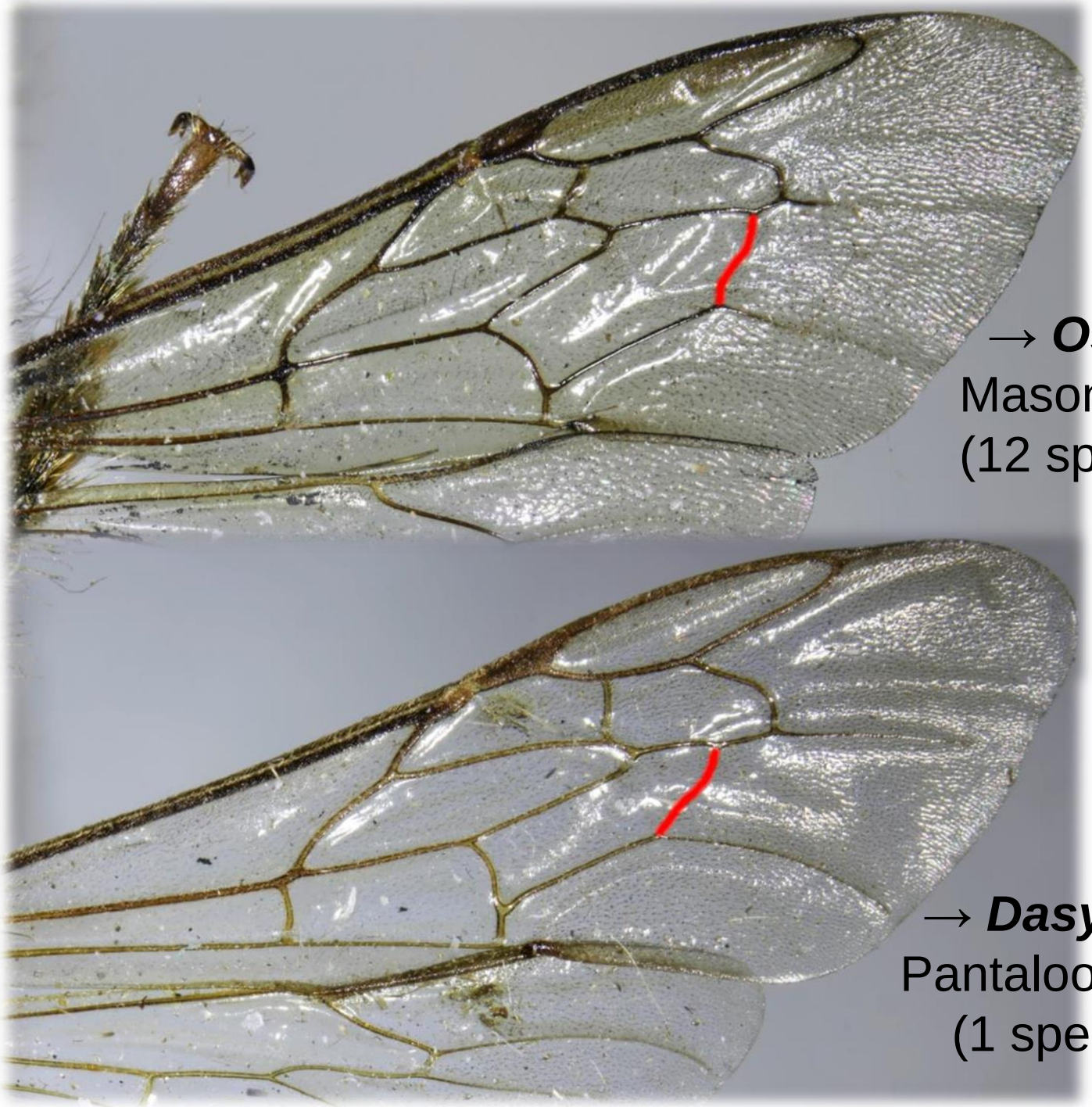
Face in front view **roundish or higher than wide**; mandibles shorter than the length of an eye; body hairs mostly **pale**

↓

(14)

Osmia pilicornis © Liam Olds

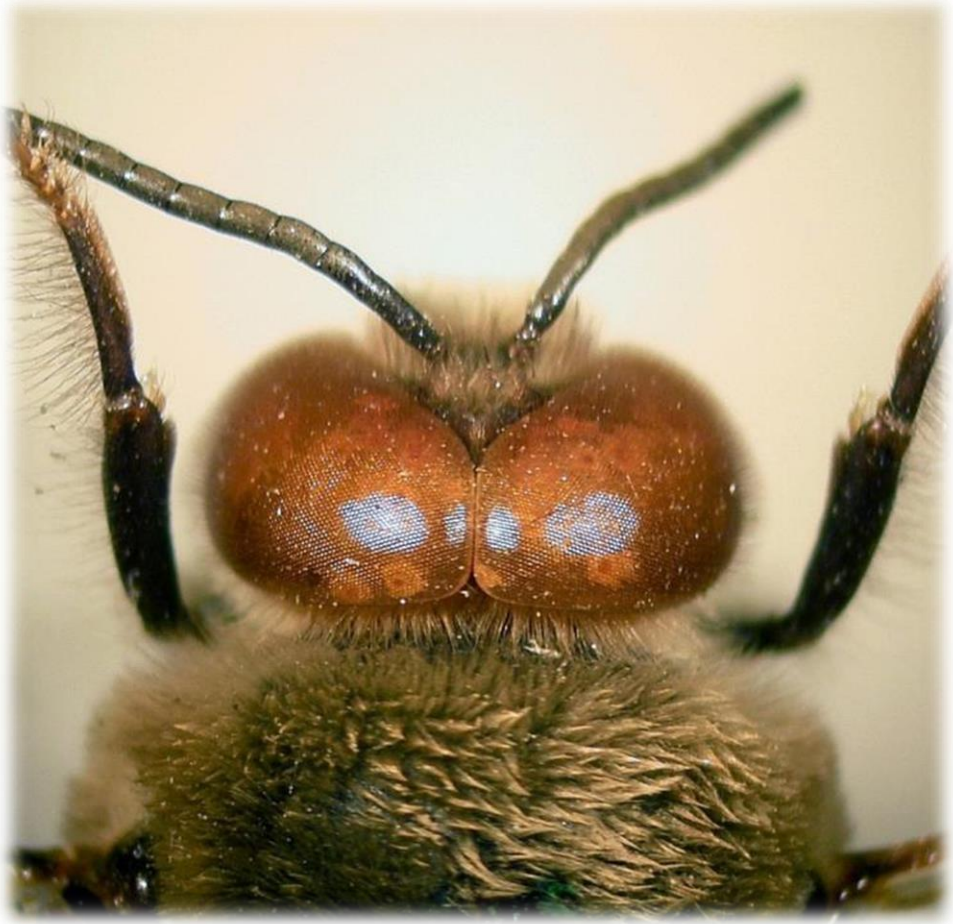
(14)



→ ***Osmia***
Mason bees
(12 species)

→ ***Dasypoda***
Pantaloon bees
(1 species)

(16) Eyes hairy, large and meeting on top of the head = ***Apis*** Honeybees (1 species)



Apis mellifera © Steven Falk

Eyes bare, not meeting on top of the head

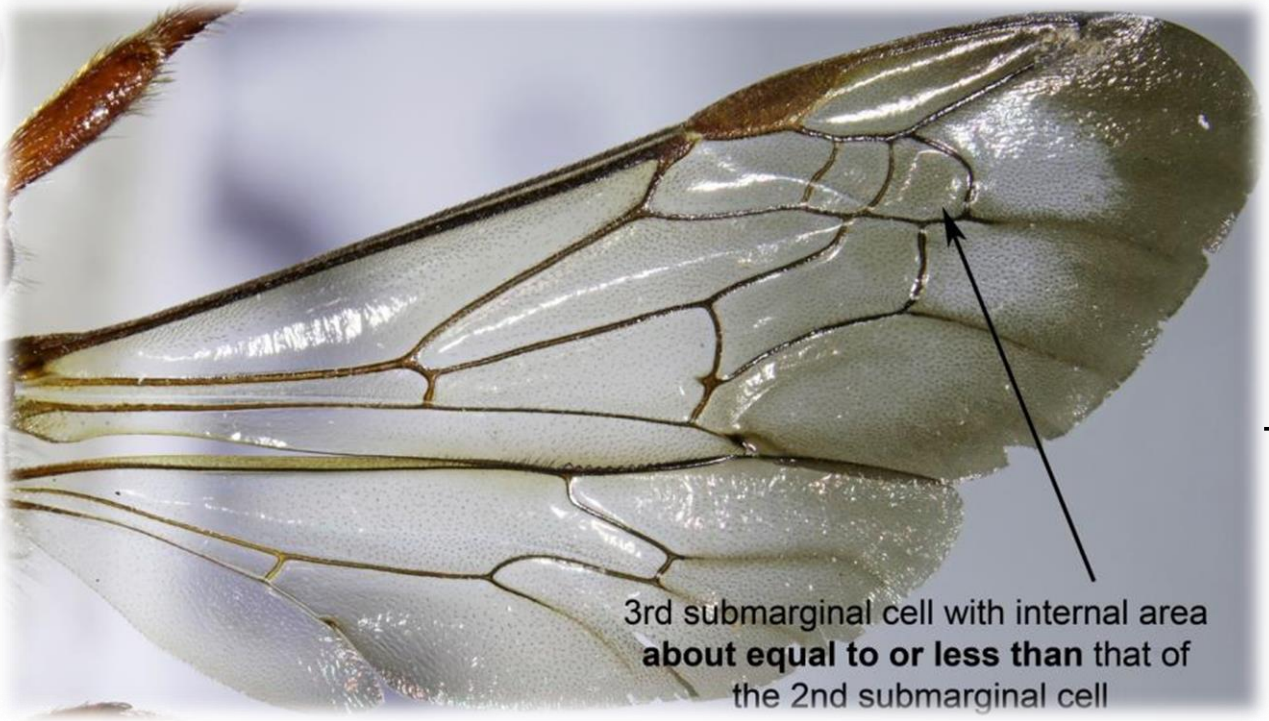
↓

(17)

(17)

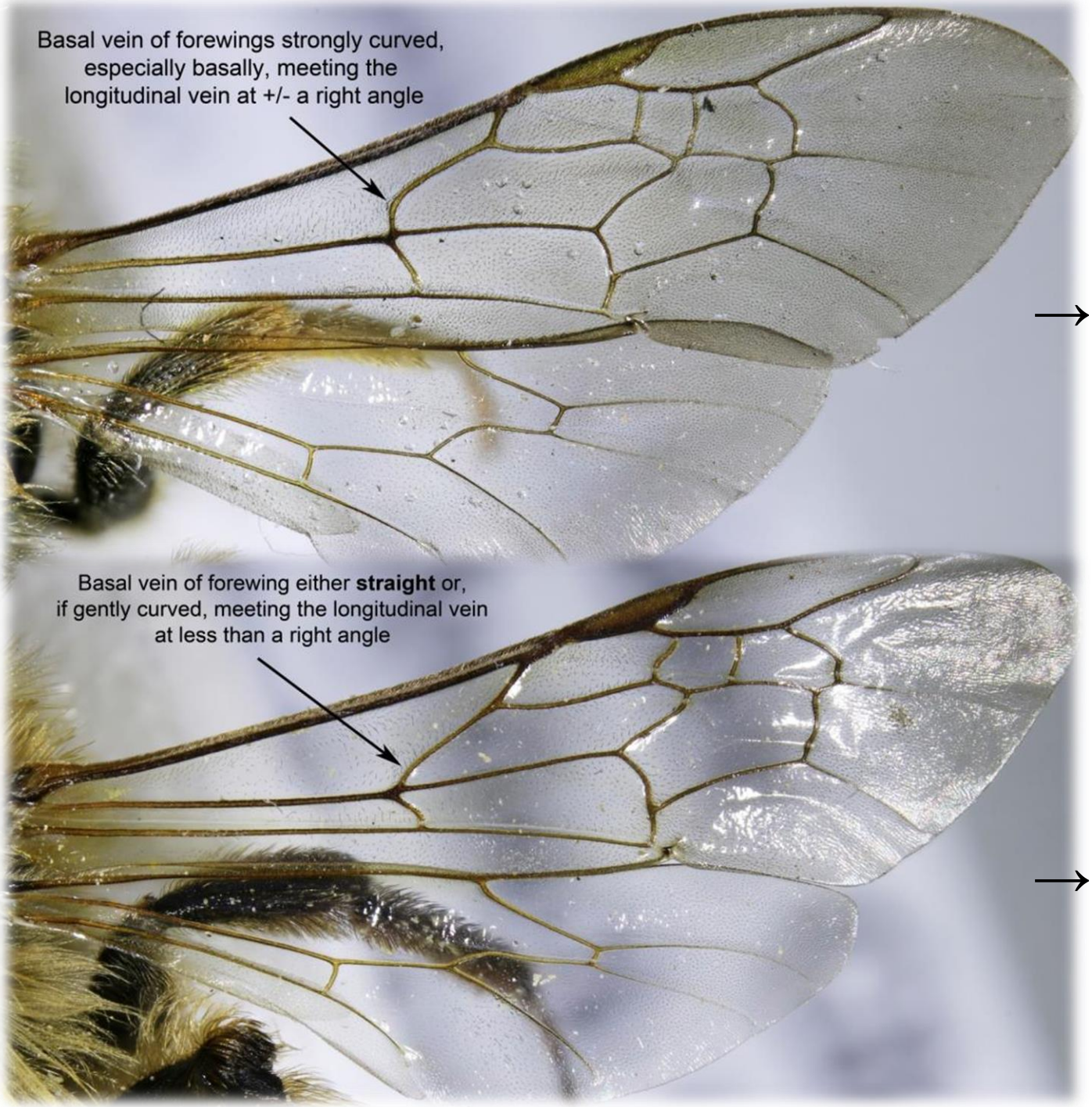

3rd submarginal cell with internal area
greater than that of 2nd submarginal cell

→ (18)


3rd submarginal cell with internal area
about equal to or less than that of
the 2nd submarginal cell

→ (25)

(18)


Basal vein of forewings strongly curved, especially basally, meeting the longitudinal vein at +/- a right angle
Basal vein of forewing either **straight** or, if gently curved, meeting the longitudinal vein at less than a right angle

→ (19)

→ (21)

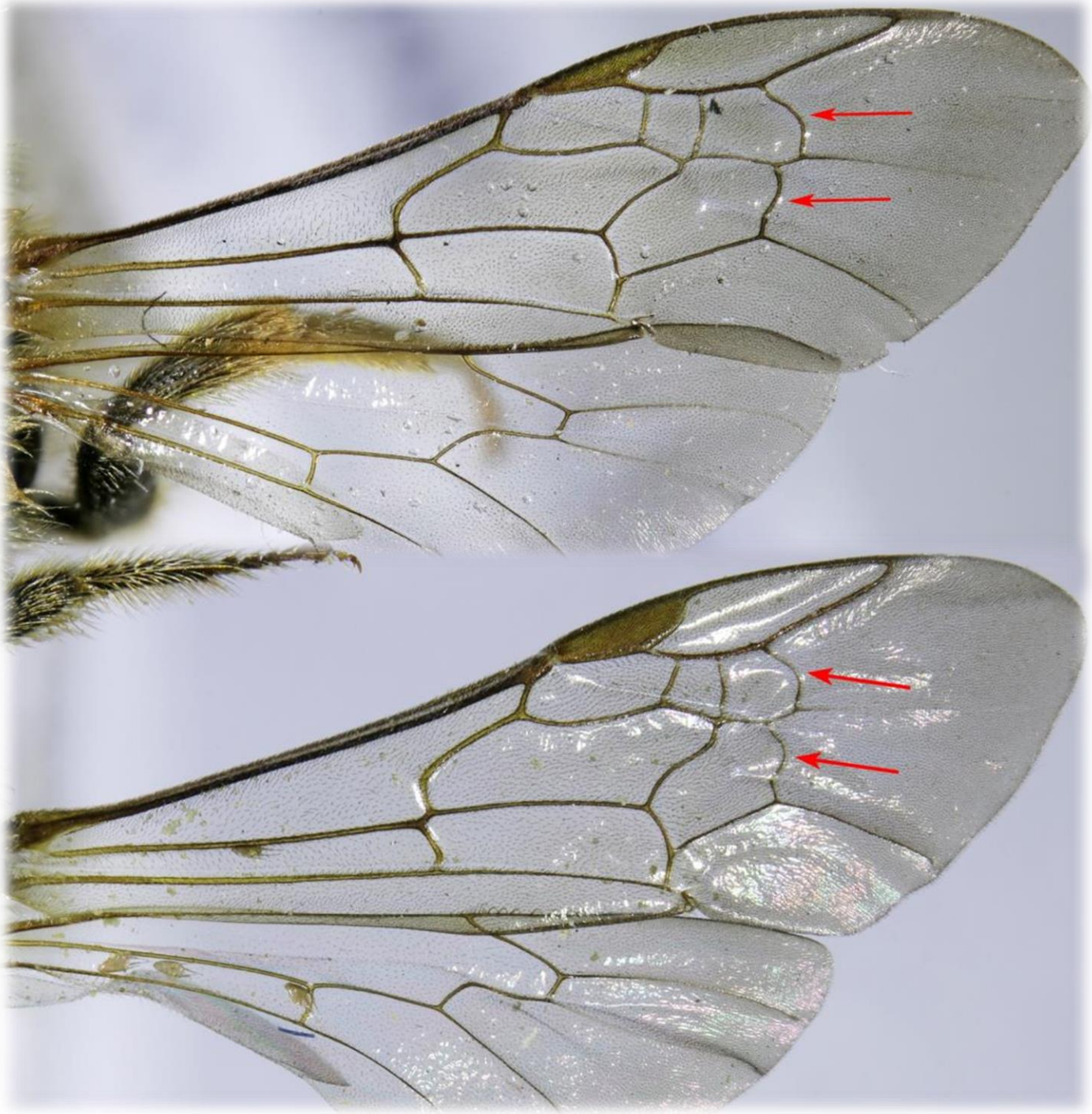
(19) Tergites usually **red-marked**, **never** with patches of adpressed white hairs; antennal flagella distinctively knobbly along front = ***Sphecodes*** Blood bees (17 species)

Sphecodes ephippius © Steven Falk

Tergites usually **black**, but if red-marked, also with patches of adpressed white hairs; antennal flagella not knobbly, the segments more cylindrical

↓

(20)



Outer cross veins of **similar thickness** and colour to other wing veins = ***Halictus***

(20)

Outer cross veins **thinner** and often paler than other wing veins = ***Lasioglossum***

(21) Body metallic blue and inconspicuously haired = ***Ceratina*** Small carpenter bees (1 species)

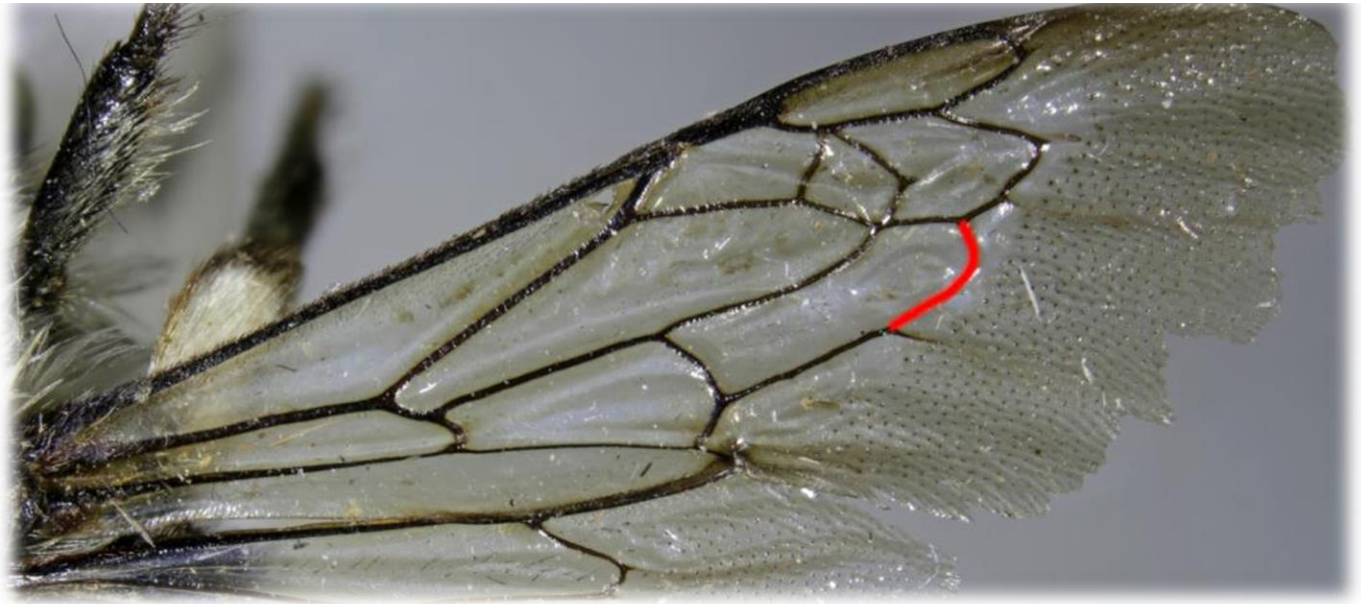
Body not usually metallic blue but if so, body has obvious hairs → **(22)** (***Andrena***, ***Melitta***, ***Melecta*** & ***Xylocopa***)

…well beyond the middle of that cell

↓

(23)

(22) Forewings with vein 2m-cu entering the 3rd submarginal cell….



…near the middle of that cell

↓

(24)

(23)

antenna with tips **pointed**
= *Andrena* Mining bees
(67 species)

antenna with tips **blunt**
= *Melitta* Blunthorn
bees (4 species)

(23) last segment of tarsi…

last segment of tarsi **long and slim = *Andrena***

relatively short and **broader than other segments = *Melitta***

(24)

Extremely large with darkened iridescent wings = ***Xylocopa*** Large carpenter bees (1 species – vagrant or introduction)

Xylocopa violacea © Steven Falk

Medium-sized without darkened wings; body usually with a pattern of white or grey hairs = ***Melecta*** Mourning bees (1 species)

Melecta albifrons © Steven Falk

(25)

Vein 2m-cu strongly
S-shaped
= ***Colletes*** plasterer bees
(9 species)

Vein 2m-cu **not**
S-shaped

↓

(26)

(26) Inconspicuously haired, rather **wasp-like** bees; legs extensively red or yellow (if black, abdomen is mostly red) → **(27)**

Nomada panzeri © Steven Falk

Epeolus cruciger © Steven Falk

Furrier bees; legs entirely dark beneath hairs → **(28)**

(27)

Nomada panzeri © Steven Falk

Epeolus cruciger © Steven Falk

Tergites **without** whitish patches of tiny hairs = ***Nomada***
Nomad bees (37 species)

Tergites **with** paired whitish spots composed of tiny adpressed hairs = ***Epeolus*** Variegated cuckoo bees (2 species)

(27)

Large and projecting auxillae on either side of scutellum = ***Epeolus***

Auxillae small and inconspicuous = ***Nomada***

(28)

Bombus humilis © Liam Olds

Surface of face black = ***Bombus*** Bumblebees (25 species)

Anthophora furcata © Liam Olds

Surface of face extensively yellow = ***Anthophora*** Flower bees (5 species)

Exercise 3: Key males to genus