

Notes on the identification keys

Martin Harvey for Soldierflies and Allies Recording Scheme



This document provides further advice and guidance on the identification keys, focusing on the standard guide to the group by Stubbs and Drake. It is also [available online](#) (with higher resolution images). If you encounter any difficulties with the keys, or find errors in the text, please do [let me know](#) so that this page can be updated. See also the recording scheme [identification resources](#) page.

- **British soldierflies and their allies: an illustrated guide to their identification and ecology**
Stubbs, A.E., and Drake, M. 2014 (second edition). [British Entomological and Natural History Society](#).

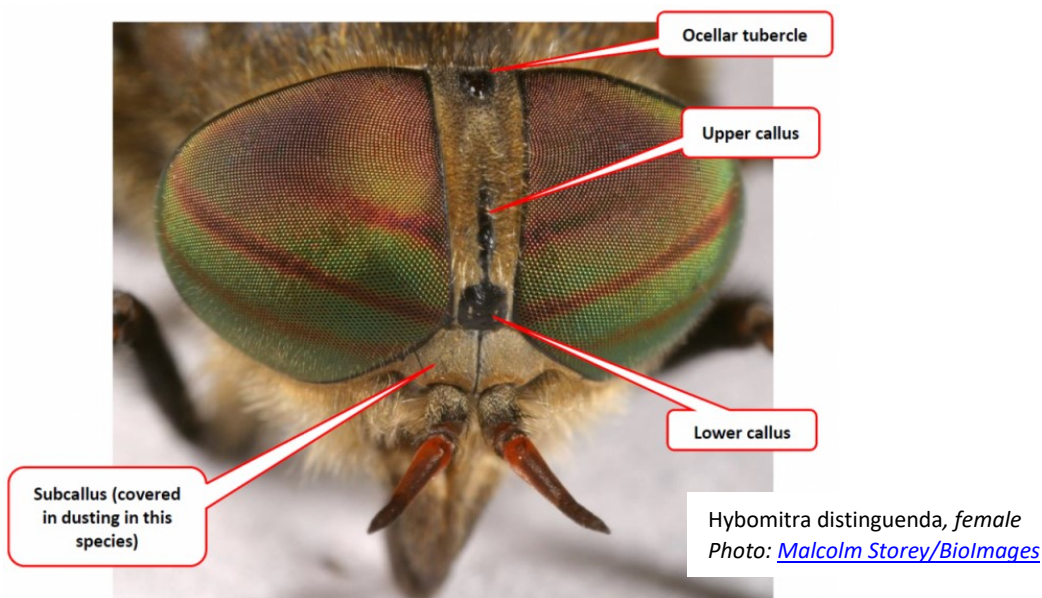
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The adult stage

Page 107, figure 4, parts of a fly

The diagram at the top-right showing a female horsefly head does not show the subcallus in the correct place. The subcallus is the slightly raised area immediately above the insertion of the antennae - beware confusion with the upper and lower callus:



The key to families

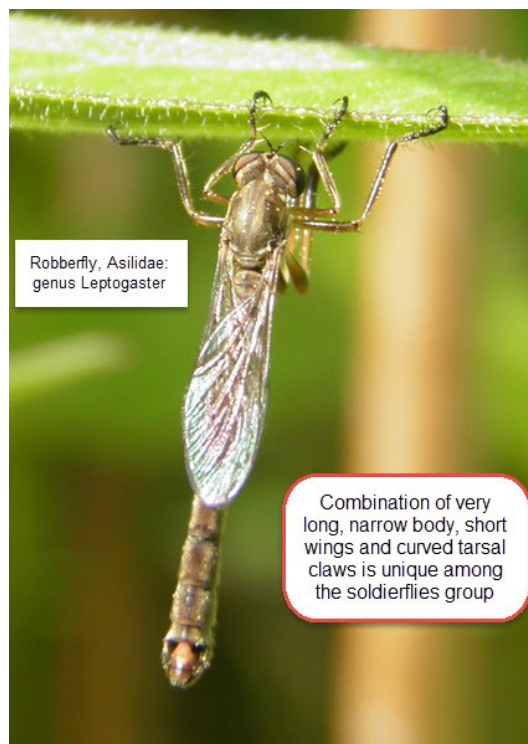
Page 109, key to families, couplet 1

There are two difficulties with this couplet. First of all, you have to decide if there are bristles on the tibiae, but some species that don't have bristles do have hairs, so you need to make a judgment as to whether you are seeing softer, denser, narrower hairs, or stiffer, more isolated, stouter bristles.



So if you can see clear bristles then you know to go to couplet 2 (which leads to a final choice between Asilidae and Therevidae).

The second difficulty is that there is an exception to the first half of couplet 1. Within the Asilidae, there is one genus that has the tibial bristles missing: genus *Leptogaster*. However, *Leptogaster* (which contains just two species) is a very distinctive genus, and can easily be recognised on its elongated appearance. So if you **can't** see bristles, **and** it's **not** *Leptogaster*, you should proceed to couplet 3.



Page 110, key to families, couplet 6

In the first half of this couplet it says that family Tabanidae has vein R₅ converging with M₁. This is true, but in some tabanids there is only a small amount of convergence. The widely splayed arrangement of veins R₄ and R₅ should be distinctive though. Note also that species of Tabanidae are at least 8mm long, some much larger.

The second half of the couplet specifies "Squama ... reduced to a thin strip", but this really applies to the lower squama only, and some of the species which fall into this category do have a well-developed upper squama.

Page 110, key to families, couplet 7

The first half of this couplet asks for small flies that are "entirely black-bodied". It would be better to say "entirely dark-bodied" as *Spania nigra* (Rhagionidae) can appear brownish, but the size difference should be clear.

Asilidae (Robberflies)

Page 113, key to family Asilidae

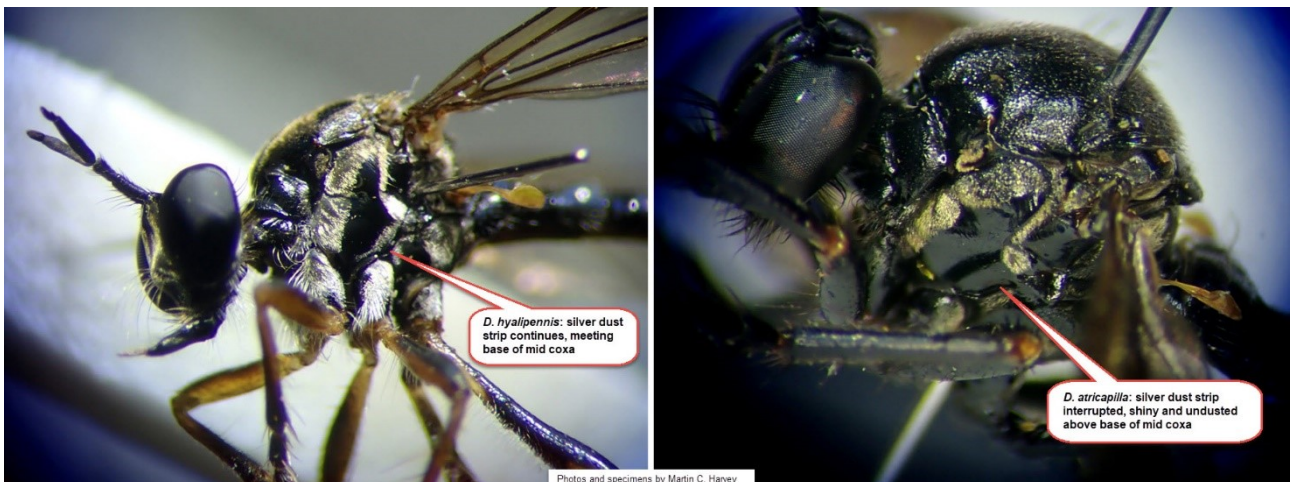
Don't forget that in addition to this key, there are more detailed line drawings of the male genitalia and female ovipositors on plates A to F (pages 452 to 463) - these provide very useful additional checks, but it is easy to forget the plates are there!

Page 115, key to family Asilidae, couplet 8b

The second half of this couplet refers to the face being "yellow-dusted". In *Philonicus albiceps* the dusting can be more silvery than yellow, but it is still clearly dusted (as opposed to having a square undusted area in *Rhadiurgus*).

Page 119, key to genus *Dioctria*, couplet 4

Although *D. atricapilla* is usually a distinctively dark species, *D. baumhaueri* (= *hyalipennis*) can also have legs that are mostly dark. If in doubt check the silver dusting on the sides of the thorax. See the [Dioctria comparison page](#).



Page 120, key to genus *Leptogaster*

The two species of *Leptogaster* can be difficult to separate: the stripe on the dorsal axis of the abdomen can be faint, and the sternite proportion can be difficult to judge. There is an additional character that is not 100% definitive but can give an extra clue: on the hind femora, *L. cylindrica* has an ill-defined blackish mark running more-or-less lengthways down the femora, while *L. guttiventris* has a more clearly defined black ring encircling the middle of the femora. This is illustrated in Geller-Grimm's [online key to robberflies](#), and see *L. guttiventris* below:



Page 121, key to genus *Machimus*, couplets 4 and 5 (*M. cowini*, *atricapillus* and *cingulatus*)

These three species can be tricky, especially the females. [Malcolm Smart's 2005 paper](#) (PDF download, 7MB) provides helpful text and photos.

Bombyliidae (Bee-flies)

Page 123, key to genera, couplet 3

The Anthracite Bee-fly *Anthrax anthrax* is given a species account on page 257 of Stubbs and Drake, but at the time of publication it had not been confirmed as a British species and is not in the keys. It has recently been found in Britain, and would key out in the same place as genus *Thyridanthrax* (couplet 3a). See [the presence of Anthracite Bee-fly \(*Anthrax anthrax*\) in Britain](#).

Page 123, key to genus *Bombylius*

See the additional information in our [ID guide to *Bombylius*](#).

Rhagionidae (Snipeflies)

Page 129, key to Genera, couplet 3

The hair colours on the abdomen are not as clear-cut as the key suggests. In particular, *Symphoromyia crassicornis* usually has a mix of pale and dark hairs on the abdomen. The shape of the antennal segment is the most reliable character.

Page 132, key to genus *Rhagio*, couplet 3

See the additional information in our ID guide to [R. scolopaceus](#) and [R. strigosus](#).

Page 132, key to genus *Rhagio*, couplet 5

Take care here - *Rhagio lineola* normally has a clear dark stigma and should go on to couplet 6, but some specimens have a poorly-developed pale grey stigma that could mistakenly lead you to couplet 8. For the species in couplet 8, if they have a visible stigma it is yellowish rather than grey. It is worth checking the front femora at this point: *R. lineola* and *R. notatus* have the front femora partly darkened, while in *R. tringarius* and *R. annulatus* the front femora is entirely pale. Suggested re-wording for couplet 5:

- | | | |
|----|--|-----|
| 5. | Stigma black or grey (sometimes pale grey), usually distinct; front femora partly dark | – 6 |
| – | Stigma indistinct or pale yellowish; front femora pale | – 8 |

Scenopinidae (Windowflies)

Page 134, key to genus *Scenopinus*, couplet 2

The legs of *Scenopinus niger* are sometimes brownish rather than black, but they are darker than the yellowish legs of *S. fenestralis*.

Stratiomyidae (Soldierflies)

See also the new series of [soldierfly photo ID guides](#). So far these cover *Chloromyia*, *Microchrysa*, *Nemotelus* and *Sargus*.

Page 134, key to family Stratiomyidae

Don't forget that there are additional line drawings of the markings on abdomen and/or thorax for many of the soldierfly genera on plates I to L (pages 468 to 475) - these provide very useful additional guides, but it is easy to forget the plates are there!

Page 136, key to family Stratiomyidae, couplet 9 (*Chloromyia*)

Chloromyia formosa is a very common species that keys out here. However, there is a second species of *Chloromyia* in Europe: *C. speciosa*, which has darker wings and yellowish basitarsi on the hind two pairs of legs. It is not believed to be likely to occur in Britain, but if it did turn up it could easily be overlooked. See our [guide to *Chloromyia*](#) for more information.

Page 137, key to family Stratiomyidae, couplet 13 (*Pachygaster* and *Eupachygaster*)

See the recording scheme [guide to Pachygastrinae](#) covering *Pachygaster atra* and the much scarcer *Eupachygaster tarsalis*.

Page 142, key to genus *Chorisops*

Note that the eyes are separated at the top of the head in both sexes in this genus. In my experience, the colour of the frons (metallic green in *nagatomii* and glossy black in *tibialis*) is not always easy to make out (especially when looking at a specimen in isolation), and the colour of the humeri is quite variable. The pattern on the abdomen seems to be the most reliable feature, but in cases of doubt dissection of males is the best way to confirm the species. There is a detailed account available:

- Speight, M.C.D. 1981. [Chorisops nagatomii, an Insect New to Ireland and Its Segregation from C. tibialis \(Diptera: Stratiomyiidae\)](#). *The Irish Naturalists' Journal*, Vol. 20, No. 8, 327-329.

Page 143, key to genus *Nemotelus*, couplet 2

In couplet 2a the key states that *N. pantherinus* has the sides of the thorax "entirely black", but in fact there is usually a narrow white stripe at the junction of the top of the thorax with the sides (pleurae), and a very small white mark on the humerus. The alternative in 2b is for those species that have a much more prominent wedge-shaped white mark at this junction and a much more obviously white humerus. See the *Nemotelus* [photo ID guide](#) for illustrations.

Page 145, key to genera *Odontomyia* and *Oplodontha*, couplet 4

There is an additional character that can help separate *Oplodontha viridula* from *Odontomyia angulata* (and also from the very rare *O. hydroleon*). The scutellum of *O. viridula* is completely dark, whereas *O. angulata* should have at least some pale colour at the tip of the scutellum. These soldierflies can be variable though, so if possible do check the antennal shape and wing venation as well. A number of images of these two species have been wrongly identified online and in some insect field guides. (Thanks to Tim Strudwick for highlighting this feature.)

Page 147, key to genera *Odontomyia* and *Oplodontha*, couplet 8 (*Odontomyia tigrina* and *O. argentata*)

The distinction between black or pale hairs on the tergites (top of abdomen) works well for males, but is less clear for females. *Odontomyia tigrina* females can have extensive pale hairs along a broad area at the sides of the abdomen, which could lead to confusion with females of *Odontomyia argentata*. Check for differences in wing veins (dark brownish in female *tigrina*, pale yellowish in *argentata*) and look at the distribution of pale hairs (evenly distributed along the sides of the abdomen in *tigrina*, usually showing pale bands right across the abdomen at the end of each segment in *argentata*).



Odontomyia tigrina female,
showing pale hairs on abdomen
sides (photo by Tim Hodge)

Page 151, key to genus *Sargus*

Note that the eyes are separated at the top of the head in both sexes in this genus.

Page 152, key to genus *Sargus*, couplet 2 for *S. cuprarius* and *S. iridatus*

S. iridatus can have a dark cloud on the wing, and this is not a reliable feature to distinguish it from *S. cuprarius*, so specimens need to be examined to check the genitalia under a microscope. As far as we know *S. iridatus* is widespread and frequent, *S. cuprarius* is widespread and rare, but there are very few fully confirmed records. If you suspect that you have found *S. cuprarius* please retain a specimen and get it checked (e.g. by sending in to the recording scheme).

Tabanidae (Horseflies)

Page 161 onwards, key to genus *Haematopota* females

For additional illustrations of the differences in the first antennal segments see our [Photo guide to antennae of female *Haematopota* species \(Tabanidae\)](#).

Page 164 onwards, key to genus *Hybomitra*

For a version of this key with additional illustrations see our [Illustrated key to genus *Hybomitra* \(Tabanidae\)](#).

Page 166 onwards, key to genus *Hybomitra* females

Several couplets in this key refer to the "subcallus". The line drawings in this section of the key are clearly labelled, but note that the diagram of a female horsefly head back on page 107 is misleading, and does not correctly show the subcallus. See "[The adult stage](#)" above.

Page 167, key to genus *Hybomitra* females, couplet 5

This couplet focuses solely on the colour of the first antennal segment, but in my experience this is not a reliable or clear-cut distinction. This part of the key really needs re-working, but in the meantime we recommend that you try following both choices and see which fits best for your specimen and location.

Therevidae (Stiletto-flies)

Page 175, key to family Therevidae

Don't forget that in addition to this key, there are more detailed line drawings of the male genitalia on plates G and H (pages 464 to 467) - these provide very useful additional checks (and are essential for some *Thereva* species), but it is easy to forget the plates are there!

Page 176, key to family Therevidae, couplet 4

Take care with the colour of the halteres - *Spiriverpa* can have silvery scales on the haltere, so make sure you can see the underlying colour.

Page 178, key to genus *Thereva*

An alternative key by Morten Falck is available and it is always worth checking your specimens in this as well as using the Stubbs and Drake key: [The UK species of *Thereva* stiletto flies \(Diptera, Therevidae\)](#).

Page 179, key to genus *Thereva* males, couplet 1

This couplet doesn't work for males of *Thereva cinifera*, which have quite substantial amounts of black hairs on the abdomen in all the specimens seen so far. If in doubt, try using Morten Falck's key (link above) as well, and if still in doubt the male aedeagus provides final confirmation.

Page 180, key to genus *Thereva* males, couplet 6

This couplet asks if there is one pair or two pairs of bristles on the top of the thorax – note that this distinction refers only to the dorso-central bristles (the innermost bristles on the fairly flat top surface of the thorax, immediately in front of the scutellum). All therevids have additional bristles at the edges of the thorax, just above the wings, but these should be ignored when deciding between one pair or two pairs of (dorso-central) bristles. Also ignore the bristles on the scutellum itself.

Page 180, key to genus *Thereva* males, couplet 7a, *Thereva nobilitata*

See [Janet Graham's superb images](#) of a dissected specimen to get a clearer idea of the shape of the aedeagus in *Thereva nobilitata* (the aedeagus is shown in the top-left corner of Janet's composite image).

Plates

Page 494, plate 9, figure 13, *Oxycera rara*

Both images of *Oxycera rara* are female specimens (13a is incorrectly labelled as male). This is potentially confusing as the male of *O. rara* does not have the yellow markings on the head that are so prominent in the female - see [Steven Falk's image of a male specimen](#):

