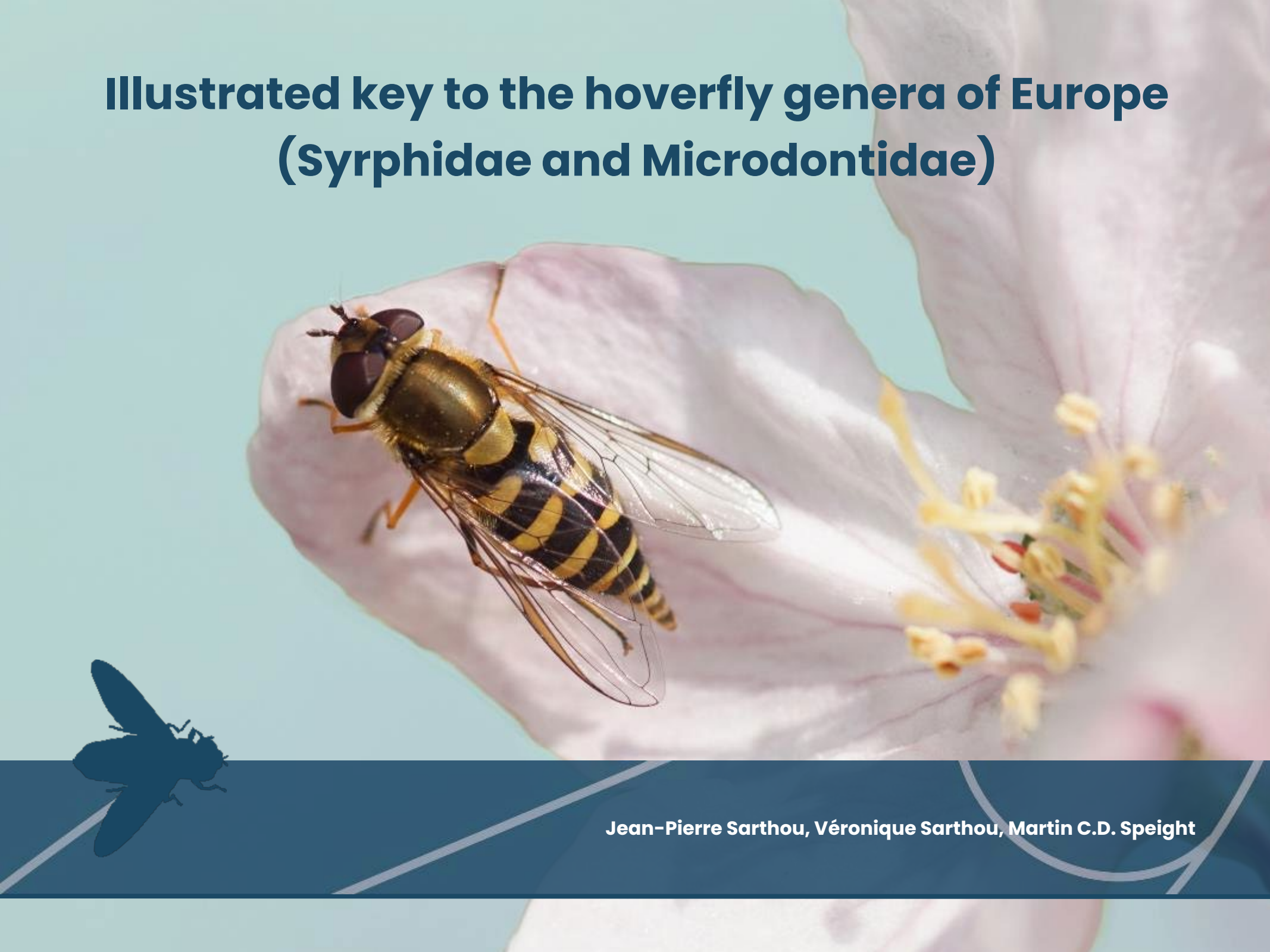
Illustrated key to the hoverfly genera of Europe (Syrphidae and Microdontidae)



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ILLUSTRATED KEY TO THE HOVERFLY GENERA OF EUROPE

Syrphidae and Microdontidae

Colophon

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ILLUSTRATED KEY TO THE HOVERFLY GENERA OF EUROPE

Syrphidae and Microdontidae

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This key is an updated and expanded version of the French key by Sarthou, Sarthou and Speight (2021). It incorporates parts of the work of Bradescu (1991), Verlinden (1994), Maibach *et al.* (1994a & b), and Speight *et al.* (2007, 2017). The nomenclature used is that of Speight, 2020.

Introduction

Hoverflies comprise two families of flies (Diptera): Syrphidae and Microdontidae. There are 96 genera and around 980 species in Europe (Speight *et al.* 2020). Numbers of genera and species are generally highest in the Southern parts of Europe and tend to decrease northwards and on islands. This key allows the separation of the two families, and the identification of the European genera. Each couplet in this key is accompanied by figures that illustrate the morphological characteristics. This should make well-informed decisions possible, but when in doubt, we refer to the glossary of terms in the in the *Syrph the Net 2017 species key* (Speight *et al.*, 2017).

In hoverflies, aberrant colour patterns (e.g. melanistic individuals) do sometimes occur. Where such variations are a potential source of confusion in the identification we have indicated this in the key.

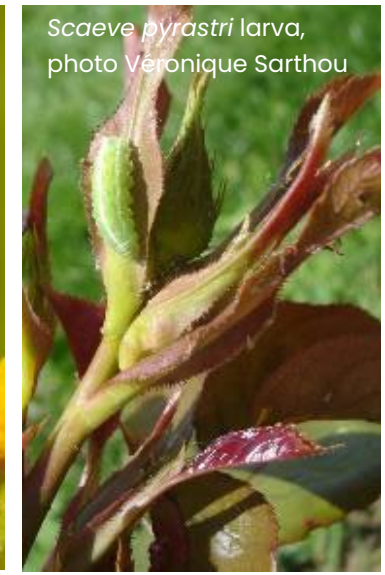
The ecology of hoverflies

Hoverflies (Syrphids) can be found in almost all terrestrial habitats, with the exception of open and running water. As adults, the majority of species feed on nectar and pollen, making them potentially important pollinators. Where previous pollinator research often focussed on bees, there is now a growing interest in other animal vectors, and as a result a more complex and informative picture of the role of syrphids as pollinators is emerging.

The various bee and syrphid pollinator networks function in different ways and consequently have different attributes. Syrphid pollination activities have more in common with the pollination activities of solitary bees than honeybees in that a multiplicity of species are involved in different habitats and through the changing seasons. The vast populations of some syrphids with aphid-feeding larvae, which can be generated by Man's crop-growing activities, produce migrant swarms which have no parallel among solitary bees and provide a long-range pollination element. The ease of mass-breeding programmes for some of these aphid-feeding syrphids makes them useful as both pollinators and pest control agents for greenhouse crops. The false-mating phenomenon which characterises the pollination of some orchids by bees is paralleled by similar visual and pheromonal lures directed at syrphids, by other orchid species.

An additional stratagem directed at aphid-feeding syrphids by orchids is to smell like aphids, promoting pollination by female syrphids looking for appropriate oviposition sites. While the selective flower-visiting activities characterising pollination by many solitary bees favours some plants, the broad-spectrum flower-visiting actions of syrphids favour others – especially plants numerically few in number within a mosaic of flowering plants. Some flowers, like those of Fabaceae, are structured for bee visiting and are hardly used by syrphids. Others, like the pollen-only flowers of rushes, sedges, plantains and grasses, are hardly visited by solitary bees but have specialist syrphid visitors like the many *Platycheirus* species, *Neoascia* and *Melanostoma*. Complementarity of pollinator networks is also evident both geographically and ecologically – solitary bee pollinators predominate in various Mediterranean zone habitats, whereas syrphid pollinators predominate in subarctic and subalpine habitats, and in various wetlands. But, in comparison with the vast literature now available on pollination by bees, the publications on syrphids as pollinators are few and far between, demonstrating that our knowledge of the subject is still in its infancy.

Eristalis horticola, photo Marit Moerman



Scaeve pyrastri larva, photo Véronique Sarthou

The ecology of hoverfly larvae is remarkably variable, hence these latter fulfil other important ecosystem functions. Some

species feed on living animals - mainly aphids and are called zoophagous. Others feed on plants, including stems, bulbs and roots and are called phytophagous. At last, some species obtain their nutrients from decomposing materials (plant or animal) and are called microphagous (saprophagous are part of this category).

Zoophagous species like *Episyrphus balteatus* or *Sphaerophoria scripta* (feeding on aphids) are important auxiliaries for pest control.

An example of phytophagous hoverflies with larvae living in the stems of plants are *Cheilosia* spp., while species from the genera *Eumerus* and *Merodon* live in bulbs and roots.

Helophilus pendulus, photo Marit Moerman

Microphagous species feed on fungi, or on micro-organisms present in sap flows and in water loaded with organic matter such as wet tree cavities (*e.g. Myathropa florea*), slurry pits (*e.g. Eristalis tenax*), ditches and animal droppings. They are called saproxylic when they feed on the decaying wood or sap run of dead or senescent trees; an example is *Sphyximorpha petronillae*.

Some hoverfly species live together with other insects and feed on waste (commensals) or feed on those insects (quasicommensals). Hoverflies of the genera *Microdon*, *Chrysotoxum* and *Volucella* are quasi-commensals of social Hymenoptera (bees, ants and wasps). The hoverfly *Blera fallax* is a commensal of saproxylic beetles.

Syrphids as indicators of environmental quality

Because of their diverse life histories hoverflies are useful environmental indicators. In structurally diverse forest ecosystems, approximately half of the syrphid fauna is associated with the trees and the rest of the species use other forest microhabitats, like glades, streams, litter layer and ground flora. Many of the syrphids associated with trees depend on the microhabitats which develop on trees as they grow older, like trunk cavities, rot-holes, sap runs and rotting tree roots. From comparison between the expected and observed fauna associated with these various microhabitats, insights into their degree of functionality can be obtained, indicating how different parts of a forest are performing in maintaining its biodiversity. For example, forest faunas frequently exhibit a lack of the syrphids associated with overmature tree microhabitats. This is an almost inevitable consequence of the harvesting of trees before they reach an age to develop microhabitats to support those species, and the faunistic impact of that form of management can also be observed for a long time after it ceases - almost by definition, it takes more than 200 years for major forest trees like oak to become overmature.

Threats, management, and European monitoring

Insect populations in Europe are under threat, and so are hoverflies. Hoverflies have been in decline for decades (Barendregt *et al.,* 2022). 314 hoverfly species on the IUCN Red List are considered threatened in Europe (Vujic *et al.,* 2022). The decline is the result of a complex array of causes, with important drivers being intensive land-use for agriculture, industrial-scale use of pesticides and fertilisers, desiccation by intensive water management, and wildfires in (semi)natural habitats. Drivers that originate in agricultural lands often spill over into neighbouring natural habitats. Climate change combined with severe habitat fragmentation adds to the vulnerability of populations. Pollinator declines are not only a threat to the conservation of biodiversity; because many crops depend on insect pollination, they also pose a threat for food security.

Good quality monitoring data, which are needed to properly evaluate the current situation and to guide effective action, are currently lacking. Following up on recommendations by an international expert group (Potts *et al.,* 2021), the European Union started preparations for a European Pollinator Monitoring Scheme (EU PoMS) for wild bees, butterflies, hoverflies and moths, using volunteer and professional recorders. This preparatory project, which runs from 2021-2023, is called SPRING: *Strengthening Pollinator Recovery through INdicators and monitorinG*. To build the taxonomic capacity that is needed to realise the goals of a EU PoMS, the SPRING project is developing a cohesive set of taxonomic identification materials that are made available through a dedicated website, the European Pollinator Academy (www.pollinatoracademy.eu).

As a key part of this European training package, a French identification key for hoverflies was selected, the *Clé des 88 genres de Diptères Microdontidae et Syrphidae d'Europe occidentale* (Sarthou et al. 2021). It was updated, expanded and translated into English by its authors to encompass the hoverflies of all European member states, and now lies before you in its new incarnation as the *Illustrated key to the hoverfly genera of Europe (Syrphidae and Microdontidae*). This key is part of a European open access project that will fill important gaps in taxonomic identification materials in all European member states. To overcome linguistic barriers, the European Pollinator Academy aims to undertake a concerted effort to make this key available in all main European languages.

Helophilus pendulus, photo Marit Moerman

TABLE OF THE DIFFERENT GENERA OF THE KEY, CLASSIFIED BY SUB-FAMILY

MICRODONTIDAE
MICRODON

SYRPHINAE
BACCHA
CHRYSOTOXUM
DASYSYRPHUS
DIDEA
DOROS
EPISTROPHE
EPISYRPHUS
ERIOZONA
EUPEODES
ISCHIODON
LAPPOSYRPHUS
LEUCOZONA
MEGASYRPHUS
MELANGYNA
MELANOSTOMA
MELIGRAMMA
MELISCAEVA
PARAGUS
PARASYRPHUS
PLATYCHEIRUS
PSEUDODOROS
PYROPHAENA
ROHDENDORFIA
SCAEVA
SPAZIGASTER
SPHAEROPHORIA
SYRPHOCHEILOSIA
SYRPHUS
XANTHANDRUS
XANTHOGRAMMA

ERISTALINAE
ANASIMYIA
ARCTOSYRPHUS
ERISTALINUS
ERISTALIS
EURIMYIA
HELOPHILUS
LEJOPS
MALLOTA
MESEMBRIUS
MYATHROPA
PARHELOPHILUS

MILESIINAE
BLERA
BRACHYOPA
BRACHYPALPOIDES
BRACHYPALPUS
CALIPROBOLA
CALLICERA
CERIANA
CHALCOSYRPHUS
CHEILOSIA
CHRYSOGASTER
CHRYSOSYRPHUS
CLAUSSENIA
CRIORHINA
CRYPTOPIPIZA
EUMERUS
FERDINANDEA
HAMMERSCHMIDTIA
HERINGIA
ISCHYROPTERA
KATARA
LEJOGASTER
LEJOTA
MATSUMYIA
MELANOGASTER
MERODON
MILESIA
MYOLEPTA
NEOASCIA
NEOCNEMODON
ORTHONEVRA
PALUMBIA
PELECOCERA
PIPIZA
PIPIZELLA
PLATYNOCHAETUS
POCOTA
PORTEVINIA
PRIMOCERIOIDES
PSARUS
PSILOTA
RHINGIA
RIPONNENSIA
SERICOMYIA
SPHECOMYIA
SPHEGINA
SPHIXIMORPHA
SPILOMYIA
SYRITTA
TRICHOPSOMYIA
TRIGLYPHUS
TROPIDIA
VOLUCELLA
XYLOTA

Terms used

The names of the different parts used to identify the genera in this key are illustrated in the figures attached to this key. For further clarification, the glossary of terms in the StN 2017 species key should be used (Speight *et al.*, 2017). The figures are numbered according to the couplet which refers to them. Thus certain figure numbers are non-existent since no illustration is necessary in the couplet.

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KEY TO THE FAMILIES MICRODONTIDAE AND SYRPHIDAE

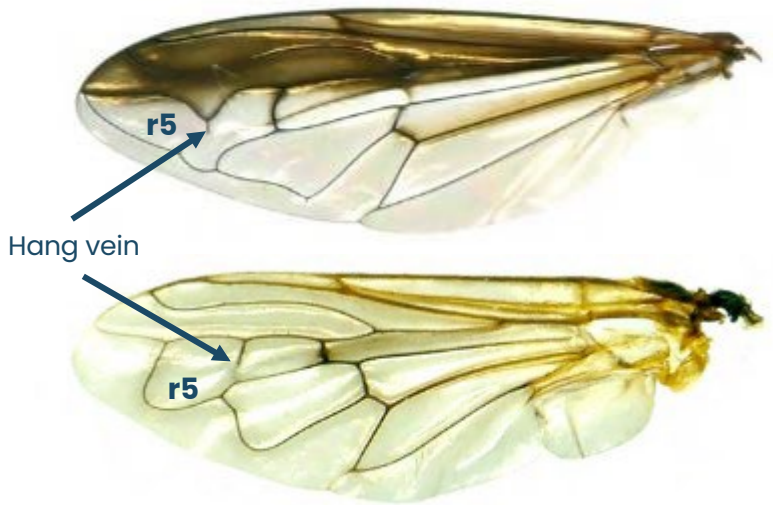
1

1a - Wing: vein R4+5 with a hang vein projecting into cell r5 (Fig. A); posterior margin of the scutellum either smooth or with two small projections (spiniform to tuberculate), which are usually distinct when present (Fig. F bottom), but are sometimes poorly developed.

››› 2

Figure A

Left wing: *Ceriana conopsoides* (top); *Microdon mutabilis* (bottom)



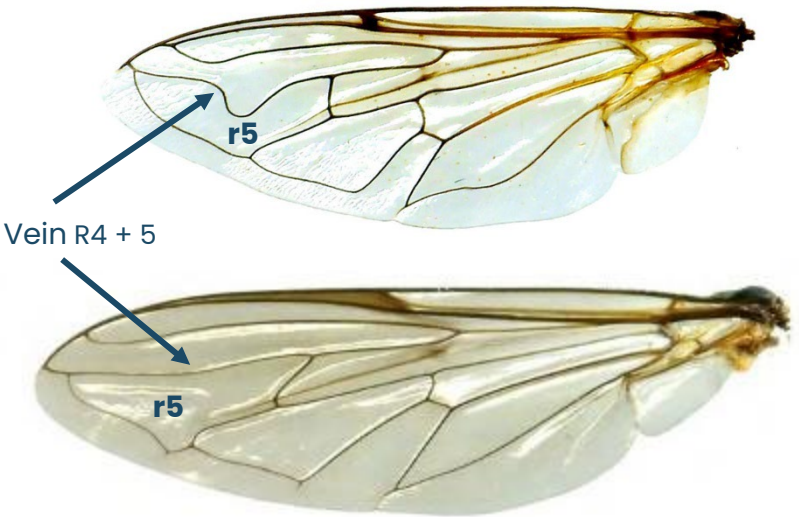
1b - Wing: vein R4+5 without a hang vein extending into cell r5 (Fig. B); posterior margin of the scutellum without projections or with a fringe of many, very small projections (Fig. F bottom).

››› SYRPHIDAE (see following key)

[pro parte: all genera other than ***Ceriana*** Rafinesque, ***Platynochaetus*** Wiedemann, ***Primocerioides*** Shannon and ***Sphiximorpha*** Rondani.]

Figure B

Left wing: *Eristalis nemorum* (top); *Xylota sylvarum* (bottom)



2a - Abdomen rather broad, entirely dark brown/red-brown and without yellow markings; in general appearance very similar to *Apis* and various solitary bees (Fig. C).

››› 3

2b - Abdomen rather narrow and elongate, black with pale yellow bands on the tergites; posterior margin of the scutellum virtually smooth, without any projections; in general appearance very similar to some eumenid or vespid wasps (Fig. D).

››› SYRPHIDAE (see following key, go to couplet 60)

[*pro parte*: the genera ***Ceriana*** Rafinesque, ***Primocerioides*** Shannon and ***Sphiximorpha*** Rondani.]

Figure C

Microdon: *M. mutabilis*, head side view; *Microdon myrmicae* male

Figure D

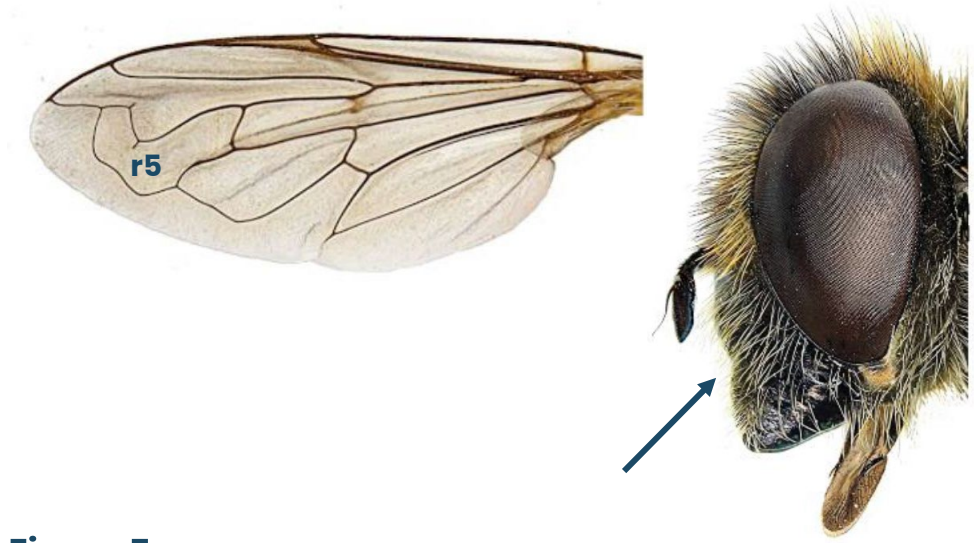
***Ceriana vespiformis* female (left); *Sphiximorpha subsessilis* male (right)**

3a – Antenna shorter than the width of the head viewed in profile; face in profile with shallow median callus (Fig. E right); posterior margin of scutellum without projections; anterior margin of wing cell r5 deeply concave (Fig. E left); general body surface without metallic reflections; abdominal tergites with upstanding hair, without bands of recumbent hair.

››› ***Platynochaetus*** Wiedemann.

Figure E

Platynochaetus: P. rufus, **left wing,** ***P. setosus,*** **female, head side view**



3b - Antenna longer than the width of the head viewed in profile and 1st antennal article distinctly longer than the 2nd (Fig. C); face in profile distinctly convex, but without a median callus; posterior margin of the scutellum usually with two small projections (Fig. F top), (varying from spiniform to tuberculate), which can sometimes be very poorly developed or even absent; anterior margin of wing cell r5 almost straight (Fig. A); general body surface with metallic reflections; abdominal tergites with bronze-coloured reflections and bands of recumbent, pale (yellow-brown to grey-brown) hair.

››› **MICRODONTIDAE**

[family monogeneric in Europe: *Microdon* spp. Meigen]

Figure F

Posterior margin of scutellum: ***Microdon devius*** **(top)** ***Eumerus alpinus*** **(bottom)**

KEY TO THE GENERA OF SYRPHIDAE

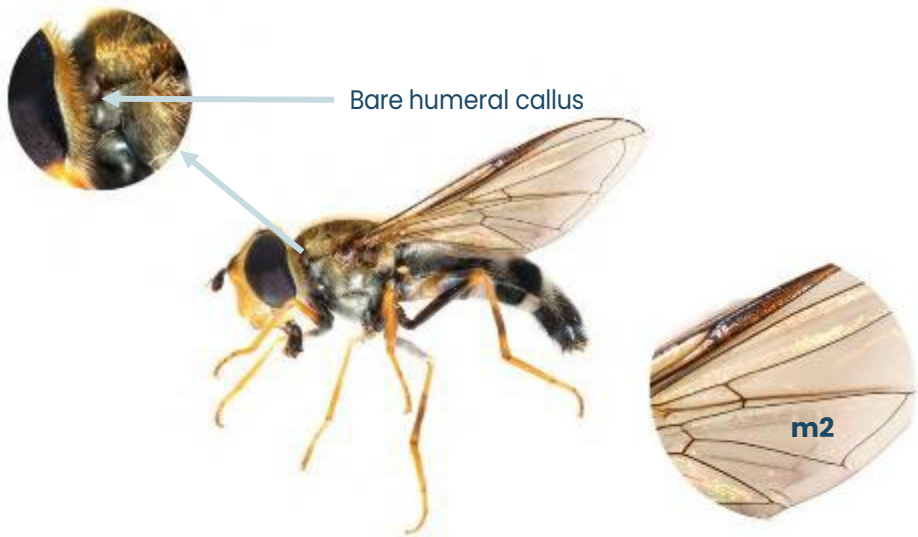
1

1 – Humeral callus without hairs, bare and shining or simply covered with a very fine and almost invisible pruinosity, exceptionally a few isolated hairs can be located at its posterior edge (the humeral callus is sometimes hidden by the posterior part of the head, curving over the prothorax) (Fig. 1A); wing with cross-vein R-M situated before the middle of cell m2 (also called the discal cell, or cell dm):

subfamily **SYRPHINAE >>> 2**

Figure 1A

Humeral callus: *Leucozona glaucia*, left lateral view

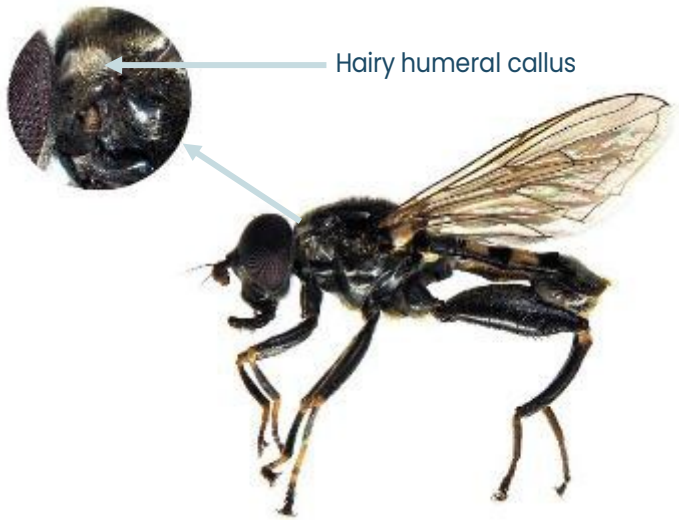


——— Humeral callus at least partially covered with well-developed hairs (with some exceptions, cf. below) and clearly visible because the posterior profile of the head does not encapsulate the prothorax and the humeral calli are therefore not hidden (FIG 1B); transverse vein R-M situated before or after (sometimes considerably after) the middle of cell m2; very rarely the hairs on the humeral callus are fine and short (but not hidden by the head), but the transverse vein R-M is then situated after the middle of cell m2:

subfamilies **ERISTALINAE** and **MILESIINAE >>> 45**

Figure 1B

Humeral callus: *Chalcosyrphus nemorum*, left lateral view



2 – Entire posterior margin of wing bearing a closely-packed line of dark-grey, punctiform, sclerenchymae (visible at medium magnification, Fig. 2); most of wing surface covered evenly in microtrichia.

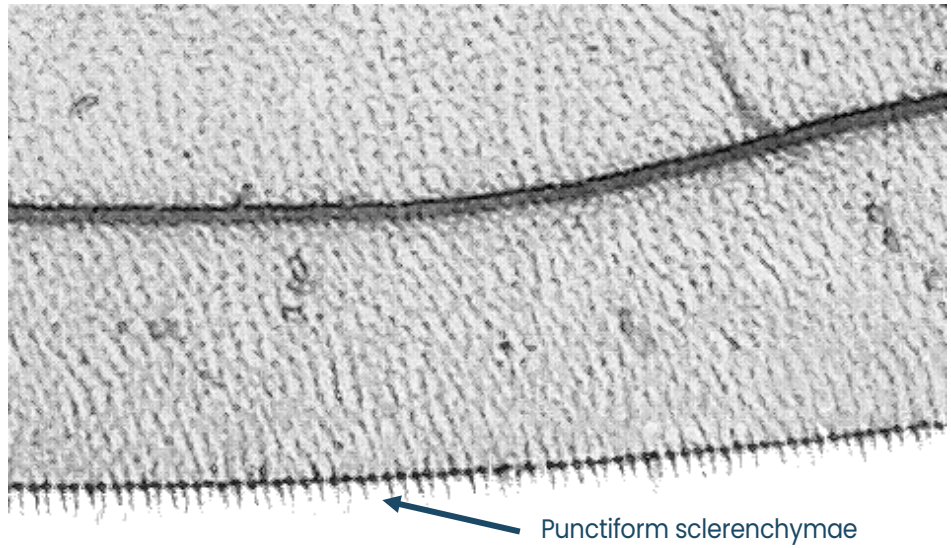
››› 3

——— Posterior margin of wing either without chitinous strips, or with minute, indistinct, pale grey sclerenchymae, or, if with discrete, blackish sclerenchymae then the wing surface is almost without microtrichia or with only sparse microtrichia.

››› 5

Figure 2

Hindwing margin: *Episyrphus balteatus*



3 – Mesanepisternite 1 bare or with microscopic pruinosity, without well-developed hairs (Fig. 3A left); metasternum bare (Fig. 3B).

››› ***Meligramma*** Frey.
[pro parte: *M. cincta* (Fallen), 1817]

——— Mesanepisternite 1 with a few well-developed hairs (Fig. 3A right).

››› **4**

Figure 3A

Thorax, left lateral view: *Meligramma cincta* (left), mesanepisternite 1 glabrous; *Meliscaeva cinctella* (right), mesanepisternite 1 hairy (after Coe, 1953)

Hc – Humeral callus
As – Anterior spiracle

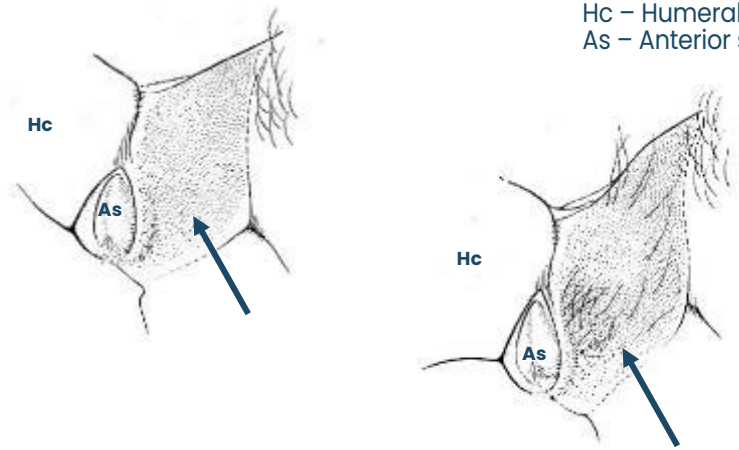
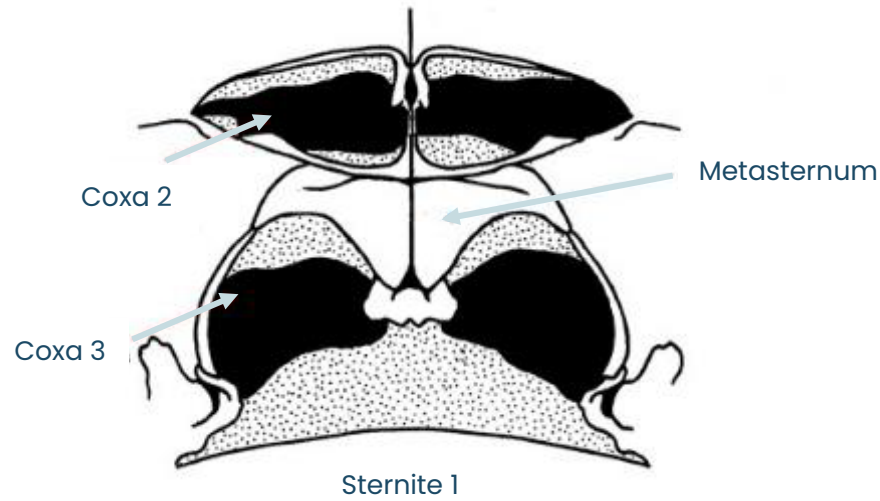


Figure 3B

Ventral side: Syrphus after Speight, 1987
(Reference: Speight, M.C.D. (1987) External morphology of adult Syrphidae (Diptera). *Tijds.Ent.*, 130: 141-175)



4 - Metasternum with distinct, rather long hairs; tergites 3 and 4 each usually with two black transverse bands, which may merge laterally in melanistic individuals; the anterior black band may be reduced to a narrow streak not reaching the lateral margins of the tergite (Fig. 4A), or further reduced into two almost linear streaks, separated in the mid-line.

››› ***Episyrphus*** Matsumura.

[monospecific genus in Europe: *E. balteatus* (DeGeer), 1776]

Figure 4A

Abdomen: *Episyrphus balteatus* (male and female)

——— Metasternum bare; tergites 3 and 4 black, with a pair of pale yellow spots, or a yellow-orange band (Fig. 4B).

››› ***Meliscaeva*** Frey.

Figure 4B

Abdomen: *Meliscaeva auricollis* (left), *M. cinctella* (right)

5 – Antennae as long as or longer than the length of the head seen in profile (Fig. 5A, note: do not confuse length of head which follows a horizontal axis, and height of head which follows a more or less vertical axis); 3rd antennal article at least 3 times as long as high; scutellum more or less orange-yellow, with or without a darker central spot (which varies in colour from yellow-brown to black); abdomen often broad and very convex dorsally; tergites quite to very sclerotized; lateral margins of tergites 3 and 4 more or less flattened, which is often more easily seen tangentially (Fig. 5B, more or less appropriately referred to as a "beaded" abdomen).

››› ***Chrysotoxum*** Meigen.

Figure 5A

Head of *Chrysotoxum cautum*, profile

Figure 5B

Abdomen of *Chrysotoxum octomaculatum*, female

——— Antennae distinctly shorter than the length of the head seen in profile (Fig. 5C, attention: do not confuse the length of the head which follows a horizontal axis, and the height of the head which follows a more or less vertical axis), or as long or longer, but then the dorsal surface of the abdomen is not strongly convex, does not have “beaded” lateral margins on tergites 3 and 4 (they are not flattened) (Fig. 5D) the tergites are not abnormally sclerotized and the scutellum is never yellow with a darker central spot.

››› **6**

Figure 5C

Head of *Scaeva pyrastri*, profile

Figure 5D

Abdomen: male *Paragus pecchiolii* (left); *Syrphus torvus* (right)

6

6 – Face in profile slightly convex or straight, thus without concavity between the antennae and the facial callus; facial callus almost indistinguishable (Fig. 6A); eyes rather short haired; small species, body length 4-8mm.

››› ***Paragus*** Latreille.

——— Face in profile with a more or less pronounced concavity under antennae (Fig. 6B).

››› **7**

Figure 6A

Head of *Paragus bicolor*, profile

Figure 6B

Head of *Baccha*, profile

7

7 – Abdominal tergite 2, at its narrowest part, narrower than tergite 1 (Fig. 7, abdomen sometimes filiform in the basal part of its length); tergite 2 sometimes, at its narrowest part, only slightly narrower than, or as wide as, tergite 1, if so then the hind tibia shows a clear notch in the apical half of its length (in addition, the abdomen of a few individuals of *Sphegina* species, *Sphaerophoria* species and male *Platycheirus* species can fit this description).

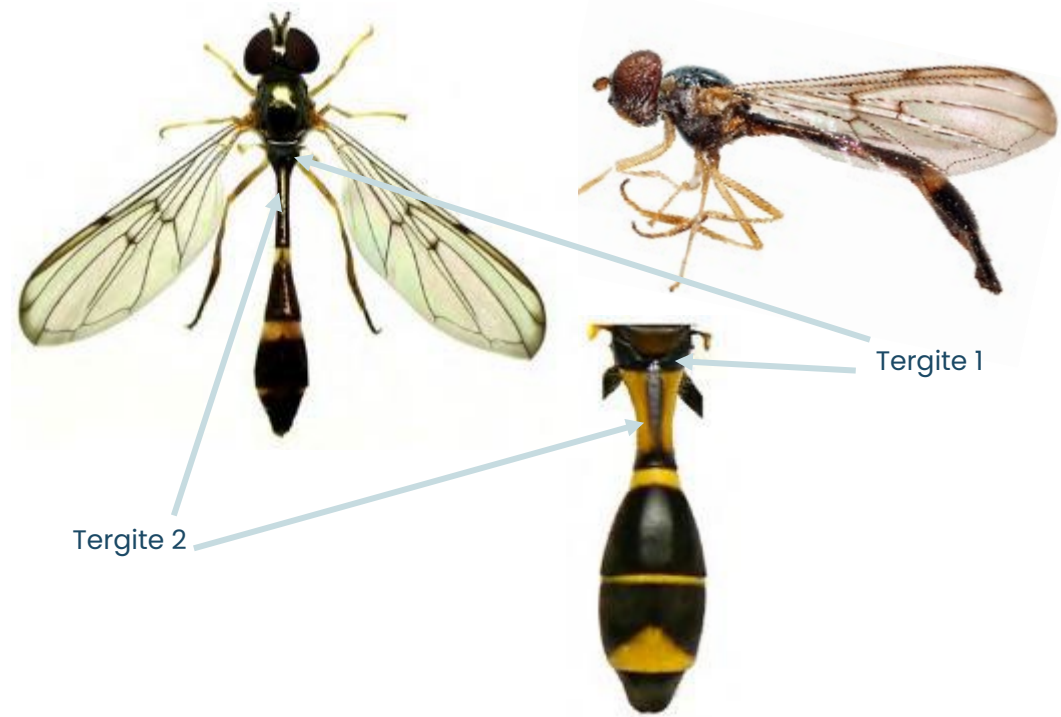
››› **8**

——— Abdominal tergite 2 everywhere wider than tergite 1.

››› **11**

Figure 7

Abdomen: *Baccha elongata* (top, upper and side view); *Doros destillatorius* (low)



8 – Mesoscutum bordered laterally, both anterior to and posterior to the transverse suture, by a clear, light yellow stripe; pleurae with yellow marks (Fig. 8); anterior parts of the wing membrane clearly infuscated; large species (15-20 mm).

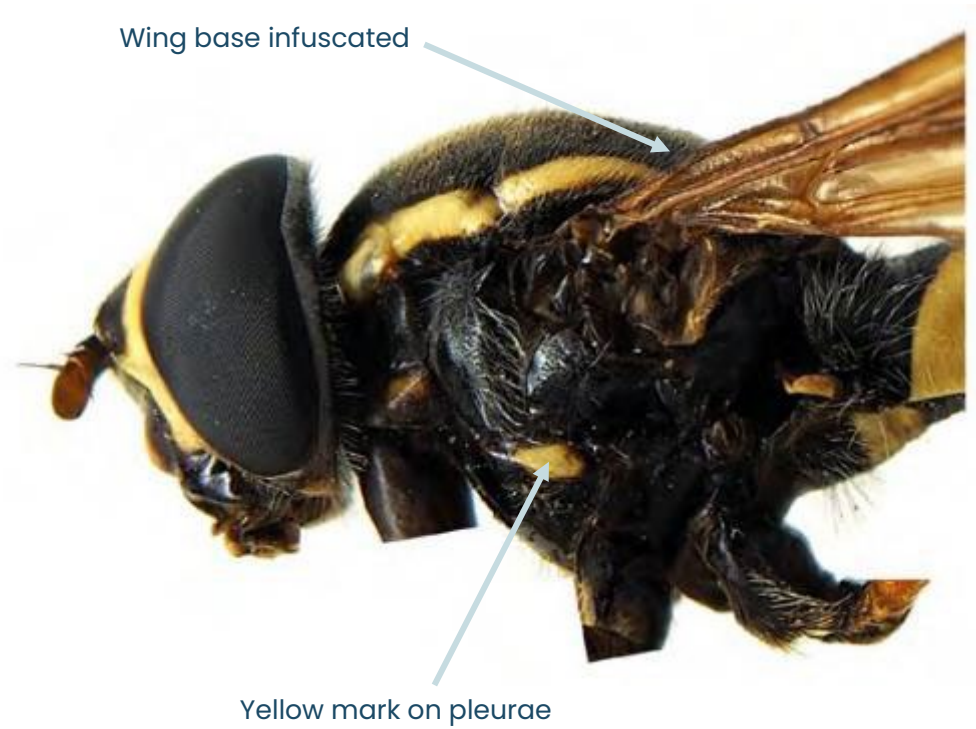
››› ***Doros*** Meigen.

—— Mesoscutum and pleurae almost uniform in colour or with, respectively, stripes or marks at best rather dark yellow, standing out poorly from the rest; wing membrane hyaline or vaguely infuscated throughout.

››› 9

Figure 8

***Doros profuges*, side view**



9 – Abdomen filiform for most of its length (Fig. 9A; note: pregnant females have a bulging abdomen and thus not filiform because of the eggs); 2nd and 3rd tergites much narrower than the scutellum; alula rudimentary; eyes and arista bare.

››› ***Baccha*** Fabricius.

[monospecific genus in Europe[1]: *B. elongata* (Fabricius), 1775]

[1]: The existence of a second species, *B. obscuripennis* (Meigen), is questioned by most authors as a junior synonym of *B. elongata* (Fab.).

——— Abdomen not filiform: tergite 2 narrower than tergite 1, but tergite 3 wider than the scutellum (Fig. 9B; alula normally developed; arista pubescent or plumose).

››› **10**

Figure 9A

Abdomen: *Baccha elongata* (upper and side view)

Figure 9B

***Spazigaster* sp. male (left); *Syrphocheilosia* sp. male (right)**

10

10 – Arista hairy, with some of the hairs longer than the diameter of the arista; hind tibia, in the male, with a clear notch and strong curvature in the apical half of its length (Fig. 9B), and less strongly curved (without notch) in the female; abdominal tergites mostly dark orange in life (note: once the insect is dead, this coloration frequently disappears in the male). **›››** ***Spazigaster*** Rondani.
[monospecific genus: *S. ambulans* (Fabricius), 1798]

—— Arista pubescent or bare, when present the hairs are all shorter than the diameter of the arista; hind tibia normal in both male and female; abdominal tergites either entirely black or black with a pair of small, greyish-white bars close to the anterior margin of tergites 2 – 4. **››› 115**

11

11 – Face and scutellum entirely black (note: (i) a pale-coloured pruinosity may partially mask this, especially on the face; (ii) it is deep black and not a more or less dark brown). **››› 12**

—— Face and/or scutellum entirely or partially yellow/orange (observe the scutellum in profile, sometimes the only way to see that the scutellum is postero-medially dark orange and not black). **››› 17**

12

12 - Abdomen oval (about twice as long as wide), rather flattened (Fig. 12B); tergites 3 and 4 with large, quadrangular orange spots (sometimes blue-green in females), confluent in males and separate in females; 3rd antennal article about twice as long as articles 1 and 2 combined; body length 10-13 mm.

››› ***Xanthandrus*** Verrall.

—— Abdomen narrow or moderately enlarged (Fig. 15, lower; Fig. 13A & 13B); 3rd antennal article short, rounded, or, rarely, a little longer than articles 1 and 2 combined (note: less than twice as long as articles 1 and 2 combined).

››› 13

Figure 12A

Oval abdomen: *Xanthandrus comtus*

Figure 12B

Oval abdomen: *Melanostoma mellinum*

13

13 – Abdomen more or less flattened dorsoventrally and clavate (widening posteriorly to at least the posterior margin of tergite 3; Fig. 13A); pale marks on tergites yellow to orange, often confluent on one tergite and even between tergites; when separate, or nearly so, the pale markings appear only on tergite 3 and sometimes vaguely on tergite 4, and are then never triangular in shape (in contrast to *Melanostoma* females, which often have an abdomen that is also clavate (Fig. 13B, left), but rather oval in cross-section and not flattened).

››› *Pyrophaena* Schiner, 1860.

[The two species of the genus are shown in Fig. 13A]

——— Abdomen cylindrical or oval in cross-section, rarely claviform, in dorsal view rather fusiform or oval (Fig. 13B).

››› 14

Figure 13A

Abdomen: *Pyrophaena granditarsa female* (left), male (centre); P. *rosarum* (right)

Figure 13B

Abdomen (female): *Melanostoma scalare* (left), *Melangyna quadrimaculata* (centre); *Platycheirus peltatus* (right)

14

14 - Eyes with obvious hairs.

››› *Melangyna* Verrall.

[pro parte: *M. quadrimaculata* Verrall, 1873, and melanistic specimens of other species of the same genus]

——— Eyes bare (even at high magnification).

››› 15

15 – Metasternum developed i.e. with lateral extensions (Fig. 15A right). Males: in most species, the tibia and tarsus of the front leg have a characteristic shape (enlarged and flattened) (Fig. 15B); in all species, either the front femur or front tibia has at least one seta that, in its length, stands out clearly from the rest of the hairs. Females: in most species the front tarsus is slightly oval, not cylindrical; the pale-coloured markings on the abdominal tergites are never clearly triangular.

››› 16

—— Metasternum reduced, i.e. not provided with lateral extensions (Fig. 13B left). Males: the front tibia and tarsus are cylindrical, without characteristic shape; the front femur and tibia have fine, short pilosity, without any particular setae. Females: the front tibia and tarsus are as in the males; the abdominal tergites have orange-yellow markings, of more-or-less triangular shape, rounded posteriorly (Fig. 15C), or the abdomen is completely black.

››› *Melanostoma* Schiner.

Figure 15A

Thoracic metasternum and posterior coxa, ventral view (after McAlpine et al, 1987): *Melanostoma* sp. (left); *Platycheirus* (right)

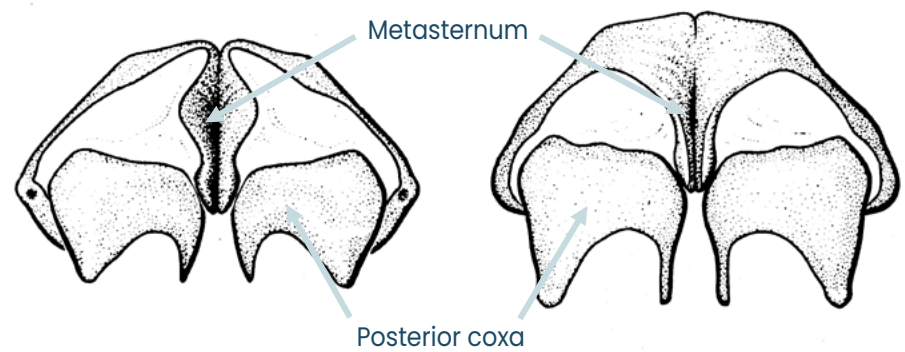


Figure 15B

***Platycheirus albimanus* male: tarsus and tibia foreleg, ventral side**

Figure 15C

Melanostoma sp. female

16 - Mesoscutum and scutellum coarsely punctate (Fig. 16A); the gena, below the most ventral point of the eye, is more than 1.8 times as high as the length of the 3rd antennal article; legs entirely black.

››› ***Rohdendorfia*** Smirnov.

—— Mesoscutum and scutellum very finely punctate (Fig. 16B); the gena, below the most ventral point of eye, is less than 1.6 times as high as the length of the 3rd antennal article; legs partly yellow/yellow-brown.

››› ***Platycheirus*** Lepeletier & Serville.

Figure 16A

***Rohdendorfia* sp. female**

Figure 16B

***Platycheirus parmatus* female**

17

17 - Mesanepisternite 2 yellow (sometimes almost white) or reddish-orange, on at least the posterior third (note: a silvery or golden pruinosity, sometimes surmounted by golden hair, can give this illusion especially on dry specimens; on specimens in alcohol, look tangentially, otherwise the yellow integument can appear black because of its transparency backed by the dark interior of the thorax; Fig. 17).

››› 18

——— Mesanepisternite 2 black (note: sometimes covered with a more or less strong silver pruinosity); rarely, the tubercle (at most) on the postero-dorsal part of mesanepisternite 2 is orange, making the sclerite orange on less than one third of its surface (notably in ***Meligramma euchroma*** females).

››› 24

Figure 17A

***Xanthogramma stackelberghi*, Lateral head and thorax view**

Figure 17B

***Leucozona laternaria*, Lateral head and thorax view**

18

18 - Wing vein R4+5 very strongly curved into cell r5, which is consequently narrowed at about the middle of its length (Fig. 18A); first segment of hind tarsus (basitarsus) black; the pale yellow markings on abdominal tergite 2 are equidistant from both the anterior (at lateral part) and posterior margins (at median part) of the tergite; tergites 3 and 4 each with a yellow or pale green band that has a concave posterior margin (Fig. 18A).

››› *Didea* Macquart.

——— Vein R4+5 less strongly curved, so that the proximal half of cell r5 is not narrowed and has sub-parallel or divergent margins distal to the R-M cross-vein (Fig. 18B).

››› 19

Figure 18A

***Didea fasciata* female, wing and whole insect**

Figure 18B

***Megasyrphus erraticus* female, wing and whole insect**

19 – The proximal part of the wing cell r5 has virtually parallel margins (Fig. 19A); first segment of hind tarsus (basitarsus) more or less dark yellow, but not black; the yellow marks on abdominal tergite 2 (Fig. 19B). are distinctly closer to its anterior margin than to its posterior margin (space between marks and posterior margin about as wide as the marks themselves); the posterior margin of the yellow band on tergite 3 (Fig. 19B): is more or less parallel to the posterior margin of the tergite; eyes distinctly hairy.

››› *Megasyrphus* Dusek & Laska.
[monospecific genus in Europe: *M. erraticus* (L.), 1758]

—— The proximal part of cell r5 has margins that are quite clearly diverging from the base (formed by cross-vein R-M) towards the apex of the wing (Fig. 19C).

››› 20

Figure 19A
***Megasyrphus erraticus* female, wing**

Figure 19B
***Megasyrphus erraticus* female, whole insect**

Figure 19C
***Xanthogramma dives*, wing**

20 - Lateral margins of abdominal tergites 3 and 4 more or less flattened, which is often more easily seen tangentially (the abdomen is said to be "beaded") (Fig. 20); eyes hairy, but the hairs are sometimes short, sparse and therefore difficult to see.

››› 21

——— Lateral margins of tergites 3 and 4 not flattened, the tergites regularly convex from their median axis to their lateral margins (so-called "unbeaded abdomen").

››› 22

Figure 20

***Xanthogramma stackelbergi*, beaded abdomen**

21

21 – Wing membrane almost entirely covered with microtrichia.

››› ***Xanthogramma*** Schiner.

——— Wing membrane almost completely without microtrichia.

››› ***Ischiodon*** Sack.

22

22 - Abdomen rather broad and oval with distinctly non-parallel margins (tergite 2 clearly narrower than tergite 3) (Fig. 22A); tergites 3 and 4 each with a rather broad yellow band, narrowing markedly just before reaching the lateral margins of the abdomen; antennae entirely black; all femora entirely yellow.

››› ***Epistrophe*** Walker.

[pro parte: *E. diaphana* (Zetterstedt), 1843]

——— Abdomen narrow, with parallel or subparallel margins (note that some pregnant females may have an oval abdomen because it is distended by the eggs) (Fig. 22B).

››› **23**

Figure 22A

Epistrophe diaphana **female, whole insect**

Figure 22B

Sphaerophoria scripta **male and female, whole insect**

23

23 - Hairs present on the metasternum (Fig. 23).

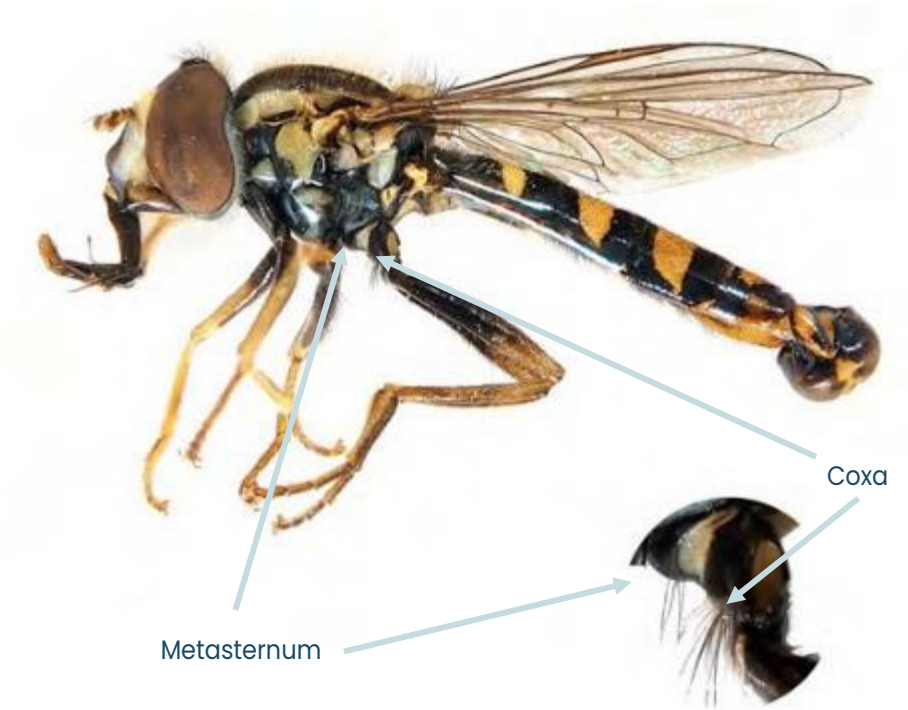
››› ***Sphaerophoria*** Lepeletier et Serville.

——— No hair on the metasternum.

››› **Meligramma** Frey.

Figure 23

Male *Sphaerophoria infuscata*, lateral view, metasternum and coxa 3



24

24 - Dorsum of the thorax and abdomen covered with dense pilosity that almost obscures the body surface (at least on the mesoscutum and/or tergite 4); middle of the wing with a strongly developed patch of infuscation.

››› 25

——— Mesonotum and abdomen covered with less dense pilosity, not masking the integument; wing without evident infuscation medially.

››› 26

25 - Pterostigma pale yellow; thoracic dorsum mostly black-haired; tergite 5 (and part of tergite 4) entirely bright yellow, and yellow-haired (Fig. 25A); insect long-haired and in its general appearance reminiscent of a bumblebee.

››› ***Eriozona*** Schiner.

[monospecific genus in Europe: *E. syrphoides* (Fallen), 1817]

——— Pterostigma dark brown; thoracic dorsum with fairly dense golden to russet hair; tergites 4 and 5 entirely black, with black or pale grey hairs (Fig. 25B).

››› ***Leucozona*** Schiner.

[pro parte: *L. lucorum* (L.), 1758 and *L. inopinata* Doczkal, 2000]

Figure 25A

***Eriozona syrphoides* male**

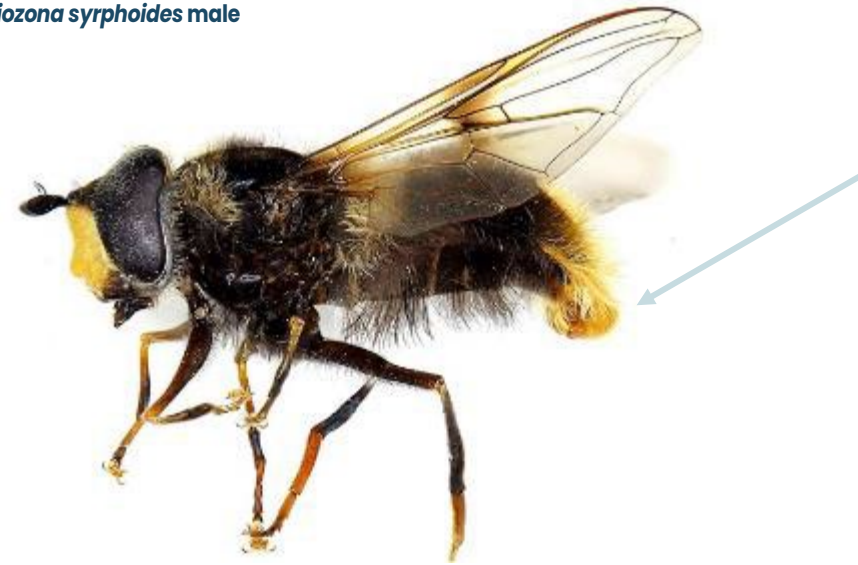


Figure 25B

***Leucozona lucorum* female**

26

26 - Pale-coloured markings on tergite 2 of large size, laterally occupying almost the entire length of the tergite and at least twice as long as the pale-coloured markings on tergite 3 (Fig. 26A and 39).

››› 27

——— Tergite 2 with shorter markings, their maximum length about the same as the maximum length of the markings on tergite 3 and always less than twice as long as the latter (Fig. 26B).

››› 28

Figure 26A

***Epistrophe eligans* male**

Figure 26B

***Lapposyrphus lapponicus* male (left), *Syrphus ribesii* female (right)**

27

27 – Eyes bare.

››› *Epistrophe* Walker.

[pro parte: *E. eligans* (Harris), 1780 and *E. leiophthalma* (Schiner & Egger), 1853]

——— Eyes hairy.

››› *Leucozona* Schiner.

[pro parte: *L. glaucia* (L.), 1758 and *L. laternaria* (Mueller), 1776]

28

28 – Wing vein R4+5 curved, sometimes strongly, in cell r5, so that the basal part of the wing cell has subparallel to parallel margins (Fig. 28A).

››› 29

——— Vein R4+5 almost straight, or slightly curved, so that the basal part of cell r5 has margins regularly diverging from its base (formed by cross-vein R-M).

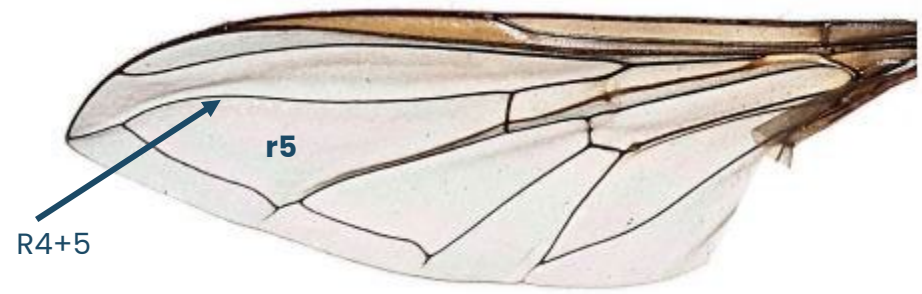
››› 32

Figure 28A

***Lapposyrphus lapponicus*, left wing**

Figure 28B

***Syrphus nitidifrons*, left wing**



29

29 – Eyes bare.

››› 30

——— Eyes hairy.

››› 31

30

30 - Metasternum hairy; Metapleural episternum bearing a group of long hairs ventral to the metathoracic stigma.

››› *Didea* Macquart.

——— Metasternum bare; metapleural episternum bare ventral to the metathoracic stigma.

››› *Lapposyrphus* Dusek & Laska.
[monospecific genus: *L. lapponicus* (Zetterstedt), 1838]

31

31 - Basal half of wing with large bare areas of microtrichia (Fig. 31A) metatsternum bare.

››› ***Scaeva*** Fabricius.

——— Wing completely and densely covered with microtrichia, (FIG. 31B) metatsternum hairy.

››› ***Megasyrphus*** Dusek & Laska.

Figure 31A

***Scaeva pyrastri*, left wing**

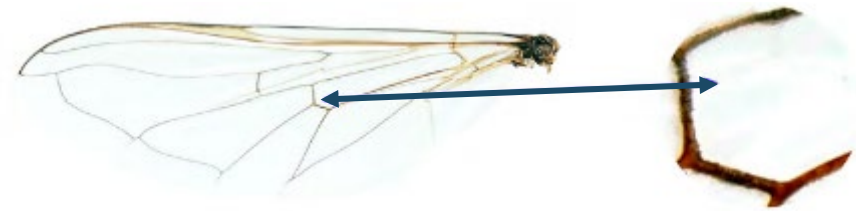
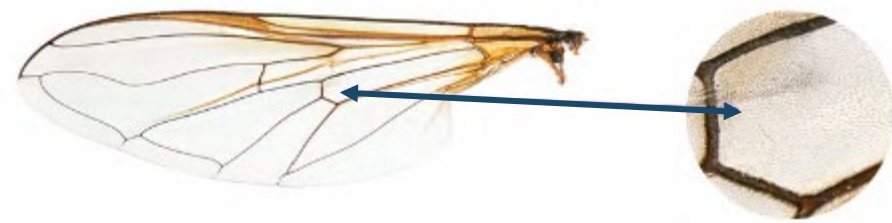


Figure 31B

***Megasyrphys erraticus*, left wing**



32

32 - Lower lobe of thoracic squama with long yellow hairs on its upper surface, near the posterior margin (note that this is not the hairs on the margin itself) (Fig. 32A). tergites 3 and 4 each with a rather narrow, yellow band with a sinuous posterior margin. Note: each yellow band may be reduced to a pair of narrowly-separated yellow bars, and in this case the hairiness of the surface of the squama may be very sparse or even absent (in *S. nitidifrons*).

››› ***Syrphus*** Fabricius.

——— Lower lobe of the squama with its upper surface glabrous or microscopically pubescent (Fig. 32B).

››› **33**

Figure 32A

Surface of thoracic scales: with long hair (*Syrphus* sp.)

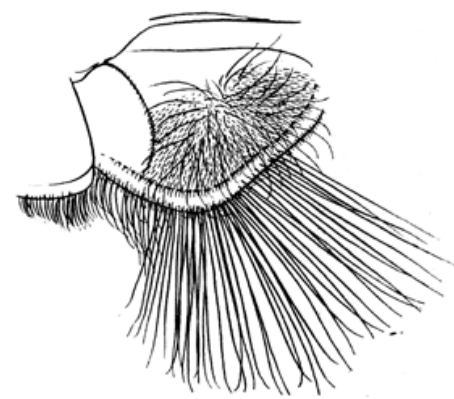
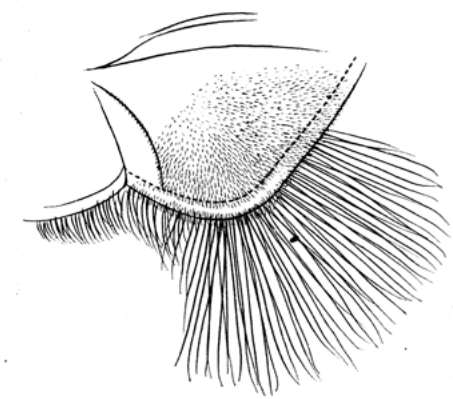


Figure 32B

Surface of thoracic squama: with microscopic pubescence



33

33 – Mesanepisternite 1 with a few well-developed hairs (as is Fig. 3A right); hind coxa, at least on its anterolateral surface, with a row of long hairs often curved at their tips; metasternum bare. **›››** ***Parasyrphus*** Matsumura.

——— Mesanepisternite 1 glabrous or microscopically pubescent, without metasternum hairy or bare. **›››** **34**

34

34 – Eyes hairy. **›››** **35**

——— Eyes bare. **›››** **36**

35

35 – Lateral margins of tergites 3 and 4 beaded; yellow or white markings on tergites 3 and 4 either not parallel with the anterior margin of the tergite, or in the form of a pale yellow/white band across the entire width of the tergite. **›››** ***Dasysyrphus*** Enderlein.

——— Lateral margin of tergites simple; tergites 3 and 4 each with a pair of pale yellow markings, separated medially and parallel with the anterior margin of the tergite. **›››** ***Melangyna*** (partim).

36 – Tergite 3 visibly less than twice as wide as long (Fig. 36A).
››› 37

—— Tergite 3 more than twice as wide as long (Fig. 36B).
››› 38

Figure 36A
Meligramma cincta

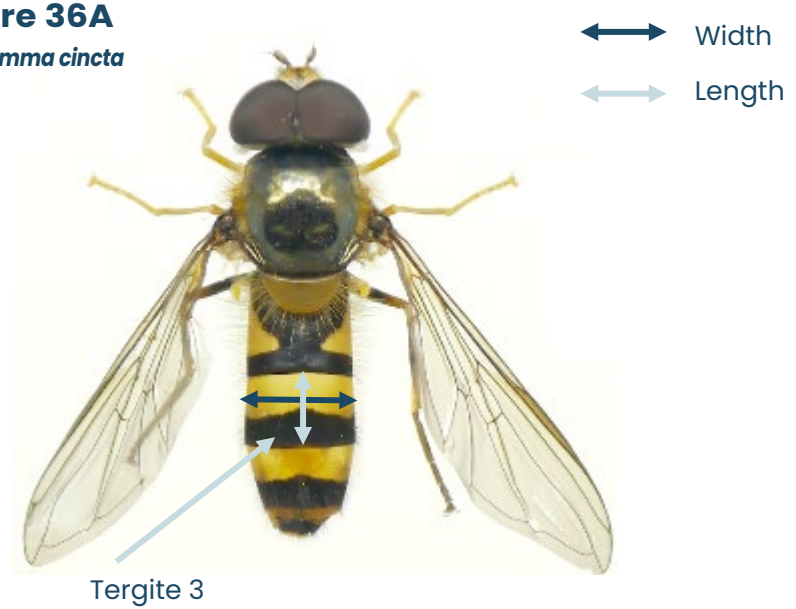
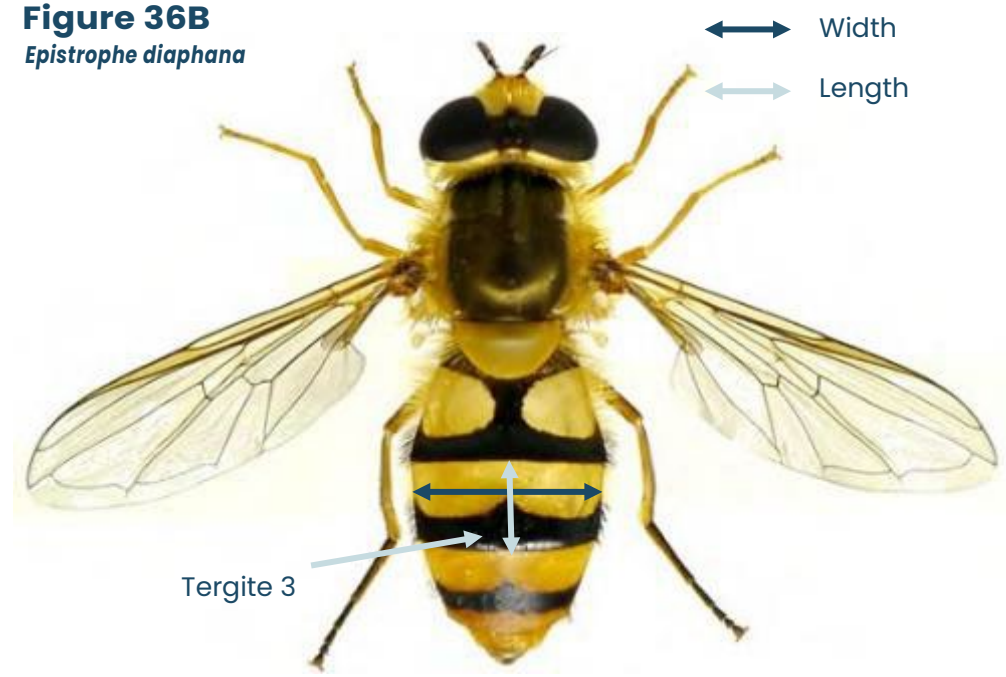


Figure 36B
Epistrophe diaphana



37

37 – Facial tubercle yellow (face often entirely yellow, otherwise the upper edge of the mouth is darkened laterally).

››› ***Meligramma*** Frey (partim) (including M. *euchroma* (Kowarz), 1855)

——— Facial tubercle black (black median mark on face, extending from top of facial tubercle to upper margin of mouth).

››› ***Melangyna*** (partim).

38

38 - Lateral margins of tergite 3 narrowly beaded (Fig. 38A).

››› 39

——— Lateral margins of tergite 3 not beaded (FIG. 38 B).

››› 41

Figure 38A

Eupeodes lucasi

Figure 38B

Epistrophe grossulariae

39 – Tergites 3 and 4 each bearing a complete, transverse, pale orange band of more or less uniform width, which is not, or hardly, narrowed in the middle (Fig. 39A).

››› ***Epistrophe*** Walker [pro parte].

Figure 39A

Epistrophe grossulariae **(left)** ***E. nitidicollis*** **(right)**

——— Tergites 3 and 4 each with either a yellow transverse band narrowed in the middle, or a pair of yellow marks, or a pair of pale grey, densely pruinose bars which are separated medially (Fig. 39B).

››› **40**

Figure 39B

Eupeodes latifasciatus **(left)** ***E. luniger*** **(center),** ***Epistrophe leiophthalma*** **(right)**

40

40 – Tergites 3 and 4 each bearing a pair of straight bars of dense, pale grey pruinosity, which have their anterior and posterior margins parallel, or tergite 4 entirely black (Fig. 26A & Fig. 39B). **›››** ***Epistrophe*** Walker [pro parte].

——— Tergites 3 and 4 each bearing either a transverse yellow band more or less devoid of pruinosity, or a pair of transverse, curved yellow marks, more or less devoid of pruinosity, the marks or band usually varying greatly in width between their inner and outer ends (Fig. 39B); all of the hairs on the lateral margins of tergites 3, 4 and 5 black. **›››** ***Eupeodes*** Osten Sacken.

41

41 – Tergites 3 and 4 each with a transverse yellow band across the entire width of the tergite, or tergite 4 entirely black.

››› **42**

——— Tergites 3 and 4 each with a pair of yellow, or yellowish-white , transverse markings or bars of dense, pale grey pruinosity.

››› **44**

42

42 – Face entirely or almost entirely black, at most yellowish only against the eyes, where a narrow, vaguely yellow dorso-ventral stripe may be present.

››› ***Meligramma*** Frey.
[pro parte: *M. cingulata* (Fallen, 1817)]

——— Face entirely yellow.

››› **43**

43

43 – Males: in anterior view, maximum width of the face less than the maximum width of an eye; females: frons with a patch of pruinosity on each side, occupying more than half the distance between the anterior ocellus and the lunule and separated medially by a parallel-sided, undusted, black area.

››› *Meligramma* Frey.
[pro parte: *M. cincta* (Egger), 1860]

—— Males: in anterior view, maximum width of face distinctly greater than the maximum width of an eye; females: frons either covered with pruinosity across its entire width, or occupied medially by a black area, without pruinosity, that widens ventrally to occupy almost the entire width of the frons just above the lunule.

››› *Epistrophe* Walker.
[pro parte].

44

44 – Tergites 3 and 4 each with a pair of pale yellow/white marks.

››› *Meligramma* Frey.
[pro parte: other than *M. cincta* and *M. cingulata*]

—— Tergites 3 and 4 each with a pair of pale grey, transverse bars (Fig. 39B right).

››› *Epistrophe* Walker.
[pro parte: *E. leiophthalma* (Schiner & Egger, 1853)]

45

45 - Hind femur, with a patch of numerous black setulae baso-ventrally (very short and thick hairs) (Fig. 45) and without a ventral, triangular projection; wing vein R4+5 strongly curved (Fig. 46A & 46B):

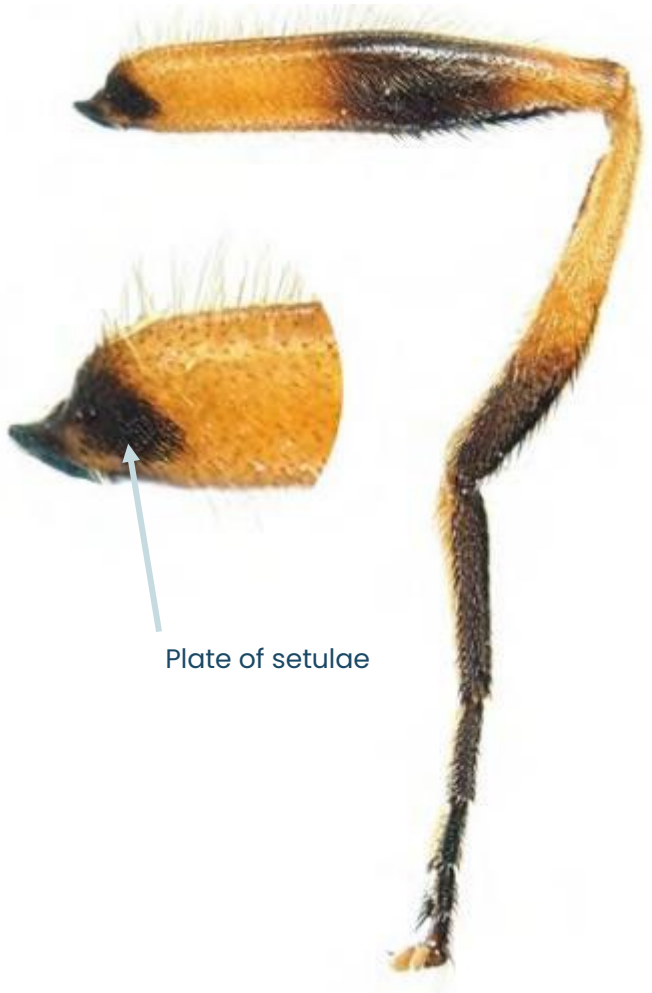
subfamily **ERISTALINAE >>> 46**

——— Hind femur without such a baso-ventral patch of setulae; vein R4+5 not curved (Fig. 66A), or, if R4+5 is curved, then the ventral side of the hind femur has a triangular projection (Fig. 69A):

subfamily **MILESIINAE >>> 55**

Figure 45

***Myathropa sp.*, Antero-lateral view of femur 3**



46

46 - Wing cell r1 closed, because vein R2+3 joins vein R1 before the costal margin of the wing (Fig. 46A).

››› 47

——— Cell r1 open, sometimes very narrowly, on the costal margin of the wing (Fig. 46B).

››› 48

Figure 46A

Left wing: *Eristalis nemorum*

Figure 46B

Left wing: *Helophilus trivittatus*

47

47 - Eyes with numerous small brown spots, or vertical bands (fig. 47). Arista always glabrous.

››› *Eristalinus* Rondani.

——— Eyes unicolorous, without brown spots or stripes; arista rarely bare, mostly feathery or finely pubescent; abdomen varying in markings and appearance, often with a pair of yellow or orange lateral spots on tergite 2 and or a pale yellow band on the posterior margin of each tergite; in general appearance similar to *Apis* or *Bombus.*

››› *Eristalis* Latreille.

Figure 47

Dorsal view of the eyes of *Eristalinus spp.*

48

48 - Mesoscutum without any pale-coloured pattern (whether examined dry or in liquid) and with the integument hidden by long, dense, yellow, red or black hair; wing more or less infuscated in the vicinity of the r-m cross-vein (Fig. 48A).

››› ***Mallota*** Meigen.

——— Mesoscutum with yellow or grey patterns, sometimes hardly discernible, especially on specimens in alcohol; wing very often hyaline (Fig. 48B).

››› **49**

Figure 48A

Mallota cimbiciformis **female**

Figure 48B

Myathropa florea **male**

Wing vein R4+5

49

49 - Eyes hairy; wing vein R4+5 strongly curved in cell r5 (FIG. 48 B).

››› ***Myathropa*** Rondani.

[monospecific genus: *M. florea* (L.), 1758]

——— Eyes bare

››› **50**

50 - Abdomen: tergites 3 and 4 each with a pair of grey, longitudinally oriented spot marks (Fig. 50A); 3rd antennal article deeper than long.

››› ***Lejops*** Rondani.
[monospecific genus: *L. vittata* (Meigen), 1822]

——— Abdomen: tergites 3 and 4 each with a pair of grey or yellow marks (and sometimes also with an additional pale-coloured band) that are at least as wide as long and often wider than long (Fig. 50B).

››› 51

Figure 50A
***Lejops vittata* female**

Figure 50B
***Helophilus trivittatus* male**

51 - First segment (basitarsus) of the hind tarsus with microscopic club-shaped, glanduliferous hairs baso-ventrally; upper part of the hypopleura, between the lower part of pteropleura and the posterior thoracic spiracle, with long wavy hairs (hypopleural ridge not developed) (Fig. 51A); male: eyes meeting for a short distance on the frons.

››› *Mesembrius* Rondani.

[monospecific genus in Europe: *M. peregrinus* (Loew), 1846]

——— First segment of the hind tarsus without such hairs; upper part of the hypopleura, between the lower part of pteropleura and the posterior thoracic spiracle, hairless, but often covered with a dense silvery bloom (hypopleural ridge developed, but often shallow) (Fig. 51B).

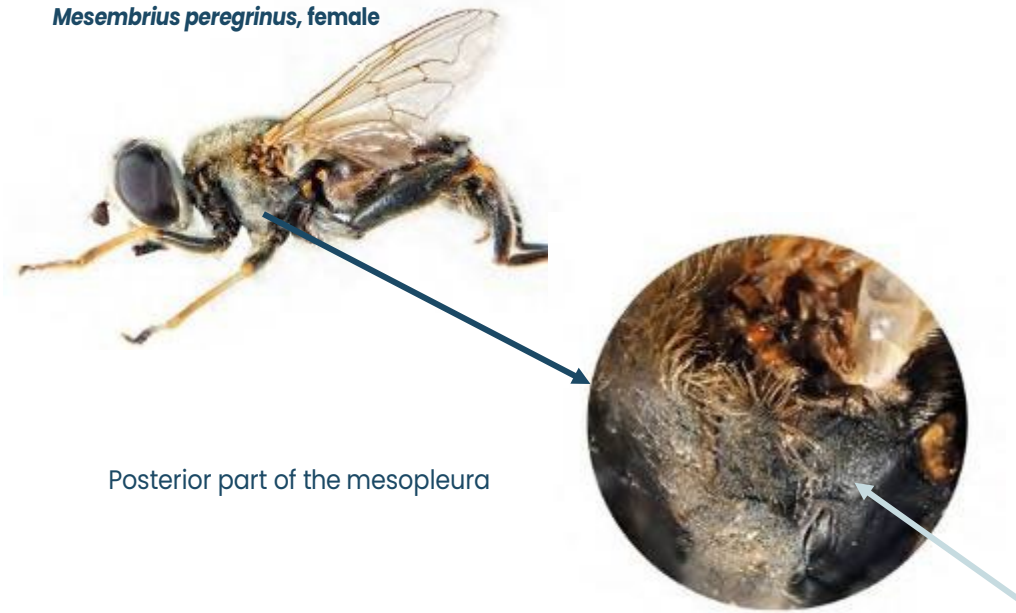
››› 52

This arrow indicates the location of the pteropleur or mesepimeron or mesepimeral sclerite of the metathoracic pleuris.

This arrow indicates the hypopleural ridge.

Figure 51A

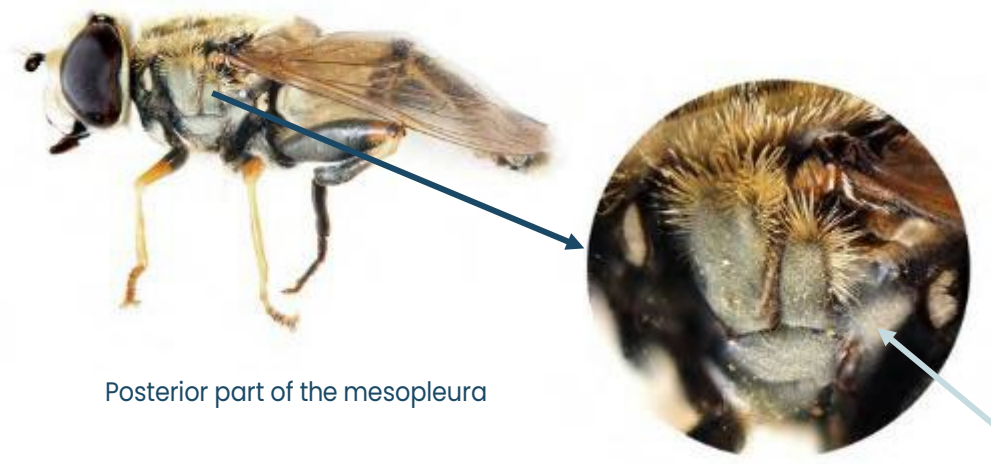
***Mesembrius peregrinus*, female**



Posterior part of the mesopleura

Figure 51B

***Helophilus trivittatus*, male**



Posterior part of the mesopleura

52 - Antenna entirely black (sometimes with a narrow orange border at the base of the third article) or blackish brown; face with a vertical median stripe, glabrous and shiny, yellow or black (Fig. 52).

››› ***Helophilus*** Meigen.

(*Arctosyrphus willingii* (Smith), a tundra species known in Europe only from northern parts of European Russia, resembles *Helophilus*, and has a black, medial stripe on the face, but has no pale-coloured

——— Antenna at least partly orange; face without such a vertical median stripe, or sometimes with a very narrow, barely marked yellow stripe.

››› 53

Figure 52

Head of *Helophilus trivittatus*: front view

53 - On the vertex, the space between each posterior ocellus and the eyes is subequal (0.5 to 1.2 times) to the diameter of an ocellus (Fig. 53A); abdomen short, rather broad and more or less conical, with large, orange, lateral marks on the tergites (Fig. 53C); black markings on the hind tibia confined to an apical, posterolateral, black patch.

››› ***Parhelophilus*** Girschner.

—— On the vertex, the space between each posterior ocellus and the eyes is much greater (1.5 to 3 times) than the diameter of an ocellus (Fig. 53B); abdomen elongate, with lateral margins more or less parallel, and relatively narrow, sometimes crescent-shaped, pale yellow or orange marks on the tergites (Fig. 53D, 53E); hind tibia with two posterolateral black marks, one in the basal half of its length, the other apical.

››› **54**

Figure 53A
Head in dorsal view:
***Parhelophilus frutetorum*, male**

Figure 53B
Head in dorsal view:
***Anasimyia contracta* male**

Posterior ocellus

Figure 53C
Abdomen dorsal view,
Parhelophilus versicolor

Figure 53D
Abdomen dorsal view,
Anasimyia contracta

Figure 53E
Abdomen dorsal view,
Euromyia lineata

54 - In lateral view, shortest distance from anterior end of head to eye, clearly greater than maximum width of eye; face in lateral view forming a cone, tapering apically almost to a point, its upper margin almost straight from insertion of antennae immediately to upper margin of mouth (Fig. 54A); hind femur dorsally black on middle third.

››› ***Eurimyia*** Bigot.
[monospecific genus in Europe: *E. lineata* (Fabricius)].

Figure 54A

Head in side view: ***Eurimyia lineata***

——— In lateral view, shortest distance from anterior end of head to eye about equal to maximum width of eye; lower part of face projected forward, but neither conical nor pointed, its upper margin extremely convex (Fig. 54B); hind femur with yellow dorsal surface continuous from base, for three-quarters of its length.

››› ***Anasimyia*** Schiner.

Figure 54B

Head in side view: ***Anasimyia lunulate***

KEY TO THE GENERA OF MILESIINAE

55

55 - In lateral view, articles 1 – 3 of the antenna together longer than the rest of the head (Fig. 55A). Caution: do not confuse head length, which follows a horizontal axis, with head height, which follows a more or less vertical axis.

>>> 56

—— In lateral view, articles 1 – 3 of the antenna shorter than the rest of the head (Fig. 55B).

>>> 61

Figure 55A
Head (lateral view):
Sphiximorpha subsessilis

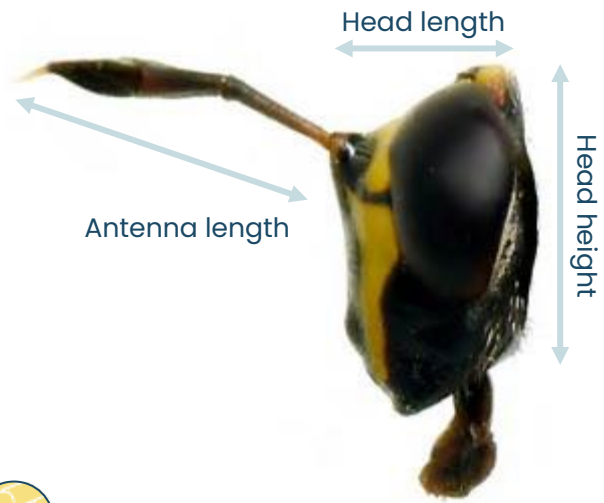


Figure 55B
Head (lateral view):
Volucella inanis

56

56 - Arista inserted on the dorsal margin of the 3rd antennal article (Fig. 56A).

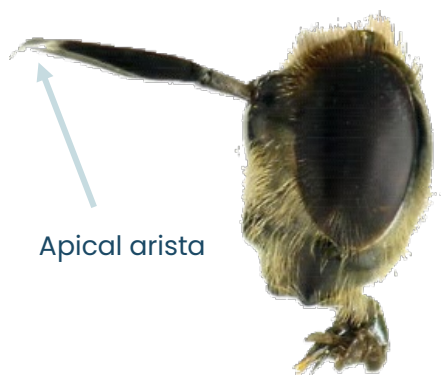
>>> 57

—— Arista inserted apically on the 3rd antennal article (Fig. 56B).

>>> 59

Figure 56A
Head (lateral view):
***Parhelophilus frutetorum*, male**

Figure 56B
Head (lateral view):
***Anasimyia contracta* male**



57

57 – Abdominal tergites 3, 4 and 5 each with a pair of yellow markings, in the form of parallel-sided, transverse bars, and a narrow, yellow bar across the hind margin of each tergite. **›››** ***Sphecomyia*** Latreille.

[monospecific genus in Europe: *S. vespiformis* (Gorski), 1852].

——— Abdominal tergites without yellow markings, mostly red, red-brown or brown, and otherwise black. **››› 58**

58

58 - Wing with the anterior margin (vein R4+5) of cell r5 deeply concave and cross-vein r-m located after the middle of wing cell m2 (Fig. 58A); male with antennal arista enlarged apically into a flat disc.

››› ***Platynochaetus*** Wiedemann

——— Lateral margin abdomen lacking any pale markings; bee mimic; arista spatulate apically (male wing with the anterior margin (vein R4+5) of cell r5 almost straight and cross-vein r-m located at about the middle of the length of cell m2 (Fig. 58B); male with arista not spatulate.

››› ***Psarus*** Latreille.

[monospecific genus: *P. abdominalis* (Fabricius, 1794)]

Figure 58A

Left wing: ***Platynochaetus rufus***

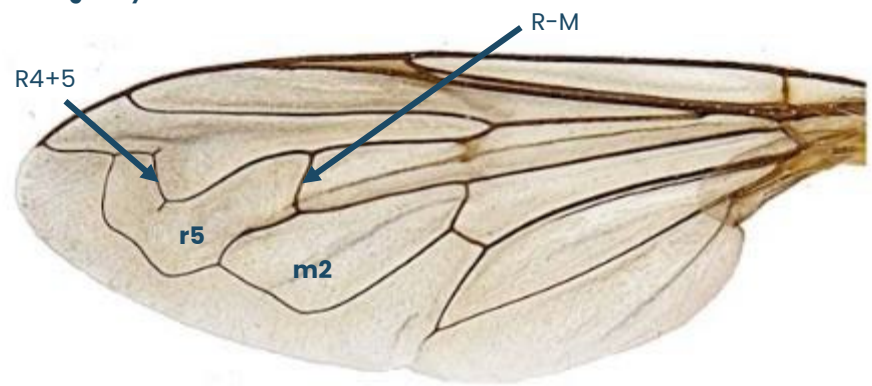
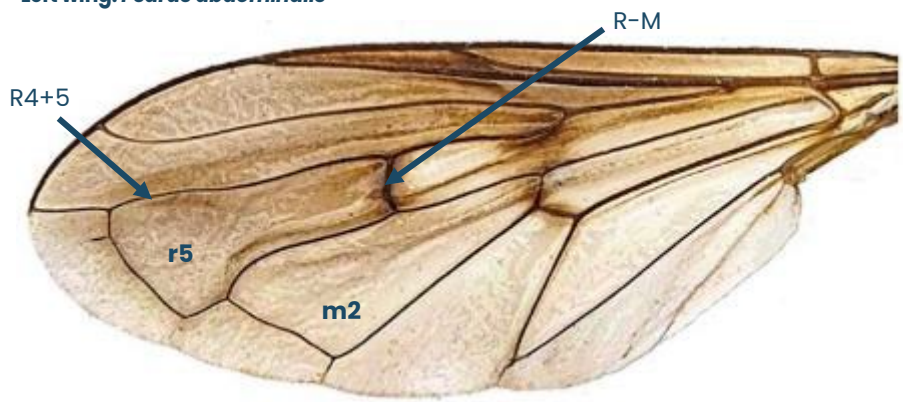


Figure 58B

Left wing: ***Psarus abdominalis***



59

59 - Wing vein R4+5 almost straight (Fig. 59A); eyes hairy; abdomen broad, oval (usually with a metallic sheen).

››› ***Callicera*** Panzer.

——— Vein R4 + 5 deeply curved towards the middle of cell r5 and with a hang-vein projecting into cell r5 (Fig. 59B) ; eyes bare or hairy.

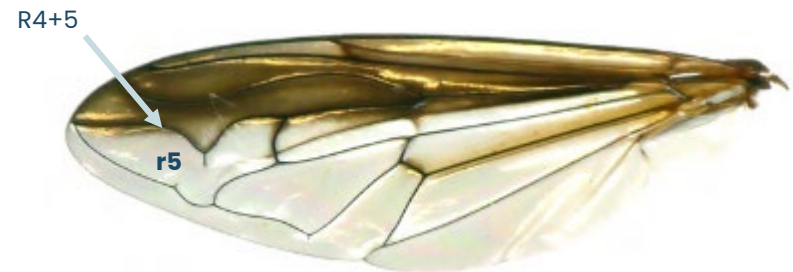
››› **60**

Figure 59A

Left wing: ***Callicera aurata***

Figure 59B

Left wing: ***Ceriana conopsoides***



60

60 - Antennae inserted on a fairly well-developed frontal prominence, equal in length to, or longer than, the antennal articles 2 and 3 combined (Fig. 60); abdomen subcylindrical, slightly enlarged towards the apex; eyes bare.

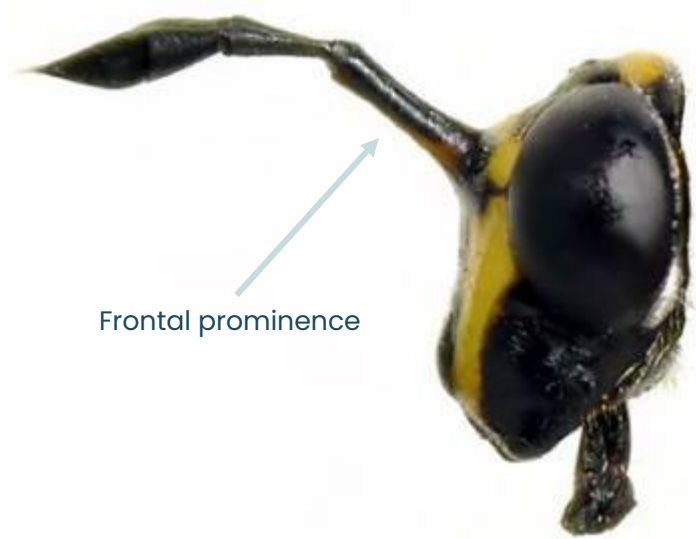
››› ***Ceriana*** Rafinesque.

——— Antennae inserted on an almost non-existent frontal prominence (Fig. 55A); abdomen subcylindrical or rather clearly narrowed at tergite 2; eyes bare or hairy.

››› **121**

Figure 60

Head (lateral view): ***Ceriana conopsoides***



61 - Arista plumose (hairs at least twice as long as the maximum diameter of the arista) (Fig. 61A & B).

››› 62

——— Arista bare or pubescent (hairs less than twice as long as the maximum diameter of the arista (Fig. 61C).

››› 66

Figure 61A

3rd antennal article and arista: *Volucella pellucens*

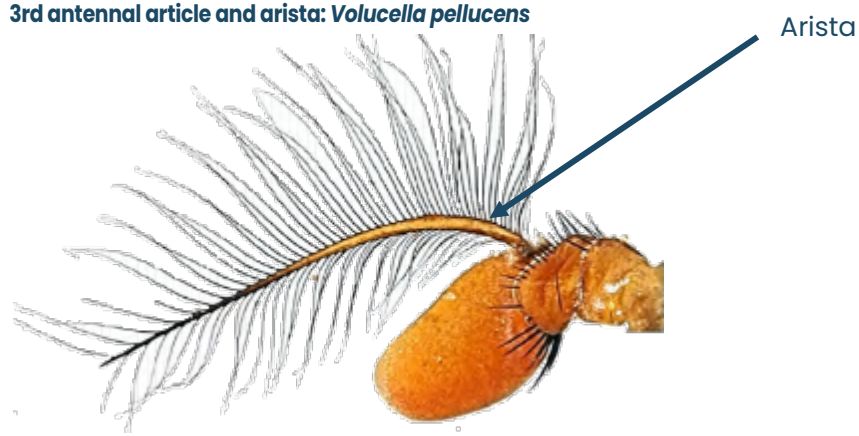


Figure 61B

3rd antennal article and arista: *Sericomyia bombiforme*

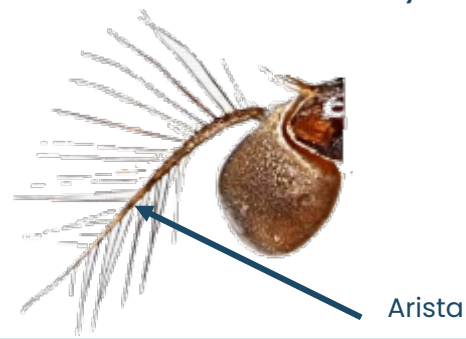
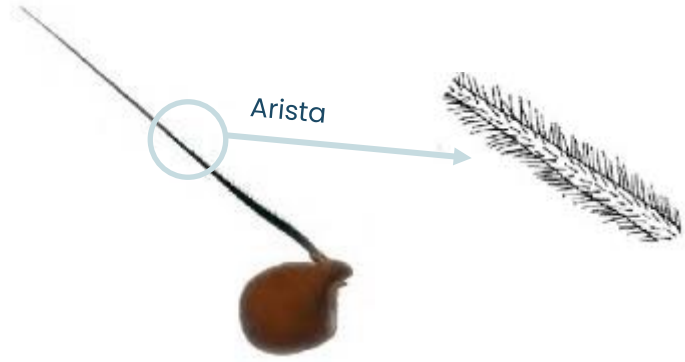


Figure 61C

3rd antennal article and arista: *Cheilosia canicularis* male



62 - Abdomen: body surface brown to red-brown, sometimes very dark brown; mesoscutum sometimes with grey areas or patterns (Fig. 62A, Fig. 99) small to moderate-sized species, with body length 11mm or less.

››› 63

—— Thorax and abdomen: integument at least partly black; sometimes tergites with yellow or white markings, or extensively covered in long, reddish hair (FIG. 62B); moderate to large-sized species with body length 11.5mm or more.

››› 64

Figure 62A

***Hammerschmidtia ferruginea* (dorsal view)**

Figure 62B

***Sericomyia silentis* female (top left); *S. superbiens* female (top right); *Volucella zonaria* female (bottom)**

63

63 - Wing vein M1 meets vein R4+5 at a right angle (Fig. 63A); abdomen elongate.

››› ***Hammerschmidtia*** Schummel.

[only two species in Europe: *H. ferruginea* (Fallen); *H. rufa* (Fallen)]

——— Wing vein M1 meets vein R4+5 at an acute angle (Fig. 63B); abdomen short.

››› ***Brachyopa*** Meigen.

[pro parte: *B. zhelochotsevi* Mutin, *B. testacea* (Fallen), *B. obscura* Thompson & Torp, *B. vittata* Zetterstedt, *B. pilosa* Collin (part), *B. scutellaris* R. -D. (part), *B. plena* Collin sensu Vujic (1991) (part)]

Figure 63A

Apical half of the wing: ***Hammerschmidtia ferruginea***

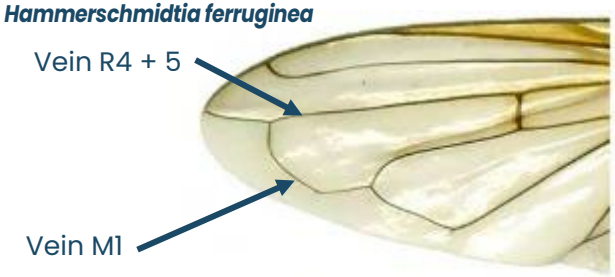
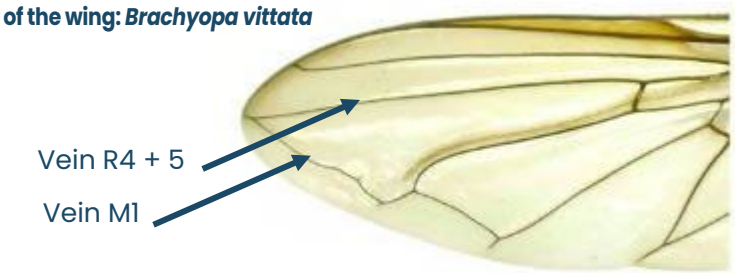


Figure 63B

Apical half of the wing: ***Brachyopa vittata***



64

64 - Wing cell r1 closed; vein M1 not parallel to the postero-apical part of the wing margin, but apically curving away strongly, towards the anterior margin of the wing (Fig. 64A).

››› ***Volucella*** Geoffroy.

——— Cell r1 open; vein M1 more or less parallel to the posteroapical part of the wing margin (Fig. 64B).

››› **65**

Figure 64A

Apical half of the wing: ***Volucella inanis***

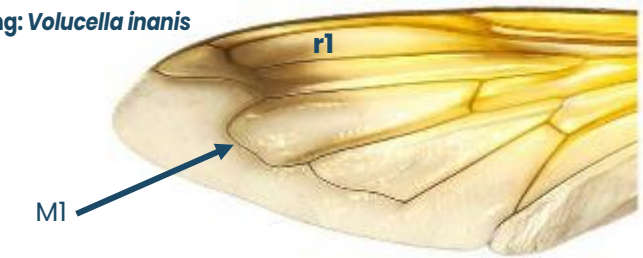
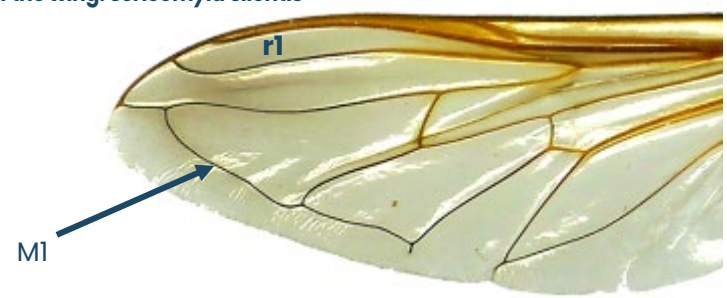


Figure 64B

Apical half of the wing: ***Sericomyia silentis***



65

65 – Abdomen: tergites without yellow markings, hair covering uniformly red-brown or with bands of black, pale yellow and more-or-less white hairs. **›››** ***Sericomyia* sg. *Arctophila*** Schiner.

——— Abdomen: tergites with yellow or almost white markings. **›››** ***Sericomyia*** Meigen.

66

66 - Wing with the R-M cross-vein situated in the middle of, or after the middle of, cell m2 (FIG. 66A); 1st antennal article not piriform; wing membrane around cross-vein R-M not infuscated.

››› **67**

[Note: in *Syritta* the position of the R-M cross-vein varies considerably, from well before the middle of cell m2 to after the middle of cell m2; in *Syritta* the hind femur is less than three times as long as its maximum height; in *Ferdinandea* R-M is located after the middle of cell m2, but the membrane around R-M is heavily infuscated and *Ferdinandea* is included with the genera treated in the second half of this couplet.]

——— R-M cross-vein located at, or before, the middle of cell m2 (FIG. 66B) AND hind femur always more than three times as long as its maximum height; wing membrane around cross-vein R-M may be infuscated.

››› **86**

Figure 66A

Left wing: ***Merodon equestris***

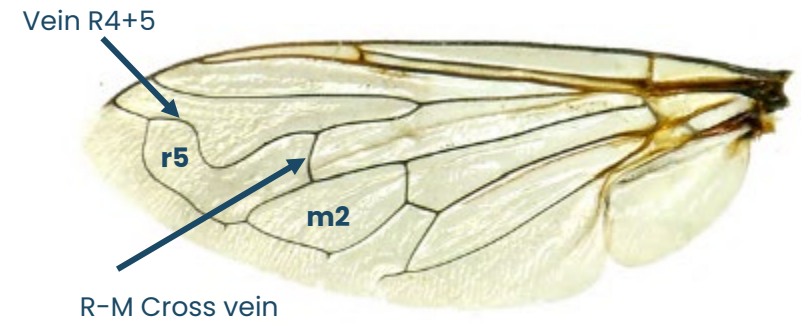
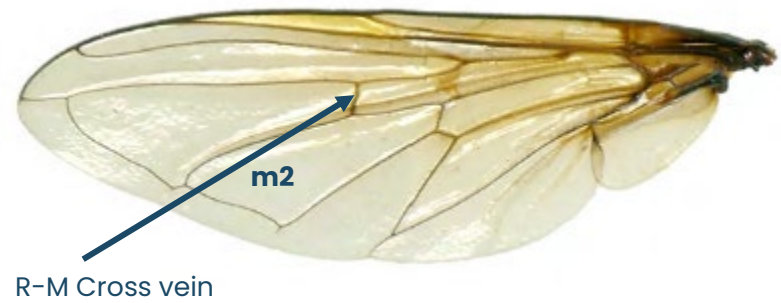


Figure 66B

Left wing: ***Cheilosia albitarsis***



67 - Wing vein M1 recurrent (its upper end curves towards the base of the wing) and in some species also strongly sinuous (Fig. 67A) AND either the anterior margin of cell r5 is deeply concave or cross-vein dm-m meets vein M1 at a right angle (Fig. 67A).

››› 68

——— Vein M1 not recurrent and, along its entire length, is more or less parallel to the postero-apical margin of the wing (sometimes also sinuous in the basal third of its length) (Fig. 67B), OR, if M1 is recurrent, then the anterior margin of cell r5 is almost straight and cross-vein dm-m does not meet vein M1 at a right angle (Fig. 67C).

››› 70

Figure 67A

Left wing: *Eumerus alpinus*

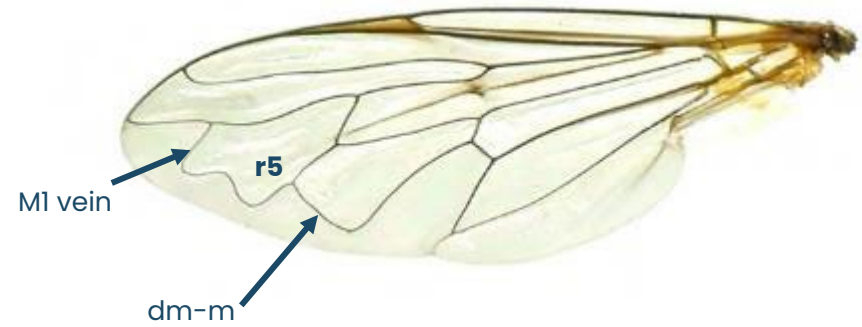


Figure 67B

Left wing: *Heringia* sp.

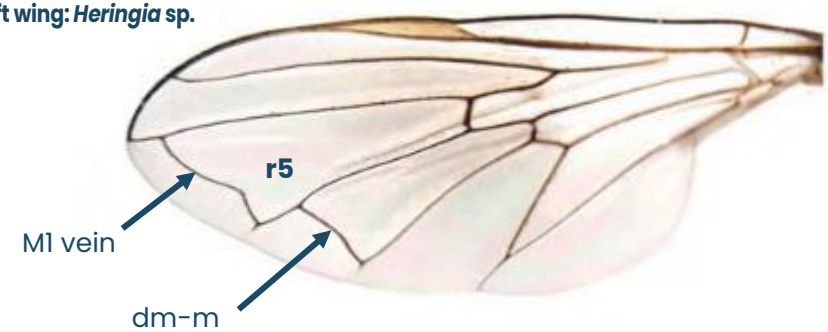
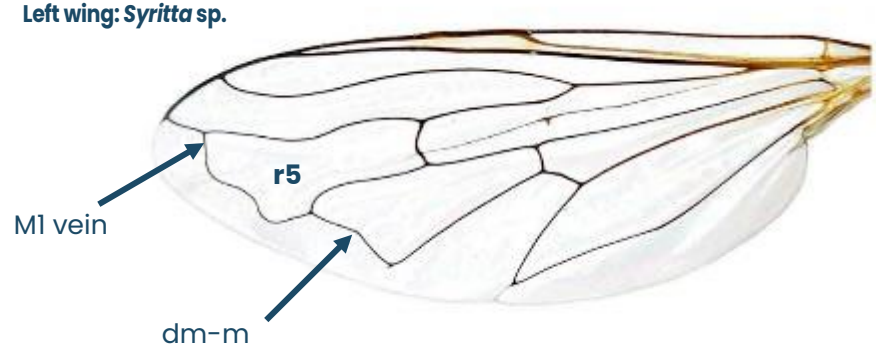


Figure 67C

Left wing: *Syritta* sp.



68

68 – Anterior margin of wing cell r5 (formed by vein R4+5) deeply concave (Fig. 66A). **››› 69**

——— Anterior margin of wing cell r5 only slightly curved or straight; vein M1 very strongly sinuate (Fig. 67A), with sometimes hang veins extending towards the wing margin; ventral surface of the hind femur with longitudinal rows of short, thick spines, on at least the apical third of its length. **››› *Eumerus*** Meigen.

[Note: Females of *Platynochaetus* may be confused with *Eumerus*, but they have hairless eyes and a distinctly tuberculated face (FIG. E – Family key)].

69

69 - Ventral surface of the hind femur apically with a well-developed triangular protuberance (Fig. 69A & B).
››› *Merodon* Meigen.

——— Hind femur without such a protuberance (Fig. 69C); arista spatulate apically in the male.
››› *Platynochaetus* Wiedeman.

Figure 69A
Femur of the left hind leg (lateral view): *Merodon aureus*

Figure 69B
Femur of the left hind leg (lateral view): *Merodon moenium*

Figure 69C
Femur of the hind leg (lateral view): *Platynochaetus setosus*

70

70 - Ventral surface of the hind femur apically with a well-developed, triangular, dentate protuberance (Fig. 70A).

››› *Tropidia* Meigen.

——— Ventral surface of hind femur without a triangular, apical protuberance (it may be strongly spinose, or with a small, isolated tubercle in the apical half of its length, but well before the apex of the femur) (Fig. 70B).

››› 71

Figure 70A

Femur and tibia of the hind leg (lateral view): *Tropidia fasciata*

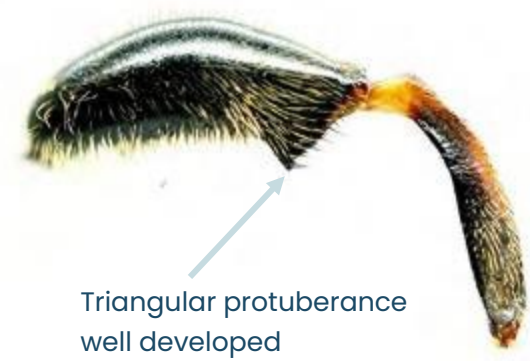
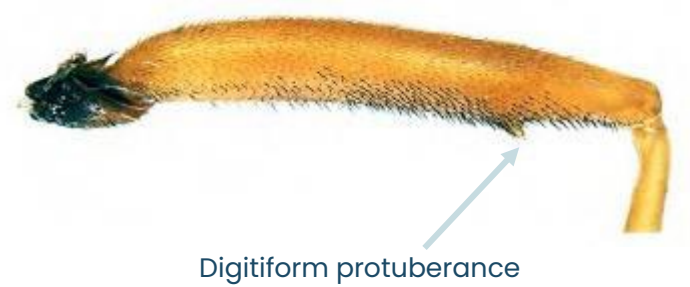


Figure 70B

Femur of the hind leg (lateral view): *Spilomyia manicata*



71

71 - Scutellum with numerous hairs clearly longer than its median length. **››› 72**

——— The longest hairs on the scutellum are shorter than its median length. **››› 77**

[Note: in some cases, there are specimens that have a few hairs longer, and sometimes both alternatives should be tested].

72

72 - Eyes with small dark spots and a dark vertical band with irregular contours (Fig. 72); ventral surface of the hind femur with an isolated, spinose, tubercle, in the apical half of its length (Fig. 70B); abdominal tergites with transverse yellow bands (insect in general appearance very similar to wasps of the genus Polistes).

››› *Spilomyia* Meigen (pro parte).

——— Eyes of a more or less uniform dark reddish brown colour; ventral surface of hind femur without an isolated tubercle in the apical half of its length; tergites without transverse yellow bands uniform.

››› 73

Figure 72
Head (lateral view): *Spilomyia manicata*

73

73 - Anterior margin of wing-cell M2 (formed by vein R4+5) almost straight. **››› 74**

——— Anterior anterior margin of wing-cell M2 deeply concave and face with a shallow central prominence (FIG. E, Key to families).

››› *Platynochaetus* Wiedemann.

74

74 - In profile, facial outline concave, from antennal insertions to upper mouth edge.

››› 75

——— In profile, facial outline undulating, due to the presence of a facial prominence (Fig. 74).

››› 117

Figure 74
Head (lateral view): *Blera fallax*

75 - In general appearance resembling narrow-bodied solitary bees and *Apis*; scutellum covered in long, yellow-brown or brown hairs (Fig. 75A).

››› 76

——— In general appearance resembling broad-bodied, long-haired *Bombus* species; scutellum covered in long, black hairs (Fig. 75B).

››› *Pocota* le Peletier & Serville.
[monospecific genus: P. personata (Harris, 1780)]

Figure 75A
***Brachypalpus laphriformis* male**

Figure 75B
***Pocota personata* male**

76

76 - Mesoscutum partly shining, but with dull bars and stripes of dense, grey pruinosity (Fig. 76); metasternum with long hairs.

››› ***Chalcosyrphus*** [pro parte: *C. eunotus* Loew, 1873].

——— Mesoscutum entirely shining, without pruinosity; metasternum bare.

››› ***Brachypalpus*** Macquart.

Figure 76

Mesoscutum *Chalcosyrphus* eunotus (dorsal view)

77

77 - Thorax dorsally and laterally black, dark brown, yellow-brown or metallic green, without pale-coloured markings (Fig. 77A), except on the humeral callus, which can be contrastingly pale grey or yellow, when the thorax is dark coloured.

››› **78**

——— Mesoscutum, and often also the thoracic pleura, black or dark brown, with well-defined yellow markings (Fig. 77B & C).

››› **84**

Figure 77A

Caliprobola speciosa

Figure 77B

Milesia crabroniformis

Figure 77C

Temnostoma bombylans

78

78 – Hind femur without spines ventrally; general body surface either yellow or a metallic, golden copper colour; anterior half of the wing with the veins mostly yellow-brown, with the wing membrane often yellow, or infuscated apically; antennae at least partly yellow. **››› 120**

——— Hind femur ventrally spinose, at least on the distal third of its length; general body surface not metallic; the wing membrane not yellow, but may be vaguely infuscated. **››› 79**

79

79 – Metasternum hairy. **››› 80**

——— Metasternum without hairs, but may be pruinose. **››› 81**

80

80 - Mesoscutum and scutellum finely punctured; lateral margins of the mesoscutum without pruinosity, except for anteriorly, where the humeral callus may be densely grey polinose (Fig. 80A); hind femur without alternating reddish-orange and black areas.

››› *Chalcosyrphus* Curran.
[pro parte: except *C. eunotus* & *C. piger*].

——— Mesoscutum and scutellum densely and coarsely punctured; lateral margins of the mesoscutum densely covered in yellow-grey pruinosity, from the humeral callus to the wing-base (Fig. 80B); hind femur with alternating reddish-orange and black areas.

››› *Syritta* Lepeletier de Saint Fargeau & Audinet-Serville in Latreille.

Figure 80A
Mesoscutum (dorsal view):
Chalcosyrphus nemorum

Figure 80B
Mesoscutum (dorsal view):
Syritta pipiens

81

81 – Tergite 4 (and tergite 5 in females) entirely or almost entirely black (may be densely covered with golden yellow hairs). **››› 82**

——— Tergite 4 entirely orange/red (tergite 5 also predominantly red in females). **››› *Chalcosyrphus*** Curran.
[pro parte: *C. piger* (Fabricius), 1794]

82

82 – Tergite 3 entirely orange/red. **››› 83**

——— Tergite 3 partly or mainly black. **››› *Xylota*** Meigen.

83

83 – Legs with at least partially pale (whitish or yellowish) tibiae and tarsi. **››› *Xylota*** Meigen.
[pro parte: all species except *X. suecica]*

——— Legs entirely black. **››› *Brachypalpoides*** Hippa.
[monospecific genus in Europe: *B. lentus* (Meigen, 1822)]

84

84 - Wing with cell r1 closed (Fig. 84A); closely resembles *Vespa crabro.*

››› ***Milesia*** Latreille.

—— Cell r1 open (Fig. 84B); closely resembles *Polistes* or *Vespula.*

››› **85**

Figure 84A
Apical half of the wing: ***Milesia crabroniformis***

Figure 84B
Apical half of the wing: ***Spilomyia manicata***

85

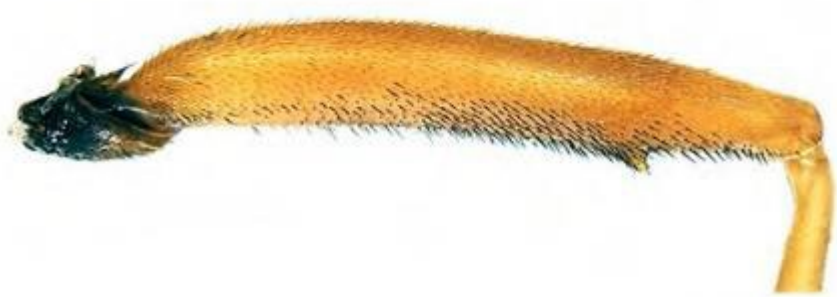
85 - Hind femur with a small, spinose projection on the apical half of its ventral surface (Fig. 85).

››› ***Spilomyia*** Meigen.

—— Hind femur without a ventral projection.

››› ***Temnostoma*** Lepeletier de Saint Frageau & Audinet-Serville in Latreille.

Figure 85
Femur of the hind leg (lateral view): ***Spilomyia manicata***



86 - Antenna with 3rd article triangular (Fig. 86A); wing membrane infuscated in the basal part of the wing; wing with cross-vein R-M located at the middle of cell m2; head, thorax, abdomen and legs entirely black (Fig. 86B).

››› ***Ischyroptera*** Pokorny
[monospecific genus: *I. bipilosa* Pokorny, 1887]

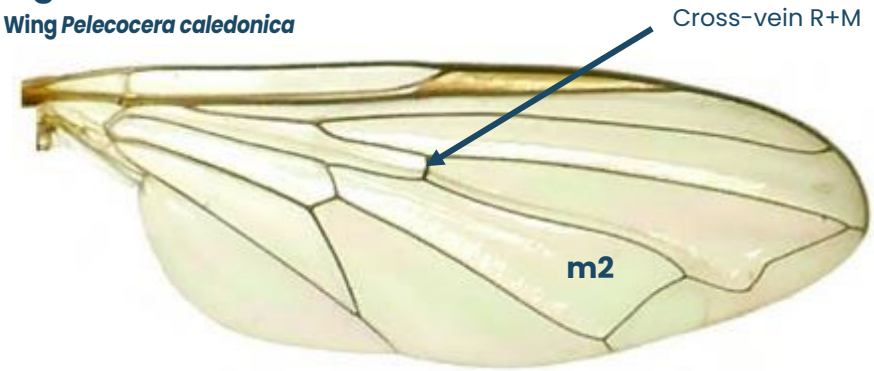
——— 3rd antennal article not triangular; wing membrane not infuscated in the basal part of the wing; cross-vein R-M located before or at the middle of cell m2 (Fig. 86C).

››› **87**

Figure 86A
***Ischyroptera bipilosa*: head male**

Figure 86B
***Ischyroptera bipilosa*: female**

Figure 86C
Wing *Pelecocera caledonica*



87

87 - Article 3 of the antenna with the arista inserted apically, or dorsally within the apical quarter of its length, arista more-or-less filiform, or spiniform and composed of three distinct elements (Fig. 87A).

››› 119

—— Article 3 of the antenna with the arista inserted dorsally, near the base of the 3rd antennal article, arista filiform (Fig. 87B).

››› 88

Figure 87A

3rd antennae article: Pelecocera tricincta

Figure 87B

3rd antennae article: *Pipizella annulata*

88

88 - Face flat or almost flat, without a facial callus, upper mouth edge sometimes slightly protruding (Fig. 88A); face entirely covered with long, dense hair directed downwards.

››› 89

—— Face with clearly protruding upper mouth edge and/or facial callus, or with a protruding upper mouth edge and facial callus combined (Fig. 88B).

››› 97

Figure 88A

Head (lateral view): *Pipiza quadrimaculata*, male

Figure 88B

Head (lateral view): *Myolepta vara*, female

89

89 – Tergites 2 and 3 well developed, tergite 4 almost absent (Fig. 89).

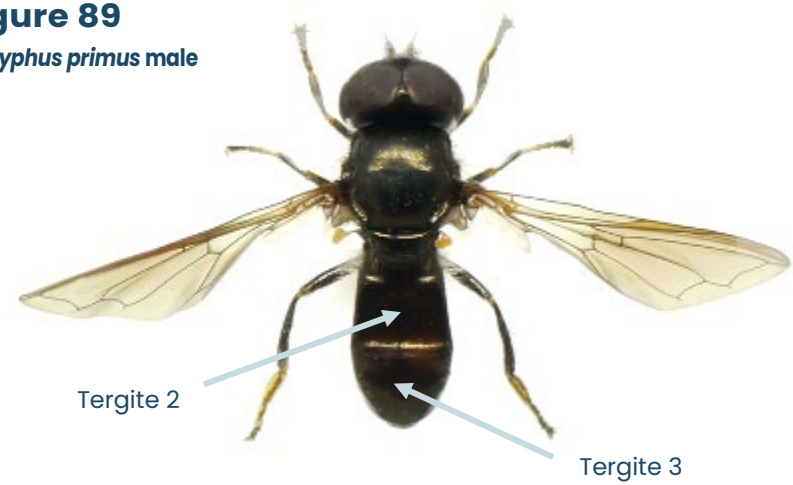
››› ***Triglyphus*** Loew.

——— Abdomen with more than 2 well developed tergites.

››› **90**

Figure 89

***Triglyphus primus* male**



90

90 – 3rd antennal article sub-rounded, with its upper margin sometimes barely longer than its height. **›››** **91**

——— 3rd antennal article at least twice as long as high. **›››** **93**

91

91 – 3rd antennal segment unicolorous dark brown/black (Fig. 91).

››› ***Pipiza*** Fallén.

——— 3rd antennal segment partly yellow ventrally at its base.

››› **92**

Figure 91

3rd antennal article: *Pipiza sp.*

92

92 - Anterior margin of the lunule without hairs.

››› ***Trichopsomyia*** Williston.
[pro parte :T. joratensis Goeldlin, 1997]

Figure 92
Head (dorsal view): male *Neocnemodon latitarsis*

93

93 - Wing vein M1 forming apically an acute angle with vein R4+5 (Fig. 93A & B).

››› **94**

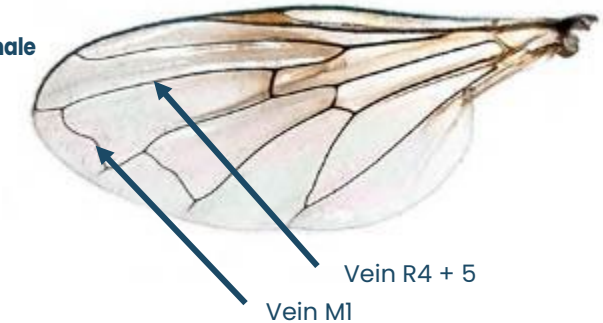
—— Wing vein M1 forming apically a right angle with vein R4+5 (Fig. 93C).

››› **96**

Figure 93A
Left wing: *Claussenia* sp.

Figure 93B
Left wing: *Heringia* sp.

Figure 93C
Left wing: *Pipizella viduata* female



94

94 - Wing vein Sc joins the Costa opposite the cross-vein R-M (Fig. 93A).

››› *Claussenia.*

——— Wing vein Sc joins the Costa after the cross-vein R-M (Fig. 93B).

››› 95

Figure 94A

Left wing: *Claussenia* sp.

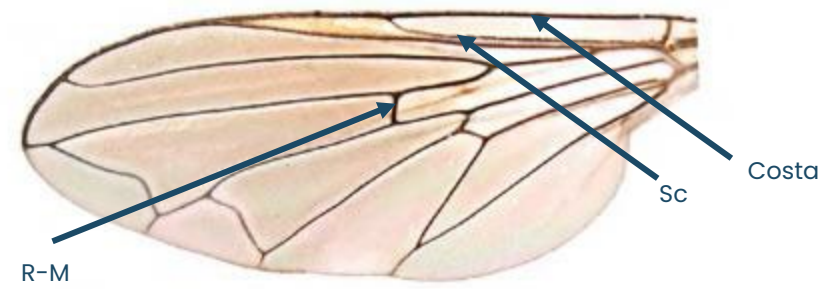
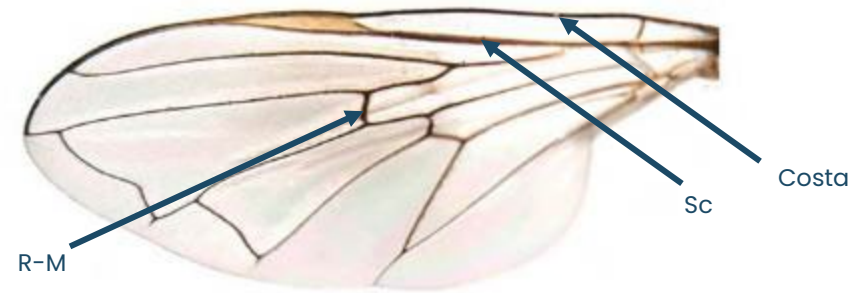


Figure 94B

Left wing: *Heringia* sp.



95

95 – Anterior margin of the lunule with hairs.

››› *Heringia* Rondani.
[pro parte: *H. heringi* Zetterstedt, 1843]

——— Lunule hairless (antennae entirely black; tergite 2 of females with orange markings).

››› *Trichopsomyia* Williston.
[pro parte: *T. lucida* (Meigen, 1922)]

96

96 - Anterolateral surface of the hind tibia completely covered with black hairs. **›››** ***Trichopsomyia*** Williston. [pro parte: *T. flavitarsis* (Meigen, 1922)]

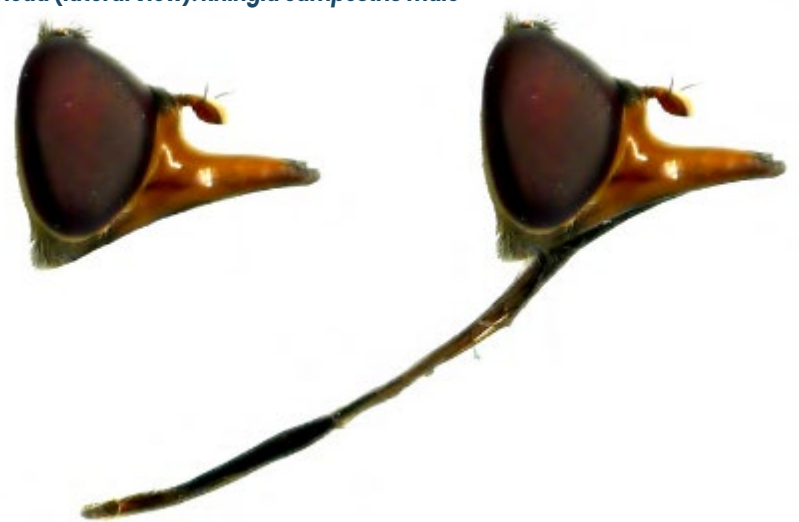
——— Anterolateral surface of the hind tibia entirely covered with pale coloured hairs (grey or pale yellow-brown) **›››** ***Pipizella*** Rondani.

97

97 - Face exceptionally produced, in profile rostrum-shaped (Fig. 97). **›››** ***Rhingia*** Scopoli.

——— Face with prominent but not rostrum-shaped epistome. **››› 98**

Figure 97
Head (lateral view): *Rhingia campestris* male



98

98 - Abdomen yellow-brown to dark brown, non-metallic and without yellow markings on the tergites; legs with the same colours (in one case, *Brachyopa cinerea*, the abdomen is almost black, with a mid-brown apex, and the legs are very dark brown with virtually black tarsi). **››› 99**

——— Abdomen black, dark blue, copper-green or golden, frequently with a metallic sheen, when the abdomen is black it is often also with yellow markings; legs partly black. **››› 100**

99

99 - Wing vein M1 joins vein R4+5 at a right angle (Fig. 63A). Abdomen elongate (Fig. 51).

››› ***Hammerschmidtia*** Schummel.

——— Vein M1 joins vein R4+5 at an acute angle (Fig. 63B). abdomen shorter and broader (Fig. 99).

››› ***Brachyopa*** Meigen.

[note there is a black *Brachyopa* in Scandinavia].

Figure 99

***Brachyopa bicolor* male (dorsal view)**

100

100 - Front and mid femora with slender spines ventrally, in the apical half of their length (Fig. 100).

››› ***Myolepta*** Newman.

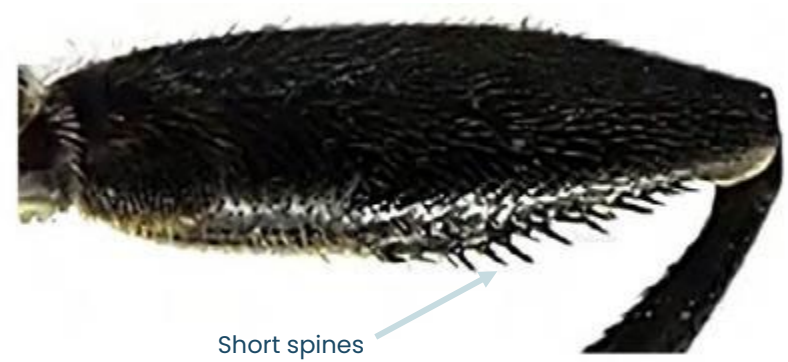
[**Note**: if the mesoscutum shows stripes of white dusting on its lateral margins, as in Figure 80B, return to couplet 66, and read the note on *Syritta*]

——— Front and mid femora without spines on their ventral surface.

››› 101

Figure 100

Fore femur (anterolateral view): *Myolepta nigritarsis* male



101 - Hind femur strongly swollen and ventrally with short spines (Fig. 101A); abdomen distinctly narrowed at tergite 2 (in the male, the eyes do not meet on the frons).

››› 102

——— Hind femur not or only slightly swollen, ventrally sometimes with coarse black hairs (Fig. 101B); abdomen not narrowed at tergite 2.

››› 103

Figure 101A

Posterior femur (anterolateral view): *Sphegina sibirica* male

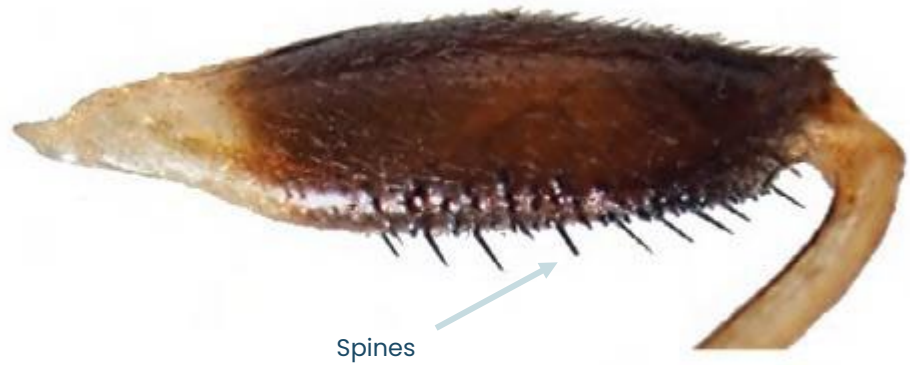


Figure 101B

Posterior femur (anterolateral view): *Cheilosia variabilis*

102 - Hind legs separated from the rest of the thorax by a sort of downward projecting, sclerotised tube, formed by fusion between elements of the metapleur and the metasternum, to the outer end of which the hind coxae are attached (Fig. 102A); metapleura broadly fused behind the hind coxa, (Fig. 102A).

››› ***Sphegina*** Meigen.

——— Hind legs attached to the thorax normally, without a projection formed by metathoracic elements intervening between them and the rest of the thorax; metapleura either more or less widely separated behind the hind coxa, or narrowly fused in the midline, to form a "postmetacoxal bridge" (Fig. 102B).

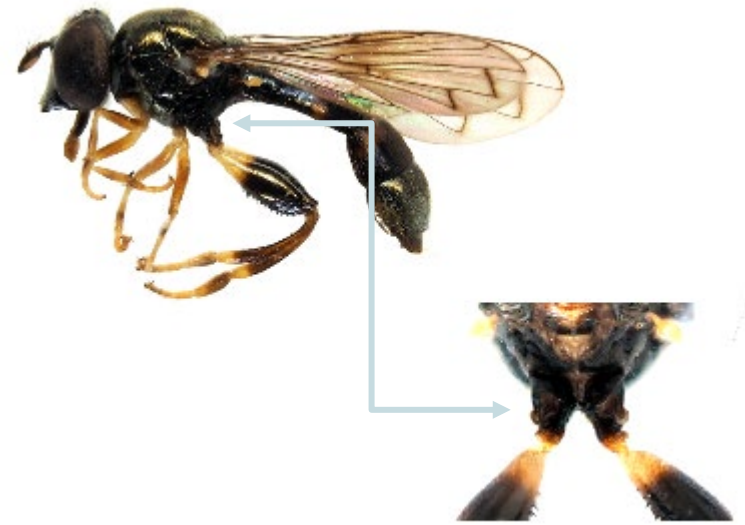
››› ***Neoascia*** Williston.

Figure 102A

Adult (lateral view) and coxa 3 (posterior view): ***Sphegina elegans***

Figure 102B

Adult (lateral view) and coxa 3 (posterior view): ***Neoascia podagrica***



103

103 – Face with a well-defined orbital strip (Fig. 103A & B).

››› 104

——— Orbital strips very poorly developed, rudimentary or absent.

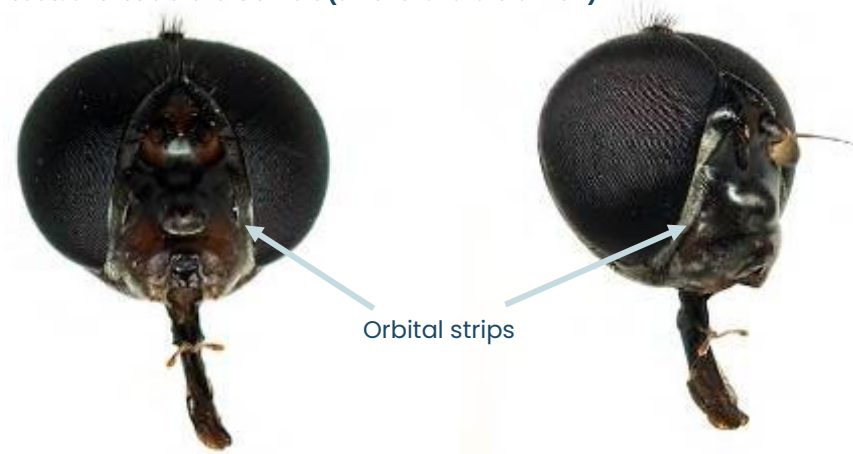
››› 106

Figure 103A

Heads: *Ferdinandea cuprea* male (anterior view);

Figure 103B

Heads: *Cheilosia albitarsis* male (anterior and lateral view)



104

104 - Face yellow; eyes distinctly hairy; abdomen bronze to golden.

››› *Ferdinandea* Rondani.

——— Face black.

››› 105

105 - Facial tubercle undifferentiated (Fig. 105A right); lunule greatly enlarged, its median length greater than half of its maximum width Fig. 105A left); tergites 2 – 4 each with a pair of rectangular patches of dense grey dusting; 3rd antennal article orange to red-brown. (Fig. 105A).

››› ***Portevinia*** Goff.

[monospecific genus: P. maculate (Fallen), 1817]

——— Facial tubercle distinct (Fig. 105B bottom); medial length of the lunule distinctly less than half of its maximum width (Fig. 105B); abdomen with or without distinct patches of dusting on the tergites; the 3rd article of the antenna black, or black with a yellow area baso-ventrally, or yellow/orange.

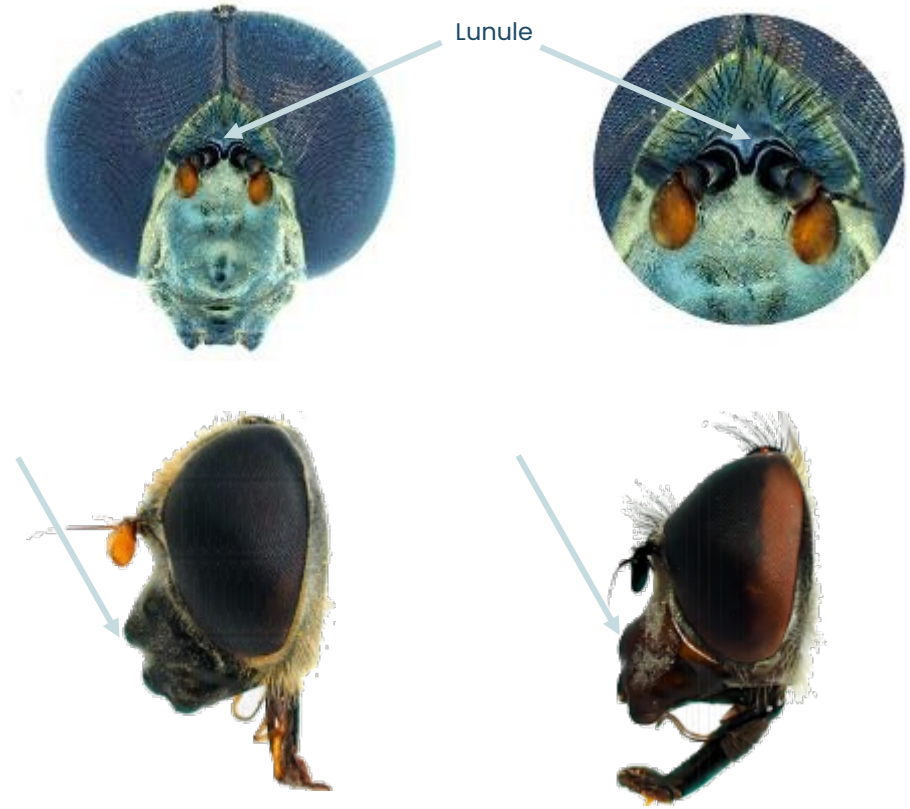
››› ***Cheilosia*** Meigen.

Figure 105A

Head (front and lateral view): ***Portevinia maculata*** **male**

Figure 105B

Head (front view, top & leteral view, buttom): ***Cheilosia canicularis*** **male,** ***Cheilosia personata***



106

106 - Scutellum ventrally with a fringe of hairs across at least the middle third of its width, along its posterior margin (Fig. 106); eyes bare.

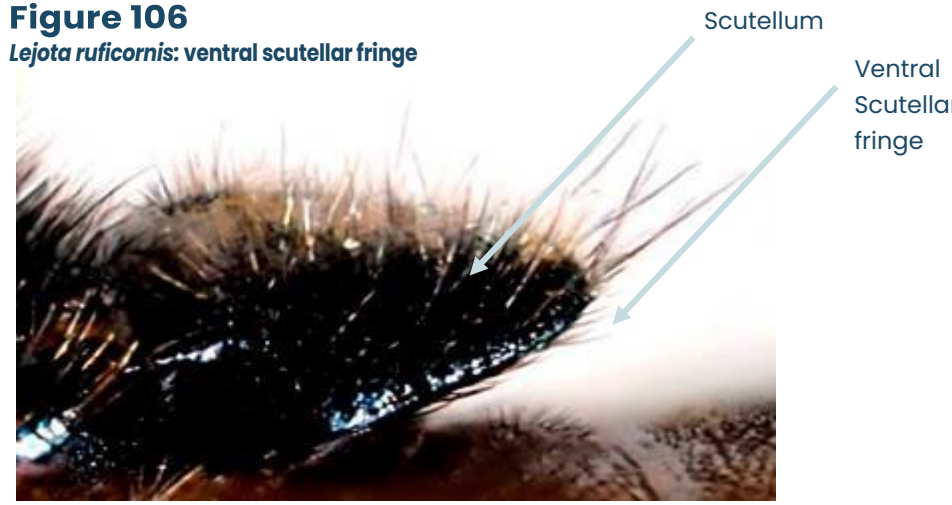
››› 107

——— Ventral scutellar fringe absent (at most, one or two hairs may be present); eyes hairy or bare.

››› 108

[Note: *Psilota* has a strong fringe of hairs on the ventral surface of the scutellum, but not along its posterior margin, and in *Psilota* the eyes are densely hairy, as in Figure 109.]

Figure 106
***Lejota ruficornis*: ventral scutellar fringe**



107

107 - Wing: last section of vein R4+5 (between the intersection of R4+5 with M1 and the costal margin of the wing) equal in length to, or longer than, the cross-vein R-M (Fig. 107A). face, laterally, with abundant short hairs.

››› *Chrysosyrphus* Sedman.
[Genus found only in Scandinavia]
[Note: specimens with eyes densely covered in long hairs: return to couplet 106 and read the note on *Psilota*]

——— Wing: last section of vein R4+5 (between the intersection of R4+5 with M1 and the costal margin of the wing) less than half as long as the cross-vein R-M (Fig. 107B). face bare.

››› *Lejota* Rondani.
[monospecific genus: *L. ruficornis* (Zetterstedt), 1843]
[Note: because the presence of the ventral scutellar fringe is difficult to assess in this species, especially in the female, it has been included again in the remainder of the key (option "ventral scutellar fringe absent") and differentiated from other species using other criteria]

Figure 107A
Left wing: *Melanogaster nuda*

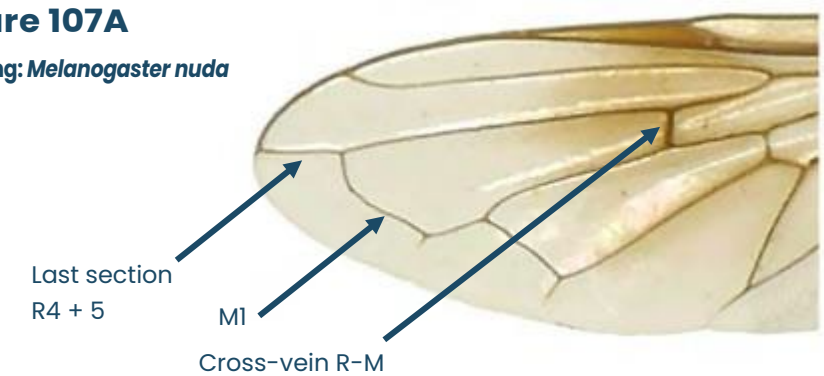
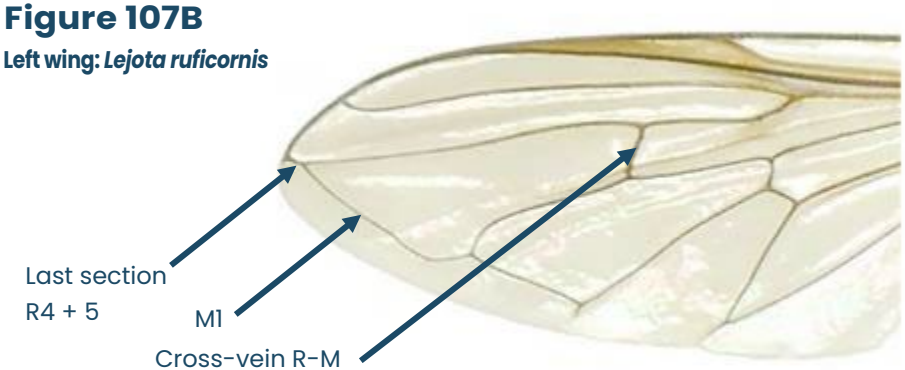


Figure 107B
Left wing: *Lejota ruficornis*



108

108 - Sternite 1 entirely, or mostly, shining and undusted; metasternum hairy or bare. **››› 109**

—— Sternite 1 entirely covered in dense, grey pruinosity; metasternum bare. **››› 113**

109

109 - Eyes covered with fine, dense hair; face flat in profile, with a protruding upper mouth edge (Fig. 109); abdomen short and broad; general body surface often metallic, bluish black; wing often with the veins pale brownish-yellow towards the wing base and costal margin (vena spuria faint or absent) (Fig. 92) (metasternum covered in long hairs).

››› *Psilota* Meigen.

—— Eyes bare, or with very short, very sparse hairs.

››› 110

Figure 109

Head (lateral view) : *Psilota atra* male

110

110 - Wing: 1st segment of radial vein bearing a series of small bristles dorsally (Fig. 110); metasternum hairy.

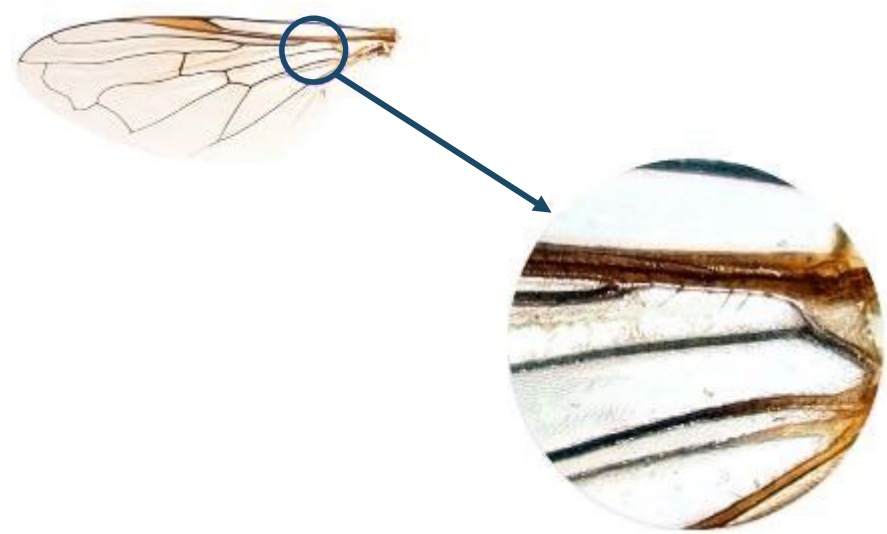
››› 111

——— Wing: 1st segment of radial vein bare; metasternum bare or hairy.

››› 112

Figure 110

Left wing: *Riponnensia splendens*



111

111 - The apical half of the ventral surface of the hind femur with a series of robust, black, spinose hairs (Fig. 111), fairly evenly spaced and distinct from the fine, almost white hairs that are also present (exceptionally, the spinose hairs may be present only on one of the two femora); males: eyes meeting on the frons (metasternum hairy).

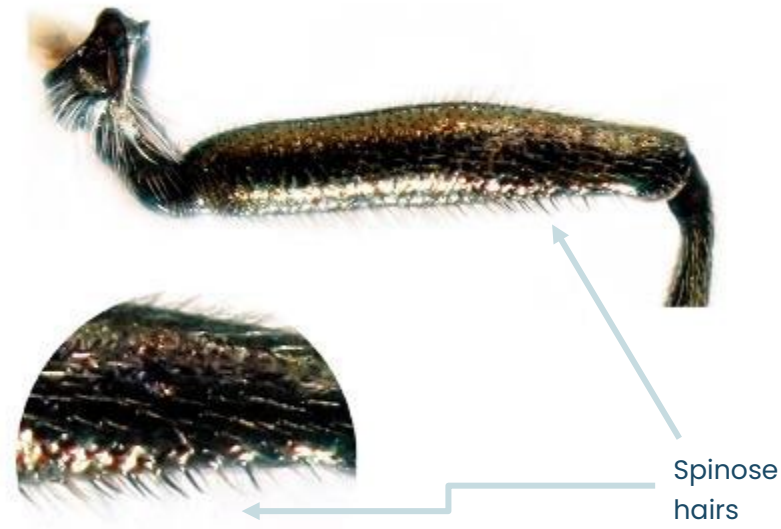
››› *Riponnensia* Maibach, Goeldlin & Speight.

——— Ventral surface of the hind femur without black spinose hairs; males: eyes separate (metasternum hairy).

››› *Lejogaster* Rondani.

Figure 111

Hind femur (anterolateral view): *Riponnensia splendens*



112

112 - Tergites 2-5 with the central part of the width of each tergite, when viewed from some angles, matt, green or dark brown, the lateral parts contrastingly brightly shining metallic green, bronze or gold (Fig. 112B); male: eyes meeting on the frons (metasternum bare or with one or two hairs).

››› ***Orthonevra*** Macquart.

——— Tergites 2 – 5 entirely shining and undusted, the central part of each tergite not appearing matt from any angle, metallic bronze or gold along the lateral margins and either the same colours or metallic blue, centrally (Fig. 112A); male: eyes separate on the frons (metasternum hairy).

››› ***Lejogaster*** (partim).

Figure 112A
Female abdomen (dorsal view):
Orthonevra nobilis

Figure 112B
Female abdomen (dorsal view):
Lejogaster tarsata

113

113 - Wing with vein M1 meeting vein R4+5 at an acute angle; the apical section of vein R4+5 (between intersection of R4+5 with M1 and the costal margin) shorter than half the length of cross-vein r-m (Fig. 107B); abdominal tergites 2 – 5 non-metallic, but entirely shining and homogenous in colour and texture throughout; male: eyes separate on frons; female: frons without grooves.

››› ***Lejota*** Rondani (female).
[monospecific genus: *L. ruficornis* (Zetterstedt, 1843)]

——— Vein M1 meeting vein R4+5 in a right angle; the apical section of vein R4+5 (between intersection of R4+5 with M1 and the costal margin) about equal in length to the cross-vein r-m (Fig. 107A); tergites 2-5 with the central and lateral parts of contrasting colour and texture, the central half of the width of each tergite matt, dark brown, black or blue-black, the lateral parts metallic green, gold or blue; male: eyes meeting on frons; female: frons with transverse, parallel grooves.

››› **114**

114

114 - Third article of antenna red-brown, dark brown or almost black; antennal arista dark brown or black). **›››** ***Melanogaster*** Rondani.

——— Third article of antenna pale orange; antennal arista orange. **›››** ***Chrysogaster*** Meigen.

115

115 - Arista bare; face mostly yellow; abdominal tergites 2 – 4 each with a pair of small, greyish-white bars close to the anterior margin of the tergite; tergite 2 more than twice as long as wide; tergites 3 and 4 each more than 1.5 times as long as wide (Fig. 115).

››› ***Pseudodoros*** Becker.
[monospecific genus in Europe: *P. nigricollis* Becker, 1903]

——— Arista pubescent (hairs all shorter than the diameter of the arista); face entirely black; abdominal tergites uniformly black, without pale-coloured markings; tergites 2 – 4 each either wider than long or only slightly longer than wide (Fig. 14).

››› ***Syrphocheilosia*** Stackelberg.
[monospecific genus: *S. claviventris* (Strobl, 1909)]

Figure 115
***Pseudodoros nigricollis* (dorsal view)**

116

116 - Medial arm of the lunule present, projecting downwards to partially separate the antennal pits (Fig. 116A); costal vein of the wing ending at, or slightly beyond, the apex of the wing (Fig. 66B); Male: eyes meeting on frons.

››› ***Cheilosia*** Meigen.

——— Medial arm of the lunule absent (Fig. 116B); costal vein ending before the apex of the wing (Fig. 116C); male: eyes separate (Fig. 116B).

››› ***Katara*** Vujić & Radenković.

[monospecific genus: *K. connexa* Vujić & Radenković, 2018]

Figure 116A

***Cheilosia canicularis*: lunule**

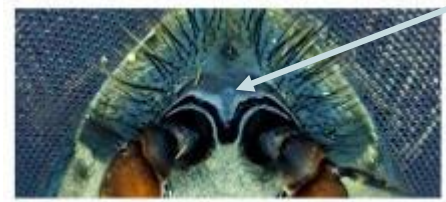


Figure 116B

***Katara connexa*: lunule**

Figure 116C

***Katara connexa*: wing**

Figure 116D

***Katara connexa*: male head (front view)**

117

117 - Face predominantly yellow (Fig. 117); metasternum bare; tergites usually with yellow or orange markings.

››› ***Blera*** Billberg (in *B. eoa* the tergites are entirely black).

[Note: specimens with a yellow face, brassy or golden abdomen and the wing membrane infuscated round cross-vein R-M ››› misidentified *Ferdinandea*, see note in couplet 66]

——— Face uniformly black, or dark brown and black, often with the ground colour obscured by dense, pale grey pruinosity; metasternum with long hairs.

››› 118

Figure 117

Head (lateral view): *Blera fallax*

118

118 – In the apical part of its length, wing vein R1 parallel with, and closely apposed to, the costal vein, for a distance almost as long as the costal margin of wing cell sm; the length of the costal margin of wing cell m is longer than the costal margin of wing cell sm (Fig. 118A).

››› ***Criorhina*** Meigen.

——— Wing vein R1 well separated from the costal vein throughout its length, its point of confluence with the costal vein distinct and unambiguous; the length of the costal margin of wing cell m is shorter than the costal margin of wing cell sm (Fig. 118B).

››› ***Matsumyia*** Shiraki.
[monospecific genus in Europe, *M. berberina* (Fabricius, 1805)]

Figure 118A
***Criorhina ranunculi*: wing**

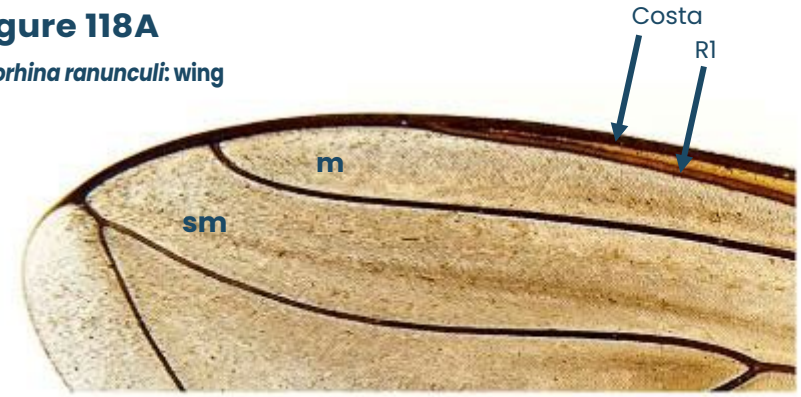
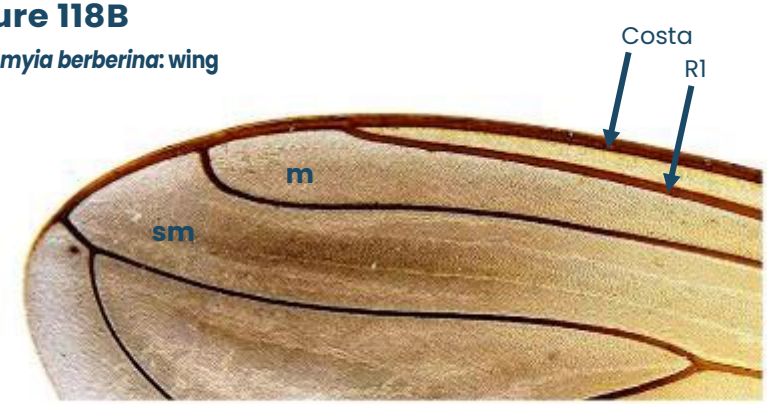


Figure 118B
***Matsumyia berberina*: wing**



119

119 - At the level of the antennal insertions the face is narrower than the width of an eye at the same level; tergites usually with yellow markings.

››› ***Pelecocera*** Meigen.

——— At the level of the antennal insertions the face is wider than an eye at the same level; tergites with yellow markings in the male, entirely dark brown in the female.

››› ***Pseudopelecocera***. Vujić & Radenković
[monospecific genus in Europe: *P. latifrons* (Loew, 1856)]

120

120 - Thorax and abdomen metallic green; tergites without yellow marks (Fig. 77A).

››› ***Caliprobola*** Rondani.

[monospecific genus in Europe: *C. speciosa* (Rossi, 1790)]

——— Thorax yellow-brown; abdominal tergites black, with a pair of large, pale yellow-brown marks on tergite 2 and the lateral margins of tergites 3 and 4 also broadly pale yellow-brown (Fig. 120).

››› ***Palumbia*** Rondani.

Figure 120

Palumbia beilleri **(dorsal view)**

121

121 - Eyes bare; abdomen clearly narrowed at tergite 2 (Fig. D: key to families).

››› ***Sphiximorpha*** Rondani.

——— Eyes hairy; abdomen subcylindrical (Fig. 121).

››› ***Primocerioides*** Shannon.

[monospecific genus in Europe: *P. regale* Violovitsh, 1985]

Figure 121

Primocerioides regale **(dorsal view)**

122 - Barette (hypopleural ridge) bare or covered to a varying extent with microscopic white hairs (Fig. 122).

››› ***Pipiza*** Fallén.

—— Barette with long, white hairs.

››› ***Cryptopipiza*** Mutin.

[monospecific genus in Europe: *C. notabila* (Violovitsh, 1985)]

Figure 122

***Pipiza* sp. (lateral view)**

This identification key is a translated, updated and expanded version of the French *Clé des 88 genres de Diptères Microdontidae et Syrphidae d'Europe* occidentale by Sarthou, Sarthou and Speight (2021). It now encompasses all European hoverfly genera and is the first of its kind that is fully illustrated. This new version was developed within the context of the European SPRING project: Strengthening Pollinator Recovery through INdicators and monitorinG. SPRING aims to develop a cohesive set of taxonomic materials for training and identification that are made publicly available through a dedicated website, the European Pollinator Academy (www.pollinatoracademy.eu).

Pollinator Academy