

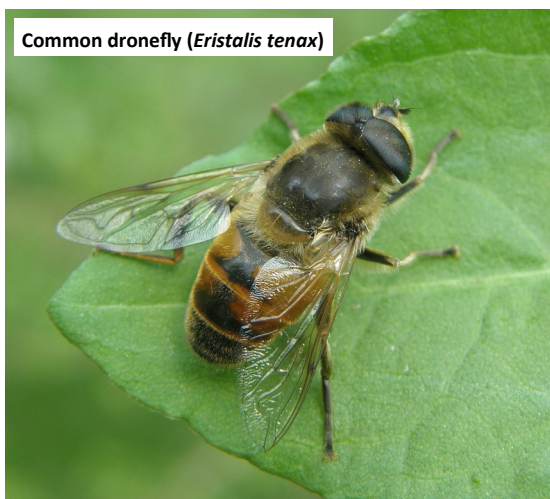
Introduction to True flies

True flies form one of the largest and most diverse orders of insects called Diptera (meaning two wings). There are around 160,000 species worldwide in 150 families, with 7,200 species from over 90 families recorded in the UK. They inhabit every continent and almost every terrestrial and freshwater niche on the planet which is testament to their adaptability. True flies differ from other insects in that they have retained only their front pair of wings, with the hind pair having evolved into small club-shaped appendages called 'halteres' which act as gyroscopes and facilitate greater aerobatic agility. They provide a range of ecological services including pollination, controlling pest species, the decomposition of organic material, and supplementing the dietary requirements of a wide range of other organisms.

Pollinating flies and other dipterans

Of the four most significant orders of pollinating insects, flies are the most abundant. Approximately 1,500 of the 7,200 British species are thought to contribute to pollination. Hoverflies (family Syrphidae) are especially significant pollinators, but some other families (the house flies and their relatives) are just as important. The remainder of the 90+ families contribute relatively few, or no pollinating species. True flies contribute to more pollination in Scotland than any other order of insects, mainly due to the sparsity, absence or selectiveness of bees in colder, northern upland habitats.

Below are some examples that demonstrate the diversity of true flies that may be encountered.



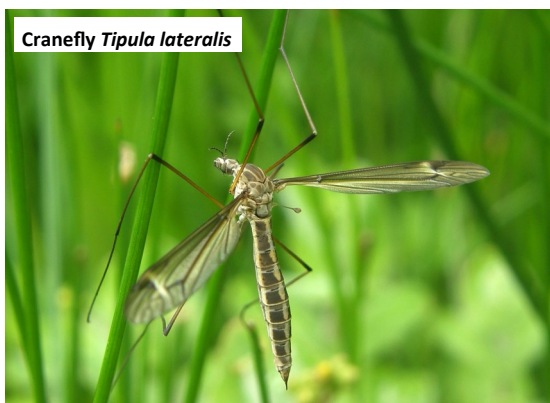
Common dronefly (*Eristalis tenax*)

© Steven Falk



Splayed deerfly (*Chrysops caecutiens*)

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Crane fly *Tipula lateralis*

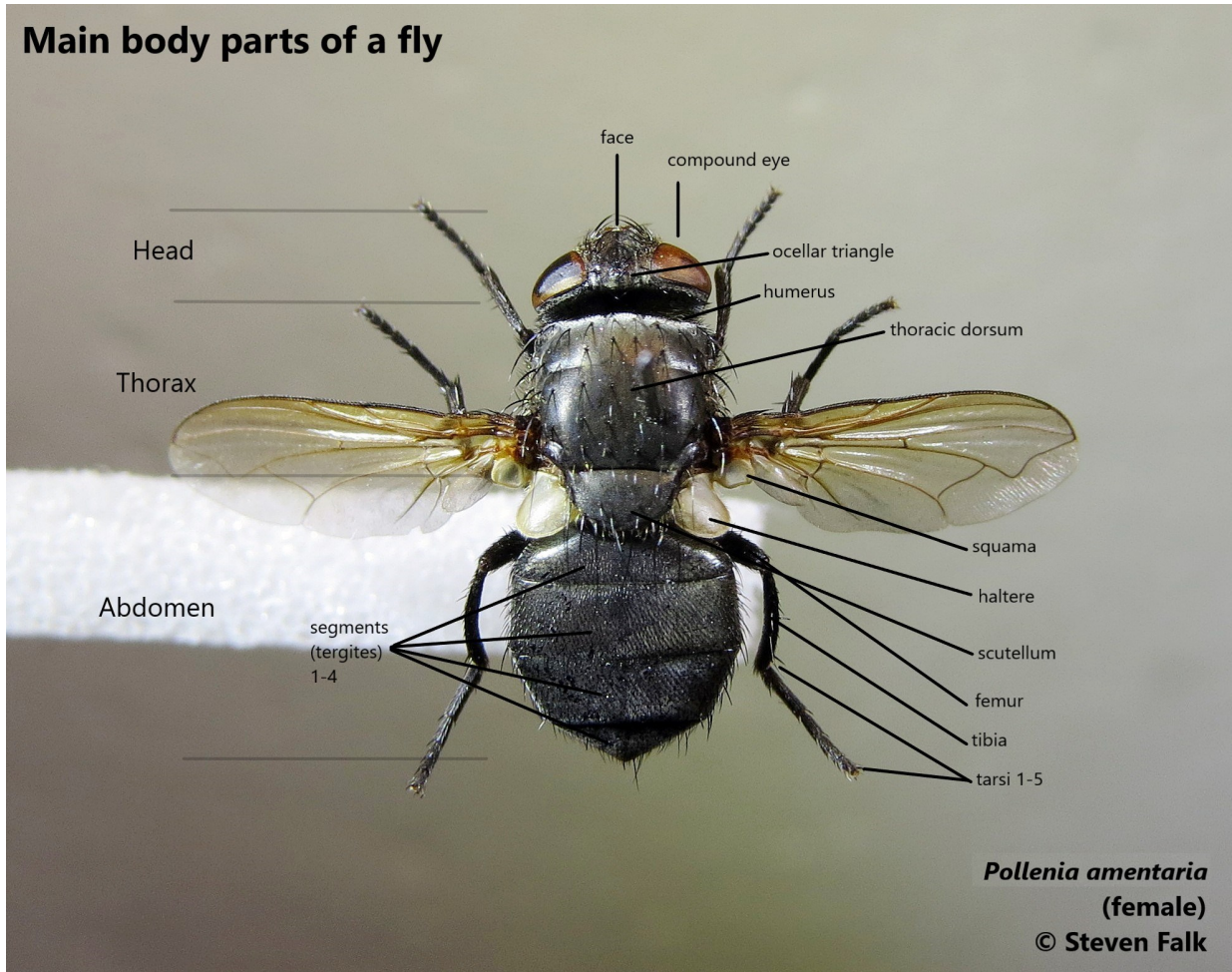
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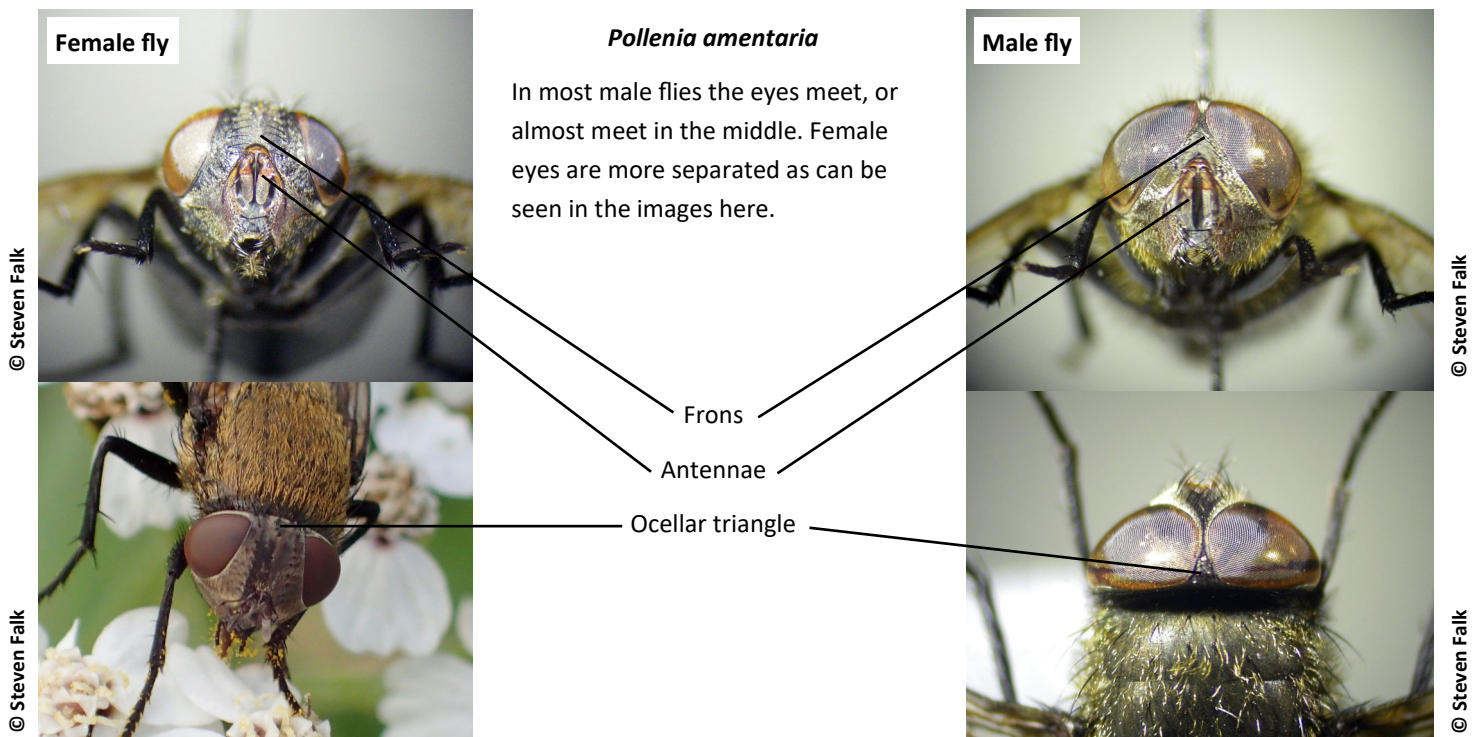
Orange-legged robberfly (*Dioctria oelandica*)

© Steven Falk

Fly anatomy



Identifying male and female flies



Introduction to selected pollinating flies

This guide is an introduction to some of the most common and important pollinating fly families likely to be encountered in Scotland. Each family is summarised, with a species to look for featured from each, indicating key identification features, habitat preferences, approximate body length and other relevant information.

Please note that many of the 7,200+ true flies in the UK will need further examination under a microscope to confirm species identification.

St. Mark's flies (Family Bibionidae)

18 species in 2 genera

Males have much larger eyes and heads than females and are often encountered in large swarms in shaded woodland areas. They are thought to be important pollinators because they occur in large numbers with both sexes visiting flowers, where they often linger rather sluggishly.

Species to look out for:

Red-thighed St Mark's fly (*Bibio pomonae*)

Britain's second largest bibionid which is readily identifiable by its red thighs. It flies through the summer in upland and moorland areas where it often associates with heather, hence its alternative common name of Heather fly. Considered an important pollinator with adults feeding mostly on nectar.



© Steven Falk

Soldierflies (Family Stratiomyidae)

~50 species in 15 genera

A diverse family in terms of size and appearance, with several species still to be confirmed from larval records in the UK. Some species may be confused with hoverflies due to the bold markings, which is where the family's common name comes from.

Species to look out for:

Broad centurion (*Chloromyia formosa*)

Britain's most common soldierfly that is often seen in large numbers on umbellifers such as Hogweed. Distinctive in that the body is entirely green or blue-green in the female (pictured), while the abdomen is bronze in the male. Soldierflies, in common with some relatives, have the thorax lacking strong bristles and the abdomen is broad and rather flat.



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Bee-flies (Family Bombyliidae)

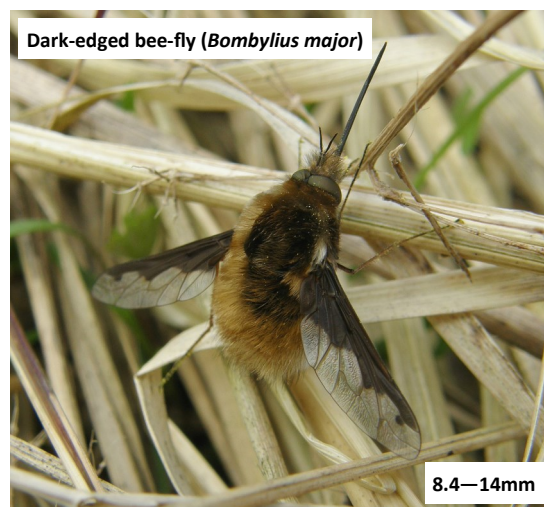
10 species in 5 genera

A diverse family with some distinctive, long-snouted furry and boldly marked species. Three representatives in Scotland. All are parasitoids of the larvae of other insects including solitary bees and various moths.

Species to look out for:

Dark-edged bee-fly (*Bombylius major*)

The most common bee-fly and the most likely one to encounter in Scotland. Easily identified by the long snout, densely furry body and bold markings on the leading edge of the wing. The population has expanded northwards in recent years with records now stretching north to Cromarty and west to Skye.



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Hunched assassinflies (Family Hybotidae)

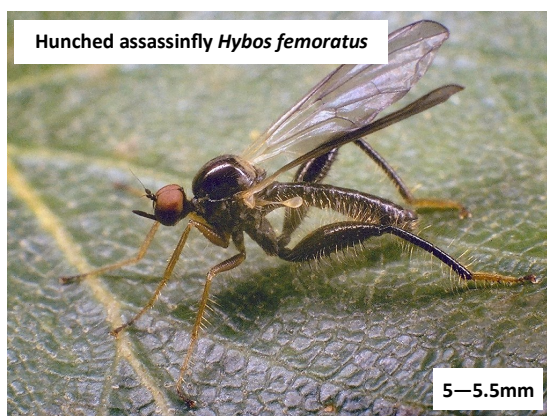
182 species in 21 genera

Closely related to the Empididae, hunched assassinflies are a large family of predatory flies. The top of the thorax is domed in most genera, giving a hunched appearance. About a quarter of the species belong to flower-visiting genera. The rest can be found running over leaves or other surfaces.

Species to look out for:

Hunched assassinfly *Hybos femoratus*

A distinctive and widespread species with yellow tarsi and enlarged femurs, with spiky bristles below, on the hind legs.



© Roger Key

Assassinflies (Family Empididae)

208 species in 15 genera

A large and widespread family of mainly small to medium sized predatory flies. Some are considered important biological controllers of pest insect species, while others are known to visit flowers to feed on nectar.

Species to look out for:

Assassinfly *Empis tessellata*

This relatively large predatory fly often visits umbellifer flowers to feed on nectar and is common and widespread throughout the UK.



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Hoverflies (Family Syrphidae)

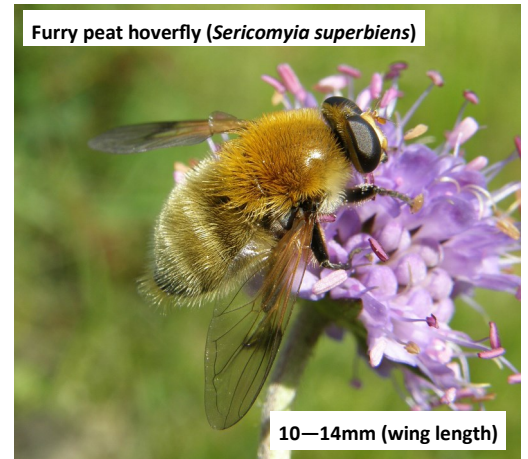
283 species in 68 genera

A large and extremely diverse family of flies that play a vital role in the pollination of a variety of plants. Many are well-known for their mimicry, some genera are small and rather drab, while others can be boldly marked and brightly coloured. The characteristic hovering flight is common throughout the wide range of genera. Care is required to identify many individuals because of variation and the similarity of various species.

Species to look out for:

Furry peat hoverfly (*Sericomyia superbiens*)

A common bumblebee mimic with a range that extends north to the Highlands and islands. The larvae of the three species in this genus often develop in peat pools, while the adults fly late in the season and are often seen visiting Devil's bit scabious.



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Dung flies (Family Scathophagidae)

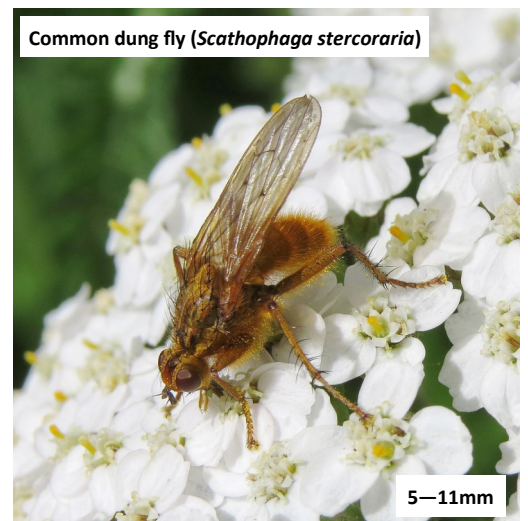
55 species in 15 genera

A relatively small family of flies within the Muscoidea superfamily. So called due to some species spending the larval stage developing in animal dung. Significant pollinators in more remote parts of Scotland due to a lack of other pollinating insects.

Species to look out for:

Common dung fly (*Scathophaga stercoraria*)

One of the most widespread and familiar flies nationally, this fly is an important decomposer of dung in fields. It also plays an important role in pollination, frequenting a variety of flowers and having been found to be the primary pollinator of Hebridean heath orchid.



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Flower flies (Family Anthomyiidae)

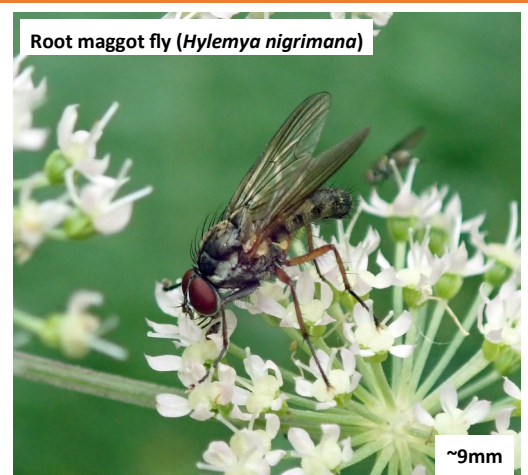
246 species in 39 genera

A large family of mainly small, drab grey flies, closely related to house flies with the common family name translated from Greek as a result of their regularity visiting flowers for nectar. Also significant Scottish pollinators due to a lack of other pollinating insects.

Species to look out for:

Root maggot fly (*Hylemya nigrimana*)

One of the many important pollinating species within this family that occur in Scotland.



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House flies and relatives (Family Muscidae)

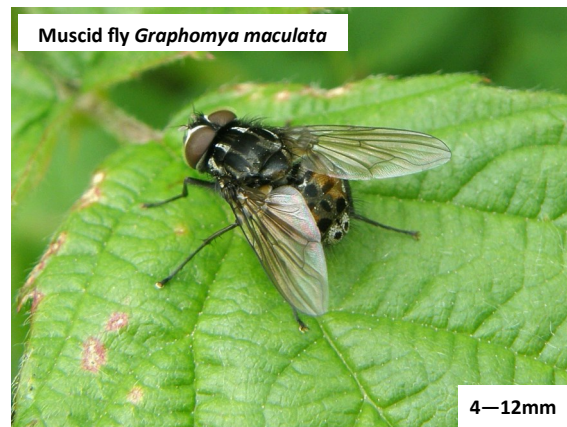
293 species in 40 genera

The negative reputation of the Common house fly is in contrast to the positive actions of the majority in this family as pollinators and in other beneficial roles. In Scotland, where bees and other pollinators can be sparse or absent, Muscidae, together with Anthomyiidae, are especially important pollinator groups.

Species to look out for:

Muscid fly *Graphomya maculata*

A distinctive genus with bold white stripes at the front of the thorax and a dumpy abdomen with a pattern of paired spots. The abdomen is more reddish in males. This species is mostly found at flowers in locations close to where its larvae live in marshes or ditches.



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Blowflies and allies (Family Calliphoridae)

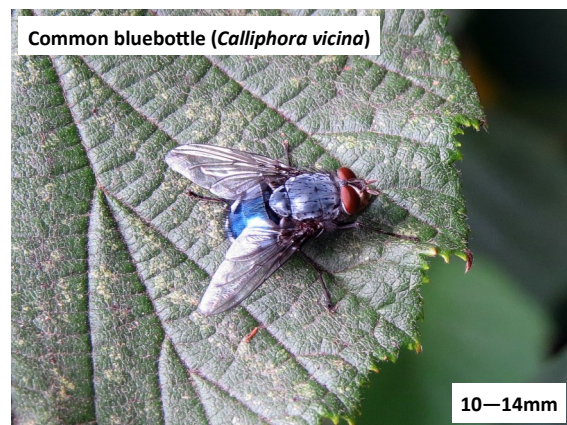
30 species in 12 genera

A relatively small family containing bluebottles and greenbottles (blowflies), the larvae of which often feed on carrion. These flies are attracted to stinkhorn fungi which smell like rotting meat. Members of the genus *Protocalliphora* are bright blue and their larvae are blood-suckers of nestlings in bird's nests. The larvae of other genera consume snails or are parasites of earthworms.

Species to look out for:

Common bluebottle (*Calliphora vicina*)

The most familiar blowfly and one that is easy to rear for use in the pollination of food crops in greenhouses. Scotland is home to all six British species of *Calliphora* (only two in southern England).



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Clusterflies (Family Polleniidae)

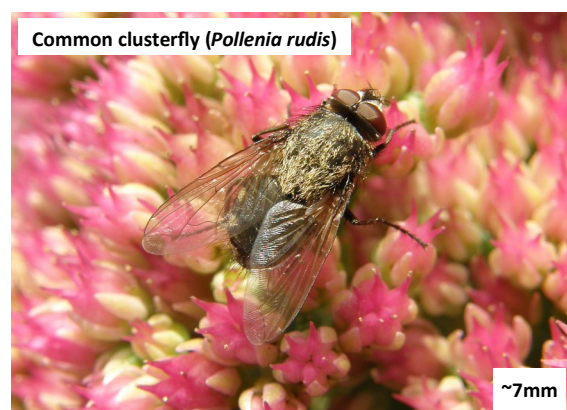
8 species in 1 genus

Closely related to blowflies, This family also plays an important role in pollination as species visit flowers to feed on nectar. The larvae of most species parasitize earthworms.

Species to look out for:

Common clusterfly (*Pollenia rudis*)

The most commonly encountered species that seeks refuge in attic spaces to over-winter, forming clusters.



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