

Flower-Insect Timed Count: insect groups identification guide



This guide has been developed to support the Flower-Insect Timed Count survey (FIT Count) that forms part of the [UK Pollinator Monitoring Scheme](https://ukpoms.org.uk) (PoMS).

Who is organising this project?

The FIT Count is part of the Pollinator Monitoring Scheme (PoMS) within the UK Pollinator Monitoring and Research Partnership, co-ordinated by the UK Centre for Ecology & Hydrology (UKCEH). It is jointly funded by Defra, the Welsh and Scottish Governments, Daera, JNCC and project partners, including UKCEH, Bumblebee Conservation Trust, Butterfly Conservation, British Trust for Ornithology, Hymettus, Natural History Museum, University of Reading and University of Leeds

PoMS aims to provide much-needed data on the state of the UK's insect pollinators, especially wild bees and hoverflies, and the role they fulfil in supporting farming and wildlife.

For further information about PoMS go to: ukpoms.org.uk



Bee or wasp (Hymenoptera)? – 1

Honey Bee (family Apidae, species *Apis mellifera*)
Photo © Bob Peterson/Wikimedia Commons

most bees are more hairy than wasps



wings held flat

female bees have a pollen basket, usually on the hind legs or under the abdomen

FIT count category: Honey bee

A social wasp (family Vespidae, genus *Vespula*)
Photo © Trounce/Wikimedia Commons



at rest, wings are rolled up for some wasps (not all)

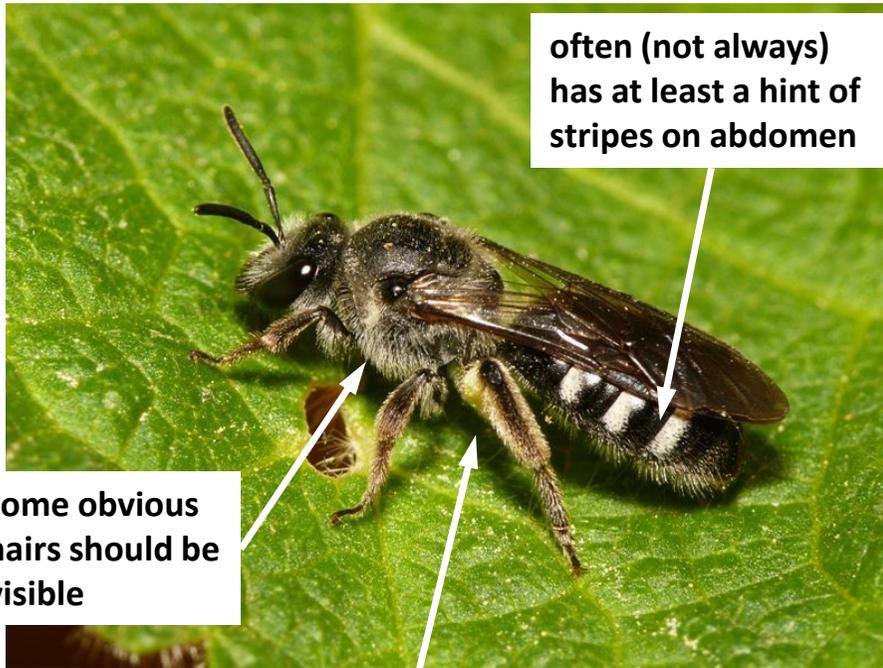
less obviously hairy, and often with very contrasting colours

FIT count category: Wasp

Bee or wasp (Hymenoptera)? – 2

There are a number of small and dark species in both groups

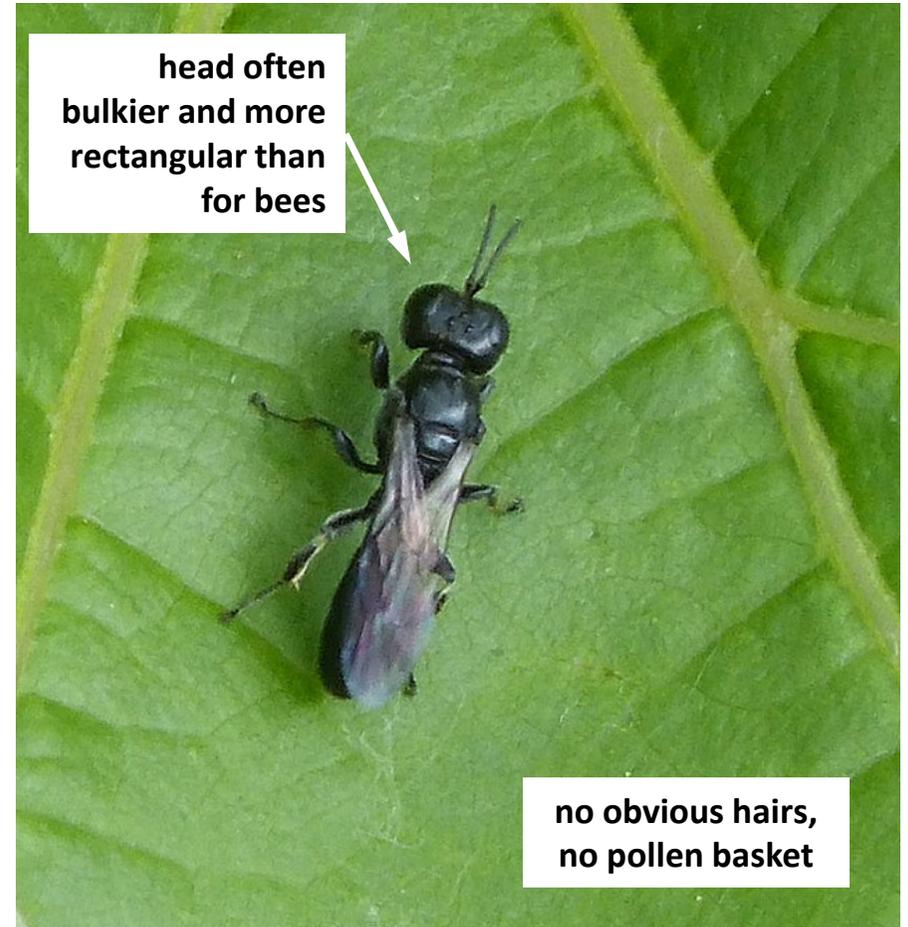
A small solitary bee (family Apidae, genus *Lasioglossum*)
Photo © Dick Belgers/Wikimedia Commons



FIT count category: Solitary bee



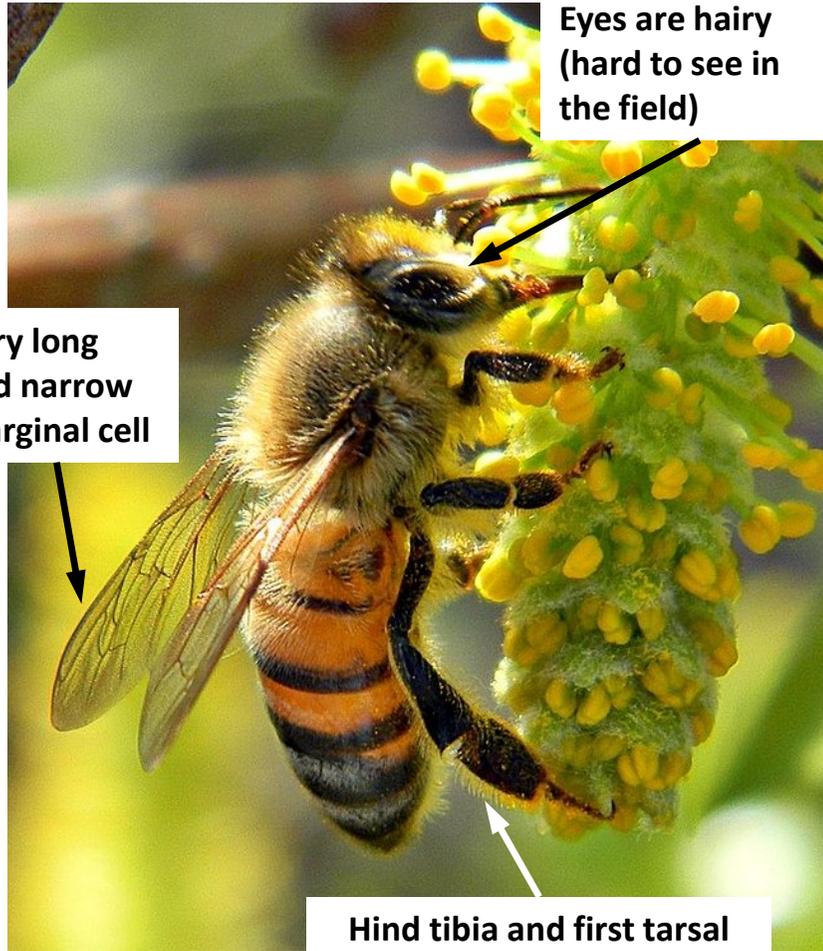
A solitary wasp (family Crabronidae, genus *Crossocerus*)
Photo © gailhampshire/Flickr CC



FIT count category: Wasp

Recognising Honey bees (Hymenoptera)

Honey Bee (family Apidae, species *Apis mellifera*)
Photo © Bob Peterson/Wikimedia Commons

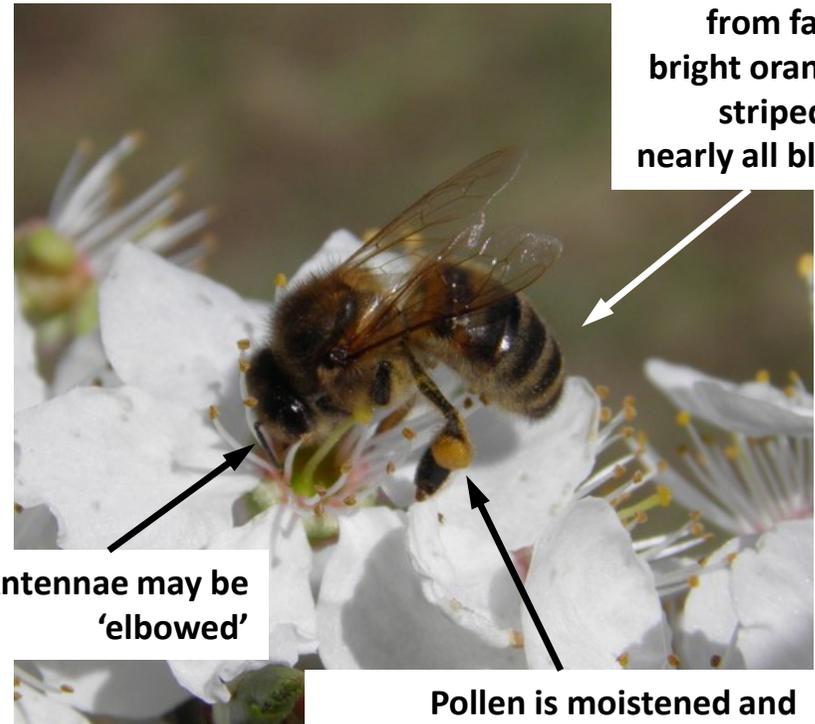


Eyes are hairy
(hard to see in
the field)

Very long
and narrow
marginal cell

Hind tibia and first tarsal
segment very broad and
flattened (in workers)

Honey Bee (family Apidae, species *Apis mellifera*)
Photo © Martin Harvey



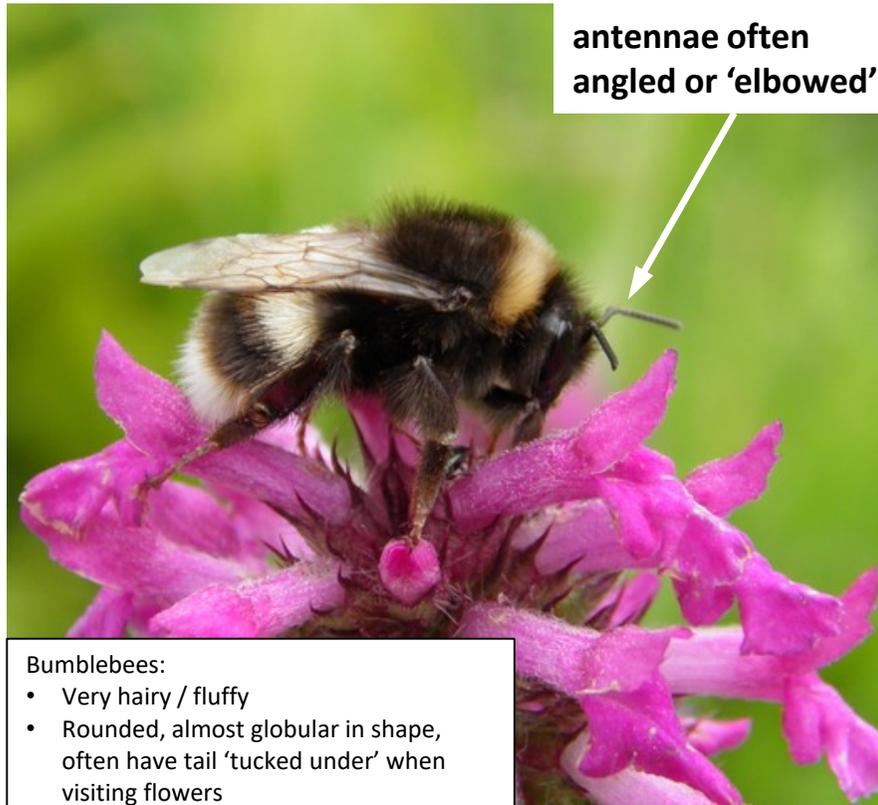
Abdomen
colour varies
from fairly
bright orange-
striped to
nearly all black

Antennae may be
'elbowed'

Pollen is moistened and
collected in the basket on the
hind tibia

Bumblebee or solitary bee (Hymenoptera)?

A bumblebee (family Apidae, genus *Bombus*)
Photo © Martin Harvey



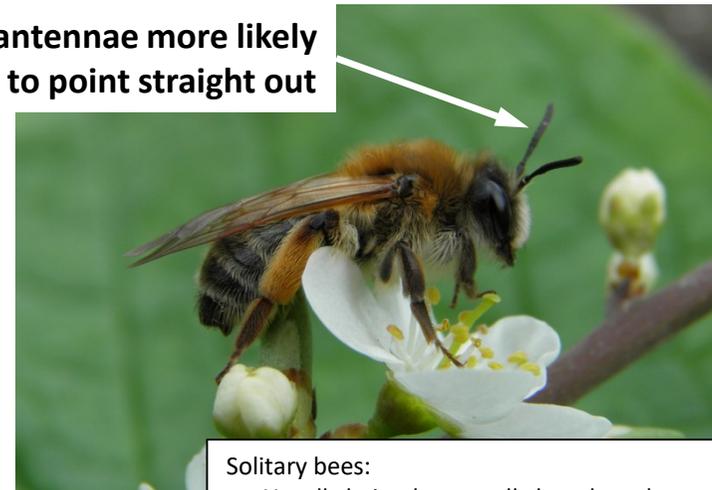
antennae often angled or 'elbowed'

Bumblebees:

- Very hairy / fluffy
- Rounded, almost globular in shape, often have tail 'tucked under' when visiting flowers
- Many have simple, contrasting colour bands
- Queens are larger than nearly all solitary species, but workers can be smaller than the larger solitaries

A solitary bee (family Andrenidae, genus *Andrena*)
Photo © Martin Harvey

antennae more likely to point straight out



Solitary bees:

- Usually hairy, but usually less densely covered in hairs than bumblebees
- Usually more elongate in shape (but lots of variety, see next sheet)
- Colours usually more subdued and less contrasting than bumblebees
- Smaller than queen bumblebees, but the largest solitaries are bigger than small worker bumblebees

FIT count category: Bumblebee



FIT count category: Solitary bee

Solitary bee examples (Hymenoptera)

There are many species of solitary bee in a range of families

Genus *Andrena* (family Andrenidae) contains many species of mining bee. Many are a mix of brown and black, but there are other patterns such as black and ashy grey.



Andrena haemorrhoa Photo © Martin Harvey

Genus *Lasioglossum* (family Halictidae) also contains many species of mining bee. Most are smaller, darker and less hairy than *Andrena*.



Photos © Mike Edwards

Some are very small!! (but larger than 3mm long)



Andrena cineraria Photo © Aiwok/Wikimedia Commons

Family Megachilidae contains mason bees (genus *Osmia*) and leaf-cutter bees (genus *Megachile*). Females in this family have pollen collecting hairs underneath the abdomen.



A leaf-cutter bee (genus *Megachile*)
Photo © Derrick Ditchburn/Wikimedia Commons

Hairy-footed Flower-bee (Hymenoptera)

A solitary bee that is active in early spring and summer. It is often confused with bumblebees but has a much faster flight, and hovers in front of flowers.

females are all-black
with orange hairs on
hind legs



Hairy-footed Flower-bee (family Anthophoridae, species *Anthophora plumipes*)
– female. Photo © Charlesjsharp/Wikimedia



males are brown or ginger,
with pale markings and
pale hairs on the face, and
very long hairs on the legs

Hairy-footed Flower-bee (family Anthophoridae, species *Anthophora plumipes*)
– male. Photo © Orangeaurochs/Flickr CC

Ichneumon wasps (Hymenoptera)

Sometimes called ichneumon 'flies' but these are wasps and should be counted as wasps

An ichneumon wasp (family Ichneumonidae)
Photo © Hectonichus/Wikimedia Commons

An ichneumon wasp (family Ichneumonidae)
Photo © Katya/Wikimedia Commons

overall shape usually
long and narrow in
proportions



antennae are
long with
many small
segments

females may have an
obvious ovipositor at the
tip of the abdomen

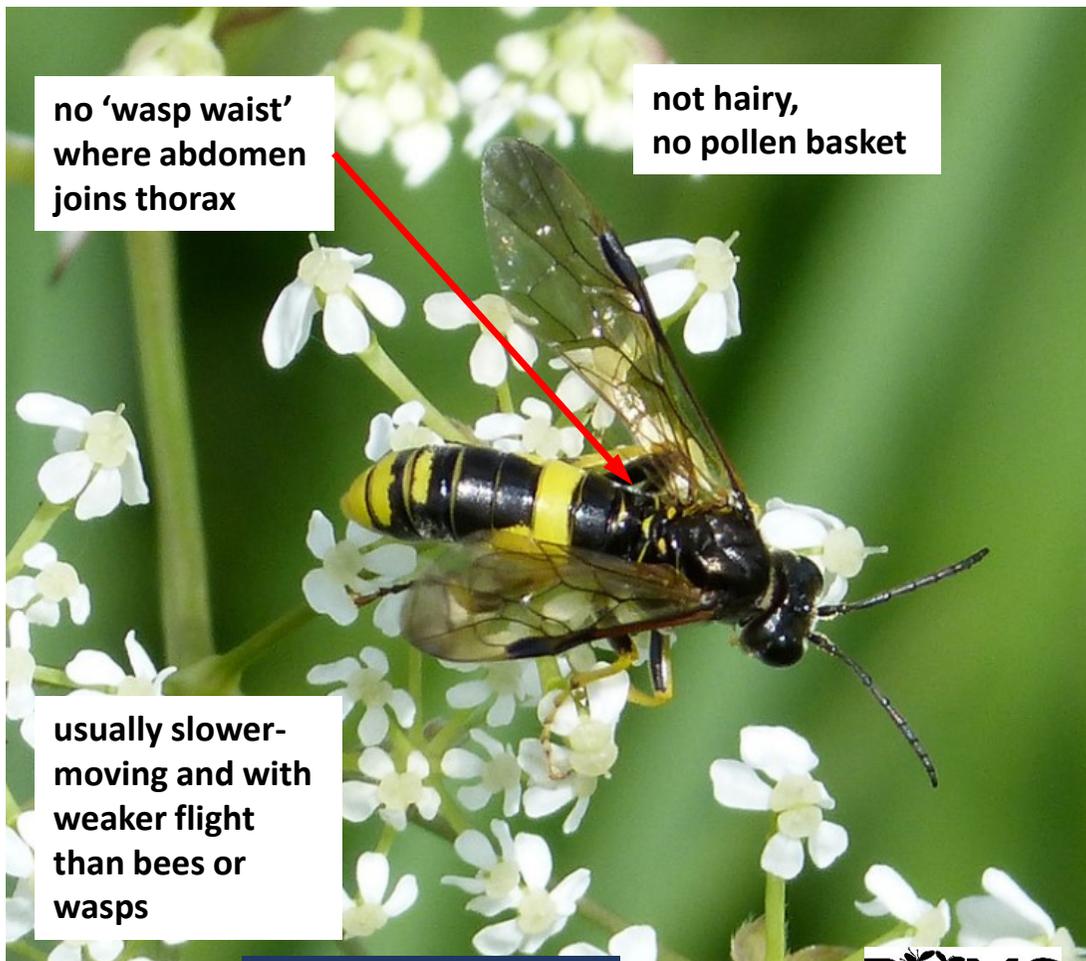


antennae are
long with many
small segments

Sawfly or wasp (Hymenoptera)?

There are many different sawflies of differing sizes and colours – they are not true flies, and are related to bees and wasps in the Hymenoptera, but note that we are counting sawflies in the “Other” category

Sawfly (family Tenthredinidae, species *Tenthredo temula*)
Photo © gailhampshire/Flickr CC



no 'wasp waist'
where abdomen
joins thorax

not hairy,
no pollen basket

usually slower-
moving and with
weaker flight
than bees or
wasps

FIT count category: Other



A social wasp (family Vespidae, genus *Vespula*)
Photo © Trounce/Wikimedia Commons



narrow 'wasp
waist'
between
thorax and
abdomen

FIT count category: Wasp

Hoverfly (Diptera: Syrphidae) or bee/wasp (Hymenoptera)?

Drone Fly (species *Eristalis tenax*)
Photo © Martin Harvey



large eyes covering most of the head; shorter antennae with 3 segments

Honey Bee (family Apidae, species *Apis mellifera*)
Photo © Ken Thomas/Wikimedia Commons



eyes on sides of head, not covering it all; longer antennae with 12 or 13 segments

Bees and wasps have:

- two pairs of wings (but this can be very hard to see on live insects)
- slower flight, not hovering (except in a few species)
- female bees have a pollen basket

- Hoverflies have:
- just one pair of wings
 - fast hovering flight (most species)
 - no pollen basket



FIT count category: Hoverfly

FIT count categories:
Honey bee / Bumblebee
/ Solitary bee / Wasp



A social wasp (family Vespidae, genus *Vespa*)
Photo © Trounce/Wikimedia Commons

A hoverfly (species *Sericomyia silentis*)
Photo © Martin Harvey



Recognising hoverflies (Diptera: Syrphidae)

A hoverfly (species *Platycheirus angustatus*)

Photo © Janet Graham

Hoverflies are:

- usually shiny or reflective (not always)
- usually black with yellow or other pale markings on the body and/or legs (not always)
- have veins parallel to the trailing edge of the wing, forming a 'false margin'
- have a "vena spuria" in the middle of the wing (hard to see in the field)
- are not obviously bristly



'vena spuria'

'false margin'
veins

antennae usually short - some
have longer antennae but still
shorter than most bees, and with
fewer segments



A hoverfly (species *Chrysotoxum festivum*)

Photo © Martin Harvey

FIT count category: Hoverfly

Hoverfly examples (Diptera: Syrphidae)

There are many species of hoverfly with a range of shapes and patterns

Typical black and yellow striped hoverfly
(left: *Epistrophe grossulariae*; right: *Episyrphus balteatus*).



Photos © Martin Harvey

Rhingia campestris is a non-typical hoverfly and a common flower visitor – note the long snout (CC photo via Pexels)



Tribe Bacchini (*Melanostoma* and *Platychirus*) contains small species that are longer/thinner than typical hoverflies. Most have spots but can seem very dark in the field.



Left: *Melanostoma scalare* Photo © Martin Cooper/Flickr CC;
right: *Platychirus albimanus* Photo © Martin Harvey

Syritta pipiens is a small, common species that does not look like a typical hoverfly, but readily hovers and has characteristic leg markings, and grey sides to the thorax.



Photo © Martin Cooper/Flickr CC

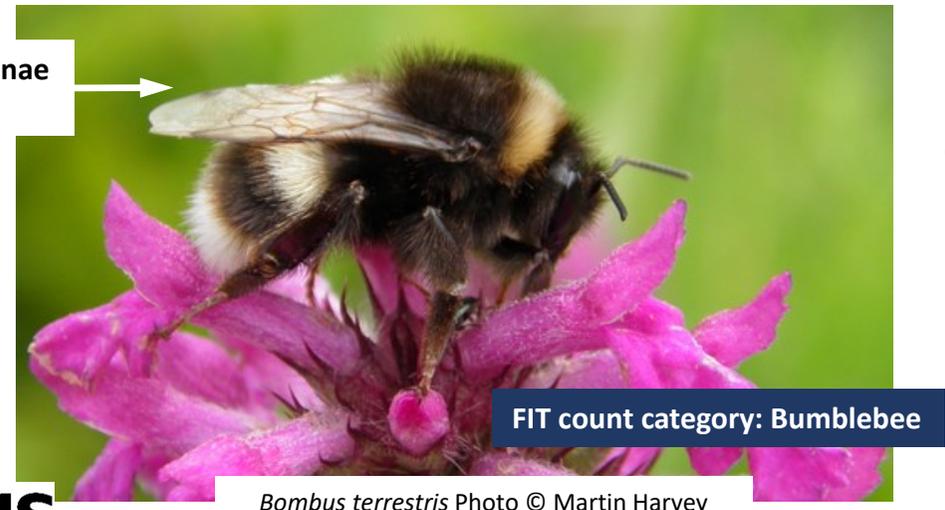
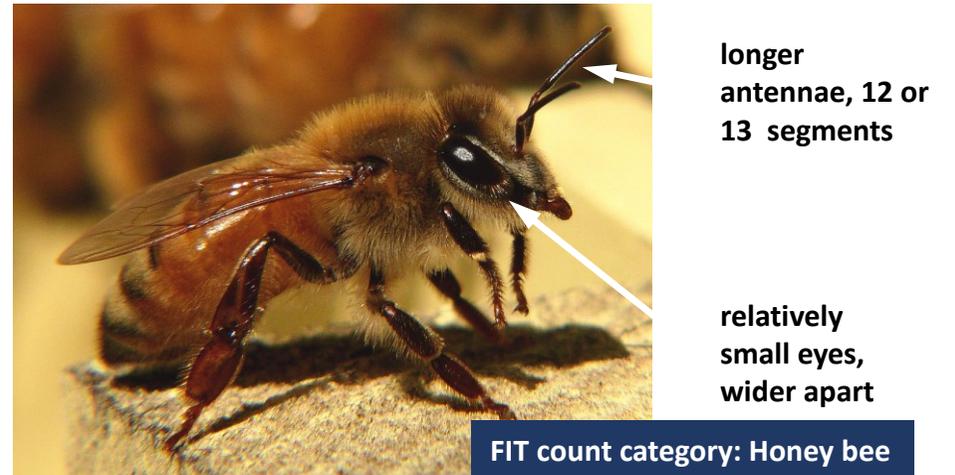
Hoverflies (Diptera: Syrphidae) mimicking bees (Hymenoptera)

Some hoverflies are very good bee mimics

Drone Fly *Eristalis tenax* Photos © Martin Harvey



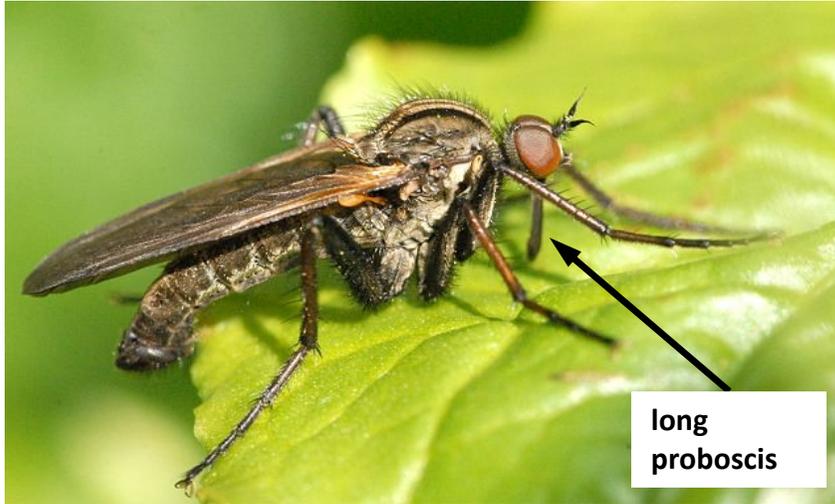
Honey Bee *Apis mellifera* Photo © Ken Thomas/Wikimedia Commons



Other flies (Diptera)

There are many other families of fly that you may see – all you need to do is separate hoverflies from the rest!

A dance fly *Empis tessellata* Photo © James K. Lindsey/Wikimedia Commons



Calypterate flies – rounded body, very bristly on body and legs:



Yellow Dung-fly *Scathophaga stercoraria* Photo © Olaf Leillinger/Wikimedia Commons



Greenbottle *Lucilia* sp. Photo © Juan Emilio/Wikimedia Commons



broad body, wing venation different from hoverflies, moves slowly, doesn't hover

Broad Centurion soldierfly *Chloromyia formosa* Photo © Martin Harvey

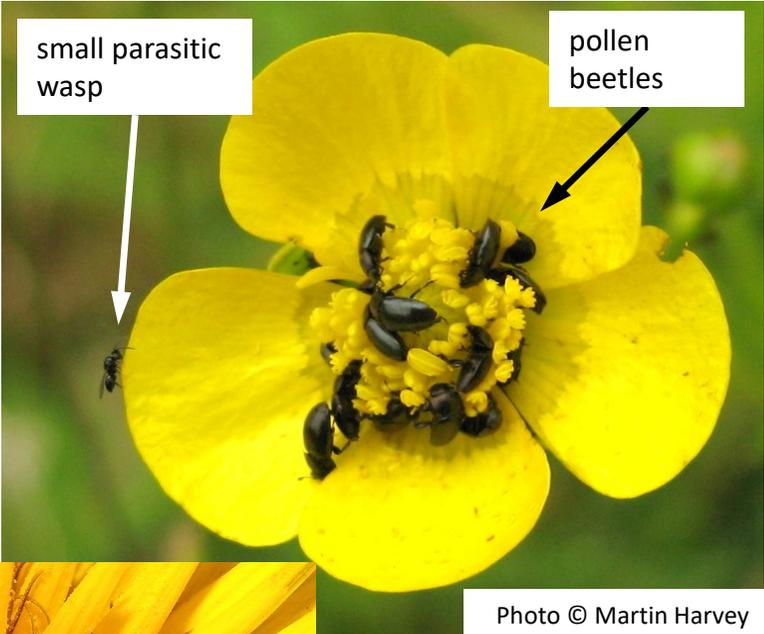


Tachina fera Photo © Luc Viatour/Wikimedia Commons

FIT count category: Other fly

Small insects

There are a number of very small (3mm or less) insects that may occur on flowers, including pollen beetles, which can be very abundant. Please provide an estimate of how many small insects you see in total on the target flower, but there is no need to identify the group (so DO NOT count pollen beetles in the "Beetles" category)



FIT count category: Small insects

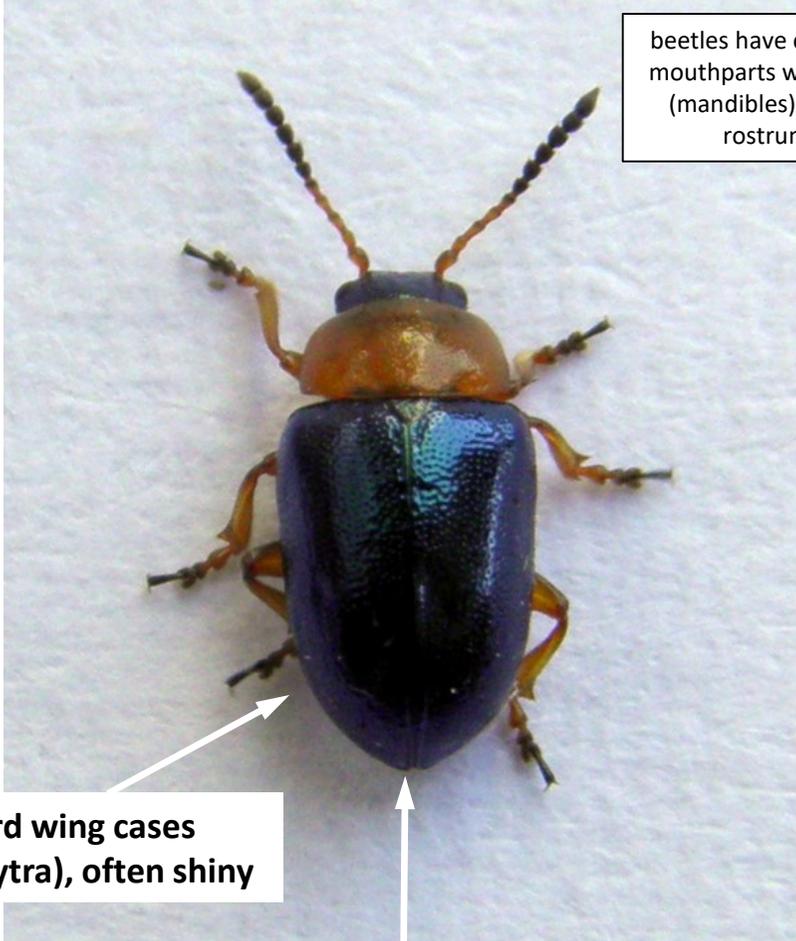
This is a small solitary bee, but all bees are bigger than 3mm and should be counted as bees! (This one has collected pollen on its hind legs, which is a good clue that it is a bee.)



FIT count category: Solitary bee

Beetle (Coleoptera) or true bug (Hemiptera: Heteroptera)?

A leaf beetle (family Chrysomelidae, species *Gastrophysa polygoni*)



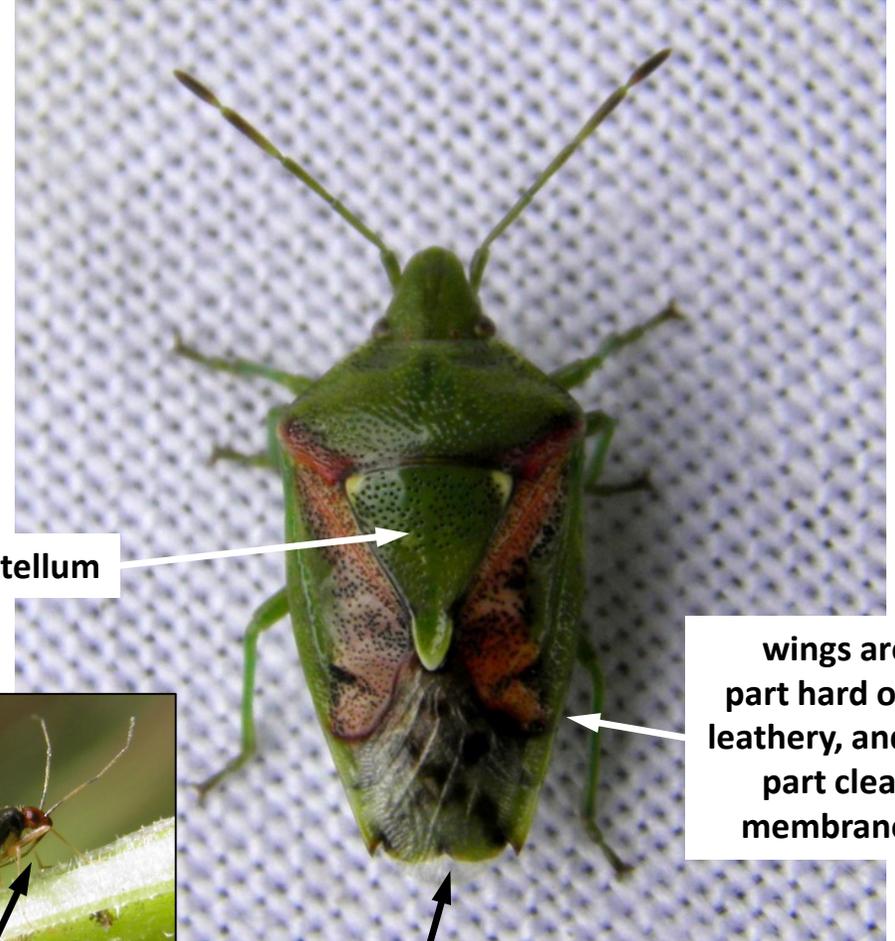
beetles have chewing mouthparts with jaws (mandibles), not a rostrum

hard wing cases (elytra), often shiny

wing cases join with a straight line down middle of insect

FIT count category: Beetle

Juniper Shieldbug (family Acanthosomatidae, species *Cyphostethus tristriatus*)



scutellum

wings are part hard or leathery, and part clear membrane

wings and scutellum form an X shape on back

FIT count category: Other

bugs have a long, narrow rostrum, usually held pointing back under the head

Photos © Martin Harvey

Butterflies and moths (Lepidoptera)

Butterflies and moths are both included in the “Lepidoptera”, which means “scale-wing”, referring to the mosaic of tiny scales that make up the fantastic colours and patterns on their wings. For PoMS both are counted into a single grouping, there is no need to distinguish butterflies from moths.

Butterflies:

above left: Large White (*Pieris brassicae*) – above right: Gatekeeper (*Pyronia tithonus*)
below: Painted Lady (*Vanessa cardui*)



Moths:

above: Six-spot Burnet (*Zygaena filipendulae*)
below: Nettle-tap (*Anthophila fabriciana*)



Photos © Martin Harvey

moths have traditionally been divided into larger ‘macro-moths’ (such as Six-spot Burnet) and smaller ‘micro-moths’ (such as Nettle-tap), but all are part of the Lepidoptera

Taking things further

For the FIT Counts you only need to put insects into groups, but if you want to take your interest further and learn how to recognise and record some of the species of pollinating insect there is plenty of help available

- Bees, Wasps and Ants Recording Society
 - website: www.bwars.com
 - Facebook (for identification help): [UK Bees, Wasps and Ants](#)
- Hoverfly Recording Scheme
 - website: <http://sgbtest.me.uk/hrs/>
 - Facebook (for identification help): [UK Hoverflies](#)
- Butterfly Conservation
 - for butterflies and moths: butterfly-conservation.org
- Other recording schemes
 - [BRC list of recording schemes](#)
- Species records
 - For any pollinator species that you can identify, please add records to **iRecord** where they will be available to the recording schemes, records centres and PoMS: www.brc.ac.uk/irecord



BWARS
Bees, Wasps & Ants
Recording Society



DipteristsForum
A Dipterists Forum recording scheme

