

The Open University Pollinator Watch Guide to identifying a selection of insect pollinators

by Andy Morris, Clare Lawson and Kate Bradshaw

Introduction

The sight and sound of a buzzing honeybee, flitting between brightly coloured flowers, is synonymous with spring and summer, although honeybees are not the only insects to visit our flowers. In fact, there are many different species of bee, as well as other types of insects that pollinate our crops and flowers. This includes butterflies, moths, wasps, flies and even beetles.

This guide will help you to discover the variety of insects that are important visitors to our flowers. Although there are many different types of insects that visit flowers, we have focused on three groups you are likely to come across in your garden, or whilst out for a walk, this spring and summer.

Flies (Diptera)



Photo © Kate Bradshaw

Marmalade hoverfly
Episyrphus balteatus

Bees and wasps (Hymenoptera)



Photo © Kate Bradshaw

Honey bee
Apis mellifera

Butterflies and moths (Lepidoptera)



Photo © Ian Kirk, CC BY

Orange tip butterfly
Anthocharis cardamines

What to do

On a sunny day spend some time outside, in your garden or on a walk, looking at the different insects visiting flowers. How many different types of insect do you see?

Don't forget to take photos of your insects so that you can upload them and share your observations with others. Your photos might also be handy when you come to identify your insects later.

Some insect basics

- All insect bodies are divided into **three** parts; the head, thorax and abdomen.
- They have two antennae on their head.
- They have six legs attached to the thorax.

There are some characteristic differences between these three groups, which will help you to distinguish between them.

- For example, flies (diptera) have one pair of membranous wings while bees and wasps (hymenoptera) have two pairs.
- Butterflies and moths (lepidoptera) have wings that are covered in tiny scales.

The first group of insects in the guide are hoverflies. They are a large group of insects and have an important role in pollination. Many hoverflies are mimics of bees and wasps, sporting the characteristic yellow and black banding on their abdomen.

So how can you tell the difference between bees and wasps?

Hoverflies (Diptera: Syrphidae)

Hoverflies have:

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

Eristalis sp.



Episyrphus balteatus



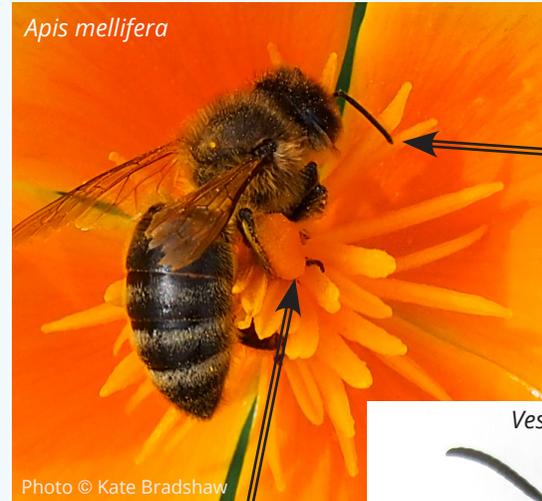
shorter antennae
(most hoverflies)
and large eyes

Photo © Kate Bradshaw

Photo © Kate Bradshaw

Bees and wasps (Hymenoptera)

Apis mellifera



longer antennae

Photo © Kate Bradshaw

pollen basket

Vespula vulgaris

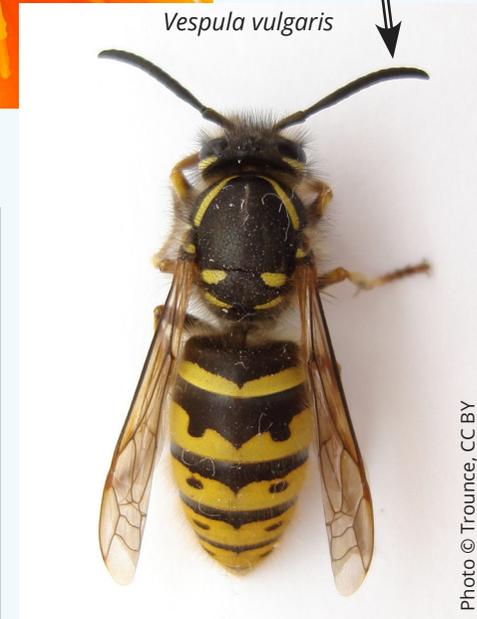


Photo © Trounce, CC BY

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

Examples of hoverflies and other flower-visiting flies

Hoverflies are not the only flies to visit flowers, you might also see the bee-fly and dance-fly.

Helophilus (a hoverfly)



Eupeodes (a hoverfly, Syrphidae)



Volucella zonaria (a hoverfly)



Bombylius (a bee-fly, Bombyliidae)



Lucilia (a green-bottle, Calliphoridae)



Empis (a dance-fly, Empididae)

Hymenoptera: bees and wasps

Honey Bee (family Apidae, species *Apis mellifera*)

most bees are more hairy than wasps



Photo © Bob Peterson, CC BY

wings held flat

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

A social wasp (family Vespidae, genus *Vespula*)

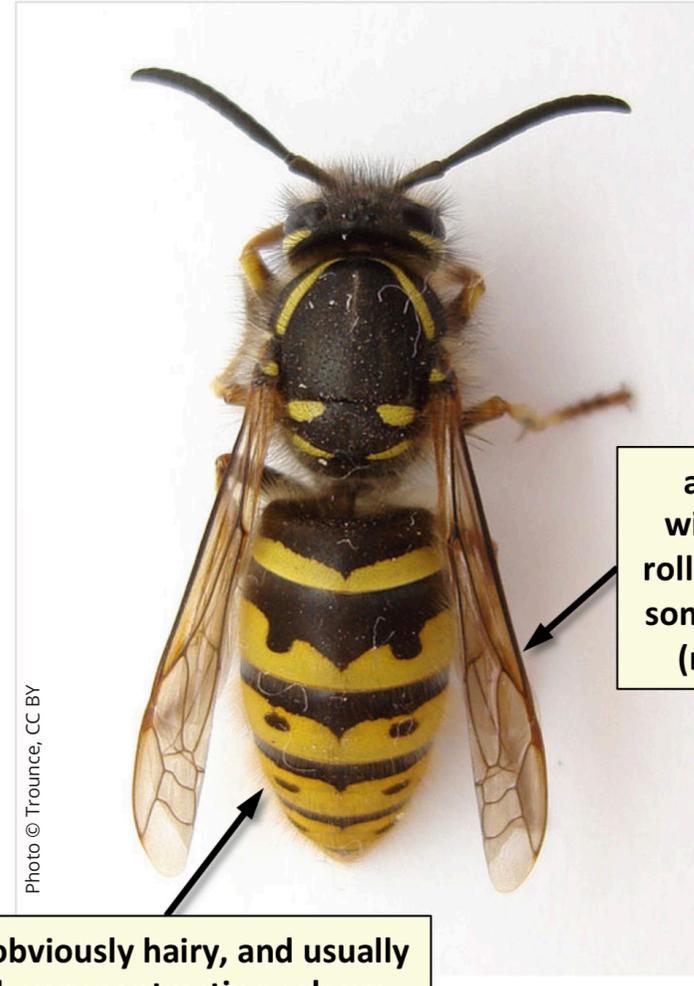


Photo © Trounce, CC BY

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

less obviously hairy, and usually with very contrasting colours (or may be entirely black)

Examples of bees

Bees can be divided into three groups, bumblebees, honey bees and solitary bees.

Solitary bees

Lasioglossum sexstrigatum



Photo © Kate Bradshaw



Andrena haemorrhoa

Photo © Kate Bradshaw

The majority of bees are solitary; they do not have a nest where individuals perform different roles. Solitary bees collect pollen and/or nectar and use this to provide for their young. They have a conspicuous waist and tend to be smaller than bumblebees.

Honey bees and **bumblebees** are social bees and live in colonies.

Apis mellifera



Photo © Kate Bradshaw



Photo © Kate Bradshaw

Bombus terrestris

Honey bees are social insects with a queen, workers and males.



Photo © Kate Bradshaw

Bumblebees are large and furry. The 'waist' is less obvious than for solitary bees. 'True' bumblebees live in colonies comprising a single queen and multiple smaller workers, all of which are females. Later in the season new queens and males are produced. There are six widespread bumblebee species in the UK.

More about bumblebees

Bumblebees can be divided into three groups depending on their colour; red tail, white tail or ginger in colour.

Red-tailed bumblebee

Bombus lapidarius



Photo © Kate Bradshaw

Queens and workers are jet black with a red tail, whilst males have yellow facial hair and bright yellow bands on the thorax.

Buff-tailed bumblebee

Bombus terrestris

Only the *Bombus terrestris* queen has a buff tail. The males and workers have white tails. Widespread distribution and abundant.



Photo © Kate Bradshaw

Common carder bee

Bombus pascuorum



Photo © Kate Bradshaw

This all-ginger bee is very distinctive, though queens have creamy-white sides to their thorax and males are often yellower. Widespread and abundant.

Tree bumblebee

Bombus hypnorum

The tree bumblebee arrived in 2001 and is found in a wide range of habitats across the UK, although it has a preference for suburbs and woodlands. Considered the seventh widespread species.



Photo © Kate Bradshaw

Photo © Gail Hampshire, CC BY



Cuckoo bumblebee

species have only males and females, which are similar in size to the true queens. The female cuckoo usurps a true queen, taking over her nest.

The true queen's workers switch to collecting food for the cuckoo female's offspring. Cuckoos usually have the same pattern of fur colour as the bee's nest they lay their eggs in, although they can be identified by some minor differences.

Butterflies and moths

There are roughly 60 species of butterflies that you can expect to see across Britain and Ireland. Some species are migratory, and their numbers can fluctuate significantly from year to year. Others are incredibly localised and might only be seen in a particular location. Different species will also be evident at different times of the year. The hot windless days of high summer are when numbers tend to peak but it is quite possible to see butterflies for at least ten months of the year.

The species you will see around your home will depend on factors such as how close you are to woodland, hedgerows, meadows or parkland. If you have a garden, its size and the variety of plant life it supports will also be significant. Wherever you are, you should expect to be able to spot 6-12 different common species.

However, it will also be useful to know whether you are looking at a butterfly or a day flying moth.

What is the difference between a day flying moth and a butterfly?

Moth



Six-spot burnet moth
Zygaena filipendulae

The six-spot burnet, like many moths, tends to rest with its wings back and close to its body. It also has a fairly chunky body, as most moths do. However, it is atypical in that it has long, fairly thin antennae: most moths have short and sometimes feathery antennae. It can be found on grasslands such as chalk downland, sandy heathland and woodland clearings.

Butterfly

The gatekeeper, like most butterflies tends to rest either with its wings spread in a raised position, or with wings folded together (moths can often rest with wings spread flat). It also has the typically long thin antennae of most butterflies as well as a relatively slim body.



Gatekeeper
Pyronia tithonus

Photo © Kate Bradshaw

Some butterflies you might see at home

Red Admiral
Vanessa atalanta



Photo © Kate Bradshaw

This is a large and eye-catching butterfly with its flashes of white and red on large dark wings. It is widely distributed and seen through much of the year (usually from early March until early November). It is a strong flier and migrates to and from the Mediterranean each year.

Small Tortoiseshell
Aglais urticae



Photo © Kate Bradshaw

A medium-sized, intricately patterned butterfly. It is common, widespread and can be seen through much of the year. It can be found on a wide range of plants. Whilst it remains a common species, its numbers can fluctuate significantly so it is an important species to monitor.

Painted Lady
Cynthia cardui



Photo © Kate Bradshaw

A relatively common migrant but seen in very variable numbers each year. In some years they remain rare and only reach southern England. In other years they will reach the far north of Scotland and be a common sight everywhere. They are best seen in high summer, from June to August and are fairly easy to identify with their large, intricately patterned wings.

Peacock
Inachis io



Photo © Kate Bradshaw

This is perhaps the most spectacular of the common butterflies, displaying distinctive 'eye' wing markings which appear to mimic those of a predatory bird. It will feed on a wide range of plants but almost always lays its eggs on nettles. It is widespread but less common in the Scottish Highlands and can be seen throughout much of the year.

Brimstone
Gonepteryx rhamni



Photo © Sharp Photography, CC BY-SA

This is often the first butterfly of the year to appear and it is not uncommon to see it on the wing as early as February and into late autumn. It is common across much of England, Wales and Ireland but rare in Scotland. A large butterfly, the paler female can be mistaken for a Large White but it has no black wing markings. The male is a brighter yellowy-green.

Large White
Pieris brassicae



Photo © Matt Prosser, CC BY

A very common and widespread butterfly, also known as the 'cabbage white' after its habit of eating through the leaves of brassicas. It is large and predominantly white, with black wingtips and a few black wing markings (more on the female than the male). Usually seen from April to September.

Some useful references

Flies and hoverflies

Dipterists Forum: identifying flies

<https://www.dipterists.org.uk/identification>

British Hoverflies

<http://syrphidae.3644.co.uk/>

Nature Guide UK: hoverflies

<https://sites.google.com/site/natureguideuk/home/hoverflies>

Bees, bumblebees and wasps

Bees, Wasps and Ants Recording Society

<https://www.bwars.com/home>

Bumblebee Conservation Trust

<https://www.bumblebeeconservation.org>

Natural History Museum key to bumblebees

<https://www.nhm.ac.uk/research-curation/research/projects/bombus/bumblebeeid.html>

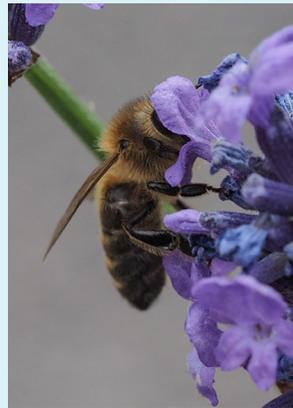
Butterflies and moths

Butterfly Conservation

<https://butterfly-conservation.org>

UK Moths Online Guide

<https://ukmoths.org.uk/>



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