THE wildlife TRUSTS
Cumbria
Wildlife Trust

WILD POLLINATORS

A beginners' guide to wild pollinators in Cumbria

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Protecting Wildlife for the Future

Our wild pollinators

Mountains, meadows, lakes, woodland and coast make a rich and diverse home for Cumbria's varied wildlife, including the pollinators that thrive in our wet and cool climate.

What are pollinators?

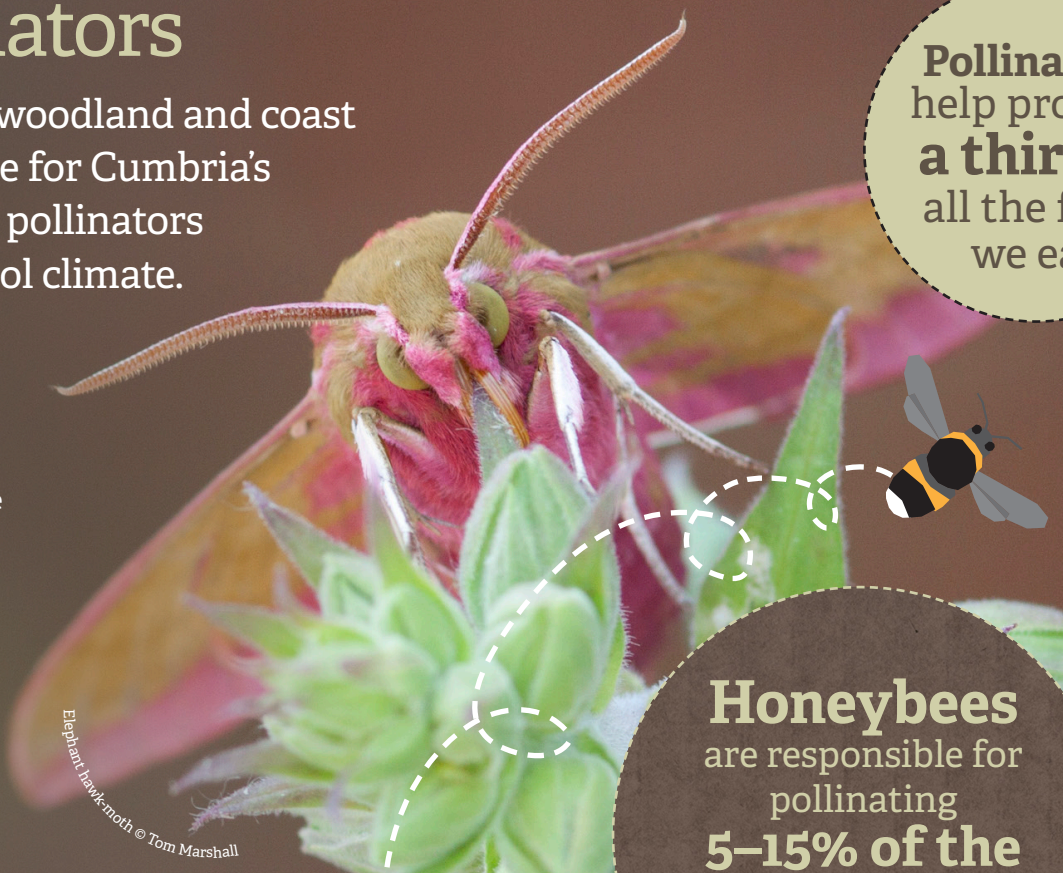
The term 'pollinator' simply refers to any animal that is known to directly contribute to the pollination of plants. Throughout the world this includes species such as bats and birds; however, the most effective pollinators by far are insects.

Insect pollination occurs when an insect, foraging for nectar or pollen, transfers pollen from one plant to another. The pollen fertilises the plant, causing new seeds to grow.

Why are they important?

Pollinators may be tiny but their impact is huge. They are vital for the health of our planet as they pollinate more than 80% of flowering plants, plus they help to create and maintain habitats and ecosystems that many other animals rely on for food and shelter, including us!

Whilst honeybees are important for pollinating crops and providing honey, their role is just part of a far greater contribution played by the wild pollinator species that populate our planet.



Elephant hawk-moth © Tom Marshall

Pollinators help provide **a third** of all the food we eat

The main groups of **wild pollinators** include bumblebees, solitary bees, hoverflies, wasps, butterflies, moths and beetles

DID YOU KNOW?

Honeybees are responsible for pollinating **5–15% of the** UK's insect-pollinated crops, leaving **85–95%** to wild pollinators

Most insect pollinators rely solely on pollen and nectar for food

Of the estimated **5,500 pollinator** species in the UK, **3,186 species** have been recorded in **Cumbria**

Wildflower meadows make perfect pollinator havens, but we've lost **97%** since the 1930s

The wonderful world of pollinating insects

The insect world is both vast and complex, with over 24,000 species in the UK alone. In order to make sense of it all, insects, like all animals, are categorised using a hierarchical system. The example below shows the white-tailed bumblebee (*Bombus lucorum*).

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Apidae
Genus: Bombus
Species: Bombus lucorum

A class of insects

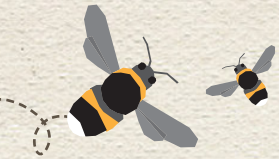
All insect pollinators belong to the class **Insecta**, which has segmented bodies, jointed legs, and external skeletons.

Establishing order

The next step down from class in the hierarchy is **Order**. For insects, this splits into:

Hymenoptera:

A large order of insects, which bees and bumblebees, wasps and sawflies are all part of.



Diptera:

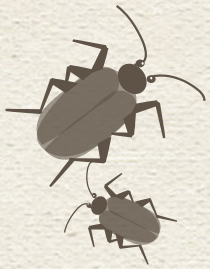
Many winged insects are commonly called flies, but the name actually applies only to members of the order Diptera – the true flies.

Lepidoptera:

Butterflies and moths are from this order of insects, which is one of the most widespread and recognisable insect orders in the world.

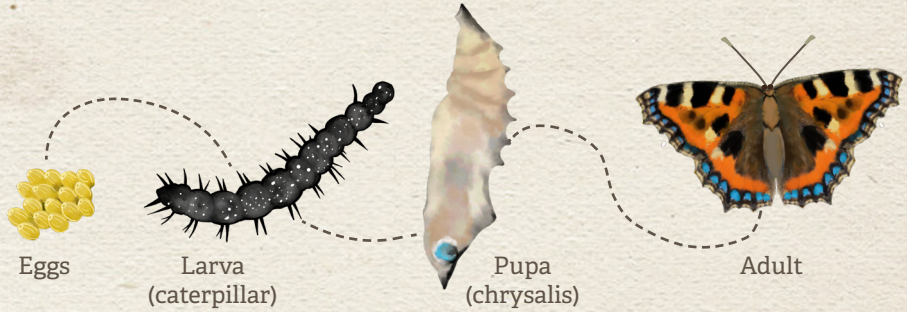
Coleoptera:

Beetles are a group of insects that form the order Coleoptera.



Stages of life

Like all insects, pollinators have a fascinating four-stage life cycle, which can vary greatly from species to species. Whilst the majority of pollinators have an annual life cycle, some species like the tortoiseshell butterfly have two generations.



The beginning

For most insects, the egg stage is very short, lasting only a few days. However, some insects may hibernate in the egg stage to avoid extreme conditions, in which case this stage can last several months.

Peak season

Most insect pollinators synchronise their life cycle with the flowering season of their preferred food source, and as a result the majority emerge as flying adults ready to feed and breed. While the flight times vary from species to species depending on when their preferred food source is in bloom, the busiest flight times are spring and summer.

Overwintering

Pollinators overwinter in different stages of their life cycle, depending on species. Many species overwinter or pupate in the soil, on plant stems and leaves, on decaying wood, and in hedgerows. Therefore, leaving areas undisturbed in winter is hugely beneficial for them.

The next generation

Depending on the species, adults either hibernate or die off during winter. For example, fertilised females of bumblebee species hibernate in order to lay their eggs when the weather gets warmer, but males and any workers die off. Because of this, their survival is vital for the success of the next generation.

Bumblebees: Hymenoptera

Buff-tailed bumblebee © Mike Langman

Role as a pollinator:

Different bumblebee species have different lengths of tongue, which means they can pollinate a wide array of flowers. In terms of pollen deposits and working speed, bumblebees are said to be eight times more efficient than honeybees in pollinating crops.

Characteristics:

Bumblebees are generally **larger (10–25mm)** and **rounder** than honey or solitary bees

Most bumblebees are **'social'** and live in a colony comprised of a queen and workers (also female). New queens and males are reared later in the year

Bumblebees usually **forage 1–3km** from their nest

They have **dense, hairy bodies,** often with **coloured bands.** These bands vary in size and colour with each species

A few species are parasitic and are known as **'cuckoo'** bumblebees, as they lay eggs in another bumblebee's nest and leave the workers of that nest to rear the young

Unlike female bumblebees, **males and cuckoo bees don't have pollen sacs**

Cuckoo bee © Penny Frith

Female bumblebee © Jon Hawkins – Surrey Hills Photography

When to see bumblebees: February–October

DID YOU KNOW?

Bumblebees can warm themselves up by vibrating their flight muscles to generate heat, allowing them to fly when the air temperature is close to freezing!

There are 24 species of bumblebee in Britain.

Many of the more common species, such as the white-tailed bumblebee or common carder bee, are widespread across Cumbria. Look out for them in gardens and parks. Rarer species such as the bilberry bumblebee can be seen in upland areas, especially where bilberry and heather grow.

Solitary bees: Hymenoptera

Mining bee © Mike Langman

Role as a pollinator:

The dry pollen from flowering plants clings to special hairs called 'scopa' on their abdomen and legs, and is carried from one plant to another. Because of this, solitary bees are one of the most effective pollinators: 120 times more effective than a single honeybee.

Characteristics:

Solitary bees can be found **nesting in holes** in soil, sand, decaying stumps of wood, rock fissures, walls and hollow plant stems

Like other bees, and wasps, they have **two pairs of wings**

They don't have pollen sacs; instead, females can often be seen carrying bright yellow pollen on their underbelly or legs

Mining bee © Chris Lawrance

They live alone, rather than in a colony, but they can often be found living close to each other, sometimes even using the same entrance hole

Solitary bees **are docile, generally hairy, and vary greatly in size (5mm–220mm)**

Solitary bees can be split into three main groups

Bees that nest in the ground: e.g. mining bees and flower bees

Cleptoparasitic bees: e.g. nomad bees that are essentially homeless, and parasitise the nests of other solitary bees

Bees that nest in crevices, dead wood and walls: e.g. leaf-cutter bees and mason bees

When to see solitary bees: March–November

DID YOU KNOW?

Solitary bees do not have a store of honey to protect so are not aggressive. Females will sting only if handled roughly or trodden on. As with wasps and bumblebees, males do not sting.

There over 250 species of solitary bee in Britain.

The red mason bee is common in Cumbria. Look out for it in parks and gardens during the springtime. Rarer species such as the wool carder bee can be found in coastal areas.

Wasps: Hymenoptera

Common wasp © Mike Langman

Role as a pollinator:

Since wasps generally do not have a fur-like covering of soft hairs, pollen does not stick as well to their bodies. However, even without hairs, several wasp species are able to effectively transport pollen, therefore contributing to pollination.

Characteristics:

Wasps are important for pest control as the workers hunt insects like caterpillars and greenfly to feed to their larvae. They do not need much protein themselves, but they do need sugar, so they visit flowers for nectar, making them helpful in the pollination of fruit crops such as raspberries.

Wasps have a distinctive narrow waist that separates the abdomen from the thorax

Mason wasp © Linda and John Reinecke

They vary in colour, from the familiar yellow striped, to brown, metallic blue, and bright red

Wasps can be classified into three groups: social, solitary and parasitic. Social wasps, such as the common wasp, live in nests made out of chewed wood. More gruesomely, parasitic wasps do not build a home for their offspring, but lay their eggs on or in a living animal or plant host, depending on the species

When to see wasps: April–November

DID YOU KNOW?

Nearly every pest insect on earth is preyed upon by a wasp species, either for food or as a host for its parasitic larvae. Wasps are so adept at controlling pest populations that the agriculture industry now regularly deploys them to protect crops, and they are a great asset to your garden too!

There are around 160 wasp species in the UK. The common wasp is a social wasp and a frequent visitor to gardens. The less-well-known ruby-tailed wasp can be found in sandy and rocky habitats like quarries, outcrops and walls.

Flies: Diptera

Marmalade fly © Mike Langman

Role as a pollinator:

True flies are one of the largest groups of pollinators in the UK and are able to fly in extreme weather conditions. Because of their abundance and ability to pollinate when other species are not flying, they are very effective pollinators.

Characteristics:

The habitats, life cycles and characteristics of true flies are fascinating and wide ranging. The most important fly pollinators include hoverflies; these are also known as flower-flies, as adults primarily feed on nectar and pollen so can be seen hovering or nectaring at flowers. Flies are an ancient group and were probably among the first pollinators of early flowering plants.

Many true flies mimic bees and wasps to protect themselves. They often have spots, bands or stripes of yellow or brown against a dark-coloured background, sometimes with dense hair covering the body surface

Volucella bombylans hoverfly © Linda and John Reinecke

White-tailed bumblebee © Derek Moore

Adult true flies have **only one pair of wings,** distinguishing them from bees and wasps, which have **two pairs**

When to see flies: January–December

DID YOU KNOW?

The name Diptera is from the Greek for 'two wings'.

There are around 7,000 known species of Diptera in the UK and new ones are being discovered every year! Look out for our most common hoverfly, the marmalade fly, which can be found in gardens, parks and woodlands. As the climate warms, you may also see the rare hornet hoverfly as it heads north from the south of England.

Butterflies: Lepidoptera

Peacock butterfly © Mike Langman

Role as a pollinator:

Butterflies search for nectar during the day and, as they visit flowers, pollen clings to their legs. They do not return to a nest like bees, so butterflies can travel more widely and carry pollen greater distances.

When to see butterflies: March–October

Characteristics:

Most butterflies have **slender antennae,** which are **club-shaped at the end**

Heath fritillary © Jim Higham

DID YOU KNOW?

Female butterflies taste with their feet. This is how they find the right plant to lay their eggs on. They have receptors on their legs similar to the taste buds of the human mouth, only 200 times stronger!

They have two distinct types of flight pattern.

One is a straight, fast flight which is used to move between suitable habitats. When foraging for nectar, they adopt a slower flight pattern and often fly in loops, which is thought to help them identify flowers

Butterflies have **four wings** that are covered with colourful, iridescent scales

They flap their wings in synchronisation when in flight and generally hold them erect when at rest

Unlike some moths, butterflies **are not active at night** and they prefer to fly on bright sunny days with low wind speeds

There are 59 species of butterfly in the UK.

The peacock and orange-tip butterflies are very common in Cumbria. They are regular visitors to our gardens where they feed on nectaring flowers like buddleia. Northwest Cumbria is home to the smallest UK butterfly – the small blue. Numbers have declined dramatically and it's a priority species for conservation. Cumbria Wildlife Trust is working closely with Butterfly Conservation to protect its habitat to ensure it doesn't disappear forever. Its preferred food source is kidney vetch.

Moths: Lepidoptera

Cinnabar moth © Mike Langman

Role as a pollinator:

As with butterflies, pollen clings to their legs as they search for nectar. Moths carry pollen over greater distances than bees. As a result, both moths and butterflies may help to prevent inbreeding among plants. Nocturnal species of moth also support plant species that benefit from pollination after dark.

When to see moths: January–December

Characteristics:

Small copper butterfly © Jon Hawkins – Surrey Hills Photography

Nocturnal moths heat up their **flight muscles** by vibrating their wings, as the sun's radiant energy isn't available to serve that purpose

Unlike butterflies, they do not have **club-shaped antennae**

Elephant hawk-moth © Tom Marshall

A surprising number of species **fly during the day**

Moths usually have **plump furry bodies**

Contrary to popular belief, **moths vary hugely in colour** – there are lots of bright and beautiful species

DID YOU KNOW?

Moths have an excellent sense of smell and are drawn to flowers that have a strong scent.

There are around 2,500 species of moth in the UK and many are found in Cumbria.

The cinnabar moth flies during both day and night. You are likely to see it in grasslands, gardens, waste ground, pastures and hedgerows.
Look out for the fascinating female vapourer moth – it has only rudimentary wings and isn't capable of flying.
It can be found in a variety of habitats, including woodland, parks, gardens, hedgerows and heathland.

Beetles: Coleoptera

Wasp beetle © Mike Langman

Role as a pollinator:

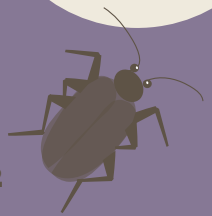
Beetles are not generally known for their role as pollinators; however, some species do feed exclusively on flowers, and others supplement their diet with nectar and pollen. These include species such as the soldier beetle, thick-legged flower beetle, cockchafer and pollen beetle. Beetles are best suited to picking up sticky pollen grains, which attach to their hard outer-bodies. Most beetle-pollinated flowers are flattened or dish-shaped, because the pollen is more easily accessible.

Characteristics:

They range in size, colour and shape, but all have **biting** or **chewing** mouthparts

Cockchafer © Linda and John Reinecke

Not all beetles have wings, but most do. They have hard forewings that are used to protect the hindwing and body



Beetles are generally characterised by their visibly **hard exoskeleton**, which acts as an armoured defence

DID YOU KNOW?

Fossil records suggest that beetles were the first pollinators on earth. In fact, it is believed they have been pollinating plants since before the time of the dinosaurs!

When to see pollinating beetles: April–October

There are around 4,000 species of beetle found in the UK.

A clever mimic, the wasp beetle is black and yellow and moves in a jerky, flight-like fashion, fooling predators into thinking it is a common wasp. In fact, the wasp beetle doesn't sting and is completely harmless. Look for it in hedgerows and woods during summer. You may also see the common cockchafer, which, although widespread, is rarer in the north. It be seen at dusk and in the evenings in parks and gardens.

Problems for pollinators

Vanishing insects

Sadly, our wild pollinators are in trouble. More than half of UK bee, butterfly and moth species have declined in the past 50 years, and 30 species of bee face extinction.

Nature networks

Much of the remaining flower-rich habitat on which our pollinators depend is now seriously fragmented or degraded. Insects are unable to travel long distances without resting or refuelling, and this fragmented habitat means they have less food available to them within flying distance.

Get Cumbria Buzzing! aims to tackle this by creating pollinator-friendly pathways where they can move freely throughout northwest Cumbria. By getting involved, you can help too! You will find lots of helpful hints and tips on how to do this on the next page.

Staggering losses

Over the last 75 years we've lost 97% of our flower-rich meadows, 50% of our hedgerows, and 60% of flowering plants are in decline. This is largely due to the intensification of agriculture, the increased urbanisation of our villages, towns and cities, and the construction and expansion of major road networks.

Ringlet butterfly © Rachel Scopes

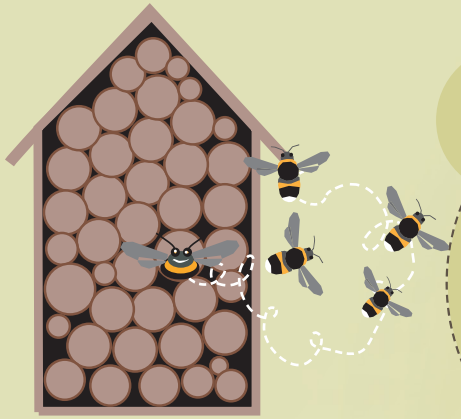
Create a pollinator haven at home

1 Plant nectar and pollen-rich plants

It doesn't matter what size your space is, there's always room for wild flowers! Set aside an area or even a pot to grow nectar-rich plants and watch the bees and butterflies buzz in. Dandelions are crucial nectar and pollen sources for queen bumblebees emerging from hibernation, whilst ivy provides late-summer nectar for butterflies and other pollinators that are getting ready to hibernate.

2 Extend the flowering season

Grow a variety of plants that flower from early spring to late autumn.



3 Build a bee hotel

Solitary bees are important pollinators and a gardener's friend. Help them by building a bee hotel in your garden and watch them buzz happily about their business.

4 Leave a log pile

Putting together a log pile will create a refuge for beetles and hibernating hoverflies, wasp and bee species.

Soldier beetle © Katrina Martin/2020VISION

Have you seen a bee, hoverfly, wasp, butterfly, moth or beetle?

Record your sightings

When it comes to pollinators in Cumbria, many of the species are vastly under-recorded, and we have large areas where nothing is recorded at all. Your records are vital and will help build up a better picture of how our pollinators are faring across the county. With this information we can focus our efforts where they are most needed.

Get online

Simply go to our webpage:

www.cumbriawildlifetrust.org.uk/getcumbriabuzzing

and scroll down to **'Record the Buzz'**.

This will take you to Cumbria Biodiversity Data Centre's recording page where you can add your sightings.

Further reading

We hope that once you get started you will want to know more about the many other wild pollinators in the UK. Many excellent field guides are available, and helpful resources are also provided by Butterfly Conservation, Bumblebee Conservation Trust and the Field Studies Council. Plus, many more can be found on our web page:

www.cumbriawildlifetrust.org.uk/getcumbriabuzzing

Remember, if you can't identify individual species don't let it put you off recording! You can always record the group of insects e.g. butterfly or bumblebee. If you snap a good picture and submit this with your record, an expert can check it.

Small blue butterfly @ Steve Doyle

THE wildlife TRUSTS

Cumbria
Wildlife Trust

This publication has been produced as part of Cumbria Wildlife Trust's 'Get Cumbria Buzzing!' project which aims to inspire everyone to do something positive for pollinators, whether it's planting wild flowers in your garden or window box, or helping to record the different pollinator species you see. Our ambition is to help reverse the decline of pollinators, and we need your help!

Working with local communities, volunteers and partners, we will create 115 hectares of flower-rich habitat, providing vital stepping stones for our pollinators to move freely across northwest Cumbria. We're also working with Cumbria Biodiversity Data Centre to create an online Pollinator Atlas to map all sightings submitted – including yours!

Find out more

www.cumbriawildlifetrust.org.uk/getcumbriabuzzing

HERITAGE FUND

Contact us

Email: mail@cumbriawildlifetrust.org.uk

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Front cover photo red-tailed bumblebee © Rachel Scopes. Design and illustrations Lisa Hornby e-graphics.co.uk