



The Royal
Society of Biology:
**The UK's favourite
flower poll**



**Educational resources
and activities**



Activities and resources

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Introduction

Why are flowers important?

The theme for this year's Biology Week Poll was chosen to highlight the importance of flowers not only environmentally, but culturally and economically.

In the last 70 years, 95% of meadows have disappeared, making way for housing and infrastructure, resulting in this environment covering just 1% of the UK. This has undoubtedly had a negative impact on the abundance of some of the flowers featured in this poll.

That's not to say all plants live in flowers: flowers are also found in a number of other wild habitats including hedgerows, forest clearings, and even cliff edges.

Not only are all of the flowers listed attractive in their own right, but they can also provide many health benefits, including the use of flowers medicinally; for example, the foxglove was the original source of digoxin isolated in the 1930s which led to the development of a medicine used to treat heart conditions.

Flowers are vital for maintaining certain wildlife populations, providing nectar and pollen for many bird and bee species. This is a critical step in cross-pollination of plants and flowers, creating seeds and maintaining diversity in a habitat. Flowering plants also aid in pollination of food crops, therefore contributing to the economy.

The flowers we have listed all contribute crucial habitats for insects which in turn support bird and other small animal populations, again contributing to the diverse nature of the habitats in which these flowers live.

How to use these resources

The resources we have developed to support our annual species poll can be used in the classroom, at home, or for reference.

Each activity is matched to a suitable age group, and the information pages can be used as a starting point for understanding more about botany, or as a basis for other activities.

Each flower that features in the poll also has its own factfile, including details on habitat, soil preference, pollination and more.

If you would like larger versions of our resources, or printed copies sent to your school or another UK based address, contact philippa.skett@rsb.org.uk

How do we classify flowers?

A whistle-stop taxonomy tour

For all the species of living organisms on our planet, there is a universal naming system. This system is known as binomial nomenclature, and ensures that, even if an organism has different names in different languages, there is a common scientific name for classifying that species that is the same the world over.

This system gives the organism a two-term name, with the first term referring to the genus, and the second referring to the species

For example, daffodil is called *Narcissus pseudonarcissus*; with *Narcissus* being the genus and *pseudonarcissus* the species. These two terms are always used in conjunction with one another when referring to a species.

Higher up the scale of classifying species, there are different divisions. The broadest classification of an organism is the kingdom it belongs to -- for plants the kingdom is Plantae. The classification of species in this way is called taxonomy.

In total there are seven taxonomic ranks:

Kingdom
Phylum
Class
Order
Family
Genus
Species

These ranks get more specific and less broad as you go descend from Kingdom through to species. For example, the taxonomic rank for the daffodil is:

Kingdom	<i>Plantae</i>
Phylum	<i>Magnoliophyta</i>
Class	<i>Magnoliopsida</i>
Order	<i>Asparagales</i>
Family	<i>Amaryllidaceae</i>
Genus	<i>Narcissus</i>
Species	<i>N. pseudonarcissus</i>

Plants are most often grouped at Family level. This is the stage of classification where the everyday person would be able to identify differences between flowers.

There are several hundred plant families, and different botanists will recognise different ones, sometimes classifying them instead as 'sub-families'. Names of families end in *-aceae*.

The lifecycle of a plant

Which plants are officially late bloomers

Flowering plants are generally classified into annuals, biennials or perennials, depending on how long it takes to complete their life-cycle. This can vary depending on the plant's location or purpose.

Annuals

Annual plants grow and complete their life-cycle in one year. They will germinate and produce flowers, foliage and mature seeds, then die back within the year. The seeds from this plant are then left behind, distributed by animals, wind or water, to take root elsewhere and continue the cycle for the next season.

In general, annuals need plenty of water and soil with good aeration to allow carbon dioxide to reach the roots of the plant.

Perennials

Perennial plants will grow and flower for more than a year, often on a continuous cycle for many years. The plant will grow from a seed, flower and germinate, and then degenerate slightly in the winter. The plant will then flower again the following spring.

The difference between perennials to annuals and biennials, is that the parent plant doesn't die after producing mature seeds. Some perennials, such as some types of bamboo, have a cycle of up to 100 years!

Biennials

Biennials take two years to complete their life-cycle. They will generally grow foliage and leaves close to the ground in the first year, for example spring 2018, and flower the following year, spring 2019, which is when they produce mature seeds. Biennial plants will remain dormant in the winter between these two stages of growth.

Most will die at the end of the second year and the seeds are left to produce more plants of the same species.

The importance of pollination

How plants reproduce

Pollination is the process of reproduction for plants. The flowers on plants produce seeds which, when pollinated, go on to create more plants of the same species. Flowers are therefore vital in making sure a plant species continues to survive and succeed.

Pollen is the male sex cell (gamete) and is held on the anther which, along with the filament, makes up the male part of the flower, the stamen.

Pollen has to travel to the stigma (the female part of the flower) and down to the ovary where the female sex cells are held, to cause pollination.

Usually flowers will possess both male and female parts and have the ability to self-pollinate.

Cross-pollination between flowers of the same species is most common however, and occurs by wind or when pollinators such as bees and other insects transfer the pollen from flower to flower.

The pollinators will pick up pollen on tiny hairs on their legs and other body parts when they reach into the flower to drink the sugary nectar held in the nectary.

When a plant is pollinated by insects in this way, they will generally have adaptations such as colourful petals and a strong fragrance to attract the insects to them. The petals of a flower are very important for pollination.

Conservation of vital insect species, such as bees, is important to keep crop and fruit harvests successful to meet food demands -- an estimated one third of the food we consume is dependent on insect pollination.

After the pollen grain reaches the ovary it will fuse with an ovule. This is known as fertilisation and causes the female parts of the flower to develop into a fruit and seeds.

Once the plant is ready to disperse the seed, it may do so by encasing the seed in flesh that is attractive to birds or mammals, that will eat the fruit and disperse the seeds once the fruit is excreted.

Other methods of seed dispersal include by the wind, by water, by attaching to animals as they pass by the plant, or even by plants developing physical mechanisms to forcefully launch seeds away when ready.

Once the seed finds the right conditions to propagate, the whole cycle begins again.

Flower habitats and range

Different climates across the UK

Although the UK isn't known for its consistency (or sunshine for that matter) when it comes to the weather, there are still plenty of beautiful flowers that thrive in different regions and habitats.

With winters in Britain getting shorter and wetter than in previous decades, flowers such as snowdrops that blossom in the late winter to early spring from bulbs are growing even earlier.

In the south-east of the UK, species such as delphiniums are struggling to survive the drier summers. Species like these favour damper soils which are getting rarer in the summer months. The populations of these flowers in the north-west however, where rainfall is more frequent, are more stable.

In wetter regions, particularly in the north of England and Scotland, bulbous flowers do not cope well with the water-logged soils, and hence populations struggle to survive.

All that being said, the growing season for flowering plants is said to be a month longer now than it was in 1990, giving plants a longer timeframe in which to germinate. This is due to the warmer weather, so more plants are able to grow over a longer period, and also similarly due to a decline in the number of days that frost is recorded.

At present, the plant growing season is on average 280 days. This is defined by periods where the daily temperature is above 5°C for 5 or more consecutive days.



Illustrating the pollination sequence

Activity notes

Suitable for children aged 8 and upwards

This activity can be conducted in groups or pairs (for younger years), or individually.

1. Groups of three or four children get a copy of the flower parts and functions cards and must match each part to their respective function for pollination
2. Each child then gets a print out of the empty pollination sequence
3. Once children understand the function and purpose of each part of the flower, they can illustrate the pollination process under the stages set out on page 5
4. Detailed diagrams of parts of the flower are encouraged

To increase the difficulty of the task, the worksheet on page 5 can be cut up, and children have to put the pollination sequence in the correct order before illustrating the process.

Older children may be able to also do the activity without guidance from the descriptions in the box.

Further activity

Refer to the 'flower parts and functions' notes to talk through the function and importance of each part of the flower.

Refer to the flower fact files to give older children further information on specific species, and further reading on the importance of native species, pollination and the threats posed to them.

Illustrating the pollination sequence

Use the information provided to draw a sequence of events to show the process of fertilisation and pollination in a flower, labelling flower parts where relevant.

Pollinating insects such as bees, butterflies and beetles search for a food source, nectar, from inside a flower

Colourful, patterned petals and attractive smells of the flower attract the insect. These are adaptations used to help flowers pollinate

The insect lands on the flower to reach the nectar and pollen grains on the anther of the flower stick to tiny hairs on the insects legs and body

The insect moves on to another flower and the pollen is moved onto the stigma of this flower

The pollen moves to the ovary of the flower, causing fertilisation

The ovary gets larger and forms a seed, which is later released, forming a new flower

Labelling a flower

Activity notes

Suitable for children aged 8 or above

This activity can be conducted as a quick starter activity when done in class, with the picture of the unlabelled flower at the front and the labels being put on one by one. Large versions of the labels are available on page 11.

The activity can also be done in smaller groups or by individuals using the worksheet on page 10.

Refer to the 'flower parts and functions' notes to talk through the function and importance of each part of the flower.

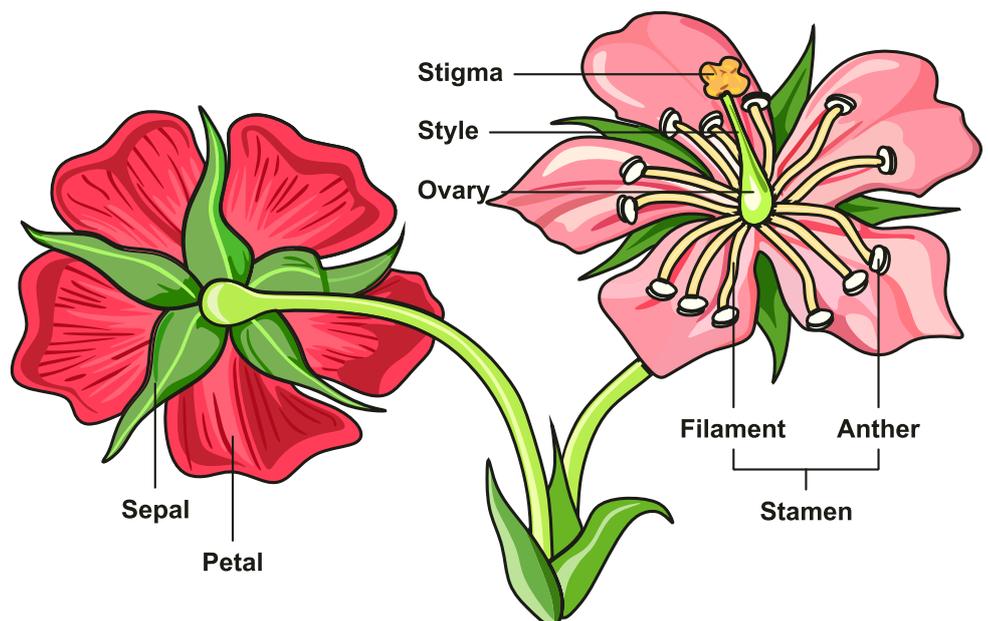
1. Cut out the label and their descriptions
2. Each group gets a print out of the flower with no labels and the set of cards naming parts of the flower
3. Groups must match the flower parts cards to the respective parts on the picture of the flower
4. For older children, identify the male part (stamen) and female part (stigma) to the class, and the male gametes (pollen) and female gametes (in the ovary)

Further activity

Refer to the flower fact file guides to give further information on specific species.

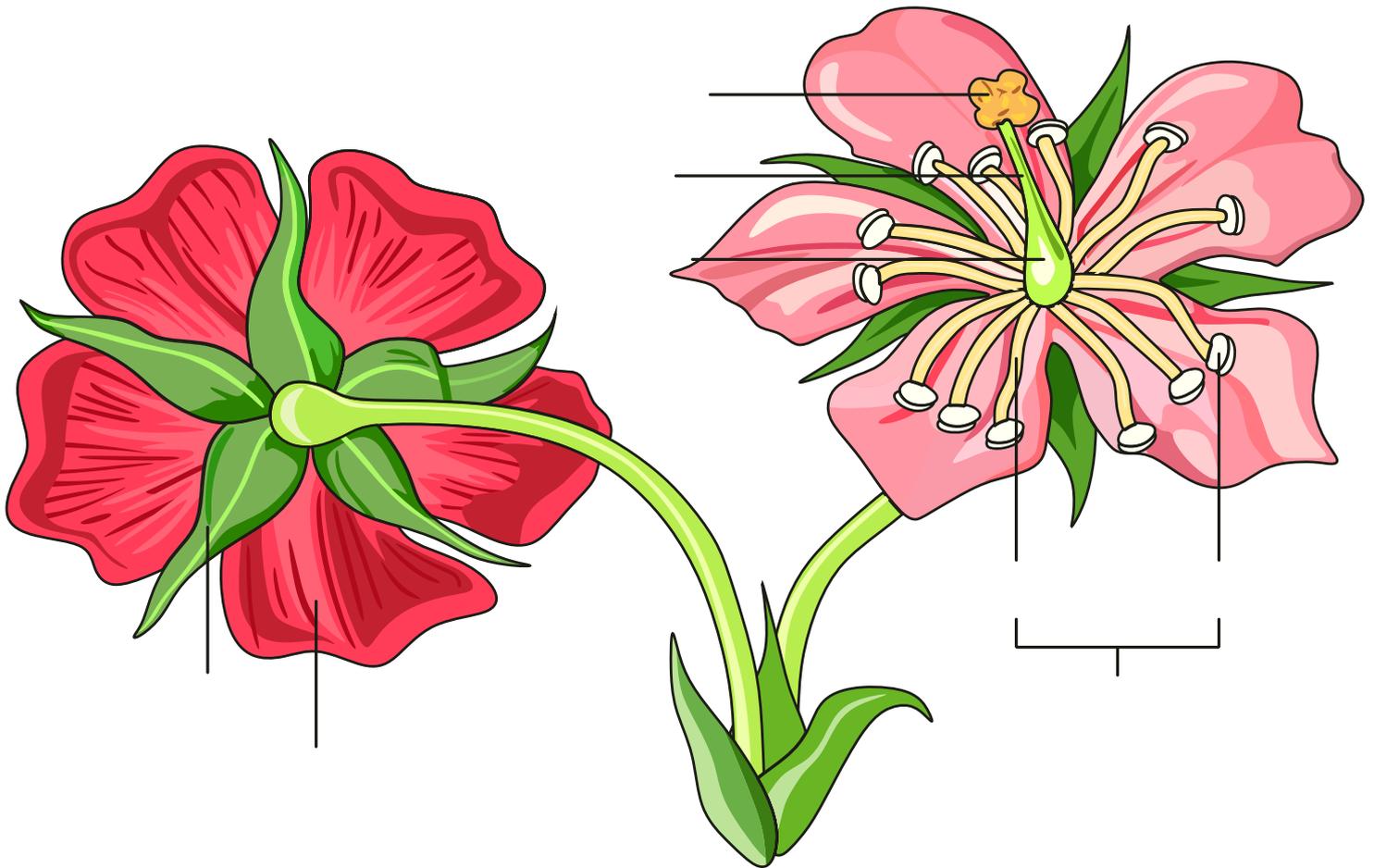
Answers

Petal	Coloured, scented or patterned to attract pollinating insects
Anther	Firmly attached to filament inside the flower. Produces sticky pollen grains which are the male gametes
Stamen	Male part of the flower made up of a filament with an anther at the top
Stigma	Sticky female part of the flower, collects pollen grains from insect
Ovary	Produces female gametes contained in ovules
Sepal	Modified leaves that protect the flower and support the petals
Style	Coloured, scented or patterned to attract pollinating insects
Filament	The stalk that holds up an anther



Labelling a flower

The boxes below contain labels for different parts of the plant and definitions. Cut out the boxes and stick both the correct label and the definition to the diagram below.



Petal	Stamen	Coloured, scented or patterned to attract pollinating insects	Coloured, scented or patterned to attract pollinating insects
Firmly attached to filament inside the flower. Produces sticky pollen grains which are the male gametes	Male part of the flower made up of a filament with an anther at the top	Filament	The stalk that holds up an anther
Produces female gametes contained in ovules	Anther	Stigma	Sepal
Style	Sticky female part of the flower, collects pollen grains from insect	Ovary	Modified leaves that protect the flower and support the petals

Petal

Coloured, scented or patterned to attract pollinating insects

Anther

Firmly attached to filament inside the flower. Produces sticky pollen grains which are the male gametes

Stamen

Male part of the flower made up of a filament with an anther at the top

Stigma

Sticky female part of the flower, collects pollen grains from insect

Ovary

Produces female gametes contained in ovules

Sepal

Modified leaves that protect the flower and support the petals

Style

Coloured, scented or patterned to attract pollinating insects

Filament

The stalk that holds up an anther

Flower Identification Bingo

Activity notes

Suitable for children aged 8-11

This activity can be conducted as a class separated into smaller groups, in the classroom or outside in the school grounds if some species are present, or as a take-away activity for children to do in their own time if some of the species are local to the area.

1. Separate children into approximately five groups, giving a different bingo card to each
2. Choose flowers to read out at random, or for added difficulty, hold up a larger photo of just the flower without giving its name
3. Groups cross off the flower on their sheet when it is called out
4. The first group to get a row of four across, down, or diagonally has to call out BINGO

Further activity

1. If the children finish quickly, keep playing until a group gets two rows of four, then three rows, then a full house crossed off.
2. Use the flower fact files provided on rsb.org.uk to give a fact about each flower after it has been read out e.g. habitat, height, flowering months etc.
3. If the activity is being used outdoors, get the children to note down the habitat they found each flower in, any nearby insects they found, and the conditions of the soil the flower was growing from.

Wild flower bingo: card 1



Poppy



Daisy



Cornflower



Common knapweed



Bluebell



Dog rose



Dandelion



Buttercup



Lily of the Valley



Snowdrop



Honeysuckle



Herb Robert



Field scabious



Foxglove



Primrose



Cow parsley

Wild flower bingo: card 2



Bluebell



Cornflower



Daisy



Cow parsley



Poppy



Snowdrop



Buttercup



Dandelion



Field scabious



Dog rose



Primrose



Foxglove



Lily of the Valley



Herb Robert



Honeysuckle



Common knapweed

Wild flower bingo: card 3



Honeysuckle



Foxglove



Cornflower



Dog rose



Primrose



Common knapweed



Herb Robert



Snowdrop



Lily of the Valley



Buttercup



Poppy



Dandelion



Cow parsley



Daisy



Bluebell



Field Scabious

Wild flower bingo: card 4



Herb Robert



Snowdrop



Buttercup



Field scabious



Poppy



Daisy



Honeysuckle



Foxglove



Dandelion



Cornflower



Primrose



Bluebell



Dog rose



Common knapweed



Lily of the Valley



Cow parsley

Wild flower bingo: card 5



Cow parsley



Dog rose



Foxglove



Poppy



Herb Robert



Primrose



Bluebell



Buttercup



Common knapweed



Lily of the Valley



Daisy



Honeysuckle



Snowdrop



Dandelion



Cornflower



Field scabious

The RSB flower poll 2018 shortlist

Why did we pick these flowers for our shortlist?

The flowers chosen due to their wide distribution across the UK and their prevalence as household names and symbols.

They were also selected due to their ability to grow in the wild, meaning that they can, and often do, grow in habitats where they were not intentionally planted, and can cope with the local conditions and environment.

The shortlisted flowers are also common country walk favourites and are readily available as cultivated plants or seeds raised from seed sustainably collected in the UK.

Our shortlisted species are:

Primrose
Lily of the Valley
Dog rose
Bluebell
Foxglove
Honeysuckle
Common Daisy
Snowdrop

Primula vulgaris
Convallaria majalis
Rosa canina
Hyacinthoides non-scripta
Digitalis purpurea
Lonicera periclymenum
Bellis perennis
Galanthus nivalis

Common poppy
Meadow buttercup
Daffodil (wild)
Scotch Thistle
White clover
Cornflower
Sunflower

Papaver rhoeas
Ranunculus acris
Narcissus pseudonarcissus
Onopordum acanthium
Trifolium repens
Centaurea cyanus
Helianthus annuus

Using these factfiles

Each flower that features in the poll has its own factfile, detailing a number of facts about each plant, including habitat, soil preference, pollination and more.

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Primrose

Primula vulgaris

Family	Primulaceae
Size	10-30 cm high
Colour	Pale yellow with dark orange centres, with five notched petals
Habitat	Open woodland and grassland, hedgerows
Soil	Moist and humus rich
Flowering months	February-April
Life cycle	The primrose is biennial, with wild plants shedding their seed during the Autumn months. These seeds go dormant until conditions are right for germination, and they may remain dormant for years. They sprout in spring and flower in summer.
Pollination	The primrose self-pollinates, so each generation is genetically identical to the last.
Seed dispersal	Dispersed by ants and rodents, which are attracted by oils in the seed coats.
Associated species	Provides nectar for butterflies. Vine weevils eat primrose roots as grubs and leaves as adult.

In some regions of Britain, primroses are used as woodland indicator species -- a woodland has to be older than 400 years to be classed as an ancient woodland, and it takes around this long for certain flora species to colonise, including the primrose, honeysuckle, and some species of orchid.

Over collection and theft led to the taking of primrose plants from the wild becoming illegal in the UK Wildlife and Countryside Act 1981.



Lily of the Valley

Convallaria majalis

Family	Asparagaceae
Size	Up to 20cm tall
Colour	White and bell-shaped
Fruit	Red poisonous berries
Habitat	Dry shaded woodland and even limestone pavements
Soil	Calcareous and alkaline soils
Flowering months	May to June
Life cycle	Perennial. After sprouting in spring, the plant forms large, interconnected colonies by spreading underground stems known as rhizomes.
Pollination	Lilies are self-sterile: they will not produce seeds if their own pollen is placed on their stigma. They can only be pollinated by pollen carried from other plants by insects.
Seed dispersal	By birds that eat their red berries.
Associated species	Some butterfly larvae, and often fed on by the leaf beetle as they can tolerate the toxic chemicals found in the flower's leaves. Bees and butterflies are

The Lily of the Valley is highly poisonous, and eating its leaves can cause vomiting, reduced heart rate and blurred vision.

The Lily of the Valley was awarded the Royal Horticultural Society's Award of Garden Merit, based on an assessment of the plant's performance under UK growing conditions, as it is very suited for growth across the UK.



Dog rose

Rosa canina

Family	Rosaceae
Size	1-5m tall
Colour	White through to deep pink large, five petalled flowers with a faint, sweet smell
Fruit	Red oval shaped hips that develop in autumn, which form in small clusters
Habitat	Hedgerows, woodland edges and on scrubland, in both sun and shade
Soil	Suited to many kinds of soils, except soil which is nutrient poor or very acidic
Flowering months	June to July
Life cycle	Perennial - they grow and bloom over spring and summer, and then die back in autumn. They can grow from seed over many years.
Pollination	Aided by butterflies and bees, but can self-pollinate in wet weather.
Seed dispersal	Dispersed by birds and other animals that eat the hips.
Associated species	Pests include rose aphids (<i>Macrosiphum rosae</i>), which feed on plant sap, beetles, mites and bees that all feed on leaves.

The dog rose is the county flower of Hampshire, and is considered to be the rose of medieval European heraldry.

Its fruit (rose hips) has a higher level of vitamin C than orange juice and is high in certain antioxidants. Some people use the flower to make syrup, tea, marmalade or rose-hip syrup. The hairs inside the hips are an irritant sometimes extracted to make an itching powder.

The dog rose is considered an invasive species in the high country of New Zealand.



Bluebell

Hyacinthoides non-scripta

Family	Asparagaceae
Size	Up to 50cm tall
Colour	Violet through to blue
Habitat	Deciduous woodland, hedgerows
Soil	Slightly acid soil
Flowering months	April to June
Life cycle	Perennial, bulbous. They spend most of the year as bulbs underground and emerge to flower from April onwards. This early flowering is to take advantage of the sunlight that can still reach the woodland floor before the canopy fully grows.
Pollination	Popular with bumblebees.
Seed dispersal	These are dropped from the flower head directly onto the ground.
Associated species	Bees, hoverflies, butterflies and other insects feed on the bluebell flowers, which provide an important early source of nectar. They also are a host species for the fungus <i>Uromyces muscari</i> , which causes bluebell rust.

The UK is home to up to 50% of the world's *H. non-scripta* population, and it is the flower of St George, England's patron saint.

Bluebell sap was used to bind pages into the spines of books, and during the Bronze Age people used bluebell to set feathers in arrows. Bluebells also synthesise at least 15 biologically active compounds that are thought to protect them against plants and animals.



Foxglove

Digitalis purpurea

Family	Plantaginaceae
Size	1-2m tall, flowers 3-5cm long
Colour	Pink, purple, white
Fruit	A capsule encompassing many seeds, which changes colour from green to black when ripening.
Habitat	Woodland clearings, gardens, and hedgerows in partial sunlight or shade.
Soil	Slightly acidic
Flowering months	June to September
Life cycle	The foxglove is biennial: during the first year primary growth occurs with a basal rosette of leaves, whilst in the second year flowers blossom with secondary stem growth.
Pollination	Bees, especially those with long tongues, can reach up the length of the flower.
Seed dispersal	Each plant produces thousands of tiny seeds that are dispersed by the wind.

Foxgloves were the original source of digoxin, a heart medicine that can be used to treat a number of heart conditions. Leaves, flowers and seeds are fatally toxic to humans and some animals.

It is the county flower of Argyll, the West Midlands and Monmouthshire.

Folk myths suggest foxes wore the flowers on their paws to silence their footsteps to hunt prey.



Honeysuckle

Lonicera periclymenum

Family	Caprifoliaceae
Size	4-8m tall, but can spread up to 2.5 metres wide
Colour	Yellow, white, red, pink
Fruit	Bright berries
Habitat	Hedgerows, climber, enjoy full sun or partial shade
Soil	Fertile, humus rich, moist and well-drained soil
Flowering months	June to September
Life cycle	Deciduous perennial. Climbers flower in the summer, and shrubs flower in late winter, spring or summer.
Pollination	They are able to self-pollinate, but often are pollinated by moths or long tongued bees. Flowers become yellow once they are pollinated.
Seed dispersal	Dispersed by animals that eat their berries
Associated species	New shoots are vulnerable to aphid attacks

The honeysuckle produces most scent at twilight to attract more pollinating moths. Honeysuckle is often used to cover walls and fences.

Their berries are not edible, and should be avoided as they may cause nausea.

The honeysuckle is the County flower of Warwickshire.



Common Daisy

Bellis perennis

Family	Asteraceae
Size	Up to 15cm tall, flowers 2-3cm wide
Colour	White/pink with yellow central disc known as a capitulum (a flat cluster of florets)
Habitat	Grassland, meadows, towns and gardens
Soil	Most well-draining soils
Flowering months	June to August, but can appear all year round
Life cycle	The Common Daisy is a herbaceous perennial plant, and blooms from early midsummer.
Pollination	Mainly self-pollinated, although cross pollination can occur.
Seed dispersal	Carried by a combination of wind, rain or even attaching to animal fur.

Daisies are thought to have medicinal properties including easing coughs, treating wounds and bruises, slowing bleeding and relieve indigestion.

Daisies are found everywhere on Earth except Antarctica, but because they thrive in inhospitable conditions, are often considered weeds. 38 plant species spread across 22 genera have common names that include the word “daisy,” but all daisy species are members of the family Asteraceae and produce daisylike, composite flowers.

Each ‘petal’ is actually an individual flower as Common Daisies have composite flower heads, made up of lots of tiny flowers.

The Common Daisy is traditionally used to make daisy chains.



Snowdrop

Galanthus nivalis

Family	Amaryllidaceae
Size	7-15cm tall, flowers 1-3cm long
Colour	White, pale green
Fruit	Small, fleshy, spherical and green
Habitat	Hedgerows, woodland edges and on scrubland, in both sun and shade
Soil	Chalk, clay, loamy and damp
Flowering months	January to March
Life cycle	Perennial, and grow from bulbs. Snowdrops start to grow roots in the autumn, and in spring, leaves and flowers develop. During spring and summer, they begin to store food in their bulbs again for the next year.
Pollination	Mainly insect- and cross-pollinated, self-pollination can occur.
Seed dispersal	Ants distribute the seeds, which emit chemicals that attract them to the plant. Bulbs also may be distributed by animals, if dug up.

Early emerging Queen bumblebees may also spread snowdrop seeds when the weather warms up.

Snowdrop collectors are known as galanthophiles.

Snowdrops contain galantamine, which researchers are using to develop potential treatments for Alzheimer's disease.

The snowdrop is considered native, but was only first recorded in the wild in the UK in 1778.



Common poppy

Papaver rhoeas

Family	Papaveraceae
Size	Up to 70cm in height, flower 5-10cm diameter
Colour	Red with a black base of petals
Habitat	Fields and grasslands
Soil	Sand, clay, loam
Flowering months	May to October
Life cycle	Annual: the seedlings appear in spring, first forming a bud which then opens into the flower. Once pollinated, the petals drop off and a hard capsule remains that contains the seeds of the plant.
Pollination	Poppies are visited by a large range of insects for cross-pollination, although self-pollination can also occur.
Seed dispersal	The seeds are released through pores at the top of a capsule that scatters the tiny seeds widely when caught in the wind. The seeds can remain dormant for up to eighty years.

The poppy is the county flower of Essex and Norfolk and in Roman times the flower was sacred and associated with the goddess of agriculture.

Poppy seeds are released when the flower is disturbed, hence the abundance between trench lines in World War I. Following the publication of the poem 'In Flanders Fields' written by a Canadian volunteer medical officer in Ypres during the winter of 1915, the practice of wearing poppies to commemorate Armistice Day became popular.

A study on pollen production in UK meadows found that *Papaver rhoeas* poppies produce more pollen than any other plant. Their seeds are also edible, and oil made from the seeds is popular in France.



Meadow buttercup

Ranunculus acris

Family	Ranunculaceae
Size	Up to 1m tall, flowers 2-3cm diameter
Colour	Yellow
Habitat	Meadows, damp soil, pastures
Soil	Clay-like, calcareous and moist
Flowering months	April to September
Life cycle	Perennial: flowering lasts for two months, before seeds ripen and shed. In June, the first fruits appear, with peak fruiting occurring in mid-August, and each flower head containing around 30 seeds. Buttercups spend the winter months as a rosette of small leaves, with seedlings emerging from January to April.
Pollination	Various pollinator species, most populations are insect pollinated, but some populations are self-sterile.
Seed dispersal	Seeds tend to fall off the parent plant directly into soil below.

Buttercups are connected under the surface by a short creeping rhizome (root network), that remains at the base of the leaves of the plant. The rhizome is densely packed with starch and branches out in autumn to produce new shoots, hence why buttercups appear in clusters.

Due to its persistence as a weed in old, permanent grassland, the abundance of buttercup is considered an indicator of the age of the pasture it is found on, and is found up to 4,000ft above sea level in the UK.

The plant is thought to be native to Alaska and Greenland, but has been widely introduced across the world.



Daffodil (wild)

Narcissus pseudonarcissus

Family	Amaryllidaceae
Size	Up to 35cm tall, flowers 4-6cm diameter
Colour	Yellow
Habitat	Woodland clearings, meadows and fields, and enjoy sun or light shade
Soil	Sand, chalk or clay soil
Flowering months	March to April
Life cycle	<p>Daffodils reproduce either by producing seeds or bulbs. Seeds can be generated though cross-pollination, but it can take as long as seven years for a daffodil to grow from seed.</p> <p>More often daffodils asexually reproduce by splitting their bulbs into bulblets or developing small bulbs called bulbils on their stems.</p> <p>Bulbs are planted in autumn, ready for producing shoots in spring.</p>
Pollination	Daffodils can self-fertile, but may be fertilised by the wind or insects
Seed dispersal	Their small black seeds disperse via the wind
Associated species	Narcissus flies, mites and moths are among the pests that destroy daffodils from the inside of the bulb outwards, or by making holes in the outer bulb.

The daffodil is the national flower of Wales, and the county flower of Gloucestershire. The bulbs contain the poison lycorine, so are not safe to eat.

Wild populations are declining due to an increase in agricultural land and habitat mismanagement, although populations remain strong in western UK.



Scotch Thistle

Onopordum acanthium

Family	Asteraceae
Size	Up to 3m tall, flowers 2-6cm diameter
Colour	Dark pink, purple, lavender
Habitat	Dry grasslands, meadows
Soil	Sandy, clay or loam
Flowering months	July to October
Life cycle	Biennial; the plant germinates in autumn when rainfall increases after the summer months, and in the first year produces a rosette of spiny leaves. In the second year, the plant grows taller and produces flowers in the summer months. After pollination, the ovary of the plant swells and produces between 8,000 and 40,000 seeds.
Pollination	Self- and cross-pollinated
Seed dispersal	Wind dispersal
Associated species	The leaves provide food for some caterpillars, including the thistle ermine (<i>Myelois circumvoluta</i>).

The Thistle is the national flower of Scotland, but is native to most of Europe and Western Asia.

Seeds that germinate in autumn under ideal conditions will behave as biennial, but should they germinate earlier, they can behave as annual plants. Buried seeds can remain viable for years after scattering.



White clover

Trifolium repens

Family	Fabaceae
Size	Up to 7cm tall, flowers 1-2cm diameter
Colour	White and pink
Habitat	Grasslands and meadows
Soil	Sandy, clay or loam, or low fertility soils
Flowering months	July to September
Life cycle	Clover is a short-lived perennial which grows rapidly and spreads via stolons -- above-ground stems that allow for plants to asexually reproduce. Most of their growth takes part in Spring, and will flower from August through to January.
Pollination	Cross pollinated by bees
Seed dispersal	Via animals that eat the clover

The plant is identifiable by its white flowers and its trifoliate leaflets, known to some as the shamrock.

Shamrocks, a common symbol associated with Ireland, are considered to be either *Trifolium repens* or *Trifolium dubium*, although some other three-leaved plants are commonly referred to as shamrocks.

Different botanists over the years have tried to determine which species is considered to be the “true” shamrock: even Carl Linnaeus, considered to be the father of modern taxonomy, was unable to choose between species.

Although found commonly with three leaflets, they may sometimes appear with four (or even more!), which are considered to be lucky.



Cornflower

Centaurea cyanus

Family	Asteraceae
Size	40-90cm tall, flowers 1-3cm diameter
Colour	Blue
Habitat	Hedgerows or any sunny spot
Soil	Sandy, well draining
Flowering months	June to August
Life cycle	An annual plant, although seeds can remain viable for years until soil disturbance. They are also very hardy, and can be sown very early in spring and will develop strong roots during the cooler months.
Pollination	Hymenoptera (specifically <i>Apis</i> and <i>Bombus</i> sp.) are popular pollinators.
Seed dispersal	The flower drops seeds into the soil below.

Cornflowers were found in Tutankhamun's tomb and are thought to be over 3,000 years old. They are considered to be a symbol of remembrance in France, and are also its national flower, although they are native to the UK.

Dried, the flowers are used as medicines to treat digestive and menstrual illnesses.

Cornflowers are declining in the UK due to agricultural practices and competitive crops, and they were named as a priority species under the UK Post-2010 Biodiversity Framework.



Sunflower

Helianthus annuus

Family	Asteraceae
Size	Up to 3m tall, with the “flower” head (pseudanthium or composite flower of numerous florets) up to 40cm diameter
Colour	Yellow
Habitat	Fields and other open spaces where they can enjoy full sunlight
Soil	Will tolerate most soil, from slightly acidic to slightly alkaline
Flowering months	August to September
Life cycle	<p><i>Helianthus annuus</i> is an annual plant (although some sunflowers are perennial) that germinate quickly after planting in spring. They flower in the summer months. Once the outer petals of the sunflower open, the florets in the centre disk expand and begin to scatter pollen.</p> <p>After the florets are pollinated, the seeds then form underneath.</p>
Pollination	Frequent pollinators include Coleoptera, in particular spotted maize beetles, and sunflowers are very popular with many bee species.
Seed dispersal	Seeds are eaten by birds and other animals and dispersed, or may just drop onto the soil below.

A mathematical model of the pattern of florets was proposed relating to the golden ratio, to fit the optimum number of florets in the head.

Sunflower seeds are used in a variety of foods, including those for birds, and in cooking. Sunflower oil is extracted from the seeds and the remaining cake is used as livestock feed. The seeds are rich in vitamins and minerals, and contain linoleic acid, an essential fatty acid in human nutrition.

Further reading

More sources of information on UK flora

The Woodland Trust
www.woodlandtrust.org.uk

The Royal Horticultural Society
www.rhs.org.uk

Royal Botanic Gardens Kew
www.kew.org

Eden project
www.edenproject.com

UK Plant Sciences Federation
<http://www.plantsci.org.uk/>

The British Society for Plant Pathology
<http://www.bspp.org.uk/>

GARNet
<https://www.garnetcommunity.org.uk/>

Importance of native species

Royal Botanic Gardens Kew on meadow habitats and their importance
<https://www.kew.org/blogs/in-the-gardens/why-meadows-matter>

Wild-flowers and invertebrate conservation

Haaland et al (2011) Sown wildflower strips for insect conservation: a review
<https://doi.org/10.1111/j.1752-4598.2010.00098.x>

Feltham et al (2015) Experimental evidence that wildflower strips increase pollinator visits to crops
<https://doi.org/10.1002/ece3.1444>

Threats to native flower species

Charity Plantlife's article on threats to plant species and their habitats on road verges
www.plantlife.org.uk/uk/blog/road-verges-are-a-refuge-for-some-of-our-rarest-plants

Fauna & Flora International on threats to flower habitats
www.fauna-flora.org/environments/wild-flower-habitats

Nicolson and Wright (2017) Plant-pollinator interactions and threats to pollination
<https://doi.org/10.1111/1365-2435.12810>

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