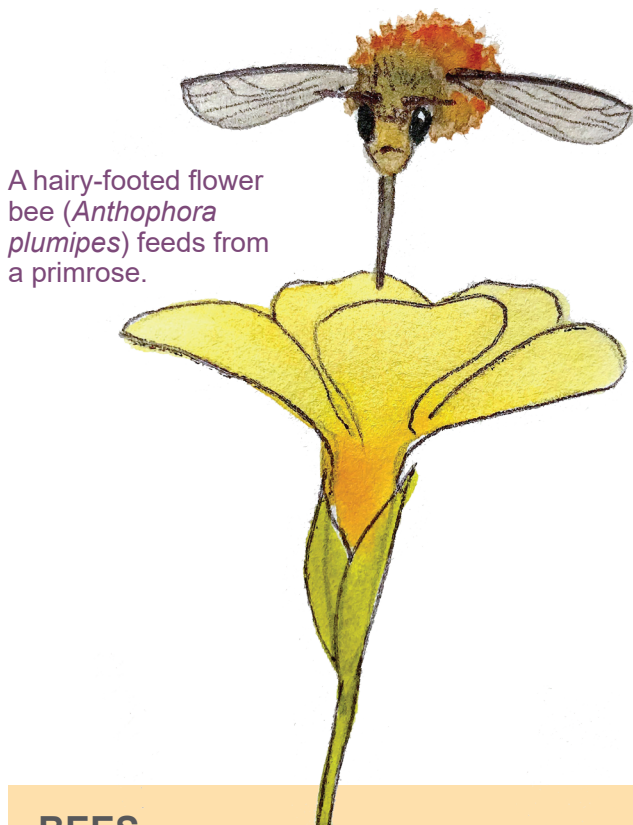


FLOWER ARCHITECTURE

Flower variation and Pollinator species

Many plant species depend on invertebrates to spread their pollen from the male part of the plant to the female part of the plant so that they can reproduce; a process which is called pollination. The invertebrates (usually insects) which perform this process do so as a by-product of foraging for nectar from the centre of the flower, and are referred to as pollinators. Over millions of years of evolution, plants and insects have improved the art of pollination. Some plants take a generalist approach and are pollinated by many types of insect, whereas other plants take such a refined approach that they can only be pollinated by one insect species alone. Colour and scent are the main forms of advertisement flowers use to attract a pollinator, and the shape of the flower will determine what type of insects may or may not gain access to nectar and hence perform pollination. Large insects transfer more pollen on their bigger bodies, but only large flowers or flowers which are clustered together can support their weight.



A hairy-footed flower bee (*Anthophora plumipes*) feeds from a primrose.

BEES

Bees cannot see the colour red, and so bee-pollinated flowers are usually yellow or blue. These kinds of flowers usually have small narrow floral tubes to fit the tongue-length of that bee species a delicate, sweet scent. Some flowers have evolved to be pollinated by bees, and so have specific shapes that only these stronger insects can get into to get inside at the nectar. For example, the UK native wildflower yellow toadflax (*Linaria vulgaris*) which similar to 'snapdragon' plants in the *antirrhinum* genus is mainly pollinated by bumblebees as it is mostly closed by its underlip with a specifically-designed landing platform to only open for a bee of the correct weight.

BUTTERFLIES

Butterflies can see all colours, but have a weak sense of smell, and so butterfly pollinated flowers are usually brightly coloured but odourless. Flowers are usually clustered so that butterflies can walk around and feed quickly from many different flowers, such as those on buddleja plant species. Flowers may also have a landing platform, as butterflies are perching feeders, such as oxeye daisy. Each flower has a suitable tube length for a butterfly tongue.

Thick-legged flower beetle (*Oedemera nobilis*) on a daisy



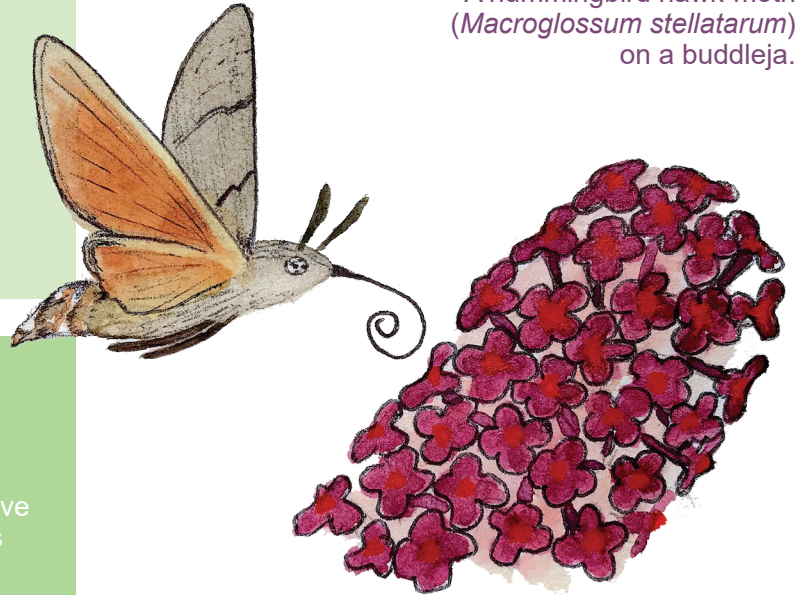
GENERALISTS

Many plants produce generalist flowers which have not evolved to be pollinated by a specific insect species or group, and so are visited by a wide variety of bees, beetles and butterflies such as those in the *Solidago* genus (goldenrods).

MOTHS

Moths are notoriously nocturnal, and so flowers which are mainly pollinated by moths are white or pale colours visible at night with a strong sweet scent released at night. Petals are often flat or bent back to allow the moth to enter, with deep tubes for the moth's tongue.

A hummingbird hawk-moth
(*Macroglossum stellatarum*)
on a buddleja.

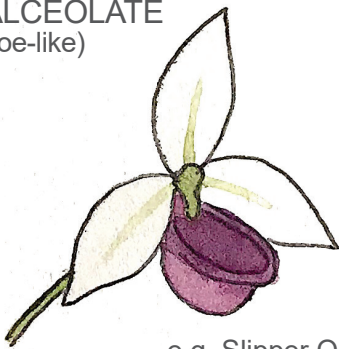


FLIES AND ANTS

Some flowers usually near the ground are pollinated by ants or ground beetles. Flowers which do not have an attractive colour, and have the odour of rotting flesh are pollinated by flies which are attracted to this smell.

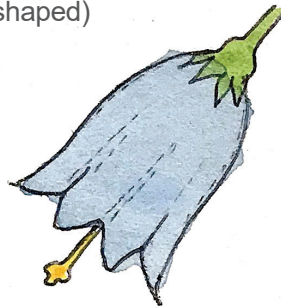
Different flower shapes to include

CALCEOLATE
(shoe-like)



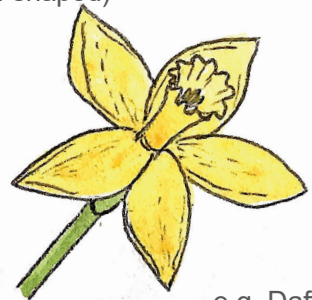
e.g. Slipper Orchid

CAMPANULATE
(bell-shaped)



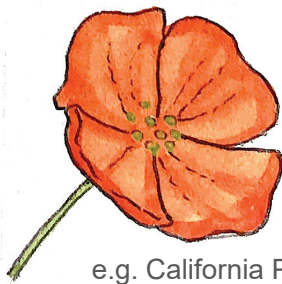
e.g. Harebell

CORONATE
(crown-shaped)



e.g. Daffodil

CRATERFORM
(shallow bowl-shaped)



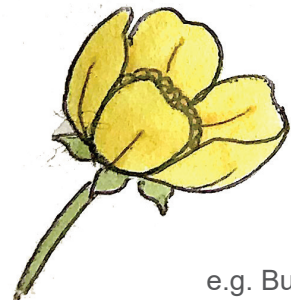
e.g. California Poppy

CRUCIFORM
(cross-shaped)



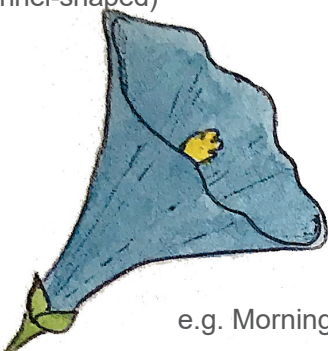
e.g. Lady's Bedstraw

CYANTHIFORM
(cup or bowl-shaped)



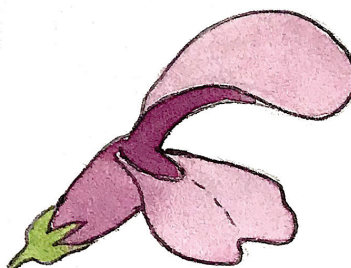
e.g. Buttercup

FUNNELFORM
(funnel-shaped)



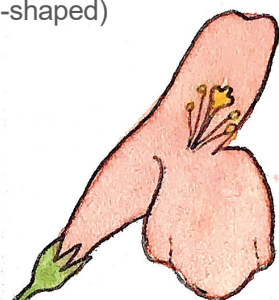
e.g. Morning Glory

GALEATE
(hooded)



e.g. Dead Nettle

LABIATE
(lip-shaped)



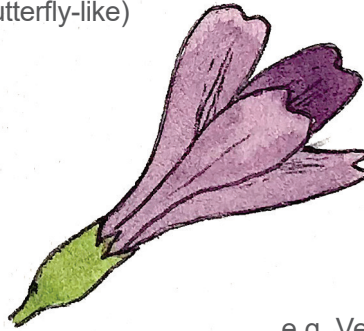
e.g. Mint

LIGULATE
(strap-like petals)



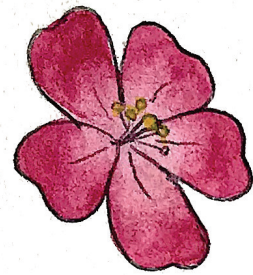
e.g. Daisy

PAPILLONACEOUS
(butterfly-like)



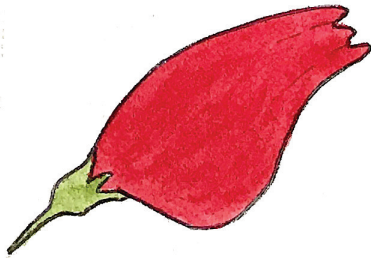
e.g. Vetch

ROTATE
(flat, wheel-shaped)



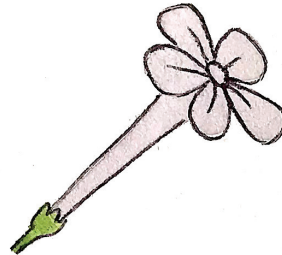
e.g. Tomato

SACCATE
(lowest petal sac-like)



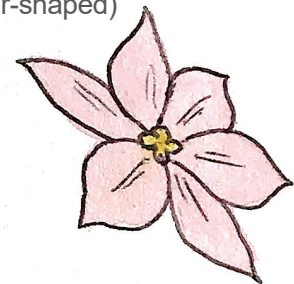
e.g. Nemantus

SALVERFORM
(tube with petal disc)



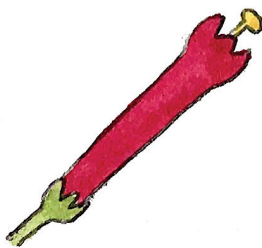
e.g. Plumbago

STELLATE
(star-shaped)



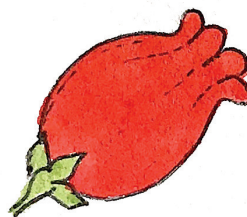
e.g. Morning Glory

TUBULATE
(tube-shaped)



e.g. Cigar Flower

URCEOLATE
(urn-shaped)



e.g. Heather

Add a variety of plants with different colours and shapes to encourage a diversity of pollinating insects to your garden, enticed by the floral buffet open for all!

More about petals

Not only do flowers have different shapes, but they also have different petal arrangements, flower inflorescence, flower habits and flower colour types. Who knew flowers could be so complex!

Petal arrangements can be a single, semi-double, double, fully double, recurved or reflexed, which range in appearance from a simple flat petal layout to a dense ball of petals. Flower inflorescence is how each flower is grouped together, which can be solitary, clustered, umbel, flowerhead, raceme, cyme, spike, corymb or panicle. These range in appearance from a single flower on a single stalk to a complex arrangement with several sets of clusters branching off from a central stem. Flower 'habits' refers to how the flower hangs on the stalk, either erect, horizontal, nodding or pendant.

Erect flowers face directly upwards whereas pendant flowers hang downwards. There is even variation in how colour is displayed on flowers! The most basic is self-coloured with a single colour, followed by bicoloured (two colours) or striped (two colours in stripes on each petal).

