



BeeSkilled - BeeSocial



Bumblebees

The excellent pollinators



The Bumblebee





Bumblebees (bombus) are social insects of the order hymenoptera.

The British Isles were home to some 25 species of bumblebees.



Some species such as the Garden bumblebee and Red-tailed bumblebee live in communities of up to a few hundred, they are abundant in gardens, parks, allotments and wildlife sanctuaries. But many species are in serious decline, some are listed as in danger of extinction, which include the

Great yellow bumblebee and the large garden bumblebee. This decline could be due to a reduction in their natural habitats, the natural breeding and feeding grounds; unfortunately some species are already extinct such as the Apple, Cullum and Short-haired bumblebee.



The Bumblebee species nest from early spring until summer.



They will nest in burrows which have been vacated by small mammals.



The Life Cycle

The Bumblebee species nests from early spring until summer (most species). In early spring after her long sleep (hibernation) during the cold, winter months; the queen looks for a suitable place to nest; she will build a ball size nest and raise a family. She prepares wax pots to store food, and wax cells to lay eggs in.

Some bumblebee species will nest in burrows which have been vacated by small mammals, especially field mice, other species prefer cavities in tree trunks, grass tussocks or directly on the ground surface.

The queen forages for nectar and pollen to feed her emerging larvae and young brood (young bumblebees). This early brood develop into workers and they set out to work immediately.



Towards the end of summer the queen lays some unfertilized eggs which develop into male bees (drones) and some fertilised eggs which receive extra food and pupate to become new queens.

The drones are forcibly driven out from the nest by the workers. They seek out new queens to mate with. The new queens and males live off nectar and pollen and spend the night on flowers or in holes.

The old queen, workers and drones die out; only the new queens begin the new cycle the following season.



The Colony



In some bumblebee colonies, certain species can have a workforce of fewer than 50 individuals while other species can have over 300 strong.

Bumblebees form colonies, which are usually much less extensive than those of their cousins the honey bee. This is due to most species having to start from scratch every season. The queen is alone in the initial building of the hive and forages for pollen and nectar to feed her brood.

When the colony is well established the workers will forage for food and take care of the colony.

Bumblebees collect nectar and pollen from flowers. They favour plants that provide good quantities of nectar and pollen.

Flowers such as red clover produce large quantities of nectar and flower from May to September. Early flowering plants are needed in abundance to support the young queen in rearing her brood.

The queen bumblebee keeps a little pot of honey in her nest to use when the weather is bad and it is difficult for her to venture out.



In some **bumblebee colonies**, certain species can have a workforce of fewer than 50 individuals while other species can have over 300 strong.





Fun Zone

WORD SEARCH

K	I	K	W	P	B	P	N	F	E	E	Y	T	R	E	X	S	M	S	R	C
B	Y	L	A	O	S	E	Y	E	C	E	H	E	R	C	G	V	P	I	E	J
T	D	E	H	L	Y	J	Z	A	C	O	B	E	N	N	F	O	E	C	K	L
Z	Q	N	E	L	J	N	K	Z	R	Z	A	E	I	O	L	P	N	S	R	E
C	G	P	X	E	Z	U	O	A	F	V	Z	W	L	L	H	E	O	O	O	G
S	C	J	A	N	X	T	X	L	R	L	E	O	I	B	S	C	R	B	W	S
S	T	S	G	W	T	G	K	A	O	A	O	N	W	T	M	T	D	O	I	B
C	C	I	O	S	A	B	L	U	N	C	A	W	D	G	L	U	Q	R	M	R
G	Q	V	N	R	D	V	G	N	E	T	T	Z	E	A	N	E	B	P	V	I
E	M	G	D	G	L	C	E	H	O	B	U	Z	Z	R	J	Q	V	E	N	X
D	J	E	E	O	E	T	M	R	N	J	J	G	Y	F	T	T	Y	U	G	T
P	N	G	E	L	N	R	S	N	O	I	T	A	N	R	E	B	I	H	X	E
J	V	W	G	A	C	M	C	F	U	I	C	A	J	X	S	G	J	W	A	C
M	T	Q	C	E	A	E	U	A	M	I	N	S	E	C	T	F	P	Y	W	P
H	E	X	E	Q	H	K	C	J	H	A	K	E	T	F	G	H	O	O	D	A
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K	R	X	K	O	V	Y	C	J	L	F	P	X	R	A	T	C	E	N	D	M
J	A	B	D	O	M	E	N	C	Z	L	U	Z	X	C	H	J	I	E	J	Q

THORAX

BUZZ

CELL

POLLINATORS

LEGS

NECTAR

QUEEN

ANTENNAE

NEST

COLONY

WORKER

LARVAE

HONEY

EGG

INSECT

HIBERNATION

DRONE

EYES

ABDOMEN

BUMBLEBEE

WINGS

FLOWER

POLLEN

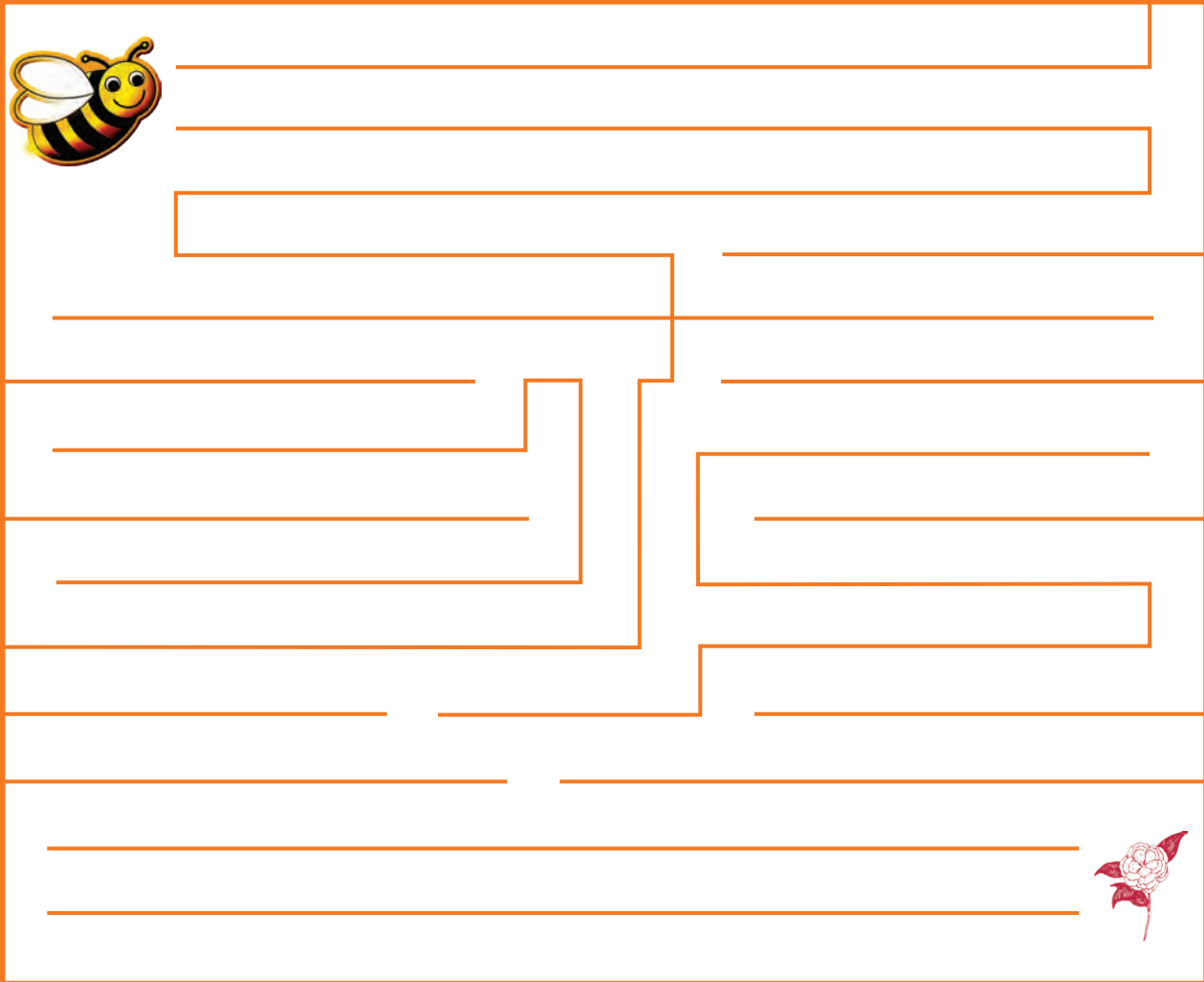
PROBOSCIS

GARDEN

STINGER

HEXAGON

WAX



Bumblebee Maze



Help the **Bumblebee** get to the flower

Excellent Pollinators



Encourage **bumblebees** to visit your garden...and benefit from pollinated flowers, that will give you seeds, fruit, and vegetables.



You can help bumblebees by allowing wildflowers, cottage flowers, herbs and selected shrubs (for example, ribes) which are favoured by these stunning creatures, to grow in your garden, allotment or pots, as these places can become a vital retreat. It is noticeable that some bumblebees are attracted to, and visit specific flowers more frequently. Allow areas to be left undisturbed to encourage the nesting of rare bumblebees. Packs of wildflower seeds can now be purchased at garden centres and can be planted to help grow useful habitats.

Agriculture use

Bumblebees are cultured for agricultural use as pollinators because they are excellent at pollinating flowers. The technique known as buzz pollination is ideal for pollinating tomato plants because the frequency of buzzing that a bumblebee exhibits

effectively releases tomato pollen. Bumblebee colonies are placed in greenhouses. For a few decades the Buff tailed bumblebee species (*B. terrestris*) has been bred commercially for use as a pollinator for greenhouse crops, particularly tomatoes - a task which was previously carried out by human hand.

Flowers for bumblebees

Introduce some of the following plants to your garden, heather, crocuses, primroses, purple dead-nettle, white dead-nettle (these don't sting), catmint, chives, rosemary, red clover, white clover, trefoils, vetches, broom, geranium, comfrey, foxglove, monkshood, honeysuckle, thistles, cornflower, delphinium, lavender, purple loosestrife.

Many new varieties of flowers are hybrids, and may lack the nectar and pollen quantities of the original plant.

Queen and worker **bumblebees** have special 'baskets' made of stiff, curving hairs on their back legs, to carry pollen back to the hive.

Queen and worker bumblebees can sting many times, the stinger is void of barbs.



The Buzzing sound it makes is actually the result of the bumblebee vibrating its flight muscles; this creates heat and warms up its body which is needed to get airborne at low temperatures.



Bumblebee species are not normally aggressive, but will sting in defence of their nest, or if harmed.

Bumblebee Facts



The **bumblebee body** can be divided into three main parts, head, thorax and abdomen. It is furry, chubby and very colourful. All species vary in sizes but queens are biggest, followed by the drone and worker.

- (1) **head** - has the eyes, antennae, and mouth parts and proboscis.
- (2) **thorax** - has the wings and legs attached. It's a muscle part that works its flight and walking.
- (3) **abdomen** - has the honey stomach for storing nectar, the sting, the wax glands and all the digestive and reproductive organs.

The head has:

1 proboscis; 2 Antennae; 5 eyes

The thorax has:

4 wings (2 pairs on either side)

6 Legs (3 on either side)



The bumblebee queen and worker both have a stinger on the end of their abdomen. The drone, in contrast, has the genital capsule.



This Instructional Lesson Plan is one of a series of learning materials offered through the BeeSkilled – BeeSocial project. The aim of the project is to protect bees and help people to understand these essential pollinators. We want to increase bee populations due to the fact that many species are endangered or at risk.

The BumbleBee Alliance CIC has been funded by the National Lottery - Heritage Fund to manage this very important project, we therefore permit free use of this instructional lesson plan for teachers, community workers, youth workers, individuals and members of the public who have an interest in bees.



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