All the buzz… Teacher Notes

This PowerPoint presentation, saved as a PDF, is designed for use in a primary school classroom to introduce bees as an important species to children. There are three activities in the science session (see following slides), activities 1 and 2 have separate PDF presentations to show the class and activity 3 has a printable board game. This link to a short video can be useful for the teacher to watch before the lesson to refresh knowledge with a brief introduction to the lifecycle of bees, the flowers they prefer and the threats they face. You could also use parts of it to show the children bees if going outside isn't an option or it's the wrong time of year to spot bees:

https://vimeo.com/232951281

These organisations also have good information about bees and flowers that may be useful background reading and some have extra downloadable resources for children;

https://www.bumblebeeconservation.org/

http://www.bwars.com/

http://www.bumblebeeconservationtrust.co.uk/

http://www.wildlifetrusts.org/

https://www.bbka.org.uk/

https://www.plantlife.org.uk/uk

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Here are some **technical words** to use during the day:

Insect	A small animal with six legs and one or two pairs of wings	***Population***	The number of animals living together in one place
Colony	A group of one type of animal living together	***Predator***	A living thing who preys on others to survive
Distribution	The way in which something is shared out among a group or spread over an area	***Species***	Specific kinds of living things who are able to exchange genes and interbreed.
Habitat	The natural home of an animal, plant or other organism	***Insecticide***	A substance used for killing insects
Pollination	The transfer of pollen to a plant to allow fertilization	***Herbicide***	A substance used for killing unwanted plants
Hibernation	The condition or period of an animal or plant spending the winter in a dormant state	***Entomology***	The study of insects

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Science - Activity 1: To Bee or not to Bee

Resources for children

- Whiteboard
- Whiteboard pen
- Cloth

Resources for teacher

- To Bee or not to Bee PDF

Method

Using the ‘To Bee or not to Bee’ PDF presentation have the children write whether they think the shown insect is ‘Bee’ or ‘Not Bee’ on their white boards and then hold them up to show you. Tell them to record their scores as they go on their whiteboards. At the end ask them to add up their scores and do a show of hands to see who got the most correct answers.

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Science – Activity 2: Colony Cycle Game

Resources for groups of 4-6 children

- One complete set of the Colony Cycle cards and text per group, jumbled up

Resources for teacher

- Colony Cycle PDF

Method:

Using pre-cut packs of the colony cycle game, jumbled up, in groups of 4-6 the children will pair names with images first. At this point you can correct any errors before they then create a colony cycle using the paired name/images. At the end you can talk them through it using the 'Colony Cycle' PDF.

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Science – Activity 3: ‘Its not easy being a bee’ board game

Resources for groups of 6 children

- One copy of the ‘Its not easy being a bee’ board game
- Chance cards
- 6 counters
- 6 Bee Species Cards
- One 6-sided die

Method:

With pre-prepared copies of the ‘Its not easy being a bee’ game the children will pick a Bee card at random and collect the corresponding counter which will be their piece on the board. Play the game using a 6-sided die following the included instructions. Have them pay special attention to the ‘chance’ cards which include hazards and benefits to Bumblebees.

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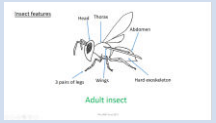
Notes for the following presentation

Slide	Notes
	What is an insect • An animal • Which group of animals has the most species? Answer: Insects (60% of all animals are insects)
	Key insect features…… •Segmented body: head, thorax, abdomen
	3 pairs of jointed legs (attached to the thorax)
	A hard external skeleton (exo-skeleton)
	Insect features…… •3 segmented parts : head, thorax, abdomen •3 pairs of jointed legs (attached to the thorax) •2 pairs of wings (in most cases) •An external skeleton (exo-skeleton) Insect life cycles : egg, larva/nymph, pupa, adult

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Slide	Notes
	This is a bumblebee In the UK: •590 species (=types) of bees, wasps and ants •250 species of bees •About 10% of the UK species are bumblebees How many is that? [250 divided by 10 = 25] There are actually 24 species *Honey Bees are not Bumblebees – There is only one species of Honey Bee in the UK = less than 1%*
	Bees collect pollen and nectar as food for the entire colony, and as they do, they pollinate plants. Only honeybees make honey. Nectar stored within their stomachs is passed from one worker to the next until the water within it diminishes. At this point, the nectar becomes honey, which workers store in the cells of the honeycomb.
	- Why do insects mimic bees?! Harmless insects such as hoverflies and moths, evolve to mimic harmful insects (such as bees who are able to sting) to deter predators and increase their ability to protect themselves. They do this by copying their appearance and / or behaviour. Some bumble bees known as cuckoo bumble bees, mimic other bumble bees, this is so that they can lay their eggs within their nest.
	Other examples of mimicry include; Stick insects mimic their surroundings, this causes them to be camouflaged - helping them avoid being predated. Predatory spotted katydid's mimic female cicadas calls, luring male cicadas to their death with the false promise of mating. The bee orchid flower mimics the appearance of bees, which attracts other bees with the intention of mating - increasing its own chances of being pollinated

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Slide	Notes
	As a defence against predators, lots of species have 'false heads' to avoid dying if attacked by predators - by mimicking their own head or eye, predators will attack the 'false head' giving the individual time to escape relatively unharmed. The Grey Hairstreak butterfly mimics its own antennae and head. When at rest the butterfly holds its false head upright, detracting attacks from its real head. The Four-eyed Butterflyfish have eyespots near their tails, which confuses predators. Males of many bee and wasp species are defenceless, but due to their resemblance to sting-carrying females, they are protected from predators.
	Grassland, rough grazing land, rich flower meadows. Anywhere with a diversity of wild flowers for food and shelter to make their nest. The type of place a species is found is called its habitat, their natural home.
	Bees pollinate one third of everything we eat with around 80% of the crops grown for human consumption – around 400 different types of plants – needing bees and other insects to pollinate them. These include most fruits and vegetables, many nuts, and plants such as rapeseed and sunflowers that are turned into oil, as well as cocoa beans, coffee and tea. But beyond their monetary value for maintaining our fragile food supply, bees also make an invaluable contribution to ecosystems around the world. Seeds, fruits and berries eaten by birds and small mammals are all from plants that are pollinated by bees, making them guardians of the food chain and the biodiversity of our planet.
	Looking at population distributions we can see where bees are found and how many there are in each area. We can then work out if certain bees are increasing in number or decreasing and ask questions as to why that might be.

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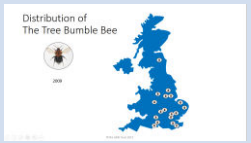
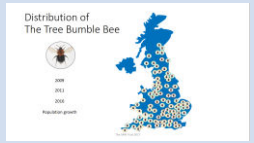
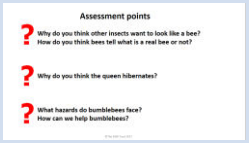
Slide	Notes
	The Tree Bumble Distribution 2009 – mainly limited to south east and midlands
	2011 – spread along west coast and wales
	2016 – heavily populated in both Wales and England, and spreading further north into southern and central Scotland = population distribution increase. Reasons for changes in distribution: colonies are capable of having two generations in one year, therefore producing more individuals and species nesting sites closely associated with ‘open woodland’, i.e gardens.
	The Great Yellow Bumble Bee 1950 – populations found across the U.K in small densities
	2000 – reduction in the density and number of southern populations
	2012 – populations now only found in northern Scotland. Causes of decline; loss of flower rich meadows, intensification of farming and grazing practises. Distribution information acquired from Bees, Wasps and Ants Recording Society (BWARS).
	Handy point for TA’s to record observations or conversations to assess understanding or SC1 skills objectives.

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All the buzz...

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Science…

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?

What is an insect?

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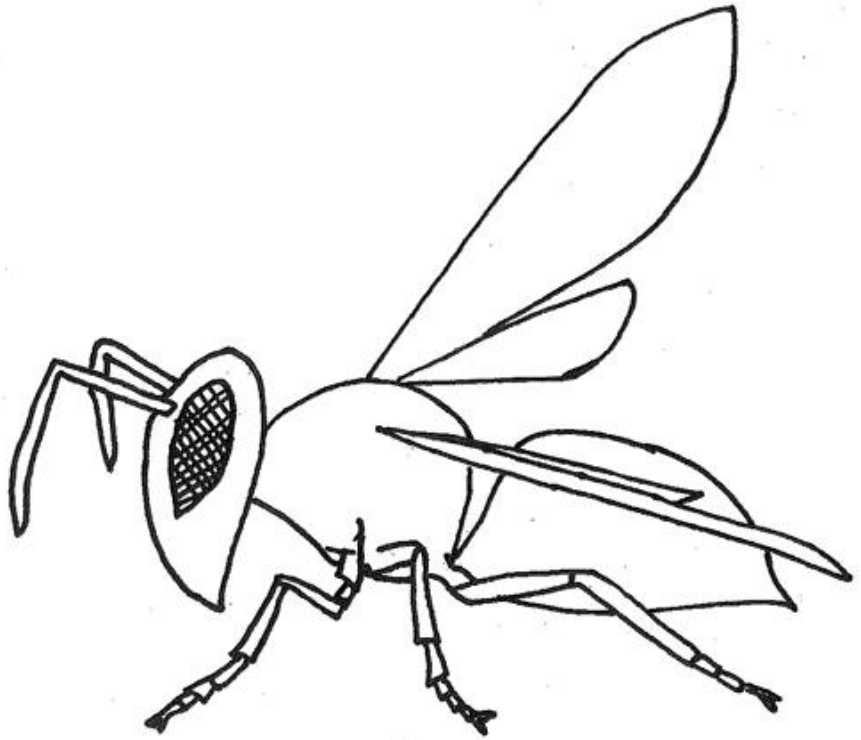
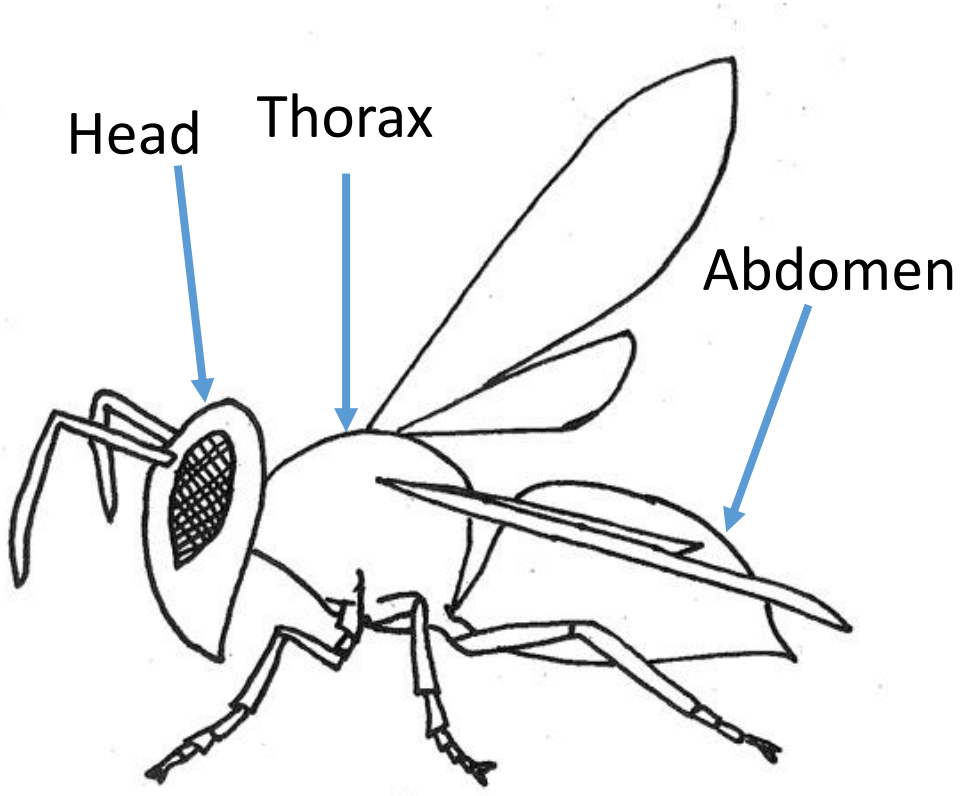
Insect features



Adult insect

©The SAW Trust 2018

Insect features



Adult insect

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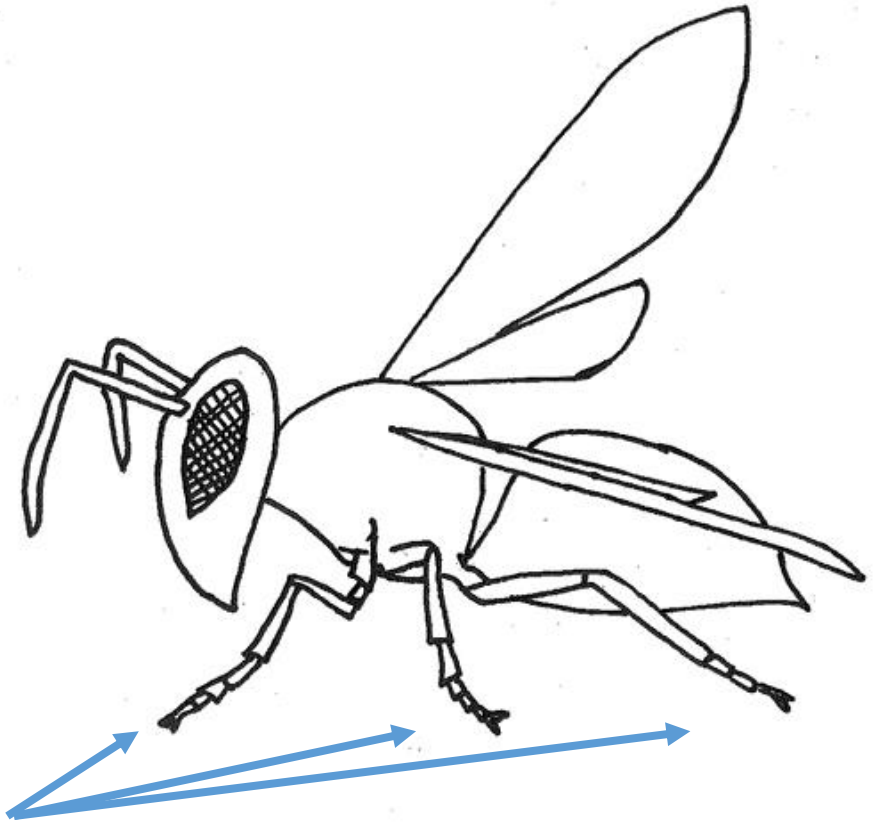
Insect features



3 pairs of legs

Adult insect

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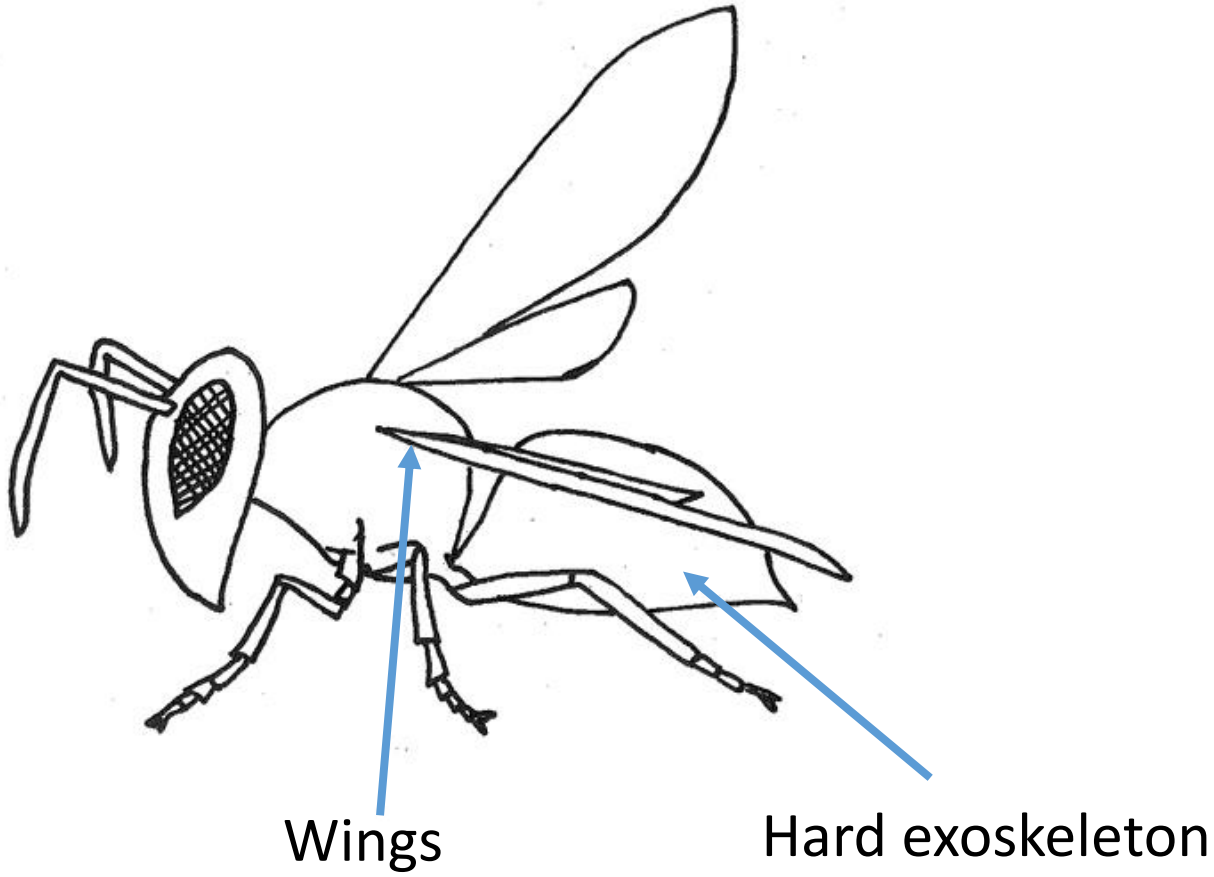
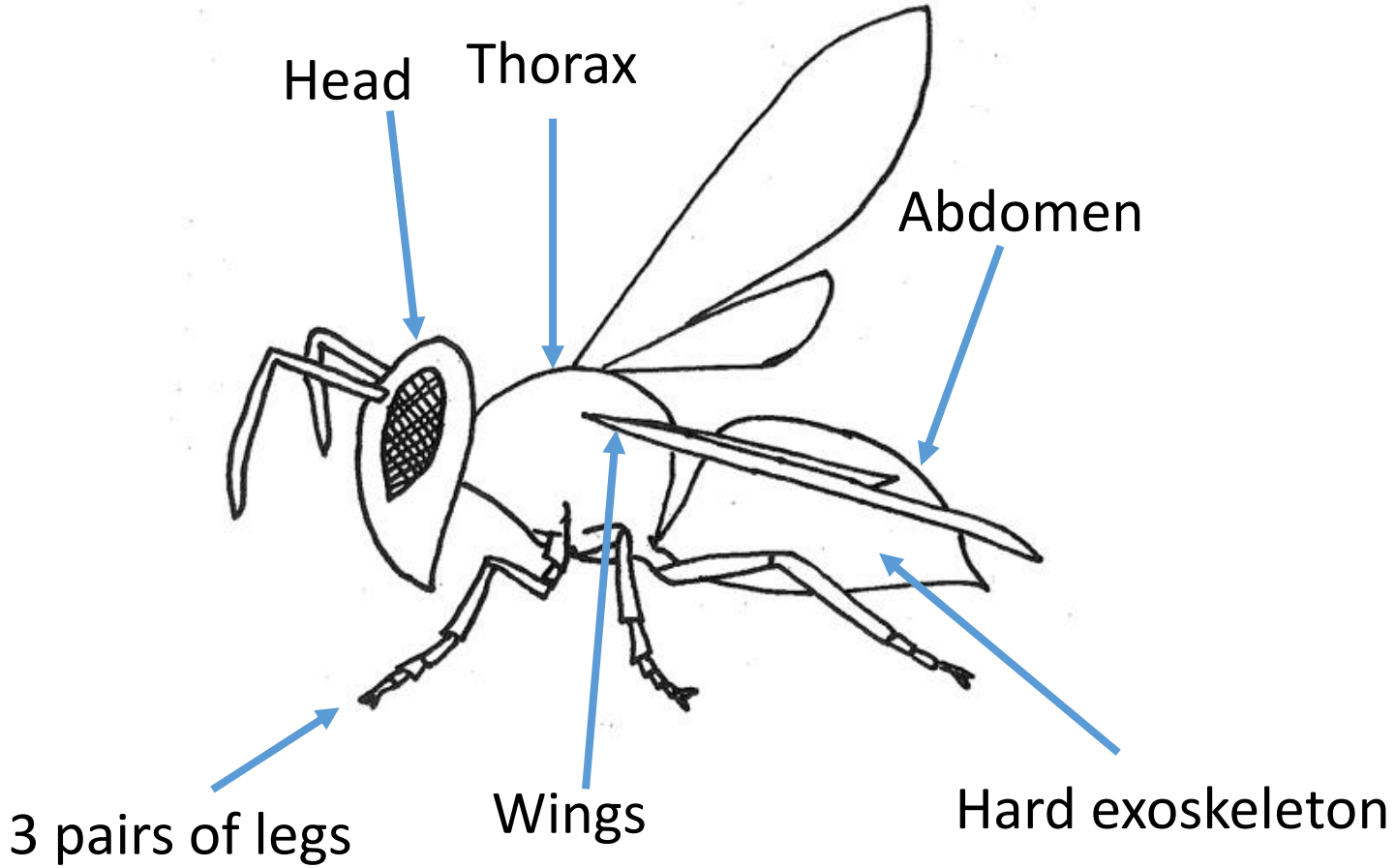
Insect features



Adult insect

©The SAW Trust 2018

Insect features



Adult insect

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What could this be?

How many types of this are there?

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What do bees do?

Do all bees make honey?

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Science - Activity 1: To Bee or not to Bee

Today, we will investigate how insects **mimic** Bumblebees and why this is advantageous for them. We will also discover how tricky **entomology** can be!

You will be:

Observing
Deciding
Writing on white boards

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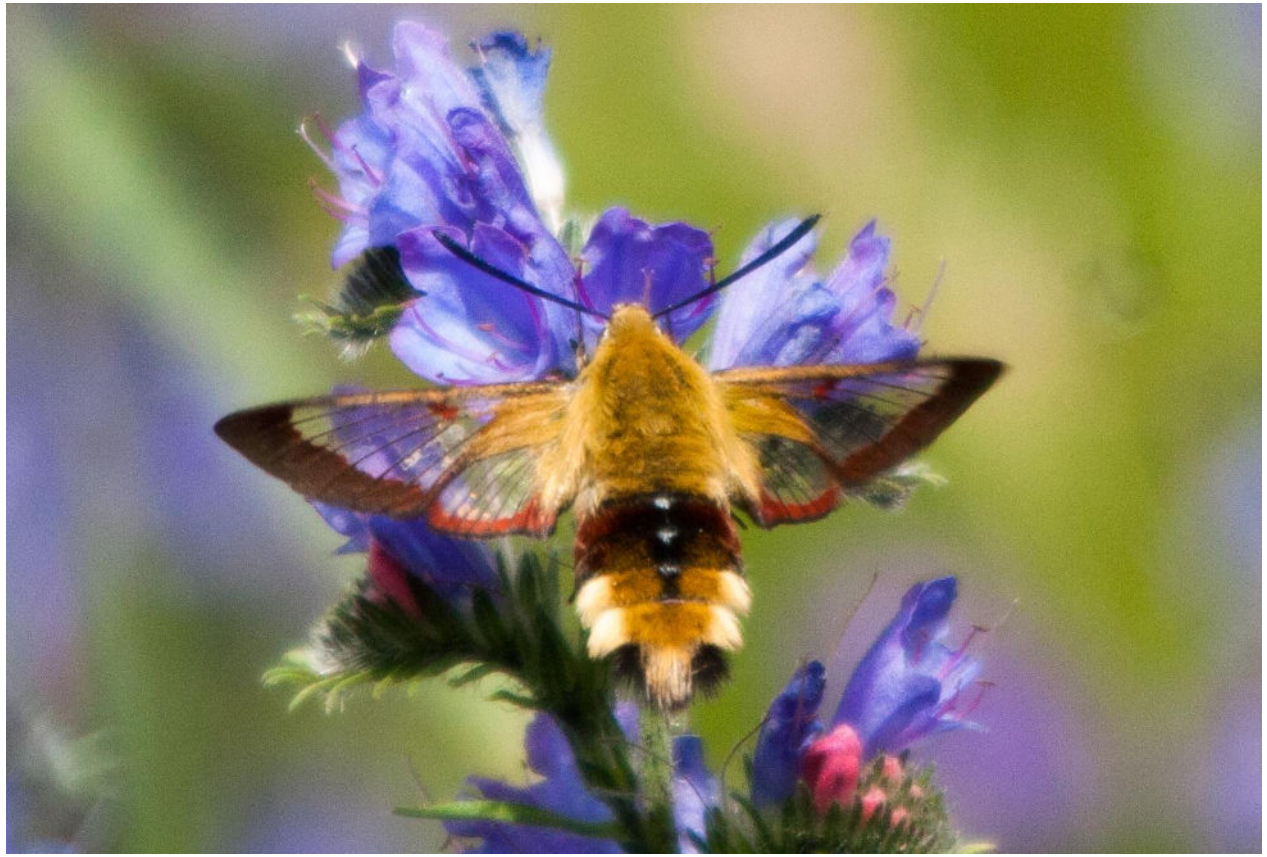
Bee mimic's

Hoverfly



Bee hawk-moth

?

Why do insects mimic bees??

Can you think of any other species that are mimics?

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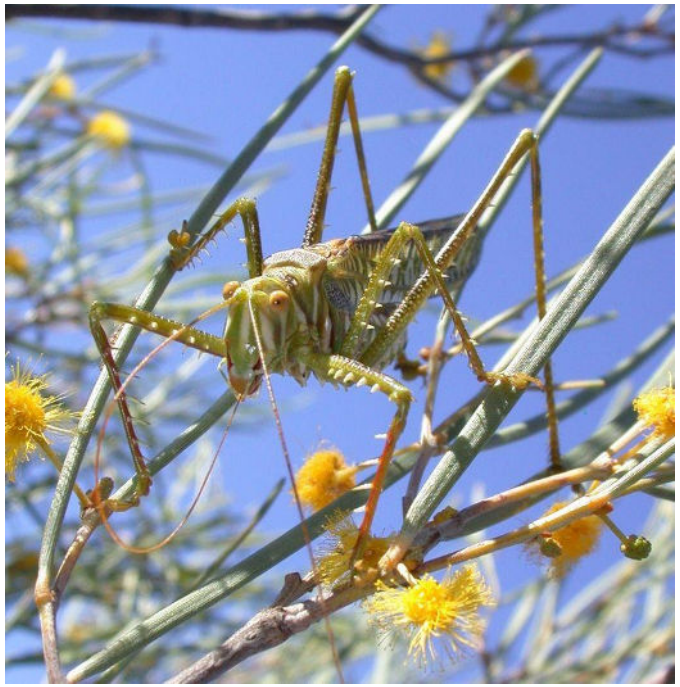
Natures other mimics

Stick insect



Spotted Katydid

Bee-orchid

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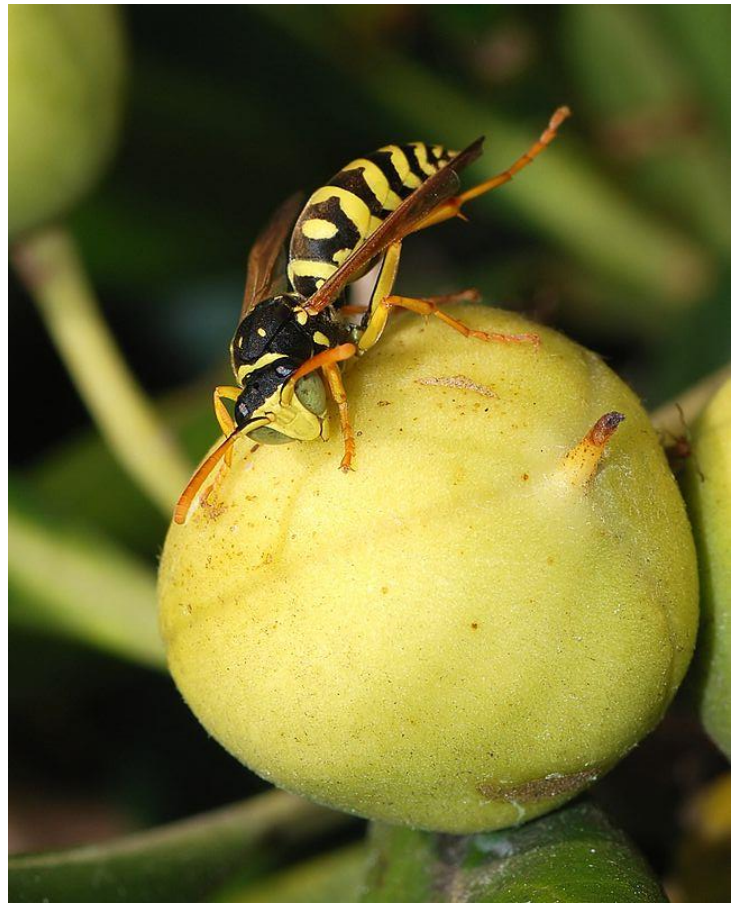
Species mimicking themselves

Grey Hairstreak butterfly

Four-eyed butterflyfish



Paper wasp

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Science – Activity 2: Colony Cycle Game

Today, we will investigate the **colony cycle** of **Bumblebees**.

You will be:

Working as a team
Observing
Deciding

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?

What types of places might different bumblebees prefer?

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?

Are bees important?

What threats do bees face?

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Bumble Bee Distribution

The Tree Bumble Bee
Bombus hypnorum

Great Yellow Bumble Bee
Bombus distinguendus

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Distribution of The Tree Bumble Bee

2009

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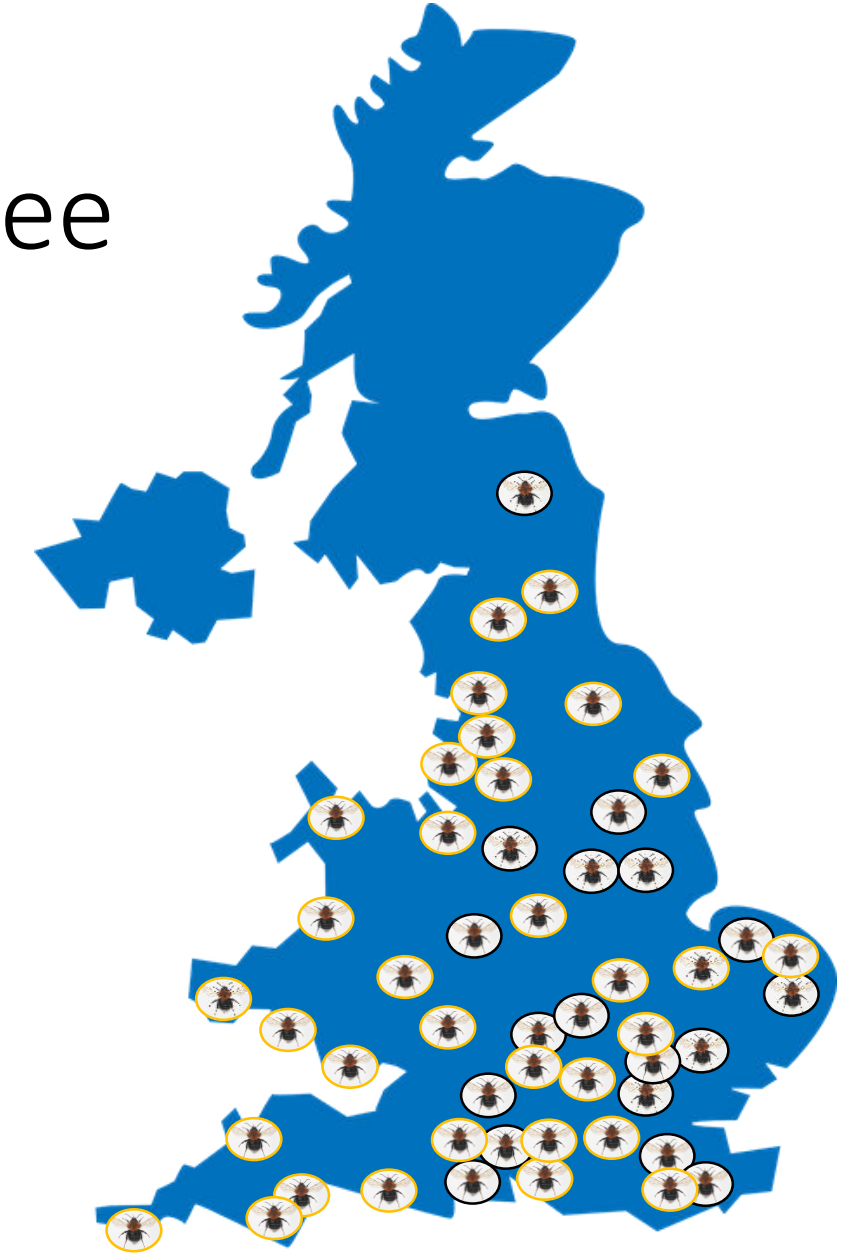
Distribution of The Tree Bumble Bee

2009

2011



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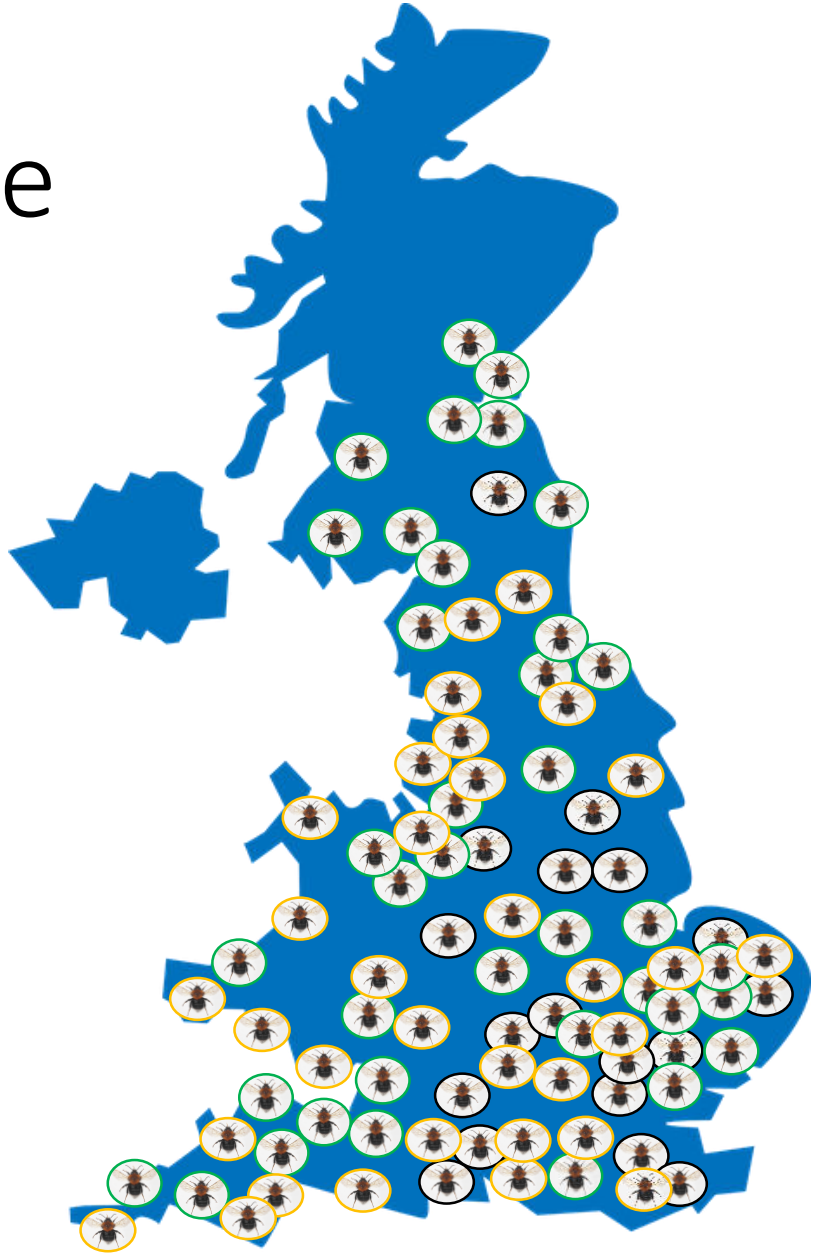
Distribution of The Tree Bumble Bee

2009

2011

2016



Population growth

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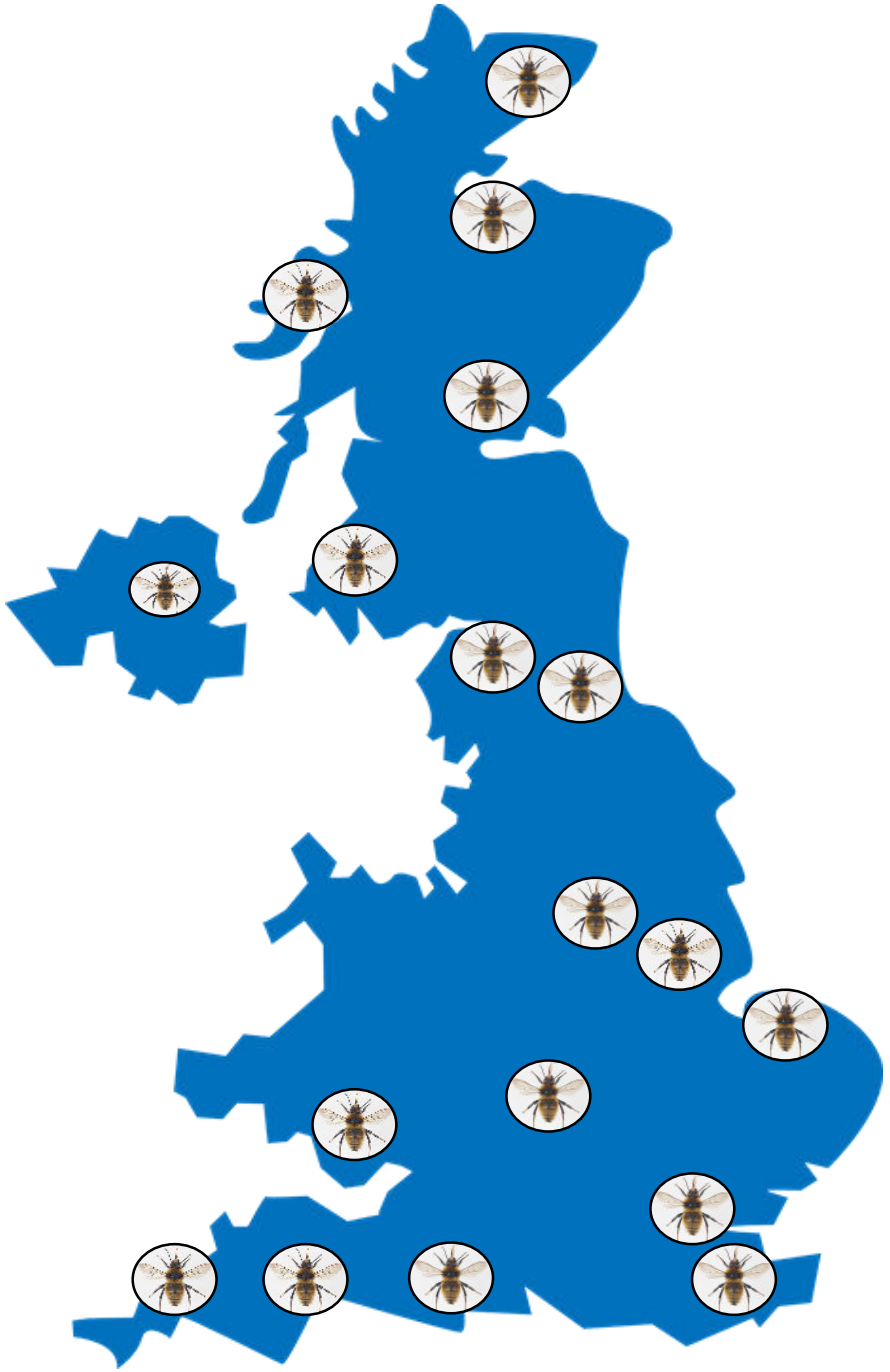
Distribution of the Great Yellow Bumble Bee

1950



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Distribution of the Great Yellow Bumble Bee

1950

2000

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Distribution of the Great Yellow Bumble Bee

1950

2000

2014

Population decline

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Science – Activity 3: ‘Its not easy being a bee’ board game

Today, we will discover some of the challenges **Bumblebees** face and how we can help them by playing the ‘Its not easy being a bee’ game.

You will be:

Playing a board game
Learning the challenges which Bumblebees face

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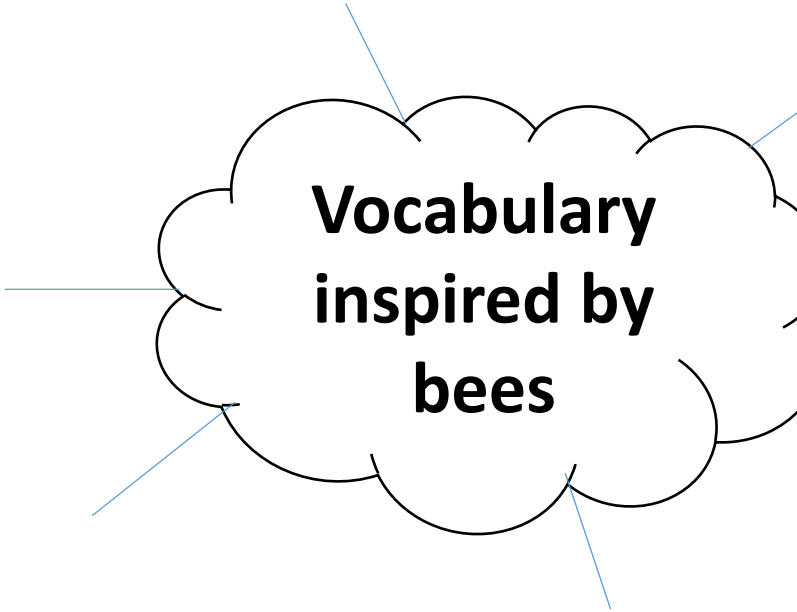
Time to collect some vocabulary –
create a **word bank** to store up the excellent vocabulary you have generated!



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Assessment points

Why do you think other insects want to look like a bee?
How do you think bees tell what is a real bee or not?

Why do you think the queen hibernates?

What hazards do bumblebees face?
How can we help bumblebees?

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Art &Writing...

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You can tell a story about the life of a bee by using your skills in art and writing.

Watch this short video made by some children who did just that!

https://vimeo.com/231386739

Telling a story to inform others about the problems bees face is one way in which you can help the bees…..

Why don’t you have a go by writing a story
and drawing some bees and flowers!

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