

## Bees Assembly

These notes run alongside the PowerPoint presentation. They provide additional information (if required) and suggestions for interaction:

### **Slide 2: How do we feel about bees?**

**Ask the children if they know what this insect is (it's a European honey bee) and how they feel about these creatures.** Some children may have negative feelings towards bees, perhaps as a result of being stung, or even being allergic to them. Bees are actually very unlikely to hurt people if left alone and they are more important than you might think! For such small animals, they play a VERY large role in our lives.

### **Slide 3: Different types of bees**

**Ask the children to guess how many different types of bees there are.**

There are over 270 species of bees in the United Kingdom and over 20,000 known species of bees in the world! The majority of the bees in the UK are species of solitary bees, which do not live in colonies like honey bees. There are also a few species of bumblebees and one species of honey bee native to the UK.

The most common species of solitary bees in the UK include the red mason bee, the leafcutter bee, and the tawny mining bee. Bumblebees are social insects that live in colonies. The most common species of bumblebees in the UK are the buff-tailed bumblebee, the white-tailed bumblebee, and the red-tailed bumblebee. The honey bee, which is also a social insect, is the only species of bee that produces honey and is kept by beekeepers for this purpose.

### **Slide 4: Why are bees important? How do they help us?**

**Ask the children if they know why bees are so important.** This may already have come up in discussions during slide 2. Some may suggest that they are useful because they can make honey, which is true. However, bees provide us with a lot more food than that, indirectly.

All bees play an important role in pollinating plants and maintaining the health of ecosystems around the world. Maybe some of the children have seen “Bee Movie” which explains what a world without bees might be like.

So how does this work?

### **Slide 5: Pollination - how does it work?**

Pollination is the process by which plants reproduce. It involves the transfer of pollen from the male parts of a flower to the female parts of a flower.

Pollen is a powdery substance that contains the plant's genetic material.

The male parts of a flower, which produce pollen, are called the stamen. The stamen is made up of the anther, which produces the pollen, and the filament, which supports the anther.

The female parts of a flower, which receive the pollen and produce seeds, are called the pistil. The pistil is made up of the stigma, which receives the pollen, the style, which connects the stigma to the ovary, and the ovary, which contains the ovules (immature eggs) and will eventually develop into the fruit.

In order for a flower to be pollinated and produce seeds, pollen must be transferred from the stamen to the pistil.

### **Slide 6: Bees as pollinators**

Some plants are able to self-pollinate within a single flower and others rely on a bit of help! Cross-pollination happens when pollen is transferred from the male parts of one flower to the female parts of another flower. This type of pollination requires the help of pollinators, such as bees. (Butterflies, other insects and even hummingbirds help, too!). Pollinators are attracted to flowers by their bright colours and sweet nectar. As they move from flower to flower collecting nectar, they brush against the male parts of the flower, picking up pollen on their bodies. When they visit the next flower, some of the pollen is transferred to the female parts of that flower, fertilising it and allowing it to produce seeds.

## **Slide 7: Without cross-pollination many plants would die out**

Pollination is important for the survival of plants because it allows them to reproduce and produce seeds, which are necessary for the continuation of their species. Without pollination, many plants would not be able to survive.

According to the Food and Agricultural organisation of the United Nations, bees help pollinate around 80% of the world's flowering plants. That doesn't just mean the flowers that make our world beautiful, but also those plants that provide habitats for many other species, and those that provide us with food... It's not just honey we'd miss without bees!

Bees also save farmers a lot of money - Estimates suggest it would cost UK farmers an enormous £1.8bn a year to pollinate their crops manually.

## **Slide 8: Without bees, we'd miss out on many foods**

Bees are important pollinators of many food crops, including fruits and vegetables from apples and pears to peppers and pumpkins. Some plants in the pepper (capiscum) family rely solely on bumble bees for pollination because they need vibrations at the right frequency in order to shake their pollen loose and the bumble bee's wings do just this!

Bees also pollinate many legume crops such as peas and soya, which don't only feed humans, but also make up the feed for livestock such as cattle and chickens. Without bees, it would be harder to get a beef burger!

As well as foods, bees pollinate plants that grow into the wood that we use to make furniture and that many other animals live in.

Overall, bees play a vital role in maintaining the health of our food supply.

## **Slide 9: Problems for bees: habitat loss**

Unfortunately for these vitally important creatures, bees are facing a number of threats that put their populations at risk.

One of the major problems that bees face is that of habitat loss. Bees need a place to live and forage for food. As natural habitats are destroyed or modified for human development, bees may lose the resources they need

to survive. The habitats that bees depended on, such as woodland and wildflower meadows are being replaced by housing and farmland.

### **Slide 10: Use of pesticides on crops and in gardens**

Pesticides can be harmful to bees when they come into contact with treated plants or when pesticides are sprayed near their hives. As well as killing them outright, some pesticides can affect the navigation, memory, and learning abilities of bees, making it more difficult for them to find food and return to their hives. Pesticides can also weaken the immune systems of bees, making them more vulnerable to diseases and parasites.

In the UK, there has been concern about the impact of pesticides on bees and other pollinators. Studies have shown that some pesticides, particularly neonicotinoids, can have negative effects on bees. These were being used on flowering crops that are attractive to bees, such as oilseed rape. By 2020, in response to the concern, the UK government had implemented a ban on the use of all but one of the pesticides containing neonicotinoids. However, 'emergency' uses are still allowed and, in 2022, the ban was lifted on a chemical used to protect sugar beet crops.

### **Slide 11: Climate Change**

Climate change is having a number of impacts on bees and other pollinators. Bees are sensitive to changes in temperature and can be affected by extreme heat or cold. These changes can affect the bees' natural nesting behaviours. As temperatures become more extreme due to climate change, it can be more difficult for bees to survive.

As temperatures change, the timing of plants flowering may also change, which can affect the availability of food for bees and their ability to reproduce. Climate change also affects weather patterns such as the amount of rain that falls. This can also change the type of plants that are growing in certain places. The change in distribution of certain plants can affect the ability of local bees to find food in places they used to look for it. Some species of bees are now at risk, due to a lack of food sources in their area.

The rusty patched bumblebee (*Bombus affinis*), which is native to North America, is listed as endangered under the U.S. Endangered Species Act. This species has suffered dramatic population declines in recent decades.

due to a variety of factors, including habitat loss, the use of pesticides, and climate change.

### **Slide 12: Diseases and parasites**

Bees can be affected by a variety of diseases and parasites, including the varroa mite, which can weaken their immune systems and make them more vulnerable to other threats.

The varroa mite (*Varroa destructor*) is a parasitic mite that feeds on the blood of honey bees (*Apis mellifera*) and can cause serious damage to bee colonies. The mites can also transmit viruses from one bee to another, which can further weaken the bees and reduce the overall health of the colony. Larger hives are more likely to experience mite infestations, as there are more bees present for the mites to feed on. In addition, hives that are overcrowded or have high levels of stress can also be more susceptible to mite infestations, as the bees may be less able to defend themselves against the parasites.

### **Slide 13: Helping bees: plant a pollinator friendly garden**

**Ask the children how they think they might be able to help bees face some of these challenges.**

One idea might be to plant a pollinator-friendly garden. You can create a space in your garden or on a balcony that is attractive to bees and other pollinators by planting a variety of flowering plants that bloom at different times of the year. Avoid using pesticides in your garden and consider adding a water source, such as a birdbath or a shallow dish filled with water and pebbles, to provide hydration for bees.

If you see a bee on the ground that looks like it needs help, you can help it by moving it to a place where it won't be trodden on and providing it with some sugar dissolved in water on a spoon. If you watch closely, you might see the bee unfurl its long tongue to have a drink!

### **Slide 14: Helping bees: make a bee home**

Many bees hibernate over the winter and they need a safe place to do this. As their habitats are in decline, we can help bees by building them a 'bug hotel' to rest in during colder months. Different types of bees prefer different types of hibernation spaces, so you might want to carry out some research based on the types of bees that you have noticed in your local area. You can find a link to make one type of bug hotel here:

<https://yppte.org.uk/downloads/home-learning-activity-make-a-bug-hotel>

**Slide 15: Helping bees: learn more about them and spread the word!**

Educating yourself about bees and their importance can help raise awareness about the need to protect these insects. You can also share your knowledge with others and encourage them to get involved in efforts to support bees.

**Slide 16: Helping bees: Get involved in conservation efforts**

You can support organisations that are working to protect bees and other pollinators, such as the [Bumblebee Conservation Trust](#) or [Buglife](#) (which works to protect all invertebrates). You can also team up with people and write to your local council or MP to advocate for policies and practices that support bees and other pollinators, such as the use of less harmful pesticides or the creation of habitat for these insects.

**Slide 17: Watch the Newsround video: Why Are Bees So Important?**

This short video will help recap some of the issues that we have learned about in our assembly today.

**Slide 18: Pause for thought**

Take some time to think about bees and to be grateful for all the work they do so that we can eat and enjoy such a wide range of plants!

***'If we and the rest of the back-boned animals were to disappear overnight, the rest of the world would get on pretty well. But if the invertebrates were to disappear, the world's ecosystems would collapse.'*** Sir David Attenborough

