

Bees & Climate Change

Bee populations are decreasing which is why climate change can buzz off!



Every three bites of food you eat is made possible by bees and other pollinators. Bees are vital to our ecosystem and food production. They directly contribute to around 90% of our crops such as fruits, vegetables and nuts.

So if bees and other pollinators are indispensable to our ecosystem why is the world's bee population in decline? Climate change affects bees in several devastating and specific ways.



Habitat Loss

Increases in temperature due to climate change have restricted the areas where bees can survive, resulting in habitat loss.

Additionally, urban sprawl is also a leading cause of habitat loss. Urban areas tend to have less green space, thus there is less food and other habitat resources available for bees to survive.

Seasonal Pollination Timing

As global temperatures rise, flowers and plants bloom earlier in the season. At this time bees may not be ready or available to feed on that pollen.

Even a mismatch of this delicate timing by the space of one week can affect bees' health, not to mention plant pollination.

Disease

Disease, fungus, and parasites already adversely affect bee populations.

Warmer environments have been correlated with an increase in these types of infections and diseases, leading to a noticeable decline in overall bee populations in the last decade.

Buzz into action!

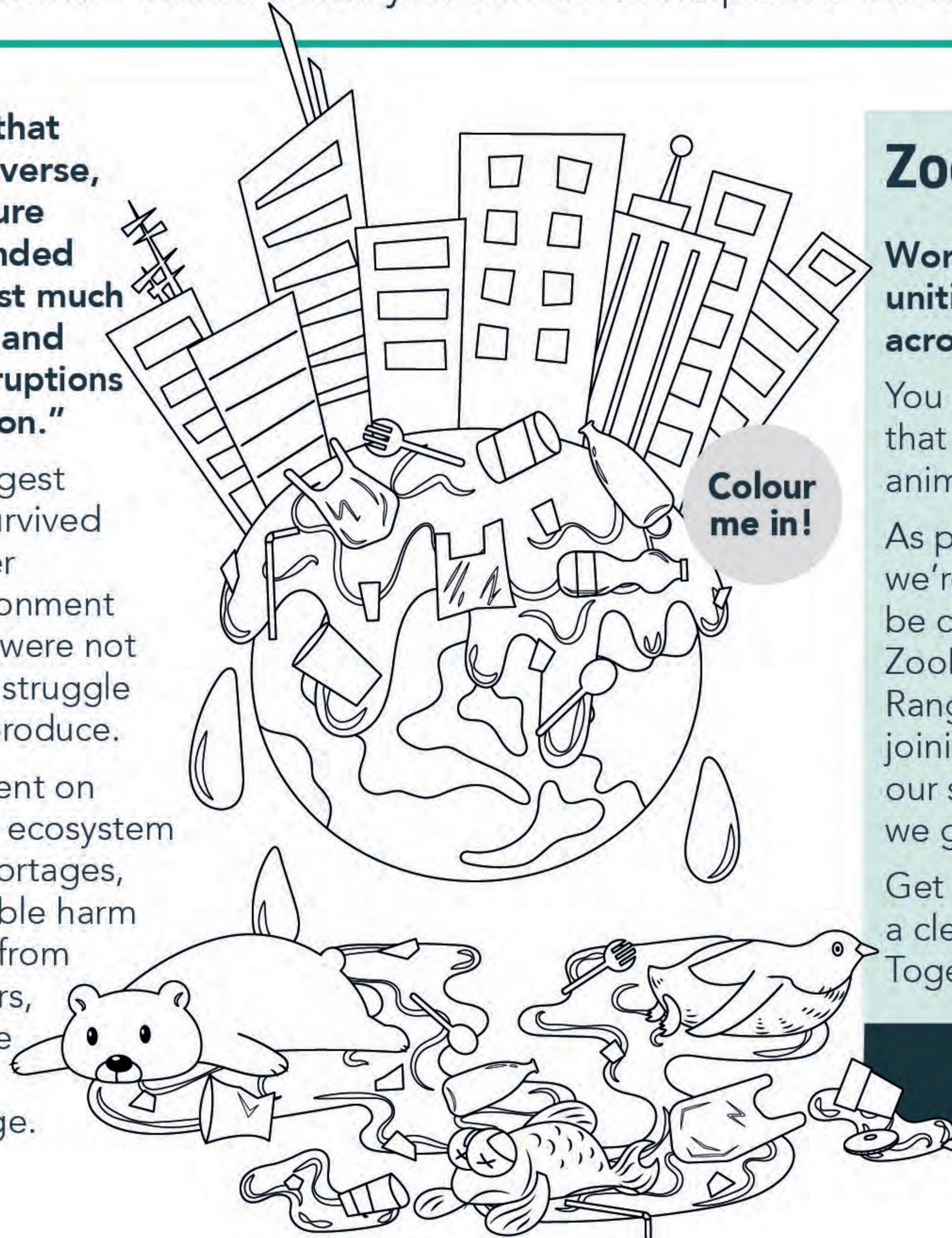
It's not all bad news - there's loads you can do to help save the bees!



Scientists found that bees raised in adverse, higher temperature environments tended to be "smaller, lost much of their body fat and suffered from disruptions to their hibernation."

These results suggest the bees which survived the altered, higher temperature environment in the experiment were not healthy and could struggle to find food or reproduce.

Nature is dependent on pollinators for the ecosystem to thrive. Food shortages, as well as irreparable harm to the ecosystem from a lack of pollinators, is a possible future for honey bees and climate change.



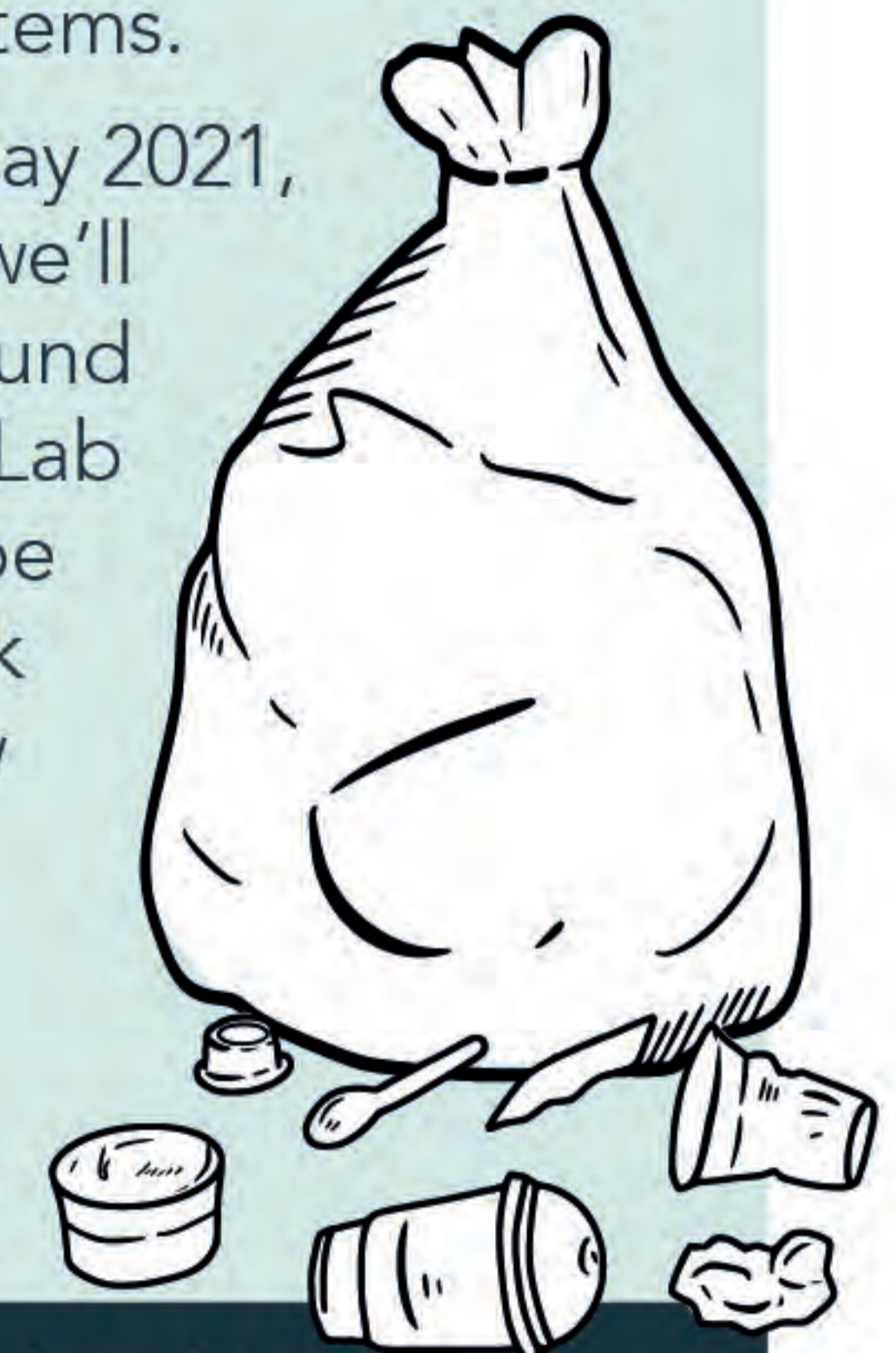
ZooLab Mission: Clean Up!

World Cleanup Day is a global movement, uniting 180 countries and millions of people across the world to clean up the planet.

You don't have to be a ZooLab Ranger to know that a cleaner planet means better habitats for animals and thriving ecosystems.

As part of World Cleanup Day 2021, we're leading by example; we'll be cleaning up the area around ZooLab HQ and all our ZooLab Rangers across the UK will be joining the effort too! Check our social media to see how we get on!

Get involved and arrange a clean up at your school! Together we can do this!



You can get involved too!
zoolabuk.com/cleanup

Bee Aware!

Buzz into action to help save the bees



ZOOLAB

Colour me in!

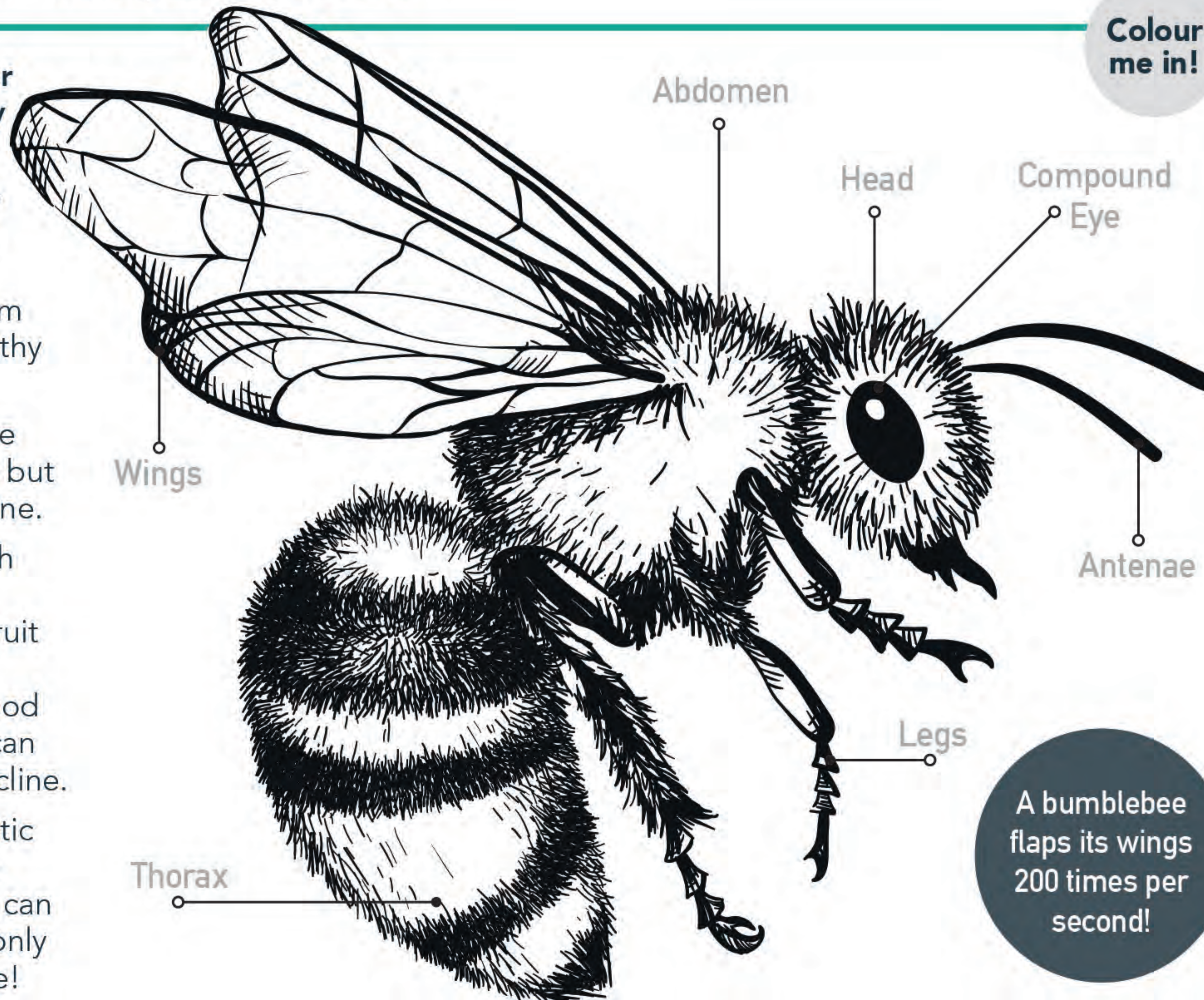
Bees are vital for a stable, healthy environment.

The vast majority of plants rely on pollination by bees making them integral to a healthy ecosystem.

There are 267 bee species in Britain but many are in decline.

Simple steps such as planting wild flowers or even fruit and vegetables help provide a food source for bees can help stop the decline.

Bees are a fantastic symbol of nature and together we can ensure they not only survive, but thrive!



QUICK FACTS!

Deadly hungry

Bees have to constantly eat due to their fast metabolisms. A bee with a full stomach is almost 40 mins from starvation.

A sting in the tail

Bumblebees don't die when they sting like honeybees. Male bumblebees don't have a stinger at all and female bumblebees aren't very aggressive.

Size matters!

The world's largest Bumble Bee is the *Bombus tahlbomii* of South America. It's the size of a flying mouse. Eeek!

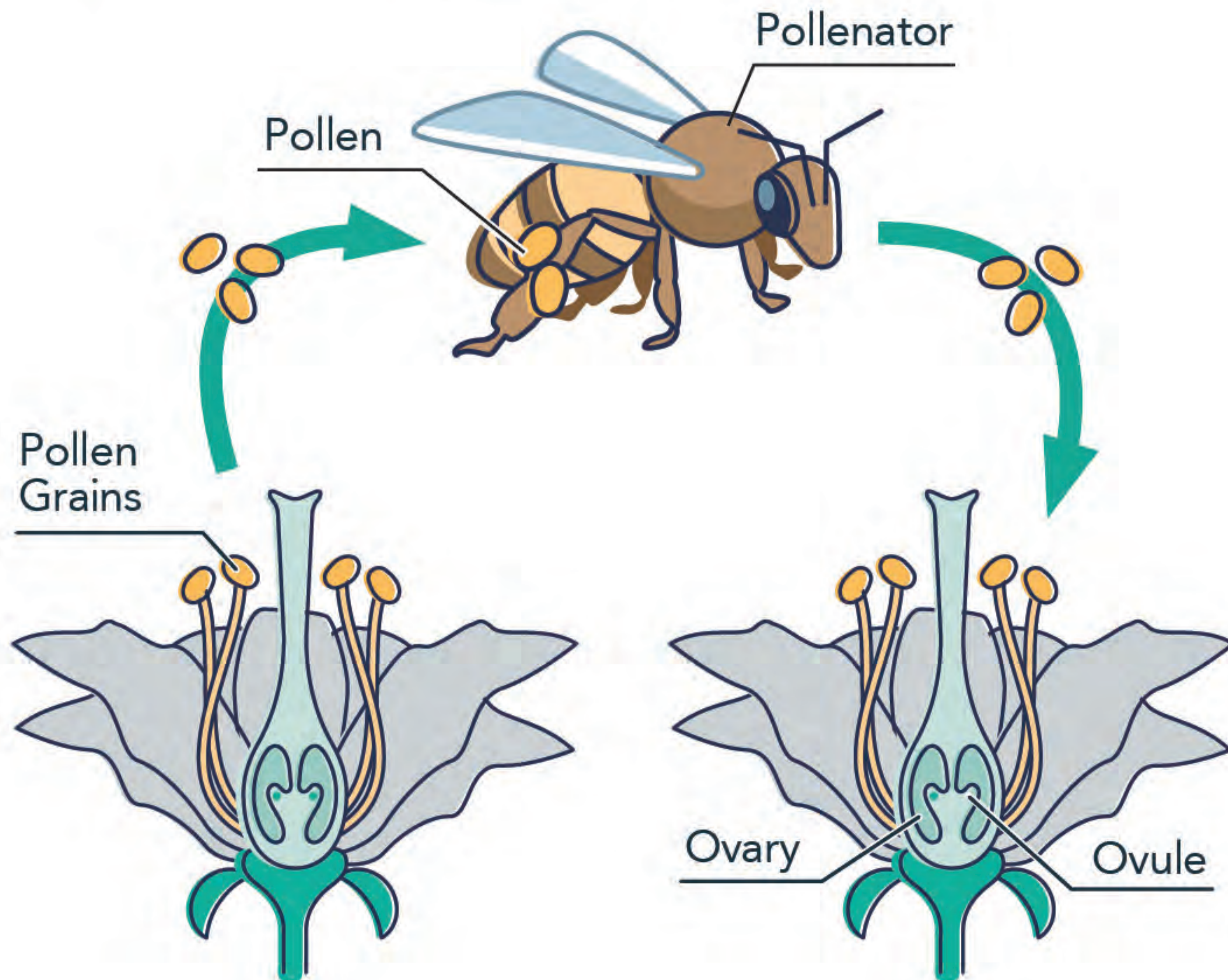
A bumblebee flaps its wings 200 times per second!

Pollination

Pollination is the process that allows plants to reproduce.

When a bee, or other insect lands on a flower, small particles of pollen stick to its legs. As the bee flies to the next plant, it transfers the pollen over with it.

Plants rely on bees and other insects to make this happen. If they ever stopped pollinating, it could damage the plants that give us fruit and produce oxygen. People need bees, plants, and food they provide to survive.



Bee Conservation

TASK

Bees are in trouble! They are slowly disappearing. Place a tick in the box below to match the correct reasons for bees becoming endangered:

- 1. Butterflies attack the bees
- 2. Climate change is affecting the bees
- 3. They drink too much nectar
- 4. Bees sting and people don't like them
- 5. We eat all their honey
- 6. Badgers dig up their hives
- 7. Pesticides harm the bees
- 8. Pollution is harming the bees
- 9. Their habitat is being destroyed

Food Chains

Within a habitat things interact with each other to form an ecosystem.

As part of the ecosystem, energy is passed from plants to the animals who eat the plants and then on to the animals who feed on that animal.

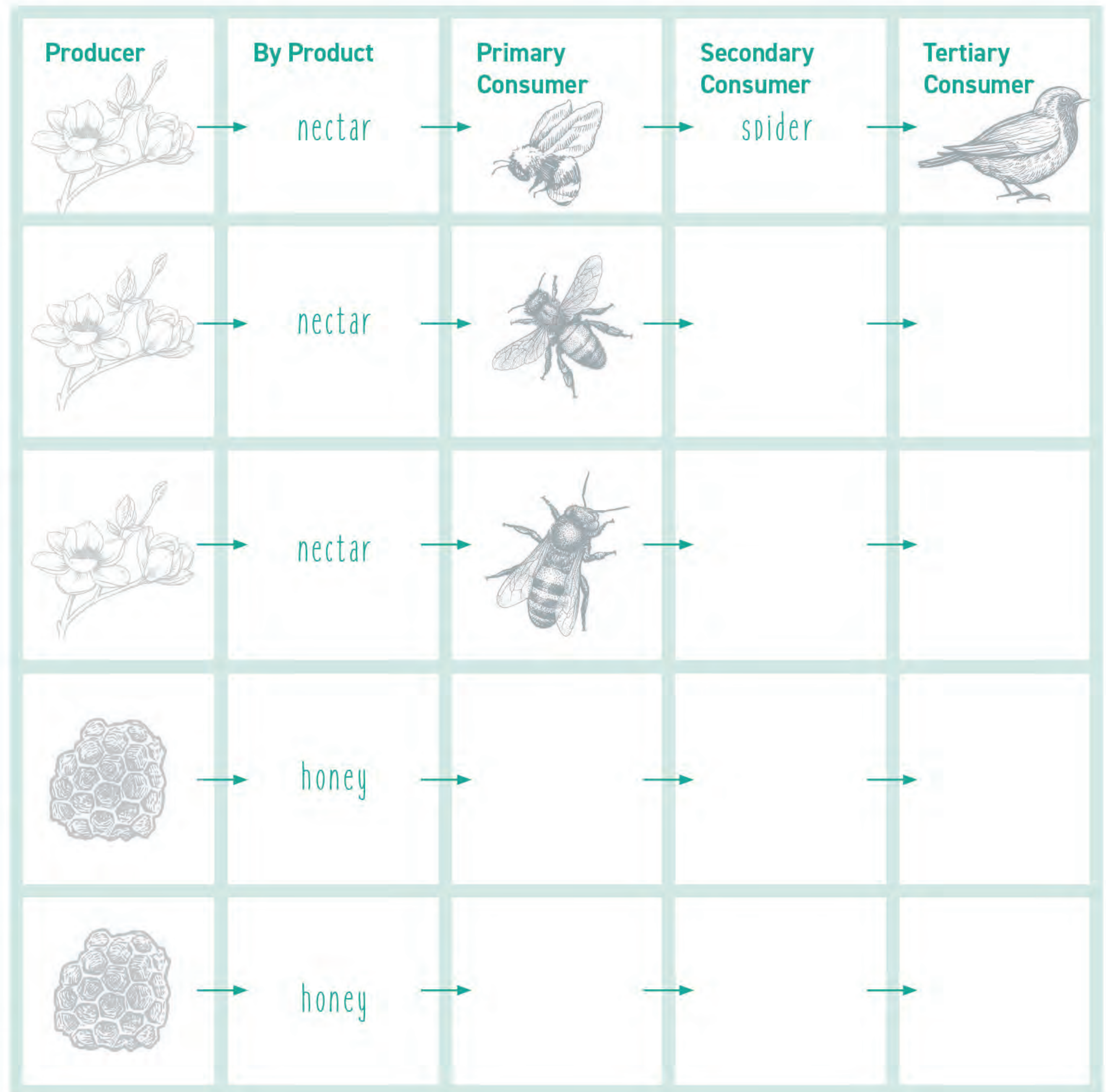
Bees drink nectar from flowers. If we put this in a food chain, the bee is the **PRIMARY CONSUMER** and the flower is the **PRODUCER** as the flower produces the food for the bee.

The **SECONDARY CONSUMER** is the animal that would eat the **PRIMARY CONSUMER**, the **TERTIARY CONSUMER** is the animal that would eat the **SECONDARY CONSUMER**.

TASK

Use the words below to complete the food chains.

honey-factory toad owl
human mouse bee keeper
possum wasp skunk



Bee our Guest!

Solitary bees don't live in hives. They make their nests on their own & lay their eggs in tunnels.

TASK

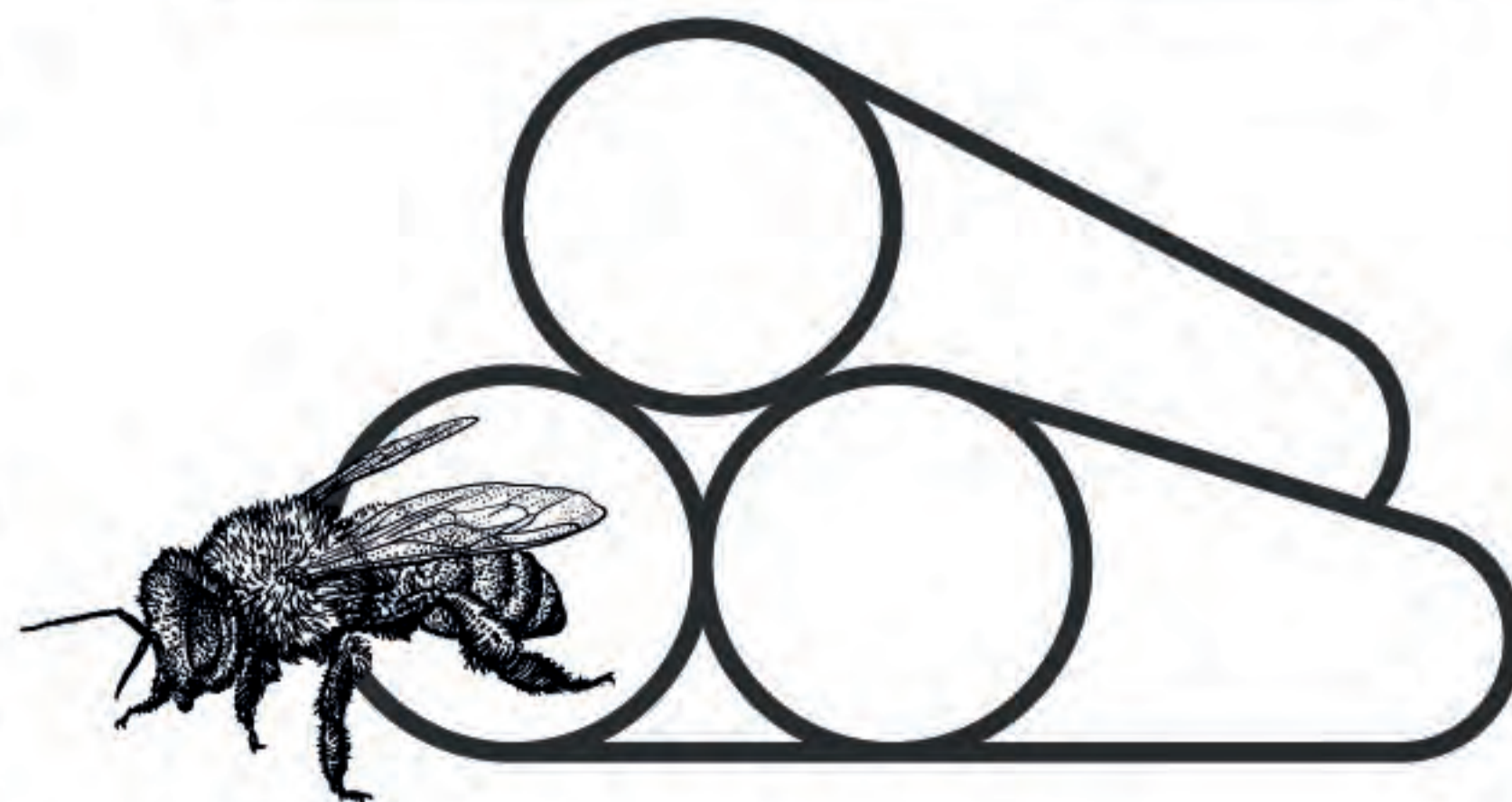
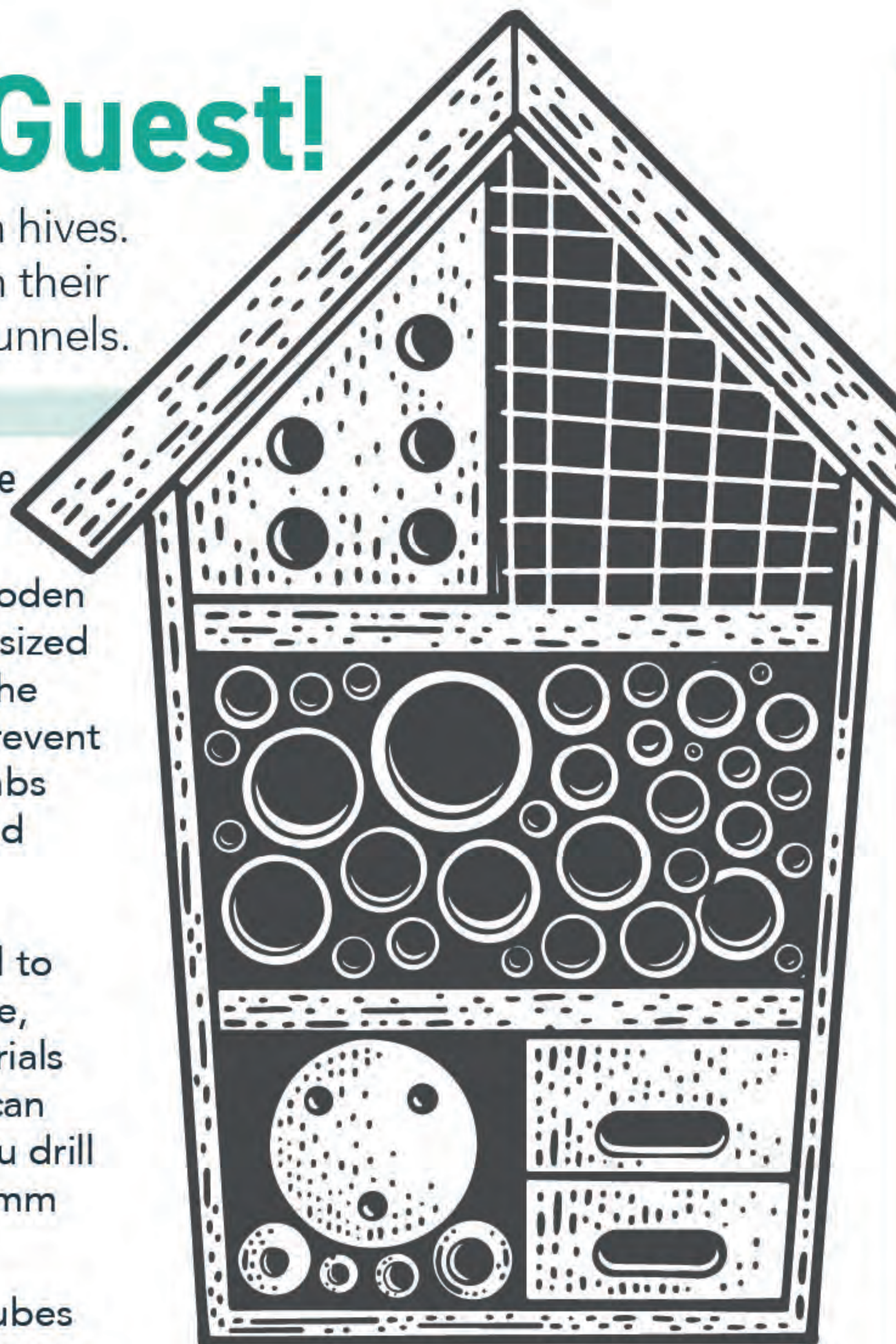
Follow the steps below to make your very own bee & bee!

STEP 1: A bee hotel is a wooden box stuffed full of different-sized hollow tubes. The back of the tube is sealed off to help prevent predators. When a bee climbs in this tube they are safe and protected.

STEP 2: You want your hotel to be around for years to come, so make sure you use materials like plastic and wood. You can also ask an adult to help you drill holes in a block of wood (5mm diameter).

Fill your box up with your tubes and blocks of wood. Squeeze all the tubes in together so they stay put.

STEP 3: Place your bee hotel facing south in a sunny position, near your bee-friendly flowers and shrubs. Viola! You're now the proud owner of a bee hotel!



TASK

Use the words in the box to fill in the blanks.

Bees live in a hive. There are lots of different sorts of bees; _____ bees live alone while _____ bees live in very large hives with thousands of bees. _____ bees live in a hive with 300-400 bees. Bees have a _____ on the end of their abdomen.

A bee will visit a _____ in the _____ and drink the _____ whilst there the bee collects _____ too. The bee then visits a different flower and pollinates the flower, the plant will then produce its seeds, these can be fruit and vegetables. Bumble bees pollinate an important pizza topping, they pollinate _____ plants. Another _____ bumblebees pollinate are _____ plants. We wouldn't have chips, crisps without bumblebees.

Honey
Stinger
Pollen

Tomato
Potato Flower
Garden

Nectar
Bumble
Mason

Bee Hive Maths

TASK

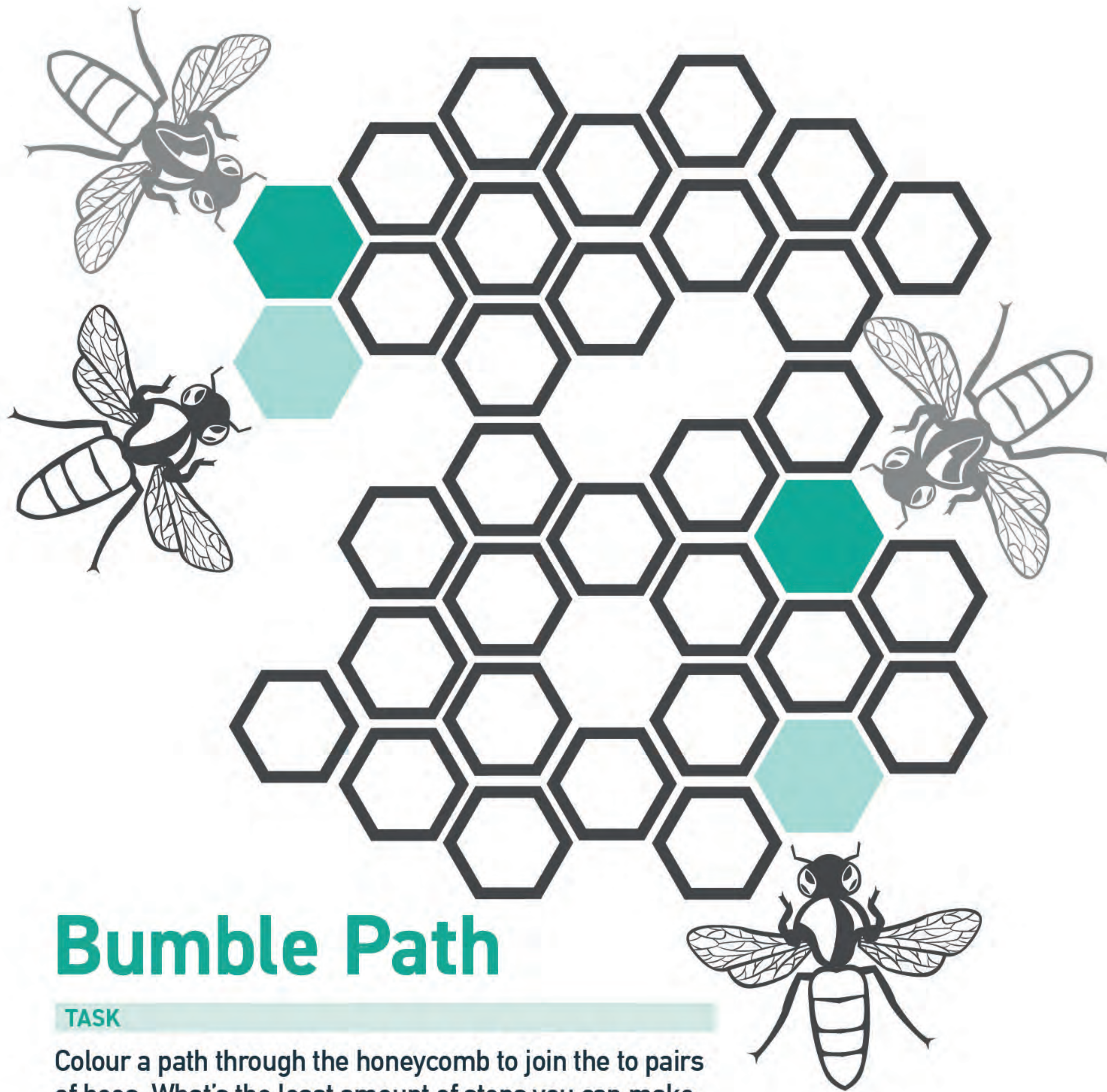
It's home time! Count the number of bees and divide them equally between the hives.

16 BEES
÷ 2 HIVES
=

BEES
÷ 2 HIVES
=

BEES
÷ 2 HIVES
=

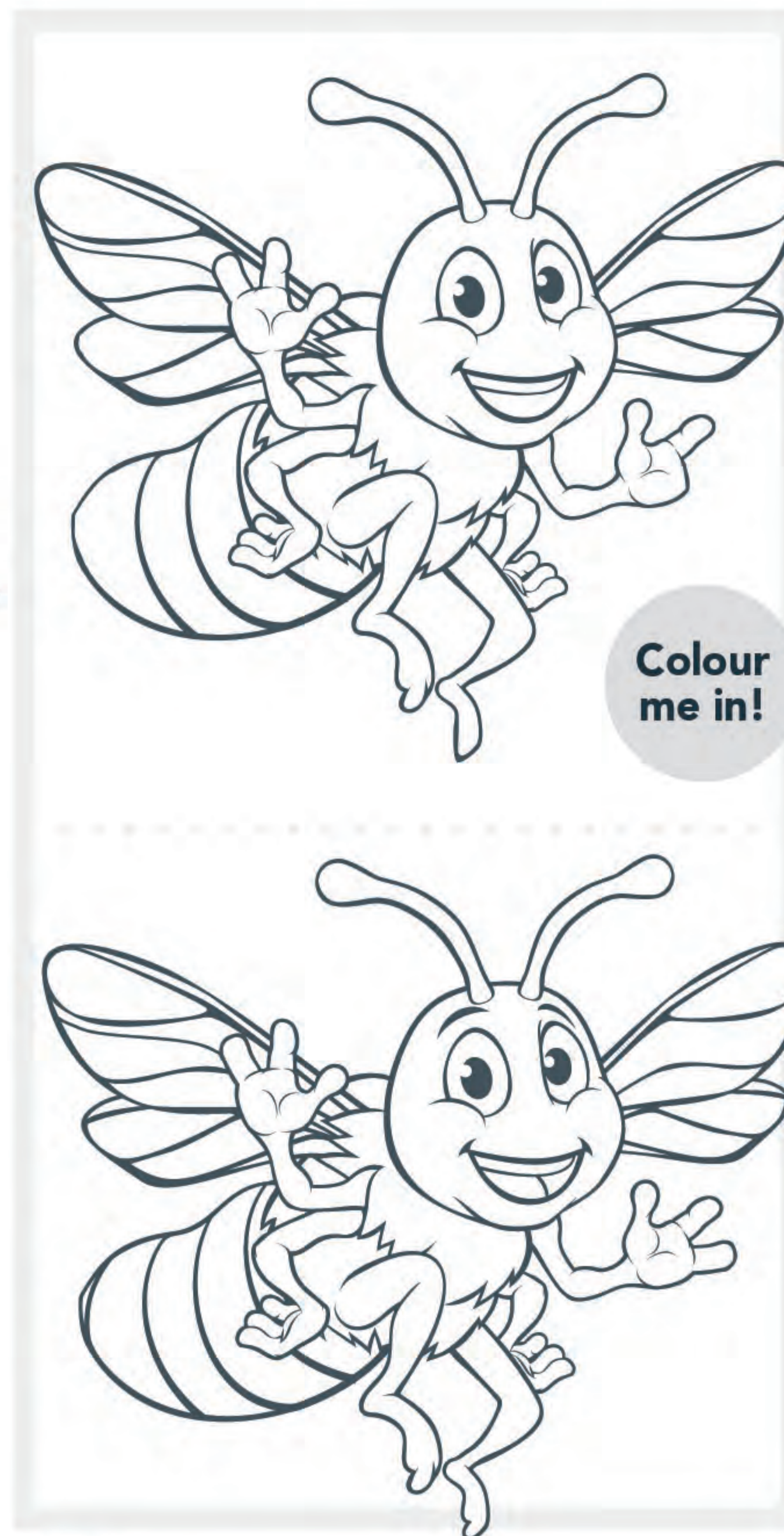
BEES
÷ 2 HIVES
=



Bumble Path

TASK

Colour a path through the honeycomb to join the to pairs of bees. What's the least amount of steps you can make the journey in? What's the most amount of steps?



Colour me in!

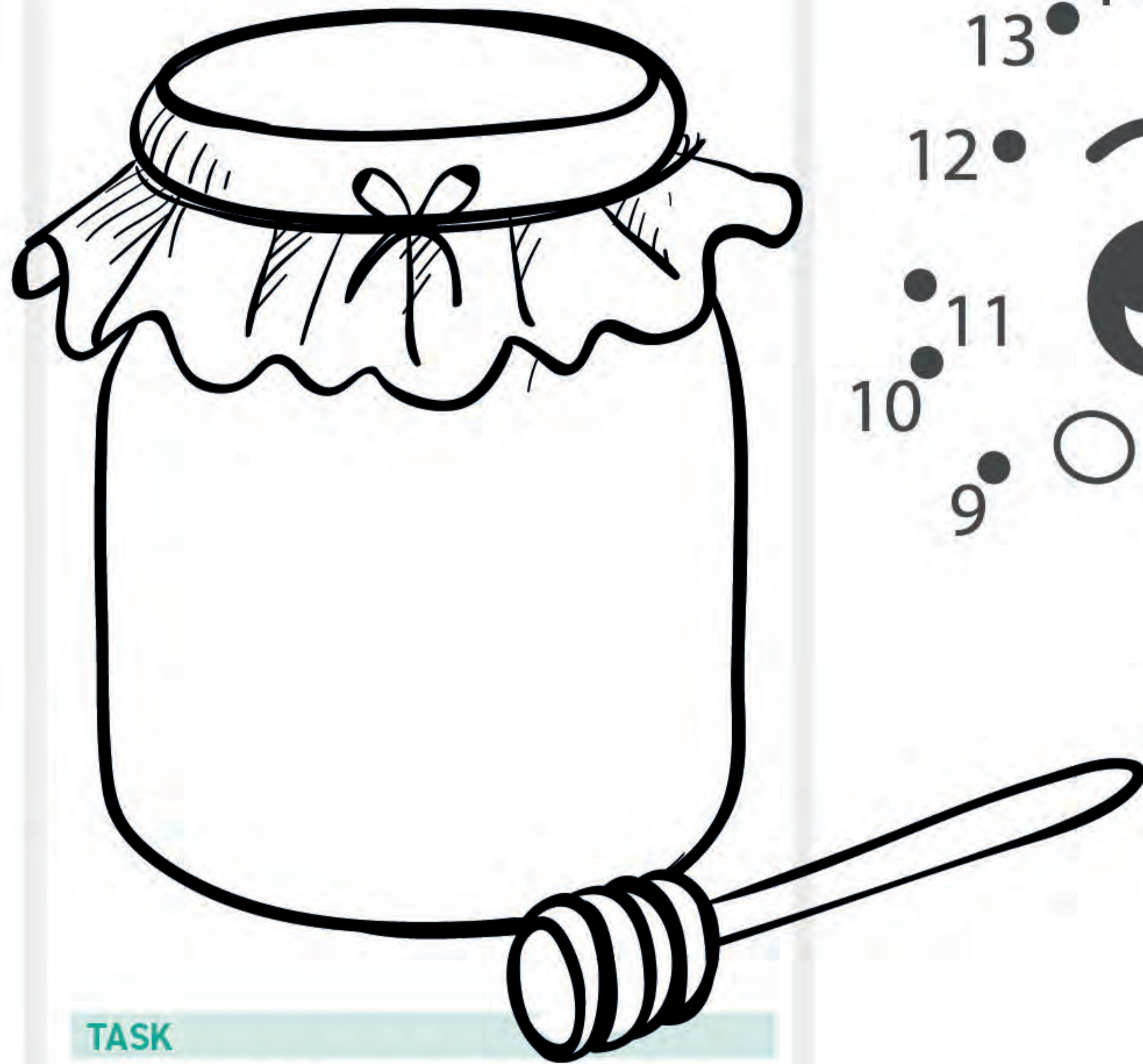
TASK

Circle five differences between the pictures.

Activity Sheet

TASK

Join the dots to reveal the picture.



TASK

Use coloured pens or pencils to design a label for a jar of honey - remember to include a bee in your design.

