



BeeSkilled



- BeeSocial



Honeybees

The craft of beekeeping



The Honeybee





A worker bee is only 1.5cm long with a 3 part body: head, thorax and abdomen. They have dark and light brown stripes, 2 pairs of wings, 6 legs, 5 eyes and 1 sting!



The honeybee is the only insect which provides food for humans! But each bee only collects 1/10 of a teaspoon of honey in her life. They live in large colonies, around 60,000 bees. The great majority of these are the female workers, which feed and care for the young larvae after they hatch from an egg.

All the eggs are laid by a queen, she can lay 2000 eggs a day in the summer! She has a longer abdomen to store eggs. A few of her eggs develop into drones [males] which are only created in the spring to mate with a queen. They are larger with big eyes and a furry bottom. They are turned out of the hive before the winter.

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They die if they use their sting so usually only defend, not attack. On their back legs they have baskets of hairs to carry pollen. The queen usually lives for 2-3 years, but the workers only for 6 weeks in the summer, they die exhausted after constant flying to collect pollen and nectar.

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They are happy to live in hives a beekeeper provides, gaining shelter and protection, but are still wild creatures.

If they choose their own site, they will pick a cavity with a small defendable entrance and will build wax combs naturally, always with hexagonal cells.

The temperament of the colony comes from the queen, she controls the hive with her special scent, she is the mother to them all. But the workers decide when she is getting too old or less powerful and they will replace her. She only flies twice in her life: once to mate and also when the colony swarms - half of the bees go with the old queen to set up home elsewhere. The rest wait for the new young queen to emerge and mate.



The queen only flies twice in her life:
once to mate and also when the colony
swarms - half the bees go with the
queen to set up elsewhere.



Modern beehives are a system of stacking boxes, each containing moveable vertical wooden frames assembled with purpose-made sheets of beeswax. The deeper box is at the bottom, resting on a stand and a floor which raises the hive off the ground.

In this deeper brood box, the queen lays eggs in the hexagonal cells in the wax. The queen is confined to the brood box by a horizontal grid [queen excluder] which the workers can pass through but she cannot.

The upper boxes are shallower with smaller frames and are used for honey storage. The beehive is kept at a temperature of 35 degrees C by the bees moving air around by fanning their wings and by spraying water if too warm. A heavy watertight roof is essential. Several hives grouped together are called an apiary.



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By-products of honeybees



Honey

Honeybees have been kept in hives over the centuries mainly so that beekeepers can take some of their surplus honey. Bees store honey to feed the young bees and to ensure they have enough supplies to keep them alive over winter. Honey is a pure natural, delicious source of energy, sweeter than sugar.

Nectar only becomes honey when the bees make the water percentage evaporate by holding nectar droplets at the end of their (tongue) proboscis and by fanning their wings. Honey is removed from the combs by crushing the wax or more usually, by spinning it out from the frames by centrifugal force with an extractor. It can be different colours, textures and tastes; from almost clear to deep golden brown, depending on which flowers the workers have taken nectar from. Honey has been used for centuries to help speed up healing of cuts and wounds.

Good on the inside and the outside!

Beeswax

Honeybees are very industrious social insects, working together. When the colony is building up in the spring the bees collect nectar and pollen to feed themselves and their larvae. An abundance of nectar causes the workers to produce wax scales from their bodies which is used to build more hexagonal cells in which the queen lays eggs or nectar is stored. Wax is also used to cap the cells of honey. A beekeeper collects all the wax scrapings and cappings from the hive and when it is melted together and cleaned it can be used for candles, polish, cosmetics and soap. Beeswax can make skis and drawers run more smoothly and make surfaces waterproof. It has a wonderful aroma.



Propolis

This is a sticky resin the bees gather from plants to glue together all the parts of the hive and seal all the cracks against cold weather. It is like toffee, but sets hard.



A year's forage for honeybees



Spring

Snowdrops, crocus, hellebore, heather, arabis, pussy willow, oil seed rape.

Early summer

Flowering currant, dandelion, grape hyacinth, forget-me-not, fruit blossom [apple, pear, plum, cherry].

Summer

All herbs, sage, mint, rosemary, oregano, marjoram; lavender, poppy, cranesbill, clover, blackberry, beans.

Autumn

Polygonum, golden rod, sedum, asters, ivy.

Bees get a lot of useful food from trees:

e.g. Lime, sycamore, maple, chestnuts, willow, hawthorn, hazel, mulberry, holly

They feed on one species while it is flowering, which makes them very efficient pollinators in fruit orchards. The bees are attracted by the sweet nectar and they move the pollen from the male to female parts of the flower to ensure seeds and fruit for farmers and gardeners.

Bees will fly up to 3 miles to seek out a source of nectar or pollen. Clover is a great source of nectar!



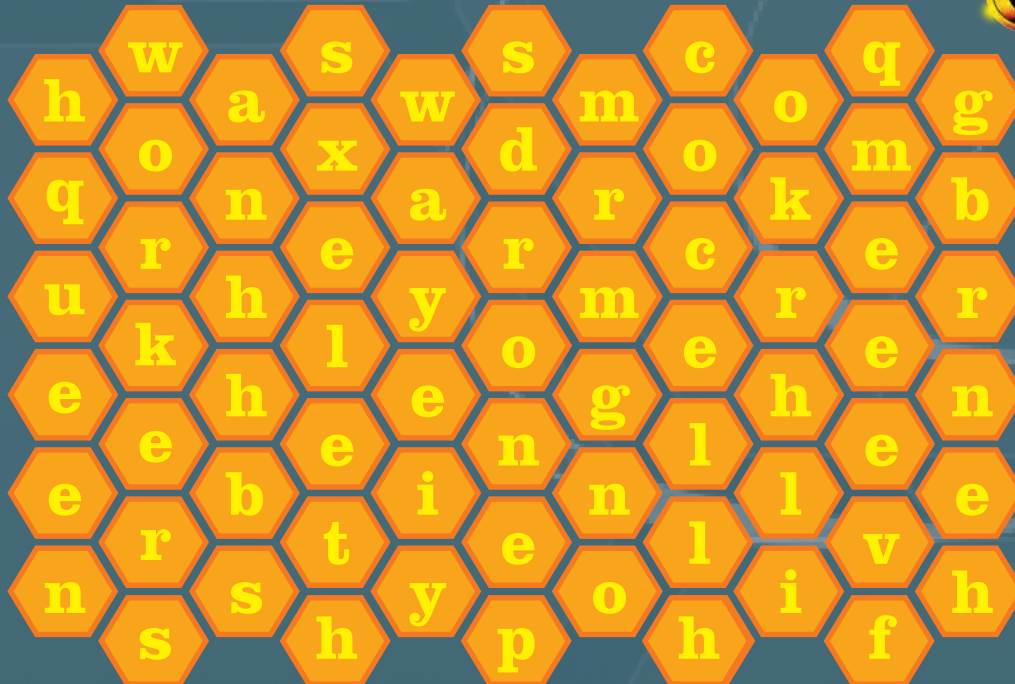
Fun Zone



Bee facts

Honeybees can fly up to 15 miles an hour. Worker bees are all female and do all the work in the hive! Workers live about 6 weeks in the summer. The queen is the largest bee in the hive. They can see ultraviolet light. Honey bees can dance to show others where to find food. They survive the winter by eating stored honey and keeping warm with other bees. It takes 556 worker bees to make 1 pound of honey from a million flowers. They flap their wings at the rate of 250 beats per second. Drone bees cannot sting.

Word Search



BEE
COMB
HIVE
POLLEN
SMOKER
SWARM
WORKER
CELL
DRONE
HONEY
QUEEN
STING
WAX



Honey Fruit Flapjacks

You will need:-

100g butter
100g honey
Grated rind of 1 orange
175g porridge oats
75g raisins
saucepan, wooden spoon,
oven gloves, greased shallow tin
[18-20cm square, approx]

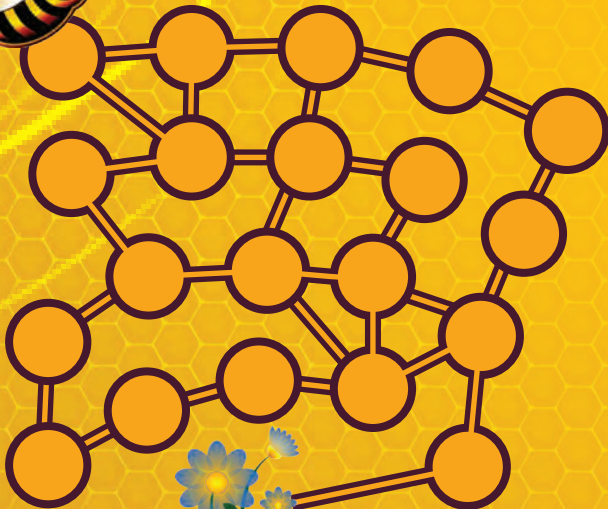


What to do:-

1. First wash your hands.
2. Set the oven temperature to 160°C (gas 3): ask an adult to help you.
3. With the help of an adult, melt butter and honey in the saucepan on a low heat.
5. Remove from the heat, stir in the rind then oats and raisins. Mix well.
6. Put into the tin, level the top.
7. Ask an adult to help you to put it in the oven to cook for 45 minutes or until golden brown: also ask them to assist in taking them out at the end.
8. Leave in the tray until cold, then lift them out.

Store in an airtight tin. YUM!!!!

Help the Honeybee reach the flowers



The Beekeeper



Beekeepers wear protective suits with a veil and glove, especially when taking the bees' honey!

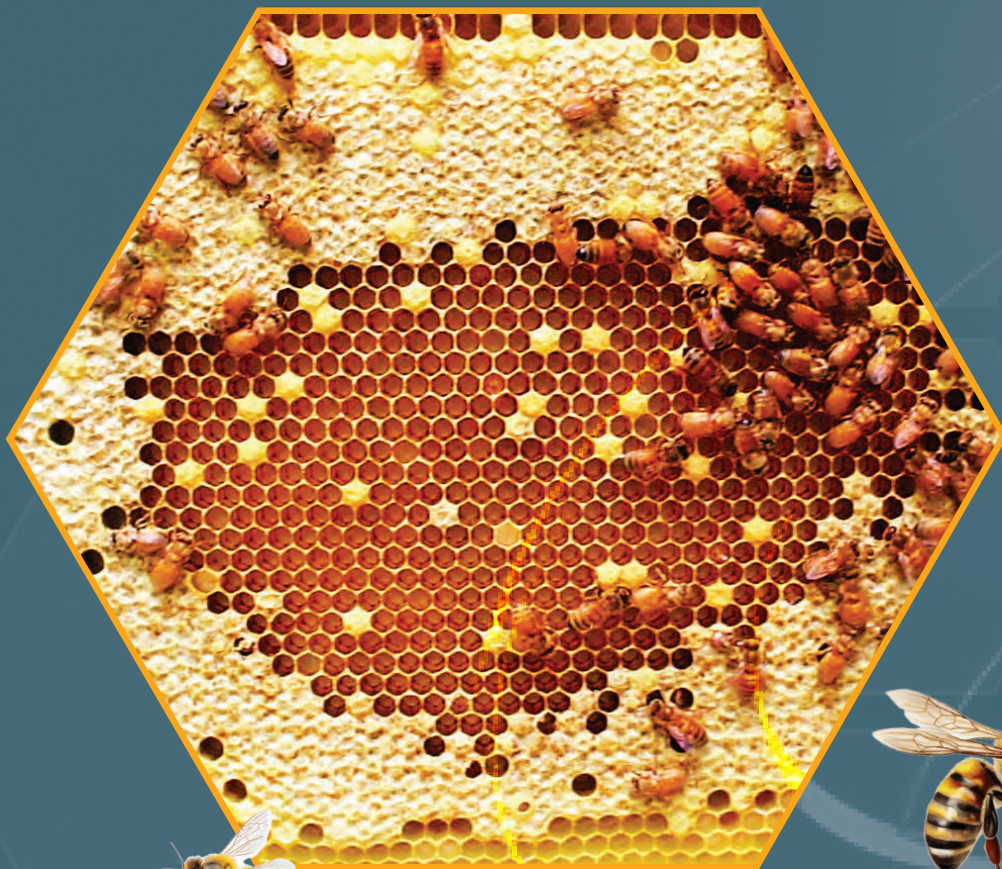


Throughout history, people have kept honeybees to extract the delicious honey and to learn about how they live and organise themselves. Some people used to believe that there was a king bee in control of the hive, not realising it was a mainly female society.

The first beekeeping records are from Ancient Egypt; in those days hives were made of clay. In the Middle Ages, in Britain, hives were made of straw; sadly this meant that the colony had to be destroyed in order to extract the honey. Nowadays, we have hives with moveable frames. The decline in bee numbers is a great worry and beekeeping clubs are growing, as concerned people realise bee numbers can be increased by more beginners taking up the craft. Beekeepers today can be any age or gender.

To start beekeeping is quite a commitment of time, specially in the spring and summer and there is much fascinating information to learn. New beekeepers should take classes and there are even exams in beekeeping for the more experienced and adventurous!

Beekeepers wear protective suits with a veil and gloves, especially when taking the bees' honey! A smoker is used to calm the bees before opening their hive. The bees fill their stomachs with honey, believing the smoke to be a forest fire.



Honey. Extraction

Honey is a food, a source of energy for the bees and essential for their survival.



As a delicious food for humans, it is obvious that hygiene must be paramount when a beekeeper extracts honey from the combs.

The bees have visited the boxes where honey is stored many thousands of times; to deposit the nectar and to cap over the cells with wax, this is the sign that the nectar is now honey.

Some dust and debris is inevitable so the honey must be strained to remove unwanted bits.

First the cappings are sliced off frames with a sharp knife, then the frames are placed in an extractor and spun to remove the honey by centrifugal force. It is liquid and runs down inside the extractor to a valve at the base.

Honey can be run off, through a filter, into buckets till needed, or into jars.

Hobby beekeepers do nothing else to their product; commercial honey producers blend different honeys, heat the honey and use very fine filters to remove all traces of pollen.

If buying from a small producer, you are getting a product as close as possible to what was in the hive.





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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