Hibernation

Hibernation

Introduction:

Hibernation is used by some animals to help them survive through periods of environmental stress - like winter's extreme cold and lack of food. Hibernation is different from sleeping due to the difference in the way the organism's body operates. A hibernating animal's body temperature falls to nearly the same temperature as their surroundings, their heart rate and breathing rate decrease, and their metabolism slows right down. This allows them to use minimal energy to get through periods of time in which they would otherwise use huge amounts of energy to keep warm. Before entering hibernation the animal must prepare by adding as much fat as possible by eating huge amounts. Because hibernation takes place in winter the animals can take advantage of the late summer gluts of food.

Although hibernation has evolved to increase the chances of an animal making it through winter it can still be dangerous because the slowing down of all the body's systems means that the animals cannot respond quickly and so they become vulnerable to predators. They can also starve from lack of fat reserves, severe weather or being woken up too soon before food has become available again.

In the UK mammals like hedgehogs, dormice and bats hibernate as well as amphibians and reptiles like the common frog and the adder. You might be surprised to find out that some insect species like peacock and small tortoiseshell butterflies, ladybirds, Queen wasps and bumblebees also hibernate over winter.

Animals need to find somewhere safe and sheltered to spend the winter where they won't be disturbed and where the temperature remains stable. You can help by building winter homes for wildlife in your garden or school grounds.

Further research keywords:
Aestivation, torpor, denning, hibernaculum, dormancy, hyperphagic, metabolism, endotherm, ectotherm, phenology - nature's calendar

Build a bug hotel

Activity guide:

Equipment required:
- Print out the worksheets, one per group
- Wooden pallets or planks of wood
- Bricks
- Old plastic bottles
- Bamboo canes
- Straw / leaves / twigs / bark / stones and pebbles
- Tiles
- Cardboard

To build the hotel:

The best time to build a bug hotel is in the autumn because the materials are more freely available but you can build them at any time.

1. Divide the pupils into a few groups. If you have enough equipment then each group could make their own hotel, if not you could divide up the jobs instead, for example one group fills the plastic bottles, one group stacks the pallets, one group pots up plants for the top, make the sign etc.

2. Stack the pallets or planks of wood using the bricks in between each layer so that you create lots of small rectangular sections.

3. Fill the sections with different combinations of items to create different sizes and types of gap and crevice.

4. Fill gaps with leaves and straw.

5. Add plants or turf to the top of the pallet stack.

6. The completed structure can be decorated; maybe include a hotel name sign or insect pictures painted on wood and stones.
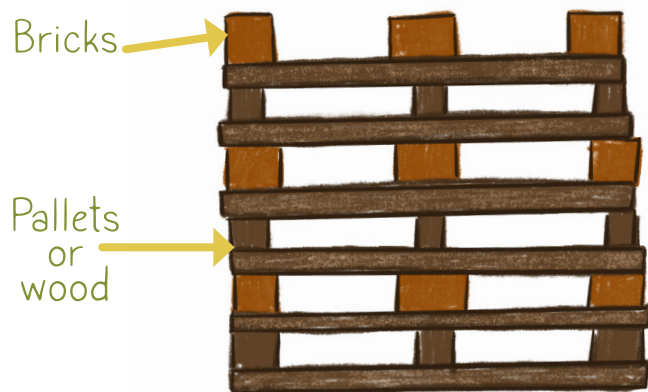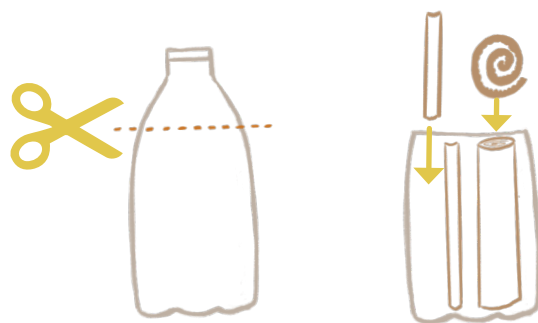
Bug hotel

Help insects get through the winter by building a bug hotel. Make sure it's got lots of different materials, gaps and crevices so that lots of different kinds of insects can live there.
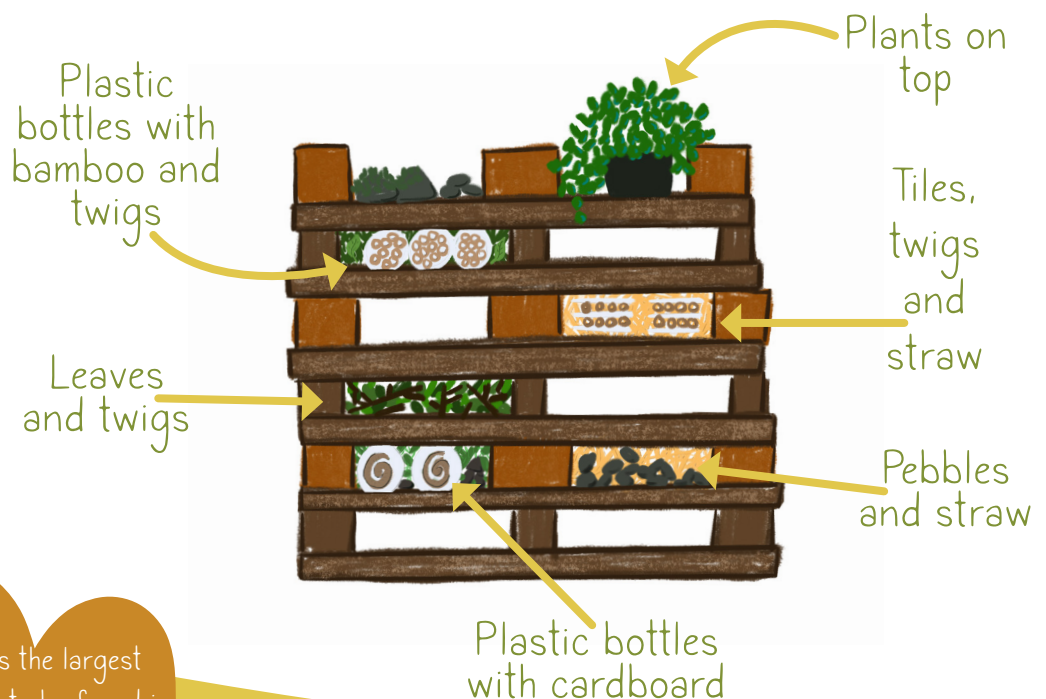
1) In groups, stack up your pallets or bigger pieces of wood in between bricks so that you end up with little sections.

Bricks

Pallets or wood

2) Fill your plastic bottles with the bamboo canes or rolled up cardboard. Make piles of tiles and twigs.

3) Fill in the gaps with straw, leaves, twigs and pebbles. Make all the sections different and fill all of them up. Add plants to the top.

Plants on top

Plastic bottles with bamboo and twigs

Tiles, twigs and straw

Leaves and twigs

Pebbles and straw

Plastic bottles with cardboard

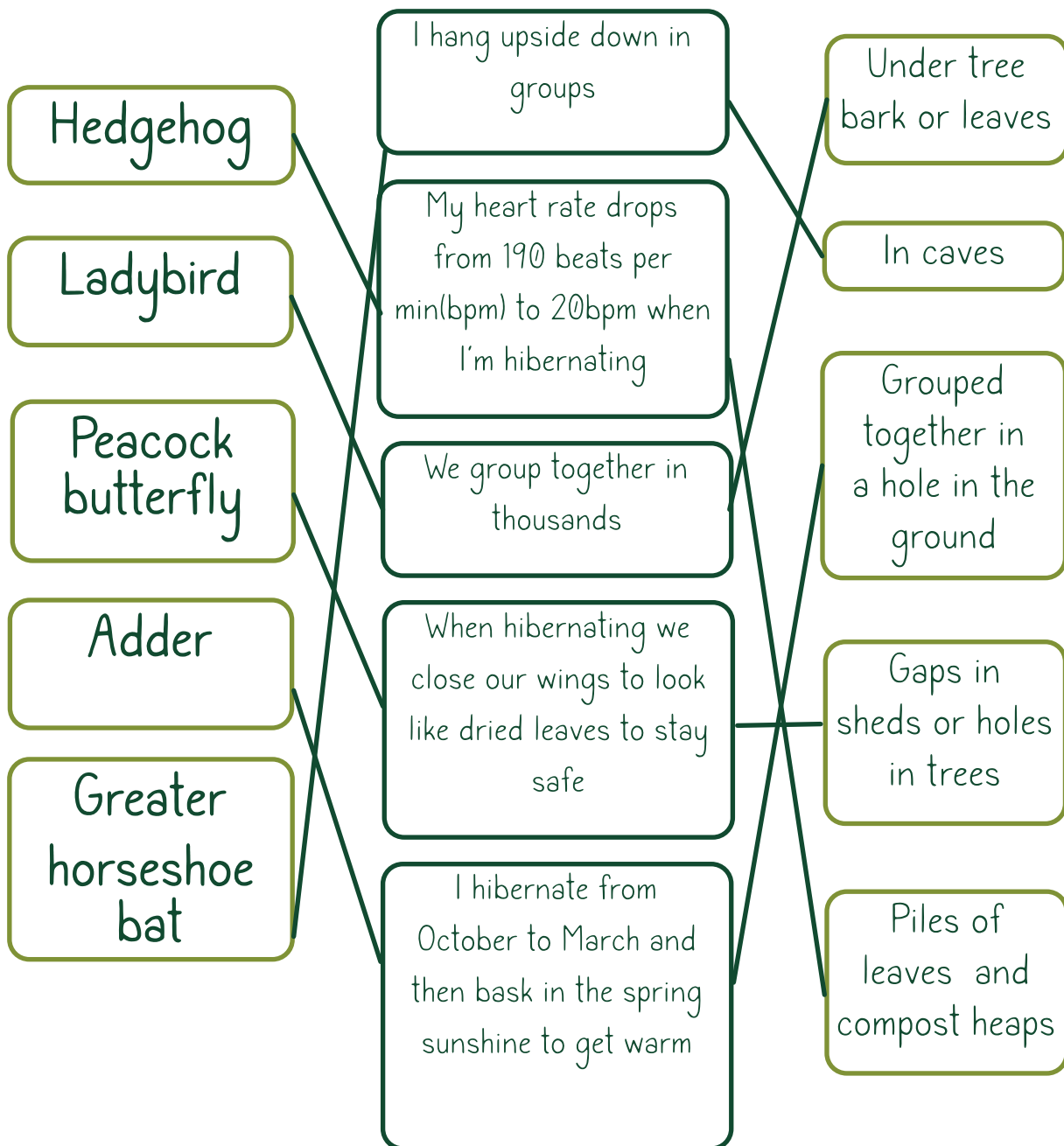The stag beetle is the largest species of insect to be found in the UK.

Hibernation match

Activity guide:

Equipment required:
- Print the 'Hibernation match' worksheet for all pupils

Answers – Habitat match

Animals	Facts	Habitats
Hedgehog	I hang upside down in groups	Under tree bark or leaves
Ladybird	My heart rate drops from 190 beats per min(bpm) to 20bpm when I'm hibernating	In caves
Peacock butterfly	We group together in thousands	Grouped together in a hole in the ground
Adder	When hibernating we close our wings to look like dried leaves to stay safe	Gaps in sheds or holes in trees
Greater horseshoe bat	I hibernate from October to March and then bask in the spring sunshine to get warm	Piles of leaves and compost heaps

Hibernation

Hedgehog

Ladybird

Peacock butterfly

Adder

Greater horseshoe bat

I hang upside down in groups

My heart rate drops from 190 beats per min(bpm) to 20bpm when I'm hibernating

We group together in thousands

When hibernating we close our wings to look like dried leaves to stay safe

I hibernate from October to February and then bask in the spring sunshine to get warm

Under tree bark or leaves

In caves

Grouped together in a hole in the ground

Gaps in sheds or holes in trees

Piles of leaves and compost heaps

The 17 species of British bat all hibernate during the winter.