

Key Stage 3 Worksheet

Creepy Crawlies



Swansea
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Abertawe



What are we learning?

In this video about 'Creepy Crawlies' S4's Biologist Alicia tells us all about how important insects and other minibeasts are for our planet. She introduces us to S4's own Madagascan Hissing Cockroaches and Giant Millipedes!

Watch the video here:
youtu.be/ewtEkAM9Grg



Open the file in your web browser to click on the links.

Before you watch the video...

What comes to your mind when you think about insects?

Draw or write your ideas in the box below:

I think insects are...

Insect facts

- Insects belong to a group of animals called invertebrates, which means they don't have a spine (back bone).
- We don't know how many insect species there are on the planet; but it is somewhere between 6 and 10 million!
- Insects make up 90% of the animal species on the planet.
- Insect bodies are made up of three parts; the thorax, abdomen, and head.
- Insects are a vital part of keeping our ecosystems, habitat, and the entire planet in balance. This is because they provide important ecosystem services like pollinating flowers, eating waste and controlling pest bugs!

Exercise

Insects have 6 main body parts:

Antenna – insect antenna are sense organs. They help the insect to smell, taste, feel, and sense temperature and humidity. They are found on the head and come in a lot of different shapes and sizes. Insects use their antennae to sense the world around them and it often looks like they are 'feeling' their way with them.

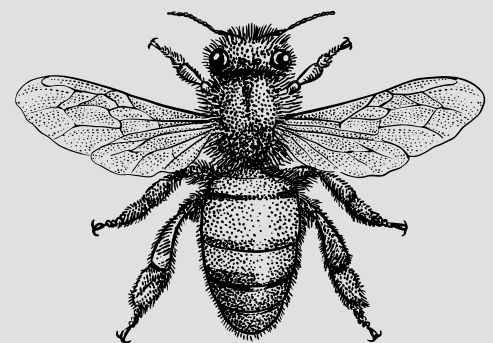
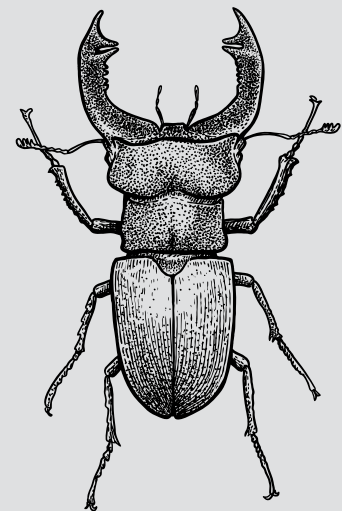
Head – insect heads can have antenna and claw-like mouthparts called mandibles. They also have a special type of eye called a compound eye. Compound eyes are different from human eyes because rather than having one of everything (one lens, one cornea) they have multiple tiny eye units that each contain a cornea, a lens and a light and colour receptor. Insects have many tiny, independent 'eyes' that together make up a compound eye.

Thorax – the thorax is the middle section of an Insect's body. It is found behind the head and in front of the abdomen.

Wings – large on some insects and small on others, some insects have two pairs of wings, some have only one pair.

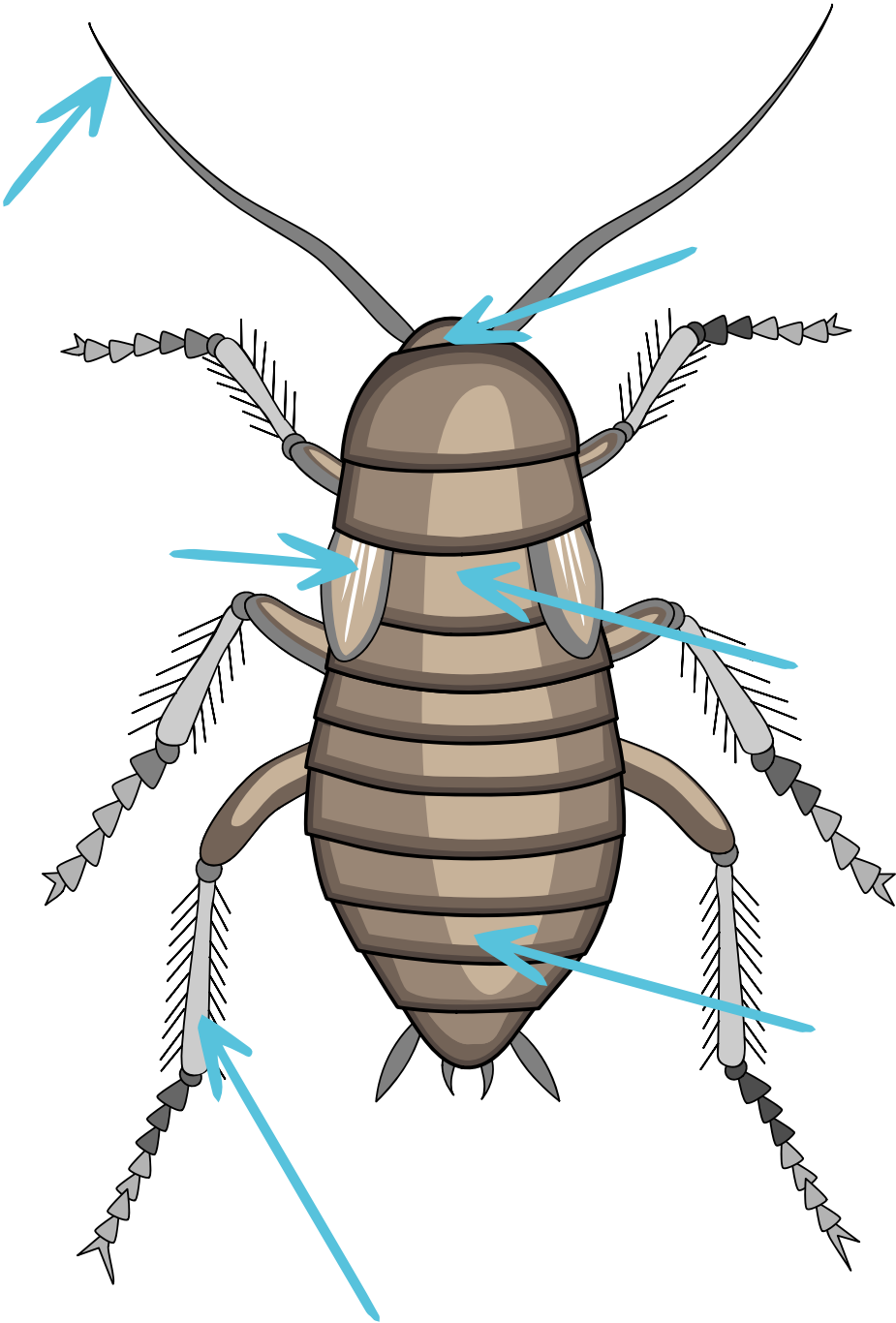
Legs – Insects have six legs. They have a pair of forelegs at the front of their bodies, a pair of midlegs in the middle and a pair of hindlegs at the back.

Abdomen – The back part of the insect's body, divided into segments.



Label the cockroach body parts on the diagram below!

ACTIVITY SHEET



Insects provide 'ecosystem services'

Insects are important because they provide ecosystem services.

What is an ecosystem service?

- An ecosystem is made up of all the organisms found in an area – for example, a coral reef is an ecosystem.
- The organisms in an ecosystem interact with one another and with their environment.
- All organisms in an ecosystem depend on each other to keep the ecosystem healthy.

Organisms fulfil certain roles within ecosystems. These roles have wider benefits not just to the organism but also to us. These benefits are called ecosystem services. For example, spiders eat the insects that can destroy crops - this is an ecosystem service provided by spiders. Organisms fulfil certain roles within ecosystems. These roles have wider benefits not just to the organism but also to us. These benefits are called ecosystem services. For example, spiders eat the insects that can destroy crops - this is an ecosystem service provided by spiders.





Some examples of important ecosystem services are:

Pollination	Insects carry pollen from one plant to another as they feed. This fertilises the flowers so the plants can reproduce and grow.
Pest Control	Carnivorous insects eat smaller insects, so they can help keep 'pests' under control.
Waste Disposal	Some insects eat waste plant material that is found on the floor of forests and natural areas. These insects are called 'detritivores'. Detritivores break down and decompose dead or decaying material and allow the nutrients to be returned to the soil.
Seed Spreading	Insects that eat plants also help to spread seeds. As moths, beetles and bugs are feeding, they often knock seeds off plants and help to spread them. Sometimes the seeds stick to the insects and are carried a long way away before being dropped. This helps spread seeds to new places for new plants to grow.

Complete the table showing the ecosystem services carried out by different insects.

The first one is an example that has been completed for you.

ACTIVITY SHEET

Animal	Ecosystem Service	How does it help?
 <p>Bees</p>	<p>Pollinator</p>	<p>Fertilising plants so that they can reproduce. Without pollinators, there would be fewer plants, fewer animals and not enough food on the planet.</p>
		<p>If it wasn't for these amazing detritivores there would be poop everywhere! They can move a dung ball up to 50 times their own weight and they navigate using the stars! They have been around on the planet for 30 million years (we know this because scientists have found huge tennis-ball sized dung ball fossils!)</p>
		<p>It's not just bees that pollinate plants! These brilliant insects mimic bees to look just like them, but they are actually flies. They feed on nectar and pollen, but they have no sting. They look like bees and wasps to scare away predators.</p>
		<p>Caterpillars are butterfly larvae and they have huge appetites! Left unchecked they can destroy crops. Caterpillar populations are kept under control naturally by pest control insects (and birds) who eat them. These pretty, tiny bugs eat caterpillars and help control their population.</p>

Life in balance

Ecosystem services are all about the relationship between insects and the environment. Ecosystems are very delicate and finely tuned. If the numbers of one species changes, this can have a huge knock-on effect to all the other species in the same ecosystem.

If the population of a predator species grows, there will be too many predators and not enough prey and the ecosystem will be out of balance.

If the population of a prey species grows and there aren't enough predators, the same will happen! It's like a delicate see-saw.



If there are too many ladybirds they will eat too many caterpillars.

If too many caterpillars are eaten there will not be enough butterflies. Butterflies are important pollinators.

BAD NEWS FOR PLANTS



If there are too few ladybirds they will not eat enough caterpillars and the caterpillars will eat too many crop plants.

BAD NEWS FOR PLANTS

If there are too many caterpillars they will eat too many plants, damaging crops and acting as a pest.

Questions

Interactive: Click on the box to start typing

Q1. What percentage of all animals on the planet are insects?



Q2. Write the differences between centipedes and millipedes.



Centipede

Millipede

Q4. What does a detritovore eat?

Q5. What does a carnivore eat?

Q6. What does a pollinator do?

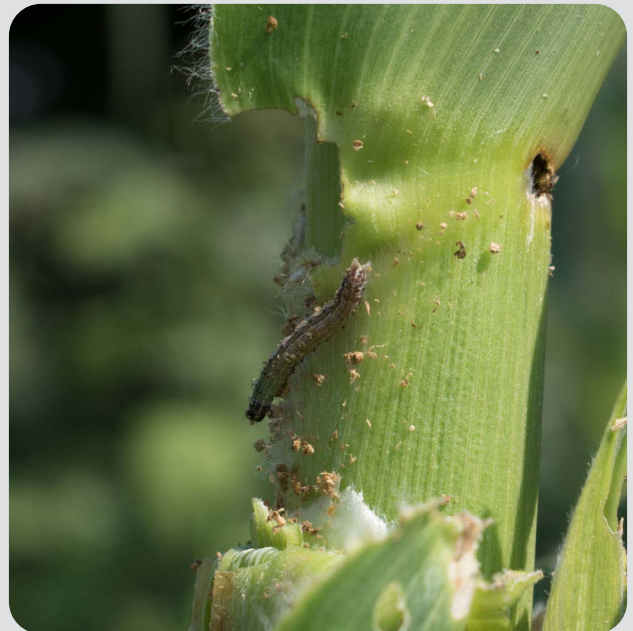
Want to know more?

Do some research and read about '**Armyworm Caterpillars**' online! These very hungry caterpillars specialise in eating cereal crops such as corn that local communities depend on for food.

They have destroyed crops for many years in South America but in 2016 they spread to Africa for the first time (either being spread on the wind or accidentally, for example, on a plane).

Scientists are exploring what can stop the Armyworms. Unfortunately, climate change really helps them as they thrive in periods of drought followed by heavy rain – just the sort of extreme weather that is caused by climate change.

Insects might be able to help! The Armyworm Caterpillar has a natural predator - a tiny parasitic wasp that doesn't hurt other animals or humans, but loves to eat the caterpillars. Scientists are exploring how this wasp can help to control the population of Armyworm and keep crops safe!



What do you think about insects now?

Draw or write your ideas in the box below:

I think insects are...



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