



CLIMATE ACTION

By Georgina Stevens

Illustrated by Katie Rewse

Our planet needs us,
and we need our planet.

Learn about the causes of climate change and how it is affecting our world.

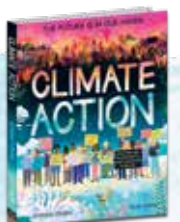
Explore the human impact and what it means to have a carbon footprint.

Read about creative ideas for tackling the climate crisis.

Be inspired by positive stories from young changemakers around the globe.

Get tips on how to take action and reduce your carbon footprint.

Teaching guide created by Miranda Otter-Barry Ross 2020





KS1
PAGES 34-35

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Bees

Curriculum Subject: Science

KS1 Area of Focus: Minibeasts

Learning Objective: To explore the positive impact bees have on the environment

Start by pulling items one by one from a special bag, and asking students to guess what the lesson might be focusing on today. Inside the bag might be: a jar of honey, a photo of a bee hive, a photo of a person in protective bee clothing. *What do you think we are learning about today? What do we already know about bees?*

Explicit teaching: Explain that bees are very special and are extremely important for the environment. While they gather nectar from a flower, they also gather pollen on their hind legs. Bees transfer this pollen from one flower to another, which is called pollination. This helps plants to make new flowers. To demonstrate this, you could role-play as a bee: adding Velcro to ping pong balls which represent the pollen, and sticking them to your clothing. As you move from flower to flower, unstick a ping-pong ball to represent the transferring of pollen. *Why is it important we protect bees? What could happen to the flowers and plants if there aren't any bees?*

Observe: If possible, take students out to the school garden to observe bees moving from flower to flower. Students can record their observations in the observation sheet.
What do you notice?

Activity: Students can then create a model bee using old toilet roll tubes, paint them and add paper wings.



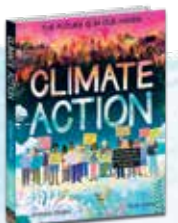


My Observations



What did you see? Draw it.

What were the bees doing when they landed on the flower?





KS1
PAGES 32-33

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Heatwaves

Curriculum Subject: Science

KS1 Area of Focus: Seasonal Changes

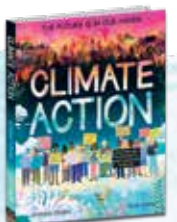
Learning Objective: To measure and record water levels over time

Start by reading pages 32 – 33, and discuss: *Can anyone think of countries where there might be a drought? What happens when it's very, very hot? Do droughts happen here where we live? What things could we do when there is a drought to save water?*

Teach: Explain that preserving water is extremely important, and the easiest way of doing this is to collect rain water. Some people do this and use the water for drinking, some people use the water for their animals or plants.

Experiment: Students will be setting up an experiment to collect and measure rainfall over a period of time. They will be recording their results each day. You can ask students to bring in old 2L clear plastic bottles. Cut the top off, at the widest part, and use it as a funnel (pointing downwards into the mouth of the bottle). Each day, students should go out in small groups and measure the amount of rainfall – this could be in ml/l or in cm, depending on age group.

Use the collected rainfall to water the school garden, or as a bird bath.





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Transport

Curriculum Subject: Maths

KS1 Area of Focus: Drawing and interpreting graphs

Learning Objective: To collect data and create a bar graph

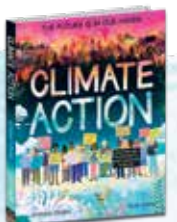
Start by reading page 50, discussing: *What is the best way to travel for the planet? What are some forms of public transport? Which form of transport do you use most?*

Collect data: Explain to students that we are now going to be collecting data. Create different areas of the classroom, each labelled clearly with a photo of mode of transport (for example: bike, walk, scooter, bus, train/tube, car). Ask students: *How did you travel to school today?* Students then move to the picture, and area of the room, which represents their form of travel that day. Create a large tally chart on the board, with the numbers for each form of travel.

Model: Teacher to model how to use the data to create a bar graph by creating an oversized version and explaining how we represent data in a bar graph. You could go outdoors and use chalk to draw a huge bar graph on the playground, or use coloured cubes to build the bars indoors.

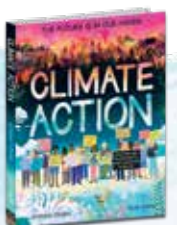
Independent work: Students now use the bar graph template to create their own bar graph with the data collected in class. They should answer questions: *What is the most popular form of transport in our class? What is the least popular form of transport in our class?*

Reflect: End the lesson with a reflection on whether students can walk or cycle more, and take the car less, to help reduce their carbon footprint.



Transport Bar Graph

Bicycle	Car	Bus	Train	Walk





Y3-4
PAGES 14-15

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Deforestation

Curriculum Subject: Science

KS2 Area of Focus: Living things and their habitats

Learning Objectives: To research the effects of deforestation on certain species and their habitat

Key words: Deforestation – the act of cutting down trees across a large area in order to use the land for another purpose.

Read pages 14 – 15, discussing the main causes of deforestation that are mentioned: agriculture, logging, mining and wildfires. *Which animals have a habitat that is affected by deforestation? On which continents is deforestation widespread? How do you feel about deforestation?*

Group work: Create five groups, and give each group an animal which is negatively affected by deforestation:

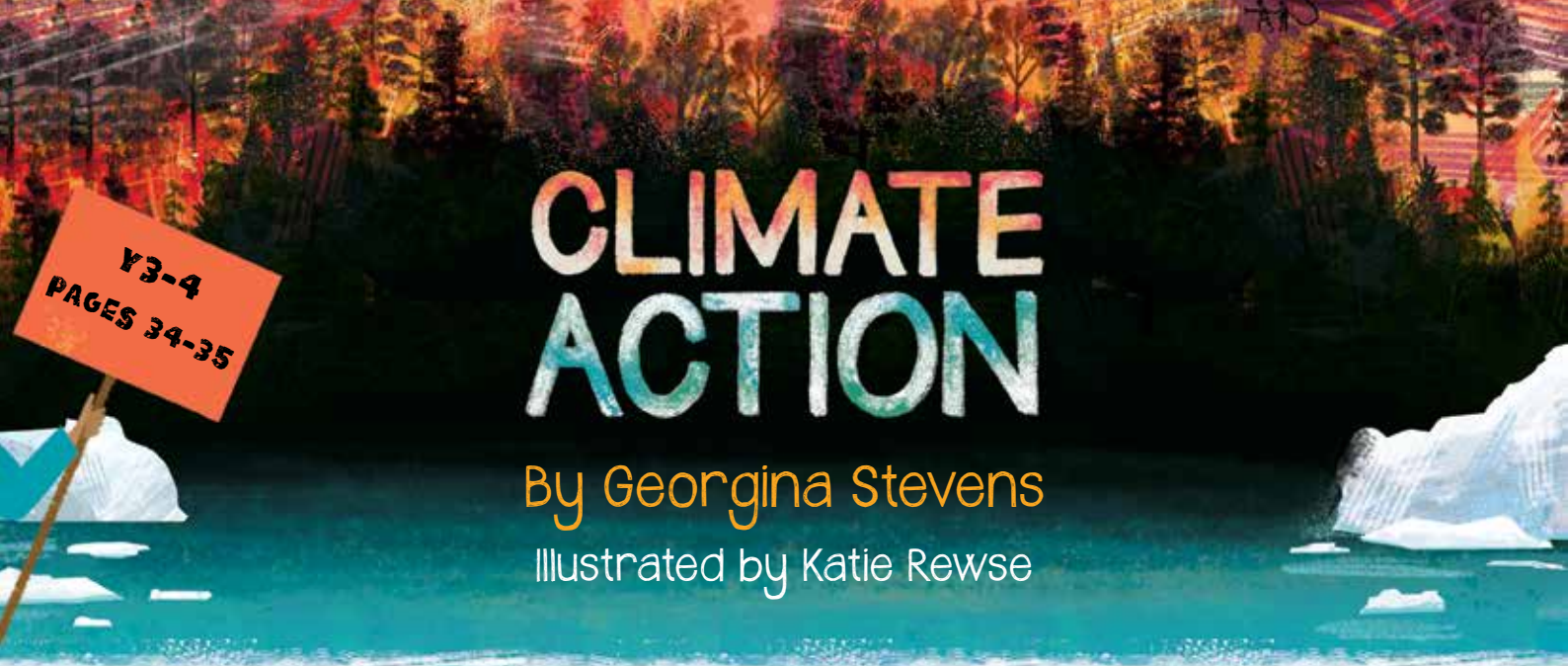
- 1) Orangutan
- 2) Sumatran Elephant
- 3) Sumatran Rhino
- 4) Jaguar
- 5) Black Spider Monkey

Groups become experts on their animal: researching its habitat, what it needs to survive, and how it is affected by deforestation. They record their research in the recording sheet.

Sharing: Form new groups that have one member from each of the animal groups. Students take turns teaching each other about their animal.

Additional activity: Students can now use a class iPad to record a news report detailing the threat to their animal, and how it is being negatively affected by deforestation. This news report could be played at assembly or shared with other students.





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Food Chains

Curriculum Subject: Science

KS2 Area of Focus: Animals, including humans

Learning Objectives: To understand the way in which food chains link organisms

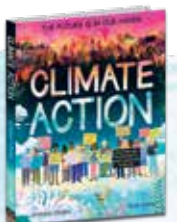
Key words: Biodiversity – The rich variation of life on Earth.

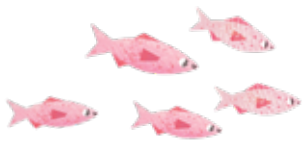
Read pages 34 – 35, explaining the term 'biodiversity' and what it means. Discuss: *Why is it important to have biodiversity? Can you think of the species of animals and plants in our local park? How are they linked?*

Teach: Remind students that a food chain always starts with a producer – this means an organism that makes its own food, for example, a green plant. Plants use the Sun to make their own food by photosynthesis. A living thing that eats other plants and animals is called a consumer. An animal that eats other animals (prey) is called a predator. Predators are found at the top of a food chain. *Can you think of a predator? Are there any predator animals in our local area?*

Group activity: Cut out the food chain cards beforehand and then distribute randomly to the class, one card per student. Students should study their card, becoming familiar with 'who' they are. Students then move around the room or playground, trying to find others in their food chain. When they think they have found their entire food chain they sit down in the correct order. Each group shares their food chain with the class.

Independent activity: Students should now record their food chain, making sure to use arrows to demonstrate the relationship between organisms.

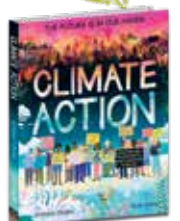
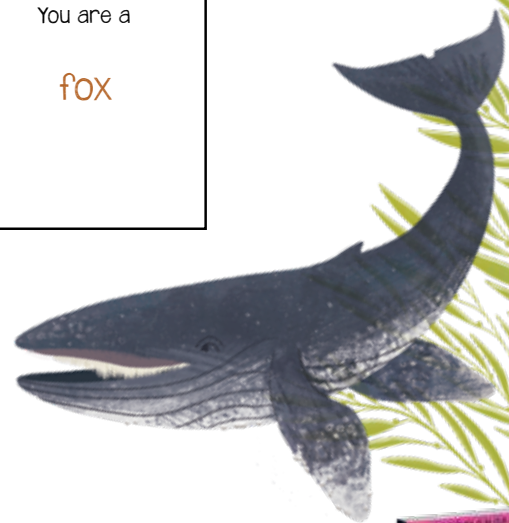




Food Chain Cards



<p>You are a</p> <p>green plant</p> <p>You are eaten by a mouse</p>	<p>You are a</p> <p>mouse</p> <p>You are eaten by a snake</p>	<p>You are a</p> <p>snake</p> <p>You are eaten by a buzzard</p>	<p>You are a</p> <p>buzzard</p>	<p>You are</p> <p>grass</p> <p>You are eaten by a grasshopper</p>
<p>You are a</p> <p>grasshopper</p> <p>You are eaten by a frog</p>	<p>You are a</p> <p>frog</p> <p>You are eaten by a hawk</p>	<p>You are a</p> <p>hawk</p>	<p>You are</p> <p>pond weed</p> <p>You are eaten by a goldfish</p>	<p>You are a</p> <p>goldfish</p> <p>You are eaten by a carp</p>
<p>You are a</p> <p>carp</p> <p>You are eaten by a heron</p>	<p>You are a</p> <p>heron</p>	<p>You are</p> <p>plankton</p> <p>You are eaten by an Arctic cod</p>	<p>You are an</p> <p>Arctic cod</p> <p>You are eaten by a seal</p>	<p>You are a</p> <p>seal</p> <p>You are eaten by a polar bear</p>
<p>You are a</p> <p>polar bear</p>	<p>You are</p> <p>grass</p> <p>You are eaten by a cow</p>	<p>You are a</p> <p>cow</p> <p>You are eaten by a human</p>	<p>You are a</p> <p>human</p> <p>You ate a beef burger for dinner</p>	<p>You are</p> <p>sea algae</p> <p>You are eaten by a crab</p>
<p>You are a</p> <p>crab</p> <p>You are eaten by a squid</p>	<p>You are a</p> <p>squid</p> <p>You are eaten by a penguin</p>	<p>You are a</p> <p>penguin</p> <p>You are eaten by a leopard seal</p>	<p>You are a</p> <p>leopard seal</p> <p>You are eaten by a killer whale</p>	<p>You are a</p> <p>killer whale</p>
<p>You are an</p> <p>acorn</p> <p>You are eaten by a shrew</p>	<p>You are a</p> <p>shrew</p> <p>You are eaten by a weasel</p>	<p>You are a</p> <p>weasel</p> <p>You are eaten by a fox</p>	<p>You are a</p> <p>fox</p>	
<p>You are a</p> <p>fruit</p> <p>You are eaten by a tapir</p>	<p>You are a</p> <p>tapir</p> <p>You are eaten by a jaguar</p>	<p>You are a</p> <p>jaguar</p>		





Y3-4
PAGES 32-33

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Saving Water

Curriculum Subject: Maths

KS2 Area of Focus: Measure length, mass and capacity

Learning Objectives: To measure and record capacity. To investigate water wastage

As preparation for this lesson, students should bring their toothbrush into school.

Read pages 32 – 33, discussing: *Why is it important not to waste water? Where does the water come from when we turn on the tap? Is this an unlimited source?*

Teach: Explain that we will be carrying out an experiment, and using Maths skills to measure capacity. Start by looking at a variety of measuring jugs, and taking careful notice of the different scales to measure the amount of liquid. Why are some scales in millilitres, while others are in litres? Students work in small groups to practise reading the scale on measuring jugs, and using the terms litre and millilitre.

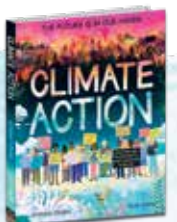
Paired activity: Students brush their teeth at a sink with the water running. At the same time, their partner fills containers with the running water until they finish brushing.

Students measure the amount of water that ran from the tap while they were brushing their teeth. This could be done using measuring jugs and ml/l.

Discuss: *How much water did you waste? Was it more than you expected? What other things could we change to save water?*

Use the collected water in the school garden, or as a bird bath.

As an extension task, students could multiply the amount of water by the number of people in their family, to figure out how much water their family wastes to brush their teeth.





Y5-6
PAGES 10-11

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Biomass Energy

Curriculum Subject: Science

KS2 Area of Focus: Living things and their habitats

Learning Objectives: To investigate biomass and one of the ways that it gives off energy

Key words: Biomass – Living matter or its waste that can be used as a fuel (biofuel is made from biomass)

Read pages 10 – 11, discussing different sources of renewable energy.

Discuss: *Which of these renewable energy sources could we have in our local area? Which of them rely on certain weather conditions?*

Teach: Explain to students that biomass is animal or plant material that is an energy source; it can be used as a fuel to provide electricity or heat. Examples of biomass are straw, wood, rubbish and energy crops.

Experiment: The experiment can be carried out by the teacher, however, students should be making predictions and recording results.

Half-fill a bag or bin-liner with grass cuttings. Before sealing the bag, measure the temperature of the grass cuttings with a thermometer. After sealing the bag with sellotape, and making sure no air can get in, put the bag into a cardboard box and leave it somewhere safe for 24hrs.

The next day, open the bag and take the temperature of the grass which is in the middle of the bag. *Has the temperature changed? Why do you think this has happened? What does the grass look/feel/smell like now? Did you predict that this would happen?*

Reflect: Explain to the class that bacteria in the grass have started to break it down: decomposition. When this happens, the grass gives off biomass energy in the form of heat and gas. This is why compost heaps are usually warm.





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Global Warming

Curriculum Subject: Science
KS2 Area of Focus: Sustainability

Learning Objective: To build a simple model to recreate the greenhouse effect

Key words: Global warming – The long-term temperature increase happening around the world caused by the heat-trapping effect of greenhouse gases such as carbon dioxide.

Greenhouse effect – A process that occurs in our atmosphere in which gases trap the Sun's heat around the Earth, just as the glass of a greenhouse keeps heat inside.

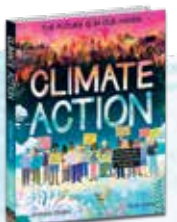
As preparation for this lesson, fill paper cups nearly full of water and freeze them solid to create a large ice cube.

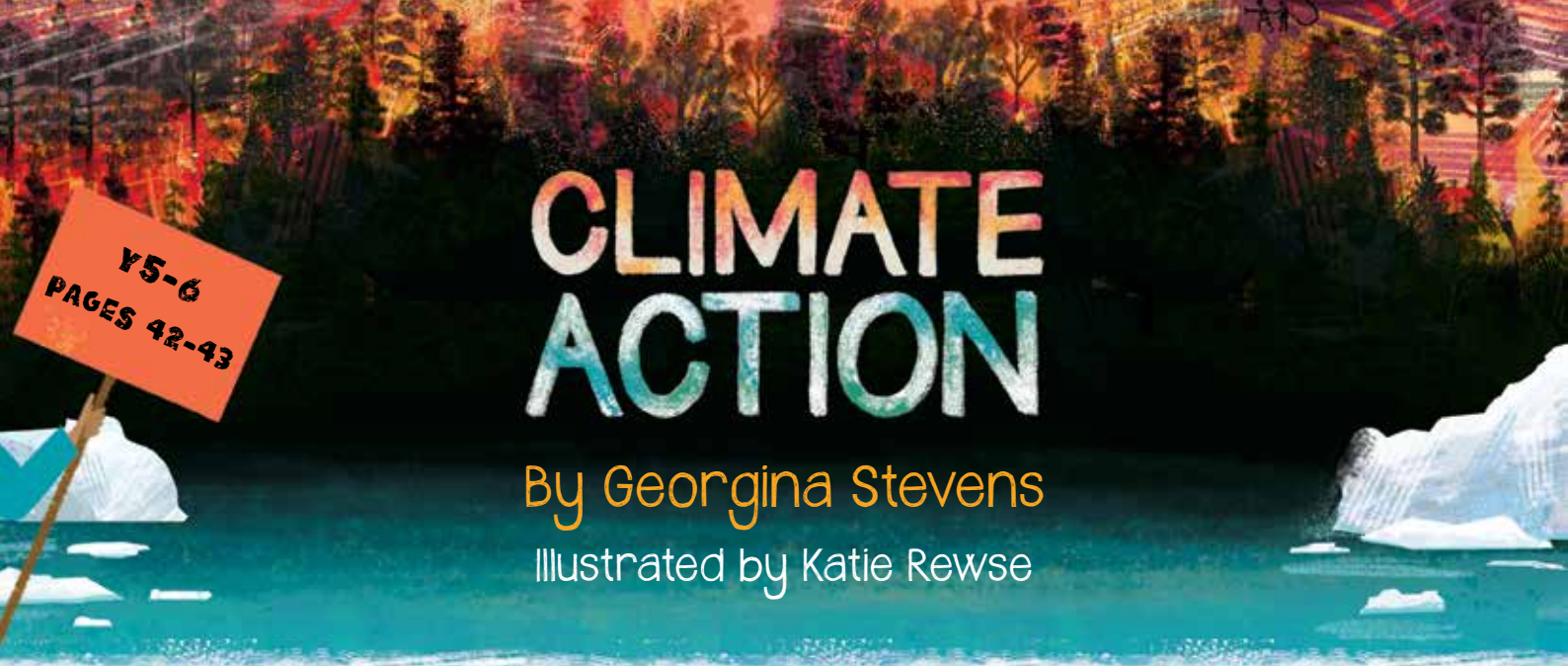
Read pages 7-9, discussing the main causes and contributors to global warming. *What do you notice? Does anything surprise you? If the temperature of Earth does become warmer, how will it affect us?*

Experiment: Students work in small groups to model an icy coastline. In a tray, they use plasticine to create the coastline and could make small polar bears or seals to decorate it. Students pour coloured water into the tray, so the water is touching the coastline but not covering it. They measure the level of the water and use permanent pen to mark it.

Students add an ice cube to the coastline, and cover the whole tray with clingfilm to mimic the greenhouse gas 'blanket' effect. They answer the prediction questions on their recording sheet. *What do you think will happen to the ice? How will this affect the water level? What role is the cling-film playing?*

Leave the models in warm locations until the ice melts. Ask students to observe the changes and record their observations. Students should then draw their model, using arrows to show what happened to the ice as it melted.





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Food Miles

Curriculum Subject: Geography

KS2 Area of Focus: Sustainability

Learning Objective: To investigate food miles and the impact they can have on the environment

Key words: Consume – To eat, to drink, use, or buy

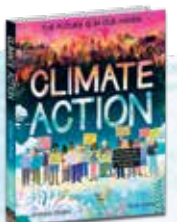
Food miles – The distance food travels from where it is grown to where it is ultimately purchased or consumed

Before this lesson, ask students to bring into school 10 pieces of food packaging from home with information on where something was grown or made. For example, a plastic wrapper or box.

Read pages 42 – 43, discussing how many of the things we use every day have travelled from far across the planet to get to us. We are connected to distant places through all the items we consume. *Think of one food you have eaten today – where do you think it travelled from to end up on your plate?*

Group work: Students should work in groups to look over the packaging they brought in and where the food has travelled from to make it to their plate. As a group, they record this information in the food miles table, using an online distance calculator on a class iPad or computer to look up how far away the capital of that country is. Come back together as a class and discuss. *What did you notice? Which item travelled the furthest? Which item was from nearby? What surprised you?*

Activity: Students now work in groups to create a 'Buy Local' poster, which encourages others in the community to consider food miles before buying food, and to buy local where possible. These could be displayed around school or in the local community if appropriate. Students should make sure the poster includes factual information, for example: Did you know your bananas have travelled over 5000 miles, all the way from Colombia?



Food Miles Table

Item	Country	Continent	Distance Travelled
Bananas	Ecuador	South America	

