CLIMATE CHAMPIONS

AGES 7-11

Curriculum resource pack

WWT is one of the UK's leading providers of outdoor learning. We welcome over 50,000 learners per year to our Wetland Centres where we provide unique opportunities for learners of all ages and abilities to interact with wetland wildlife from the UK and across the world.

We are open all year round with sessions for every season. Whether you're looking for curriculum-linked learning or simply a fun day out, there really is something for everyone. To find out more about our school visits programme please visit **learningzone.wwt.org.uk.**

Why wetlands?

WWT works across the UK to save, restore and build wetlands for wildlife and people. Wetlands are one of the most important habitats on earth – storing huge amounts of CO_2, providing a natural way of stopping flooding and serving as a home for huge numbers of different creatures. Spending time in wetlands is also proven to improve mental health and wellbeing!

Using this resource pack

This resource pack contains classroom activities designed to cover key curriculum content as well as outdoor activities designed to promote nature connection and a love of the natural world. This is accompanied by supporting resources that can be printed or used on screen with your pupils. At the end of the pack you will find a short quiz that can be used to reinforce and assess pupils' learning.

CURRICULUM LINKS

England

KS2: Science

- Recognise that environments can change and that this can sometimes pose dangers to living things

Northern Ireland

KS2: Around the world

- The effect of people on the natural and built environment over time
- The effects of positive and negative changes globally and how we contribute to some of these changes

Wales

KS2: Science and Technology

- I can recognise that what I do, and the things I use, can have an impact on my environment and on living things

Scotland

Second: Sciences

- I can report and comment on current scientific news items to develop my knowledge and understanding of topical science

Second: Social Issues

- I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally responsible way
- Having explored the ways journeys can be made, I can consider the advantages and disadvantages of different forms of transport, discussing their impact on the environment

INDOOR ACTIVITIES

YOU WILL NEED:

Causes of climate change visual (one per group)
Effects of climate change visual (one set per group)
Preventing climate change visual (one set per group)
(For all accompanying resources see the end of this pack)

3 bedsheets or blankets
Newspaper
Heavy books

Other relevant resources

Activities:

- Make a t-shirt shopping bag

School visits:

- We run 'Climate Champions' sessions at our centres for KS2. Visit our Learning Zone to find out more **learningzone.wwt.org.uk**

NOTE: **Where you see a Q this indicates a question to ask your pupils.**

INDOOR ACTIVITIES

Activity 1: What is climate change?

- Climate change can be a difficult thing to explain to children (and adults!). This activity will demonstrate the greenhouse effect in a simple way.
- Show the class the pictures on the 'causes of climate change visual'.

Activity 1 continued...

Q **What do you think is coming out into the air in each case?**

- Explain that some of the gases they can see coming from the car, power station, chimney and cow are called 'greenhouse gases'.
- Explain that these gases go up into the sky and collect around the earth in what is called the atmosphere.

Key word

ATMOSPHERE

A layer of gases surrounding a planet.

- Choose one pupil to come up to the front (one you know won't be embarrassed by this).
- Explain to the rest of the class that this child represents the earth.
- Tell the class that the earth has always had a blanket of gases surrounding it and that without this blanket, the earth would be so cold that there would be no life on earth.
- Place the first blanket around the child.
- Ask the class to imagine they are going back in time 300 years.

Q **What do you think it was like on the earth 300 years ago?**

- Explain that 300 years ago, the blanket of greenhouse gases around the earth wasn't too thick and it wasn't too thin so the temperature on the earth was just right.
- We then started to build lots of houses, power stations and cars which started to give out extra greenhouse gases.

Q **What do you think happened to the blanket of gases around the earth?**

- Explain that the blanket got thicker and add another sheet or blanket around them.

Q **Are you feeling warmer? (hopefully they'll say yes!)**

- Explain that this is what has been happening to the earth. We have been producing more and more greenhouse gases and the blanket of gases around the earth has been getting thicker. This has made the earth get warmer as heat gets trapped inside the atmosphere, warming up the earth.
- Explain that we could have used less energy so we would have needed less power stations. We could have walked and cycled more so we didn't need to travel so much by car. If we had done these things the blanket would have got thinner again.

Q **Do you think this is what we did?**

- No - we actually used even more energy and travelled even more in cars and the blanket has got even thicker - Add the final sheet or blanket.
- The blankets can then be removed.

Activity 2: What effects is climate change having?

- This activity explores some of the impacts that climate change is having on humans and other animals around the world.
- Look at the 'effects of climate change visual' with your class. This shows just a few of the effects climate change is having around the world.
- Use this to talk through the effects of climate change:

Q **What do you think each picture shows?**
How do you think each of these is caused by climate change?
What problems might this cause for humans and other animals?

- See information below that you can talk through with your class.

Dried up lake

- As the world heats up, many lakes and ponds around the world are drying up.
- This is a problem for humans as lots of people around these lakes used to rely on fishing to make money. They also had lots of tourists visiting to be near these beautiful lakes.
- It is a problem for other animals because they are losing their habitats (the places where they live).

Q **Imagine you are an animal that lived on the lake as it started to dry up. How would you feel? What would you do?**

Forest fire

- As the world heats up, we are getting more forest fires and they are spreading much further and much more quickly.
- This is a problem for humans because houses are destroyed.
- This is a problem for other animals because they are losing their habitat (the place where they live).

Q **Imagine you are a forest animal (you can choose).**
How would you feel as the fire approaches?
What would you do?

Polar bear

- As the world heats up, the ice caps are melting.
- This is a problem for humans because as the ice melts, the sea gets higher and this is flooding the homes of people who live near the sea.
- It is a problem for polar bears because when they hunt, they walk on ice covering the ocean and find a hole in the ice. They wait for animals such as seals to come up for air and then catch and eat them.
- If there is no ice covering the ocean, they can't hunt in this way and they have to go inland to hunt. There is less food here.

Q **Imagine you are a polar bear living in an area where you can no longer get onto the sea ice to hunt. How do you feel? What would you do?**

Flooding

- It is very strange to think that the earth getting hotter could result in flooding. We have already seen that the ice caps melting is causing sea levels to rise and that this is flooding some places near the sea. Climate change is also causing us to have more rain. This is because a warm atmosphere can hold more moisture and of course this moisture eventually falls as rain. The more moisture there is in the atmosphere, the more rain we get and the heavier that rain falls.
- This is causing problems for humans because it is flooding their homes.
- It is causing problems for other animals because it is flooding their habitats (the places where they live).
- It is a particular problem for wetland birds that nest on the ground because it can wash their nests away.

Q **Imagine you are a wetland bird that has had its nest and eggs washed away. How do you feel? What would you do?**

Q **What about if you were someone whose house was flooded? How would you feel?**

- The above could be used as a stimulus for empathetic writing, writing from the animal's / person's point of view.

Activity 3: How do wetlands help prevent climate change?

- Most people don't realise but many wetlands are actually as effective as rainforests at preventing climate change. This activity will explain why.
- Give out a 'preventing climate change visual' to each pupil or group.
- Explain that plants make their own food in their leaves (this process is called photosynthesis but it's not important to use this word at this stage).
- To do this they need sunshine, water and a gas called carbon dioxide (a greenhouse gas).
- They absorb the carbon dioxide through stomata in their leaves. These are like the pores in our skin.
- Get each pupil or group to draw an arrow pointing to one of the **leaves** and label this '**carbon dioxide**'.
- They also absorb the sunshine through their leaves.
- Get each pupil or group to draw the **sun above the plant** and draw an arrow from the **sun** to this same **leaf**. They should label this arrow '**sunlight**'.
- Plants draw in water from their roots and carry it up their stem and into the leaves.
- Get each pupil or group to draw an arrow from the **roots, up the stem and along into the same leaf**. They should label this arrow '**water**'.
- Explain that the leaf then turns the water, carbon dioxide and sunlight into food for the plant and oxygen.
- The food for the plant is taken from the leaf and distributed around the plant to help it to grow.
- Get each pupil or group to draw an arrow from the **leaf** back into the **stem**. They should label this '**food**'.
- The oxygen goes back out of the stomata in the same way the carbon dioxide came in.
- Get each pupil or group to draw an arrow out of the **leaf** into the **air around it.** They should label this arrow '**oxygen**'.
- Explain that, over time, the more plants there are in the world, the more carbon dioxide they will take in from the air. This will mean that there is less carbon dioxide going up into the atmosphere and the blanket we saw earlier will start to get thinner (meaning less climate change). On the other hand, if we cut down trees and other plants, more carbon dioxide will go up into the atmosphere and the blanket will get thicker (meaning more climate change).
- When the plants take in the carbon dioxide, they store the carbon inside them (it is used to make new parts of the plant).
- When the plants die, they rot down in the soil and this carbon is released, adding more carbon dioxide into the atmosphere.
- But here's the amazing bit! When wetland plants die, because the soil is so wet, the bits of the plant don't fully rot down and the carbon stays stored in the soil. This is why wetlands are so good at helping to prevent climate change.

Activity 3 continued...

- **NOTE:** If you choose to visit one of our centres and book our 'Climate Change Champions' session, pupils will have a chance to act out the above process. This is a great way of reinforcing this learning.
- The table below shows how many grams of carbon become stored in one metre squared of soil / sediment (material that settles to the bottom) of each habitat type each year. Salt marsh is a type of wetland found on our coasts and estuaries. Our Steart Marshes site contains large areas of salt marsh. Tropical rainforests are hot, wet forests like the Amazon.

Habitat type	Amount of carbon stored per year (g C m–2 yr–1)
Salt marsh	218
Tropical rainforest	4

Q **How many times more carbon are salt marshes able to store per year in their soil/sediment than rainforests?**

A **218/4 = 54.5 (or 55 if rounded). This means that saltmarshes can absorb and store approximately 55 times more carbon in their soils and sediments each year than tropical rainforests.**

Activity 4: What can we do help prevent climate change?

- Remind the class what was causing climate change; the greenhouse gasses going into the atmosphere from things like energy production, transport, food production and houses.
- If you haven't done so already, split the class into small groups.
- Ask each group to come up with a list of things they could do to help prevent climate change under the following three headings:
- These might include:

Transport:

- Walk or cycle for short journeys rather than use the car
- Buy an electric car
- Use public transport

Energy:

- Turn things off when they're not in use
- Put an extra layer on before turning the heating up
- Use energy saving lightbulbs
- Insulate your loft and walls
- Keep windows closed during the winter

Food:

- Buy local produce
- Eat less meat (meat production produces much more greenhouse gas than fruit and veg production)
- Only buy the amount you need to cut down on waste

- Get each group to feed back to the class and use their responses to produce a class list.
- You might want to set a homework task where children take home the class list and are asked to discuss with their families which they might be able to do at home. They could then create a pledge sheet / poster showing what their family will do to help prevent climate change.

OUTDOOR ACTIVITY

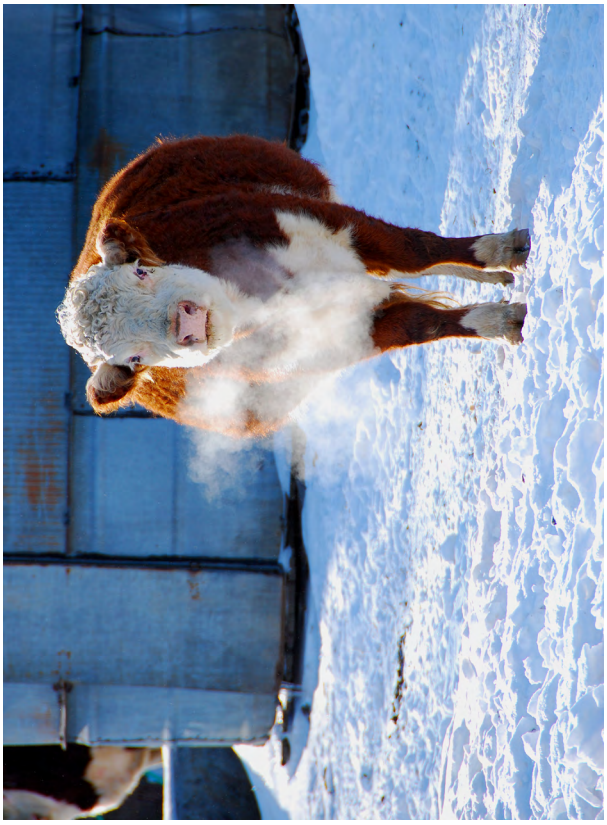
Activity 5: Wonderful leaves

- Go to an outdoor space that has plants.
- Ask each child to find a leaf that they really like. See if they can find a fallen leaf from the plant. If not, and if the plant has lots of leaves, get them to carefully remove a leaf from the plant, being careful not to damage the rest of the plant.
- Ask them to hold their leaf up to the sky and observe it really carefully. They may be able to see the veins that carry the water in and the food for the plant out.

Q **Imagine everything that goes on inside your leaf; how it takes in carbon dioxide, water and sunlight and produces oxygen and food for the plant. How does this make you feel? Do you now view leaves and plants differently?**

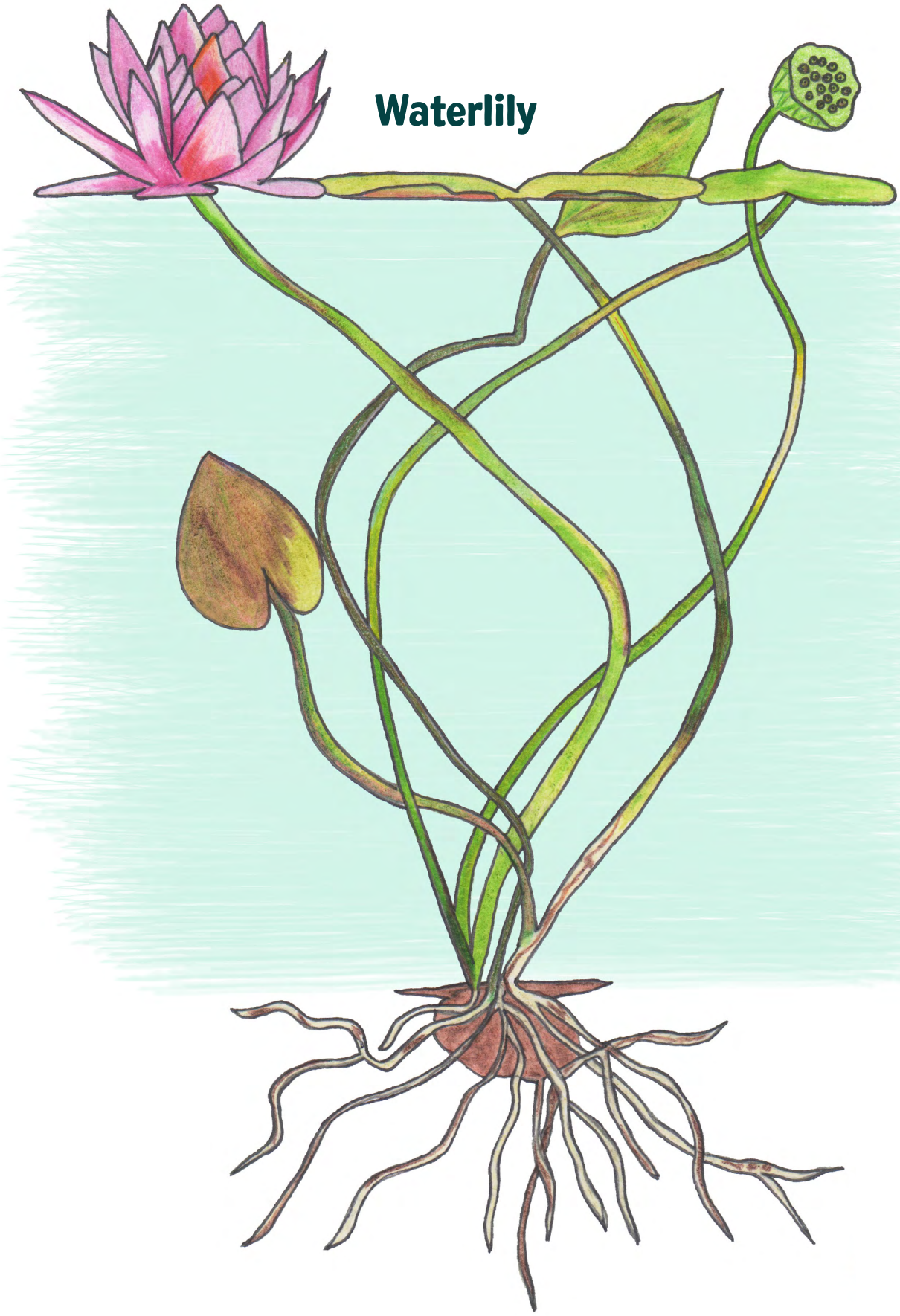
- Ask them to try to store in their memory exactly what their leaf looks like.
- Now get all of the children to place their leaves on a single pile.
- Get each child to take in turns to see if they can find 'their' leaf.
- You could get pupils to press their leaves so that they can take them home and keep them:
  - Place the leaves wrapped in newspaper inside a heavy book. Place more books, a weight, or rock on top of the book to add more weight.
  - Keep the book in a dry location. Check the pressing after about one week. Make sure the leaves are drying and not rotting. You will probably need to leave the leaves under the book for another one to two weeks before they are completely dry and ready to use.
  - Once dry, pupils could take these home stick them on their family's pledge sheet.

CAUSES OF CLIMATE CHANGE



EFFECTS OF CLIMATE CHANGE

PREVENTING CLIMATE CHANGE



QUIZ: CLIMATE CHAMPIONS

Round 1: Picture round

These animals are all affected by climate change.

Q Can you name them?

1 .....

2 .....

3 .....

4 .....

5 .....

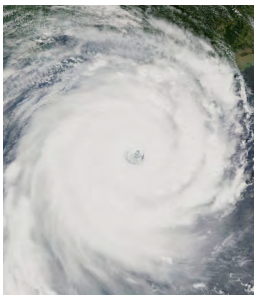
Round 2: Effects of climate change

Each of the pictures below shows an effect of climate change or something that might be affected by climate change.

Q Which single word could be used to describe each?

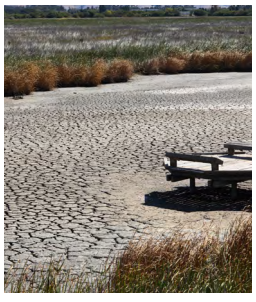
6 .....

7 .....



8 .....

9 .....



10 .....

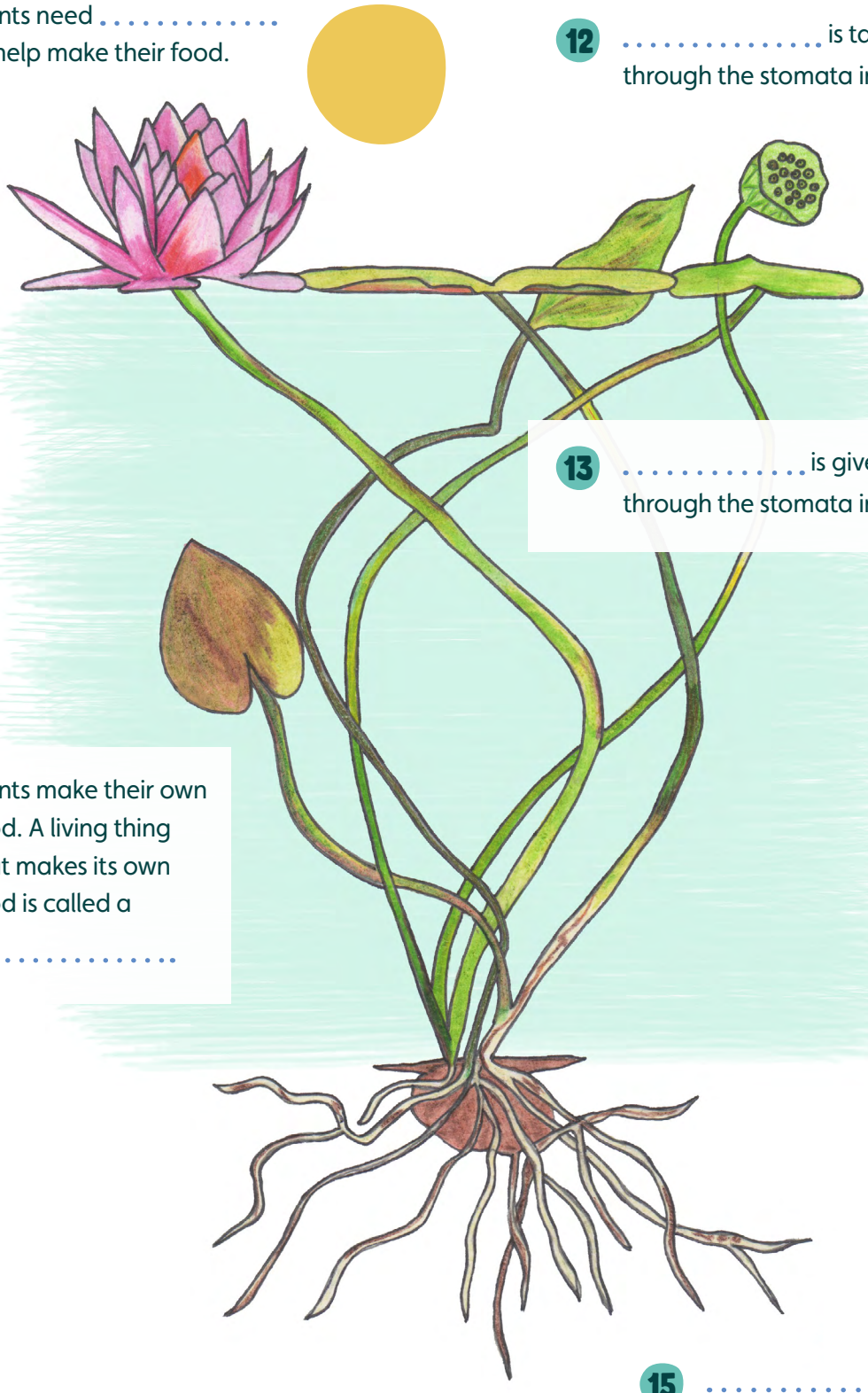
Round 3: Plants are amazing

Label the diagram using the words below to show how plants help to prevent climate change.

Water • Carbon Dioxide • Sunlight • Producer • Oxygen

11 Plants need . . . . . to help make their food.

12 . . . . . is taken in through the stomata in the leaves.



13 . . . . . is given out through the stomata in the leaves

14 Plants make their own food. A living thing that makes its own food is called a . . . . . .

15 . . . . . is taken in through the roots.

Round 4: Multiple choice round

Q Can you correctly identify the correct answer each time?

16 Which of these gases is a greenhouse gas that causes climate change?

A) Oxygen
B) Carbon Dioxide
C) Helium
D) Krypton

15 Which method of travelling is best for helping to prevent climate change?

A) Flying
B) Driving
C) Walking
D) Getting the bus

17 Which of these could be an effect of climate change?

A) Volcanic eruption
B) Earthquake
C) Tsunami
D) Flooding

18 Which of the following is best at helping to prevent climate change?

A) Oak tree
B) Blue whale
C) Tiger
D) Polar bear

19 Which of these is the part of a leaf through which a plant takes in carbon dioxide and gives out oxygen?

A) Sepal
B) Stomata
C) Tomato
D) Stigma

ANSWERS: CLIMATE CHAMPIONS

Round 1: Picture round

These animals are all affected by climate change.

Q Can you name them?

1 Polar bear

2 Puffin

3 Snow leopard

4 (Green) Turtle

5 (Adelie) Penguin

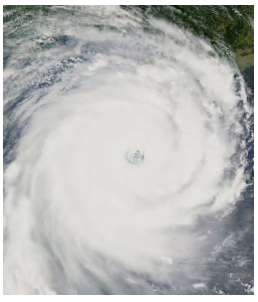
Round 2: Effects of climate change

Each of the pictures below shows an effect of climate change or something that might be affected by climate change.

Q Which single word could be used to describe each?

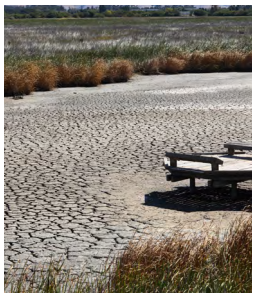
6 Flood

7 Coral or reef



8 Hurricane or cyclone

9 Glacier



10 Drought

Round 3: Plants are amazing

Label the diagram using the words below to show how plants help to prevent climate change.

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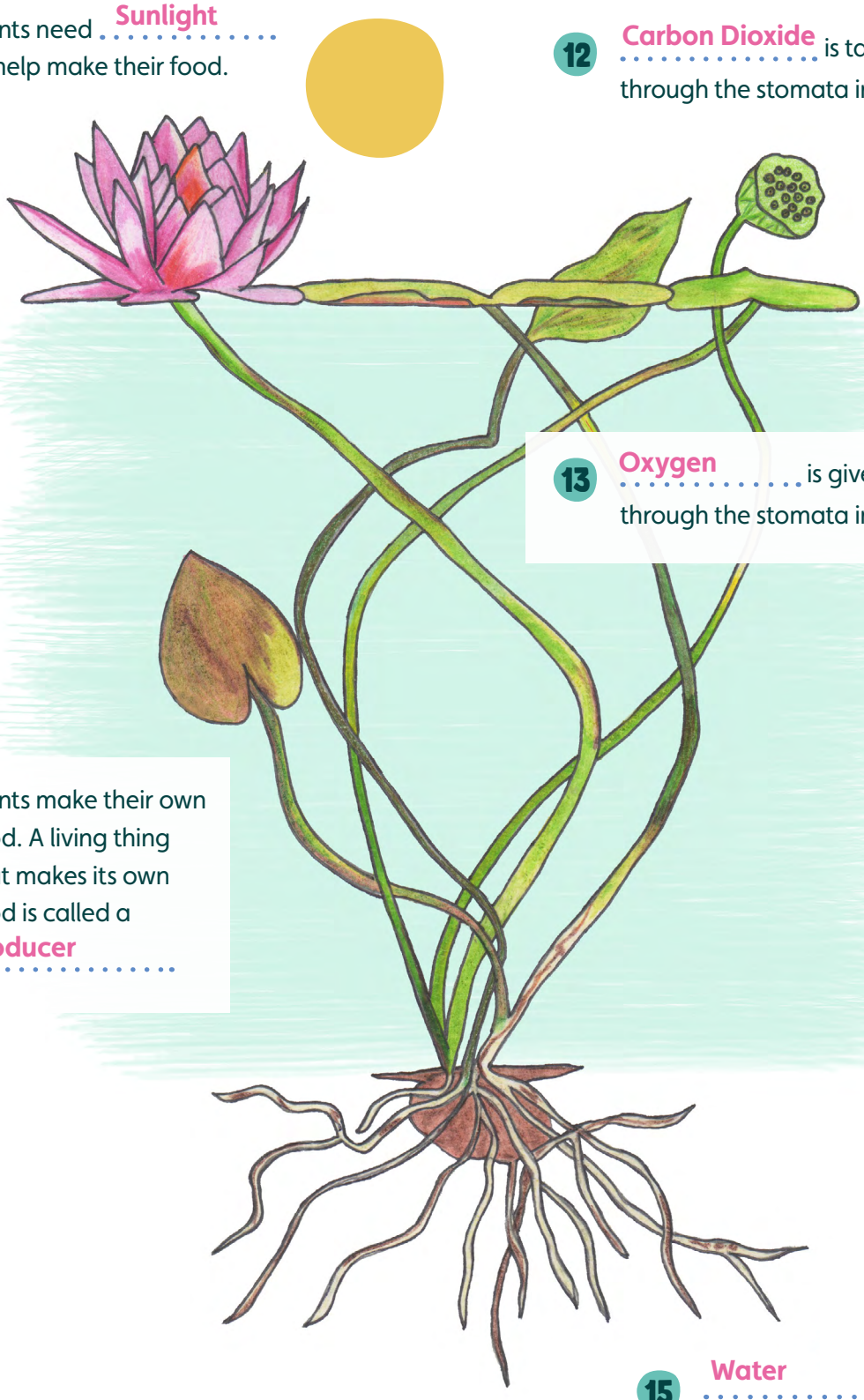
12 Carbon Dioxide is taken in through the stomata in the leaves.



13 Oxygen is given out through the stomata in the leaves

14 Plants make their own food. A living thing that makes its own food is called a Producer

15 Water is taken in through the roots.

Round 4: Multiple choice round

Q Can you correctly identify the correct answer each time?

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