Climate Champions

Activities for children aged 7–11 years

WWT has a well-established and well-loved education programme that we run across the UK at our ten wetland sites. We've designed these short activities based on one of our school activities. We've made it to connect you and your family to the natural world and help you to work with your children to feel great about nature and understand some of the things that WWT love and care about.

Why wetlands?

WWT works across the UK to save, conserve 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.

This activity will help you and your children to discover the amazing role that wetlands can play in helping to prevent climate change. It is meant as an introduction to a complicated topic and will hopefully help your children to become more interested in the issues around climate change and the things we can do to help.

These activities link to the National Curricula for science and geography in England, Northern Ireland, Scotland and Wales..

Stuff you need:

- **Causes of climate change visual (see final pages of this document)**
- **Effects of climate change visual (see final pages of this document)**
- **Preventing climate change visual (see final pages of this document)**
- **3 bedsheets or blankets**
- **Newspaper**
- **Heavy books**

Note: Where you see a Q this indicates a question to ask your child

Indoor activities

(4 x 15 minutes)

Section 1: What is climate change?

(15 minutes)

Climate change can be a difficult thing to explain to children (and adults!). This activity will demonstrate a process known as the greenhouse effect.

- Show your child the pictures on the 'causes of climate change visual'.

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.

- Ask your child to imagine that they are the earth and wrap one of the sheets or blankets around them. Explain that this is the atmosphere and contains the greenhouse gases that come out of the cars, power stations etc. (as well as other gases).
- Ask them to imagine that 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.

Section 2: What effects is climate change having?

(15 minutes)

In this activity you and your child will explore 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 child. This shows just a few of the effects climate change is having around the world.

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 on the next page that you can talk through with your child)

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).

Imagine you are an animal that lived on the lake as it started to dry up.

Q 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).

Imagine you are a forest animal (you can choose).

Q 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.

Imagine you are a polar bear living in an area where you can no longer get onto the sea ice to hunt.

Q How do you feel? What will you do?

Imagine you are a wetland bird that has had its nest and eggs washed away.

Q How do you feel? What will you do?

What about if you were someone whose house was flooded?

Q How would you feel?

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.

Section 3: What can we do help prevent climate change?

(15 minutes)

Most people don't realise but many wetlands are actually as effective as rainforests at preventing climate change. In this activity you and your child will find out why.

- Take the 'preventing climate change visual' that shows a picture of a wetland plant.
- Explain to your child 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 your child to draw an arrow pointing to one of the **leaves** and label this '**carbon dioxide**'.

- They also absorb the sunshine through their leaves.

Get your child 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 your child 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 your child 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 your child 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.
- 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.

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

(15 minutes)

- Remind your child what was causing climate change; the greenhouse gasses going into the atmosphere from things like energy production, transport, food production and houses.
- Together, come up with a list of things we could all do to help prevent climate change.

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

- Discuss with your child which of these would be easiest to achieve with the least cost.
- Make a pledge sheet as a family showing the things you will do to help prevent climate change. Display it somewhere where the whole family will see it regularly.

Take it outdoors:

(15 minutes)

- Go to an outdoor space that has plants.
- Ask your 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.

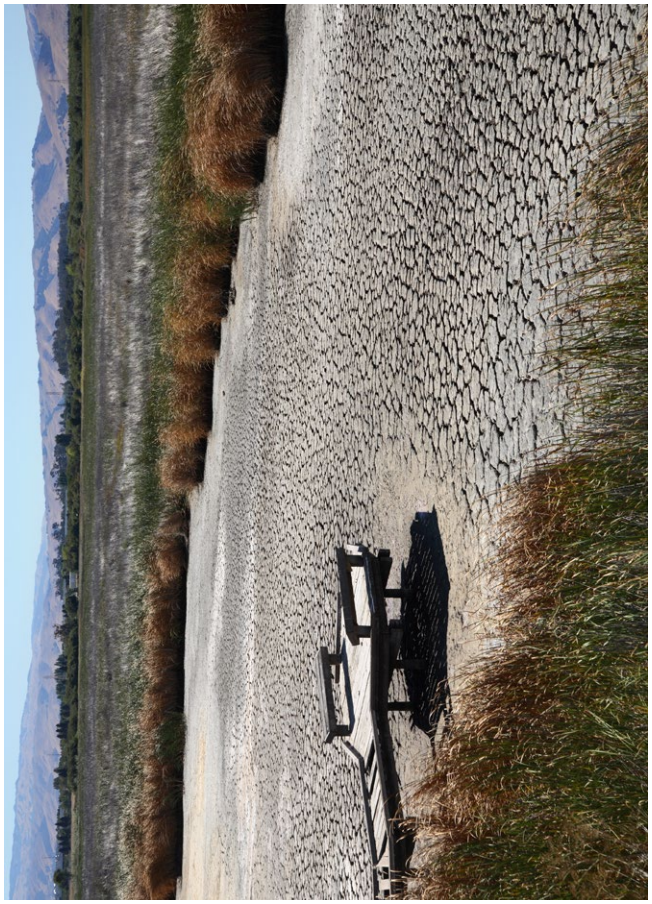
Q Imagine everything that goes on inside your leaf; how it takes in carbon dioxide, water and sunlight and produces oxygen and food for the plant. How does this make you feel? Do you now view leaves and plants differently?

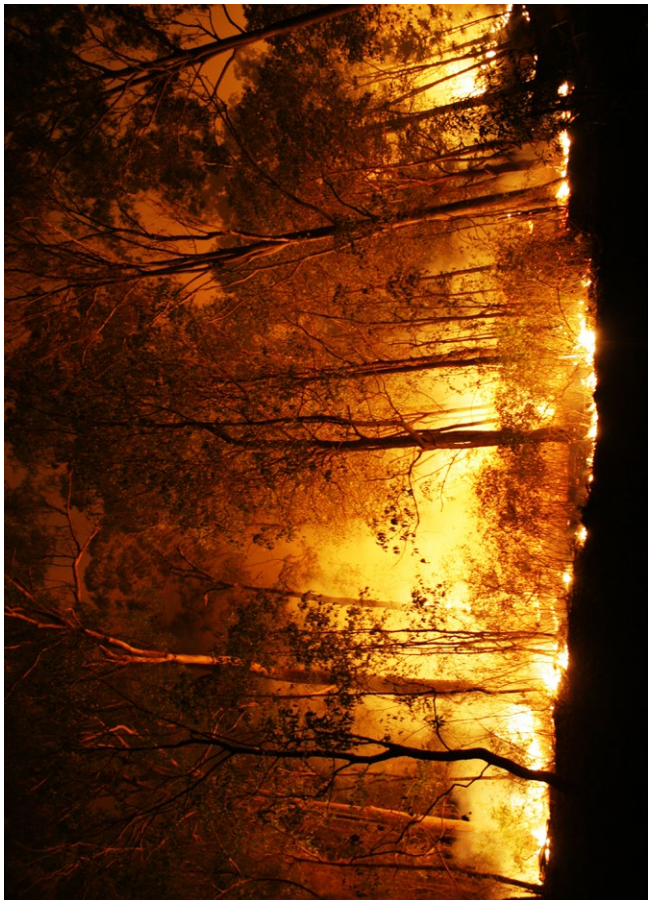
- Ask them to try to store in their memory exactly what their leaf looks like.
- Now challenge them to pick a handful of other leaves in the same way, mix them all up and see if they can find 'their' leaf.
- It is likely that by now this leaf will mean something special to them. They might like to take it indoors and press it so that they can keep it:

- 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, you could stick this on your family's pledge sheet.

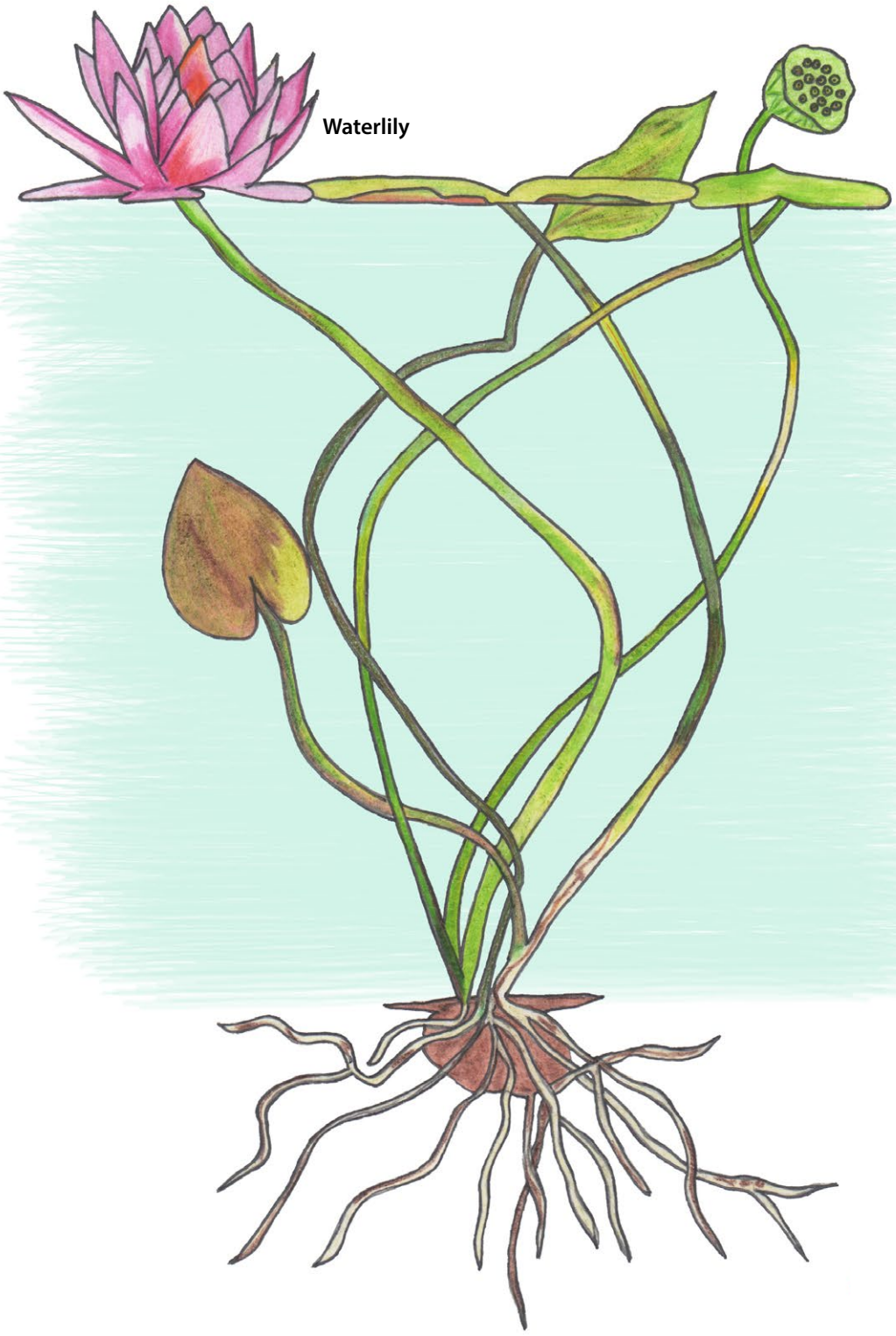
Causes of climate change

Effects of climate change





Preventing climate change



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