Biodiversity

Time needed for session:	Location:	Context:
60 minutes	Classroom	This lesson outlines the definition of Biodiversity, why it's important and highlights what we can do to help. This 60-minute suggested lesson follows on from the morning's introduction.

LESSON PLAN NOTES

Information for suggested lesson plan:

1. (10 minutes) What is biodiversity?

Ask the children for ideas before watching the linked BBC bitesize video explaining the answer (https://www.bbc.co.uk/bitesize/articles/z674g7h#z4ksn9q).

Answer: Biodiversity means the variety of life on earth, can be or the number of different species living in an area. We can find biodiversity in many different environments, examples might include seas, oceans, rivers, woodlands, and forests or school grounds. These are just a few examples to be named. A community in which organisms live is called an 'ecosystem'. Ecosystems can be any size from very small to very large. We can even count our own back gardens as an ecosystem where there may be hundreds of living creatures!

2. (10 minutes) How does biodiversity link to climate?

Nature and climate are closely linked. Climate change has caused changes to nature on land and at sea.

The sea around the UK is getting warmer because of climate change. That means the water is heating up more than it used to. This might sound nice for swimming, but it's causing problems for animals that live in or near the sea.

- Some fish like cold water. When the sea gets too warm, they swim to cooler places. That means animals that eat those fish—like seals and seabirds—might not find enough food.

- Birds like puffins dive into the sea to catch fish. But if the fish move away or disappear, the birds can't feed their chicks properly. That's making it harder for baby birds to survive.
- Warmer seas are attracting animals that don't usually live in UK waters—like jellyfish and even sea turtles! That sounds exciting, but it can upset the balance of nature and make life harder for local animals.

In addition to seas, our air temperature is also rising. That means summers are hotter, winters are milder, and the weather is acting a bit strange. This is causing problems for animals and plants that are used to the old, cooler climate.

- Some animals, like hedgehogs and bats, hibernate (sleep through winter). But if it's too warm, they might wake up too early and not find enough food. That can make them weak or sick.
- Higher temperatures mean flowers and trees are blooming earlier. Insects like bees and butterflies might miss the flowers they need for food because they're coming out at the wrong time.
- Trees are being attacked by diseases that like this warmer weather. This makes it harder for our woodlands to stay healthy.
- Birds use the temperature to decide when to build nests and lay eggs. Birds like robins and blackbirds are laying eggs earlier because of warmer springs. If they do this too early, the baby birds might hatch before there's enough food like insects or berries.

We are experiencing more extreme weather including more floods and dry spells which are particularly damaging to ponds and wetlands. If these dry up, frogs, toads, and newts don't have anywhere to lay their eggs. Heatwaves can also be hard for animals, especially those that live in forests or wetlands. They might not find enough water or shade, and that can make them sick or even die.

When nature struggles, it affects everything—our food, our air, our water, and even our happiness. So, if we help nature, we also help the climate—and if we protect the climate, we give nature a better chance to grow and thrive.

3. <u>(20 minutes) Biodiversity loss:</u>

Biodiversity is disappearing. Here's why:

Human impact: Having so many different species is essential. Every species is different and has their own unique qualities and needs. Activities led by humans such as building roads, houses for us to live in and often cutting down trees and digging up fields. This means that animals that were living in those trees and fields lose their homes._many animals are forced to leave their homes as the land has been disrupted. Actions like these can cause a species to become extinct (where that species no longer exists anywhere in the world).

Pollution: As we go about our day to day lives, we use lot of things—plastic, paper, water, electricity to name a few. These all create waste. If we're not careful, these can harm nature.

For example, cutting down too many trees for paper means fewer homes for birds and squirrels.

Cars, factories, and even fires release dirty gases into the air. These gases can make it hard for animals (and people!) to breathe, damage trees and plants, cause acid rain, which falls from the sky and harms forests, rivers, and soil.

Litter and Waste - When people drop rubbish like plastic bottles or crisp packets on the ground, it can hurt animals who might eat it or get stuck in it and pollute rivers and oceans, making it dangerous for fish and birds.

Water Pollution - Sometimes, chemicals from farms or factories get into rivers and lakes. This can poison fish and frogs and make the water unsafe for animals and people.

Climate change – means that the earth is getting Earth hotter. This means that we are experiencing more natural disasters and extreme weather such as flooding, storms and forest fires. This changes the weather and makes it hard for some animals to survive. Think about the curlew, climate change is making it harder for curlews to find safe places to nest and raise their young.

Introduced species - Introduced species are those that have been moved intentionally or unintentionally by humans into a new geographic location where they are not naturally found. Some may become established in this new location and are then termed naturalised species. It is possible for a naturalised species to spread rapidly and outcompete or prey on native species - these are termed invasive species. Introduced species may have no natural predators to keep them in check. Invasive species can eliminate native species therefore reducing biodiversity e.g. Red squirrels.

Red squirrels are native to the UK. They are under threat due to the presence of the grey squirrel. The grey squirrel is an invasive species. It is native of North America and was first introduced into England from America in the early 1900s. Grey squirrel negatively impact red squirrel because:

- The red squirrel is outcompeted for food and space
- The grey squirrel carries a disease called the squirrel pox virus. This disease kills the red squirrel but has no known lasting effect on the greys.
- Grey squirrels do well in conditions that would be difficult for red squirrels. So, where habitat is lost to housing or agriculture, the greys can continue to live in parks, gardens and hedgerows while reds squirrels cannot.
- Red squirrels need woodland - they feed, nest and breed in trees and struggle to survive in parks, gardens and hedgerows

4. <u>(15 minutes) How does nature help us?</u>

Nature is like our big helper that’s always working to keep us happy, healthy, and safe. Here are some interesting ways it helps:

1. Cleans the air we breathe: Trees and plants take in dirty air and give out clean oxygen. That's what we need to breathe! Forests are like giant air filters.

2. Food to Eat: Fruits, vegetables, grains, and even animals we eat all come from nature. Bees and other insects help pollinate plants so they can grow food for us.

3. Water to Drink: Rain comes from clouds, and it fills rivers and lakes. Nature helps clean water too—wetlands and forests act like natural water filters.

4. Fun and Relaxation: Parks, beaches, and forests are great places to play, explore, and relax. Being in nature can make us feel calm and happy.

5. Medicine: Many medicines come from plants. For example, the bark of a tree called the willow was used to make aspirin!

6. Protection: Trees help stop floods by soaking up rainwater. Mountains and forests can protect towns from strong winds and landslides.

5. (5 minutes) What can you do to help nature

Even small actions can make a big difference, so what can you do to help?

1. Plant Something - Grow flowers for bees and butterflies or plant a tree, remember they help clean the air!

2. Walk or Cycle More - Cars make pollution. Walking or biking is better for the planet—and fun

3. Save Energy - Turn off lights when you leave a room. Don't leave devices charging all day.

4. Save Water - Turn off the tap while brushing your teeth. Take shorter showers.

5. Pick Up Litter - Help clean up parks or beaches. Always put rubbish in the bin—or recycle it!

6. Be Kind to Wildlife - Leave wild animals alone and don't disturb their homes. Make a bug hotel or bird feeder in your garden or school!

7. Learn and Share - Read books or watch videos about nature. Tell your friends and family what you've learned!