

EXPLORING OUR WILD ISLES: FRESHWATER

ACTIVITY GUIDE FOR PRIMARY TEACHERS
AND YOUTH GROUP LEADERS

SAVE OUR
WILD
ISLES

AGE 4 – 11 YEAR OLDS



INTRODUCTION

Have you ever taken the time to think about all the amazing landscapes we have in the UK?

Despite being small, the combination of weather, climate and ancient rock formations we have in the UK means that we are lucky enough to have some of the most diverse and beautiful landscapes on Earth. From our high craggy mountains, boggy moorlands, rushing rivers, dense green forests, tranquil lakes, wildflower meadows, rocky coastlines and wild seas, each of these unique landscapes is packed full of different habitats with a huge variety of plants, animals and fungi.



Because of this, the UK is home to some amazing natural wonders: spectacular murmurations of starlings, dense woodlands sprinkled with bluebells, rutting deer on frosty mornings, glittering blue damselflies dancing over streams, damp forest floors exploding with mushrooms – it's all here, right on our doorstep!

But despite all of this, we have not been protecting our precious nature. We have farmed intensively across almost all of our land, we have expanded towns and cities putting pressure on surrounding countryside

habitats, built miles of roads and trainlines carving up wild habitats and polluted our waters with plastics and pesticides.

The UK is now one of the most nature depleted countries in the world and many of our unique habitats are now under pressure. Over the last 50 years we've had huge losses in numbers of wildlife. More than one in seven native species are now facing extinction and more than 40% are in decline including some of our most iconic species like bumblebees and hedgehogs.



GETTING TO KNOW FRESHWATER

Freshwater habitats like rivers, streams, ponds and marshes need to be protected. They are home to thousands of species in the UK including dragonflies, salmon, frogs, newts, kingfishers, herons, dippers, otters and water voles. They allow wildlife to travel vast distances through different kinds of landscape to complete their life cycles, and act as conveyor belts transporting nutrients and sediment.

And it's not just wildlife that needs freshwater – we drink freshwater to stay alive, use it to keep clean, water the crops we depend upon, to generate energy and in the manufacture all sorts of products. Rivers act as transport routes, they provide fish to feed people and provide important flood protection... in other words, we couldn't manage without them!

Unfortunately, human activities are putting our freshwater habitats under tremendous strain. Thirsty crops suck up water, industrial pollution and sewage leaks into rivers, natural habitats are built over, and dams and weirs divide up our river systems. Too often, our rivers and wetlands are seen as pipes for water and a way of disposing of waste rather than rich environments providing diverse benefits for people and nature. Populations of freshwater species are falling faster than wildlife in any other type of habitat on our planet, and this means that many of the things we need from rivers, lakes and wetlands are also in danger of being lost.

But we can bring our freshwater habitats back to life. Reedbeds are now being restored across the UK, helping to save bitterns from the brink of extinction in the UK. We once lost beavers from the UK altogether, but now they're back, building dams and reshaping whole freshwater systems – helping plants, insects, fish and

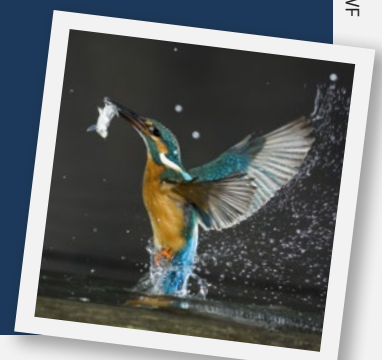
birds to thrive. We're saving over-modified rivers, such as Swindale beck, by letting nature take the lead.

As the UK experiences more droughts and floods, our freshwater habitats will be an ever-important lifeline. We need to uphold regulations that protect our rivers, to improve the quality of our water and ensure we can adapt to a changing climate.

If we all work together, we can bring the blue veins of our wild isles back to life.

Freshwater facts

- Only 2.5% of the water on Earth is freshwater and most of that is locked up in ice caps and glaciers.
- Rivers, lakes and freshwater wetlands cover around 1% of the Earth's surface, but they're home to almost a quarter of the world's vertebrate species.
- Over half of all known fish species live in freshwater.
- Almost 90% of the world's wetlands have been lost since 1700.
- We have over 11,000 rivers and 40,000 lakes in the UK.





WHAT'S IN THIS GUIDE

This guide is designed to be used by teachers and youth group leaders and contains activities suitable for children aged 4 – 11 (Key Stage 1-2, First-Second Level). These activities are all designed to encourage children to connect with UK nature, explore the biodiversity of their local green spaces and learn more about freshwater ecosystems. We recommend using the Save Our Wild Isles presentation in combination with these activities.

Activity 1:

Ecosystem engineers
(age 7-11)

Activity 2:

Metamorphosis mayhem
(age 4-11)

Activity 3:

Dipping detectives
(age 4-11)

Activity 4:

Freshwater alliteration
(age 7-11)

Activity 5:

Make a mini pond
(age 4-11)

Activity 6:

Nature-friendly careers
(age 4-11)



Sustainable development goals

The activities in this guide link to the following Sustainable Development Goals:

Ensure availability and sustainable management of water and sanitation for all.



- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
- 6.6 By 2030, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.



ACTIVITY 1 ECOSYSTEM ENGINEERS

Time: 1 hour **Age: 7 – 11**

Curriculum links: England: Science, Geography, Scotland: Sciences, Social studies, Technologies, Wales: Science and technology, Humanities, Northern Ireland: Geography, Science and technology.

Beavers are nature's architects. They cut down trees with their impressive front teeth and build dams across rivers and streams using branches, mud and weeds. Through this activity you will become an ecosystem engineer through constructing your own beaver dam, observing the impact this has on the flow of water in a river and considering how this might benefit humans and freshwater wildlife.

You will need

- Plastic tray or tub to act as the river (recommend at least 40cm in length).
- Water.
- Water jug or small bucket.
- Natural materials to build dam – sticks, rocks, leaves, cardboard, paper scraps etc.
- Modelling clay or playdough.
- Stopwatch.
- Small people or house figures (optional).
- Aprons (optional).

Instructions

1. Discuss how beavers build dams and what materials they use.
2. Set up your plastic tray outside with a very slight slope - this will be your river. Pour a little water into your tray to demonstrate how your river flows without a dam. It will run very quickly but see if you can time how long it takes the water to reach the lower end of the tray.



This activity can get quite messy and wet so works best outside!

3. Out of your natural materials, think about which ones might work best for building a dam. Once you've come up with a plan, start building your beaver dam across the flow of your river just like how beavers work in the wild. You can use your clay or playdough to help secure your dam to the bottom of the tray and to help hold your dam together - like how beavers use mud to help them cement their dams.
4. Once you have built your dam you can add any house or people figures downstream to represent villages and towns.
5. Once your river is all set up, get one person to carefully pour water into the upstream section of the river. At the same time have one person use the stopwatch to time how long it takes for the water to reach the lower end of the tray.
6. If you want to, add a competitive element by seeing which team can build the best dam (i.e. hold back the most water) in 5 minutes!

Questions

- What difference did your dam make to the speed of the water?
- What do you think causes flooding in a river?
- How do you think beaver dams might help with the issue of flooding?
- Can you build your dam solid enough to be able to contain a pool of water in the top section of your river?
- In the wild how might these pools of water be beneficial to wildlife such as otters, birds and newts?
- What improvements could you make to your dam so that it can hold even more water or for a longer amount of time?

ACTIVITY 2

METAMORPHOSIS MAYHEM

Time: 15 minutes **Age: 4 – 11**

Curriculum links: England: Science, Scotland: Sciences, Wales: Science and technology, Northern Ireland: Science and technology.

Explore the life cycle and metamorphosis of a pond frog through this fun interactive game!

You will need

- Large space, preferably outdoors.



Instructions

1. Before playing this game recap the life cycle of a frog. When a frog grows, it goes through several changes called **metamorphosis**. First a frog will lay frogspawn in water. Next the frogspawn hatches into a tadpole which has a long wiggly tail. Next the tadpoles grow arms and legs to become froglets. Later the froglets lose their tails and become frogs. Finally, two adult frogs reproduce to create new frogspawn and continue the cycle.
2. For this game each stage of a frog's metamorphosis has a corresponding action. To be frogspawn you should be low to the ground with hands over your



head, to be a tadpole you need to wiggle your entire body, to be a froglet you need to walk around moving your arms as if swimming and to be a frog you need to jump on all fours and make a 'ribbit' sound (adapt as you see fit for inclusivity).

3. Recap how to play 'rock paper scissors' if children are not familiar. If you want to, you could change up the game to be 'rock water heron' instead using the same hand gestures (heron beak = scissors, paper = water, rock = rock), where the heron drinks the water (heron wins), the rock sinks in water (water wins) and the heron's beak is stopped by the rock (rock wins).
4. Players all start as frogspawn and play a game of 'rock paper scissors' or 'rock water heron' with another player. The winner grows into the next stage i.e. frogspawn becomes tadpole. Players can only play 'rock paper scissors' or 'rock water heron' with someone who is at the same stage as them i.e. both frogspawn or both tadpoles.
5. The aim of the game is to try and go through all the life stages of a frog before becoming frogspawn again. The game can end when the first player has completed a life cycle or players can sit out when they become frogspawn and wait for others to finish.



Extension: Can you come up with a similar version of this game for another freshwater animal that undergoes metamorphosis e.g. a dragonfly?

ACTIVITY 3

DIPPING DETECTIVES

Time: 1 hour **Age: 4 – 11**

Curriculum links: England: Science, Scotland: Sciences, Wales: Science and technology, Northern Ireland: Science and technology.

A brilliant way to learn more about freshwater habitats and food chains is to explore them directly. Become a dipping detective and discover a world of amazing nature just below the surface of your local pond!

You will need

- Access to a pond - make sure you have permission from the landowner, if you have already made your own mini pond using **Activity 5** you could use this!
- Pond dipping net or container to scoop through the water.
- Shallow tray or tub to observe your findings, ideally white in colour.
- Images of pond creatures to help you identify them – could be a spotter guide or the Seek app.
- Spoon or soft tipped paint brush.
- Paper and pencil for recording and sketching.
- Magnifying glass (optional).

Instructions

1. Before heading outside discuss as a class or in pairs what you already know about pond life. What sort of wildlife would you expect to find in a pond? Would this change in different seasons? Can you categorise different pond creatures into groups e.g. smaller than a penny and larger than a penny, vertebrates and invertebrates, insects, amphibians, crustaceans and molluscs? (Adapt for age range and prior knowledge).
2. Head outside to your local pond, place your shallow tray near the edge of the pond and fill it with some pond water. Loud noises and vibrations can easily disturb wildlife so make sure to be quiet and calm when approaching the pond.
3. Find some stable ground (so that you are not in danger of falling in!) and use your net or container to carefully sweep through the water. Creatures live in different places and at different depths in ponds so try to sweep different layers and places around the pond, to find different minibeasts lurking.
4. Gently tip the contents of your net or container into the tray, and use your spoon or soft tipped paintbrush to carefully search for any minibeasts. Make sure to look closely as some minibeasts will be very tiny!
5. Use a spotter guide or the Seek app to help you identify the pond minibeasts, and think about the questions below. Record what you find in a table, and if you have time, you can sketch some of your favourite creatures, making sure to label the main parts of their bodies.



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ACTIVITY 3 – CONTINUED

Questions

- What do you think this creature is? What group of animals does it belong to?
- What features does this creature have that make it suited to pondlife?
- What do you think it might eat? Is it a carnivore, herbivore, omnivore or detritivore (something that eats dead plants or animals)?
- Where might this creature fit in a food chain?
- How is it protected from predators?



At home:
Great activity
to do with your
family in a local
park pond!

Extension: Using library books or online research, find out what different pond creatures eat. Use this information to draw your own food chain involving at least one of the creatures you found in the pond.

Safety

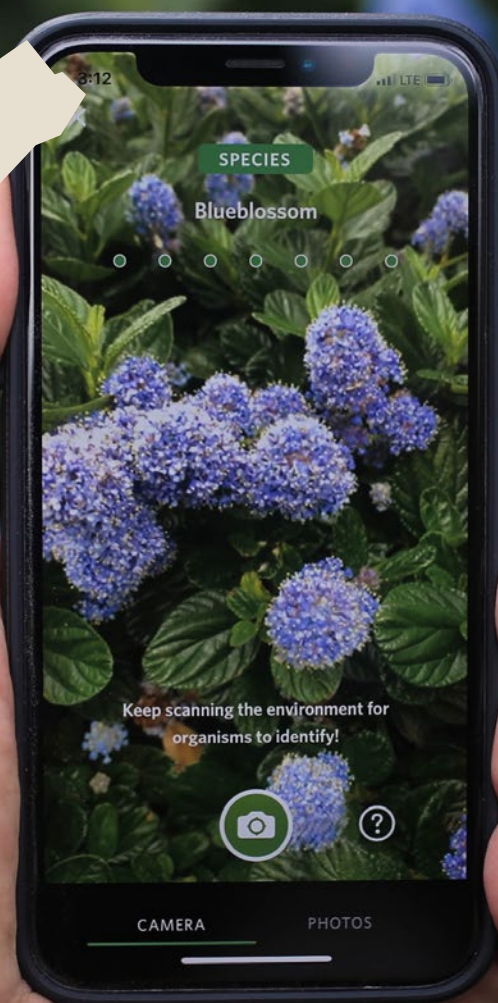
- Be careful around the water's edge. Make sure you have sturdy footing to avoid any danger of falling in.
- Do not touch any minibeasts, you can move them around carefully using a spoon or soft tipped paintbrush.
- Make sure to wash your hands thoroughly after the activity and keep them away from your mouth.
- Return all plants and animals to the pond after you have finished identifying them. Make sure everything is returned to the pond it came from to avoid spreading disease or any invasive species between ponds.

seek 
by iNaturalist

Seek app

You can download the free Seek app by iNaturalist on a phone or tablet to unlock a whole world of freshwater nature on your doorstep! From newts and dragonflies to bullrushes and willow trees and everything in between, Seek's smart image recognition technology will identify what you've found and encourage you to discover the hidden natural treasures in your local surroundings.

www.wwf.org.uk/discover-nature-seek-app



ACTIVITY 4

FRESHWATER ALLITERATION







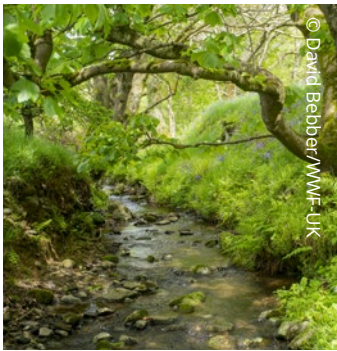

Time: 20 minutes Age: 7 – 11

Curriculum links:
England: English,
Scotland: Literacy and
English, Wales: English,
Northern Ireland:
Language and literacy.

Alliteration is when two or more nearby words have the same letter or sound at the start of a word, for example, a shimmering salmon (these words both start with an ‘s’ sound). We can use alliteration in poetry and other creative writing to grab the reader’s attention, add deeper meaning or to make our writing more entertaining. Match the **nouns** below to the **adjectives** to create your own **freshwater alliterations**, and then use these to create sentences and your own freshwater poem.



Match the animal, plant or habitat to its alliteration adjective and its picture.

Adjective Splashing	Adjective Shimmering	Adjective Handsome
Adjective Magnificent	Adjective Brown-furred	Adjective Darting
Adjective Rustling	Adjective Tiny	Adjective Knobbly
Noun Salmon	Noun Mayfly	Noun Tadpole
Noun Stream	Noun Reeds	Noun Newt
Noun Beaver	Noun Dragonfly	Noun Heron
 © Pixabay	 © Alessandro Sgroi/WWF	 © Pixabay
 © Joseph Gray/WWF-UK	 © David Bebbler/WWF-UK	 © naturepi.com/Mike Potts/WWF

ACTIVITY 4 – CONTINUED

- Using the 4 images below, river, damselfly, pond skater and pond, or a freshwater image of your own, think about the qualities they have - what do they look like? What might they sound like? How do they move and at what speed? What characteristics do they have? Then come up with your own alliteration adjectives for these.



River



Damselfly



Pond skater



Pond

- Write an alliteration sentence for five of these freshwater animals. For example:

The shimmering salmon swam speedily up the splashing stream.



Extension: Use alliteration to write a poem or short story about a freshwater habitat such as a pond or river.

ACTIVITY 5

MAKE A MINI POND

Time: 30 minutes **Age: 4 – 11**

Curriculum links: England: Science, Geography, Art and design, Scotland: Sciences, Social studies, Technologies, Wales: Science and technology, Humanities, Northern Ireland: Geography, Science and technology.

Building a pond is one of the best things you can do to attract wildlife to your school grounds or garden, and it's really easy! Follow these instructions to create your own freshwater oasis.



You will need

- A large container such as a washing up bowl, plastic tub, old plant pot – anything will do as long as you can make it watertight.
- Rainwater.
- Gravel to line base of pond.
- Bricks, large stones or sticks.
- Pond plants – can purchase from your local garden centre or from a local pond with permission (optional).
- Small trowel or spade for digging pond hole (optional).

Instructions

1. Decide where you want to position your mini pond whilst the container is still easy to carry – it's good to try and find a spot that gets some sunlight and some shade at different parts of the day. It's also good to try and keep your pond away from trees, otherwise it might fill up with leaves.
2. Place your container in your desired location and if you are digging it into the ground, you will need to dig a hole slightly larger than the container (make sure you have permission first!). Place your container in the hole and use the soil you have dug out to secure it, and fill in any gaps around the sides. Don't worry if you can't dig into the ground, you can always add some brick or stone steps around the edge of your container, to encourage more creatures into your pond habitat.
3. Add some gravel to cover the bottom of your container, this is called the 'substrate layer' and provides a habitat for lots of different freshwater creatures like dragonfly larvae and water boatmen.
4. Now using your stones, bricks or sticks create different levels in your container – different pond creatures will prefer different habitats so it's good to give them a choice, it will also help creatures to easily get in and out of your pond.
5. Fill your pond with rainwater. If you can't use rainwater you can use tap water, but you need to leave it for 2-3 days before it's safe for wildlife (tap water has chemicals added to make it safe for us to drink but these are not necessarily good for wildlife).
6. Finally, if you have any, you can add pond plants to your new freshwater habitat. Pond plants will help oxygen get into the water and also provide habitats and food for freshwater wildlife. Try to go for native plants if you can, and if collecting from a local pond ensure that you take only a little so as not to harm any wildlife living there.
7. Regularly check up on your pond to discover any new wildlife you have attracted to your school or garden. You can use the Seek app or nature spotting guides to help with your identification. You could also come up with a name for your new freshwater habitat and make a plaque from cardboard or recycled wood to let everyone know!

ACTIVITY 6 NATURE-FRIENDLY CAREERS



© Yoon S. Byun / WWF-US

We can all try to help nature in our daily life.

However, some people can help solve some of the big issues facing nature because they have a job that can make a big difference.

1. Whole class discussion

(10 mins)

- What problems have we learned about that affect this biome? (gather suggestions)
- Pick out a few of the suggestions and ask for ideas of what jobs might be able to help solve the problem by taking action or doing something differently.

E.g. Pollution in rivers: Farmers, politicians, water companies

2. Think, Pair and Share activity

(5 mins)

- Choose one of the jobs suggested in point 2, or come up with a new job, and discuss how you would try to do good for nature if that was your job.

3. Whole class discussion

(10 mins)

- Go round and hear from each pair, building up a list of the jobs that could influence the health of the biome.
- How might people in these jobs make choices that could help nature? Choose one or more jobs that don't have an obvious link to the biome (e.g. artist, builder, teacher, politician, shop manager, banker) and see if the class can think of ways they could help. E.g. nature-friendly products and materials, building awareness of the importance of nature etc.

USEFUL LINKS AND RESOURCES



LearnToLoveNature freshwater activities

Learn to love nature - focus on freshwater | WWF

Rivers and freshwater explainer sheet

WWF_Rivers_Resource_A_Million_Hands.pdf

Our freshwater information sheet

primary_ourfreshwaters.pdf (panda.org)



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Schools' Wild Challenge Pond dipping activity
(experience nature)

Pond dipping (rspb.org.uk)

Make a pond dipping net

make-a-pond-dipping-net.pdf (rspb.org.uk)

RSPB's Wild Challenge award

www.rspb.org.uk/schoolswildchallenge



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