Shrinking Peatland

Time needed for activity

10 minutes

Location

A flat and spacious outdoor area

Context

This activity looks at the effects of human actions on the wildlife that live in fragile peatland habitats.

Natural Resources Wales' purpose is to pursue sustainable management of natural resources in all its work. This means looking after air, land, water, wildlife, plants and soil to improve Wales' well-being, and provide a better future for everyone.

Curriculum for Wales

Science and Technology

- **What matters** – The world around us is full of living things which depend on each other for survival.

Objectives

Learners understand that human actions can have positive or negative effects on the wildlife of peatland habitats. They learn what can be done to protect and restore these fragile habitats.

Supporting information & resources

- Small tarpaulin
- Safe space to run

What to do

1. Lay the tarp on a grassy, flat and open area. Explain to the group that this represents the peatland habitat that some wildlife species live in. Explain that a healthy peatland is an open, wet and boggy environment. If they are unfamiliar with a peatland environment, why not show them a picture of a peatland – see our Resource cards - Peatlands.
2. Explain that peatland habitats are tough places to live in, yet wildlife still thrives on them. Peatlands are key habitats for endangered and rare species of invertebrates, mammals, reptiles, birds and plants that are specially adapted to living in the harsh, nutrient poor conditions.

   Discuss:

   - What creatures might live in this habitat?
   - How and where do they shelter?
   - How have they adapted to live in a peatland environment?
   - What do they eat?

   Show pictures of species that are common on peatlands including cotton grass, sundews, rosy marsh moths, curlew, hen harriers, adders and field voles.

3. Explain that the group is going to act as field voles that are active day and night looking for seeds, leaves and roots to eat. Explain that the tarpaulin is the area of peatland in which their burrow is located, and they must return to it when they feel threatened. Ask your learners to go and explore the wider peatland area and actively look for food. Ask them to run around the designated area pretending to scurry like a field vole and communicate with each other by making squeaking noises similar to those made by mice.
4. Ask the children what predators do they think a field vole might have? Explain that field voles are an extremely important part of the diet of many predators, such as kestrels, weasels, barn owls and hen harriers. Choose a learner to act as a barn owl, or take the role yourself. Barn owls are mostly nocturnal birds but do hunt just before dusk and around daybreak. Hunting from perches like fence posts, barn owls fly low and silently, striking their prey with a head-first dive before pulling their head back and stretching out their talons, ready to grab their prey.
5. Explain to your learners that barn owls don't hoot but rather make a long, hissing screeching noise that lasts about 2 seconds. Explain that when the field voles hear the owl screech, the field voles must scurry into their burrows (onto the tarpaulin) to hide.
6. Unfortunately due to a number of human actions and environmental factors the size of the peatland is shrinking and the field voles' burrow area is decreasing. Examples of human actions resulting in the decrease of the surface area of peatland, the consequences of these actions and suggested actions of what could be done to restore and protect peatlands are detailed in the table below.
7. Read out the examples and consequences to your learners one at a time. Fold the tarp in half each time a new problem occurs and repeat the running, hunting and shrinking process until you are unable to fold the tarpaulin further. Only field voles that have managed to hide in their shrinking burrow area will survive (the ones able to stand on the shrinking tarpaulin). Field voles that are unable to get to the cover of their burrows are swooped on by a barn owl and escorted to one side.
8. Discuss with your learners what can be done to protect and restore peatlands? It's not all doom and gloom – we don't want to fill your learners with fear, there are lots of projects and things they can do on an individual basis to help protect and conserve these fragile habitats. With time and patience it is possible to restore peatland habitats. Read out what is being done to restore peatlands in relation to the examples given previously one at a time. For each human action that helps restore and protect peatlands, reopen the tarpaulin, providing more habitat for the remaining field voles to hide and live in. With each unfolding of the tarpaulin the field vole population recovers and learners are reintroduced back into the game.

Suggested key questions

- Ask your learners what effect the decreasing habitat area will have on the barn owl population? The smaller the peatland area, the less habitat there will be to support the field vole population resulting in fewer numbers of field voles = less available food for the barn owl population.
- What would happen to the biodiversity of the peatland if there was no human disturbance? Would the numbers of field voles increase?
- What would happen to the field vole and barn owl population if the entire peatland was disturbed and dried out?
- What would happen if one of the field voles was poisoned by the raw sewage? What effect might this have on the food chain?

Adapting for different needs/abilities

Less able

- Don't include all the essential factors – just play with a few.
- Play the game with only one peat problem.

More able

- Don't reveal the human actions to protect and restore the peatlands. Ask your learners to discuss and think what could be done themselves.

Follow up activity/extension

- Give each learner or group of learners a peatland plant, invertebrate, mammal, reptile or bird to research. Ask them to prepare a presentation or write about their species. They should share some key facts about their species and consider how and why they depend on a peatland habitat.
- Ask your learners to write a newspaper style article for a local newspaper about the wildlife of peatlands and the threats that face them.
- Set up a wildlife camera on an area of peatland – what images can your learners capture? Landowners permission must be sought beforehand.
- Use our Activity Plan – Food chain and Resource Cards – Ask your learners to create a peatland food chain.

Looking for more learning resources, information and data?

Please contact: **education@naturalresourceswales.gov.uk** or go to **https://naturalresources.wales/learning**

Alternative format; large print or another language, please contact:
enquiries@naturalresourceswales.gov.uk
0300 065 3000

Human actions resulting in the decrease of the surface area of the peatland include:	Consequences of these human actions for the field voles:	Human actions resulting in the increase of the surface area of the peatland include:
Drainage Sections of peatland are being drained to make way for agriculture and forestry resulting in drained peatlands with lowered water table levels.	Lowered water levels make conditions difficult for peatland plants to grow = less available food for field voles.	The drainage ditches on site have been blocked to improve water levels, reducing and/or slowing water from running off peatland and allowing the habitat to get re-saturated, providing ideal conditions for important plants like sundews and cotton grass to regrow.
Peat is being dug up to produce garden compost Applying peat compost to the garden to produce an organic rich soil has long been used by gardeners to encourage plant growth.	Less peatland = less habitat for field voles.	Following a letter from local school children about the damage that digging peat for compost has on peatlands, the local garden centre begins to stock peat-free compost alternatives such as bark, wood fibre, bracken and wool. The peat can stay in the ground, the peatland will continue to grow rather than shrink, gardeners are provided with a peat free alternative and the peatland habitat is restored.
A farmer has put too many sheep on the peatland to graze. The sheep have eaten vast sections of the special plants that grow on the peatland.	Less seeds and leaves available for the field voles to eat.	The farmer's daughter has been learning about peatlands in school. She comes home and discusses over-grazing with her parents. The farmer realises he is over-grazing the peatland on his farm and decides to. reduce the amount and type of livestock on the peatland. The peatland is no longer over grazed but is now lightly grazed, allowing peatland plants to thrive, providing food and habitat for the field vole population.

Human actions resulting in the decrease of the surface area of the peatland include:	Consequences of these human actions for the field voles:	Human actions resulting in the increase of the surface area of the peatland include:
A sewer in a local town has become blocked with wet wipes that people have flushed down the toilet. Unlike toilet paper that breaks down, wet wipes will remain virtually imperishable even when flushed down the toilet. The wet wipes cause a blockage in the sewer and raw sewage comes up through the drain cover and overspills onto the street. During a period of heavy rain, the ground becomes saturated, it cannot hold any more water. The sewage washes away and travels across the ground as surface run-off, from the town onto the peatland.	The sewage kills the specialised plants that grow on the peatland = the field vole's habitat shrinks further.	Following the sewage pollution incident on the peatland, Natural Resources Wales Environment Officers investigate and identify the sewer blockage and clear the accumulated wet wipes. Local school children make a video to raise awareness of why flushing wet wipes down the toilet is not a good idea and this reduces occurrences in the area.
A couple visit the peatland for a picnic. Before leaving one of them discards a cigarette but doesn't stub it out properly. A fire starts in an area of peatland which has dried out. The high temperature causes the underlying peat to ignite. Once alight, peat can burn downwards into the thick layers over large areas, sustaining underground fires that can continue to burn for several weeks, making them difficult to put out.	A large area of habitat is burnt = reduced habitat for the field voles.	The organisation that manages the peatland holds a competition for local children to design a poster to raise the general public's awareness of the vulnerability of peatlands to fire. The winning entry is made into a sign and is put up at several points around the peatland asking visitors to take care and not to smoke or light a barbeque in or around the peatland. The combined action allows the local peatland to thrive providing habitat for field voles and other species.