How does peat form?

Time needed for activity

30 minutes

Location

A flat and spacious indoor or outdoor area

Context

This activity shares ideas to encourage discussion about the factors that can affect peat formation and accumulation rates.

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.
- **What matters**
  Matter and the way it behaves defines our universe and shapes our lives.

Humanities

- **What matters**
  Our natural world is diverse and dynamic, influenced by processes and human actions.

Mathematics and Numeracy

- **What matters**
  The number system is used to represent and compare relationships between numbers and quantities.

Objectives

Learners will be able to:

- Understand that peat forms and accumulates when certain habitat requirements are met.
- Appreciate that it takes a long time for peat to form and accumulate.
- Understand that human actions and environmental factors can have an influence on peat accumulation rates.

Suggested equipment and resources

- Three containers e.g. buckets
- Stopwatch
- Metre ruler or measuring tape (optional)
- Hi-vis jackets or something to denote certain learners as 'workers'
- One set of Resource cards – How does peat form per learner.
- Resource Cards – Peatland photos

Suggestions to complete this activity

- Working in small groups, you could introduce this activity by asking your learners to discuss and describe what they can see in the Resource Cards – Peatland photos.
- You could ask your learners to imagine they are sphagnum mosses that want to form into peat. What habitat requirements would they need to form into peat? Peat needs specific habitat requirements as detailed on our Resource cards – How does peat form.
  - Acidic soil.
  - Low oxygen supply.
  - Cold, waterlogged land.

  Further information on how peat forms is available in our Information note – Peatlands.

  You could show our Resource cards – How does peat form to your learners or ask them to make their own. We suggest that once your learners have had an opportunity to see the resource cards, place each type of habitat requirement into one bucket or container e.g. all acidic soil resource cards into one bucket. To get your learners moving, we suggest spacing the filled buckets over a wide area.

Concept - Peat forms and accumulates when certain habitat requirements are met.

- Ask your learners - Is it essential for all three habitat requirements to be present for peat to form and accumulate? Yes. Although the site specific characteristics of areas (climate, topography, water depth and flow) will be different, peat will not form unless all three habitat requirements are present.
- Explain to your learners, in order for them to successfully turn from sphagnum moss into peat, they will need to collect one of each of the essential habitat requirement resource cards to make a complete set of cards as quickly as possible. Once they have collected a full set of resource cards, your learners will have the right habitat requirements to form peat. Learners that have successfully turned from sphagnum moss into peat could stand at the side of the peatland (designated area). You could ask your learners to think of an action to show they have formed into peat.
- Once your learners have grasped the concept of the activity, we suggest giving them a practice run. After a minute or so of accumulation, ask your learners to stop. How many learners have successfully accumulated into peat?

Concept - It takes a long time for peat to form and accumulate.

- You could ask your learners how long do they think it would take for just one millimetre of peat to form? It takes approximately one year for a millimetre of peat to form – you might want to illustrate this on a ruler or measuring tape.

  You could challenge your learners by asking them if it takes a year for a millimetre of peat to form, how long would it take for a cm of peat to accumulate? Then 50cm, a metre and ten metres?
- We suggest repeating the activity but explaining that this round is competitive. You could split your learners into two teams or leave them as one whole group. After a minute or so of accumulation, ask your learners to stop. How many learners have successfully accumulated into peat? To encourage some mental maths, you could explain that each learner that has successfully formed into peat represents 500 years of accumulation. You could also ask questions along these lines:
  - Added together, to what depth of peat has their team accumulated?
  - How many years has it taken for their peat to accumulate?
  - Working back from the present day, in what year did their team's peat begin to accumulate?

Concept - Human actions and environmental factors can have an influence on peat accumulation rates

- You might want to explain to your learners that human actions and environmental factors have been at work and it looks as if the peatland area is about to be disturbed.
- Set the scene by using your own scenario or use the ones suggested below:
  - A landowner wants to dig up and drain the land in order to plant trees.
  - The farmer wants to drain the peatland to increase the amount of available pasture for animals.
  - A garden centre wants to drain and dig up the peatland to create their own brand of peat compost to sell to gardeners.
- You could assign the role of 'workers' to some learners or take on the role yourself. You could ask any learners that aren't workers to imagine that they are deposits of peat that have been lying in the ground for two thousand years. In order to accumulate for another successful year they will need to gather one of each of the habitat requirement cards. The peat deposits will be aiming to continue accumulating, while the workers will be trying dig up and destroy the peat. If a 'peat deposit' is tapped by a 'worker' they should stop, bend down and crouch to the floor – they are out of the game. You might want to give your 'peat deposits' a head start before releasing the 'workers'.

  Once the activity has run it's course you could gather your learners together and ask them:
  - How much peat deposits remain?
  - How long have they all been collectively accumulating for?
  - What total volume of peat do they symbolise?
  - What total volume of peat did the 'workers' dig up?
  - How many years of peat accumulation has been lost?

  You could emphasise to your learners that the peat accumulation process has taken thousands of years but in comparison digging up the peatland only took a short period of time.

Suggested key questions

- What habitat requirements are needed for peat to form?
- Why does it take a long time for peat to form and accumulate?
- What human activities can affect peatlands?

Suggestions for adapting for different needs/abilities

- Swop roles so everyone has a chance to try this activity from a different perspective.
- Expand or shrink the area over which the activity is run.
- Instead of challenging your learners to use mental maths provide calculators to help them.
- Give your learners the facts and figures, don't pose as many questions or give them laminated year cards to help them visualise the peat accumulation over time.
- Allow peat to accumulate for longer and to a greater depth. Allow the 'worker' to dig up more layers of peat. Can your learners calculate the depth and years back in time?

Suggestions for follow up activity/extension

- You could challenge your learners to write a recipe to create the right habitat requirements for peat to form.
- Using different materials e.g. stones, leaves, sand and soil, you could mock up a fake sample of peat in a plastic bottle to allow learners to visualise layers of peat forming and accumulating.
- Your learners could be challenged to create a presentation, blog or film about peat formation and accumulation.
- Expressive arts challenge – can your learners come up with a sequence of movements to tell the story of the creation of peat growth?
- Your leaners could compare sizes of peatlands on a local, national and international level.
- Your learners could write a newspaper style article for a local newspaper on how peat is created, how it accumulates and how we can help restore/conserve it.

Suggested other resources

- Activity plan – Why are peatlands important?
- Activity plan – Peatlands quiz
- Activity plan – Shrinking peatlands
- Information note - Peatlands

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