

Changing climate and weather: Revealing the secrets of ponds and peat bogs

In this demonstration you will recreate a simple coring device to look at how ponds and peat bogs can tell us how climate and weather changed in the past. Scientists regularly use coring devices to study changes in the earth and ice over long periods of time.



Using an engine to core the tundra peat.



Standing on the ice of a lake to take a core from the bottom.

You will need:

- Plasticine or play dough (at least 3 different colours)
- A cardboard roll (e.g. the centre of a kitchen paper roll)
- Wooden spoon
- Knife or scissors
- Sellotape or cling film
- Picture or model of the artefacts shown on page 2 (NB: The RSBP sell small broaches that could be used.)

Preparation:

- The teacher fills the cardboard tube with different coloured layers of plasticine/playdough, with an artefact between each layer. (Cut along the length of the roll to more easily insert the contents, resealing the tube with sellotape or cling film).
- Make a hole at the top of the roll, so that a wooden handle (the spoon) can be inserted.

Note for teachers: the layers and transitions are illustrative only. In practice, it is microfossils that remain such as pollen grains and invertebrate skeleton parts.

A simple coring device



A real peat core showing layers built up over thousands of years.



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The Demonstration:

- When the class is assembled, demonstrate how the “core” represents sediment or peat – open the tube and separate the layers one at a time, starting at the bottom with the “oldest” first (the fish).
- For each layer, ask the class what the artefact tells us about what is happening during that period and what the climate was like.



A dung beetle: Cattle were present and people were farming the area.

The climate was warm and pleasant.

Burnt wood: There had been a forest fire or people had moved into the area. **The climate was warm with thunderstorms.**

An acorn: An oak forest had replaced the fir forest.

The climate was warmer and drier.

A fir cone: A fir forest had grown on or near the pond.

The climate was cool and drier.

A dragonfly: Dragonflies need reeds above the water to lay their eggs on. Reeds tell us the pond was becoming smaller.

A fish: Long ago, there was a pond that did not freeze to the bottom in winter.

The climate was cold and wet.

What does the demonstration tell us?

- Layers of soil and mud build up over thousands of years. When small animals and plants die, when leaves fall or when rain washes soil and dead material into a pond or lake, they fall to the bottom and are trapped by the soil and mud.
- We know how old the layers are from hi-tech measurements of carbon atoms.
- What is preserved in the peat and mud (sediment), tells us what the weather and environment were like in the past. This is because some plants and animals are very particular about where they live.

Why does this matter? Knowing about past changes in our environment helps us to understand what will happen to where we live as climate changes in the future.

For more information and resources visit:

www.wickedweatherwatch.org.uk and www.eu-interact.org