

Eco-Sgolion



Eco-Schools



Lichen Detectives

Exploring how lichens can tell us about air quality and what this means for our environment.



Ariennir gan
Lywodraeth Cymru
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Practitioner Knowledge

- Lichen looks like a mix of moss, fungi, or algae – but it’s actually a partnership between two living things: a fungus and an alga (tiny plant-like thing).
- They live together and help each other survive.
- Lichens grow on trees, walls, rocks, and even on the ground.
- They come in many colours – green, yellow, grey, orange, or even black.
- They grow very slowly and can live for a long time.
- Lichens are important because they show how clean the air is.
 - Some lichens only grow where the air is very clean.
 - Other lichens can survive where the air is dirty or polluted.

Lichens are fascinating organisms that play an important role in the natural world. They are a unique partnership between fungi and algae (or cyanobacteria), working together in a relationship called symbiosis. The algae or cyanobacteria produce food through photosynthesis, using energy from the sun, while the fungus provides structure and protection. Lichens are found in almost every habitat, from urban walls to remote mountains, and they contribute to ecosystems in subtle but essential ways, such as helping to break down rocks into soil and providing food and shelter for small invertebrates. Understanding lichens allows learners to appreciate how even the smallest organisms can support biodiversity and the balance of ecosystems.

Lichens are highly sensitive to changes in their environment, which makes them excellent indicators of air quality and climate change. Rapid shifts in temperature, rainfall, or pollution levels can prevent lichens from surviving in areas where they were once common. The loss of lichen species affects the wider ecosystem: for example, fewer lichens mean less food for certain insects or birds, and less contribution to soil formation. Some species of lichen are more resilient and can spread into new areas as climates change, but others may be pushed out or disappear entirely. By studying lichens, we can better understand the impacts of environmental change.

Activity

We are going to go outside, look for lichens, and see what they can tell us about our environment.

Materials Needed:

- A clipboard or paper
- Pencil or pen
- A simple “spotting sheet” (pictures of common lichens)

Optional: magnifying glass or tablet camera

Step 1 Learn About Lichen:

- Look at some pictures of lichens.
- Talk about how they look different.
- Discuss why lichens can tell us if the air is clean or dirty.

Step 2 Go Outside:

- Walk around the school grounds or a safe local area.
- Look on trees, walls, rocks, or fences.
- Circle or tick on your spotting sheet when you see different lichens.

Using the activity resource 'Lichen Spotting Sheet' included, look around trees, walls, rocks and fences. Mark when you see a lichen on your sheet. Use smiley or sad faces to show if they mean clean or dirty air.

Step 3 Sort What You Find:

- Try to group lichens into clean air lichens and dirty air lichens using your sheet.
- Think: does this tell us something about the air in our area?

Step 4 Talk and Share:

Ask the learners:

- Where did you find the most lichens?
- Were there more lichens that like clean air or dirty air?
- What does this tell us about our environment?

Step 5:

- What can we do to help keep the air clean?
- How do small changes (like walking, cycling, planting trees) help?

Curriculum Links

Purpose(s)	AOLE(s)	Statement of What Matters
Ambitious, capable learners Ethical, informed citizens Healthy, confident individuals	Science and Technology	Learning about living things and how they survive.
	Humanities	Enquiry, exploration and investigation inspire curiosity about the world, its past, present and future.
	Health & Well-being	Our decision-making impacts on the quality of our lives and the lives of others.

Next Steps and Other Ideas:

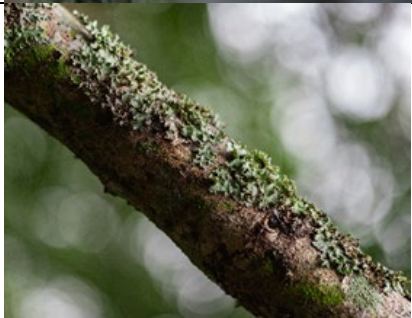
- Make a lichen map of your grounds: where did you find the most?
- Art activity: draw/paint/model lichen with different colours and shapes, have a partner or teacher guess if your lichen is in a clean or polluted area!
- Compare lichens in two different places (e.g. busy road vs. quiet park).
- Invite learners to make a poster: "Lichens are nature's air monitors."

UN Sustainable Global Goals Links:



Activity Resource: Lichen Spotting Sheet

✓ Tip: If you can, take photos of lichens you find and compare them to this sheet later.

Lichen Type	Where it's found	What it looks like		Colour	Air Quality	Mark if found
Fruticose	Trees	Bushy/ looks like hair		Green/grey	Clean Air	
Foliose	Trees	Flat, leafy shapes		Green/grey	Clean Air	
Crustose	Rocks/trees/ stone/ dead wood	Flat and stuck like paint on rock/tree		Yellow/orange	Can grow in dirty air	