WORKSHEET

Lichens everywhere

Air quality for primary schools



Image: J. Burrage

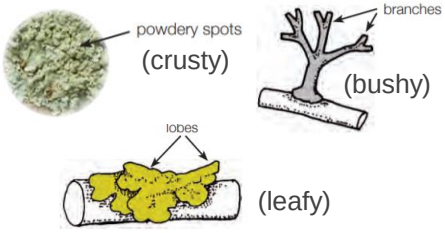
What are lichens?

Lichens are made up of two tiny living things, a fungus and an alga, which live and work together. Both organisms benefit from this close relationship. The fungus creates the body of the lichen and protects the alga. The alga provides the fungus with the food it needs to survive.

Activity 1: Can you name a type of fungus and an alga commonly found in the UK and around our shores?

Alga inside the lichen absorb nutrients from the surrounding air through photosynthesis. This means lichens are very sensitive to changes in their environment, which in turn tells us how clean or polluted the air we breathe is.

Lichens come in many different shapes and colours. Some have lobes or branches, while others have powdery spots.



Getting to know lichen

Lichen are found in many places all over the UK and around world. You are most likely to see them on rocks, walls, benches and trees. Go to a window and see if you can spot any on your neighbours roof tops. These lichen are usually bright yellow.

Activity 2: Look at the pictures on the right of your worksheet. What adjectives (describing words) could you use for each lichen?

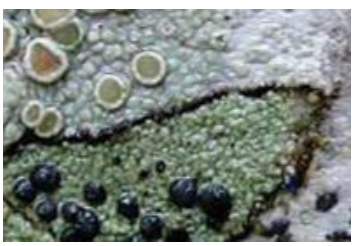
Scientists studying lichen to understand air quality, put them into one of three groups:

- **Nitrogen loving:** lichen that grow well in areas with high levels of nitrogen e.g. towns, busy roads.
- **Intermediate:** lichen found in areas where air conditions change between clean and polluted.
- **Nitrogen sensitive:** lichen that grow well in areas with low levels of nitrogen e.g. forests, woods.

Activity 3: Think about the places where you would find nitrogen loving and nitrogen sensitive lichens. Write down if you think the air may be clean or polluted. Now, using an ID guide what lichens are found outside your home? Are they nitrogen loving or sensitive?







Activity 4: Make your own lichen using recycled materials such as egg boxes, newspaper, foil, wrappers, glue and paint.

Activity 5: Ask an adult to share your creation on Facebook at Sustrans Brighton or Twitter @BikeItLucy @BikeItBen

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Images: Imperial College London, 2019. https://www.opalexplorenature.org/airsurvey.

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Notes for teachers and parents

Activity 1:

Lichens are environmental indicators (or bio-indicators) which are highly sensitive to local air quality. When questioned children in Year 4 and above, usually name “mushrooms” they eat (fungus) and “seaweed” in the ocean (alga).

Activity 2:

Prompting questions may include the following:

- Do they have lobes, branches or powdery spots?
- What colour are they?
- Do they look like anything else you can think of?

Typical descriptions and adjectives from looking at the images include:

- leafy, green, flat, cauliflower, bushy, green, fluffy, hairy, crusty, spotty, grey, flat and uneven.

Activity 3:

Research has shown that lichen respond to nitrogen in the atmosphere. Nitrogen-loving lichen tolerate higher levels of nitrogen and may indicate poor air quality. These are highlighted in red boxes on the Lichen Identification Guide (below). Nitrogen-sensitive lichen dislike high levels of nitrogen and may indicate better air quality. These are highlighted in the blue boxes on the Lichen Identification Guide.

To undertake your own lichen survey, download the app https://www.inaturalist.org/pages/seek_app or a detailed version of the Lichen Identification Guide (below) from https://www.opalexplorenature.org/airsurvey. What do your findings tell you about local air quality? NB: This activity can be undertaken in a garden and close to the home. Please ensure you follow the latest government advice https://www.gov.uk/coronavirus.

For more information contact: lucy.dance@sustrans.org.uk

