



Lovely Lichens

Lichens are amazing and can grow almost anywhere!

This means that they can grow in some really unexpected places, like on rocks, concrete and even on your homes!

All the activities in this pack can be done indoors just by looking on your window sills but if you want to explore in a garden or park there are some extension activities too.



Lichens are not just one organism but two:

a fungus (like a mushroom) and an algae (a tiny plant). They live very closely together; the fungus grows a structure and the algae lives inside where it is protected from the weather. The fungus benefits from this too; the algae gets its energy from the sun through photosynthesis and it passes some of this energy onto the fungus. This kind of relationship between two life forms where both of them benefit is called a **symbiotic relationship**.

There is another kind of relationship that two plants or animals can have called **parasitic**. In this relationship one of them is the parasite and it gets all the benefits where the other is harmed.

An example of this is between humans and mosquitos where the mosquito drinks our blood but we just get itchy spots in return!

Can you think of any other examples of parasitic or symbiotic relationships in nature?



Listen to this [amazing song](#) to help you learn about symbiotic relationships in lichens!





Lichens can take three forms: crustose, foliose and fruiticose.



Crustose lichens stick to whatever they are growing on like a hard crust so sometimes they just look like a stain.



Foliose lichens look like lots of tiny leaves all laying on top of each other but they usually stay close to the surface



Fruticose lichens grow branching arms which look the most like plants.

Usually foliose and fruiticose lichens grow where the air is cleanest so if you live in the city you will most likely be looking for crustose lichens. In city parks you might also find foliose and if you live in the countryside you will probably find all three types.

Activity 1: Lichen Spotting

Lichens can grow almost anywhere because the algae makes energy from sunlight, and the fungus can grip to difficult places. Once you start to look for them they are really easy to spot, on rocks, tree trunks and even window sills! But different lichens like different environments so there are hundreds of different species!

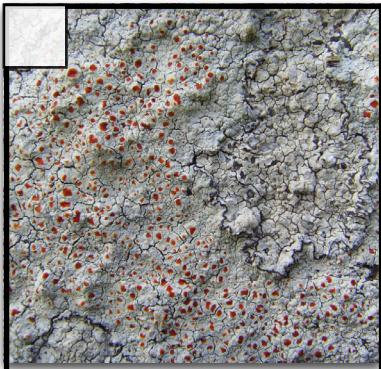
Download or print off this bingo sheet and see how many of these lichens you can find on your window sills. Our team found them all on their window sills around Edinburgh! There is also another sheet with lichens you can find on trees attached at the end of this pack.

Remember there are thousands of species of lichens and lots of them look very similar so it might be difficult to identify the ones you find. If you want more detailed identification keys, [this](#) is a great place to look!





Windowsill Lichen Bingo!



Blood Stain
Haematomma



Yellow
Caloplaca



Orange
Caloplaca



White
Caloplaca teicholyta



Black Button
Diplotomma alboatrum

Other plants to look out for:



Moss



Green Algae
Desmococcus



Activity 2: The lichen Compass

Lichens like a cool and damp environment which means we are more likely to find them in certain places than in others.

In Scotland (and the rest of the northern hemisphere) we get more sunlight shining on surfaces which are facing south than those which are facing north. This means that we can look at where lichens are growing on a building to make a compass.

Both of these photos were taken at the same house but one window sill is covered in lichens whereas the other has hardly any. Possibly the photo on the left is a south facing window so gets lots of sun which would make it too dry for lichens, whereas the other photo could be on the less sunny north side, and therefore more suited to lichen growth.



Activity:

1. Have a look to see if different window sills or outside walls of your home have different amounts of lichen on them.
2. Can you use this information to guess which way is north?
3. Check with a compass or compass app on your phone to see if you are right.
4. If you're wrong, why else might there not be lichens present? There are lots of reasons: pollution, pets using one area and not another, what the windowsill is made of, trees shading one side of the building, and many more!

Extension: This also works really well on trees. Find a tree standing on its own away from buildings and other trees and see if you can find north. It will be the side of the tree with the most lichens!

If you are interested in learning to navigate using signs you find in nature [this website](#) has lots of brilliant information to get you started.



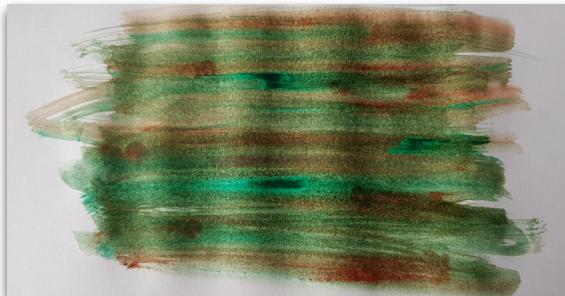
Activity 3: Make your own lichen

What you need:

- Paper
- Paint (good lichen colours are orange, green, white, black and yellow)
- Materials to give the lichen texture (sand, salt, oats, shredded paper, string, anything you think you can mix with paint to give a good texture)
- PVA glue (optional)

What to do:

1. Paint a background colour on your paper
2. Mix some of your materials with your paint colours. You might want to make different paint colours with different textures. If the mixture gets very dry add some PVA glue and mix well.
3. Paint your lichens!
4. After your lichen dry you might want to add a different colour to the topmost parts of your lichen like Black Button Lichen.



Activity 4: Lichens and air quality

Lichens are what are known as an indicator species.

An indicator species is one that can tell us about the environment because it can grow in certain conditions. Lichens can be very fussy about how clean the air around them is and so are an indicator species of air quality. This means that you can use the presence or absence of certain lichens to learn how clean the air is.

Try the OPAL projects [air quality activity](#) to learn more about lichens and pollution.

If you want to discover more about air quality check out our previous #dynamicEarthOnline activities.

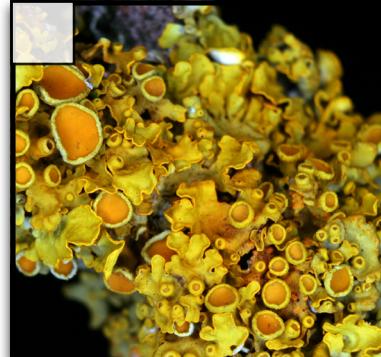




Tree Lichen Bingo!



Parmelia



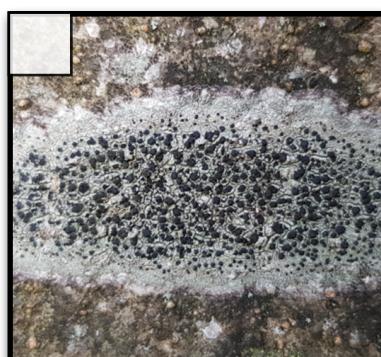
Leafy Xanthoria



Hypogymnia



Flavoparmelia



Black Star Arthonia



Cuspidate Xanthoria



Evernia

Other plants to look out for:



Green Algae Desmococcus

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Flavoparmelia - Jason Hollinger via Wikimedia Commons

