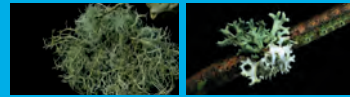
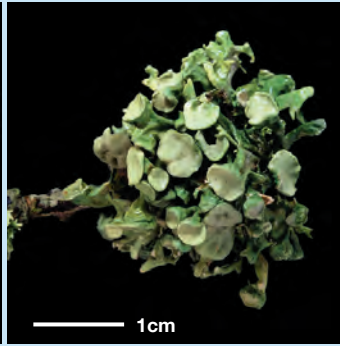
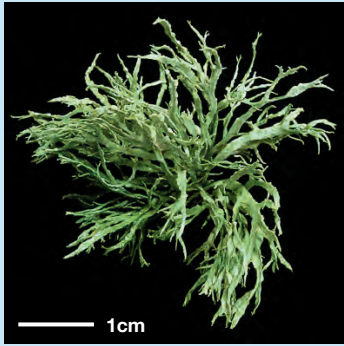


# Don't get confused

## Nitrogen-sensitive lichens that can be confused with *Usnea* and *Evernia*



*Usnea* *Evernia*



*Ramalina farinacea* can be confused with *Usnea* and *Evernia*, but:

- it has strap-like branches, unlike *Usnea* which has thread-like branches
- it is green on the underside unlike *Evernia* which is white on the underside

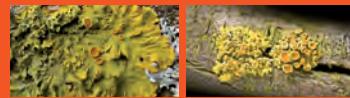
*Ramalina fastigiata* can be confused with *Evernia*, but:

- the lobes are wider than *Evernia*
- it has disc-like fruiting bodies on the ends of the lobes, which *Evernia* does not have

*Pseudevernia* can be confused with *Evernia*, but:

- the lower surface is blackish in the centre rather than white like *Evernia*
- it has pin-like reproductive structures on the upper surface of the lobes, unlike *Evernia*

## Nitrogen-loving lichens that can be confused with Leafy and Cushion *Xanthoria*



*Leafy Xanthoria* *Cushion Xanthoria*



*Candelaria concolor* can be confused with *Leafy Xanthoria* and *Cushion Xanthoria*, but:

- it has bright yellow lobes that are thinner and more finely divided than *Xanthoria*
- fruiting bodies may not be present



Don't get confused between *Leafy Xanthoria* and *Cushion Xanthoria*. *Leafy Xanthoria* has broad spreading lobes with or without fruiting bodies. *Cushion Xanthoria* has very small lobes and is usually dominated by many fruiting bodies.

# Lichen Identification Guide

This guide can be used for the OPAL Air Survey



Lichens are made up of two or more different organisms living together, a fungus and an alga. The fungus provides the body (thallus) in which the algal partner can live, protected from damaging conditions such as high levels of light (ultraviolet radiation) and lack of water (drought). The algal partner provides the essential carbohydrates (food for the fungus) from carbon dioxide and water, with the aid of sunlight. This close, interdependent relationship is referred to as a symbiosis.

Unlike mosses and flowering plants, lichens do not have green leaves or a stem. They may be pale or bright coloured and commonly occur in three forms:

Crusty lichens	Leafy lichens	Bushy lichens
Closely attached as if pressed on the bark. Crusty lichens are difficult to identify, so are not included in this survey.	Leaf-like lobes closely or loosely attached to the bark from the lower surface.	Branched and shrub-like, attached to the bark at the base.

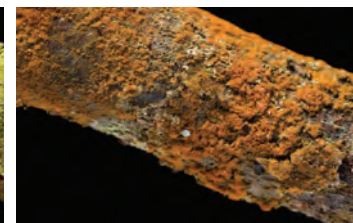
The nine types of lichen in the OPAL Air Survey (overleaf) are all leafy or bushy. Lichens can be confused with moss or algae



Moss



Green algae



Orange algae



# Lichen bioindicators

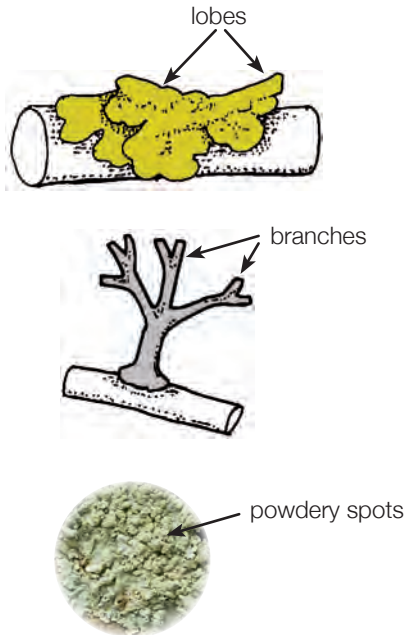
Why lichens? Lichens that are highly sensitive to air quality have been used to detect sources of pollution. In the past, when the air in many places was highly polluted by sulphur dioxide, few lichens could survive, creating lichen deserts around many industrial and urban areas. Lichens are now returning to towns and cities in the UK, and they can still provide a great deal of information about air quality.

Nitrogen-sensitive lichens are outlined in **blue**

Intermediate lichens can be found in clean and polluted conditions and are outlined in **grey**

Nitrogen-loving lichens are outlined in **red**

## Important lichen terms



**1. *Usnea***

**Nitrogen-sensitive**

- grey-green all round
- branches thread-like

**2. *Evernia***

**Nitrogen-sensitive**

- grey-green on top, white below
- lobes flattened, strap-like

**3. *Hypogymnia***

**Nitrogen-sensitive**

- lobes greyish on top, pale brown below
- lobes puffed up and hollow
- lobe ends often become powdery

**4. *Melanelixia***

**Intermediate**

- dull brown lobes, closely attached to the bark
- paler areas show when surface is rubbed

**5. *Flavoparmelia***

**Intermediate**

- broad, apple-green lobes
- wrinkled surface on which powdery spots may develop

**6. *Parmelia***

**Intermediate**

- lobes grey on top, dark brown below
- lobes thin, loosely attached to the bark
- pattern of white lines on the surface

**7. Leafy *Xanthoria***

**Nitrogen-loving**

- lobes yellow/orange to greenish yellow
- lobes broad, spreading
- a few orange fruiting bodies present

**8. Cushion *Xanthoria***

**Nitrogen-loving**

- lobes yellow to green-grey
- lobes small and clustered
- many orange fruiting bodies present

**9. *Physcia***

**Nitrogen-loving**

- lobes grey on top, whitish below
- lobe ends raised up becoming powdery
- black-tipped whiskers on the lobe edges