

## 5 IS THE LICHEN BEARD-LIKE, HAIR-LIKE OR STRAP-LIKE?

*Usnea subfloridana* Beard lichen



*Bryoria fuscescens* Horsehair lichen



Dry

*Ochrolechia androgyna* A cudbear lichen



Soredia and fruits

*Ochrolechia tartarea* A cudbear lichen



**Form** Shrubby tufts on trees, mainly found on twigs.  
**Colour** Yellow-green to grey-green thallus that is blackened at the base.  
**Soredia/Isidia** Round to irregularly-shaped soralia with granular soredia and isidia-like structures present.  
**Fruit** Rare.  
**Notes** Similar to other *Usnea* species, but has distinctly blackened base with transverse cracking only.

**Form** Elongated tufts of very narrow, hair-like branches.  
**Colour** Greenish brown, brown or dark brown.  
**Soredia/Isidia** Soredia in discrete oval soralia along branches.  
**Fruit** Very rare.  
**Underside** Paler below.  
**Notes** Similar to other *Bryoria* species but *B. fuscescens* is by far the commonest species in Atlantic woodlands.

**Form** A thick, warty crust, usually without fruits.  
**Colour** Whitish, pale grey to grey or greenish white.  
**Soredia/Isidia** Round to irregular pale-green soralia that can join to form a continuous crust.  
**Fruit** Occasional; pale pinkish to orange-brown disc, a thick rim with soredia.  
**Notes** When fertile, it is often mistaken for *O. tartarea* (which has no soredia). This is a common species in north and west Britain in a range of lichen communities on acidic trees and rocks. It is used in the production of traditional cudbear dye.

**Form** A thick, warty crust with numerous 'jam-tart' fruits.  
**Colour** White, pale grey to grey.  
**Soredia/Isidia** None.  
**Fruit** Frequent; dull orange-pink to pale-brown disc, thick rim.  
**Notes** Similar to *O. androgyna*. Also used in the production of traditional cudbear dyes.

*Ramalina farinacea* Shaggy strap lichen



Soralia

*Evernia prunastri* Oak moss



*Pertusaria amara* Bitter wart lichen



*Mycoblastus sanguinarius* Bloody-heart lichen



**Form** Short tufts of narrow, flattened branches.  
**Colour** Pale grey-green to yellow-green.  
**Soredia/Isidia** Soredia in discrete oval soralia along branch margins.  
**Fruit** Rare.  
**Underside** Same colour as upper surface.  
**Notes** Similar to *Evernia prunastri* (see right), short-tufted *Usnea* species (but these have cylindrical branches) and other *Ramalina* species; *R. farinacea* is the most common *Ramalina* species on trees with acid bark.

**Form** Short tufts of flattened branches with forked tips, often with a network of ridges.  
**Colour** Pale grey-green to pale yellow-green.  
**Soredia/Isidia** At first, round and on ridges and lobe margins; later, irregular, spreading and coalescing.  
**Fruit** Very rare.  
**Underside** Whitish, occasionally with green patches.  
**Notes** Similar to *Ramalina farinacea* which has narrower lobes, and the upper and lower surfaces are the same colour. A common species on a range of deciduous trees and used in the perfume industry.

**Form** A thin or thickish warty crust.  
**Colour** Pale grey, grey to greenish grey.  
**Soredia/Isidia** Soredia are white and rounded, and taste very bitter (rub with a wet finger and taste).  
**Fruit** Very rare.  
**Notes** Similar to another common wart lichen, *P. albescens* (but this does not taste bitter). Both of these wart lichens are common in a range of lichen communities on trees.

**Form** A thin or thickish crust.  
**Colour** White, pale grey or grey.  
**Soredia/Isidia** Usually none.  
**Fruit** Frequent; black convex fruits; scratch one with a fingernail to reveal a 'blood spot'.

## 6 IS THE LICHEN CRUSTY, LUMPY OR PORRIDGE-LIKE?

### We are Plantlife

For over 25 years, Plantlife has had a single ideal – to save and celebrate wild flowers, plants and fungi. They are the life support for all our wildlife and their colour and character light up our landscapes. But without our help, this priceless natural heritage is in danger of being lost.

From the open spaces of our nature reserves to the corridors of government, we work nationally and internationally to raise their profile, celebrate their beauty and to protect their future.

### Where wild plants lead Wildlife follows



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### Some key features to look for when identifying lichens

Use a hand lens (preferably x10 magnification) to examine them.

**Cilia** Wiry black hairs on the upper surface or lobe margins.

**Colour** Of upper (and if visible, the lower) surface. The colour of a species can vary – eg, depending on whether it is wet or dry.

**Cyphellae** and **pseudocyphellae** Pores or cracks that expose the interior of the lichen, appearing as paler spots or lines on the surface.

**Fruits** Reproductive structures that produce spores. They can be round discs, pimple-like or globular, and their colour often contrasts with the lichen surface.

**Hypothallus** A dark mat on the lower surface, often only visible between lobes or at the margins. It may be thin and visible only as a dark stain, but when well developed may be thicker and velvet-like.

**Isidia** Tiny projections on the surface that may be nodular, granular, finger-like, or branched like tiny fragments of coral. They are a means of vegetative reproduction.

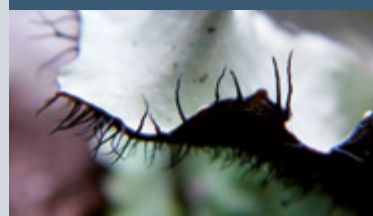
**Lobe** The rounded 'leaf' of a leafy lichen.

**Lobules** Small 'secondary' lobes that develop on the margins or on the surface of the lobes.

**Rhizines** Root-like structures. Stiff wiry black rhizines are typical of many *Parmelion* species. These may be straight, forked or branched.

**Soredia** Floury powder or coarse granules that often occur along ridges or cracks on the surface, or on the lobe margins. They may be diffuse or arise in discrete structures (termed **soralia**). Like isidia, they are a means of vegetative reproduction.

Cilia on *Parmotrema perlatum*



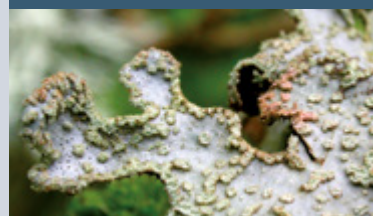
Fruits on *Ochrolechia tartarea*



Isidia on *Parmelia saxatilis*



Soredia on *Parmelia sulcata*



Pseudocyphellae on *Cetrelia olivetorum*



Rhizines on *Hypotrachyna laevigata*



# Plantlife

## Lichens of Atlantic Woodlands in the Lake District

Guide 2 The Parmelion lichens of birch, alder and oak





This guide is for anyone interested in identifying some of the more conspicuous lichens of Atlantic woodlands in the Lake District. Different species of lichen often grow together, forming distinct communities.

The **Parmelion** community grows on trees with very acidic bark, such as alder, birch and oak.

A companion guide (Guide 1) looks at the **Lobarion** community of lichens that grows on trees with mildly acidic or alkaline bark.

### What is a lichen?

A lichen is a special association between a fungus and an alga. The fungus forms the main body of the lichen, providing an upper surface that protects the alga underneath, while the alga manufactures food using the energy of sunlight (photosynthesis). Each lichen has its own distinct species of fungus, but all lichens share just a small number of algae species; in most cases this is a green alga.

### What are Atlantic woodlands?

Atlantic woodlands are natural or semi-natural woodlands found in western Britain and Ireland where the climate is mild and wet due to the influence of the Gulf Stream. These conditions are ideal for a range of important lichens. Atlantic woodlands have been compared to tropical rainforests because of their luxuriant growth of lichens, ferns, mosses and liverworts, and have become known as the Celtic Rainforest.

### Why are the Lake District's Atlantic woodlands important for lichens?

The Atlantic woodlands of western Britain are an important habitat for many lichens, mosses and liverworts. Many of these are largely confined to areas with low air pollution and ancient or long-established woodlands, for example those that have never been clear-felled or intensively coppiced. They play a fundamental role in woodland ecosystems, and are indicators of habitats that are of high quality and have been that way for a long period of time.

Many of these lichens are not found in other parts of Britain and Europe, and some are globally rare. A number of species are considered of "principal importance for the conservation of biodiversity in England" under Section 41 of the Natural Environment and Rural Communities Act (2006). Further details of species conservation status can be found in the GB Red List (see the books section under 'Further information').

### Finding and identifying lichens

*Parmelion* species of lichen occur on bark, or on mats of mosses/liverworts growing over bark. Some can also be found on mossy boulders and rocky outcrops. In very humid situations they may grow directly on rock. The occurrence of pale-grey leafy lichens and extensive areas of whitish crusts on tree trunks is a good indication of the presence of this community. A good Atlantic woodland will often have populations of a range of the species described in this guide, and may include scarce or rare species.

To identify a lichen first look at its growth form:

- Does it consist of leafy lobes? If so, see Sections 1 to 3 of this guide.
- Is it shrubby, beard-like, or coral-like? If so, see Sections 4 and 5 of this guide.
- Is it crusty, lumpy or porridge-like? If so, see Section 6 of this guide.

The key features to look for when identifying lichens are described on the back page. To see these features well, and to fully appreciate the beauty of lichens, you will need to use a magnifier or a hand lens of x10-15 magnification.

Although internationally important for their rich lichen and bryophyte communities, Atlantic woodlands face a number of threats. Therefore, Plantlife is securing their future by working with landowners and managers, helping to develop their skills in identifying important sites and species; raising awareness of the key conservation issues; identifying priority areas for management; and planning effective habitat management that will build more secure and resilient populations.

Please submit any records you make to the British Lichen Society (see below). Records should comprise of date observed, site name, grid reference, names of surveyors, species and abundance. Please note that scientific names should always be used when recording.

### Further information

#### Books



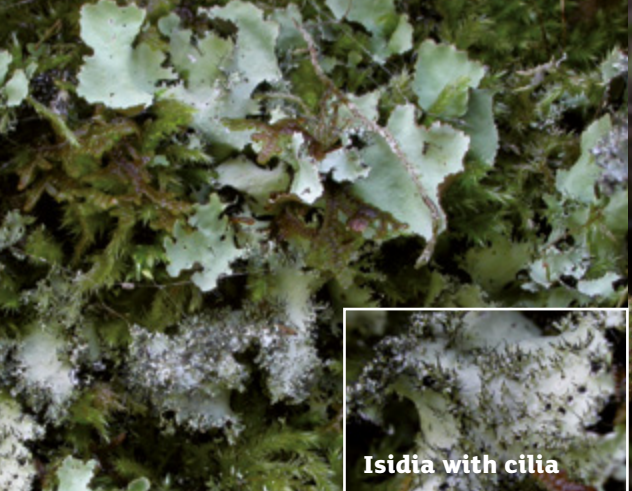



*Lichens: An Illustrated Guide to the British and Irish Species*, Frank Dobson, 7th Edition (2018), Richmond Publishing Co Ltd.  
*Lichens*, Oliver Gilbert (2000), Collins New Naturalist series, HarperCollins.  
*A Conservation Evaluation of British Lichens and Lichenicolous Fungi*, Woods & Coppins (2012), JNCC.

<http://jncc.defra.gov.uk/page-6197>

This is the current Red List for lichens in Great Britain.

#### Websites

[www.britishtlichensociety.org.uk](http://www.britishtlichensociety.org.uk) The British Lichen Society (BLS) website provides a wide range of information about all aspects of lichens and lichenology.  
[www.nbnatlas.org](http://www.nbnatlas.org) The NBN atlas hosts an up-to-date database of British lichen distribution.  
[www.uklichens.co.uk](http://www.uklichens.co.uk) The UK lichens website has useful photos of many UK species.  
[www.wales-lichens.org.uk](http://www.wales-lichens.org.uk) This website is dedicated to the conservation of lichens in Wales, but is a great resource for some of the Lake District's Atlantic woodland species.

1 IS THE LICHEN LEAFY WITH NUMEROUS BLACK, WIRY RHIZINES ON THE UNDERSIDE?		2 DO THE LOBES HAVE WAVY MARGINS AND/OR THE UNDERSIDE HAS A BARE AREA NEAR THE MARGIN?		3 ARE THE LOBES INFLATED AND HOLLOW, WITH A SMOOTH UNDERSIDE WITHOUT BLACK RHIZINES?	
<i>Hypotrachyna laevigata</i> Smooth loop-lichen	<i>Hypotrachyna taylorensis</i> Tailed loop-lichen	<i>Parmotrema crinitum</i> Desperate Dan	<i>Parmotrema perlatum</i> Sea-storm lichen	<i>Hypogymnia physodes</i> Heather rags	<i>S42 Menegazzia terebrata</i> Tree flute
					
<b>Soralia</b>		<b>Isidia with cilia</b>	<b>Soralia</b>	<b>Soralia</b>	
<b>Form</b> Smooth, narrow lobes with square-cut tips. <b>Colour</b> Pale grey to pale blue-grey. <b>Soredia/Isidia</b> Discrete globular soralia at lobe tips. <b>Fruit</b> Scarce; dark brown disc with a rim. <b>Underside</b> Black with numerous branched black rhizines. <b>Notes</b> Similar to <i>H. taylorensis</i> but that species has no soralia, and to <i>H. revoluta</i> , but that species has less well-defined soralia and downturned, rounded lobe tips.	<b>Form</b> Densely overlapping lobes, looks scruffy; old lobes often hang down and roll up to form distinctive tubes. <b>Colour</b> Pale grey to pale green-grey. <b>Soredia/Isidia</b> Discrete globular soralia, often with brown tips. <b>Soredia/Isidia</b> None. <b>Fruit</b> Rare. <b>Underside</b> Black, dark brown near margins, numerous black rhizines. <b>Notes</b> Similar to <i>H. laevigata</i> but that species has soredia.	<b>Form</b> Scruffy, wavy lobes with divided margins, isidia and stubble-like black hairs. <b>Colour</b> Pale grey to pale green-grey. <b>Soredia/Isidia</b> Simple or coral-like isidia, often with protruding black hairs (cilia). <b>Fruit</b> Very rare. <b>Underside</b> Black with simple rhizines and a brown naked zone at margin. <b>Notes</b> Similar to <i>P. perlatum</i> , so search carefully for isidia/cilia to confirm <i>P. crinitum</i> . Also similar to <i>P. horrescens</i> .	<b>Form</b> Lobes with raised wavy margins, often with scattered black cilia. <b>Colour</b> Pale grey to pale green-grey. <b>Soredia/Isidia</b> Soredia in discrete globular or lip-shaped soralia. <b>Fruit</b> Rare. <b>Underside</b> Black with a few simple rhizines and a brown-black naked zone at the margin. <b>Notes</b> Common in a range of habitats in western Britain, similar to <i>P. crinitum</i> and <i>Cetrelia olivetorum</i> .	<b>Form</b> Inflated hollow lobes, with lobe tips often raised to show brown underside, or split to reveal distinctive soralia. <b>Colour</b> Pale grey to green-grey. <b>Soredia/Isidia</b> Soredia in discrete globular or lip-shaped soralia. <b>Fruit</b> Scarce; red-brown disc with a rim. <b>Underside</b> Black, brown near margin without rhizines. <b>Notes</b> Similar to <i>H. tubulosa</i> which has globular soralia on unsplit lobe tips. Also similar to <i>Menegazzia terebrata</i> .	<b>Form</b> Inflated hollow lobes, with distinctive holes. Often forms neat rosettes closely pressed to the substrate. <b>Colour</b> Pale grey to pale green-grey. <b>Soredia/Isidia</b> Soredia in discrete rounded soralia. <b>Fruit</b> Very rare. <b>Underside</b> Black without rhizines. <b>Notes</b> Similar to <i>Hypogymnia physodes</i> , which has distinctive soralia and lacks holes in lobes.
<b>4 DOES THE LICHEN RESEMBLE CORAL?</b>					

<i>Parmelia saxatilis</i> Grey crottle		<i>Parmelia sulcata</i> Powdered crottle		<i>Cetrelia olivetorum</i> Speckled sea-storm lichen		<i>Platismatia glauca</i> Frilly lettuce		<i>Sphaerophorus globosus</i> Coral lichen		<i>Bunodophoron melanocarpum</i> Black-eyed Susan	
											
						<b>P. saxatilis isidia</b>	<b>P. sulcata soredia</b>	<b>Pseudocyphellae</b>	<b>Grazed</b>		

**Form** *Parmelia saxatilis* is a common leafy species and similar in appearance to *Parmelia sulcata*. Look for white ridges, giving an appearance like that of hammered metal.  
**Colour** Pale grey with white flecks and ridges.  
**Soredia/Isidia** *P. saxatilis* has simple or coral-like isidia which are often brown-tipped.  
**Fruit** Occasional; red or brown disc.  
**Underside** Black, brown at margin with numerous simple or occasionally forked black rhizines.  
**Notes** This species is common in a range of lichen communities and is used to make traditional dyes.

**Form** *Parmelia sulcata* is a common leafy species that looks like *Parmelia saxatilis*. Look for white ridges, which give the appearance of hammered metal.  
**Colour** Pale grey with white flecks and ridges.  
**Soredia/Isidia** *P. sulcata* has soredia.  
**Fruit** Occasional; red or brown disc.  
**Underside** Black, brown at margin with numerous simple or occasionally forked black rhizines.  
**Notes** This species is common in a range of lichen communities and is used to make traditional dyes.

**Form** Lobes with raised wavy margins and distinctive white spots.  
**Colour** Pale grey to pale green-grey, sometimes tinged with brown.  
**Soredia/Isidia** Soredia on margins of older lobes.  
**Fruit** Rare.  
**Underside** Black with scattered simple rhizines and a brown-black naked zone at the margin.  
**Notes** Similar to *P. perlatum* but that species has no white spots on the lobe surface.

**Form** Frilly lobes with wavy divided margins.  
**Colour** Pale grey-green to whitish green, sometimes tinged with brown, and often with reddish or pinkish patches on older lobes.  
**Soredia/Isidia** Often with simple to coral-like isidia or granular soredia on margins.  
**Fruit** Very rare.  
**Underside** Brown, white or black; if present, the few rhizines are simple or branched.  
**Notes** A common species on trees in a range of habitats.

**Form** Irregularly branched cylindrical stems, although if grazed – for example, by slugs – it can form neat, dense cushions.  
**Colour** Pale grey to pale green-grey, main branches often orange-brown.  
**Soredia/Isidia** None.  
**Fruit** Occasional; globular swellings at branch tips burst to reveal a dark powder of spores.  
**Notes** Similar to *Bunodophoron melanocarpum*.

**Form** Branched, flattened stems, sometimes forming distinct tiers; branch tips divide to look like hands; fruits distinctive when present.  
**Colour** Whitish, pale grey to pale green-grey.  
**Soredia/Isidia** None.  
**Fruit** Occasional; branch tips swell to form a hood that has distinctive 'black eyes' (a mass of spores) on the lower surface.  
**Underside** Paler below.  
**Notes** Similar to the much more common *Sphaerophorus globosus* which has cylindrical branches; the main branches are often orange-brown.