THE LICHENS OF MONKWOOD GREEN

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An indicative site plan can be found inside the back cover.

Introduction

Whilst we were doing the Monkwood Green Tree Survey in 2022/3[1], I noted some of the lichens observed on the trees in the Green's arboreal ecological community[2]. As lichens have always fascinated me since the research for my PhD on Hartlebury Common, I wanted to expand on this aspect of the Green's natural history – hence this short paper. It is by no means complete but hopefully will give an idea if the great variety of these fascinating organisms on this wonderful wildlife site.

Lichens, from the ancient Greek λειχήν, are curious, fascinating, biologically remarkable and ecologically important as well as often being aesthetically pleasing. They are ubiquitous in unpolluted areas and able to colonise almost any solid and reasonably stable substratum. I cannot better the general description given in Wikipedia[3] which is fully referenced for readers who would like to delve into more detailed information:

A lichen is a hybrid colony of algae or cyanobacteria living symbiotically among filaments of multiple fungus species, along with bacteria embedded in the cortex, in a mutualistic relationship. Lichens are the lifeform that first brought the term symbiosis into biological context.

Lichens have since been recognized as important actors in nutrient cycling and producers which many higher trophic consumers feed on, such as reindeer, gastropods, nematodes, mites, and springtails. Lichens have properties different from those of their component organisms. They come in many colours, sizes, and forms; they sometimes resemble plants, but they are not plants. They may have tiny, leafless branches (fruticose) or flat, leaf-like structures (foliose); they may grow in a crust-like form, adhering tightly to a substratum somewhat like a thick coat of paint (crustose), have a powder-like appearance (leprose), or feature other growth forms[4].

[1] Available to download at https://ziply.pk/3bYqa3. This also contains a map of the area subject to study.
[2] The global tree bark biome is known as the caulosphere. It is home to a huge range of mosses, lichens and other organisms including trillions of bacteria per square metre and plays an important role in absorbing greenhouse gases such as carbon dioxide and methane.
[3] https://ziply.pk/t67P9O (I have made minor edits for the purposes of this paper.)
[4] Examples are squamulose (scaly), filamentose (stringy), byssoid (wispy) and placodioid (crustose with marginal lobes).

*A macrolichen is a lichen that is either bush-like or leafy; all other lichens are termed microlichens. Here, "macro" and "micro" do not refer to size, but to the growth form. Common names for lichens may contain the word "moss" (*e.g. *"reindeer moss", "Iceland moss"), and lichens may superficially look like and grow with mosses, but they are not closely related to mosses or any plant. Lichens do not have roots that absorb water and nutrients as plants do, but like plants, they do produce their own energy by photosynthesis. When they grow on plants, they do not live as parasites, but instead use the plant's surface as a substratum.*

Lichens occur from sea level to high alpine elevations, in many environmental conditions, and can grow on almost any surface. They are abundant as epiphytes, growing on bark, leaves, mosses, or other lichens and hanging from branches in rainforests and in temperate woodland. They also grow on rock, walls, gravestones, roofs, exposed soil surfaces, rubber, bones, and in the soil as part of biological soil crusts. Various lichens have adapted to survive in some of the most extreme environments on Earth: arctic tundra, hot dry deserts, rocky coasts, and toxic slag heaps. They can even live inside solid rock, growing between the grains (endolithic).

There are approaching 2000 British species. Some lichens have lost the ability to reproduce sexually, yet continue to speciate. They can be thought of as relatively self-contained miniature ecosystems, where the fungi, algae, or cyanobacteria have the potential to engage with other microorganisms in a functioning system that may evolve as an even more complex composite organism. Lichens may be long-lived, with some considered to be among the oldest living things. They are among the first organisms to grow on fresh rock exposed after an event such as a landslide. The long lifespan and slow and regular growth rate of some species can be used to date events (lichenometry). Lichens are a keystone species in many ecosystems.

Examples of foliose, fruticose and crustose lichens on Monkwood Green trees. These are included in the listings in the Table below.

Lichens of Monkwood Green recorded by the author

The sixty-eight lichens listed are abundant, frequent or at least locally frequent on the Green, mostly on the wide variety of trees and shrubs, ranging from young to very old in the case of boundary oaks, but some lichens occur on posts, signs, stones, concrete drain headwalls and even on the lesser-used road surfaces. Only a few have common English names and I have noted these where I have come across them.

Name	Type
Amandina punctata (Hoffm.) Coppins & Scheid. (1993) (little button lichen)	Crustose
Arthonia atra (Pers.) A. Schneid.	Crustose
Arthonia radiata (Pers.) Ach. (1808) (the asterisk lichen)	Crustose/immersed
Arthopyrenia analepta (Ach.) A. Massal., 1852	Crustose/evanescent
Athallia holocarpa s. lat. (Hoffm.) Arup, Frödén & Søchting (fire dot lichen)	Crustose
Caloplaca cerina (Hedw.) Th. Fr. (1860)	Crustose
Candelariella aurella (Hoffm.) Zahlbr. (1928) (hidden goldspeck or eggyolk lichen)	Crustose
Candelariella vitellina f. vitellina (Hoffm.) Müll. Arg. (1894)	Crustose
Candelariella xanthostigmoides (Müll.Arg.) R. W. Rogers (1982)	Crustose
Chaenotheca ferruginea (Turner ex Sm.) Mig. (1931)	Crustose
Chrysothrix candelaris (L.) J. R. Laundon (1981) (mustard powder or gold dust lichen)	Leprose
Cyrtidula quercus (A. Massal.) Minks	Crustose/immersed
Diploicia canescens (Dicks.) A. Massal. (1852)	Crustose/placodioid
Diplotomma alboatrum (Hoffm.) Flot. (1849)	Crustose
Enterographa crassa (DC.) Fée (1824)	Crustose
Evernia prunastri (L.) Ach. (1810) (oakmoss)	Foliose
Flavoparmelia caperata (L.) Hale (1986) (common greenshield lichen)	Foliose
Flavoplaca citrina s. lat. (Hoffm.) Arup, Frödén & Søchting	Leprose
Fuscidea lightfootii (Sm.) Coppins & James	Crustose
Glaucomaria carpinea (L.) S.Y. Kondr., L. Lőkös & Farkas (2019) (rim lichen)	Crustose
Graphis elegans (Borrer ex Sm.) Ach. (1814) (elegant script lichen)	Crustose
Graphis scripta s. lat. (L.) Ach. (1809) (secret writing lichen aggregate)	Crustose
Hypocenomyce scalaris (Ach. ex Lilj.) M. Choisy (1951)	Squamulose
Hypogymnia physodes (L.) Nyl. (1896) (monk's-hood lichen)	Foliose

Name	Type
Hypogymnia tubulosa (Schaer.) Hav. (1918) (powder-headed tube lichen)	Foliose
Lecanora campestris (Schaer.) Hue (1888)	Crustose
Lecanora chlarotera s. lat. Nyl. (1872)	Crustose
Lecanora conizaeoides Nyl. ex Crombie, 1885 (groene schotelkorst "green dish crust")	Crustose
Lecanora expallens Ach. (1810)	Crustose
Lecanora intricata (Ach.) Ach.	Crustose
Lecanora varia (Hoffm.) Ach. (1810)	Crustose
Lecidella elaeochroma (Ach.) M. Choisy, 1950	Crustose
Lepra amara (Ach.) Hafellner (2016)	Crustose
Lepraria incana s. lat. (L.) Ach. (1803) (dust lichen aggregate)	Leprose
Micaria denigrata (Fr.) Hedl. (1892)	Crustose
Myriolecis dispersa (Pers.) Śliwa, X. Zhao & Lumbsch, 2015	Crustose
Naetrocymbe punctiformis (Pers.) R.C. Harris	Crustose
Naevia punctiformis (Ach.) A. Massal.	Crustose (immersed)
Opegrapha vulgata *(Ach.) Ach. (1803)* (common scribble)	Crustose
Parmelia saxatilis (L.) Ach. (1803) (salted shield lichen)	Foliose
Parmelia sulcata Taylor (1836) (hammered shield lichen)	Foliose
Parmotrema perlatum (Huds.) M. Choisy (1952) (powdered ruffle lichen)	Foliose
Pertusaria hymenea (Ach.) Schaer. (pore lichen)	Crustose
Pertusaria leioplaca DC. (1815)	Crustose
Phaeographis dendritica (Ach.) Müll. Arg. (1882)	Crustose
Phaeophyscia orbicularis (Neck.) Moberg (1977)	Foliose
Phlyctis argena (Ach.) Flot. (1850) (whitewash lichen)	Crustose
Physcia adscendens H. Olivier (1882) (hooded rosette lichen)	Foliose
Physcia aipolia (Ehrh. ex Humb.) Fürnr., 1839 (hoary rosette or black spot lichen)	Foliose
Physcia tenella (Scop.) DC.	Foliose
Physconia grisea (Lam.) Poelt (1965)	Foliose
Polycauliona candelaria s. lat. (L.) Frödén, Arup & Søchting (shrubby sunburst lichen)	Foliose
Porina aenea (Wallr.) Zahlbr. (golden porina)	Crustose
Porpidia macrocarpa (DC.) Hertel & A. J. Schwab (1984)	Crustose/immersed
Protomeliopsis muralis (Schreb.) M. Choisy (stonewall rim lichen)	Crustose/placodioid
Punctelia subrudecta (Nyl.) Krog (1982)	Foliose
Pyrenula macrospora (Degel.) Coppins & P. James (1980)	Crustose

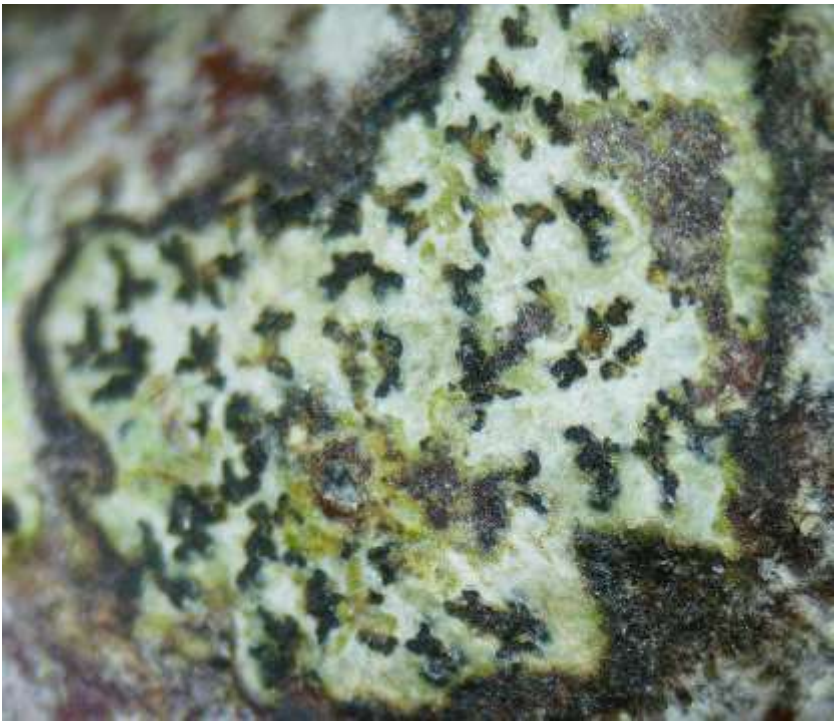
Name	Type
Ramalina farinacea (L.) Ach. (1810) (shaggy strap lichen)	Fruticose
Ramalina fastigiata (Pers.) Ach. (1810) (tufted bush lichen)	Fruticose
Rinodina sophodes (Ach.) A. Massal. (obscure black-shielded lichen)	Crustose
Scytinium teretiusculum (Wallr.) Otálora, P.M. Jørg. & Wedin (2013)	Foliose gelatinous
Thelotrema lepadinum (Ach.) Ach. (1803) (barnacle lichen)	Crustose
Trapeliopsis flexuosa (Fr.) Coppins & P. James (1984)	Crustose
Verrucaria hochstetteri Fr. (1831)	Crustose
Verrucaria nigrescens Pers. (1795)	Crustose
Xanthoria calcicola Oxner (1937)	Foliose
Xanthoria parietina (L.) Th.Fr (1860) (yellow wall lichen and other names)	Foliose
Zeora confusa (Almb.) L.M.Weber & Ivanovich-Hichins (2025) (formerly *Lecanora*)	Crustose

This is a provisional list and there are undoubtedly many other lichens on the Green which would be revealed by more surveying, particularly rarer ones and small squamulose types which can easily be overlooked. There are also a few I would expect to have seen (*e.g.* the common foliose lichen of trees *Melanelixia glabratula*) which I have not found as yet. I believe the identifications I have made are correct as far as they go but a few have eluded my taxonomic determination. Expert confirmation and more testing by K (potassium hydroxide (caustic potash) 35% solution), P (p-phenylene-diamine freshly dissolved in meths) and C (calcium hypochlorite or a strong domestic bleach), plus viewing under ultraviolet light, microscopic dissection in some cases and spore examination would be useful and appreciated, particularly for the aggregate taxa (annotated "*s. lat*. for *sensu lato* – in the broad sense, in my list).

Lichen nomenclature can be confusing. There has been significant taxonomic revision in recent years, resulting in renaming of many genera and species. I have used the latest names as far as I have been able to research them for the data that are presented here, but please be aware that this is a constantly evolving field.

Illustrations

The following are a few examples of a few of the Monkwood Green lichens, photographed with a digital microscope or mobile phone. Please note that they are at different magnifications.



The asterisk lichen *Arthonia radiata* is common on smooth-barked branches and twigs on the Green. The black prothallus appears at the junction between it and other lichens.

Evernia prunastri (oakmoss). Note darker upper surface of thallus fronds to left and the white underside of the fronds (right), and granular soredia.

Graphis scripta sensu lato (secret writing lichen), a crustose species frequent on trees on the Green. Note that the black carbonaceous margins of the lirellae raised above the thallus do not have furrows. *G. elegans*, which also occurs on the Green but much less commonly, is similar but has furrowed margins and less open centres to the lirellae. Both are very variable.

Lecidella elaeochroma is common on well-lit smooth bark/twigs on the Green. The apothecia are about 1mm in diameter, concave and with a smooth margin, becoming convex. The mosaic of grey thallus delimited by black prothallus is typical, as seen here.

Parmelia sulcata (hammered shield lichen). Another very common species occurring on various substrata on the Green. It has a network of pseudocyphellae, along which are soredia propagules. It is usually only fertile in the north and west as here – note the apothecia (fruiting bodies) in lower left quadrant. The underside of this foliose lichen is black with brown tips to the thallus margin and black rhizines.

Physcia adscendens (hooded rosette lichen). This is a very common foliose lichen. The example in my photo was on the border of the parish sign by the telephone kiosk but it occurs on various substrata around the Green.

Punctelia subrudecta, another common foliose lichen occurring on the Green's trees. It belongs to the *Parmelia* family. The powdery soredia cover small spots where the thallus surface is broken. The lower surface is a light brown colour. This specimen was on a fallen dead branch, here growing with a bristle moss (*Orthotrichum*).

Hypogymnia physodes, the monk's-hood lichen, a common foliose species on trees around the Green. Note the farinose soredia are at the upturned lobe ends.

Protoparmeliopsis (formerly *Lecanora*) *muralis*, the stonewall rim lichen growing on the tarmac on the small road across the centre of Monkwood Green. This is a worldwide crustose/placodioid species, rather waxy-looking. It is very variable but usually grows as a rosette with the apothecia in the centre, as here.

Ramalina fastigiata, the tufted bush lichen. This fruticose species is fairly common on deciduous trees around the Green. As my photo shows, the flattened, wrinkled, much-branched thallus lobes have disc-shaped apical apothecia.

Ramalina farinacea. In this species, known as the shaggy strap lichen, the flattened thallus branches have oval/disc-shaped soralia containing farinose soredia along them.

Saxicolous lichens on one of the several drainage ditch headwalls on the Green. More detailed study of these mainly crustose communities is likely to add to the species list.

There are even lichens growing on the old telephone box (the yellow *Xanthoria parietina* and *Parmelia sulcata*).

Casual observations of bryophytes, fungi, algae during surveys

Mosses

Brachythecium velutinum (velvet feather-moss)
Hypnum cupressiforme s. lat. (cypress-leaved plaitmoss)
Kindbergia praelonga (common feather-moss)
Lewinskya affinis (wood bristle moss)
Rhynchostegium confertum (clustered feather-moss)
Syntrichia laevipila (small hairy screw-moss)

Liverworts

Frullania dilatata (dilated scalewort)

Algae

Desmococcus viridis s. lat. (vibrant green alga)
Pleurococcus vulgaris (resilient green alga)
Trentepohlia sp. (filamentous alga)

Fungi

Illosporiopsis christiansenii (a fungus parasite of lichen)
Marchandiomyces corallinus (another lichen parasite)
Trametes versicolor (turkey tail)
Tremella mesenterica (witch's butter – photo below)
Xylaria hypoxylon (candlesnuff fungus)

The fungus *Tremella mesenterica* (witch's butter) on a dead oak branch on the Green near the bus stop.

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Internet Resources

British Lichens https://www.britishlichens.co.uk/
British Lichen Society https://britishlichensociety.org.uk
Irish Lichens https://irishlichens.ie
Marine, Oceanic & Similar Lichens https://www.lichensmaritimes.org
Picture index of British Lichens https://shorturl.fm/mWPo7
Royal Botanic Garden Edinburgh https://shorturl.fm/buQqP
Scottish Lichens https://scottishlichens.co.uk
Wikipedia https://en.wikipedia.org

Key

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Approx area examined for lichens