**LICHENS IN COLDHAM'S COMMON AREA AND AT THE LEPER CHAPEL**
A joint meeting of the Cambridge Flora Group and the Cambridge Lichen Group
17th September 2017

**Summary**
A website devoted to the taxonomy of fungi (including lichens) is being developed in collaboration with the Natural History Museum and Kew Gardens. Images and micrographs of most of the species found during the day are available there. See for example: http://fungi.myspecies.info/all-fungi/rinodina-calcarea

Lichens are curious dual organisms, a close association between a fungus and a photosynthetic partner (usually a green alga). This association is so intimate that Victorian biologists argued about whether lichens were a single organism or a partnership. One school of thought maintained that the microscopic green cells within them were organelles produced by the fungus while others argued that the green cells were algae that had been entrapped by the fungus. We now know that the latter is correct but the degree to which the algae are exploited is still a matter for debate.

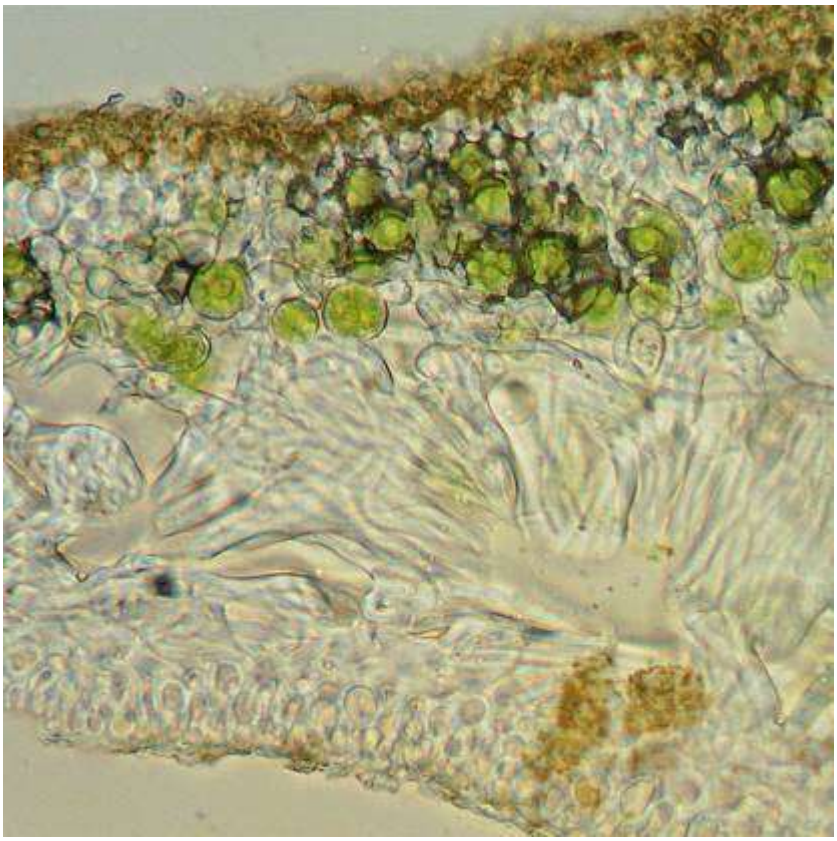

**Figure 1**. A cross section through a lobe of *Xanthoria parietina* (an extremely common lichen) as seen through a microscope. The thin section was cut by hand using a razor blade and mounted on a microscope slide. The algal cells (looking rather like peas but only one thousandth of the size) are seen in a layer towards the upper part. The glassy structures forming the bulk of the lichen are the fungal hyphae.

## The Leper Chapel (St Mary Magdalene)

The chapel building retains evidence of the intense sooty pollution that would have affected this area for many decades before the 1980s. Where the stonework is sheltered under arches, thick black deposits are still conspicuous. The lichen communities on the chapel are rather poor (when compared with a typical rural church) but include rather good examples of *Caloplaca ruderum* and *Lecania rabenhorstii* on the south wall. The dominant species on the church include *Caloplaca flavescens*, *Diploicia canescens* and *Lecanora albescens*. The north wall has a rather different community from the south, and the chamfered plinth supports species including *Bacidia egenula* and *Lecania turicensis*. The limestone sill of a small window on the north side of the chapel is affected by run-off

from a rusty grille and is dominated by *Arthonia lapidicola*. One lichen (in abundance on the lower part of the north wall) on the chapel remains enigmatic. This pale green *Lepraria* doesn't look right for any of the usual suspects in this habitat. It is close in appearance to *L. vouauxii* but lacks the pleated appearance of that species at its margins. We have a long way to go before we have a reasonably full understanding of British lichens and an open mind must be kept about this interesting *Lepraria*.

**Figure 2**. North wall of the Leper Chapel. The lower part of the wall is dominated by an unidentified species of *Lepraria* (pale green). The damp shaded lower north wall also supports species such as *Bacidia egenula* and *Lecania turicensis*. The lower bricks of the brickwork in the centre of the image are yellow-green due to the presence of *Psilolechia lucida*. One of the most conspicuous lichens on the north wall is *Diploicia canescens*, sometimes nicknamed the Brain Lichen due to its pleated placodioid lobes.

The most remarkable feature of the site is to be seen on the concrete path leading to the chapel. Here the dominant species of lichen is the Nationally Rare *Rinodina calcarea*. Now that we can reliably recognise sterile colonies this lichen is turning out to be not so rare as previously thought but it is still a notable lichen and is almost always found on the oldest limestone memorials or dressed stonework on old church buildings. To find it at all on concrete, let alone as an extensive colony covering several square metres, is very unusual. A few apothecia were found and a couple collected to study the interesting ascospores. These are distinctive in being *Tunicata*-type, described in the literature as having a two-layered wall. My observations from the Leper material shows that more than one outer layer is present.

**Figure 3**. The concrete path leading to the Leper Chapel, dominated by *Rinodina calcarea*.

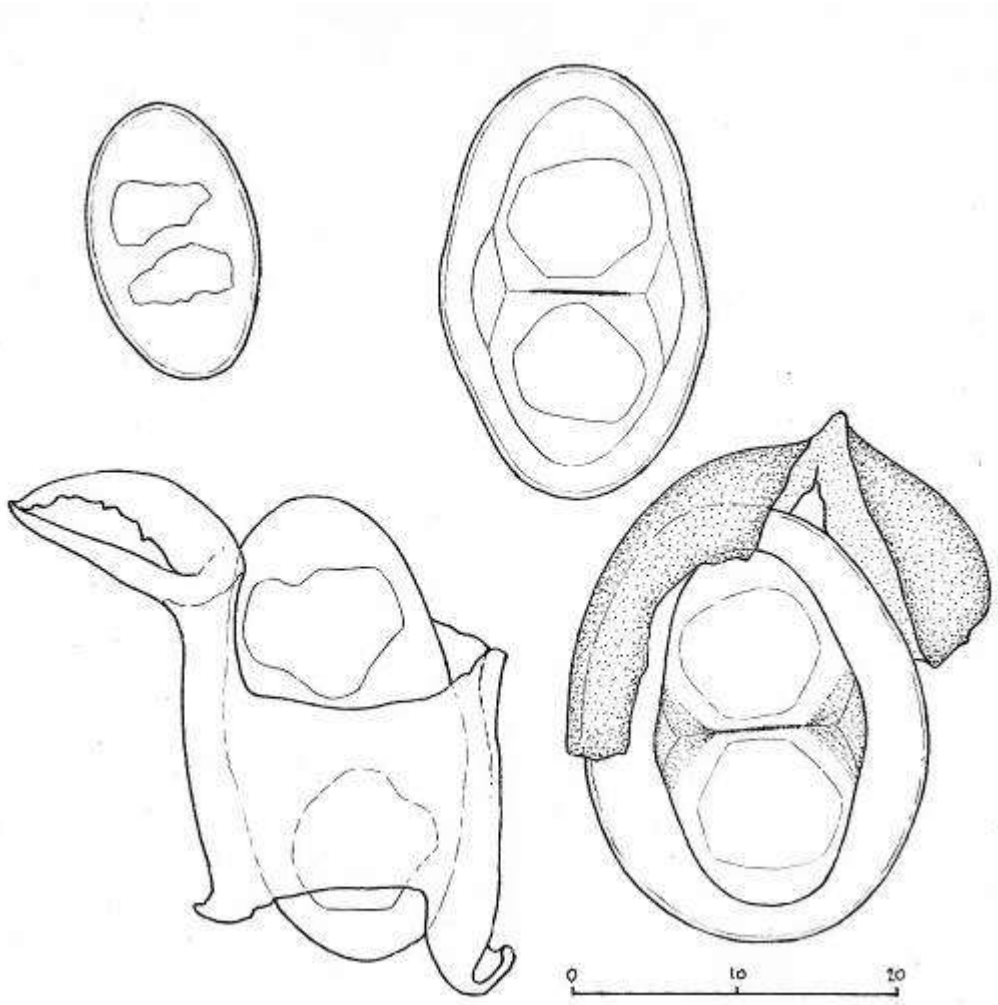


**Figure 4**. Drawing of ascospores from *Rinodina calcarea* collected from the path leading to the Leper Chapel. The spore in upper left is immature, while that in upper right is mature and shows the swollen outer wall. The spores beneath show the outer layer(s) sloughing off after gentle squashing. The spore in lower right shows that more than one outer layer is present.

**Lists of lichens and lichenicolous fungi recorded at the sites – key to symbols**

Column A gives the standard BLS number for each taxon.
Column B gives the name of each taxon recorded.
Column C indicates whether the taxon is a lichenicolous fungus (LF), a bark fungus conventionally recorded by lichenologists (F) or a lichen (0).
Column D gives the conservation designations as follows: LC = Least Concern, NE = Not Evaluated, NS = Nationally Scarce, NT = Near Threatened, NR = Nationally Rare, IR = a species for which Britain has International Responsibility.
Column E gives the substratum upon which the taxon was growing: Bry = bryicolous (growing on mosses), Cort = corticolous (growing on bark), Lic = lichenicolous, Lig = lignicolous (growing on decorticated wood), Sax = saxicolous (growing on stonework and rocks.
Column F gives more detail of the habitat using standard British Lichen Society codes.

**Table 1. Lichens at the Leper Chapel site**

| | | | | | |
|---|---|---|---|---|---|
| 64 | *Arthonia lapidicola* | 0 | LC | Sax | XX |
| 145 | *Bacidia egenula* | 0 | LC NS | Sax | XX |
| 2442 | *Caloplaca arcis* | 0 | LC NS | Sax | XX |
| 239 | *Caloplaca aurantia* | 0 | LC | Sax | XX |

| | | | | | |
|---|---|---|---|---|---|
| 247 | *Caloplaca citrina s. lat.* | 0 | LC | Sax | XX |
| 259 | *Caloplaca flavescens* | 0 | LC | Sax | XX |
| 2315 | *Caloplaca flavocitrina* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 2607 | *Caloplaca limonia* | 0 | LC | Sax | XX |
| 277 | *Caloplaca saxicola* | 0 | LC | Sax | XX |
| 281 | *Caloplaca teicholyta* | 0 | LC | Sax | XX |
| 291 | *Candelariella aurella f. aurella* | 0 | LC | Sax | XX |
| 296 | *Candelariella medians f. medians* | 0 | LC | Sax | XX |
| 306 | *Catillaria chalybeia var. chalybeia* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 459 | *Collema tenax var. tenax* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 491 | *Diploicia canescens* | 0 | LC | Sax | XX |
| 613 | *Lecania cyrtella* | 0 | LC | Cort | XY,CSm |
| 1708 | *Lecania rabenhorstii* | 0 | LC | Sax | XX |
| 1691 | *Lecania turicensis* | 0 | LC | Sax | XX |
| 627 | *Lecanora albescens* | 0 | LC | Sax | XX |
| 636 | *Lecanora carpinea* | 0 | LC | Cort | XY,CApl |
| 639 | *Lecanora chlarotera* | 0 | LC | Cort | XY,CApl |
| 644 | *Lecanora crenulata* | 0 | LC | Sax | XX |
| 646 | *Lecanora dispersa* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 661 | *Lecanora muralis* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 796 | *Lecidella carpathica* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 797 | *Lecidella elaeochroma f. elaeochroma* | 0 | LC | Cort | XY,CApl |
| 802 | *Lecidella scabra* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 803 | *Lecidella stigmatea* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 1112 | *Physcia adscendens* | 0 | LC | Cort | XY,CApl |
| 1120 | *Physcia tenella* | 0 | LC | Cort | XY,CApl |
| 1492 | *Placopyrenium fuscellum* | 0 | LC | Sax | XY,SSd,XGu,PPav |
| 1801 | *Rinodina calcarea* | 0 | LC NR | Sax | XY,SCo,PPa |
| 1289 | *Rinodina oleae* | 0 | LC | Sax | XX |
| 1306 | *Sarcogyne regularis* | 0 | LC | Sax | XX |
| 1519 | *Verrucaria macrostoma f. furfuracea* | 0 | LC | Sax | XX |
| 1510 | *Verrucaria nigrescens f. nigrescens* | 0 | LC | Sax | XX |
| 2514 | *Verrucaria nigrescens f. tectorum* | 0 | LC | Sax | XX |
| 1530 | *Xanthoria parietina* | 0 | LC | Cort | XY,CApl |
| 950 | *Xanthoria ucrainica* | 0 | LC NS | Cort | XY,CApl |
| #N/A | *Lepraria sp.* | 0 | #N/A | Sax | XX |
| #N/A | *Verrucaria cf. squamulosa* | 0 | #N/A | Sax | XY,SCo |

**Coldham's Common area**

No truly notable lichens were found in the Coldham's Common area but that does not detract from the value of general recording. Many lichenologists used to cherry pick the richest regions and sites so our older records give a very distorted picture of the lichen communities. It seems remarkable now to realise that *Arthonia radiata* was almost completely excluded from the Midlands and Eastern England by the former high concentration of atmospheric sulphur dioxide. This is now a ubiquitous twig species throughout England. The more thorough general recording undertaken these days will provide a better picture of the ongoing changes.

The old concrete surround to a manhole at TL4718.5923 supports at least fourteen lichens. Two of these, *Lecania rabenhorstii* and *Verrucaria macrostoma* f. *furfuracea*, are more usually associated with the limestone of church buildings and memorials. Having *Phaeophyscia nigricans* and *P. orbicularis* growing side by side provided a useful comparison. Juvenile thalli of the latter are sometimes mistaken for the former.

**Figure 5**. *Phaeophyscia nigricans* indicated by the upper arrow, with *P. orbicularis* below (lower arrow).

One of the more conspicuous lichens on the concrete is *Caloplaca arcis*, forming bright yellow patches of minutely squamulose and blastidiate crust. Until recent years, *C. arcis* and five other members of the *C. citrina* group were all recorded as '*C. citrina*' by British lichenologists, though some suspected that this coarse entity was distinct and called it '*Caloplaca* A'. *Caloplaca dichroa* which we did not see (but is the dominant member of the group on the top of limestone memorials) was described as new to science in 2006. Powell & Vondrák (2011) revealed the presence of *C. limonia* in Britain (this is present on shaded limestone of the Leper Chapel). Alan Orange has recently confirmed the presence of *C. citrina* s. str. in Britain, but there may still be more complexity than we know about in this semi-cryptic group.

One of the least conspicuous lichens on the concrete, *Verrucaria ochrostoma*, is rather dear to my heart because of the long story of reviving this common colonist from almost complete Victorian obscurity (Powell 2015). The eminent botanist William Borrer was way ahead of his time; he described *V. ochrostoma*, *V. elaeina* and *V. polysticta* and for a while lichenologists in the mid-1800s

appear to have been familiar with them. They later became lost to the consciousness of British lichenologists until the current century.

**Figure 6**. Concrete surround of manhole cover at TL4718.5923.

A portion of a pale green sorediate crust was collected from an ash tree in a car park at TL47345.58927. This looks rather like the lichen that Peter Earland-Bennett nicknamed *Bacidina* 'granny smithii', collected at Southend-on-Sea, and which molecular work by Alan Orange revealed was the first known British occurrence of *Bacidina flavoleprosa*. The only other world occurrence of this species is from a north-facing granite wall close to a road in the Czech Republic. We will have to wait and see if Alan will sequence the Coldham's Common specimen before we know whether or not we have the third known colony.

**Table 2. Lichens in the Coldham's Common area**

| | | | | | |
|---|---|---|---|---|---|
| 212 | *Amandinea punctata* | 0 | LC | Lig | LWT,PFp |
| 69 | *Arthonia radiata* | 0 | LC | Cort | CAl |
| 2503 | *Caloplaca albolutescens* | 0 | LC NS | Sax | SCo |
| 242 | *Caloplaca cerinella* | 0 | LC | Cort | CFx |
| 2461 | *Caloplaca oasis* | 0 | LC | Sax | SCo |
| 271 | *Caloplaca obscurella* | 0 | LC | Cort | CPp |
| 281 | *Caloplaca teicholyta* | 0 | LC | Sax | SCo |
| 284 | *Caloplaca variabilis* | 0 | LC | Sax | SCo |
| 291 | *Candelariella aurella f. aurella* | 0 | LC | Sax | SCo |
| 297 | *Candelariella reflexa* | 0 | LC | Cort | CFx |
| 2071 | *Illosporiopsis christiansenii* | {LF} | LC NS | Lic | |

| | | | | | |
|---|---|---|---|---|---|
| 613 | *Lecania cyrtella* | 0 | LC | Cort | CPp |
| 613 | *Lecania cyrtella* | 0 | LC | Cort | CCt |
| 616 | *Lecania erysibe s. str.* | 0 | LC | Sax | SCo |
| 1708 | *Lecania rabenhorstii* | 0 | LC | Sax | SCo |
| 627 | *Lecanora albescens* | 0 | LC | Sax | SCo |
| 635 | *Lecanora campestris subsp. campestris* | 0 | LC | Sax | SCo |
| 639 | *Lecanora chlarotera* | 0 | LC | Cort | CCp |
| 646 | *Lecanora dispersa* | 0 | LC | Lig | LWT,PFp |
| 646 | *Lecanora dispersa* | 0 | LC | Sax | SCo |
| 621 | *Lecanora hagenii* | 0 | NE | Cort | CFx |
| 661 | *Lecanora muralis* | 0 | LC | Sax | SCo |
| 803 | *Lecidella stigmatea* | 0 | LC | Sax | SCo |
| 1106 | *Phaeophyscia nigricans* | 0 | LC | Sax | SCo |
| 1107 | *Phaeophyscia orbicularis* | 0 | LC | Lig | LWT,PFp |
| 1107 | *Phaeophyscia orbicularis* | 0 | LC | Sax | SCo |
| 2179 | *Pyrenidium actinellum* | {LF} | LC NS | Lic | Z0281,SCo |
| 1519 | *Verrucaria macrostoma f. furfuracea* | 0 | LC | Sax | SCo |
| 1507 | *Verrucaria muralis* | 0 | LC | Sax | SCo |
| 2514 | *Verrucaria nigrescens f. tectorum* | 0 | LC | Sax | SCo |
| 1511 | *Verrucaria ochrostoma* | 0 | DD NR | Sax | SCo |
| 950 | *Xanthoria ucrainica* | 0 | LC NS | Lig | LWT,PFp |

**Barnwell Pits City Wildlife site**

Jon tantalised the lichen contingent with the prospect of dumped rubbish. The late Oliver Gilbert discovered various lichenological treasures when he explored abandoned industrial sites in Sheffield in the 1980s and 1990s. The rubbish at Barnwell Pits was too recent and not quite the right sort of rubbish so we had to content ourselves with two terricolous 'jelly lichens', *Collema crispum* and *C. tenax*. All other lichen species seen during the day have a green alga as their photosynthetic partner but these *Collema* species are partnered by a cyanobacterium (*Nostoc*, a species of which was also present nearby as olive brown, jelly-like clumps).

The willow trees surrounding the lake support an unremarkable list of lichens, including the much overlooked *Caloplaca obscurella*. Wooden fishing platforms added species more typical of paving (such as *Caloplaca crenulatella*, *Lecanora campestris* and *Lecidella carpathica*) due to the silt impregnation of the boards by footwear. Some good specimens of a squamulose *Bacidina* were collected from a broken board to send to Alan Orange who is currently sequencing such material.

A fertile green sorediate lichen was collected from a rotting post and proved to be *Scoliciosporum chlorococcum*. The decline of this species over the past decade has been remarkable. At one time, it seemed almost ubiquitous on twigs but now I rarely find it. On twigs it has been largely replaced by *Halecania viridescens*, which was completely absent from this region ten years ago.

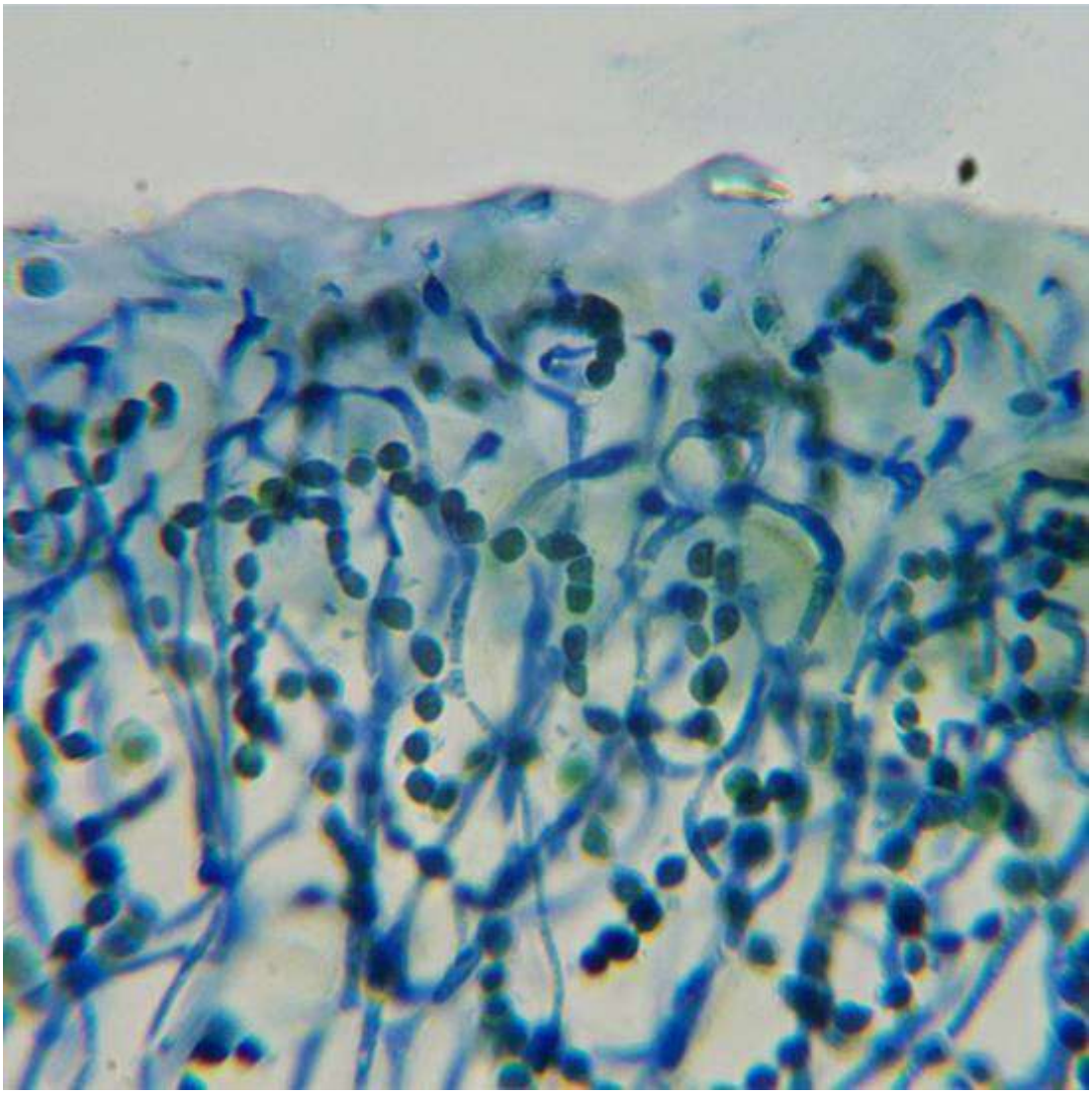

**Figure 7**. A thin microscopic section through a *Collema* lobe, stained using the ink-vinegar technique. The ink has stained the fungal hyphae blue while the chains of *Nostoc* cells are dark green. The matrix is produced by the *Nostoc* so in this type of lichen it is the photobiont (rather than the lichen-fungus) which produces the main structure.

## Table 3. Lichens at Barnwell Pits City Wildlife Site

| | | | | | |
|---|---|---|---|---|---|
| 212 | *Amandinea punctata* | 0 | LC | Lig | LWT |
| 69 | *Arthonia radiata* | 0 | LC | Cort | CSx |
| 242 | *Caloplaca cerinella* | 0 | LC | Cort | CSx |
| 249 | *Caloplaca crenulatella* | 0 | LC | Lig | LWT |
| 2315 | *Caloplaca flavocitrina* | 0 | LC | Lig | LWT |
| 261 | *Caloplaca holocarpa s. lat.* | 0 | LC | Lig | LWT |
| 271 | *Caloplaca obscurella* | 0 | LC | Cort | CSx |
| 289 | *Candelaria concolor* | 0 | LC | Cort | CSx |
| 298 | *Candelariella vitellina f. vitellina* | 0 | LC | Lig | LWT |
| 440 | *Collema crispum var. crispum* | 0 | LC | Terr | |
| 459 | *Collema tenax var. tenax* | 0 | LC | Terr | |
| 1125 | *Hyperphyscia adglutinata* | 0 | LC | Cort | CSx |
| 635 | *Lecanora campestris subsp. campestris* | 0 | LC | Lig | LWT |
| 636 | *Lecanora carpinea* | 0 | LC | Cort | |
| 639 | *Lecanora chlarotera* | 0 | LC | Cort | CSx |

| | | | | | |
|---|---|---|---|---|---|
| 646 | *Lecanora dispersa* | 0 | LC | Lig | LWT |
| 621 | *Lecanora hagenii* | 0 | NE | Cort | CSx |
| 661 | *Lecanora muralis* | 0 | LC | Lig | LWT |
| 796 | *Lecidella carpathica* | 0 | LC | Lig | LWT |
| 797 | *Lecidella elaeochroma f. elaeochroma* | 0 | LC | Cort | CSx |
| 803 | *Lecidella stigmatea* | 0 | LC | Lig | LWT |
| 2108 | *Marchandiobasidium aurantiacus* | {LF} | LC | Lic | Z1530 |
| 1106 | *Phaeophyscia nigricans* | 0 | LC | Lig | LWT |
| 1107 | *Phaeophyscia orbicularis* | 0 | LC | Cort | CSx |
| 732 | *Placynthiella icmalea* | 0 | LC | Lig | LWT |
| 1289 | *Rinodina oleae* | 0 | LC | Lig | LWT |
| 1320 | *Scoliciosporum chlorococcum* | 0 | LC | Lig | LWT |
| 2260 | *Unguiculariopsis thallophila* | {LF} | LC NS | Lic | Z0639,CSx |
| 1530 | *Xanthoria parietina* | 0 | LC | Cort | CRo |
| 1531 | *Xanthoria polycarpa* | 0 | LC | Cort | CRo |
| #N/A | *Bacidia cf. caligans* | #N/A | #N/A | Lig | LWT |

**Barnwell West**

The impressive old elder bushes were scrutinized for specialist lichens such as *Piccolia ochrophora* (but that species was not found). An intriguing minute foliose lichen was found in some quantity. This looked like an exuberant *Phaeophyscia nigricans* but it did not look like a good match when set side by side with material of that species. Now it has dried out there are distinct tinges of yellow so I now think that it is a shade form of *Candelaria concolor*. Thoughts of it being something new to Britain have now evaporated from my mind.

One consolation was being introduced to ‘elder whitewash’ (*Xylodon* [*Hyphodontia*] *sambuci*, a common basidiomycete which creates extensive white crusts on elder stems. Some basidiomycetes have ‘clamp connections’ on their hyphae. Such connections (or lack of them) are of importance when identifying some lichenicolous fungi. *Xylodon* provided my first view of such clamps, structures which are more easily observed (under high power) than I had anticipated. For several years I tried to obtain a drawing tube for use with a microscope. This prismatic device is now an old-fashioned way of drawing microscopic features. It took me far too long to realise that a laptop provides a much more convenient way of getting the proportions right. I have a digicam which is attached to my microscope and linked to my laptop. An image captured on the laptop can be gently traced with tracing paper held to the screen and a soft pencil. Further detail can be added by direct observation through the microscope. If I want to create a fine copy on stout paper or card, I use a sheet of glass and a lamp as an improvised light-table. This method makes drawing so much easier. Making drawings is as useful for the person creating them as for viewers. There is nothing so effective for learning about and remembering the features of an organism than by drawing them.

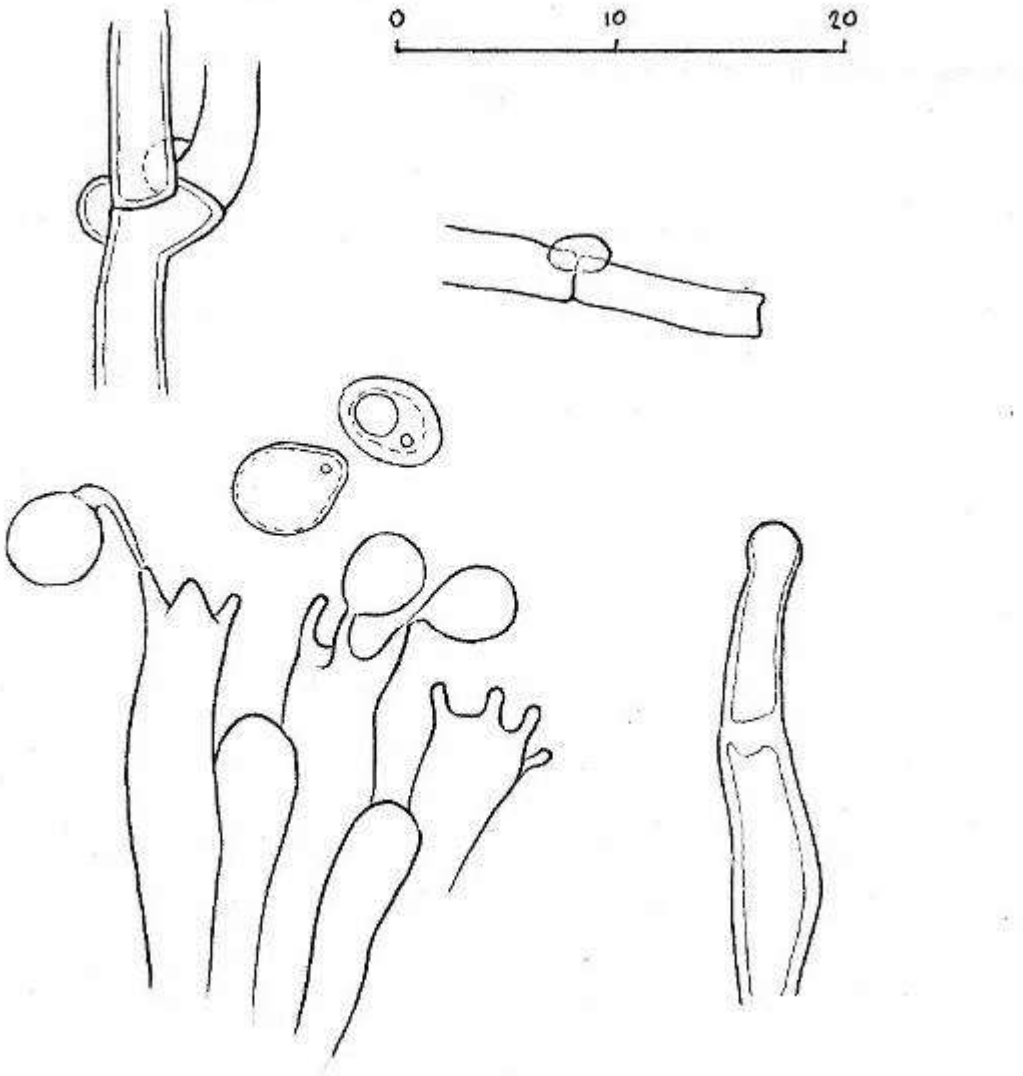


**Figure 8**. Drawing showing some microscopic features of Xylodon sambuci, from Barnwell West material. Clamp connections on hyphae are shown above and basidia producing basidiospores below. The scale in in microns (1 micron = one thousandth of a millimetre).

Two species of *Strigula* were found, *S. jamesii* abundant on elder stems and *S. taylorii* on the bark of a couple of mature trees. Woods & Coppins (2012) list *S. taylorii* as Nationally Scarce (though IUCN Least Concern) and as a species for which Britain has International Responsibility. Coppins & Orange (2009) give the following information about its habitat and distribution: "On usually ± smooth bark or mature trees (especially *Acer* and *Fraxinus*) in sheltered situations, or on limestone: local. S.W. England, Scotland, Ireland." Fig. 9 shows the distribution of *S. taylorii*, taken from the BLS website. Like all such maps it is not fully up to date and there are records from Huntingdonshire and Cambridgeshire awaiting incorporation. Nevertheless, it gives an impression of the recent spread of this species. Previous under-recording has to be considered but the recent appearance in East Lothian (Brian Coppins' home territory) is further indication that the eastward advance is a true phenomenon.

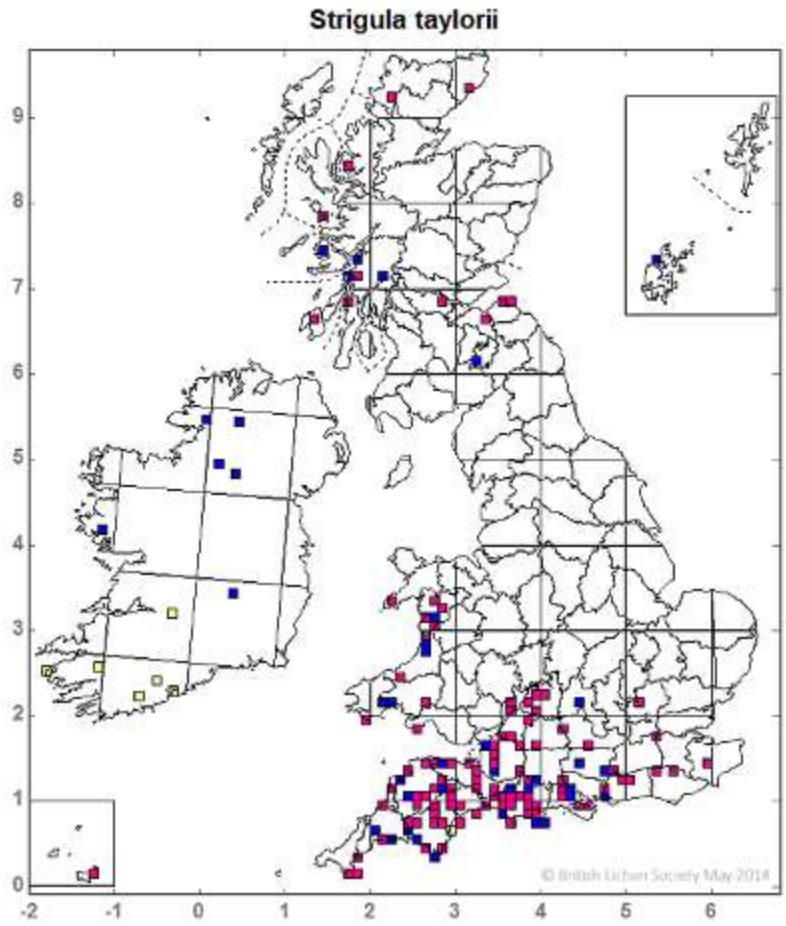


**Figure 9**. Distribution map of *Strigula taylorii*.

**Table 3. Lichens at Barnwell West**

| | | | | | |
|---|---|---|---|---|---|
| 613 | *Lecania cyrtella* | 0 | LC | Cort | CSm |
| 614 | *Lecania cyrtellina* | 0 | LC | Cort | CSm |
| 1629 | *Lepraria finkii* | 0 | LC | Bry | |
| 1974 | *Lepraria incana s. str.* | 0 | LC | Cort | CCt |
| 1107 | *Phaeophyscia orbicularis* | 0 | LC | Cort | CSm |
| 1110 | *Phlyctis argena* | 0 | LC | Cort | |
| 1614 | *Porina byssophila* | 0 | DD NR Sc | Cort | CCt |
| 1375 | *Strigula jamesii* | 0 | LC NS | Cort | CSm |
| 1378 | *Strigula taylorii* | 0 | LC NS Sc IR | Cort | CSx |
| 1530 | *Xanthoria parietina* | 0 | LC | Cort | CSm |
| 2272 | *Xanthoriicola physciae* | {LF} | LC | Lic | Z1530 |

**References**

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