LICHENS AT BIG WOOD, HAMPSTEAD GARDEN SUBURB (TQ256.888)
A survey by Mark Powell, 3rd December 2017

Summary

- Thirty-eight species of lichens and lichen-related fungi were recorded in the wood.
- Six species are new to VC 21 (Middlesex): *Arthonia cinnabarina*, *Eopyrenula grandicula*, *Leptorhaphis maggiana*, *Micarea viridileprosa*, *Opegrapha ochrocheila* and *Phylloblastia* cf. *bielczykiae*.
- *Eopyrenula grandicula* and *Strigula taylorii* are species for which Britain is considered to have International Responsibility (Britain likely to support more than 10% of the extant European and/or world's populations, see Woods & Coppins 2012).
- Despite careful searching of trees with the most veteran characteristics, no lichen species were found that are likely to be relicts from pre-Industrial Revolution times.
- *Porina byssophila* is listed by Woods & Coppins (2012) as Nationally Rare (recorded from 1-15 British hectads) while *Eopyrenula grandicula*, *Leptorhaphis maggiana*, *Micarea viridileprosa*, *Paranectria oropensis*, *Phylloblastia inexpectata* and *Strigula taylorii* are listed as Nationally Scarce (recorded from 16-100 British hectads).
- Big Wood is now the third known British site for *Phylloblastia* cf. *bielczykiae*, a foliicolous species first discovered on holly leaves in Sussex earlier in 2017.
- Canopy species are likely to be considerably under-recorded due to lack of access to twigs (except for some windblown material).
- The presence of a large population of old hazel stools provides the potential for a fascinating study of recolonization of hazels in an urban situation. The discovery of *Arthonia cinnabarina* and *Eopyrenula grandicula* within the Greater London area seems rather remarkable and the abundance of *Graphis scripta* is also of great interest. All three species are nicknamed 'smoothies', crustose species forming part of a community on smooth bark, particularly that of hazel, and generally considered to be a feature of hazels in western areas with little history of atmospheric pollution.
- Amenity trees in the area surrounding Big Wood (for example *Tilia* trees in Central Square) may appear to support more exuberant lichen communities than any visible in Big Wood itself. Initial investigation suggests that such communities are like those that could be found on planted suburban trees across lowland England. Exuberance is not a reliable indicator of importance.

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 at Big Wood are available there. See for example *Arthonia* (*Coniocarpon*) *cinnabarina*: http://fungi.myspecies.info/all-fungi/arthonia-cinnabarina

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.

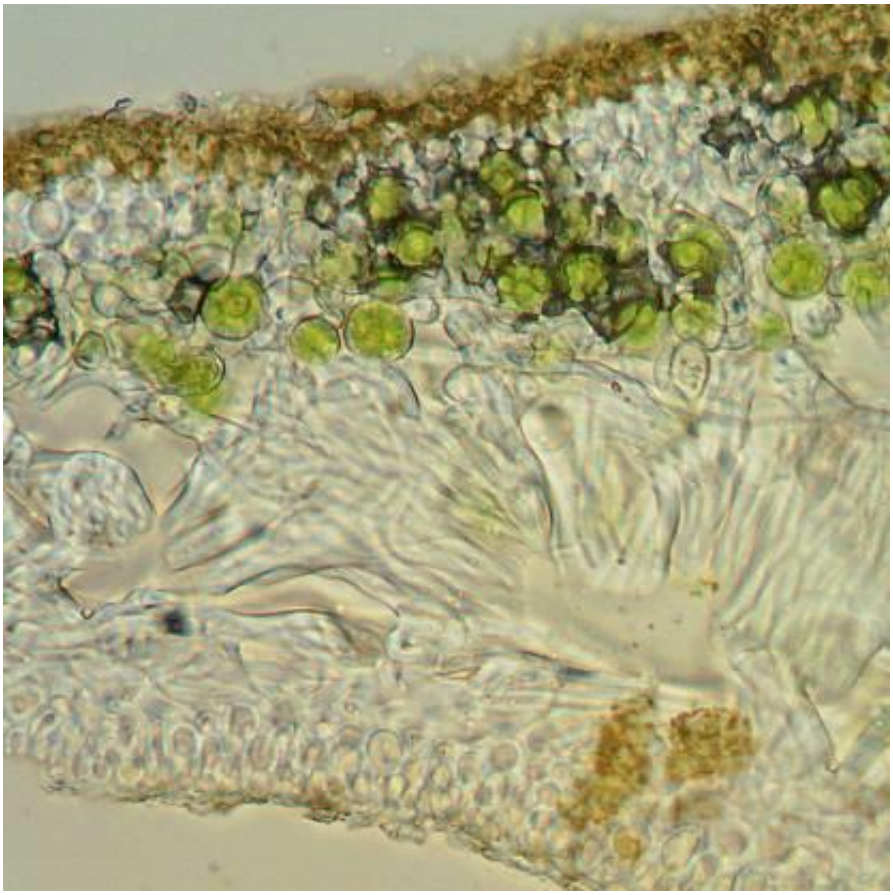

Fig 1. A cross section through a lobe of *Xanthoria parietina* (an extremely common lichen) as seen through a microscope. The thin section was cut by hand using a razor blade and mounted on a microscope slide. The algal cells (looking rather like peas but only one thousandth of the size) are seen in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

The main habitats for lichens at Big Wood

Due to the very limited access to twigs, a rather distorted picture of the lichen communities will have been gained. It is likely that a modest number of additional species are present on branches and twigs in the canopy but there is no reason to suppose that such lichens would be different from those on twigs and branches throughout much of lowland England. The lichens that colonise *Corylus* stems can live in shady conditions and at Big Wood are represented by a rather interesting small collection of species; *Graphis scripta* is the most frequent member of this community while *Arthonia cinnabarina*, *Eopyrenula grandicula* and *Leptorhaphis maggiana* are also present on *Corylus* stems and have not previously been recorded in VC 21 (Middlesex).

Fig. 2. Photograph showing the main lichen habitats in Big Wood. The oak trunks are very poor in species, due to a combination of the shady conditions and the toxic legacy affect. Other species of tree include ash, crab apple, hornbeam and wild service-tree; none of these support rich or exuberant lichen communities. Hazel stools provide stems ranging from thin sun-shoots to old gnarled trunks; four of the species new to Middlesex were found on hazel stems. Holly leaves support two species of *Phylloblastia*, one of which is new to Middlesex. Fallen branches rapidly lose any lichens that grew on them when present in the canopy and acquire few new lichens. Note the lack of access to any twigs or branches belonging to the canopy of the larger trees.

Fig. 3. An old dead standing decorticated oak tree. Such trees support important lichen communities at some sites, but shade and the history of pollution has resulted in this and similar trunks being effectively bare of lichens in Big Wood.

Fig. 4. Tree stump and felled trunk at TQ25600.88814. Shade and history of pollution result in sparse lichen colonization on this stump and felled trunk (and on similar lignicolous habitat elsewhere in Big Wood). However, this fallen trunk is of interest for the presence of a small colony of *Micarea viridileprosa* (at its only known site in Middlesex). Also present is *Micarea prasina* s. lat. and the basal squamules of an unidentified species of *Cladonia*.

Fig. 5. A large oak tree at TQ25706.88744, colonised by free-living algal crusts and a single lichen species (*Lepraria incana*). It is thought that old bark in areas with a history of pollution retain a 'toxic legacy' leading to the counter-intuitive situation in which the oldest bark supports the fewest species. *Lepraria incana* was resistant to acidic, sulphurous pollution and is perhaps the only lichen species in Big Wood that has been present throughout the changing conditions of the past two centuries.

Fig. 6. Dark stains at the bases of these ash stems include colonies of *Strigula taylorii*. The presence of this species in the London area would have been considered remarkable until very recent times and the first record for Middlesex was at Abney Park Cemetery in January 2017 (see Appendix A).

Fig. 7. Veteran *Quercus* (apparently a former pollard) at TQ2545.8861 (on the boundary of the wood). This tree is hollow on the side facing out from the wood. Such trees may sometimes benefit from slight crown reduction to prevent collapse of stems, but such work should proceed with care since extensive crown reduction may lead to physiological stress and subsequent decline. See for example: http://www.treeworks.co.uk/downloads/Notes_on_Arboricultural_Techniques_for_VT_management.pdf. A careful examination of the accessible part of the trunk failed to find any lichen species other than *Lepraria incana*.

An annotated and illustrated list of taxa recorded at Big Wood

In this section, the words describing abundance relate to how commonly each species was found during the survey. If a species is described as 'rare' in this section it means that it appears to be rare in Big Wood but does not imply that it is rare in a wider context. For conservation designations for each species please refer to Table 1. A species described as Rare in Big Wood is one that was observed in small quantity at only one or two places within the wood. Species that are described as Occasional occur as small colonies in several places. Species described as Frequent are widespread on suitable habitat in the wood while Abundant species are widespread and present in large quantity. These descriptive terms describing the abundance of each species are subjective but may prove useful to future recorders. The mere presence of a species in a list gives no impression of its abundance. If access had been available to the canopy (either by climbing, examination of felled trees or windblown

branches) the list would undoubtedly have been longer and the stated abundances of some species much increased.

Anisomeridium polypori: Rare, present as a fertile colony on a *Fraxinus* stem and as pycnidia on a *Corylus* stem.
Arthonia cinnabarina: Rare, present as a single immature thallus on a *Corylus* stem. This is one of the more interesting and surprising records for Big Wood and is the first modern record for the Greater London area. The closest known extant colony is at Burnham Beeches in Buckinghamshire where it appears to be a relic species on a veteran *Fagus* tree. The immature thallus at Big Wood suggests that *A. cinnabarina* is starting to behave as a colonising species. Although immature, and the apothecia not yet producing asci, the identification was confirmed by the presence of dense crystals overlying the disc and the K+ purple pigment in the exciple.

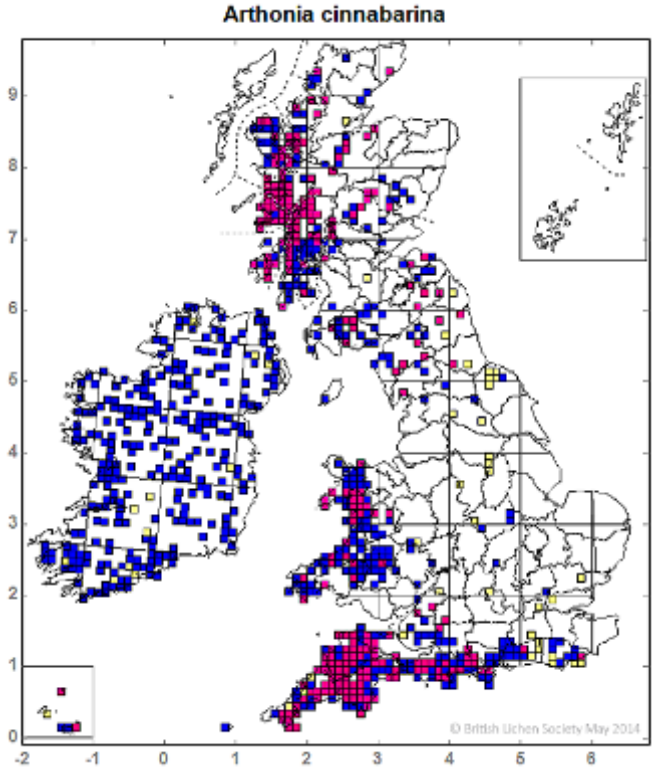

Fig. 8. Distribution map of *Arthonia cinnabarina*. Yellow squares are records dating from 1650-1959, blue squares date from 1960-1999 while pink squares are modern records (2000+). The recent record from Burnham Beeches does not appear on this map.

Fig 9. *Corylus* stool at TQ25515.88814. The right-hand stem as seen in the photograph supports a single immature thallus of *Arthonia cinnabarina* (just below the white tape).

Arthonia didyma: Frequent, present (often very thinly-developed) on many *Corylus* stems; occasionally present on other hard bark including *Carpinus*.
Bacidia delicata: Rare, present as a single colony on the dead bark of a fallen *Quercus* branch.
Buellia griseovirens: Rare, present as a single colony on the lignum of a fallen dead *Quercus* stem.
Candelaria concolor: Rare, found twice on windblown twigs.
Candelariella reflexa: Rare, found on windblown twigs.
Cladonia sp.: Rare, present only as basal squamules (hence uncertainty of exact identity), on lignum of fallen *Quercus* and on base of old *Quercus* trunk.
Dimerella pineti: Occasional, on shaded bark of *Quercus*, *Carpinus* and *Corylus*.
Eopyrenula grandicula: Rare, on smooth bark plates of old *Corylus* stem. These tiny bark fungi and their apparent recent spread is intriguing. It is possible that species such as *Eopyrenula grandicula* have been much over-looked and it is impossible to state with certainty whether recent records represent recent increases or merely more thorough recent surveys. It is extremely unlikely that such species survived the many decades of sulphurous pollution (at its height in mid-20th century) and therefore it is overwhelmingly likely that such species are fairly recent colonists.

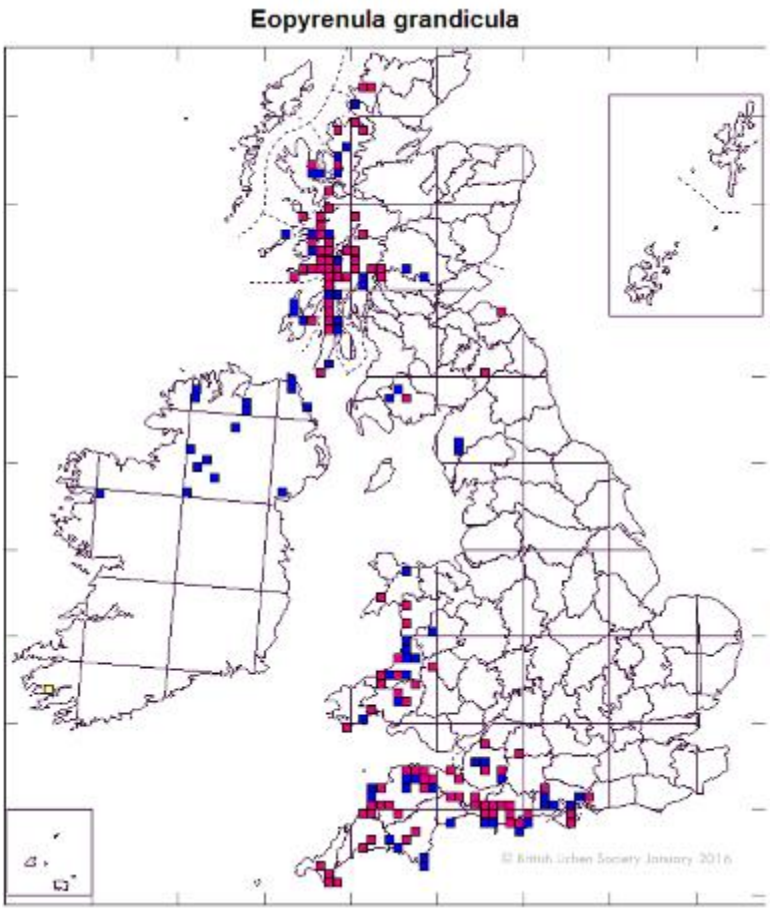

Fig 10. Distribution map of *Eopyrenula grandicula*.

Graphis scripta: Occasional, occurring on *Corylus* stems ranging from old rough-barked ones to thin smooth-barked ones only 1 cm in diameter. The widespread presence of this lichen at Big Wood is somewhat surprising; in the Home Counties it is more often encountered as a relic species in old woods in rural areas. At Big Wood *G. scripta* occurs as relatively young thalli, none more than 4 cm in diameter and hence it appears to a successful colonist here.
Hypotrachyna afrorevoluta: Rare, present on a fallen *Quercus* twig.
Hypotrachyna revoluta: Occasional, recorded on fallen *Quercus* twigs.
Jamesiella anastomosans: Rare, suppressed thalli on *Carpinus* stem.
Lecanora carpinea: Rare, present on fallen *Quercus* twig.
Lecanora chlarotera: Occasional, present on fallen *Quercus* twigs.
Lecidella elaeochroma: Occasional, present on fallen *Quercus* twigs.
Lepraria finkii: Occasional, mainly overgrowing bryophytes on shaded stems.
Lepraria incana: Abundant, the most common lichen in Big Wood, occurring on most species of tree and shrub and particularly common in bark crevices of old *Quercus* trunks.
Leptorhaphis maggiana: Rare, collected from smooth bark of *Corylus* (a sun-shoot arising from an old stool).

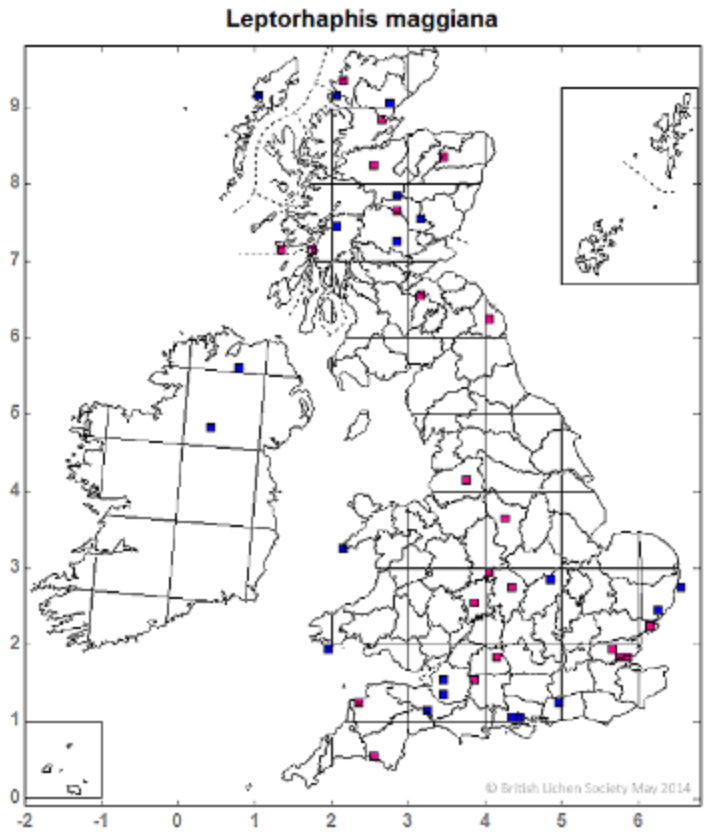

Fig 11. Distribution map of *Leptorhaphis maggiana*. The thin and relatively even scatter of records suggests that this may be a widespread but under-recorded species. It was recently reported from the outskirts of Cambridge on *Corylus* in an amenity planting (not shown on this map).

Melanelixia subaurifera: Occasional, on fallen *Quercus* twigs.
Melanohalea elegantula: Rare, on fallen *Quercus* twig.
Micarea prasina s. lat.: Occasional, found only twice but on two different substrates. At TQ25600.88838 it is present on the lignum of a fallen *Quercus* trunk; at TQ25630.88787 present in small quantity on the old bark of a live *Quercus* trunk.
Micarea viridileprosa: Rare, present as one small colony on the lignum of a fallen *Quercus* trunk at TQ25600.88838.

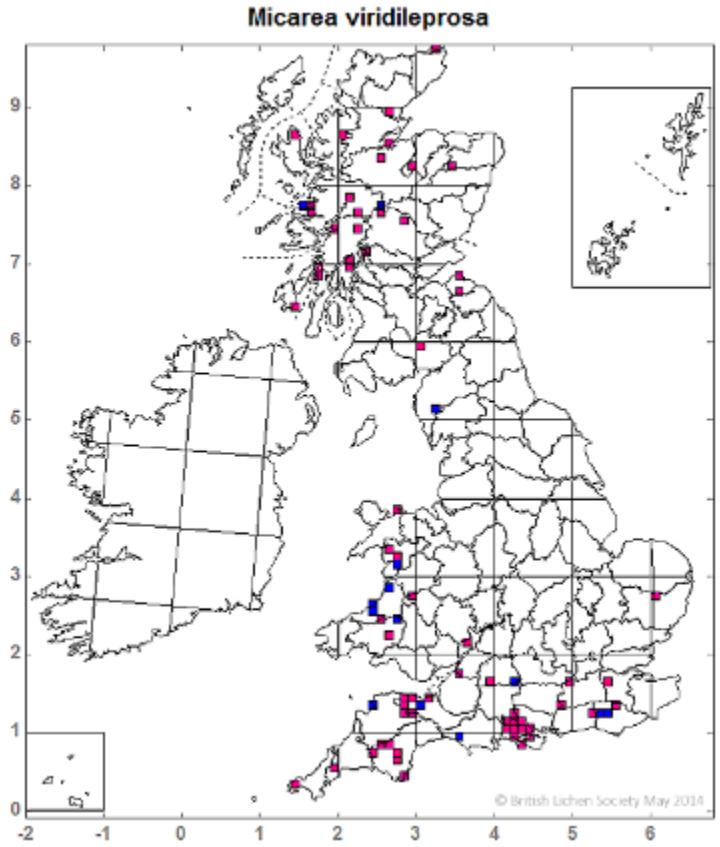

Fig. 12. Distribution map of *Micarea viridileprosa*.

Opegrapha ochrocheila: Rare, present as one recently colonised thallus on a *Corylus* stem.
Paranectria oropensis subsp. ***oropensis***: Rare, found once, infecting *Lepraria incana* on an old *Quercus* trunk.
Parmelia sulcata: Occasional, present on fallen *Quercus* twigs.
Phlyctis argena: Rare, present on *Corylus* stems.
Phylloblastia cf. ***bielczykiae***: Occasional, present growing on leaves of *Ilex*. Not known in Britain before 2017, this is the third site now known for this species (also present in Sussex and Essex). Specimens from Essex are being examined by the lichenologist who described *P. bielczykiae* as new to science, which is not currently known outside the tropics.
Phylloblastia inexpectata: Occasional, on leaves of *Ilex*.
Physcia adscendens: Occasional, on fallen *Quercus* twigs.
Physcia tenella: Occasional, on fallen *Quercus* twigs.
Porina aenea: Rare, on *Crataegus* stem.
Porina byssophila: Occasional, on *Corylus* and *Fraxinus* stems.
Punctelia subrudecta: Rare, on fallen *Quercus* twig.
Strigula taylorii: Occasional, on *Corylus* and *Fraxinus* stems. The presence of this species in London would have been considered remarkable even just a few years ago. It appears to have rapidly spread and moved out of its former strongholds in old woodlands.
Xanthoria parietina: Occasional, on fallen *Quercus* twigs.
Xanthoria polycarpa: Rare, on fallen *Quercus* twig.

Table 1: list of lichens and lichenicolous fungi recorded in Big Wood

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 fungus recorded by lichenologists (F) or a lichen (0).
Column D gives the conservation designations as follows: LC = Least Concern, DD = Data Deficient, NS = Nationally Scarce, NR = Nationally Rare, IR = International Responsibility.
Column E gives the substratum upon which the taxon was growing: Bry = bryicolous (growing on moss), Cort = corticolous (growing on bark), Lic = lichenicolous.
Column F provides details of substratum using standard BLS codes.

49	*Anisomeridium polypori*	0	LC	Cort	CFx,CCo
72	*Arthonia cinnabarina*	0	LC	Cort	CCo
56	*Arthonia didyma*	0	LC	Cort	CCo
144	*Bacidia delicata*	0	LC	Cort	CQ
207	*Buellia griseovirens*	0	LC	Lig	LQ,LDf
289	*Candelaria concolor*	0	LC	Cort	CQ,CTw
297	*Candelariella reflexa*	0	LC	Cort	CQ,CTw
489	*Dimerella pineti*	0	LC	Cort	CCo
1616	*Eopyrenula grandicula*	{F}	LC NS IR	Cort	CCo
533	*Graphis scripta*	0	LC	Cort	CCo
2468	*Hypotrachyna afrorevoluta*	0	LC	Cort	CQ,CTw
2577	*Hypotrachyna revoluta s. str.*	0	LC	Cort	CQ
547	*Jamesiella anastomosans*	0	LC	Cort	CCp
636	*Lecanora carpinea*	0	LC	Cort	CQ,CTw
639	*Lecanora chlarotera*	0	LC	Cort	CQ
797	*Lecidella elaeochroma f. elaeochroma*	0	LC	Cort	CQ,CTw
1629	*Lepraria finkii*	0	LC	Bry	
1974	*Lepraria incana s. str.*	0	LC	Cort	CQ
1537	*Leptorhaphis maggiana*	{F}	LC NS	Cort	CCo
1020	*Melanelixia subaurifera*	0	LC	Cort	CQ
993	*Melanohalea elegantula*	0	LC	Cort	CQ
887	*Micarea prasina s. lat.*	0		Lig	LQ,LDf
838	*Micarea viridileprosa*	0	LC NS	Lig	LQ,LDf
954	*Opegrapha ochrocheila*	0	LC	Cort	CCo
2135	*Paranectria oropensis subsp. oropensis*	{LF}	LC NS	Lic	Z1974
1022	*Parmelia sulcata*	0	LC	Cort	CQ
1110	*Phlyctis argena*	0	LC	Cort	CCo
2464	*Phylloblastia inexpectata*	0	LC NS	Fol	
1112	*Physcia adscendens*	0	LC	Cort	CQ,CTw
1120	*Physcia tenella*	0	LC	Cort	CQ
1168	*Porina aenea*	0	LC	Cort	CCt
1614	*Porina byssophila*	0	DD NR	Cort	CCo,CFx
2070	*Punctelia subrudecta s. str.*	0	LC	Cort	CQ
1378	*Strigula taylorii*	0	LC NS IR	Cort	CFx,CCo
1530	*Xanthoria parietina*	0	LC	Cort	CQ
1531	*Xanthoria polycarpa*	0	LC	Cort	CQ

#N/A	*Phylloblastia cf. bielczykiae*	#N/A	#N/A	Fol	
#N/A	*Cladonia sp.*	#N/A	#N/A	Lig	LQ,LDf

Lichens, a source of food and camouflage

Many organisms use lichens; well-known examples are the diet of reindeer and the nests of long-tailed tits. Foliose lichens form a canopy beneath which can be found large numbers of invertebrates. Bagworms are the caterpillar stage of moths in the family Psychidae. The larvae construct cases out of silk and various environmental materials. Fig. 13 shows a bagworm present on the trunk of a *Tilia* in Central Square, probably *Luffia ferchaultella* which both eats lichen and incorporates fragments of lichen into its case (often in differently coloured bands).

Fig. 13. The slightly curved, elongated cylindrical case of a bagworm in Central Square, Hampstead Garden Suburb. The case has been 'decorated' with fragments of lichen in subtle bands.

References

Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. J. & Wolseley, P. A., (eds) (2009) *The Lichens of Great Britain and Ireland*. London: British Lichen Society.

Woods, R. G. & Coppins, B. J. (2012). A Conservation Evaluation of British Lichens and Lichenicolous Fungi. Species Status 13. Joint Nature Conservation Committee, Peterborough.

APPENDIX A: LICHENS AT ABNEY PARK CEMETERY

A survey by the British Lichen Society, 22nd January 2017

Introduction

Abney Park Cemetery provided a convenient and interesting venue for the post-AGM field meeting of the BLS. Any lichenologist who wanted to see an exuberance of lichens or to learn about rare species would have been disappointed. The lichenologists who attended (like all good lichenologists) are interested in all lichens including the common ones and are fascinated by the rapid changes occurring

in lowland England. The weather was cold but sunny. Lichenologists were on site from approximately 09:30 to 16:00. The attendees appeared to retain their interest throughout the day and I doubt if anyone left the site without learning from others. The identification and taxonomy of common species is not necessarily easy; there were light-hearted (and constructive) disputes and several frugal specimens were collected for subsequent microscopic examination. The literature does not always treat common species with the information and illustrations that they deserve and, without being overwhelmed by diversity, time was available for the very important work of improving our knowledge of common species. Sixty-two species were confirmed as reliable records while several more are tentative or require additional work. At least one undescribed species (*Opegrapha hochstetteri* in ed.) was recorded. The following lichenologists attended the meeting: Judith Allinson, Joe Beale, Ishpi Blatchley, Paul Cannon, Keith Cavanagh, Pat Cavanagh, David Hill, Mark Powell, Steve Price, William Purvis, Paula Shipway, John Skinner, Pat Wolseley.

Management advice

When advising on the management of most other burial grounds, there are important lichen communities on the memorials which take priority. Abney Park Cemetery is different due to its urban location (with a legacy of atmospheric pollution) and, even more significantly, its overgrown nature which has resulted in very impoverished lichen communities on the gravestones. Hence the proposed vision for Abney Park as a predominantly woodland site is not in conflict with any existing important lichen communities.

The area near the south gate (Church Street entrance) and beside the South Boundary Road retains a relatively open character and this southern edge of the cemetery also contains a concentration of chest tombs and other large memorials of various rock types. We would recommend that it is retained as a predominantly open, well-lit area. From a lichenologist's point of view, a slight extension of this open area northwards by removing encroaching shrubs and trees would be welcome, to completely expose the old chest tombs and other memorials to well-lit, airy conditions which would benefit saxicolous lichens. It would also be beneficial if ivy could be suppressed, and certainly kept from overgrowing memorials, in this narrow southern area of the cemetery.

The layman might expect the oldest trees to support the richest lichen communities but the history of atmospheric pollution has turned this assumption on its head in most urban sites. The bark of old tree trunks is retained for decades and becomes so modified by pollution (a sort of toxic legacy) that lichens tend to be sparse and few in number. The younger trunks of more recent trees often have richer communities. We did not have time to examine all of the veteran trees so it is just possible that a small community of notable lichens is present in a wound seepage track, on exposed lignum or deep in bark crevices of one or more of the veterans. Such communities are unlikely to be present in such an urban setting and, even if such were present, the management proposals as set out in the leaflet by Miller (2013) are entirely appropriate for retaining any lichen interest which might be associated with the veteran trees.

We were informed that there are plans to clean stonework in the vicinity of the eastern gate (High Street entrance). Although lichens are present on this stonework, they are all common colonist species. A crude analogy would be that the lichens present are the equivalent of the daisies and buttercups present in a typical garden lawn – they are wildflowers but their conservation value is not comparable to the wildflowers in an unimproved meadow.

Now that we have a good baseline survey of the lichens present at Abney Park, future surveys have the potential to provide useful information about future changes in lichen communities in London. Table 1 gives a list of all lichens and lichenicolous fungi recorded at Abney Park which have some stated conservation designation. {LF} = lichenicolous funus, LC = Least Concern, DD = Data Deficient, NS = Nationally Scarce, NR = Nationally Rare, (Sc = relevant to Scottish sites), IR = a species for which Britain & Ireland has International Responsibility. The Nationally Scarce and Nationally Rare species in the table are thought to be either under-recorded (due to their inconspicuous nature or previous taxonomic uncertainty) or undergoing recent changes in distribution.

Table 1. List of lichens and lichenicolous fungi at Abney Park which have conservation designations as indicated by Woods & Coppins (2012).

2442	*Caloplaca arcis*	0	LC NS
2443	*Caloplaca dichroa*	0	LC NS Sc
1018	*Flavoparmelia soredians*	0	LC Sc
2071	*Illosporiopsis christiansenii*	{LF}	LC NS
1707	*Lecania inundata*	0	LC NS
2542	*Opegrapha hochstetteri in ed.*	{LF}	LC NR
2464	*Phylloblastia inexpectata*	0	LC NS
1614	*Porina byssophila*	0	DD NR Sc
1375	*Strigula jamesii*	0	LC NS
1378	*Strigula taylorii*	0	LC NS Sc IR
2260	*Unguiculariopsis thallophila*	{LF}	LC NS
2464	*Phylloblastia inexpectata*	0	LC NS

Noteworthy species and features

Strigula taylorii is present in some quantity at Abney Park and is particularly associated with the lower trunks of pole-size to moderately large *Fraxinus* 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. 1 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.

At Abney Park, *S. taylorii* often occurs in association with *S. jamesii*, *Porina aenea* and *P. byssophila*. All but *P. aenea* would, until recent years, have been considered notable species in the region. These interesting species, all having a similar growth form (crustose lichens with a Trentepohlioid photosynthetic partner and perithecioid ascomata), have expanded their range and become better understood (e.g. Powell, 2013).

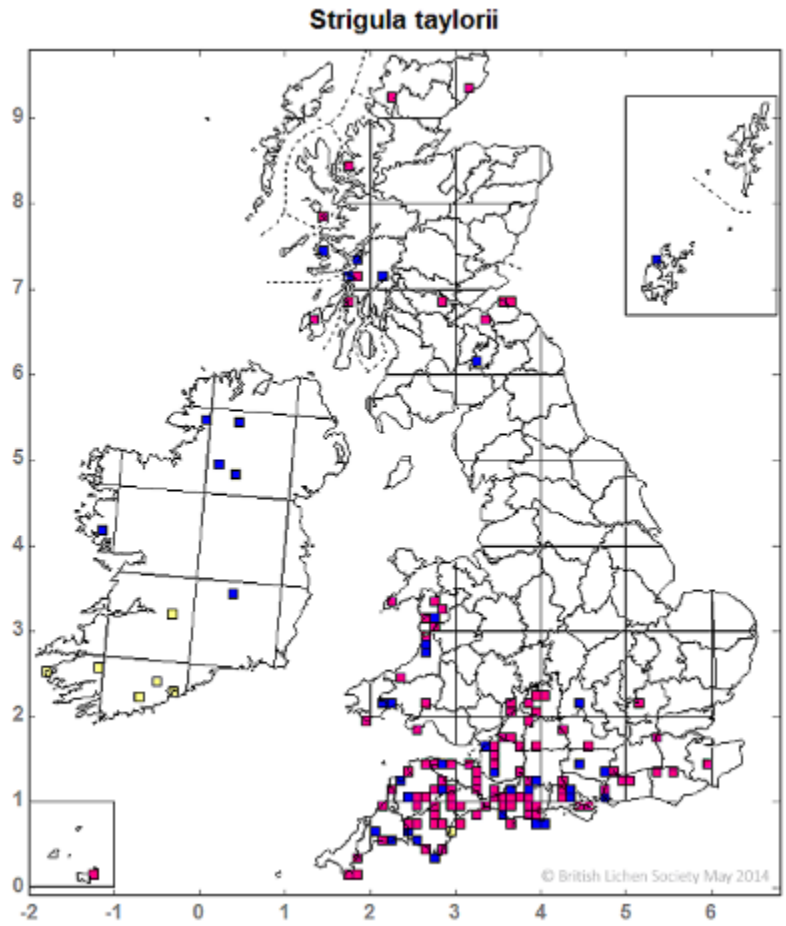

Figure 1. Distribution map of *Strigula taylorii*, post-2000 records in pink.

Figure 2. A moderately sized *Fraxinus* trunk towards the north end of the cemetery. This trunk exhibits an interesting range of lichens due to its leaning trunk. The dry, underhanging side has an abundance of *Anisomeridium polypori*. The upper slope is modified by years of water flushing (rain water collected by the crown) and provides a habitat for *Strigula jamesii* which prefers soft bark. Towards the base of the trunk are extensive colonies of *S. taylorii*.

Absentees
Surveyors often omit to note species which they have anticipated but failed to find. This information can be almost as useful for monitoring changes as recording the presence of species. There is provision within the BLS spreadsheet for such 'nil' occurrences. Please note the guidelines for filling spreadsheets which stresses that records of absence should be highlighted to prevent them being incorporated into the database as records of presence. During our lunchtime chat the following were mentioned as notable absentees which we might have expected to see: *Arthonia spadicea*, *Dimerella pineti* and members of the genus *Opegrapha*.

The tree canopy
Our knowledge of the lichens on branches and twigs at Abney Park is very incomplete and relied on the examination of occasional low-hanging branches and the very few windblown twigs we found. There appears to be a rather rich covering of lichens on some of the branches when viewed from the ground. These canopy species are more of academic interest than of conservation importance (there is no reason to suspect that these communities are any different from those on branches of other trees in the region). If a future survey has access to recently felled or windblown trees the difference of access to the branch and twig communities will have to be taken into account when comparing the lists.

Foliicolous lichens
Some lichens specialise in growing on the surface of evergreen leaves. Aptroot (2012) reported that: "In the past decades there has been a dramatic increase in the occurrence of foliicolous lichens in Western Europe", and attributed this phenomenon thus: "The enormous increase of the occurrence of foliicolous lichens in temperate Europe is doubtlessly due to global warming, which has made the climate in these parts warmer and wetter, that is more humid for more prolonged periods". Only one species with a BLS number was recorded (*Phylloblastia inexpectata*) and even this species is rather tenuously lichenized. Another species (*Seuratia millardetii*) was found on holly leaves; this fungus once had a name suggesting that it was a lichen (*Collema epiphyllum*). While it bears a superficial resemblance to the lichenized genus *Collema*, it is really a free-living fungus with no close relationship to *Collema*. Another foliicolous fungus, *Dennisiella babingtonii*, was identified subsequently from a collected leaf. If evergreen shrubs remain a feature of Abney Park it will be fascinating to see if further foliicolous species appear.

Lichenicolous fungi
Lichenologists also study the fungi that infect them. Lichenicolous fungi live on or in lichens and are often host-specific and pathogenic. Just as rose bushes and cereal crops are infected by various fungi, similarly many lichens are infected by fungi which specialise in infecting them. *Lecanora chlarotera* is a species of lichen which was virtually excluded from Eastern England by sulphur dioxide pollution but which has reinvaded to become a ubiquitous part of the lichen community that colonises young bark. *L. chlarotera* was already common in Eastern England many years before *Unguiculariopsis thallophila* started to become a common infection of its thalli.

An undescribed species
Opegrapha hochstetteri in ed. is a lichenicolous fungus that infects the saxicolous lichen *Verrucaria muralis*. *O. hochstetteri* has been recognised as a separate organism for many years but remains yet, an undescribed species.

Figure 3. *Opegrapha hochstetteri*, small clusters of minute fruiting bodies infecting the thallus of *Verrucaria muralis*.

The Lichens

A previous survey was conducted by Ishpi Blatchley and Amanda Waterfield in 2002 and their records are incorporated into the table below. The records for the site are also available in the form of an Excel spreadsheet.

Table 2: list of lichens and lichenicolous fungi recorded at Abney Park Cemetery

Column A gives the standard BLS number for each taxon. If Column A is filled with red it indicates that the taxon is new for VC 21 (Middlesex).
Column B gives the name of each taxon recorded.
Column C indicates whether the taxon is a lichenicolous fungus {LF} or a lichen (0).
Column D gives the conservation designations as follows: LC = Least Concern, DD = Data Deficient, NS = Nationally Scarce, NR = Nationally Rare, Sc = relevant to Scottish sites, IR = a species for which Britain & Ireland have International Responsibility.
Column E gives the substratum upon which the taxon was growing: Cort = corticolous (growing on bark), Lic = lichenicolous, Sax = saxicolous (growing on stone).
Column F provides habitat the standard BLS habitat codes.

A	B	C	2002	D	E (2017)	F (2017)
10	*Acarospora fuscata*	0		LC	Sax	XM,SSd
	Amandinea punctata		x			
49	*Anisomeridium polypori*	0		LC	Cort	CFx,CQ
69	*Arthonia radiata*	0		LC	Cort	CFx
107	*Aspicilia contorta subsp. contorta*	0		LC	Sax	SCo

	Buellia aethalea		x			
	Buellia griseovirens		x			
2442	*Caloplaca arcis*	0		LC NS	Sax	SGr
	Caloplaca citrina s. lat.		x			
249	*Caloplaca crenulatella*	0	x	LC	Sax	XM,SLm
2443	*Caloplaca dichroa*	0		LC NS Sc	Sax	XM,SLm
2315	*Caloplaca flavocitrina*	0		LC	Sax	XM,SSd
2527	*Caloplaca holocarpa s. str.*	0		LC	Sax	XM,SSd
2461	*Caloplaca oasis*	0		LC	Sax	SLm
289	*Candelaria concolor*	0		LC	Sax	XM,SGr
291	*Candelariella aurella f. aurella*	0	x	LC	Sax	SLm
296	*Candelariella medians f. medians*	0		LC	Sax	SLm
297	*Candelariella reflexa*	0		LC	Cort	CFx,CQ
298	*Candelariella vitellina f. vitellina*	0	x	LC	Sax	XM,SSd
306	*Catillaria chalybeia var. chalybeia*	0	x	LC	Sax	SGr
311	*Catillaria lenticularis*	0	x	LC	Sax	XM,SLm
	Cladonia chlorphaea		x			
440	*Collema crispum var. crispum*	0		LC	Terr	
460	*Collema tenax var. ceranoides*	0		LC	Terr	
	Dimerella pineti		x			
1018	*Flavoparmelia soredians*	0		LC Sc	Cort	CFx
1125	*Hyperphyscia adglutinata*	0		LC	Cort	CFx,CCo
2071	*Illosporiopsis christiansenii*	{LF}		LC NS	Lic	Z1112,CFx
613	*Lecania cyrtella*	0		LC	Cort	CSm,CAe
614	*Lecania cyrtellina*	0		LC	Cort	CSm
616	*Lecania erysibe s. str.*	0		LC	Sax	XM,SLm
	Lecania erysibe s. lat.		x			
1707	*Lecania inundata*	0		LC NS	Sax	XM,SLm
159	*Lecania naegelii*	0		LC	Cort	CFx
627	*Lecanora albescens*	0	x	LC	Sax	XM,SLm
635	*Lecanora campestris subsp. campestris*	0	x	LC	Sax	XM,SSd
639	*Lecanora chlarotera*	0		LC	Cort	CFx,CQ
	Lecanora conizaeoides		x			
644	*Lecanora crenulata*	0		LC	Sax	SLm
646	*Lecanora dispersa*	0	x	LC	Sax	XM,SSd
649	*Lecanora expallens*	0		LC	Cort	CFx
621	*Lecanora hagenii*	0		NE	Cort	CFx,CTw
661	*Lecanora muralis*	0	x	LC	Sax	XM,SSd
	Lecanora polytropa		x			
	Lecanora symmicta		x			
2474	*Lecidea grisella*	0		LC	Sax	XM,SSd
797	*Lecidella elaeochroma f. elaeochroma*	0		LC	Cort	CFx
802	*Lecidella scabra*	0		LC	Sax	XM,SSd
803	*Lecidella stigmatea*	0		LC	Sax	XM,SSd
1974	*Lepraria incana s. str.*	0		LC	Cort	CFx
	Lepraria incana s. lat.		x			
849	*Leptogium turgidum*	0		LC	Sax	XM,SLm

1020	*Melanelixia subaurifera*	0	x	LC	Cort	CFx,CQ
2542	*Opegrapha hochstetteri in ed.*	{LF}		LC NR	Sax	XM,SLm
1022	*Parmelia sulcata*	0	x	LC	Cort	CQ,CAe
1107	*Phaeophyscia orbicularis*	0	x	LC	Cort	CFx,CAe
2464	*Phylloblastia inexpectata*	0		LC NS	Fol	FIx
1112	*Physcia adscendens*	0	x	LC	Cort	CFx
1114	*Physcia caesia*	0	x	LC	Cort + Sax	SGr,CFx
1120	*Physcia tenella*	0	x	LC	Cort	CFx
1168	*Porina aenea*	0		LC	Cort	CFx
1614	*Porina byssophila*	0		DD NR Sc	Cort	CFx
1690	*Porpidia soredizodes*	0		LC	Sax	XM,SSd
1189	*Protoblastenia rupestris*	0		LC	Sax	SLm
1200	*Psilolechia lucida*	0	x	LC	Sax	XM,SSd
1630	*Psoroglaena stigonemoides*	0		LC	Cort	CSm
1989	*Punctelia jeckeri*	0		LC	Cort	CTw,CAe
	Ramalina farinacea		x			
1289	*Rinodina oleae*	0	x	LC	Sax	XM,SSd
1306	*Sarcogyne regularis*	0		LC	Sax	SCo
1320	*Scoliciosporum chlorococcum*	0		LC	Cort	CQ
1375	*Strigula jamesii*	0		LC NS	Cort	CFx
1378	*Strigula taylorii*	0		LC NS Sc IR	Cort	CFx,CPr,CQ
1389	*Thelidium incavatum*	0		LC	Sax	XM,SLm
1581	*Trapelia coarctata*	0	x	LC	Sax	XM,SSd
2260	*Unguiculariopsis thallophila*	{LF}		LC NS	Lic	Z0639,CFx
1871	*Verrucaria elaeina*	0	x	LC	Sax	XM,SLm
1507	*Verrucaria muralis*	0	x	LC	Sax	XM,SLm
2514	*Verrucaria nigrescens f. tectorum*	0		LC	Sax	XM,SSd
1530	*Xanthoria parietina*	0	x	LC	Cort	CFx
1531	*Xanthoria polycarpa*	0		LC	Cort	CFx.CQ
	Bacidia cf. caligans				Sax	XM,SLm
	Bacidia cf. chloroticula				Sax	

References

Aptroot, A. (2012). A new foliicolous *Fellhaneropsis* (*Pilocarpaceae*) from the Netherlands. *The Lichenologist* **44:** 441-448.

Miller, R. (2013). The Veteran Trees of Abney Park Cemetery Nature Reserve (2nd edition). A leaflet produced by the Abney Park Trust.

Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. J. & Wolseley, P. A., (eds) (2009) *The Lichens of Great Britain and Ireland*. London: British Lichen Society.

Woods, R. G. & Coppins, B. J. (2012). A Conservation Evaluation of British Lichens and Lichenicolous Fungi. Species Status 13. Joint Nature Conservation Committee, Peterborough.