British Lichen Society *Bulletin* no. 121 Winter 2017

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Welcome to your winter edition of *The Bulletin*, artfully compiled by our trainee editors, Maxine Putnam and Tony Holwill. This edition has a certain structural theme featuring walls, roofs and a lightning conductor and the lichens that grow on them. Do read on …….

We are also fortunate to have reports of important work from both urban and rural areas of Britain, from London and Kent as well as from the heathlands of the New Forest and Surrey, and from the wilds of Dartmoor.

The BLS has always punched above its weight, having impact and influence on both a national and global scale despite a relatively small membership. There is never a shortage of new initiatives, though often a shortage of those needed to put them into practice. In the summer of 2017, the Society agreed to adopt another new project, to prepare a third edition of its flagship publication, the *Lichens of Great Britain and Ireland*. Edition 2 was published in 2009. Since then there have been substantial changes in the classification of many lichen groups, reflecting the impact of molecular phylogenetic research on our understanding of speciation and evolution. Scientific names have reflected relationships ever since the binomial system was invented in the 1750s, and it is inevitable that some name changes will occur. These may not be welcomed by all, but we cannot continue in a vacuum and the Society will do all it can to help in translation. The BLS will put some financial resources into this operation, but as before the bulk of the work will be done by volunteers. If you might be interested in helping out (and perhaps seeing your name at the beginning of a genus account or two), we would be interested to hear from you.

If all of this sounds like 'a strain on the brain' then take time out to relax and enjoy the artistic appreciation of the beauty of lichens in the article from Swaledale and Caithness. Be aware also that several of the articles in this issue have been written by people very new to lichenology – we're delighted to include such works in addition to the more academic contributions.

Now to a completely different subject. May we put in a plea for more articles/information/experiences relating to the increased effects of pollution on lichen from intensive agricultural farming. Not only are high ammonia levels now threatening important rich lichen sites in our own local region, but also causing distress to neighbouring residents. The problems have been aired locally by the BBC which has identified the problems of slurry lagoons, spillages and elevated pollutant levels etc. We do not feel we have the necessary knowledge to help in any of these matters when approached for help, as is increasingly happening.

Front cover: A nod to the first article in this issue: a hirsute (perhaps even Rastafarian) gravestone covered in *Bryoria fuscescens*, from the cemetery at Wanlockhead, SW Scotland.

Bryoria smithii and other *Bryoria* at Black-a-tor Copse

Black-a-tor Copse, in the valley of the West Okement river on the northern edge of Dartmoor, remains the only known extant site in the British Isles for *Bryoria smithii*. It is a magical place with gnarled, twisted and stunted ancient oaks draped in lichens and a moss-covered boulder-filled woodland floor.

Figure 1. A lichen-clad oak in Black-a-tor Copse

It is one of a number of 'high altitude' oak woodlands found on Dartmoor, the most famous (and best studied) of which is Wistman's Wood which has long been known as an important lichen site. Recognition of Black-a-tor Copse as an important site for lichens is more recent and still evolving. The history of the sites and their lichens were covered very thoroughly in a review by Brian and Sandy Coppins on a contract for Natural England in 2003 (Coppins & Coppins 2003a), when they also undertook the first full survey of the lichens on the site and established monitoring of the three *Bryoria* species - *B. bicolor* and *B. fuscescens* along with the *B. smithii* .

History of *Bryoria* recording at Black-a-tor Copse

With reference to the Coppins' review, the first records of *Bryoria* from Black-a-tor Copse are from 1971 when Francis Rose, 'Dougal' Swinscow, and David Hawskworth all recorded *B. smithii*, with DH noting it on 25-30 oak trees. Subsequently, *B. smithii* has been recorded on most lichen-hunting visits to the site e.g. by Simon Davey in 1973 and Steve Chambers in 1993. An absence in a 1999 visit by DH is intriguing as it may suggest some degree of decline had occurred before it was recorded again by Brian and Sandy Coppins in 2003.

B. bicolor has been recorded on all visits, except the first 1971 visits, although it seems likely it would have been present just not noted, whilst *B. fuscescens* has only been recorded on 5 visits (of 9 visits to 2003) since the first record in 1975.

Monitoring of *Bryoria* species 2003-2017

The Coppins' 2003 baseline monitoring was established as a means to assess fluctuations in the populations of these species, and was intended to be repeated at five-yearly intervals. Although it has not been repeated as regularly as intended it has still been monitored twice since 2003; in 2010 by Brian and Sandy (funded by Natural England) and in 2016-17 by Plantlife, funded by Natural England's Species Recovery Programme, with partial monitoring undertaken by the Devon Lichen Group in 2013.

The basic method established by Brian and Sandy was to locate colonies, number them, photograph them, GPS them, count number of thalli and record associated species. This information was recorded on a proforma, each one relating to a defined part of the site. 17 locations, with proformas for each, were surveyed in 2003, and a further two added in subsequent years such that we now have 19 locations for which detailed information has been recorded. Of these, a select number were monitored in 2010 and 2016, with the 2017 monitoring aiming to complete monitoring for all locations, the first time all will have been monitored since 2003.

Trends in *Bryoria* species at Black-a-tor Copse 2003-2016

Species	**2003**		**2010**		**2016**	
	No. tufts / thalli	No. boulders / trees	No. tufts / thalli	No. boulders / trees	No. tufts / thalli	No. boulders / trees
Bryoria smithii	6	4	16	7	6	4
Bryoria bicolor	340-370	69	126	57	632	106
Bryoria fuscescens	9	1	0	0	0	0

Table 1. Trends in *Bryoria* at monitored locations 2003-2016

Bryoria smithii

The population of *Bryoria smithii* at Black-a-tor Copse certainly seems to be very small with just 6 thalli recorded from 4 sites (1 tree and 3 boulders) in 2016 and a trend is hard to detect, although it has almost certainly declined since 1971 when it was recorded on 25-30 oak trees by David Hawksworth.

Of the four sites (1 tree and 3 boulders) where *B. smithii* was recorded in 2003, all *B. smithii* had been lost by 2010, and it was still absent come 2016. However, seven new sites were recorded in 2010 (5 boulders and 2 trees) although by 2016 it was lost from 3 of these (but recorded on two new boulders). 2017 fieldwork, yet to be completed, has had promising results with some robust colonies found on oak boughs in a part of the wood not visited since monitoring was established in 2003. The age of the trees and the robust nature and size of these colonies suggest they may have been some of the trees on which David Hawksworth recorded *B. smithii* in 1971.

Bryoria bicolor

Bryoria bicolor continues to be a frequent component of the lichen flora at Black-a-tor Copse with 703 tufts/thalli of *B. bicolor* from 84 sites; 34 trees and 50 boulders in 2016. Of 69 sites recorded in 2003 (44 boulders and 25 trees), 67 sites were monitored in 2016. Of these just 7 have shown an increase in the number of tufts/thalli of *B. bicolor* and 22 a complete loss (the remainder showing a decrease or no change).

A great deal of this loss occurred between 2003 and 2010, reflecting Coppins & Coppins' summation that there had been a 'marked decline of *Bryoria bicolor*' between 2003 and 2010 (Coppins & Coppins 2010). However, there was an apparent reversal of fortune between 2010 and 2016, with 14 sites showing an increase in number of tufts, and the discovery of new sites within the locations monitored in both 2010 and 2016.

An emerging trend appears to involve a clear decline in the number of tufts/thalli on monitored sites between 2003 and 2010, as reported by Coppins & Coppins (2010) followed by some recovery, which interestingly includes the recolonisation of sites that had completely lost their *Bryoria* by 2010 e.g. Fig 4-6.

Bryoria fuscescens

This was found at just one site in 2003, and had been lost by 2010, most probably due to the loss of bark from the tree on which it was growing. It was not recorded here in 2016 although interestingly *B. bicolor* appears to be increasing and occupying lignum as well as bark.

Again, 2017 fieldwork has been more promising, with the species found growing on a large boulder, albeit rather sparsely.

Bryoria and bryophytes

The benefits of repeat monitoring go beyond simply being able to report a little more accurately on species trends. The 2016 monitoring has added weight to Brian and Sandy's suspicions that the dynamics of the *Bryoria* populations are closely linked to the dynamics of the bryophyte populations.

Coppins & Coppins (2010): 'Given that both *B. bicolor* and *B. smithii* occur on boulders (and occasionally on trees) always in association with bryophytes and/or other lichens, their populations are intimately linked with the cyclical nature of bryophyte dynamics'. The *Bryoria* species at Black-a-tor Copse do appear to be very closely linked to a particular stage in the bryophyte community succession, especially on boulders, typified by the moss *Dicranum scoparium* and the liverwort *Scapania gracilis*.

The mosses *Isothecium myosuroides* and *Rhytidiadelphus loreus* are frequent associates becoming dominant to the exclusion of other, presumably less competitive species of bryophyte and lichen including *Bryoria* species. By the time these species become dominant the *Bryoria* appears to have been lost.

Figure 2. *Bryoria bicolor* with typical associates on a boulder

The '*Bryoria* stage' on rocks appears to be a mid succession stage in terms of the bryophyte communities, Figure 2 shows a typical example, and in broad terms the apparent stages are shown in Figure 3.

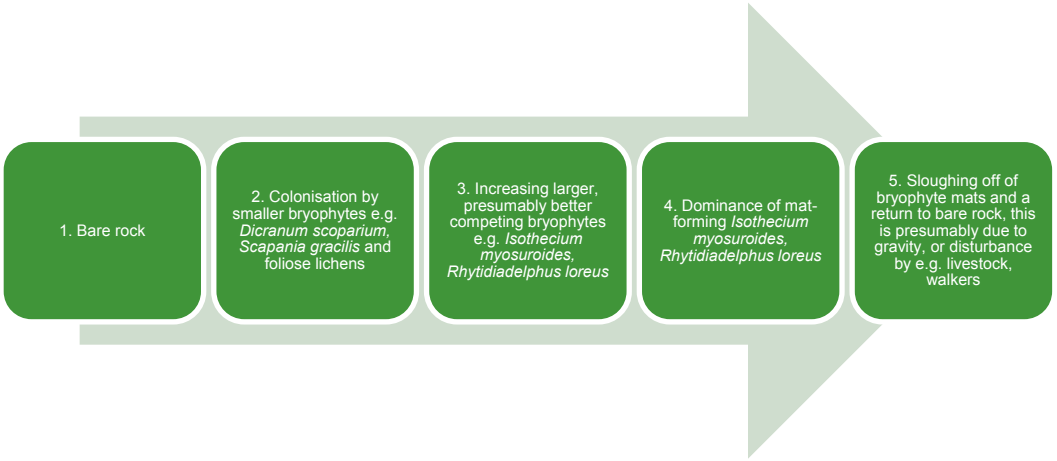

Figure 3. The apparent stages of bryophyte and lichen succession on rocks at Black-a-tor Copse, the '*Bryoria* stage' seems to be at stages 2 and 3

The speed at which loss and recolonisation can take place was surprising. An example is 'Boulder 1' which in 2003 supported a large population of *B. bicolor*, indicated by white tags in Figure 4 which had completely disappeared by 2010 (Figure 5). However by 2016, it had been recolonised by *B. bicolor* associated with an enlarging patch of bryophytes and *Hypotrachyna laevigata* (Figure 6).

Figure 4. March 2003: Boulder 1, with white tags indicate patches of *B. bicolor* (photo Coppins & Coppins 2003)

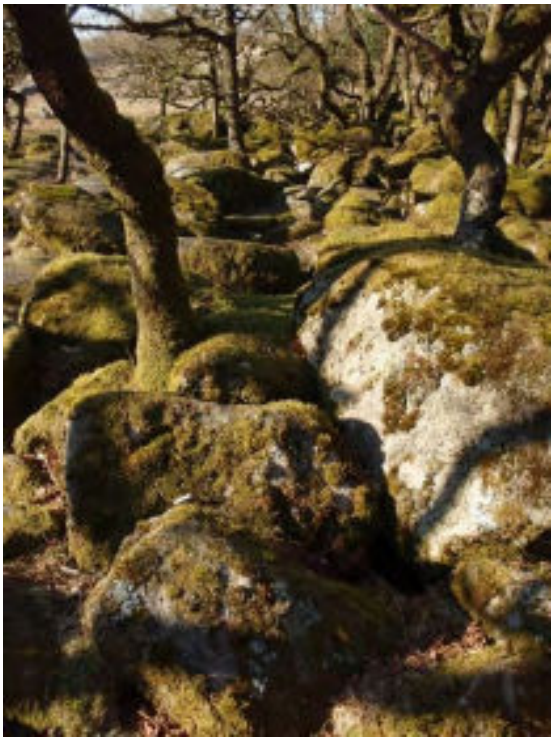

Figure 5. March 2010: The same view, showing how the vegetation on the sloping face of Boulder 1 has sloughed away, taking all the tufts of *B. bicolor* with the mosses and other lichens. A single small tuft of *B. bicolor* remaining on an adjacent boulder is indicated by the white tag. The huge reduction in incidences of *B. bicolor* is immediately apparent (photo Coppins & Coppins 2010)

Figure 6. September 2016: The same view, showing further change in the community of lichens and bryophytes on Boulder 1 which has been recolonised by e.g. *Hypotrachyna laevigata* as well as by 2 tufts of *B. bicolor* (indicated with green tags). Change is also apparent on Boulder 1b with a loss of cover in the centre. 2 tufts of *B. bicolor* were recorded on the left hand edge of Boulder 1b indicated by the green tags.

On trees, the process seems similar, but is perhaps less clear. Indeed populations on trees seem a little more static, or at least less dynamic. Whilst there are some examples of losses of *Bryoria bicolor* apparently due to increasing *Isothecium myosuroides* since 2003 (see Figure 7) the largest tufts of *B. bicolor* recorded on the site were on trees rather than rock (see Figure 8).

Figure 7 Change in community of lichen on a tree limb

March 2003: detail of the tuft of *B. bicolor* on the upper side of a crook in the sinuous branch extending horizontally off from the leaning trunk.

September 2016: where the tuft of *B bicolor* was located in 2003. It is no longer present. A change in cover is apparent with a near dominance of *Isothecium myosuroides* by 2016, together with loss of foliose lichens from the upper side of the branch. *Hypogymnia physodes,* on the lower left side, may be a new arrival since 2003.

Figure 8. One of the largest patches of *Bryoria* recorded at Black-a-tor Copse in 2016; *B. bicolor* on an oak limb in Location 1 (Tree 4). To give an idea of scale the white tags are 10cm long with about 8cm visible.

Summary and what next?

Whilst *Bryoria bicolor* remains a frequent component of the Black-a-tor Copse lichen flora, the other two species retain a tenuous toe-hold. This is particularly worrying in the case of *Bryoria smithii* given this is its only extant British site. However, monitoring such as this is helping us to understand the trends and dynamics of the populations and to learn more about the ecology of these species at the site, which will only put us in a stronger position when it comes to conservation management. The work continues in 2017, focussed on further monitoring and searches of little visited parts of the wood, and we are also continuing to consider other factors that may be influencing these populations e.g. woodland dynamics, grazing, human disturbance, collecting. Above all, this work demonstrates the value of establishing and undertaking monitoring, something which is worryingly becoming increasingly difficult to fund.

Acknowledgements

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Lichens at Lesnes Abbey and Abbey Woods, Kent

Summary

A full day was spent exploring the site with a focus on the abbey ruins. 112 taxa were recorded in total, of which 18 are listed by Woods & Coppins (2012) as Nationally Scarce and 2 Nationally Rare. This apparently large number of scarce and rare taxa is largely due to most of those taxa being much under-recorded.

All except two of the lichens (*Leprocaulon calcicola* and *Stereocaulon nanodes*) are frequently recorded during detailed lichen surveys in Eastern England. *Leptorhaphis maggiana*, a diminutive bark fungus which is usually recorded by lichenologists rather than mycologists, is also infrequently encountered in the East and is new to VC 16 (West Kent).

The authors can provide a full list of lichens recorded.

Management

The conservation priority at the Lesnes Abbey site (as far as lichens are concerned) is the abbey ruins. These support a good range of lichens typical of old calcareous walls along with some interesting communities on the occasional sandstone blocks in the structure. The management of the ruins is probably close to ideal for the lichen interest. The lack of herbaceous vegetation adjacent to the wall (due to a shallow earth trench kept clear by herbicide) is advantageous in a way that might not be appreciated by the layman. Lichens are constantly under browsing pressure from molluscs (which seek out algae, including those which are included in the structure of lichens). Most lichens can survive mild to moderate mollusc browsing, but they are more poorly developed, and probably less diverse, when browsing is moderate to severe. If rank herbaceous vegetation grew against the walls of the ruins, it would be expected that the lichen communities would be depleted. The effect of herbicides on lichens is poorly known so it would be prudent not to allow too much spray to drift on to the stones themselves. A certain amount of abrasion due to visitors brushing against and climbing upon the walls is almost inevitable and is not likely to be causing significant damage to the lichens. One of the largest threats to the lichen communities will be the periodic requirement for restoration. If this is done sensitively then a good balance can be struck between preserving the structure and retaining the lichen diversity. It is important that large areas of the ruins are not repointed in one phase since some of the diversity is associated with weathered mortar in joints.

The small area of heathland and the chalk and fossil pits in Abbey Woods are all rather disappointing as far as lichens are concerned. The heathland, like much of this habitat in lowland England, has become dominated by herbaceous vegetation between the heather. The chalk pit has some impressive exposed roots and large tree trunks growing on steep banks. These provide habitat for several interesting lichens such as *Opegrapha ochrocheila*, *Porina byssophila* and *Strigula taylorii*. No specific management is required but if ivy starts to encroach on the trunks and exposed roots of the largest trees in the chalk pit this should be removed. While ivy provides benefits

for a wide variety of wildlife, it seems to be increasing in abundance and lichens cannot survive in its dense shade.

The Abbey ruins

Fifty-three taxa were recorded from the walls of the ruined abbey buildings. In comparison, this number would be a good, but not exceptional total for a typical old church building. All sections of wall are important, providing a significant surface area for the growth of lichens. Certain sections, and even some individual stones, are hotspots but the management recommendations are the same for all parts.

Figure 1. North-facing wall of the north aisle.

Figure 2 (below). Sketch of wall shown in Figure 1. The repointing appears to have been undertaken in a piecemeal manner which is ideal for maintaining the diversity of lichens. Some lichens require weathered mortar courses and hence if large sections of wall are repointed at one time the continuity of this important habitat is lost. The shallow trench kept clear of vegetation adjacent to the base of the wall is advantageous in reducing the browsing-pressure on the lichen communities by molluscs.

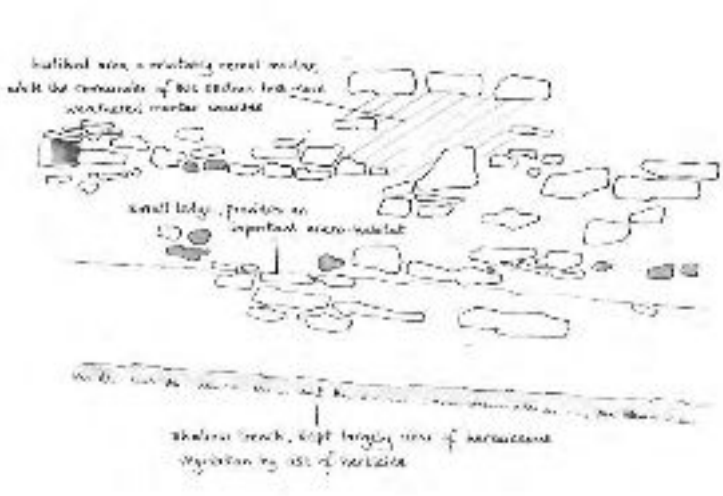

Figure 3. Just above centre in this image is a particularly interesting stone. It is in the upper course with an exposed horizontal surface, two stones to the right of the notebook. This stone, in contrast to most of the stones in the ruins, is a type of sandstone and has a distinctive community of lichens, including a large colony of *Stereocaulon nanodes*.

Leprocaulon calcicola

Orange *et al*. (2017) formally described this species as new to science, and was first recognized on the Roman walls at Colchester. It is known from only a limited number of other sites and its known world distribution is restricted to south-east England.

Figure 4. *Leprocaulon calcicola*, a bluish-green powdery lichen which grows on decaying moss in mortar courses. Described as new to science in May 2017 (Orange *et al*. 2017), *L. calcicola* is known only from Essex, Norfolk, Suffolk, Sussex and now from West Kent (as far as is known it is endemic to south-east England). It is generally found on walls of some antiquity, including the Roman walls at Colchester and on various old churches.

L. calcicola grows in mortar courses, sometimes directly on the mortar itself but more commonly overgrowing mosses. Occasionally it grows directly on the surfaces of building stones but only where it has encroached onto such stones from its typical mortar course habitat. Recently repointed mortar courses are not a suitable habitat for *L. calcicola*; this lichen is dependent on the development of weathered and mossy mortar courses for its establishment. It is important to note that repointing temporarily destroys the habitat for this species. The more extensive and complete the repointing of the walls, the greater the risk of depleting the population of *L. calcicola* and its associated community.

Orange *et al.* (2017) recorded the spot reactions of *L. calcicola* (K-, C-, KC+ yellow, Pd-) as investigated by using an acetone extract on filter paper. Subsequent fieldwork has shown that the KC+ yellow reaction due to usnic acid can be detected in the field by swabbing a spot of K from the lichen onto a white tissue and adding C to the tissue. Orange *et al.* describe the photobiont of *L. calcicola* as "a green alga, cells spherical, 8-15 µm diam., sometimes divided into autospores." We have investigated the photobiont by careful microscopy and find that distinctive haustoria are present. Such haustoria are not seen in look-alike *Lepraria* species (such as *L. lobificans* and *L. incana*) but are reminiscent of those in *Halecania viridescens*. Lendemer & Hodkinson (2013) used molecular phylogenetic analysis to redefine the genus *Leprocaulon*. In its revised sense *Leprocaulon* was placed in a new family *Leprocaulaceae* and order *Leprocaulales*, sister to the *Caliciales*, and including *Halecania*. Is the similarity of haustoria that we have observed in *Leprocaulon* and *Halecania* simple coincidence, or a character belying their relationship and observable with a simple microscope?

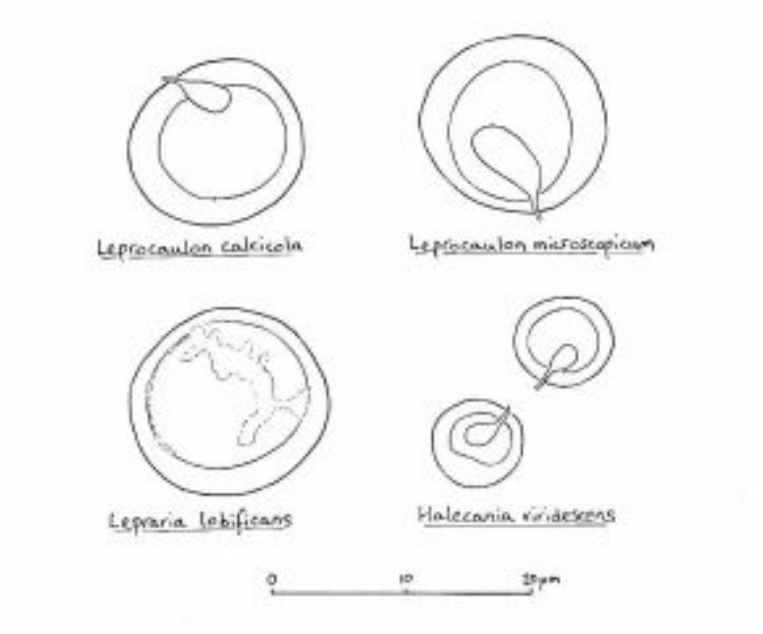

Figure 5. Algal-fungal interactions in four lichen species. The algal cells are shown with their chloroplasts. The similarity between the haustoria in the *Leprocaulon* species and in *Halecania viridescens* is striking. No such haustoria are observed in *Lepraria lobificans*. The vague structure shown on the chloroplast of *L. lobificans* is an area which becomes stained and may be an internal interaction between the hyphae and the algal chloroplast.

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A Summary of The New Forest Heathland Lichen Survey 2011–2015

Introduction

The start of The New Forest Heathland Lichen Survey 2011–2015 was described by Sanderson (2011) as "the dizzying beginning of a steep learning curve produced by trying to identify every lichen seen in 6000 10x10 cm quadrat cells placed in randomly sampled 1ha heathland plots in the New Forest." The survey started as a contract to aid Pat Wolseley and Holger Thüs in recording lichens as part of the Natural History Museum's New Forest Quantitative Inventory (NFQI) survey. This was carried out by random sampling using the method described by Scheidegger et al (2002). These included 25 one hectare plots in heath and grassland habitats.

The quantitative inventory work on the heathlands stimulated a much wider survey of the New Forest heathland lichens by 1 km grid squares, run on a voluntary basis by Neil Sanderson. This aimed to survey systematically at least 33% of the heathland of the New Forest grazings using 1 km national grid squares and was aided by many volunteers. The grid squares were selected to be representative of the range of heathland habitats, to complement the more limited random sampling by the NFQI. The fieldwork finished in 2015 after 100 1 km squares had been surveyed. A write-up was then funded by Natural England, the Forestry Commission and the National Trust to allow the data to be digitised and analyses presented. This has now been published as Natural England Joint Publication JP020 (Sanderson, 2017) – see *http://publications.naturalengland.org.uk/publication/6223067854929920*.

Great Witch, east of Ogden's Purlieu (SU1912). A lichen rich old hollow way, with *Cladonia zopfii* and *Cladonia subcervicornis*. The heath here is within the burning cycle, but the open vegetation on the hollow way side is probably a partial fire refuge.

The Results of the New Forest Quantitative Inventory

Species diversity data from the NFQI quadrats were tested against environmental variables, including the date of last burning from the Forest Enterprise GIS system, using Student T-Tests. A range of heathland habitats was also compared (a separate full analysis using the species data has yet to be carried out). The results were interesting, pointing to the major factors influencing lichen diversity in the New Forest heathlands. The non-random wider survey, however, found far more species and emphasised the importance of smaller scale habitats not sampled by the randomly placed plots.

The diversity data from the NFQI quadrats indicated that the dry heaths were significantly richer ($p < 0.01$) than all other main vegetation types sampled (Wet Heath, Acid Grassland and Wet lawn), which were all generally species-poor habitats for lichens. Within the dry heaths, those with high Bristle Bent *Agrostis curtisii* cover were less lichen-rich than dry heaths with low grass cover, but the difference was only weakly significant in statistical terms ($p < 0.1$).

The environmental variables tested against the NFQI quadrat diversity data were burning history, sward height and browsing level. Burning history was divided into classes: i) unburnable (NB) – areas of short sward maintained by long-established grazing, ii) not burned for more than 20 years (>20) – areas of taller heath and iii) areas subjected to controlled burning within the last 20 years (1 – 19). This last was further divided into one to nine year old burns (1 – 9) and 10 to 19 year old burns (10 – 19). Within the controlled burns, the older (10 – 19) heaths showed lower species diversity scores than the younger burns (1 – 9) but this difference was not significant. Within the wider survey, very large differences in diversity were clearly evident in the field that were confirmed by the highly significant ($p < 0.01$) differences found between the

diversity scores of the different ages of heaths. The unburnable short grazed heaths were the richest at quadrat level. Quadrats in controlled burn areas younger than 20 years were less rich at quadrat level than the unburnable short grazed heaths, but were much richer than the burnable heath over 20 years old. These were extremely species poor and impoverished, indicating a rapid drop off in lichen diversity more than 20 years after a burn.

Sward height in the quadrats was recorded in three classes: short, medium, and tall. The average species diversity of each sward height class was significantly different ($p < 0.01$ or $p < 0.05$). The short swards were richest, with the medium height sward about half as rich, and the tallest swards very species poor. The short swards occurred on the unburnable short grazed heaths and recently burned pioneer stands, while the medium height swards occurred on mainly older 'controlled burn' stands. The tall stands were either unburned stands over 20 years old or older burn sites over 10 years old in lightly browsed areas. Increasing sward height clearly caused both decreasing light levels on the ground and an increasing build-up of loose litter covering hard humus, both of which reduced lichen diversity.

The records of this species at Ogden's Purlieu were the first for the New Forest and England since 1911. Ogden's Purlieu (SU1812), a patch of *Cladonia zopfii* in an open area within ancient short browsed humid heath/wet heath transition.

Browsing intensity was defined in three classes: low, medium, and heavy. The heavily browsed heather stands were the richest and significantly richer ($p < 0.01$) than either medium or low browsed stands. The low browsed areas were on average poorer (using the diversity scores) than medium browsed areas, but this was not a significant difference. The low browsed areas were not nearly as species poor as either long unburned stands or very tall stands. This demonstrates that even in areas of low browsing intensity, burning can open up the heather stands to allow colonisation by lichens. Heavy browsing produces very open short swards which significantly increases the diversity of the lichen assemblage in contrast to the more lightly browsed areas.

The primary factors driving diversity appeared to be higher light levels and the availability of open hard black humus. Taller and older swards shaded the ground and a build-up of loose litter and fibrous brown humus covered the hard humus, all of which reduced lichen diversity. At a landscape scale, controlled burning and varying levels of grazing pressure maintained light levels at ground level and suitable humus, allowing diverse lichen communities to survive.

There were clear differences between the lichen assemblages of the two main lichen-rich habitats: unburnable short-grazed areas, and areas subjected to controlled burning within the last 20 years (1 – 19), which will be explored by further analysis of the species data. The short grazed heaths had extensive areas of dominance by more robust lichens, especial Reindeer Mosses and *Cetraria* species, but with a more limited assemblage of species. These included some fire sensitive species that were rare beyond these fire refuges, particularly *Cladonia arbuscula*. The 'controlled burn' areas had much more patchy occurrence of lichens, hence were less rich at quadrat level but at a wider scale the assemblage was more diverse. These areas also supported greater numbers of small lichen species, including some species that appeared strongly fire- and disturbance-dependant such as *Cladonia callosa*, *Cladonia strepsilis* and *Pycnothelia papillaria*. Small fire refuges, such as path sides and patches of thin vegetation within the 'controlled burn' heaths allowed the survival of some moderately fire sensitive species, such as *Cetraria aculeata*, *Cladonia ciliata* and *Cladonia uncialis.*

Cadnam Common west (SU2815). Typical old short grazed heath with a mixed population of *Cladonia arbuscula* and *Cladonia ciliata* var. *ciliata*, with the common moss *Dicranum scoparium* and heathers.

The Forest Wide Survey

The 1km square survey recorded many more species than the random plots. A total of 161 taxa were recorded from the New Forest heathlands between 2011 and 2015, up from the previous total of 82. These were species recorded growing on the ground, on stones or epiphytically on heathers. Of the taxa, 30 were totally or largely confined to lumps of concrete, limestone and brick, or moss growing upon these substrates. Natural pebbles supported 16 taxa and 99 were recorded on the ground. Remarkably high numbers of species of conservation interest were found during the survey; many were quite unexpected species. These included: *Cladonia mediterranea*, *Cladonia borealis*, *Cladonia callosa*, *Cladonia subcervicornis*, *Cladonia grayi* s. str., *Cladonia phyllophora*, *Cladonia sulphurina*, *Micarea leprosula* and *Micarea xanthonica*. Some species not seen for decades were found including *Cladonia zopfii* and *Leptogium palmatum*.

A comparison with old records, mostly from the 1990s, showed no evidence of any significant loss of heathland lichen diversity from the New Forest. Species that are declining in the English lowlands beyond the New Forest, were found to be still frequent, with *Cladonia strepsilis* recorded in 84% of systematically surveyed 1km grid squares and *Pycnothelia papillaria* in 89%.

Within the landscape, lichen richness in heaths could be related to inherent soil fertility. For example, more fertile heathland soils occurred on level river gravel terraces with a high proportion of loess (brick earth) but were generally lichen poor. In contrast, lichen rich heaths were typically either found on eroded river gravel terrace edges or the rolling terrain produced by the complete erosion of the terraces to expose the underlying infertile Tertiary sands and clays.

Plaitford common (SU2718). Extensive short browsed lichen rich heath, part of the largest area of this habitat in the New Forest. Here with a high cover of Reindeer Mosses in humid dry heath. Shallow hollow ways from a medieval track system cut through the heath here have more exposed humus that provides niches for smaller lichens.

Localised Lichen Rich Habitats

As well as the major lichen habitats of longstanding short grazed heath and open patches in the heaths within the burn rotations, the widescale survey recorded less extensive special habitats missed by the random sampling. The most important of these were disturbed areas, where bare soil or banks were produced in the past. Many heathland species are most frequent in this habitat, or are confined to it. The disturbance can have very long lasting effects; Bronze Age barrows can have very rich assemblages on well-lit steep sides. The lichen assemblage of banks is distinguished by a high frequency of Heathtails and Pixie Cups (*Cladonia* spp.) compared to stable surfaces, along with the typical smaller species of the undisturbed heaths. Characteristic specialists of the habitat included *Cladonia callosa* and *Cladonia subcervicornis*, while *Cladonia zopfii,* a Nationally Scarce species, had its only occurrences in dry heath in disturbed areas.

The types of disturbance that create lichen rich habitats are varied. Natural disturbance includes slumping banks above mire springlines and rabbit holes. Manmade sources of disturbance include prehistoric tumuli, medieval hollow ways, early modern and modern gravel pits, ground disturbance and construction during WWII and widespread recent track and path erosion. The scale of past disturbance was at times far higher than anything occurring now. The continual development of paths and tracks today is, however, important in providing fresh exposures for early pioneer species.

The side of an old hollow way, dominated by two species found new to the New Forest during this survey. The upper brown lichen is *Cladonia callosa*, formerly thought to be an exclusively upland species in Britain, and the pale lichen below is dry *Cladonia subcervicornis*, with very few previous lowland records.

Wet heaths were generally poor in lichens. At a local level, however, a very specialised version of the 'controlled burn' heath lichen assemblage was found in the transition from wet humid dry heath into wet heath. *Cladonia zopfii* had a major proportion of its population in this habitat and some burn sensitive species such as *Cladonia arbuscula* can survive in burned wet heath but not in the drier burned heaths.

Holm Hill (SU2502) (Wessex Lichen Group meeting). A close up of recently mown heath, showing surviving weft mosses (*Hypnum jutlandicum*) and loose brown fibrous humus. This is a poor environment for lichen regeneration.

Other more minor habitats of interest included disturbed grasslands. Some were heavily impacted by major WWII construction, especially airfield runways, and their subsequent removal. The assemblage included some uncommon species, where broken concrete had raised the soil pH, including *Agonimia globulifera*, *Cladonia cariosa* and *Leptogium tenuissimum*. More acid disturbed soils supported the largest known lowland population of *Leptogium palmatum*.

The survey also covered two ungrazed heaths, which provided a useful contrast with the grazed heathland of the open Forest. In both, thick thatches of Moorgrass (*Molinia*) litter or dense closed heather canopies were suppressing lichen diversity. Lichen interest was limited and confined to recently disturbed or burned areas.

White Moor, north east of Boltons Bench (SU3108). A lichen rich glade in mature control-burned heath, *Cetraria muricata*, a moderately fire sensitive species surviving in a typical small fire refuge.

Air Pollution

Work in the Netherlands has shown that ammonia pollution is a severe threat to lichen-rich heaths and acid dunes. The main effect is greatly increased cover by the invasive non-native moss *Campylopus introflexus*. In the Netherlands, local dominance of *Campylopus introflexus* was found to occur at or above atmospheric ammonia concentrations of 7 µg NH_3 m^3 (Sparrius, 2011). Modelled atmospheric ammonia concentrations in the New Forest range from 0.72 µg NH_3 m^3, in the centre, to 1.51 µg NH_3 m^3 on the edges (*http://www.apis.ac.uk*).

In the New Forest *Campylopus introflexus* was found to be widespread but the very vigorous tall growth form that displaces lichen diversity was very rare and associated with hot wildfire sites. It seems at current levels, nitrogen pollution is not a major factor driving lichen diversity within the New Forest. Inherent environmental factors and habitat management are more important.

Comparison with other English Heathlands

There have been few systematic surveys of lichens on British heathlands, but some comparable site data was available from the Dorset Heaths (B. Edwards, pers. comm.). The robust Reindeer Moss *Cladonia portentosa* has a similar frequency in both Dorset and the New Forest. Otherwise there are marked differences, with all but one species less frequent in Dorset. These data suggest that currently at a site/1km square scale the New Forest may be twice as diverse as the Dorset heathlands. Limited observations in other parts of the country suggest that sites may be even poorer than the Dorset Heaths. This is especially so with damper and wet heaths. Beyond the Forest, lichen rich communities on very dry sands survive much better but lack many of the specialist species of damper heaths.

Comparison with Continental Europe

At European level, the well studied heathlands of the Netherlands and the north European plain have lichen assemblages that are similar to lowland England. Many species that still have strong populations in the New Forest, however, are red listed or extinct in the Netherlands. For example, *Pycnothelia papillaria* was a fairly common species in the Netherlands' heathlands until the 1970s but was thought extinct until refound at a single site in 2006 (Haveman & Ronde, 2013). This hard humus specialist is still abundant in the New Forest but is seriously declining throughout the north European plain from Belgium to Latvia. Specialists of hard humus were noted by Sparrius (2011) as particularly threatened in the Netherlands, illustrating the stark contrast in fortunes between the New Forest and the continental lowland heaths.

Conclusions

The survey demonstrated that exceptionally rich, and internationally important, lichen assemblages survive in the New Forest heaths. These were shown to be highly dependent on the continuity of the heathland disturbance regimes, through extensive traditional management by varying combinations of grazing by commoners stock, and controlled burning combined with localised soil disturbance. In other parts of lowland England, limited information indicates that the heathlands have poorer and declining lichen assemblages. The presence of controlled burning and very extensive grazing with marked variations in grazing intensity were thought to be the main factors absent from heaths beyond the New Forest that were promoting lichen diversity on the Forest heathlands.

Without the example of the New Forest it would be difficult to realise the extent to which high lichen diversity was dependent on aspects of extensive traditional management not generally reproduced in typical modern conservation heathland management. The results of this survey should help improve advice on heathland management to help conserve and restore lichen diversity in other lowland heaths.

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An investigation into the lichen-flora of three limestone dry-stone walls of different age

Introduction

Part of the British Lichen Society Limestone Workshop which ran in May 2017 was to investigate three sections of dry-stone wall at Lower Winskill near Settle, in the Craven district of North Yorkshire. Although walls are a popular substrate for examination by lichenologists and are often the principal rocky habitat in lowland Britain, there have been few systematic studies in relation to their age, aspect, construction and fabric. The ecology of walls is well summarised by Darlington (1981) who made reference to lichens as some of the early colonisers. Other ecological studies of walls make little or no reference to lichens, e.g. West (1911), Rishbeth (1948), Woodell & Rossiter (1959), Kent (1961) and Payne (1989). More recently, Presland (2007) has drawn attention to the importance of lichens as pioneers of limestone dry-stone walls and listed four common taxa. Walls are an enduring and importantcomponent of the British landscape and in some regions where natural rock exposures are rare, they provide a major habitat for saxicolous bryophytes, lichens and invertebrates.

Lichens and bryophytes are often well represented on walls. This is due in part to the paucity of soil, reducing competition from flowering plants. As a result a large number of bryophytes and lichens occur upon them. Some have high conservation status. For example, the moss *Zygodon gracilis* is more or less confined to limestone walls in the Craven district of Yorkshire (Porley & Hodgetts, 2005).

The principal aim of this study was to test the hypothesis that as these walls age, their lichen flora will change and the diversity increase. This is known to occur on tree bark and is a consequence of the increasing amount of time available for colonisation and physical-chemical changes that occur on the surface resulting from exposure to the atmosphere. If such an hypothesis is accepted, historians may be able to make use of this information to help date walls. We were also interested to see how the wall flora compares with an adjacent limestone outcrop and to discover whether a group-exercise could be effective in this type of investigation. As a pilot study we hoped to gain experience in the planning and analysis of wall lichen floras as this could lead to a more detailed and informative project.

Methods

Three walls of different construction age but similar aspect and height were chosen for this study. They were selected by Tom Lord, a wall expert who has farmed Lower Winskill for many years. All of the sites were clear of trees and other tall vegetation, with the walls forming boundaries to upland grazing meadows. Details are provided in Figures 1-4 and Table 1.

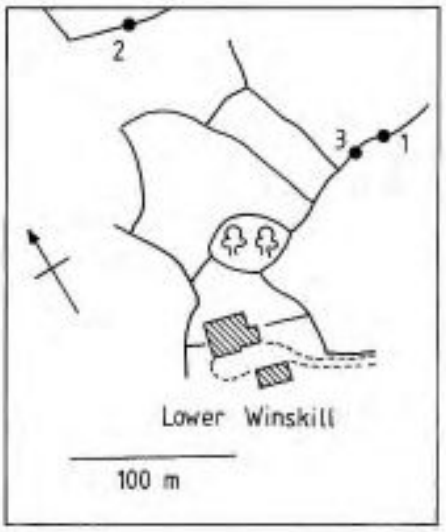

Figure 1. Plan of Lower Winskill showing wall sampling locations

Segal (1969) divided walls into four zones: base, middle level, upper level and wall top. For our study we focused on the middle to upper level to avoid complications relating to soil flora and bryophyte creep from the wall base and the influence of bird excreta on the wall top. A series of six adjacent 1m^2 quadrats were marked out in chalk centred on the mid-height of the wall. Each recorder was assigned one of the quadrats but recorders cross-checked their results with other recorders to help maintain consistency using presence-absence criteria. An exhaustive study of the walls was undertaken, with each 1 m^2 taking up to an hour to examine thoroughly, by 18 lichenologists. Bryophytes and lichen parasites were also recorded but these were not used in the data analysis unless stated. A slight complication arose owing to the inclusion of a few sandstone blocks in the wall. These had a markedly different flora to the limestone and to avoid complication they were recorded and analysed separately. In addition, one of us (BJC) examined a limestone outcrop adjacent to wall 1 for comparison.

Figure 2. Wall 1 with adjacent limestone outcrops

Figure 3. Wall 2

Figure 4. Wall 3. Note the large slabs set on edge at the base of the wall, a characteristic of medieval dry-stone walls (Lord, 2004).

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In order to assess changes in the wall cryptogam flora as these walls age, percentage dissimilarity was calculated for the three combinations of wall flora (wall 1 vs wall 2; 1 vs 3 and 2 vs 3) using the limestone bryophytes and lichens but excluding the sandstone (Table 1). From these, a simple Bray-Curtis ordination was constructed using presence-absence data converted to frequency (Bray & Curtis, 1957; Gauch, 1982). For the limestone bryophytes and lichens, Shannon-Wiener diversity indices were calculated and consecutive species-area curves constructed.

Table 1. Wall characters

No.	Est. age	Wall type	Grid ref. SD/	Altitude m	Average wall height m	Average wall thickness m	Wall slope degrees	Aspect degrees	Average stone size cm	% non-lime-stone
1	18-19 C	Narrow top	82782 66658	305	1.5	0.55	85	150	20	5-8
2	16 C	Narrow top	82653 66728	300	1.1	0.5	80	170	20	5
3	Late medieval 13C	Wide top double	82779 66590	312	1.6	0.65	85-90	144	25	<5

Results and discussion

The walls can be seen to be similar in overall form but differing in their age of construction. A summary of the species numbers occurring on the walls can be found in Table 2. Here it is evident that the walls differ little in their total species number, with the possible exception of wall 1 which possesses a large number of lichen species on the sandstone blocks. Bryophytes and lichen parasites contribute little to the species totals.

Table 2. Species totals for the walls (6 m^2 of wall in all cases)

Wall number	Limestone lichens	Limestone lichen parasites	Limestone bryophytes	Total limestone cryptogams	Total Sandstone cryptogams (all lichens)	All taxa
1	34	4	3	41	22	63
2	38	1	3	42	10	52
3	33	0	4	37	4	41

The nine most abundant lichen taxa occurring on the walls are listed in Table 3. They contain many familiar limestone lichens but include several taxa, e.g. *Belonia nidarosiensis* and *Acrocordia conoidea* that are normally associated with north-facing walls. Their occurrence here is probably associated with deep crevices.

Table 3. The nine most abundant lichen taxa.

Species	Number of records
Aspicilia calcarea	18
Verrucaria baldensis	18
Verrucaria nigrescens	18
Belonia nidarosiensis	17
Caloplaca flavescens	17
Acrocordia conoidea	15
Caloplaca dichroa	15
Lecanora albescens	13
Protoblastenia rupestris	13

Shannon-Wiener diversity indices for the lichens of walls 1, 2 and 3 were respectively 3.33, 3.45 and 3.41 and the walls therefore differ little in this respect.

The dissimilarity coefficients for the three wall combinations were: 1 and 2; 34.2%; 1 and 3; 39.7%, 2 and 3; 38.7%. Again the differences are slight although a Bray-Curtis plot placed the walls in order of their age, i.e. 1,2,3. Little credence can be given to this order owing to the small sample size. Chance alone gives a probability of occurrence of 33%. Species-area curves (Fig. 5) show that for all walls, a $1m^2$ plot includes about half of the species found on the full $6m^2$ studied. The slope of the line suggests that increasing the area further would include even more taxa.

Regular trends in the occurrence of species on the three walls were few. Species showing increasing frequency with age were *Caloplaca dichroa*, *Catillaria lenticularis*, *Clauzadea immersa*, *Hymenelia prevostii* and *Lecanora dispersa*. Decreasing trends were shown by *Porina linearis*, *Protoblastenia incrustans* and *Thelidium decipiens*. Most of these trends with the possible exception of *Catillaria lenticularis*, *Protoblastenia incrustans* and *Thelidium decipiens* were weak.

Patterns were also sought among the lichens by classifying the species according to their phycobiont, their morphology and their ascocarp type and the results are presented in Table 4. These data are presented as frequency of occurrence (the number of times each recorder listed the species on each of the walls).

It can be seen that cyanolichens are in a minority compared with chlorolichens and there is no trend with wall age. Foliose/placodioid species were also in a minority compared with crustose forms but more abundant on wall 3. Endoliths as opposed to epiliths were a small but constant component while pyrenolichens, also a minority were more frequent on the oldest wall 3. The above figures are close to the percentage occurrence of these types since the total number of observations of lichens on each of these walls was close to 100.

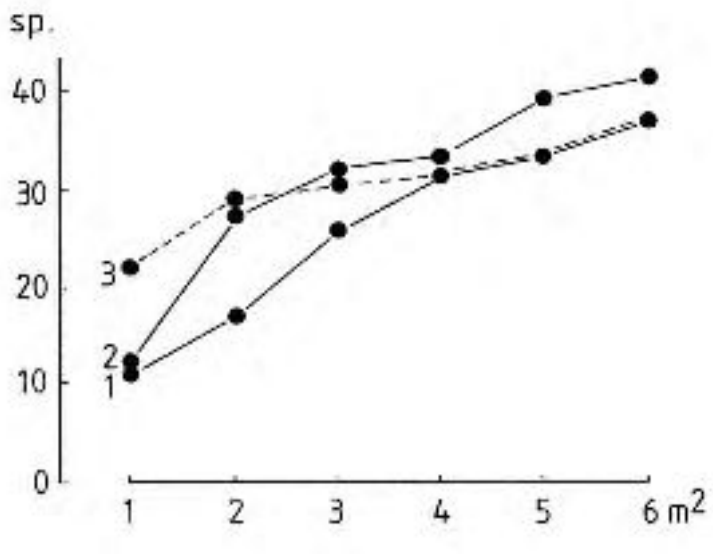

Figure 5. Species-area curves for limestone lichens plus bryophytes on the three walls.

Table 4. Frequency of occurrence of lichen types on the three walls. These values are also close to the percentage occurrence of the types on the walls.

Lichen types	Wall 1	2	3
Cyanolichens	1	5	1
Foliose/placodioid	12	13	20
Endoliths	20	20	21
Pyrenocarps	12	13	20

An adjacent limestone outcrop near Wall 1 had 35 lichen taxa in common with the walls (61% of the total wall lichen flora) plus an additional thirteen species that were not recorded from them: *Bacidia fuscoviridis*, *Caloplaca chalybeia*, *C. marmorata*, *C. oasis*, *Cladonia pocillum*, *Clauzadea monticola*, *Collema cristatum* var. *marginale*, *Farnoldia jurana*, *Lecanora semipallida*, *Merismatium deminutum*, *M. discrepans*, *Staurothele caesia* and *Toninia verrucarioides*. Some of these taxa such as *Farnoldia jurana* and *Lecanora semipallida* are not common wall species in the Dales, while *Cladonia pocillum* tends to grow on wall-top bryophytes. The outcrop was also close to the ground and had an easterly aspect.

Numerous factors will affect the cryptogam flora of walls. For example, aspect will determine the level of solar radiation, exposure to wind and precipitation while wall thickness will influence its heat-capacity and wall height will affect air flow (Darlington, 1981).

One problem with using walls for studies of colonisation and succession is their potential instability. Poorly constructed dry-stone walls may have a limited life and need extensive repair which could reduce estimations of their age and invalidate any conclusions. Our walls however were well-constructed and are unlikely to have undergone extensive repair so we believe that our conclusions are justified. However, when originally constructed, some of the stones used to build them may have already been colonised by lichens and this needs to be borne in mind.

We deliberately chose the southern aspect of our walls and ignored the wall top to simplify the study. Had we chosen an entire strip of wall including the top and the north-facing side we would have almost certainly included further taxa and perhaps altered our conclusions. Studies of entire walls should prove rewarding but would need more time to undertake. The species present on the three walls are listed in Table 5.

Conclusions

1. The cryptogam flora of three south-facing dry-stone walls was dominated by lichens.
2. There was little difference in the flora of the walls dated between 200 and 800 years old. Therefore, a reasonably mature and stable flora must have developed over a period of less than 200 years.
3. A few species showed increasing or decreasing trends in frequency with wall age and some of these merit further investigation. Foliose/placodioid lichens and pyrenolichens were also more frequent on the oldest wall.
4. The methods employed proved to be effective providing a useful group exercise.

Further work

We were not able to give much support to our hypothesis that a progressive change in the lichen flora and diversity occurs as these walls age. Our walls must have been too old to demonstrate this although it should be noted that they were exposed on a fell-side at 300m altitude. Younger dry-stone walls therefore need to be subjected to a similar investigation. Studies of other aspects and wall-tops are also needed.

Acknowledgements.

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A remarkable *Orthoptera*, lichen mimic from Ecuador

Whilst on a botanical holiday in Ecuador, led by Gustavo Caňas-Valle, we visited the Cerro Toledo, a mountain range near Vilcabamba in southern Ecuador which is near the border with Peru. On our way down from exploring the summit ridges we stopped to botanise in an area of low scrub, on a north-facing slope at an altitude of about 2500m., the site of a former forest. A small species of tufted *Usnea* (similar in form to *Usnea subfloridana*) was frequent on the low growing shrubs. One of us (Gustavo), heard the sound of a grasshopper coming from a low bush, which apparently had a number of these tufts. His sharp eyes spied a brief movement and after much pointing he eventually convinced me that it was coming from what appeared to be a lichen. I crept around and eventually got close enough to be able to see that what appeared to be a tuft of *Usnea,* was in fact the grasshopper. I was able to take a number of photographs which were not easy because of the complexity of the form of the insect. It remained still until I got a little too close and it then dropped down into the undergrowth, rather than jumping as might have been expected.

A search on the internet has suggested that it is *Markia histrix* (*Orthoptera Tettigoniidae* subfamily *Phaneropterinae*), a species known from Central America (S. Mexico, Panama), Colombia and northern Ecuador. The identification has to remain

provisional as we did not collect a specimen. This appears to be the furthest south that this species has been recorded. Both the colour which is greyish and the form with its numerous processes make it a superb mimic of *Usnea*. The type, not seen, is in the collections of the Department of Zoology, University of Oxford and was described by Westwood in1844.

Cannon, (2010) gives other examples of this strategy which is a widespread phenomenon especially in the tropics.

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Peltigera didactyla, a green-roof colonizer

Introduction

Peltigera didactyla is a small cyanolichen that is usually no more than a few centimetres in diameter and forms soredia as vegetative propagules on its upper surface when young (Figure 1).

Figure 1.Thalli of *Peltigera didactyla* with soredia on the upper surface (photo: Anwar Tumur).

Apothecia later form along the margins and soredia no longer develop (Figure 2) (Goffinet & Hastings 1965). A similar species, *P. extenuata* is differentiated by its fibrillose rhizinae and the production of methyl gyrophoric and gyrophoric acids which are sometimes in sufficient quantity to give a C+ or KC+ red reaction. Both species are widely distributed in the northern hemisphere and are sometimes found together. They usually occur scattered on sandy soils that are calcareous or in disturbed eutrophicated situations and do not normally form extensive patches like, for example, *P. rufescens* (Weiss) Humb. *P. didactyla* is also found in the southern hemisphere as far south as maritime Antarctica (Lewis-Smith 2005).

Figure 2. The pale upturned reverse side of the brown apothecia on the margins of mature thalli of *Peltigera didactyla* (photo: Anwar Tumur).

The Green Roof

The Science Building at Saint Mary's University in Halifax, Nova Scotia was renovated and extended to form the Atrium. On one new section c. 15 m above ground, a 24 x 9 m green roof replaced the normal flat roof in the spring of 2010 (Figure 3). Green roofs have been shown to reduce run-off, and keep the building interior cooler in summer and warmer in winter (Thuring & Dunnett 2014).

Figure 3. The 24 m x 9 m green roof on the Atrium Building of Saint Mary's University with moveable trays of soil on the right hand (northern) side (photo: Anwar Tumur).

A commercially available growing medium for green roofs, consisting of expanded shale, perlite and compost (Soprema, Drummondville, PQ, "SopraflorX"), was applied to a depth of 7.5 cm. On installation, the substratum was relatively high in nitrate N (average >13 ppm), but at the beginning of the fourth growing season, testing

showed a decline in nitrate N to around 2 ppm. The growing medium had a buffered pH of around 7 and this was maintained until 2014.

Instead of planting the Saint Mary's University green roof with commercially available plants such as *Sedum,* as has been done at the Farmers Market and New Library in Halifax, the Atrium green roof was designed for research (Figure 3) in order to see if native Nova Scotian plant species would thrive as well as commercially available plants. In 2010, *Sibbaldiopsis tridentata* and *Danthonia spicata* were planted in the spring and early fall, but coverage remained low. By the end of 2011, the roof had >60% cover of mosses, dominated by *Ceratodon purpurea*, *Funaria hygrometrica* and *Bryum argenteum.* A clump of *Peltigera didactyla*, around 0.25m^2, was first observed in the third growing season (2012) in the centre of the roof in an area characterized by full sun, hot and dry conditions. One reason for the delay in the appearance of *P. didactyla* may be related to the high initial nitrogen levels in the substratum as studies have shown that high nitrogen reduces the probability of its occurrence (Stevens et al. 2012). It is uncertain where the soredia, ascospores or fragments of the lichen came from to initiate the *P. didactyla* population, but, while many plants of *Sibbaldiopsis tridentata* and *Danthonia spicata* were grown from seed, some were transplanted directly from an abandoned gravel road near Chebucto Head. This is quite a common habitat for *P. didactyla* and is close the Nova Scotia coastal barrens where this lichen has occasionally been seen. In the spring of 2014, the substratum was disturbed for a spatial heterogeneity experiment that involved placing dead wood on the growing medium surface in some areas and white gravel in others. For a third treatment, the substratum was altered to create mounds c. 15 cm high alternating with troughs 5 cm in depth (Walker & Lundholm 2017). Perhaps because of this disturbance, the *P. didactyla* continued to thrive and by 2016, sparse cover by the lichen had extended to all parts of the green roof. In 2017, the lichen was so conspicuous that it was decided to collect data on its abundance in case the population collapsed since *P. didactyla* it is known to be a ruderal species.

Data Collection

There are 48 plots, 180 x 180 cm in size, with narrow paths in between to allow researchers access, laid out on the green roof. Six specimens of *P. didactyla* from various parts of the roof were analysed for their lichen substances using spot tests and thin layer chromatography (TLC) with solvent G. No positive spot tests or indications of methyl gyrophoric or gyrophoric acid, using TLC, were recorded. In assessing the population of *P. didactyla* it was difficult to count individual thalli of the lichen nestled among the mosses and green plants. It was easier, but time-consuming, to count the projecting brown apothecia of *P. didactyla*. The apothecia were randomly scattered in each plot, being more abundant in the centre of some plots and more abundant on the edges of others. The number of apothecia in each plot was assessed using a 30 × 30 cm quadrat, subdivided into nine squares, that was randomly dropped into the centre of each plot.The number of apothecia on several sampled thalli of *P. didactyla* were counted and ten was the common number, so this figure was used to estimate the number of mature individuals of the lichen on the roof. The resultant data revealed that the mean number of apothecia counted in the 30 x 30 cm quadrat was 190 +/- 127 with a range

from 5 to 537. The mean figure was used with the number of apothecia per thallus to estimate the total number of mature lichen thalli on the entire green roof. The number of mature thalli on the roof was calculated as 32,854 with an overall density of 211 thalli per square metre (Table 1).

Plot Number	Number of Apothecia	Number of thalli per plot	Density /m^2	Plot Number	Number of Apothecia	Number of thalli per plot	Density /m^2
1	114	396	122	25	106	382	118
2	42	144	44	26	50	180	56
3	64	216	67	27	234	828	256
4	44	144	44	28	104	360	111
5	340	1224	378	29	41	144	44
6	112	396	122	30	169	612	189
7	108	396	122	31	266	972	300
8	338	1224	378	32	137	504	156
9	345	1260	389	33	353	1260	389
10	86	324	100	34	297	1080	333
11	90	324	100	35	97	360	111
12	131	468	144	36	531	1908	589
13	91	324	100	37	294	1044	322
14	66	252	78	38	176	648	200
15	339	1224	378	39	136	504	156
16	84	288	89	40	75	288	89
17	118	432	133	41	5	36	11
18	276	1008	311	42	259	936	289
19	253	900	278	43	283	1008	311
20	280	1008	311	44	271	972	300
21	274	972	300	45	232	828	256
22	171	612	189	46	537	1944	600
23	24	72	22	47	189	684	211
24	386	1404	433	48	96	360	111

Table 1. The number of apothecia on the Saint Mary's University green roof recorded in the 30x30cm quadrat for each of the 48 plots. In addition, the estimated number of thalli are shown for each of the 180x180cm plots and the estimated density of thalli per square metre of *P. didactyla*

Habitat and Succession

Gilbert (1990) in a study of urban wastelands in Britain found *P. didacyla* on some of his sites, and in one near Sheffield, it was frequent. He concluded that a reduction of sulphur dioxide levels in the city facilitated its colonization. Halifax, Nova Scotia, is another city where pollution levels are now relatively low as facilities have changed from oil to natural gas in the last decade. Indeed, the Public Gardens in the city centre has 53 lichen species present on the trees (Anwar & Richardson 2017). Lichens are known to grow on green roofs which are characterized by shallow substrata (<20 cm) and they have been documented on old green roofs in northern Europe where they have spontaneously colonized the surface (Köhler 2006). The first attempt to purposefully transplant lichens onto the Saint Mary's University green roof involved placing trays of soil with intact clumps of *Cladonia boryii* and *C. terranova* on the roof adjacent to the main green roof (Figure 3). A number of *Cladonia* species have colonized the green roof (Heim & Lundholm 2014). Large fruticose lichens have the potential to improve the value of green roofs via their high albedo which has the potential to contribute to energy savings by the building in summer and facilitate the survival of vascular plants by reducing water evaporation from the soil surface (Heim & Lundholm 2014).

As mentioned above, *P. didactyla* is a ruderal, an ephemeral colonist that shows rapid growth, a short life cycle, fruiting commencing at an early stage of development and subsequently death (Gilbert 1990). *P. didactyla* is known from laboratory studies to develop from a soredium into a thallus within five months (Stocker-Worgotter & Turk 1998) and under natural conditions begins to form apothecia within a year or two. One reason for the abundance of *P. didactyla* on the Saint Mary's University green roof may relate to its preference for hot bare soils including those at clear-cuts, roadsides and disturbed sites (Kantvilas & Jarman 2006; Smith et al. 2009). As can be seen from Table 1, the estimated number of thalli varied from plot to plot. They tended to be more abundant in the sunny open parts of the green roof and less common on the side shaded by the sloping Atrium roof. The associated cyanobacterium of *P. didactyla* fixes atmospheric nitrogen, and thus when growing in abundance, has the potential to enrich the underlying soil and benefit any higher plants growing nearby (Nash 2008). It remains to be seen how long the c. 30,000 thalli of *P. didactya* on the Saint Mary's University green roof will continue to thrive, but it is surely worth documenting information about the extraordinarily high population of this lichen growing on such a relatively small area.

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Hidden treasures in the Conwy Valley

A year and nine months ago I became a CENNAD lichen apprentice (or a 'Cennadeer', as Tracey Lovering the project manager affectionately refers to us). A career in nature conservation working for Countryside Council for Wales, and now Natural Resources Wales, has led me to managing woodland National Nature Reserves in North West Wales; one of which, Coedydd Aber NNR, has a SSSI epiphytic lichen assemblage. Feeling I needed to get a better grip on the identification and ecology of lichens to manage the site effectively, I had been making slow progress through self-study of lichenology. Then I caught wind of CENNAD! The Plantlife CENNAD Lichen Apprenticeship Scheme has been fantastic and has turned an interest into a bit of an obsession. The scheme has fast tracked my learning no end, and has been instrumental in developing my identification skills and my knowledge of lichen ecology. The scheme has not only been extremely beneficial in developing skills but has also been extremely enjoyable and has formed a community of developing lichenologists across Wales (let's call it the "Cennadeerion").

A brief overview of the scheme

Funded by Welsh Government, Plantlife drew together support from Welsh BLS mentors and partners to create a Lichen Apprentice Scheme in Wales aimed at developing people's skills and knowledge in the dark art of ichenology. If you're not a welsh speaker, and haven't heard of the scheme before, you're probably thinking what on earth is CENNAD, and what does it mean? 'Cennad' is a welsh word meaning messenger/envoy, and is also a play on words, as the welsh word for lichen is 'cen'. A key part of the scheme is not only to develop people's skills and knowledge, but for the apprentices to act as messengers, engaging with others in understanding the stories lichens tell us about our environment. You can find out more about the scheme on the Plantlife website at the following address *https://www.plantlife.org.uk/wales/our-work/projects-wales-cymru/cennad-lichen-apprenticeship-sche.*

Although just one of the three woodland sites that I manage has an epiphytic lichen assemblage as a SSSI feature, I was pleasantly surprised to find new records of species associated with the Lobarion community at another site 'Coed Dolgarrog NNR' in the Conwy valley. The river gorges had passed the criteria for SSSI bryophyte assemblage, following a survey in 2012 for oceanic bryophytes (when the site was described as very rich), and so I was aware there were high levels of humidity. I had recently taken over site management and so took a walk into an area of the woods which I had not yet explored. Since joining CENNAD, I find it impossible to walk through a woodland without looking at the lichens (sort of like trying to eat a donut without licking your lips!). As I walked through the woods at Dolgarrog it wasn't long before the hand lens found its way out of my pocket and I was pressed up against the bark of a mature oak on the river bank. '*Thelotrema lepadinum*, that's nice to see', I thought, (my CENNAD training kicking in telling me "good indicator of ecological continuity").

Mature Ash trees at Coed Dolgarrog NNR

I carried on through the woods, more and more focused in on lichens. I started finding *Parmeliella triptophylla* abundant on ash and hazel and also finding other species such as *Leptogium lichenoides, Normandina pulchella* and *Nephroma laevigatum.* I then reached an area of the woodland and cast my eye upwards and spotted a lichen with a dull metallic colour, "that looks like *Degelia* I thought". I was somewhat familiar with the appearance of *Degelia*, as Coedydd Aber holds a robust population of *Degelia plumbea.* The colony being high on the trunk of an ash, and far out of reach, I took out my camera and proceeded to use the zoom to get a closer look, crossing my fingers it was a *Degelia* species. Just as I was about to gain focus it was sods law that the camera beeped and battery went flat! Arrrhh!! Still not sure whether I had found *Degelia*, I continued through the woodland and proceeded to scour the branches of a willow, when I came across what I initially thought was a healthy thallus of *Degelia atlantica* but later concluded it was *Pannaria conoplea*. Interestingly, it was growing on a branch surrounded by the likes of *Hypogymnia* and *Platismatia glauca*, and not the expected base-rich indicator species.

Pannaria conoplea (above) and *Sticta limbata* (below) at Coed Dolgarrog NNR

I came away from the woods that day with a sense of achievement, and excited at the prospect of what other species of the Lobarion community may still to be found. It has also given me an interesting management challenge, as the woodland has been ungrazed for several years, with bramble and ivy starting to take hold. I now plan to carry out my first comprehensive lichen survey and assess the full interest of the site, as part of set CENNAD homework. This will be a challenge and a good driver to developing my skills in microscopy. I will also need to consider the possibility of re-introducing grazing to manage for these species. Species recorded on my first visit include: *Catinaria atropurpurea*, *Dimerella lutea*, *Leptogium lichenoides*, *Mycobilimbia pilularis*, *Nephroma laevigatum*, *Normandina pulchella, Pannaria conoplea*, *Peltigera horizontalis*, *Sticta limbata, Sticta sylvatica* and *Thelotrema lepadinum.*

At the other end of Coed Dolgarrog NNR, I first saw the beautiful *Protopannaria pezizoides.* Again, I was new to the site and was exploring a section of woodland which proved to be very challenging terrain to navigate. After what I can only describe as "slowly struggling" my way through the woodland for a good while, I came out to the clearing of the woodland canopy at the river's edge. My jaw dropped as I looked down upon the boulder strewn riverbank which was plastered in *P. pezizoides.* Having not encountered this species before, to see it in such extensive colonies was amazing. Interestingly this river, the Afon Porth Llwyd, was the site of the 1925 Dolgarrog dam disaster where an upstream dam burst, sending a torrent of

water downstream and flooding the village of Dolgarrog, leading tragically to the loss of 16 lives. The disaster has resulted in a ravine and river system strewn with huge boulders, which have since been colonised by copious amounts of *P. pezizoides.* The Afon Porth-Llwyd is still susceptible to unpredictable flows and can be extremely dangerous even during summer months so please don't risk going exploring here. I only ventured there as I have local knowledge and communication with the Dolgarrog hydroelectric power station who extract from the river catchment above.

Protopannaria pezizoides at Coed Dolgarrog NNR

My finds within the Conwy Valley don't stop at Coed Dolgarrog. Whilst following a footpath through a conifer plantation further up the valley I arrived at a derelict stone building (by the name of Llanerch Elsi, a Grade II listed, late C17 farmhouse) surrounded by a cluster of ash, hazel, oak and sycamore, a small island of broadleaves surrounded by conifer plantation. It wasn't hard to miss the great swathes of *Lobaria pulmonaria* dripping from a mature sycamore as I emerged into this small oasis. Looking around I also found extensive colonies of *Lobaria amplissima* covered with

Lobaria amplissima at Llanerch Elsi

large patches of cephalodia. The *L. pulmonaria* had numerous fruiting bodies which is something not commonly seen in Wales. I didn't have a great deal of time to search the area in detail but also recorded *Leptogium lichenoidies, Dimerella lutea, Sticta fuliginosa* and *Sticta limbata*. This small patch of Lobarion species signifies a remnant of what once would have been widespread within the area.

The new species records at Coed Dolgarrog and Llanerch Elsi has got me wondering what other hidden gems might be hiding within the Conwy Valley. It has opened my eyes to the fact that there are still uncharted waters in terms of searching for lichens and I am looking forward to seeing what other hidden treasures I can find, and helping to contribute to the understanding of the distribution of the Lobarion community in Wales. I am also very much looking forward to continuing with the CENNAD scheme, and am pleased to be a new member of the BLS.

A fruiting *Sticta fuliginosa* at Llanerch Elsi

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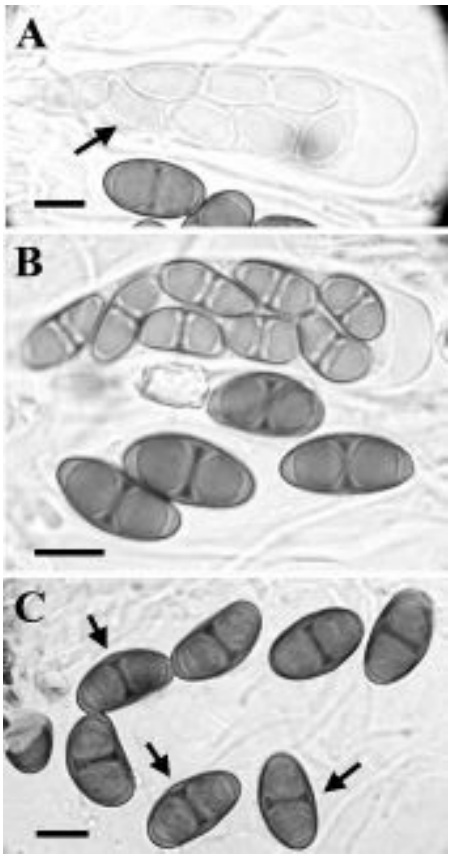
Techniques for clarifying ascospore structure

Further to the illustration on the front cover of Bulletin no. 120, Summer 2017, the potential effect of mounting medium on ascospore structure and dimensions cannot be emphasized enough. The photomicrographs show clearly the effect of the application of KOH on *Caloplaca* spores. The differences of internal structure are very obvious but note also the difference of shape and hence size. In KOH, the spores are more broadly ellipsoid due to the swelling of the wall in the wide septal region.

Ascospore size and structure is critical to the identification of *Rinodina* species, many spore types having been recognized (Poelt and Mayrhofer 1979, Mayrhofer 1982, Sheard and Mayrhofer 2002, Sheard 2010). Internal structure is typically obscured by oil droplets in freshly collected specimens, as in *Caloplaca*. These oil droplets eventually clear themselves in the herbarium but it may take one to three years, possibly longer in some species, to do so. It is therefore essential always to clear the spores in order to reveal their internal structure before attempting to use spore structure during species identification. Failure to do so, I believe, is one reason why many budding lichenologists too readily give up on the genus! There is no mention of this necessity in either Mayrhofer and Moberg (2002) or Giavarini et al. (2009), two 'go to' references for species identification in Europe.

Sheard (2010) recommended the use of Melzer's iodine solution (see under mounting media in Kirk et al. 2008) as a clearing agent. The process may take up to 30 minutes depending on the species, the variation presumably being due to differing ascospore wall properties across species. A faster method is to gently heat a slide water mount over an alcohol burner just to the point of boiling, using the technique of Wetmore (1994) for *Caloplaca*, the clearing being instantaneous. This method, like that using Melzer's solution, has no effect on spore dimensions, which often may not be the case for KOH.

While KOH should not be used for measuring spore dimensions in the genus *Rinodina*, it is very helpful in identifying the Dirinaria-type spore, which swells at the septum on introduction of the solution to the usual water mount. Slight swelling at the septum may or may not be present on examination under water. When this swelling is absent, or unnoticed, the Dirinaria-type of spore is easily mistaken for the Physcia-type of spore, having both septal and apical wall thickening. Two figures, taken from Sheard (2010), are shown by way of illustration. The first is of *Rinodina oleae* Bagl., a British species here referred to as *R. gennarii* Bagl., the second is a common Boreal species of Scandinavia and North America, *R. metaboliza* Vain., in which wall swelling in KOH is much more obvious.



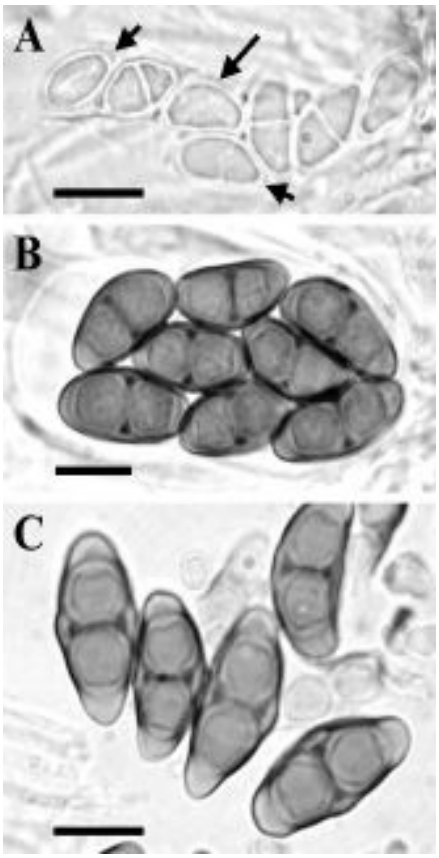


Figure 1 (left). *Rinodina gennarii, I.M. Brodo* 13914, rocks near shoreline, Saltspring Island, British Columbia, Canada (SASK), *Dirinaria*-type ascospores. A - Immature ascus showing Type B development (apical wall thickening prior to septum formation, arrow) of spores. B - Young ascus with immature spores showing wall thickening at apices and septa (*Physcia*-like) and four mature spores with inflated lumina, retaining some septal and apical wall thickening. C - Mature spores in KOH showing slight swelling at septa (arrows). Note that the pigmented band in the septum of spores in B and C is due to a septal disc rather than a torus. All scales 10 μm.

Figure 2 (right). *Rinodina metaboliza*, 1994, *J.W. Sheard*, corticolous on *Picea*, Prince Albert National Park, Saskatchewan, Canada (SASK), *Dirinaria*-type ascospores. A - Type B development, minimal thickening of both apices in one spore (large arrow), thickening of only one apex in two other spores (small arrows). B - Mature spores with *Physcia*-like lumina, with both septal and apical wall thickening. C - Mature spores with prominent swelling of both septal and apical walls after application of KOH. All scales 10 μm.

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Lichens in Greenwich Park

A survey by Joe Beale, Mark Powell and Paula Shipway
11th May 2017

Summary
The survey produced a list of eighty-five taxa, four of which are only tentatively identified and seven are lichenicolous fungi. Nine of the taxa are currently evaluated as Nationally Scarce (present in 16 to 100 British hectads) and two of them are Nationally Rare (present in 15 or fewer British hectads). However, all except one of these are common species which appear scarcer due to under-recording. *Polycoccum kerneri* is reported for only the second time in Britain and Ireland (the only previous record was from Devon in 1989).

The corticolous communities of Greenwich Park are not rich – the history of pollution

Yahr *et al.* (2009) described the background situation: "Lichen diversity in lowland England was devastated by the effects of industrial pollution during and after the Industrial Revolution, creating the well-known 'lichen deserts' already recognized in the late nineteenth century." Laundon (2012) explained the effects of changing atmospheric conditions in the City of London: "The pollutant which has the greatest adverse effect on lichens is sulphur dioxide (SO_2). No lichens had been recorded in the City before 1954, so that the Square Mile was then a lichen desert. This was because of the high level of sulphur dioxide. Between 1971 and 1980 sulphur dioxide

concentrations in the City fell by more than 80%, and since 1980 they have halved again, and continue to decline. *Lecanora dispersa* was apparently the only lichen present before 1973, but since then forty-two species have been found. This unprecedented increase is due to the diminution of sulphur dioxide air pollution. Today the most important pollutant is nitrogen dioxide (NO_2). This is largely a secondary pollutant formed by the oxidation of nitric oxide (NO)."

The background atmospheric conditions in Greenwich will perhaps have been slightly less severe than in the City of London but will have been broadly comparable; Greenwich Park was well within the former severe 'lichen desert' conditions of Eastern England. Most of the lichen species recorded now will be relatively recent colonisers. We found no lichens that are likely to be relicts from pre-Industrial Revolution times.

Periodic surveys of the corticolous lichens (those growing on tree bark) at sites such as Greenwich Park are of great interest in monitoring the phenomenal increase in diversity of lichens in formerly polluted regions. Laundon (2012) gives an optimistic view of the situation: "In the British Isles most groups of organisms are in decline in the early twenty-first century. Fortunately, this is not true of lichens, because in many areas these are increasing, especially those which grow on bark. It is good to be able to report that lichens 'buck the trend' in comparison with other forms of wildlife."

The 'wrong' sort of trees

The subtitle above is not meant as a criticism of any past or present planting plans. It merely points out that the trees present in Greenwich Park are predominantly those which support a relatively low diversity of lichens in this region. *Castanea*, *Platanus*, *Aesculus* and most conifers tend to be relatively poor. The rather sparse occurrences of other species, such as *Crataegus*, *Fraxinus* and *Morus*, tend to be hotspots of diversity. A rather recently planted *Fraxinus* to the east of the Flower Garden has a community of crustose lichens rather different from that seen elsewhere with the only sighting of *Arthonia* radiata in the park and accompanied by *Catillaria nigroclavata* and *Lecanora persimilis*. A *Morus* close by has a tentatively identified specimen of *Punctelia borreri* on one of its branches. A *Morus* in the Flower Garden is particularly well-colonized by lichens and is the only known site in the Park for several foliose lichens.

Greenwich Park, too dry?

The survey was conducted on a fine and breezy day with the grass surprisingly brown for so early in the season. The past winter and current spring is reported to have been notably dry and this is particularly noticeable on a site with a free-draining soil. While the weather conditions have little effect on lichens in the short term, sites on light soils tend to be less humid and this often results in relatively poor lichen communities. If we compare the corticolous communities at Greenwich Park with those at Kew Gardens, the latter appear to be much richer. The main factors leading to this difference are likely to be the species of tree (a great range of tree species at Kew) and the more sheltered and humid conditions at Kew.

The corticolous communities

The lichens of branches in this region can be divided into two main groups, those found on relatively acidic bark and dominated by 'Parmelioid' lichens and those in which nutrient-enrichment is more evident and dominated by species of *Xanthoria* and *Physcia*. With decreasing acidity and increasing effects of enrichment there has been a decline across Eastern England of Parmelioid lichens and an increase of *Xanthoria* and *Physcia* species. Skinner (2016) reported the results of a resurvey of lichens in quadrats at Hatfield Forest (1989 and 2009). The following extract illustrates the changing communities (which appear to be also observed widely across much of lowland England): "Of the eleven *Parmelia s. lat.* dominated sites, five were not re-found or were shaded out. The other six sites showed signs of a change to a more nitrophilous biota with the presence of *Xanthoria parietina*, *Candelariella reflexa* and *Physcia* species (not recorded previously) and the decline or disappearance of *Parmelia sulcata*, *Punctelia subrudecta* and *Melanelixia* species".

At Greenwich Park, the balance is tipped in favour of the *Xanthoria*/*Physcia* community too, despite the natural 'acidity' of the site and its tree species. *Parmelia sulcata* is present reasonably frequently on shaded horizontal branches, where it is accompanied by *Punctelia subrudecta* and *Melanelixia subaurifera* (and others in smaller quantity). In comparison *Xanthoria* and *Physcia* species are abundant on twigs and branches throughout Greenwich Park.

Xanthoria polycarpa appears to have declined across Eastern England over the last decade. Although it is a species of nutrient-enrichment, it is perhaps rather less so than *Physcia adscendens*, *P. tenella* and *Xanthoria parietina* and these species are now the dominant species of most twigs and small branches. At Greenwich Park *X. polycarpa* is rather common when compared with many other sites. The hard bark of the dominant types of tree will be less absorbent to nutrients and this may be allowing *X. polycarpa* still to thrive.

A few individual trees add disproportionately to the diversity of lichens at Greenwich Park. This is common to many sites but is particularly noticeable at a site dominated by *Castanea*, *Platanus* and Quercus. To add to the *Crataegus*, *Fraxinus* and *Morus* list in a previous section, some young *Ulmus* near the Royal Observatory support a richer community than most of the larger trees elsewhere.

At this point it is useful to introduce the concept of 'toxic legacy'. The bark of the trunks of many species of trees is a long-lasting surface and the bark of old tree trunks will have been subjected to many decades of sulphurous and sooty pollution during the twentieth century. This sort of old bark tends to resist colonization by lichens. An example is of several large *Fraxinus* trees in a dell. If these had grown in a less polluted region they would support a rich assemblage of lichens but here they are colonized by algal crusts, along with small patches of sorediate lichens and no macro-lichens.

Figure 6. *Physcia stellaris* at Greenwich Park. Formerly almost completely eradicated from Eastern England and the Midlands by sulphur dioxide pollution, *P. stellaris* appears to be spreading. Its separation from *P. aipolia* ought to be straightforward but may cause uncertainty (and the taxonomy may be more complicated than we realise). Currently the name *P. stellaris* is applied to specimens with a K- medulla and with lobes that have very indistinct white flecks (maculae). Image © Joe Beale.

The canine zone

The use of trees by urinating dogs modifies the epiphytes which grow on the lower trunks of trees throughout Greenwich Park. The most frequently visited trees have lower trunks dominated by algal crusts, sometimes accompanied by *Lecanora dispersa*. The algal crusts often resemble sorediate lichen crusts, being rather thick and sometimes with a whitish surface due to the presence of a superficial layer of dead algal cells.

Boundary wall near Maze Hill gate

This wall is of interest for the lichen community on the sandstone coping blocks, and for the presence of *Polycoccum kerneri*, lichenicolous on *Lecidea fuscoatra*, representing only the second British record. The lichen community on the sandstone is dominated by *Candelariella vitellina*, *Catillaria chalybeia*, *Lecidella scabra*, *Lecanora muralis*, *Lecidea fuscoatra* s. lat and *Porpidia soredizodes* with smaller quantities of *Amandinea punctata*, *Buellia aethalea*, *B. ocellata*, *Lecanora dispersa*, *L. polytropa* and *Lecidella carpathica*.

Terricolous lichens
The only terricolous lichens were found among the relatively sparse vegetation on a couple of the Saxon burial mounds. *Cladonia furcata* is present along with one or two other species which were so poorly developed that reliable identification was not possible. The most notable lichen here is *Cetraria aculeata*, a common lichen in the national context, but relatively exciting to find in an urban park.

Absentees
There are many lichens which are now common across Eastern England but which were not encountered in Greenwich Park. The post-AGM meeting of the British Lichen Society visited Abney Park Cemetery in Stoke Newington. The *Fraxinus* stems there supported numerous colonies of various lichens containing *Trentepohlia* as their photosynthetic partner. *Porina aenea*, *P. byssophila*, *Strigula jamesii* and *S. taylorii* were all present in quantity at Abney Park but appear to be completely absent in Greenwich Park. Species of *Opegrapha* are a significant component of the recolonizing community across Eastern England and some sites support six or more members of this genus; none were found in Greenwich Park. On twigs across Eastern England, *Scoliciosporum chlorococcum* appears to have declined while *Halecania viridescens* has dramatically increased; neither species was encountered during our survey. *Unguiculariopsis thallophila* is a lichenicolous fungus which is now frequently encountered bursting out of its host in Eastern England. Despite the presence of its host (*Lecanora chlarotera*) at Greenwich Park, no signs of *U. thallophila* were spotted. The apparent absence of *Physcia caesia* at Greenwich Park is very surprising.

Table: list of lichens and lichenicolous fungi recorded at Greenwich Park
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 16 (West Kent). The maps on the BLS website, accessed in February 2017, were used to determine which species are new for West Kent; all are lichenicolous fungi, a group which is much under-recorded.
Column B gives the name of each taxon recorded.
Column C indicates whether the taxon is a lichenicolous fungus {LF}, a lichen-related fungus {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, Sc = relevant to Scottish sites.
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 details using the standard BLS habitat codes.

212	*Amandinea punctata*	0	LC	Cort	CQ
2683	*Arthonia parietinaria*	{LF}		Lic	Z1530
69	*Arthonia radiata*	0	LC	Cort	CFx
1542	*Arthopyrenia punctiformis*	{F}	LC	Cort	CCt
107	*Aspicilia contorta* subsp. *contorta*	0	LC	Sax	STa
200	*Buellia aethalea*	0	LC	Sax	SSd
219	*Buellia ocellata*	0	LC	Sax	SSd
2442	*Caloplaca arcis*	0	LC NS	Sax	SCo
249	*Caloplaca crenulatella*	0	LC	Sax	STa
2315	*Caloplaca flavocitrina*	0	LC	Sax	SBr
2607	*Caloplaca limonia*	0	LC	Sax	SCo
2461	*Caloplaca oasis*	0	LC	Sax	SCo
271	*Caloplaca obscurella*	0	LC	Cort	CQ
277	*Caloplaca saxicola*	0	LC	Sax	SCo
289	*Candelaria concolor*	0	LC	Cort	CU
291	*Candelariella aurella* f. *aurella*	0	LC	Sax	SMo
297	*Candelariella reflexa*	0	LC	Cort	CQ
294	*Candelariella vitellina* f. *flavovirella*	0	LC	Sax	SSd
298	*Candelariella vitellina* f. *vitellina*	0	LC	Sax	SSd
306	*Catillaria chalybeia* var. *chalybeia*	0	LC	Sax	SSd
316	*Catillaria nigroclavata*	0	LC NS	Cort	CFx
430	*Cetraria aculeata*	0	LC	Terr	
	Cladonia cf. *coniocraea*	0		Terr	
389	*Cladonia furcata* subsp. *furcata*	0	LC	Terr	
	Cladonia cf. *pyxidata*			Sax	SMo
491	*Diploicia canescens*	0	LC	Cort	CCt
498	*Diplotomma hedinii*	0	LC NS	Sax	SMo
511	*Evernia prunastri*	0	LC	Cort	CCt
987	*Flavoparmelia caperata*	0	LC	Cort	CU
1018	*Flavoparmelia soredians*	0	LC Sc	Cort	CCs
1125	*Hyperphyscia adglutinata*	0	LC	Cort	CU
582	*Hypogymnia physodes*	0	LC	Cort	
583	*Hypogymnia tubulosa*	0	LC	Cort	
2468	*Hypotrachyna afrorevoluta*	0	LC	Cort	CQ
2577	*Hypotrachyna revoluta s. str.*	0	LC	Cort	CQ
2667	*Laetisaria lichenicola*	{LF}		Lic	Z1112
1707	*Lecania inundata*	0	LC NS	Sax	SLm

627	*Lecanora albescens*	0	LC	Sax	SCo
2121	*Lecanora barkmaniana*	0	LC NS	Cort	CQ
636	*Lecanora carpinea*	0	LC	Cort	CQ
639	*Lecanora chlarotera*	0	LC	Cort	CQ
1996	*Lecanora compallens*	0	LC NS	Cort	
641	*Lecanora confusa*	0	LC	Cort	CFg
646	*Lecanora dispersa*	0	LC	Cort	CU
649	*Lecanora expallens*	0	LC	Cort	CU
661	*Lecanora muralis*	0	LC	Sax	SSd
1836	*Lecanora persimilis*	0	LC	Cort	CFx
667	*Lecanora polytropa*	0	LC	Sax	SSd
610	*Lecanora semipallida*	0	LC NS	Sax	SMo
688	*Lecanora symmicta*	0	LC	Cort	CQ
724	*Lecidea fuscoatra s. lat.*	0		Sax	SSd
796	*Lecidella carpathica*	0	LC	Sax	SSd
797	*Lecidella elaeochroma* f. *elaeochroma*	0	LC	Cort	CQ
802	*Lecidella scabra*	0	LC	Sax	SSd
803	*Lecidella stigmatea*	0	LC	Sax	SCo
1974	*Lepraria incana s. str.*	0	LC	Cort	CQ
2108	*Marchandiomyces aurantiacus*	{LF}	LC	Lic	Z1112,CQ
1020	*Melanelixia subaurifera*	0	LC	Cort	CQ
1022	*Parmelia sulcata*	0	LC	Cort	CQ
1107	*Phaeophyscia orbicularis*	0	LC	Cort	CQ
1112	*Physcia adscendens*	0	LC	Cort	CQ
1119	*Physcia stellaris*	0	LC	Cort	CCt
1120	*Physcia tenella*	0	LC	Cort	CQ
1127	*Physconia grisea*	0	LC	Cort	CCt
2160	*Polycoccum kerneri*	{LF}	NE NR	Sax	Z0724,SSd
1690	*Porpidia soredizodes*	0	LC	Sax	SSd
1200	*Psilolechia lucida*	0	LC	Sax	SBr
	Punctelia cf. *borreri*	0		Cort	
1989	*Punctelia jeckeri*	0	LC	Cort	
2070	*Punctelia subrudecta s. str.*	0	LC	Cort	CQ
1235	*Ramalina fastigiata*	0	LC	Cort	CCt
1289	*Rinodina oleae*	0	LC	Sax	SBr
1306	*Sarcogyne regularis*	0	LC	Sax	SMo
2240	*Syzygospora physciacearum*	{LF}	LC NS	Lic	Z1112,CQ

2603	*Tubeufia heterodermiae*	{LF}	NE	Lic	Z1112,CQ
	Verrucaria cf. *macrostoma*	0		Sax	SLm
1507	*Verrucaria muralis*	0	LC	Sax	SMo
2514	*Verrucaria nigrescens* f. *tectorum*	0	LC	Sax	SSd
1511	*Verrucaria ochrostoma*	0	DD NR	Sax	SLm
1518	*Verrucaria viridula*	0	LC	Sax	SBr
1526	*Xanthoria calcicola*	0	LC	Sax	SCo
1530	*Xanthoria parietina*	0	LC	Cort	CQ
1531	*Xanthoria polycarpa*	0	LC	Cort	CQ
950	*Xanthoria ucrainica*	0	LC NS	Cort	CQ
2272	*Xanthoriicola physciae*	{LF}	LC	Lic	Z1530,CCt

Appendix: recent records of additional species at Greenwich Park, that were not found during the May 2017 survey

Records by Joe Beale (2016/17):

Cladonia coniocraea
Cladonia sp.
Illiosporiopsis christiansenii (LF)
Parmotrema perlatum
Physcia aipolia
Ramalina farinacea
Usnea sp.

Records from a preliminary study by Ishpi Blatchley, Don Chapman, Linda Davies and Amanda Waterfield, 5th March 2008.

Athelia arachnoidea (LF)
Lecanora campestris
Lecanora conizaeoides
Protoblastenia rupestris

References

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Skinner, J.F. (2016) Observations on the changes in the lichen flora of Hatfield Forest, Essex, over a nineteen year period. *Bull. Brit. Lichen Soc.* **119:** 42-48.

Yahr, R., Coppins, B. J. & Ellis, C. (2009) Historic lichen communities in Wiltshire. *Bull. Brit. Lichen Soc.* **105:** 10-17.

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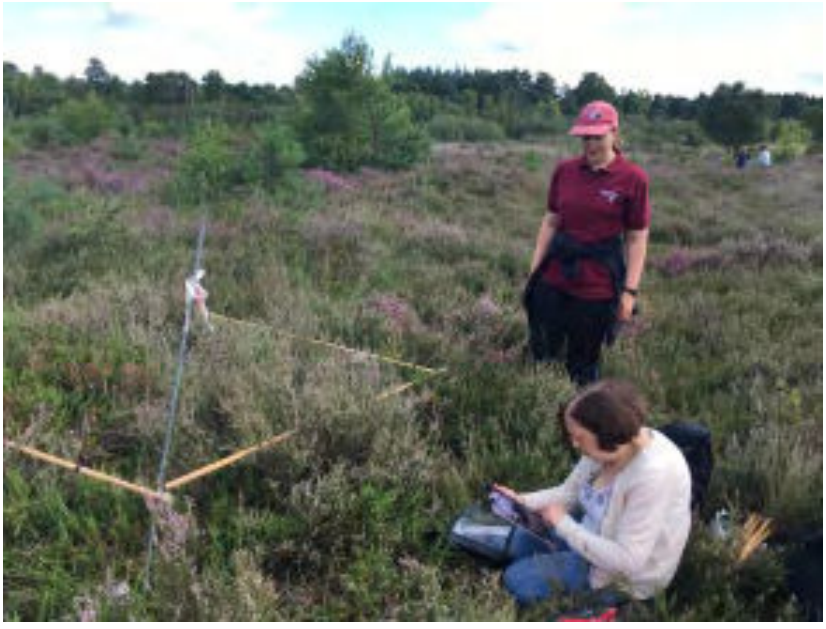
Chobham Common – lichens and long term monitoring

Natural England's Long Term Monitoring Network (LTMN) was set up in 2009 to help understand how climate change and air pollution might change the natural environment and how we might mitigate against any damaging effects. It complements and extends the UK Environmental Change Network that was established in 1992.

Chobham Common is one of the 37 core LTMN sites across England. Vegetation and soil are monitored on all the core LTMN sites, and birds, butterflies, air quality, weather and land management are also monitored on various sites. The aim of the network is to carry out surveys on representative sites across the country so that similar habitats can be compared in areas with contrasting climate and pollution conditions. There are 10 target habitats and Chobham is one of the core sites for lowland heathland.Vegetation surveys are carried out every four to five years and Chobham was first surveyed in 2012. The repeat survey was completed in August 2017, by 34 volunteers from a range of back grounds including Natural England, independent consultants, Surrey Wildlife Trust, students and the Thames Basin Heath Wardens. Lichens that grow directly on soil and peat are included in the LTMN vegetation survey, but lichens growing on other plants such as trees or heather twigs are not.



Preparing a quadrat for the survey © Natural England/Susie Smith

The 2017 Chobham Common survey was organised by Susie Smith who in 2015 started studying lichens and joined the BLS.

"When I visited Chobham to prepare for the survey I realised that there would be a range of lichens that I wouldn't be able to accurately identify. We often commission experts for LTMN surveys to help identify difficult and specialist species groups. I immediately thought of Neil Sanderson for the lichens as we had just published his report, *The New Forest heathland lichen survey 2011 to 2015* (JP020), and in 2015 he had been fantastic at identifying the lichen specimens we had collected from the Thursley Common LTMN survey. He had even identified the lichen parasite

Scutula epicladonia on one of the samples from Thursley, which was the first record of this species in England. It was great that Neil could join us for a day at Chobham and share his lichen expertise."

Neil's notes for 2017 with comparisons from visits in 2011 and 2012

SU9763
The first LTMN plots surveyed were in a valley bog, but there was some wet heath on the margins nearby. This was dull compared to New Forest bog margin wet heath.

SU975 635
Cladonia macilenta
Cladonia portentosa
Cladonia subulata
Cladonia cryptochlorophaea
Cladonia floerkeana

SU9765
In the afternoon we moved north of the M3 motorway to more diverse dry heath. There was good diversity in the open, probably previously burned heath, with *Cladonia strepsilis* present and an abundance of *Cladonia glauca*. There was a lack of any even slightly fire sensitive species that would be expected in New Forest heaths within the burning cycle such as *Cladonia ciliata* and *Cladonia uncialis* subsp. *biuncialis.*

SU9716 6548
Cladonia strepsilis

SU9733 6555 LTMN plot 8
Micarea viridileprosa
Cladonia macilenta
Cladonia cervicornis s. str.
Cladonia cryptochlorophaea
Cladonia portentosa
Cladonia coniocraea
Cladonia chlorophaea s. str. on *Calluna stem*
Placynthiella dasaea
Cladonia subulata
Placynthiella icmalea

SU973 655 LTMN Plot 7
Cladonia crispata var. *cetrariiformis*
Cladonia diversa
Cladonia verticillata
Cladonia floerkeana
Cladonia glauca
Cladonia ramulosa
Cladonia cervicornis s. str.

In the area on the north side of the M3 motorway that had been subject to a wild fire in April 2017 there were a lot of bleached lichens, but a few with green squamules regrowing already at the base of some thalli, especially the fire resistant *Cladonia strepsilis*. Luckily it had been a cool spring with wild fire, and regrowth with a rich *Cladonia* assemblage could be likely.
SU9736 6555
Cladonia strepsilis in burned area had thallus whitened but still gives C+green reaction.

Cumulative list

The cumulative list from the three Chobham visits (30 September 2011 Chobham & 3 August 2012 Chobham Common & 1 August 2017):

	2011	2012	2017	Cumulative
Species	**SU9763**	**SU9764**	**SU9765**	**Chobham**
Baeomyces rufus		1	1	1
Cladonia callosa		1		1
Cladonia cervicornis s. str.		1	1	1
Cladonia chlorophaea s. str.				1
Cladonia coniocraea	1		1	1
Cladonia crispata var cetrariiformis	1	1	1	1
Cladonia cryptochlorophaea group	1	1	1	1
Cladonia diversa		1	1	1
Cladonia floerkeana	1	1	1	1
Cladonia furcata subsp. furcata			1	1
Cladonia glauca		1	1	1
Cladonia macilenta	1	1	1	1
Cladonia portentosa	1	1	1	1
Cladonia ramulosa	1		1	1
Cladonia squamosa var squamosa	1		1	1
Cladonia strepsilis	1	1	1	1
Cladonia strepsilis, sorediate morph	+	+		+
Cladonia subcervicornis		1		1
Cladonia subulata	1	1	1	1
Cladonia verticillata		1	1	1
Micarea leprosula		1		1
Micarea lignaria var. lignaria			1	1
Micarea viridileprosa		1	1	1
Placynthiella dasaea			1	1
Placynthiella icmalea			1	1
Pycnothelia papillaria		1		1
Rhizocarpon reductum			1	1
Trapeliopsis flexuosa	1	1		1
Trapeliopsis granulosa		1		1
Total	11	19	21	28
CCP Score	10	14	15	19

This is a reasonable assemblage but occurs at a lower density of diversity measured at 1km scale than in either the New Forest or the better Dorset heaths. On the basis of three visits, the heathland was scoring between 10 to 15 in the *Cetrelia*, *Cladonia* & *Pycnothelia* Index (CCP Index); that is the total numbers of terrestrial *Cetrelia*, *Cladonia* & *Pycnothelia* taxa recorded, this is used to assess heathland lichen diversity on a 1km basis. The New Forest scored an average of 21 in systematically recorded 1km squares, with a range from 5 to 35 (Sanderson, 2017).

The rare occurrence of uncommon specialists of damper heathland, such as *Cladonia callosa, Cladonia strepsilis, Cladonia subcervicornis, Micarea leprosula* and *Pycnothelia papillaria*, indicates that the assemblage was once similar to that found in the New Forest and Dorset. These surviving species are moderately to strongly fire tolerant. Many species are missing, however, of which fire sensitive species are conspicuous. These include *Cladonia ciliata var. ciliata*, *Cladonia uncialis* subsp. *biuncialis* and *Cladonia arbuscula* subsp. *squarrosa*. There is a 1983 record for the latter species, but the area where it was recorded has since been subject to a hot wildfire.

Figure 7. A close-up of *Cladonia callosa*, showing the distinctive but rare small podetia; the species is best identified by its tomentose white underside that fluoresces very bright grey-violet.

At Chobham Common it is a rare species found once where it had survived a hot wildfire in a poorly vegetated patch of heath that the fire had leapt. This is the sort of habitat in which fire sensitive species find refuges in fires under controlled burning regimes; at Chobham in contrast they are a refuge for the most fire resistant species. The exotic moss *Campylopus introflexus* is present, but not threatening the Cladonia here. Where eutrophication is a problem this moss dominates and eliminates such small lichens.

The frequency of hot wildfires is clearly depressing the lichen diversity and is probably the major negative factor on lichen diversity at Chobham Common. On the other hand the cooler wild fires have allowed some of the more fire tolerant species to survive. This includes strong populations of the fire dependant *Cladonia strepsilis*, a declining species across lowland Europe. In contrast, less frequently burned heaths in

the lowlands are becoming dominated by tall late succession senescent heath, where most lichen diversity is shaded out.

Lack of grazing and air pollution are also likely to be having an impact. Out of curiosity the modelled air pollution given on the APIS website was compared between the 5km squares SU96NW at Chobham and SU30NW, a very lichen rich area of heathland in the New Forest:

Pollutant	**Chobham Common**	**New Forest**	**APIS Critical Level**
Ammonia	0.9 µg m^3	0.62 µg m^3	1.0 µg m^3
Nitrogen Deposition	13.44 kg N/ha/year	12.04 kg N/ha/year	20 kg N/ha/year
Nitrogen Oxides	27.34 µg m^3	11.94 µg	30 µg m^3
Sulphur Dioxide	0.32 µg m^3	0.28 µg m^3	20 µg m^3
Acid Deposition	1.04 (N: 0.96 | S: 0.19) keq/ha/yr	0.93 (N: 0.86 | S: 0.2) keq/ha/yr	N: 0.88 keq/ha/yr

This gives much higher ammonia levels and nitrogen oxide for Chobham, with Chobham nearly in exceedance for the critical levels for both. Field research has shown ammonia to eliminate heathland lichens in Netherlands above a critical level of 7.0 µg m^3 (Sparrius, 2011), but presumably there would be a decline before this high level is reached. The visible indication of high ammonia impact, thick and tall mats of the exotic moss *Campylopus introflexus* displacing lichens, was not seen, but the moss was present at lower cover. The impact from nitrogen oxides is less clear. Modelled nitrogen deposition levels are oddly similar, and both are well below the critical levels. Chobham has only slightly higher modelled acid deposition but both are given as being in exceedance; what damage, if any, this is doing is not clear from observation and recording data from the New Forest. The acid deposition is also presumably lower than occurred during the height of SO_2 pollution in the latter part of the 20th century.

In comparison to the New Forest, my impression was that that land management is the overwhelming factor determining the differences in heathland lichen diversity between the two sites. It seems likely that it will be difficult to demonstrate any contribution to the comparative lower lichen diversity from pollution at Chobham; there certainly may be a pollution impact but the impression is that it is much weaker than the land use impact.

References

Sanderson, N. A. (2017) The New Forest Heathland Lichen Survey 2011 – 2015. *Natural England Joint Publication JP020*. York; Natural England

Sparrius, L. B. (2011) Inland dunes in The Netherlands: soil, vegetation, nitrogen deposition and invasive species. *Ph.D. thesis, University of Amsterdam. Link*

Future LTMN surveys

LTMN is a long term programme of monitoring and we are just at the start. We will be re-surveying all the sites a number of times and would really like to get more

lichenologists involved in the LTMN surveys, particularly for Thursley Common, which is due to be re-surveyed in 2019 or 2020 and also for other heathland, sand dune, moorland and blanket bog sites, not only so that we can get a more accurate record of the lichens present, but also to get more LTMN volunteers interested in lichens.

The data collected during LTMN surveys is being made available as Open Data under The Government Open Data initiative, which aims to enable people to learn more about how government works, carry out research or build applications and services, with the aim to be an engine of economic growth, social wellbeing, political accountability and public service improvement.

Lichens at Thursley Common LTMN survey 2015 © Natural England/Keith Porter

Details of the LTMN project can be seen on the Natural England Access to Evidence Catalogue LTMN project page (*http://publications.naturalengland.org.uk/publication/4654364897050624*).

This page has links to the various data sets and protocols already published and in due course will provide links to regular newsletters with updates on LTMN developments and the publication of new data sets, protocols and analysis. The report "Taking the long view: an introduction to Natural England's Long Term Monitoring Network 2011 to 2016" is due to be published in October 2017.

If you would like to get involved or find out more about LTMN and Natural England evidence reports contact Susie Smith or access the links below. *Susie.j.smith@naturalengland.org.uk*

Links
The New Forest heathland lichen survey 2011 to 2015 (JP020)
http://publications.naturalengland.org.uk/publication/6223067854929920
Natural England's Long Term Monitoring Network (RP00316)
http://publications.naturalengland.org.uk/publication/4654364897050624
LTMN Chobham Common - target habitat lowland heathland (LTMNB31)
http://publications.naturalengland.org.uk/publication/5607801928810496

British Invasion

As a new member of the British Lichen Society and someone new to the world of lichens, I could not be more pleased to find *Cladonia floerkeana* on one of my first expeditions. Although not rare in Ohio and the USA Midwest, it was an exciting find and a good introduction to the wonderful world of lichens.

The *Cladonia floerkeana* (common name Gritty British Soldiers) was found on Beavercreek fen last spring on an old stump surrounded by nothing but water.

Thank you for the peaceful invasion

Jon Steeves

Lichen-inspired artwork

I started to become interested in lichens after attending a course at Kew Gardens. Studying plants for botanical illustration involves a great deal of concentration, documenting every detail, as the completed works were to be used as botanical records for learning, not just for decoration. On returning home I found that my drawing had to fit in between other projects and everyday chores around the house. With too many distractions my plants specimens had often wilted before I could draw them! I then had a month as artist-in-residence at Sumburgh Head Lighthouse in Shetland, early in the growing season, I started to notice the lichen on rocks, walls, fence posts and in the heather. A whole new world was opening up. They were very accommodating and didn't wilt while drawing them, and using my camera, I could zoom into photos on my computer to see the detail and variety.

Dunnet Head lighthouse wall

I'd previously made a pressed herbarium, documenting the plants growing on my 6.5 acres in Dunnet on Dunnet Head, the most northerly point on the UK mainland, and now I'm looking again at my field with fresh eyes - at lichens.

The more I look, the more they intrigue, such is their variety and sensitivity to their surroundings, I'm slowly starting to learn they are very choosy when finding the perfect growing conditions and are indeed used as indicators of air quality.

Their Latin names are quite a mouthful, but their common names are descriptive and quite fun. Here's a selection from the 200 compiled by the British Lichen Society; Fishbone Beard lichen, Sunburst lichens, Map lichen, and Crab's-eye lichens.

Fabric of Place is a community based, artist in residence project which Chrysalis Arts Development has developed as part of the company's Slow Art strand of artistic activity. The project focuses on the distinctiveness of Reeth and the surrounding area of Swaledale. Artists will use creative processes and activities to explore different aspects of the area, its communities and their relationship with where they live, to create a series of artworks and offer a range of opportunities for residents to participate.

This two year project will culminate in a touring exhibition in late 2018 and a community artwork that will ultimately be housed in Reeth.

Invited as lead artist for the project, I'm intrigued to find out what, if any, differences there are in the variety of lichens found in Swaledale, an inland valley with a history of lead mining, and walks from my home on the north coast headland of Dunnet Head, Caithness.

This 'investigation' will be mostly art based. I want to inspire the people of Swaledale to go out and explore their landscape, looking at the variety of shapes and colours of lichens all around, noting what they grow on, from gravestones, walls, fence posts, to in amongst the heather on the moors.

Inspired by bringing the outside in, I have been working with a group of very enthusiastic ladies who live in and around Swaledale. They have been imagining themselves as eccentric lichenologists, who have spent so much time amongst them, that lichens have started to grow on their clothes!

We have been experimenting with a variety of natural and recycled materials to make lichen-inspired clothes using a variety of techniques, incorporating their skills and learning new ones. We are focusing on anything that may usually be found on or under a peg rail for our component in the end of project exhibition. As people explore, they may be inspired to learn more about lichens. To help us get started, we were joined by local lichen enthusiasts, Les and Sue Knight at our initial workshops who offered their time freely as volunteers.

I have also started working with years 5 and 6 pupils from Reeth and Gunnerside Primary School in Swaledale. As well as making lichen- inspired clothing for the exhibition using recycled or natural materials, they have started a survey of lichens found in Swaledale. Les and Sue Knight have planned a full day of lichen science activities with the school – I'll be learning alongside the children. Again, working as volunteers, Les and Sue's expertise and time have already been invaluable. During my first visit to the school we made a large picture map of Swaledale which was printed onto canvas. Decorative, with an element of science, the lichens are documented by the children mark[ng their locations on the canvas map with cross stitches. The map, clothing and other art/science work will also be in the touring exhibition.

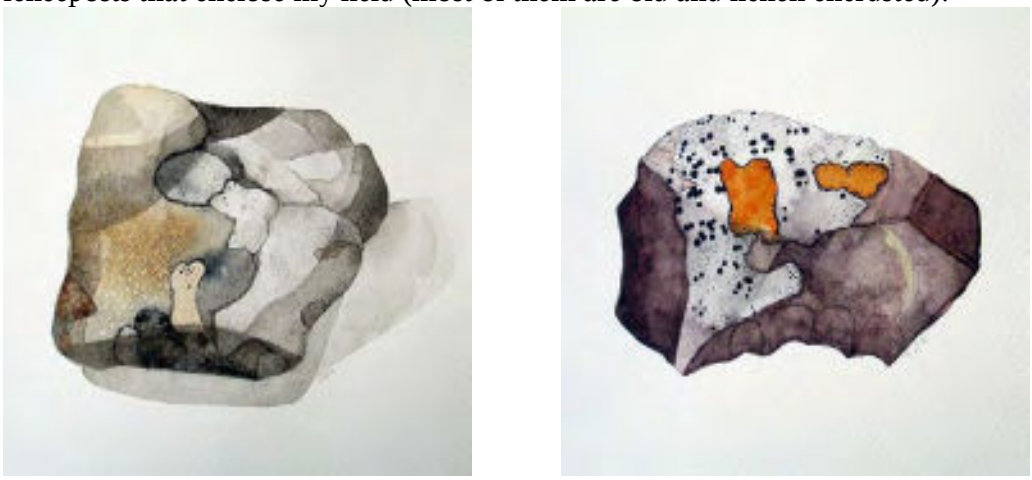
In the north, I've made a pair of peaty coloured boots from barked twine, constructed using the ancient nalbinding technique, I added tiny red dots of bright red to represent the 'matchstick' lichens found underfoot on the exposed old peat banks.

I'm intrigued by the saying 'Cattle on the hills and gold on the stones', which refers to Highlanders literally scraping a living harvesting lichens for the dye industry. I've been unable to find out if lichens were harvested in Caithness on a commercial scale or just used in the home. It conjures up such wonderful imagery. I may just have to stretch my boundary to extend past Caithness to include it somewhere in my artwork if direct links can't be found. If you have any information do please get in touch!

While out fishing in the Pentland Firth, I looked back at the bands of colour on the cliff face . These coastal lichens have inspired a 'coastal coat' made from paper, embossed with lichen-inspired patterns, and coloured with pigments. The papers are made from waste linen threads and fabric bits I recycle from the Scalpay Hand Weaving Shed in the Western Isles. The coat shape is based on my brother's smock-style oilskin he wore when fishing and had a hundred creels to check each day. It's a slow process, and seduced by the common names of lichens, the coat will be, from bottom to top, sea tar, sea star, crab eye and finally the hood will be a shaggy sea ivory. I hope to include the local names given to the cliffs of Dunnet Head somewhere in the coat too, many of which I use when out fishing to mark our location, drift and the best spots for cod.

Coastal paper coat in the making and crab-eye lichen -inspired embossed paper

I've been inspired to go beyond the Fabric of Place artist residency and have been continuing to learn watercolour with a focus on lichens, more recently lichen encrusted rocks on the old tracks to the peats on Dunnet Head. I've also photographed all 300+ fenceposts that enclose my field (most of them are old and lichen encrusted).



Lichen watercolours

My visits to Swaledale are short with gaps of months, not just weeks between trips. To my delight, lichens have continued to inspire the group of ladies I met earlier this year for the first time who have, in my absence, met up on many occasions to share skills, ideas and also go out and about with Les and Sue to learn more about lichens. Before the summer break, there was mention of a possible 'lichen' art lunch club at the primary school, as they continue to make lichen- inspired artwork.

I'll keep you posted on our progress in the next bulletin. If you can't wait until then, do check out the project website and Facebook page for news. And if you want to see all 300+ lichen encrusted fenceposts see the news page on my website!

All events are offered free to the public. This is a Chrysalis Arts project, and is supported by NYCC Stronger Communities and YD National Park.

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Tree Lungwort at Naddle Forest, Mardale

Naddle Forest is an important ancient woodland in the eastern Lake District, in Mardale, Cumbria, now part of the large Reserve managed by the RSPB. Although not as rich in lichens as the famous Borrowdale woods (which receive higher rainfall amounts), historically at least, its species lists are interesting. The RSPB is keen to conserve the existing lichen flora, which has been well-recorded by visiting lichenologists over the years, including Brian Coppins, Francis Rose and Allan Pentecost. Between them they have variously found 'Lobarion' community species, including *L. pulmonaria,* which is now present on only three trees, all Ashes.

The images with this note serve as a record of their state in September 2017. By far the best colony is in an open SE-facing situation, where the tree is actually a fascinating 3-limbed 'chimera', one limb of which is a large Rowan *(Sorbus aucuparia)* self-implanted into the Ash. The lichen has two main patches (covering c. 700 and 1400 cm^2 respectively), both on limbs of the Ash itself, and both non-fruiting. The RSPB has fenced off this site to deter sheep and deer. There are also small 'initials' of the lungwort, suggesting it is still able to spread here.

Tree Lungwort at Naddle Forest: the main site, fenced against large grazers

At the two other sites [Sites '2' & '3'], the host trees are small in diameter, and declining: both they and the lichen look to have a limited future. *L. pulmonaria* now

has very limited occurrence in Cumbria, where it was once far more widespread. The loss of native Wych Elm exacerbated this in the late 20th century.

. Tree Lungwort at Naddle Forest: 'Site 2' (left), 'Site 3' (right)

I am grateful to Lee Schofield, manager at the RSPB Mardale office, and to volunteer Laura Shelbourn for help with locating these colonies. Hopefully there may be yet more to find. Lee would welcome further visits by prior contact, and is liaising with PlantLife and BLS over a possible bid to undertake a wider survey of the 'lower plants' at this site.

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Additions to the lichen flora of Nicaragua

The fascinating world of tropical areas is always an inexhaustible and surprising field for lichen research. Particularly rain forests are becoming more and more endangered by deforestation and many species are disappearing before we can identify them. Hence, every study of tropical lichens is an important contribution and helps us to improve the knowledge of species

Not only field trips, but also revisions of herbaria can bring species to light which have so far not been reported and enable researchers to extend the species lists.

Working on the identification of Costa Rican specimens deposited in my private herbarium and comparing them with specimens from adjoining countries led my attention to older examples from Nicaragua with amazing results.
This article introduces some lichen species new to Nicaragua as well as some remarkable records of already known lichens which have only been listed in previous papers but not documented in photographs.

Nicaragua, comprising an area of 129,494 km^2, is bordered by Honduras to the north, Costa Rica to the south, the Pacific Ocean to the west and the Caribbean Sea to the east. The specimens were collected in the year 2001 by the author during a trip through different regions of the Central American country which is characterized by extremely diverse ecological conditions from tropical coasts to volcanic craters. And just as the area is geomorphological diverse, habitats can be found, supporting corticolous, foliicolous and epilithic lichens, in rainforests, open landscapes and on rocks of volcanos.

In contrast to neighboring Costa Rica with its well established lichen research, the lichenized ascomycetes of Nicaragua have hardly been investigated. Imshaug (1956) listed only 22 species occurring in the country whereas Breuss (2002) raised the species number to 273. Four new species have been provided subsequently by Lücking (2008) and Rivas Plata (2011), followed by Breuss (2011) who contributed another study including thirty new species to Nicaragua. Since this time only three new species have been added by Breuss & Lücking (2015) and one by Lücking et al. (2016).

Another seven species new to Nicaragua that were collected in the southwest of the country in 2001 are presented in this article. Specimens from montane regions of Nicaragua have hardly been mentioned so far. Hence, these first records of two saxicolous species which are actually common, is not astonishing.

The investigation of literature on lichens pertaining to Nicaragua, inclusive of the new species in the present study, has resulted in a current total number of only 318 species. In fact, the real number of lichen species must be much higher and much more research in lichen taxonomy should be done in the future to extend the species list of Nicaragua.

While the last sentences of this article are being written, the hurricane "Irma" is creating a track of devastation in the Caribbean islands and the state of Florida. This shows us that the Anthropocene is becoming an age of climate change and environmental destruction, all the more important to preserve lichen specimens in herbaria.

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Comments:

All photographs were taken by the author. The determination of species was done by the author. Apothecial sections were mounted in water.

Bactrospora incana Egea & Torrente (Fig. 1A, B) is characterized by its corticolous habitat, the small apothecia 0.2-0.4 mm in diameter, the indistinct thallus and the 3—7-septate, hyaline ascospores with constrictions at some septa. The dimensions are 35-50 x 2.5-3 µm in the present specimens.

Bactrospora is a widespread but seldom abundant genus, so far only recorded from Venezuela (Sobreira et al. 2015). The specimens were collected at the foot of the Mombaccho Volcano, Prov. Granada, in a rainforest on the bark of *Rubiaceae* (hb. Neuwirth 6060, 6063). Only reported from Venezuela, new to Nicaragua.

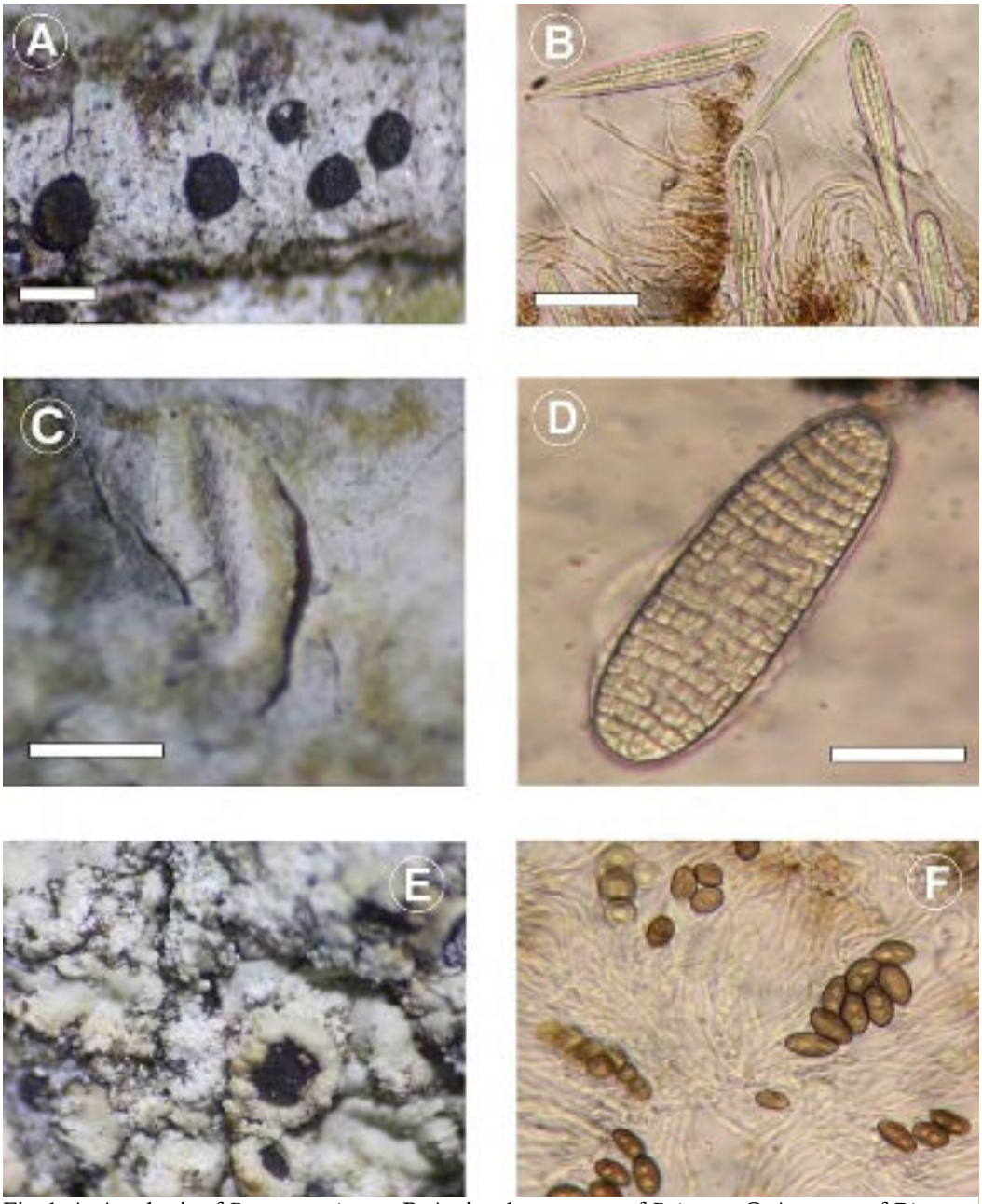

Fig. 1. A: Apothecia of *Bactrospora incana*; B: Asci and ascospores of *B. incana*. C: Ascocarp of *Diorygma pruinosum* with prominent margins. D: muriform ascospore of *D. pruinosum*. E: Apothecia of *Hyperphyscia adglutinata*. F: Ascospores of *H. adglutinata*. Scales: A=0.5 mm; B=30 µm; C=1 mm; D=40 µm; E=1 mm; F=15 µm. Images© Gerhard Neuwirth.

Diorygma pruinosum (Eschw.) Kalb, Staiger & Elix (Fig. 1C, D).
As a member of the Graphidaceae family the species is one of the abundant representatives of the genus (Feuerstein et al. 2014). Thallus grey, continuous, crustose, containing protocetraric acid (Pd+ red), UV-, K- . Ascomata rounded to elongate, heavily pruinose and with prominent margins. Ascospores large, regularly muriform, 1 per ascus, 90-120 x 27-35 µm in the collected specimen. Together with *D. confluens* on bark of trees in the same rainforest as cited above, elevation ca. 1050 m (hb Neuwirth 6067). Growing in relatively dry and open situations in undisturbed forests as well as on trees along roads (Kalb et al. 2004). Pantropical, but new to Nicaragua.

Hyperphyscia adglutinata (Flörke) H. Mayrhofer & Poelt (Fig 1E, F).
The species of Hyperphyscia are distinguished in the family Physciaceae by typical characters such as the lack of or rudimentary occurrence of rhizines on the lower thallus surface, a strongly adnate thallus and the pycnoconidia (Nash III, T.H. et al. 2004). The present specimen correlates with the features listed in the online-key by Sipman (2012), who describes the species as widespread in tropical and subtropical areas. But it hasn't been reported from Nicaragua so far. Area of the Masaya Volcano, on bark of *Rubiaceae* (hb Neuwirth 6051, 6052).

Gassicurtia ferruginascens (Malme) Marbach & Kalb (Fig. 2A, B).
The former *Buellia sanguinariella* var. *ferruginascens* (basionym), recombined and reported by Marbach (2000), turned out to be a rare species, only found in a few locations in Brazil and Hawaii. Additional specimen were contributed by Neuwirth (2008) from Venezuela and mentioned by Flakus et al. (2014) from Bolivia.
The distinguishing features are the heavy red pruina on thallus (Fig.) and apothecia and the UV+ reaction which is salmon-pink. The brown, 1-septate ascospores reach dimensions 10-15 x 4-5 µm. Isle of Ometepe, Nicaragua-Lake, Maderas Volcano, rainforest (hb Neuwirth 6007). New to Nicaragua.

Porpidia crustulata (Ach.) Hertel & Knoph (Fig 2C, D). 2005). Curiously enough, the species has not been found in Nicaragua so far. On acid rocks in the area of the Massaya Volcano (hb Neuwirth 6077B). This common species, occurring in many areas all over the world on siliceous rocks. The indistinct thallus and the anatomy of the sometimes slightly pruinose apothecia (Dobson 2005) showing thin excipula with outer dark and internally pale brown parts, as well as the simple small ascospores (15-20 x 6-7 µm) identify the specimen (Fryday

Rhizocarpon reductum Th. Fr. (Fig. 2E, F).
A well-known saxicolous species recorded in many areas of the world on siliceous rocks; cosmopolitan (Smith et al. 2009). The specimen is characterized by a distinctly areolate, olive-brown thallus which reacts I-negative in its medulla. The apothecia, embedded in the thallus and reaching up to 0.8 mm in diameter, have a clear hymenium reacting blue in Lugol's solution, bordered by a thin green-brownish excipulum (K-). Ascospores: muriform, hyaline, 18-30 x 10-12 µm. On the same rocks together with *Porpidia crustulata* in the area of the Massaya Volcano. New to Nicaragua (hb Neuwirth 6077A).

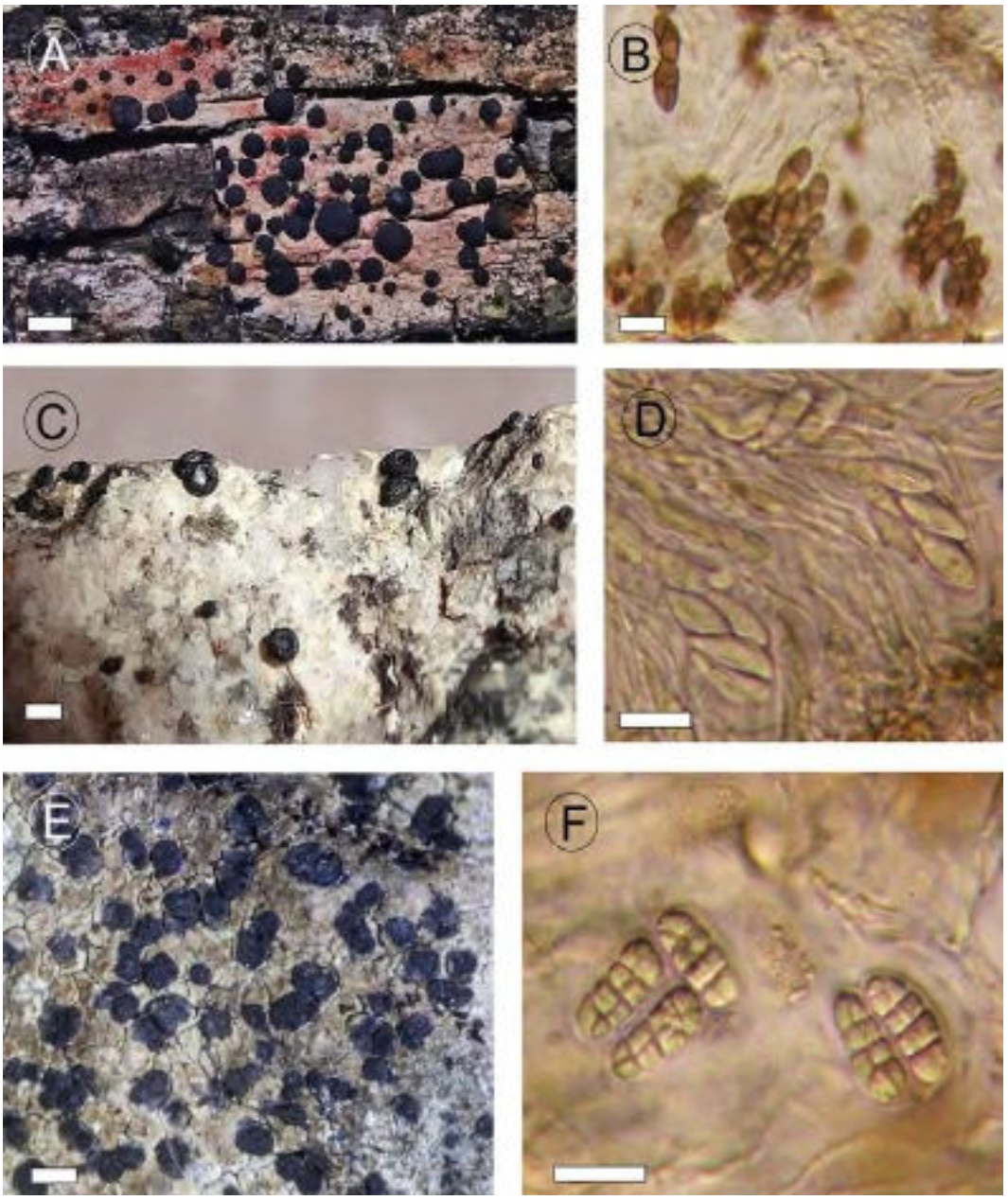

Fig. 2. A: *Gassicurtia ferruginascens*, thallus and apothecia with red pigments. B: Ascospores of *G. ferruginascens.* C: Apothecia of *Porpidia crustulata***.** D: Ascospores of *P. crustulata.* E: *Rhizocarpon reductum*, thallus and apothecia. F: muriform ascospores of *R. reductum.* Scales: A=1 mm; B=15µm; C=0.5 mm; D=15µm; E=1 mm; F=20 µm. Images© Gerhard Neuwirth

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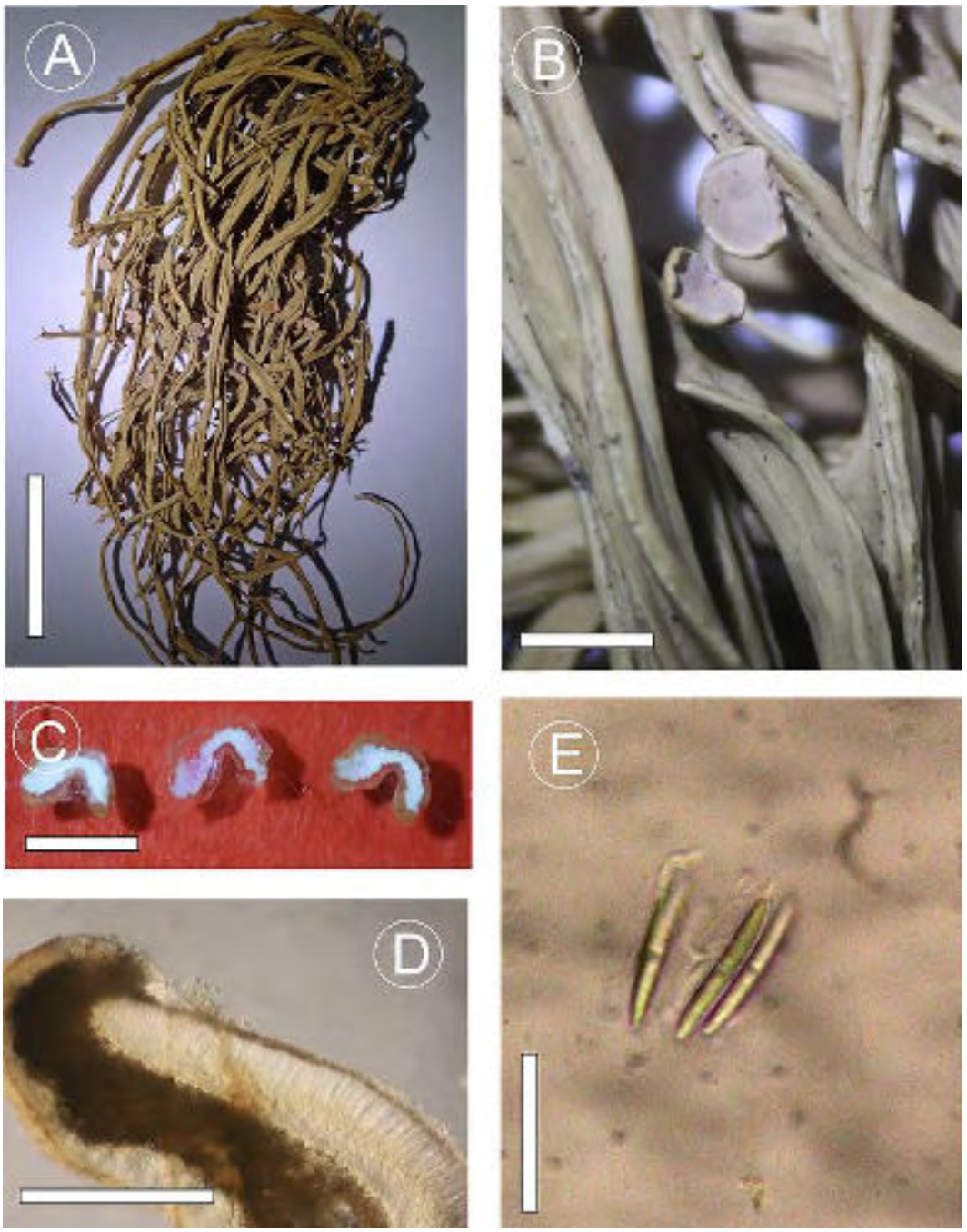

Fig. 3: ***Ramalina rectangularis***. A: long pendulous thallus. B: detail of thallus with apothecia.C: thallus section showing chondroid tissue and medulla. D: apothecium section.E: ascospores, narrowly fusiform, 1-septate, 20-28 x 3-4 µm. Scales: A=3 cm; B=3 mm; C=3 mm; D=0.5 mm; E=30 µm. Images© Gerhard Neuwirth.

Ramalina rectangularis Nyl. (Fig. 3A-E) is currently known from three sites in South America: Brazil, Colombia and Venezuela. A description by Kashiwadani and Kalb (1993), based on Nylander (1870), correlates with the characters of the present specimen from Nicaragua although apothecia have not been seen in the Brazilian example. Particularly the thick cracked, chondroid tissue bearing isidial protuberances along the margins and the marginal pseudocyphellae confirm the species (Kashiwadani & Kalb 1993). Marcano et al. (1996) mentioned the species in their checklist from Venezuela. The additional specimen is covered by many apothecia producing narrow fusiform, 1-septate ascospores having dimensions of 20-28 x 3-4 µm. Location: Isle of Ometepe, great Nicaragua-Lake; on coffee tree in the area of a Finca. New to Nicaragua (hb Neuwirth 6101).

Several lichen species which have been only listed in previous papers but not documented with photographs

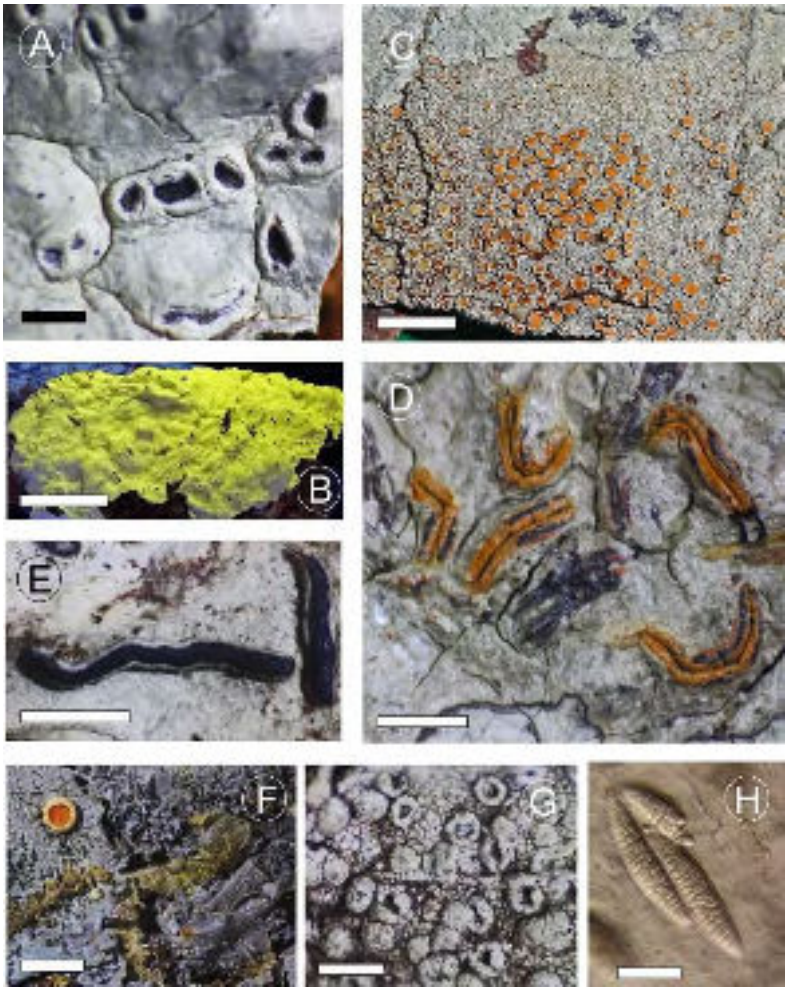

Fig. 4: ***Diorygma confluens***. A: habitus. B: thallus in UV-light. C: ***Lecanora helva***, thallus and apothecia. D: ***Graphis chrysocarpa***, ascocarps showing orange pigments. E: ***Graphis oxyclada***: lirellae F: ***Leptogium cochleatum***, apothecium. G: ***Porina farinosa***: ascocarps **H**: ascospores. Scales: A=0.5 mm; B=1 cm; C=4 cm; D=2mm; E=2mm; F=2mm; G=1mm; H=30µm. Images© Gerhard Neuwirth.

Acknowledgments

I am grateful to Robert Lücking (Berlin, Germany) for confirming the correct identification of the species and recommending literature. Thanks also to André Aptroot (Soest, The Netherlands) who confirmed one species.

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Metal influence on lichen colonisation

I took this picture on 31st July 2013 at Broadway Tower, on the Cotswolds near the village of Broadway in Worcestershire. It shows a clear zone of inhibition of the lichen

growth for about 25mm either side of the lightning conductor. I assume the tower is built from Jurassic limestone and judging by the green patina, the lightning conductor is probably copper, well known as an anti-fungal element (e.g. Bordeaux Mixture). I am not sure about the compass orientation of this surface.

Unfortunately my lichen identification is at a very elementary stage, but at least 4 species seem to be present here, coloured bright yellow (*Caloplaca* sp?), white, grey, and pale yellow respectively. The grey lichen seems to be encroaching onto the inhibition zone towards the bottom of the picture.

Clearly not all metals have this effect; I have seen old iron railings carrying quite prolific lichen growth.

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Lichen names with Italian connections

The pronunciation of the Latin names of lichens varies enormously and everyone seems to have their personal preferences. Do you pronounce the first syllable of *Physcia* to rhyme with 'fist' or with 'file'? Do you pronounce the third syllable of *Verrucaria* to rhyme with 'car' or with 'care'? There are countless other examples, all along the 'tomato vs tomato' example from the popular song and we might as well live with the differences.

But when it comes to Latin names where the taxon is named after a specific person it seems only reasonable that the pronunciation of that name should follow how that person concerned would have pronounced their own name. The chances are that the word will sound better and roll off the tongue more easily.

While attending the recent workshop on limestone lichens at Malham, I noticed that people were having trouble in pronouncing a couple of lichen names, both connected to Italian lichenologists of the past. I do not profess to be a linguist but hope that the following note might be of interest.

All languages have their idiosyncrasies and Italian is no exception but it has one very useful attribute, namely that if you know how a word is spelled you know how to pronounce it (unlike English, think of plough, thought and rough!). One rule that often confuses English speakers is that in Italian, the letter g before the letter l is not pronounced, the 'gl' being said rather like the centre of 'stallion' or 'million'. A classic example is the pasta shape tagliatelle:
The word Tagliatelle should be pronounced as follows:
TAL (rhyme with first syllable of 'talent') - **YAT** – **ELL** – **AY** (rhyme with 'say')
But definitely not with the first syllable as TAG. The main stress of the word is on the penultimate syllable ('ELL') as is normal in this language.

Even just learning to pronounce this word would ease the pain felt by many long-suffering Italian waiters. Even well-known TV chefs mis-pronounce this word.

Back to lichens. The genus *Baglietoa* is a genus of lichenised ascomycetes in the family *Verrucariaceae*. We saw examples at Malham. The genus was first named in 1853 by the Italian lichenologist Massalongo in honour of Francesco Baglietto (1826 – 1916), an assistant to De Notaris in Genoa. *Baglietoa* should be pronounced as follows:

BAL (rhyme with first syllable of 'balance' – **YET** – **O** (rhyme with 'mow') – **A**

But definitely not with the first syllable as in BAG. The stress of the word should be slightly on the letter E to be in keeping with how Baglietto should be pronounced.

We were excited at Malham to see *Placynthium garovaglii* but what a tongue twister it proved to be. It's not helped by the fact that 'The Lichens of Great Britain & Ireland' lists the name as *Placynthium garovaglioi* which is particularly challenging. Santo Garovaglio (1805 – 1882) was an Italian botanist who was Professor of Botany at the University of Pavia in northern Italy. *Placynthium garovaglii* is named after him, as is the rare *Miriquidica garovaglii*.

Before dealing with pronunciation, a brief explanation is needed of why the specific epithets of species named in honour of Garovaglio should be *garovaglii* and not *garovaglioi* as used in 'The Lichens of Great Britain & Ireland'. Professor Nimis has pointed out, in a note to the editor of Index Fungorum that Garovaglio wrote most of his publications in Latin as Garovaglius and that the Latinisation of Italian names was current practice at that time, making *garovaglii* the correct spelling. Also, in the paper (in Italian) 'Della distribuzione geografica dei licheni di Lombardia' (1864) Garovaglio mentions some eight species named in his honour, all of them *garovaglii*. This is now generally accepted as the correct spelling.

The specific epithet should therefore be pronounced as follows:

GAR (as first syllable of 'garage') – **O** – **VAL** (as in 'valley') – **I** (rhyme with 'me') - **I**

In this case the stress of the word should be on VAL. The pronunciation of the final double i is, I think, a matter of choice. Most British lichenologists would pronounce this as

I (rhyme with me) – **I** (rhyme with my) rather than rhyming with 'me-'me'.

Of course there are subtleties in pronunciation which I cannot express in the simple phonetics above so apologies to any Italian readers who feel that I am not doing justice to their language.

So, to summarise, no audible g in the middles of tagliatelle, *Baglietoa* or *garovaglii*….per favore!

I am most grateful to Professor P.L. Nimis for supplying information about Garovaglio and for commenting on earlier drafts of this article.

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A revised multi-attribute Cladonia key using Excel

In the Summer 2016 Bulletin we (Les Knight and Annelie Burghause) described a multi-attribute key to Cladonias using the Lucid software package. Unfortunately, for many the software proved difficult, and in some cases impossible, to load and run. Thanks to the programming skills of Nigel Chadwick we have been able to to use Excel to build a multi-attribute key with almost the same functionality as the Lucid key. Because it is an Excel spreadsheet it does not require any additional software or complex installation procedures to run. The key should run on any platform capable of running any version of Excel and to date versions are available for both Microsoft PCs and Macs.

So how does this compare with Lucid?

Firstly, it uses exactly the same data as the Lucid key and therefore **has the same issues regarding missing data as that key has**. Any additional information to fill these data deficiencies would be welcomed. Currently, links to text descriptions, distribution maps and pictures have not been included but could be incorporated in later versions. It also lacks some of the finer data selection tools in Lucid.

If you would like a copy please email *lesknight@btinternet.com.*

Les Knight and Nigel Chadwick

Some thoughts on whether we can stimulate taxonomic progress with British 'problems'

The recent Epping Forest meeting yielded several distinct taxa which we cannot currently name. This is a typical experience when fieldwork is conducted anywhere in Britain. We are accumulating a large backlog of 'problems' and work on resolving them seems rather slow.

Holly leaves provided abundant material of a third British species of *Phylloblastia*, first discovered by Neil Sanderson at Ebernoe Common earlier this year. The characters of the English material seem identical to those of *P. bielczykiae* but that species is currently not known outside the tropics. We have uploaded images and information to the FGBI website and Neil has contacted one of the authors of *P. bielczykiae* to see if he can help us place this interesting foliicolous species. Alan Orange has kindly offered to attempt to sequence the Epping material.

See*: http://fungi.myspecies.info/taxonomy/term/8259/media*

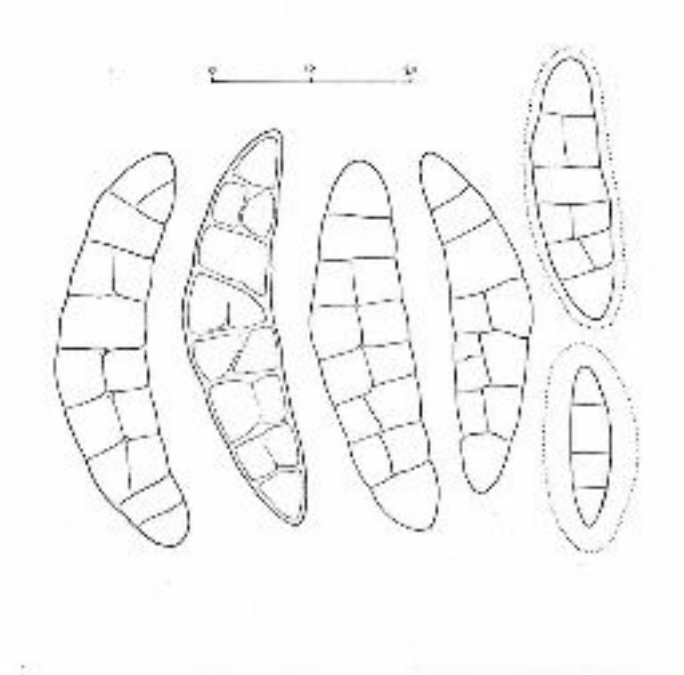

Figure 7. The spectacular ascospores of *Phylloblastia* cf. *bielczykiae* from Epping Forest.

Figure 8. *Seuratia millardetii* (*Collema epiphyllum* in old money) on the surface of a holly leaf. This cute little fungus is not a lichen but is now adopted as 'one of ours' along with other non-pathogenic foliicolous fungi.

At Epping, we also collected the curious foliicolous fungus *Seuratia millardetii* (which was previously named *Collema epiphyllum* – it resembles a diminutive foliicolous *Leptogium*). The BLS is likely to adopt all the foliicolous fungi and this will allow more thorough monitoring of the anticipated increase in abundance and diversity of foliicolous organisms. There are many such fungi which we cannot currently name, either because we have not yet found reference to them or because they are undescribed. Almost any park or garden in Britain can provide material to further these interesting taxonomic studies.

Tim Wilkins collected a *Micarea* from a fallen beech trunk in Epping Forest. The *Micarea* key leads to the couplet which includes *M. denigrata* and *M. misella* but it differs from either of those. Brian Coppins has looked at the information posted here: *http://fungi.myspecies.info/all-fungi/micarea-spmp4504*, and thinks it looks new. Brian thinks that E. Sérusiaux may sequence it for us. For other potential undescribed taxa, is there potential to conduct such taxonomic work in-house? Or at least in Britain.
Even if we can't find the time to formally describe them, surely, we can make a good stab at distinguishing the different entities and provide the information online so that lichenologists can at least start to recognise them. I have applied this approach with a couple of corticolous pyrenocarps:
http://fungi.myspecies.info/all-fungi/arthopyrenia-sp-mp4462
http://fungi.myspecies.info/all-fungi/anisomeridium-sp-mp4445
Otherwise such unknowns remain out of sight and out of mind in herbarium packets where they may languish for years or decades. The luxury of the internet makes it simple to make information about putative taxa more accessible. Any lichenologist could make valuable contributions. Currently, the only major tool not directly available to amateurs is the molecular work. However, there is plenty we can do in preparation using conventional methods of examination. DNA extraction is likely to become more accessible through innovations such as Bentolab.

There is a lot to do; it takes time but not necessarily much money. If amateur lichenologists realised that taxonomy is not the sole preserve of 'experts' they may find that this fascinating and ground-breaking work is rewarded by the thrill of scientific advancement. I feel that my best taxonomic fieldwork is conducted close to home or in areas which are repeatedly visited. Getting to know an organism, and especially semi-cryptic ones, is a long process of familiarisation.

If work starts on a future edition of the 'Flora', I hope that the authors will invite a wider circle of lichenologists to become involved. Even those who don't have the time or skills to sit at a microscope for hours may prove invaluable for their ecological insights or in providing specimens from their part of the country. I am currently working on a taxonomic revision of *Opegrapha* s. lat., in collaboration with several others, as a trial of this approach. Please contact me if you have any interest in (or problems with) *Opegrapha* or would like to see what we have found out so far.

Mark Powell
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Montane Lichen Study Group

In response to the article in the last Bulletin I am proposing the formation of a Montane Lichen Group. I am into mountains and in more recent years lichens in a big way! I spend a lot of time climbing Scottish hills, sometimes alone but more often with people who tolerate my lichen interest rather than enthuse about sitting on a cold hillside! Forming a like-minded group will move towards making an outdoor life even more perfect! And of course will contribute lists to areas where little recording has occurred.

My initial thought was to make a start with the Ben Alder area where some of the highest limestones occur in the UK. The area was visited a couple of times by Brian Coppins, Peter James, Oliver Gilbert and others and a few years ago was surveyed under contract by Andy Acton. This is however a very large area for so few visits and during some of these expeditions the weather was not always kind! Any serious exploration of this area will require the use of tents or a bothy or both.

On looking at a geological map the area of Dalradian limestone north of the highland boundary fault is extensive though rather well dispersed. I think it would be worth looking at this substrate to see how much of it occurs at a high elevation and then to focus on it for future expeditions. Clearly any ideas about the focus of the group is open to discussion.

I tend to reserve part of May and September for a Scottish visit; the weather is sometimes good and the midges are less active. I also go in February but lichenising at high elevations can be impossible!

I have already communicated these thoughts to Paul Cannon, Andy Acton, John Douglas & Dave Genney and was told to keep Brian informed.

If you are interested please get in touch and I will put some logistics together for a meeting or expedition.

Graham Boswell
togooutdoors@hotmail.com

Beara Peninsula and Killarney field meeting, SW Ireland 2014

The field meeting took place between 26th April and 3rd May 2014 with 17 attending led by John Douglass and Steve Price. The trip was initially organised by Vince Giavarini who is heartily thanked for his preparatory work but unfortunately was unable to attend. Clare Heardman (National Park & Wildlife Service) and Kathryn Freeman (Killarney National Park) were our local contacts and are thanked for sharing their time and knowledge with the group.

The group was based at the Glengarriff Park Hotel in the village of Glangarriff at the head of Bantry Bay.

The Beara Peninsula was so named by Owen Mór King of Ireland (136 - 195 AD), after his Spanish wife Beara, daughter of the King of Castille. Located within two Vice Counties, VC H3 West Cork and VC H1 South Kerry, the Peninsula sits between the Kenmare River and Bantry Bay with the Caha and Slieve Miskish mountain ranges running down it's centre. The geology is mostly red sandstone, siltstone and mudstone. The surrounding ocean boosted by the North Atlantic current helps to stabilise yearly thermal variations and the prevailing westerly and south westerly winds frequently bring moisture off the ocean. Owing to these climatic factors a certain suite of plants known as Hiberno–Lusitanian can be found here including Kidney saxifrage *Saxifraga hirsuta*, St. Patrick's Cabbage *Saxifraga spathularis*, Irish Spurge *Euphorbia hyberna*, Greater Butterwort *Pinguicula grandiflora* and the Strawberry tree *Arbutus unedo*.

The attendees were: Annelie Burghause, Frank Burghause. Heather Colls, Ginnie Copsey, Aoife Delaney, John Douglass, Kathryn Freeman, Clare Heardman, Rory Hodd, Heather Paul, Steve Price, Maxine Putnam, Peter Putnam, Sheila Quin, Jenni Roche, Eluned Smith and Anthony Taylor-Pigott.

Glengarriff Woodlands, Fisherman's Walk: VC H3, West Cork, Grid ref. IV 922 567 to IV 924 565. Visited 27th April 2014

Glengarriff, sheltered from the north by the Caha Mountains is one of the few remaining relict ancient sessile oak woodlands to persist in Ireland. This eighteenth century hunting demesne was owned and protected by the White family (owners of Bantry House and Earls of Bantry). Trees were cut from the oak woodland in the 18th century for charcoal to fuel the local iron smelter. Parts of the woodland were under-planted with trees including Scots pine and European larch in the 19th century. The State acquired 380 ha in 1955 and began using it for forestry purposes planting spruce, pine, larch, hemlock, western red cedar and small amounts of beech. In 1991 an area of Glengarriff Woods was declared a National Nature Reserve and included in a 1290 hectares Special Area of Conservation (SAC) managed by the government, with conservation of native biodiversity a priority. Non-native conifers are gradually being replaced by native broadleaved trees and steps are being taken to eradicate the invasive *Rhododendron ponticum* (Duchas 2002 & Corcoran 2009).

Lichens have been recorded from Glengarriff Woods since Miss E. Hutchins collected *Thelotrema isidioides* in 1815. Other documented visits by lichenologists include: Matilda Knowles 1933, Admiral T.A. Jones 1868, T.D.V. Swinscow 1965, Peter James 1966 and again in 1982 with Jørgensen and Rose.

Studying the lichens on a rocky outcrop by the Glengarriff River. Picture by Ginnie Copsey.

Jenny Seawright and Andy Acton visited in March 2010 and Vince Giavarini, John Douglass and Robert Thompson visited in November 2010 as part of the LichenIreland project.

The Glengarriff River runs parallel and west of the path. The oak, ash & birch woodland has an understory of holly and hazel with alder and willow close to the river. Outcropping rocks date to the late Devonian formed during the Caha Mountain formation. The rocks are composed of fine-grained micaceous purple sandstone/siltstone (Meere et al. 2013). The woodland lichen assemblages include well developed elements of the *Lobarion* and *Graphidion*. The smooth barked *Graphidion* is best developed on holly and hazel. *Arthonia ilicina* was abundant. *Graphina ruiziana*, *Schismatomma niveum, Pyrenula laevigata* and *P. occidentalis* were occasional to locally frequent. *Arthonia astroidestera, A. stellaris* and *Pyrenula dermatodes* were rare on mature holly trunks only, with the later also occurring on a shaded outcrop. *Agonimia octospora* was recorded from oak; *Graphina pauciloculata* from birch and *Porina hibernica* & *Strigula phaea* from ash. Leafy *Lobarion* species included the jelly lichens: *Leptogium brebissonii, L. coralloideum, L. cyanescens* and *L. lichenoides* together with *Degelia atlantica, Lobaria pulmonaria, L. virens, Normandina pulchella, Pannaria*

conoplea, P. rubiginosa, Parmeliella parvula, P. testacea, P. triptophylla, Sticta dufourii, S. fuliginosa, S. limbata and *S. sylvatica*. *Menegazzia terebrata* and *M. subsimilis* were seen on oak with the former also on alder. A large outcrop which sloped into the river proved a fine site for a sunny picnic (see picture). This rock also proved a rich lichen habitat supporting several species including: *Dermatocarpon intestiniforme, D. leptophyllodes, D. luridum, Lecidea phaeops, Pertusaria excludens* and *Polychidium muscicola*. *Lecidea ahlesii* was also found on outcrops near the river under light shade.

Allihies disused Copper Mine: VC H3, West Cork, Grid Ref. IV 591 458. Visited 28th April

Allihies Mine.

Allihies Copper Mine sits at the end of the Beara Peninsula between the Slieve Miskish Mountain range and Ballydonegan Bay. Trees from local woodlands were burnt in the furnaces to power the pumps to prevent the mine from flooding. This will have inevitably impacted the local woodlands and the lichen flora they supported. The major working of the mines occurred between 1812 and 1884. The extracted quartz together with the copper sulphide minerals chalcopyrite & bornite were crushed and the ore separated using massive crushing machines. The ore was then shipped to Swansea for smelting. Over 1500 people were employed at the height of the mine's

activity. The mine was worked in the 1920s and between 1957 and 1962 by which time it was declared unviable. A museum is based in the Methodist Church built in 1845 for the Cornish miners who worked at Allihies.

There are six mines at Allihies from Dooneen in the north west to Tra namBean mine in the south west. Our lichen survey centred on an area between Mountain mine and Caminches near the centre of the mining area.

Metallophyte species found include *Stereocaulon leucophaeopsis, S. nanodes* and *Rhizocarpon oederi*. Vince Giavarini had previously recorded *Arthonia atlantica* from this mine, however we were working in a different area and did not find it during our survey.

Derreen Garden: VC H1, South Kerry, Grid Ref. IV 76-7 58-9. Visited 29th April

A group surveying one of the exotic trees at Derreen Gardens.

Occupying a central and northern position on the Beara Peninsula, with the Caha Mountains to the south, Macgillycuddy's Reeks to the north and Kilmakilloge Harbour to the west, Derreen Gardens are in a beautiful setting.

The fifth Marquess of Landsdowne began planting the arboretum garden in 1870, which covers more than 60 acres and includes nearly 12km of paths. Some of

the specimens came from India where the Marquess was Viceroy and from Canada where he was Governor General.

A recent storm had cut through the arboretum and taken down a number of large trees. A wide variety of exotic and native open grown trees in the gardens supported a good *Lobarion* community including 3 *Lobaria* species, 3 *Sticta* species and *Graphidion* communities including *Arthonia astroidestera, A. cinnabarina*, and *Phaeographis smithii*.

Coolcreen north of Healy Pass: VC H1, South Kerry, Grid Ref. IV 78 54. Visited 29th April

The burn and bridge at Coolcreen

The Healy Pass is a section of winding mountain road which cuts north to south across the Beara Peninsula between Adrigole in Co. Cork in the south & Lauragh in Co. Kerry in the north. The road runs between two of the highest mountain peaks in the Caha mountains: Hungry Hill to the west at 682m and Knockowen to the east at 658m. The Healy Pass rises to 334m. The underlying rock is sandstone/siltstone. Some of the group looked at boulders on the hillsides whilst others looked at the rocks in and around the burn. Boulders in the burn supported *Ephebe lanata*, *Porina lectissima, Rhizocarpon infernulum* f. *sylvaticum, R. lavatum, Verrucaria margacea* and *Ionaspis lacustris*

with the parasite *Sagediopsis lomnitzensis.* The boulders on the surrounding hillside support a good diversity of upland species including *Opegrapha saxigena, Pertusaria excludens* and *Porpidia melinodes*.

Killarney National Park: Reenadina Wood to West Meadow Bay, VC H2, North Kerry, Grid Ref. IV 95 86. Visited 30th April

Situated at the central gateway to the Iveragh Peninsula, Killarney National Park was designated as a UNESCO biosphere reserve in 1981. The reserve encompasses three lakes, the largest of which Lough Leane is 5 x 4km. Tomies Mountain rises to 735m to the west and the highest mountain range in Ireland, Macgillycuddy's Reeks, is visible just beyond. To the south is Torc Mountain (535m) with Mangerton (839m) just beyond that. These mountain ranges shelter the park somewhat from incoming northerly and westerly weather. The geology in this section of the park is on the boundary between Carboniferous limestone to the north and east and the Devonian Old Red Sandstone to the south and west. Reenadina Wood was visited during the BLS Killarney meeting in 1996 and surveyed as part of the LichenIreland Project by J. Douglass, V. Giavarini and P. Whelan in 2009 and J. Douglass & V. Giavarini in 2010. This area is famous for its old growth holly, yew and oak woodland and the lichen flora is second to none in the whole of Ireland. The *Lobarion* and *Graphidion* communities are excellent. Of particular note is the abundance of *Pyrenula dermatodes* on holly.

Underwater shot of fertile *Collema dichotomum* with mayfly nymphs; on the West Water nr. Edzell, Angus.

Some years earlier Vince Giavarini had found River Jelly Lichen (RJL) *Collema dichotomum* (a globally threatened, UK Schedule 8 species), growing on submerged rock in Lough Leane in West Meadow Bay. This species (see image above) was re-found growing in some abundance on submerged boulders together with *Verrucaria aquatilis, V. rheitrophila* and *Nostoc parmelioides*. This is the only confirmed record of RJL in Southern Ireland. RJL has also been confirmed for one site in Northern Ireland on the Glenarm River, Co. Antrim; first recorded by Richard Brinklow in 1973, re-found by Nick Stewart in 1992 and again by Mike Simms in 2014 (BLS bulletin **119**, Winter 2016).

The group looking at *Pyrenula dermatodes* (large pinkish patches on the trunk of a mature holly).

Bantry House: VC H3, West Cork,Grid Ref. IV 98 48. Visited 1st May

Originally named Blackrock, Bantry House was built around 1700. Bought by Councillor Richard White in 1750 the house was renamed Seafield. The second Earl of Bantry and his wife developed the gardens which feature a south facing parterre with an ornate fountain surrounded by *Wisteria sinensis* leading to the Hundred Steps. Other habitats include mixed woodland and trees in open parkland. The wisteria proved an interesting habitat supporting a number of *Lobarion* species including *Leptogium cyanescens, L. lichenoides, Pannaria rubiginosa* and

Bantry House and the *Wisteria* encircling the fountain

three species of *Sticta*. Other notable finds include *Leptogium brebissonii* and *Thelopsis rubella* on a fallen oak branch, *Physcia tribacioides* on a fallen pine branch and *Opegrapha corticola* on oak and sycamore.

Glengarriff Castle: VC H3, West Cork, Grid Ref. IV 94 55. Visited 2nd May

Built around 1790 by Colonel Simon White, brother of the first Earl of Bantry Glengarriff Castle is gothic in style and overlooks Glengarriff Harbour. The castle operated as a resort until the late 1970's. Yeats among other notaries apparently stayed here . The surrounding woodland contains oak, ash, beech, willow, Japanese red cedar, European larch and Chilean pine. A well developed Lobarion was found on willow, ash and oak including *Leptogium juressianum* on oak. Other species of note include *Biatora globulosa* found on an oak twig and *Lecidea sanguineoatra* on willow. A large coastal outcrop held our interest after lunch despite heavy midge attack, which was thankfully only intermittent, due to regular gusts of wind. This outcrop supported species such as *Collema furfuraceum*, *Dermatocarpon miniatum*, *Lecanora actophila, L. poliophaea, Leptogium britannicum, Rinodina luridescens, Solenopsora holophaea, S. vulturiensis, Vahliella leucophaea* and a wind and salt-blasted multi-lobed *Sticta* hiding in the crevices.

Maxine and Anthony surveying a coastal outcrop.

On 'private forays' before and after the meeting Heather Paul also re-found *Teloschistes flavicans* on coastal rocks at Baltimore. This species had originally been found here by Lilian Porter in 1936 and re-found by A. Fletcher and I. Evans in 1979. Heather also found *Degelia ligulata* at Garnish Point and *Tremella parmeliarum* (a new lichenicolous fungus for the UK & Ireland) on the fallen branch of an old pine in Glengarriff Town, together with *Parmelinopsis minarum* (new to Ireland) and *P. horrescens* which is known for Glengarriff woodlands, but is very rare in Ireland and only known from two counties.

A personal account of the meeting by Anthony Taylor-Pigott (Badger)

Earlier this year I had the great pleasure of joining a wonderful group of lichenologists on a trip to the south-west of Ireland for the British Lichen Society's spring field meeting. It was a great experience, and I felt I learnt a lot about lichens from the other participants.

Our first day was spent exploring the woodlands around our base in Glengarriff in West Cork. Verdant and lush, with oodles of Lobarion lichens (though very little actual *Lobaria*), these woodlands were to be a good introduction to the lichens we would see through the week. Whilst the lichens there were just as lush as anything I had seen in Scotland, the weather was positively Mediterranean by comparison. The flora agreed and we came across stands of strawberry tree (*Arbutus unedo*), an Irish native with Iberian roots. Its flaky bark did not seem to support a large array of epiphytes however. Although I joined the trip primarily for the lichens, the wildlife in this corner of Ireland could not be ignored and I had a few things on my list to see, including the almost endemic Kerry slug (*Geomalacus maculosus*). But although we were informed by Wildlife Ranger Claire Heardman that we would be in with a chance of seeing them (as we all had our noses to the tree trunks) unfortunately the only slugs we saw were regular garden variety ones. I often feel lichenology has the distinct advantage over botany that lichens can be studied all year round, but our visit at the beginning of May was made better by the fabulous show of spring flowers. One of the best for me was the Irish spurge (*Euphorbia hyberna*), the heady, honey scent of which was so thick at times it could almost be swum through.

Our second day was spent on a trip to a disused copper mine to see metal-loving lichens and choughs; a few of the participants also visited a very nice tea room in the village at Allihies. For many of the group one of the highlights of the week was a visit to the wild and beautiful Derreen Gardens, where a rich lichen flora was found despite widespread damage to the woodlands from the ferocious winter storms. The gardens were also apparently inhabited by "Derreenies", a type of faery, but sadly (like the Kerry slugs) none were to be found. We ventured over into County Kerry for a day out at the spectacular Killarney National Park, where we explored the dark and deep yew forests, and the lichen-rich woodlands along the shores of Loch Leane where all four of the *Lobaria* species were found. We also visited Bantry House, where a very old wisteria harboured a stunning lichen flora.

But the best lichen of the week was fittingly found on the last day, and only a stone's throw from our base in Glengariff. After spending some time watching Glengarriff's very own pair of white-tailed eagles out on an island in the bay, the group started searching the grounds of an abandoned hotel on the coast. There a few of us came across a smallish ash growing next to a boggy area. I happened to be focussing on one group of lichens that week, the jelly lichens. I saw one on the tree that looked a bit odd so I took a small sample for later identification, and showed it to John Douglass. He confirmed it as *Leptogium juressianum*! I think that was the perfect way in which to end my spring lichenological adventures.

Leptogium juressianum specimen from Natural History Museum, London, collected by F. Rose, P.W. James and P. M. Jørgensen at Glaway's Bridge, Killarney 16th September 1982.

This was my second field meeting with the BLS, and I have once again been impressed with the society's members' good humour and willingness to share knowledge. I very much hope I can join them again soon.

Anthony Taylor-Pigott

The group at Fisherman's Walk, Glengarriff Woodlands, (left to right) Heather Colls, Rory Hodd, Eluned Smith, Jenni Roche, Ginnie Copsey, Steve Price, Annelie Burghause, Anthony Taylor-Pigott (Badger), John Douglass, Maxine Putnam, Heather Paul, Sheila Quin and Frank Burghause. Picture by Clare Heardman.
All photographs by John Douglass (unless otherwise stated).

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John Douglass

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
2008	*Abrothallus welwitschii*						•		
0010	*Acarospora fuscata*		•		•				
0034	*Acrocordia gemmata*						•	•	
0036	*Acrocordia salweyi*							•	
0037	*Agonimia octospora*	•	•	•					
0212	*Amandinea punctata*						•	•	
0047	*Anaptychia runcinata*			•				•	
0048	*Anisomeridium biforme*					•	•		
0049	*Anisomeridium polypori*						•	•	
1584	*Anisomeridium ranunculosporum*	•				•			
1687	*Arthonia astroidestera*	•		•		•			
0072	*Arthonia cinnabarina*			•		•	•	•	
0094	*Arthonia ilicina*	•		•		•			
0068	*Arthonia punctiformis (F)*					•	•	•	
0069	*Arthonia radiata*	•		•		•	•	•	
0071	*Arthonia stellaris*	•				•			
0082	*Arthopyrenia cinereopruinosa*	•							
1605	*Arthopyrenia nitescens*							•	
0102	*Aspicilia caesiocinerea*	•	•						
0103	*Aspicilia calcarea*						•		
0112	*Aspicilia grisea*		•						
0115	*Aspicilia laevata*	•		•					

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
0116	*Aspicilia leprosescens*						•		
0136	*Bacidia biatorina*	•							
0155	*Bacidia laurocerasi*			•					
0164	*Bacidia rubella*						•		
0166	*Bacidia scopulicola*							•	
0176	*Baeomyces rufus*	•	•						
0310	*Biatora globulosa*							•	
2018	*Biatoropsis usnearum (LF)*	•		•				•	
0200	*Buellia aethalea*		•	•	•				
0204	*Buellia disciformis*	•		•		•		•	
0219	*Buellia ocellata*		•						•
0216	*Buellia stellulata*		•						
2442	*Caloplaca arcis*							•	
1689	*Caloplaca britannica*							•	
1644	*Caloplaca ceracea*							•	
0247	*Caloplaca citrina s. lat.*						•	•	•
0253	*Caloplaca crenularia*	•		•			•	•	
0252	*Caloplaca ferruginea s. str.*			•		•	•	•	
0259	*Caloplaca flavescens*							•	
2315	*Caloplaca flavocitrina*		•				•	•	
0255	*Caloplaca flavovirescens*						•		
2527	*Caloplaca holocarpa s.str.*	•	•				•		
2607	*Caloplaca limonea*							•	
0267	*Caloplaca marina*							•	
0268	*Caloplaca microthallina*							•	
2461	*Caloplaca oasis*						•		
0277	*Caloplaca saxicola*							•	
0282	*Caloplaca thallincola*			•				•	
0291	*Candelariella aurella* f. *aurella*		•						
0298	*Candelariella vitellina* f. *vitellina*		•	•			•	•	
0306	*Catillaria chalybeia* var. *chalybeia*	•	•				•	•	•
0183	*Catinaria atropurpurea*	•		•		•		•	
0341	*Chaenotheca brunneola*			•					
0345	*Chaenotheca hsipidula*					•			
0354	*Chrysothryx candelaris*								•
0369	*Cladonia cervicornis* subsp. *cervicornis*	•	•						

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
0370	*Cladonia cervicornis* subsp. *verticillata*		•						
0371	*Cladonia chlorophaea s. lat.*			•				•	
0372	*Cladonia ciliata* var. *ciliata*	•	•						
0373	*Cladonia ciliata* var. *tenuis*	•	•						
0375	*Cladonia coniocraea*	•		•		•	•		•
1749	*Cladonia diversa*		•						
0384	*Cladonia fimbriata*	•		•				•	
0386	*Cladonia floerkeana*	•	•						
0389	*Cladonia furcata* subsp. *furcata*	•	•	•					
0403	*Cladonia ochrochlora*							•	
0408	*Cladonia polydactyla* var. *polydactyla*					•		•	
0407	*Cladonia pocillum*		•					•	
0409	*Cladonia portentosa*	•							
0410	*Cladonia pyxidata*	•		•		•	•	•	•
0359	*Cladonia ramulosa*	•						•	
0412	*Cladonia rangiformis*		•						
0416	*Cladonia squamosa s. lat.*			•					
2365	*Cladonia squamosa* var. *squamosa*		•						
0417	*Cladonia squamosa* var. *subsquamosa*							•	
0421	*Cladonia subcervicornis*	•	•		•				
0422	*Cladonia subulata*			•					
0426	*Cladonia uncialis* subsp. *biuncialis*	•	•						
0734	*Clauzadea immersa*					•			
0751	*Clauzadea monticola*							•	
0433	*Collema auriforme*							•	•
0446	*Collema dichotomum*					•			
0444	*Collema fasciculare*					•			
0449	*Collema furfuraceum*			•			•	•	
0457	*Collema subflaccidum*					•		•	
0459	*Collema tenax* var. *tenax*							•	
0085	*Collemopsidium foveolatum*							•	
0093	*Collemopsidium sublitorale*							•	
0477	*Cystocoleus ebeneus*		•						
#N/A	*Dactylospora scapanaria (F)*	•							
1027	*Degelia atlantica*	•		•		•	•	•	
2540	*Degelia cyanoloma*					•		•	

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
0480	*Dermatocarpon intestiniforme*	•							
0481	*Dermatocarpon leptophyllodes*	•							
0487	*Dermatocarpon luridum*	•				•			
0483	*Dermatocarpon meiophyllizum*					•			
0484	*Dermatocarpon miniatum*							•	
0490	*Dimerella lutea*		•	•		•			
0489	*Dimerella pineti*							•	
0496	*Diplotomma alboatrum*							•	
0504	*Enterographa crassa*			•		•	•	•	
0509	*Ephebe lanata*	•	•		•				
0511	*Evernia prunastri*	•		•		•	•	•	
0987	*Flavoparmelia caperata*	•	•	•		•	•	•	•
0515	*Fuscidea cyathoides* var. *cyathoides*		•		•			•	
0521	*Fuscidea lightfootii*						•	•	
0527	*Fuscidea lygaea*		•		•				
0529	*Graphina anguina*						•	•	
0530	*Graphina pauciloculata*	•							
0531	*Graphina ruiziana*	•				•			
0532	*Graphis elegans*	•		•				•	
0533	*Graphis scripta*	•		•		•	•	•	
0539	*Gyalecta jenensis*					•			
0541	*Gyalecta truncigena*						•		
0557	*Herteliana gagei*	•		•		•			
	Hydropunctaria oceanica							•	
0582	*Hypogymnia physodes*	•	•	•		•	•	•	•
0583	*Hypogymnia tubulosa*	•		•			•		•
2468	*Hypotrachyna afrorevoluta*						•		
1013	*Hypotrachyna revoluta s.lat*							•	
1017	*Hypotrachyna sinuosa*	•		•					
0573	*Ionaspis lacustris*	•	•		•				
0547	*Jamesiella anastomosans*	•							
0708	*Japewiella tavaresiana*			•			•		
	Kalchbrenneriella cyanescens (LF)	•							
0592	*Lecanactis abietina*			•		•	•		
0307	*Lecania chlorotiza*					•			
0143	*Lecania cuprea*					•			

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
0613	*Lecania cyrtella*							•	
1625	*Lecania hutchinsiae*		•				•	•	
0624	*Lecanora actophila*							•	
0627	*Lecanora albescens*		•				•	•	•
0628	*Lecanora alboflavida*	•	•						
0639	*Lecanora chlarotera*	•		•		•	•	•	
0641	*Lecanora confusa*			•				•	
0646	*Lecanora dispersa*		•					•	
0649	*Lecanora expallens*	•	•	•		•	•	•	•
0635	*Lecanora campestris* subsp. *campestris*						•	•	•
0641	*Lecanora confusa*						•		
0653	*Lecanora gangaleoides*		•					•	
0658	*Lecanora jamesii*			•		•	•	•	
0661	*Lecanora muralis*							•	
0666	*Lecanora poliophaea*							•	
0667	*Lecanora polytropa*		•		•				
0783	*Lecanora sulphurea*		•					•	
0790	*Lecidea ahlesii*	•							
2583	*Lecidea fuscoatra s. str.*		•		•				
2474	*Lecidea grisella*	•							
0761	*Lecidea phaeops*	•							
1772	*Lecidea sanguineoatra*							•	
0797	*Lecidella elaeochroma* f. *elaeochroma*	•		•		•	•	•	
0802	*Lecidella scabra*						•		
0803	*Lecidella stigmatea*						•		
0823	*Lepraria caesioalba*		•						
1974	*Lepraria incana s. str.*			•			•		
1629	*Lepraria lobificans*	•		•		•	•	•	
0828	*Leptogium brebissonii*	•				•	•		
0829	*Leptogium britannicum*					•	•	•	
0830	*Leptogium burgessii*					•	•		
1660	*Leptogium coralloideum*	•				•			
0834	*Leptogium cyanescens*	•				•	•	•	
0846	*Leptogium gelatinosum*							•	
0836	*Leptogium hibernicum*					•			
0839	*Leptogium lichenoides*	•		•		•	•	•	

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
1612	*Leptogium juressianum*							•	
2530	*Leptogium pulvinatum*							•	
0855	*Lobaria amplissima*					•			
0857	*Lobaria pulmonaria*	•		•		•		•	
0858	*Lobaria scrobiculata*			•		•	•	•	
0858	*Lobaria virens*	•		•		•		•	
0551	*Loxospora elatina*	•		•			•	•	
0318	*Megalaria pulverea*	•						•	
0862	*Megalospora tuberculosa*	•				•		•	
0998	*Melanelixia fuliginosa*		•	•					
0997	*Melanelixia glabratula*			•		•	•	•	
1020	*Melanelixia subaurifera*	•				•	•	•	
2447	*Menegazzia subsimilis*	•							
0869	*Menegazzia terebrata*	•							
1720	*Micarea coppinsii*		•						
0880	*Micarea lignaria* var. *lignaria*		•		•				
0887	*Micarea prasina*	•						•	
0889	*Micarea stipitata*	•							
2293	*Micarea xanthonica*		•						
0320	*Mycobilimbia pilularis*					•			
0550	*Mycoblastus caesius*	•							
1278	*Mycoglena myricae*					•			
0075	*Mycoporum antecellens*	•					•	•	
1576	*Mycoporum lachteum*					•			
0025	*Myriospora smaragdula*		•		•				
0917	*Nephroma laevigatum*			•		•		•	
0920	*Normandina pulchella*	•		•		•	•	•	
0921	*Ochrolechia androgyna*		•						
0945	*Opegrapha corticola*						•		
0926	*Ochrolechia parella*	•	•	•			•	•	
0938	*Opegrapha atra*	•				•	•	•	
0959	*Opegrapha calcarea*		•			•		•	
0945	*Opegrapha corticola*						•	•	
0947	*Opegrapha gyrocarpa*		•						
0948	*Opegrapha herbarum*	•							
0952	*Opegrapha mougeotii*					•			

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
0954	*Opegrapha ochrocheila*			•					
0961	*Opegrapha saxigena*				•				
0964	*Opegrapha varia*					•			
0966	*Opegrapha viridis*			•		•			
0943	*Opegrapha vulgata*			•		•		•	
0974	*Pannaria conoplea*	•		•		•		•	
0980	*Pannaria rubiginosa*	•		•		•	•	•	
1006	*Parmelia omphalodes*		•						
1015	*Parmelia saxatilis*		•	•		•	•	•	
1022	*Parmelia sulcata*	•				•	•	•	•
1028	*Parmeliella parvula*	•		•		•	•	•	
1031	*Parmeliella testacea*	•				•			
1032	*Parmeliella triptophylla*	•				•		•	
0999	*Parmelinopsis horrescens*								•
1004	*Parmelinopsis minarum*								•
0989	*Parmotrema crinitum*	•	•	•		•	•	•	•
1008	*Parmotrema perlatum*	•	•	•		•	•	•	•
1012	*Parmotrema reticulatum*			•			•		
1040	*Peltigera collina*					•			
1042	*Peltigera horizontalis*			•		•		•	
1043	*Peltigera hymenina*			•		•		•	
1047	*Peltigera membranacea*	•		•		•		•	
1050	*Peltigera praetextata*	•		•				•	
1056	*Pertusaria albescens* var. *albescens*			•				•	
1057	*Pertusaria albescens* var. *corallina*				•	•		•	
1058	*Pertusaria amara* f. *amara*			•			•	•	
1070	*Pertusaria aspergilla*	•	•	•	•				
1066	*Pertusaria corallina*		•		•				
1071	*Pertusaria excludens*	•	•	•	•			•	
1072	*Pertusaria flavicans*		•		•				
1075	*Pertusaria hemisphaerica*	•							
1076	*Pertusaria hymenea*	•		•		•	•	•	
1079	*Pertusaria leioplaca*	•		•		•		•	
1083	*Pertusaria multipuncta*	•		•		•		•	
1087	*Pertusaria pertusa*		•	•		•		•	
1089	*Pertusaria pseudocorallina*	•	•	•	•			•	

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
1100	*Phaeographis dendritica*						•		•
1103	*Phaeographis smithii*			•		•		•	
1107	*Phaeophyscia orbicularis*							•	
1110	*Phlyctis argena*			•			•		•
1113	*Physcia aipolia*	•		•		•	•	•	
1116	*Physcia dubia*		•						
1118	*Physcia leptalea*						•		
1120	*Physcia tenella*			•			•		
1139	*Placynthium nigrum*	•				•	•		
2153	*Plectocarpon lichenum (LF)*			•					
1150	*Polyblastia cruenta*				•				
1166	*Polychidium muscicola*	•							
1168	*Porina aenea*					•	•		
1171	*Porina chlorotica* f. *chlorotica*	•						•	•
1178	*Porina hibernica*	•							
1180	*Porina lectissima*				•				
1181	*Porina leptalea*	•		•		•	•		
0562	*Porpidia cinereoatra*	•	•	•	•			•	
0564	*Porpidia crustulata*	•	•		•				
2398	*Porpidia flavocruenta*		•						
0567	*Porpidia hydrophila*•				•				
0568	*Porpidia macrocarpa* f. *macrocarpa*	•	•		•				
2399	*Porpidia macrocarpa* f. *nigrocruenta*		•						
0565	*Porpidia melinodes*		•		•				
0562	*Porpidia cinereoatra*	•	•	•	•				
0564	*Porpidia crustulata*	•	•		•				
0571	*Porpidia platycarpoides*							•	
0572	*Porpidia tuberculosa*	•	•	•				•	
1189	*Protoblastenia rupestris*						•		•
0985	*Punctelia borreri*						•		
1222	*Pyrenula dermatodes*	•				•			
1221	*Pyrenula chlorospila*						•		
1223	*Pyrenula laevigata*	•							
1224	*Pyrenula macrospora*	•		•		•	•		
1225	*Pyrenula occidentalis*	•							
1231	*Ramalina calicaris*			•		•	•		

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
1230	*Ramalina canariensis*			•					
1232	*Ramalina cuspidata*					•			
1234	*Ramalina farinacea*	•		•		•	•	•	
1235	*Ramalina fastigiata*					•	•	•	
1236	*Ramalina fraxinea*						•		
1240	*Ramalina siliquosa*		•	•				•	
1257	*Rhizocarpon geographicum*		•	•	•			•	
2334	*Rhizocarpon infernulum* f. *infernulum*		•						
1037	*Rhizocarpon infernulum* f. *sylvaticum*				•				
1264	*Rhizocarpon lavatum*				•		•		
1267	*Rhizocarpon oederi*								
1266	*Rhizocarpon reductum*	•	•	•	•		•	•	
1250	*Rhizocarpon richardii*		•						
1281	*Rinodina atrocinerea*	•		•					
1287	*Rinodina efflorescens*	•							
1293	*Rinodina luridescens*							•	
1298	*Rinodina sophodes*					•	•	•	
1202	*Romjularia lurida*							•	
2013	*Sagediopsis lomnitzensis (LF)*				•				
1306	*Sarcogyne regularis*							•	
1313	*Schaereria fuscocinerea* var. *fuscocinerea*				•				
1315	*Schismatomma decolorans*					•			
1317	*Schismatomma niveum*	•				•			
0607	*Schismatomma umbrinum*	•	•						
1306	*Sarcogyne regularis*					•	•		
1325	*Solenopsora holophaea*							•	
1326	*Solenopsora vulturiensis*							•	
1563	*Stenocybe pullatula*	•							
1564	*Stenocybe septata*	•				•			
1355	*Stereocaulon evolutum*		•						
1639	*Stereocaulon leucophaeopsis*		•						
1357	*Stereocaulon nanodes*		•						
1363	*Stereocaulon vesuvianum* var. *vesuvianum*		•		•				
1366	*Sticta canariensis (dufourii)*	•		•					
1367	*Sticta fuliginosa*	•		•		•	•	•	
1368	*Sticta limbata*	•		•		•	•	•	
1369	*Sticta sylvatica*	•		•		•	•	•	

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
1963	*Stigmidium microspilum*	•							
2392	*Strigula phaea*	•							
0630	*Tephromela atra* var. *atra*	•	•		•			•	
2349	*Tephromela atra* var. *torulosa*					•	•	•	
1900	*Thelidium fontigenum*					•			
1394	*Thelidium papulare*						•		
1408	*Thelopsis rubella*						•		
1410	*Thelotrema lepadinum*	•		•		•	•	•	
1565	*Tomasellia gelatinosa*							•	
1415	*Toninia aromatica*							•	
1431	*Trapelia coarctata*	•							
1581	*Trapelia corticola*	•							
1432	*Trapelia glebulosa*		•		•			•	
1595	*Trapelia placodioides*	•	•				•		
1582	*Trapeliopsis pseudogranulosa*	•		•				•	
	Tremella parmeliarum (LF)								•
1469	*Usnea cornuta*	•		•			•	•	•
1816	*Usnea esperantiana*			•		•	•		
1461	*Usnea flammea*	•	•	•		•	•	•	•
1817	*Usnea fragilescens* var. *mollis*			•					
1468	*Usnea hirta*					•			
1470	*Usnea rubicunda*	•						•	
1471	*Usnea subfloridana*						•		
0977	*Vahliella leucophaea*							•	
2261	*Vouauxiella lichenicola (LF)*					•			
1479	*Verrucaria baldensis*						•		
1871	*Verrucaria elaeina*							•	
1491	*Verrucaria fusconigrescens*		•				•		
1498	*Verrucaria internigrescens*							•	
1502	*Verrucaria macrostoma* f. *macrostoma*						•	•	
1503	*Verrucaria margacea*				•				
1506	*Verrucaria mucosa*								
1507	*Verrucaria muralis*			•				•	
1476	*Verrucaria aquatilis*					•			
1510	*Verrucaria nigrescens*					•			•
1513	*Verrucaria praetermissa*					•			
1499	*Verrucaria rheitrophila*					•			

BLS no.	Taxon Name	Fishermans Walk	Allhies Mine	Derreen Garden	Healy Pass	Killarney NP	Bantry House	Glengarriff Castle	Glengariff Town
1517	*Verrucaria striatula*							•	
1518	*Verrucaria viridula*						•	•	
0988	*Xanthoparmelia conspersa*	•		•					
1005	*Xanthoparmelia mougeotii*			•					
1026	*Xanthoparmelia verruculifera*							•	
1538	*Xanthoria aureola*			•				•	
1513	*Xanthoria parietina*					•	•	•	

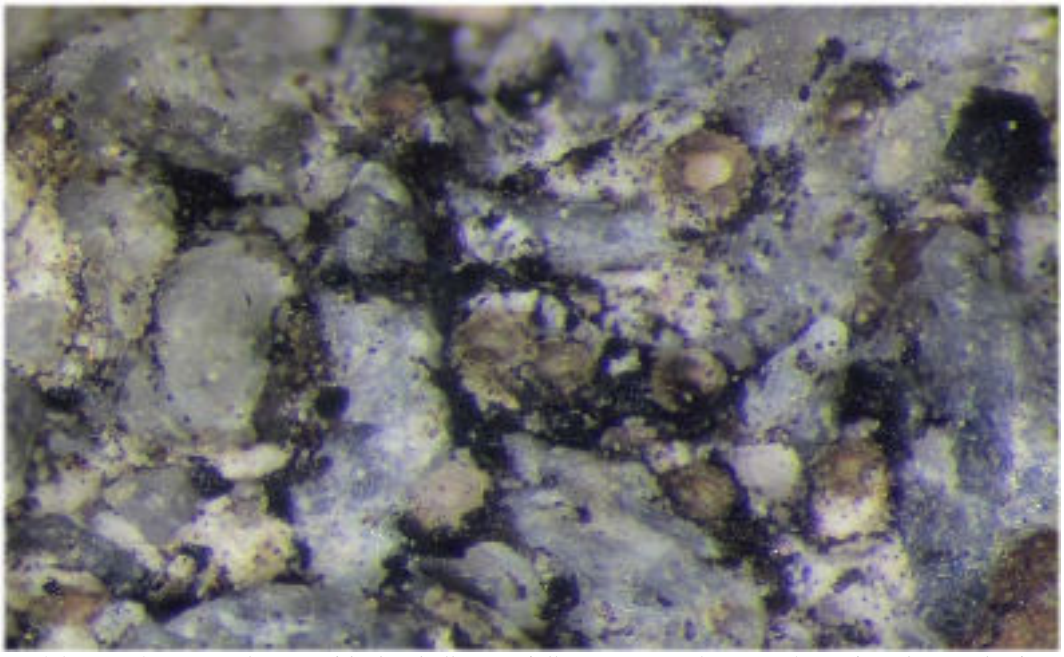
Lead-loving lichens in the Scottish Borders

As many *Bulletin* readers will know, there is a distinctive assemblage of lichens associated with rocks containing metal ores, found especially in spoil heaps from old mine workings. A small group (Les and Sue Knight, Janet Simkin and Paul Cannon) spent a day-and-a-half at the end of August fossicking for lichens in Leadhills (VC77 Lanarkshire) and Wanlockhead (VC72 Dumfries). This area was a major centre for lead mining from Roman times until the 1930s, and small-scale prospecting for gold continues to this day – with an 18g nugget worth around £10,000 found in 2015. Our efforts were rewarded with scientific knowledge rather than hard cash, but were none the less satisfying. Also satisfying were the soup and bacon rolls at the Museum of Lead Mining in Wanlockhead…

A focus for the visit was to resurvey and monitor a population of *Gyalidea roseola*, a poorly known metal-specialist that is one of the target species of the Lost and Found Fungi project (*http://fungi.myspecies.info/content/lost-found-fungi-project*) supported by the Esmée Fairbairn Foundation, which provided partial financial support for the occasion. *G. roseola* was given the conservation status **Critically Endangered** by Woods & Coppins (2012), listed as a BAP Priority Species and subsequently under Section 2(4) of the Nature Conservation (Scotland) Act. Its first UK site is at Strontian in Argyll (the place from which the element strontium was discovered), and the only other known locality at the time of our visit was at a mine site just NW of Wanlockhead, a 2005 record contributed by Brian Simpson, Peder Aspen and John Douglass. John took a photo of the exact collection site (see below), an example of best practice that should be emulated by anyone finding something that could be extra-special…

The site for *Gyalidea roseola* at Wanlockhead, the exact spot marked by a GPS unit

We found the site without difficulty, but the area had clearly been further disturbed since 2005, with rock and concrete debris in different positions – probably the work of trail-bikers. Further challenges were the minute nature of the species concerned (John had suggested bringing a ×20 hand lens) and identification of the rocks present. Spoil heaps are rubbish piles, after all, and tend to be complex mixtures from a range of different workings and ages. The substratum for the 2005 collection was listed as micaceous sandstone, presumably similar to what we considered to be greywacke. Geologists can disagree over identifications too… We picked up/chipped off various rock fragments harbouring the most inconspicuous lichens we could find, and were rewarded in the end by one of Sue's samples which was subsequently confirmed as *Gyalidea roseola* by Brian Coppins. We can therefore confirm that the species persists at this site, though it remains highly vulnerable to future disturbance.

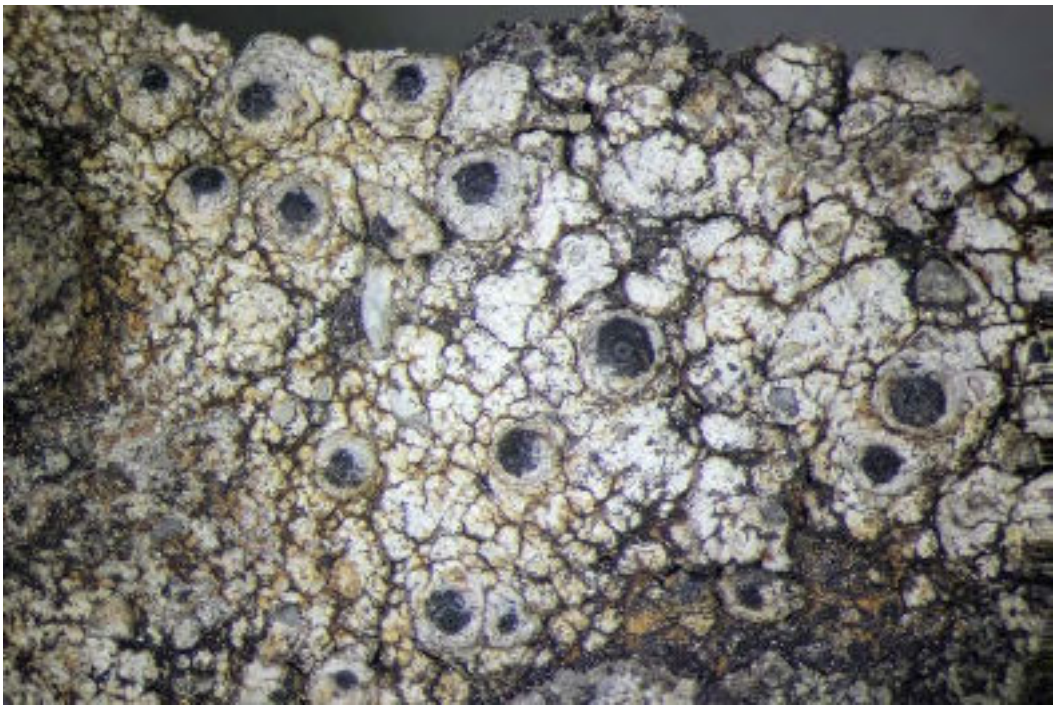


Gyalidea roseola, on sandstone with the thallus partially overgrown by cyanobacteria. The apothecium (upper right) is about 250 µm in diameter.

Stereocaulon dactylophyllum, with small black apothecia of *Catillaria stereocaulorum* dotting the podetia

Even without Janet in the party, it would have been difficult to ignore other lichens in the area, so general recording was part of the package and to date nearly 300 records

have been added to the BLS database. The area around the *Gyalidea* site was not very diverse in lichen terms, due to the continuing disturbance, concrete dust etc., but some metal specialists such as *Epilichen scabrosus*, *Lecanora semipallida* (confirmed with a UV torch under a raincoat), *Myriospora smaragdula* and *Stereocaulon condensatum* were listed.



Janet's eyeballs – *Sporodictyon schaererianum*, its large perithecia partially covered with thalline material

After a pub meal that included haggis bonbons (as a starter, not a sweet) and a night in an old miner's cottage in Leadhills (cosy but comfortable) we returned to the fray. There are extensive mine workings in the valley between Wanlockhead and Leadhills to the north (which is just across the border into Lanarkshire), and we spent the morning surveying spoil heaps close to the narrow-gauge railway that was originally built to transport processed ore to the main line between Carlisle and Glasgow. Occasional whistles from a former mine engine travelling up and down interrupted our studies. The spoil deposits here were much less disturbed than at the Wanlockhead site, with a broader range of species. Sue again came up with the goods, with a further record of *Gyalidea roseola* on a rock that could perhaps be best described as calcareous conglomerate, a new VC record and the third site in the UK for this species. Other notable finds included a suite of *Stereocaulon* species including statuesque thalli of *S. dactylophyllum* parasitized by *Catillaria stereocaulorum*. We had hoped to refind the rare *S. tornense*, but our candidate for this species turned out (surprisingly to us) to be the sorediate morph of *Porpidia superba*. And Janet rediscovered her "eyeballs" – her *aide-memoire* for *Sporodictyon schaererianum*, a large-fruited perithecial species she'd previously found in Wales but couldn't remember its name.

Parmelia submontana on *Acer pseudoplatanus* at Wanlockhead cemetery

We returned to Wanlockhead for a further helping of soup and bacon rolls, and then visited the cemetery, having been tipped-off by telephone from East Linton that the sycamore trees there harboured one of only four known UK populations of *Parmelia submontana*. As *Lichens of Great Britain and Ireland* (2009) states, this resembles a loosely-attached form of *P. sulcata* with strap-shaped, pendent little-branched lobes with raised apices and down-rolled margins. We were pleased to discover that the trunks of the trees surrounding the cemetery were plastered with the species, and the population appears very healthy. There does not seem any particular reason why this species has such a restricted distribution in the UK – perhaps it is overlooked. Other finds of interest included a gravestone festooned with *Bryoria fuscescens* (see the front cover of this *Bulletin*).

A small area of mine spoil beside the cemetery was studied in some detail, the weather being conducive to lying on the ground to search for small things. More *Stereocaulon condensatum* was present, along with inconspicuous species such as *Micarea cinerea* forma *tenuispora* and *Vezdaea leprosa*. Other metal-tolerant species including *Rhizocarpon oederi* were growing on the small pebbles, and four species of *Peltigera* decorated the bare ground.

Except on gravestones and walls, saxicolous lichens tend to be under-recorded in the UK compared with lichens on trees, and their identification can be problematic. However, there are many distinctive species on natural rock, and the collection of

samples is less controversial than in churchyards. Spoil heaps are especially attractive in this regard, with lichens occurring on easily portable pebbles, avoiding the need for a hammer and chisel. Thanks to my companions for their help in the field (especially to Sue for her *Gyalidea* detection skills), to Brian C for his ID skills, and to both Coppinses for their well-oiled hospitality after the event. A trip to Strontian might be on the cards next year!

References

Louwhoff, S H.J.J., Purvis, O.W. & James, P.W. (2009). *Parmelia*. In Smith, C.W. *et al.* (eds), *Lichens of Great Britain and Ireland* pp. 651-654. London: British Lichen Society.

Woods, R.G. & Coppins, B.J. (2012). *A Conservation Analysis of British Lichens and Lichenicolous Fungi*. JNCC Species Status Report no. 13: 155 pp. Available at *http://jncc.defra.gov.uk/pdf/Lichens_web_Edits%2020%20Aug.pdf*

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A short postcript: seeing *Gyalidea roseola* in the flesh led to re-examination of images of a *Gyalidea* species collected by Paula Shipway on lead mine spoil at the BLS limestone workshop in Malham last April. There was speculation at the time that this was *G. roseola*, but it was eventually listed as a pale morph of the commoner *G. fritzei*. I'm now confident that it is indeed *G. roseola*, the fourth site in the UK for this rare species and the first English record. More pictures of this species, including micrographs can be found on the FGBI website at *http://fungi.myspecies.info/all-fungi/gyalidea-roseola*.

British Isles List of Lichens and Lichenicolous Fungi

September 2017 update to list

The fully corrected list is available on the BLS web site, *www.britishlichensociety.org.uk*

We are indebted to Paul Diederich, Alan Orange, Mark Powell, Neil Sanderson, Emmanuël Sérusiaux, Ave Suija and Rebecca Yahr, and other checklist users, for bringing several of the required changes to our notice. Anyone encountering difficulties or errors regarding nomenclature or BLS code numbers, please contact one of us, as below.

E-mail contacts (with main responsibilities):
Brian Coppins (nomenclature, BLS and NBN species dictionaries, spelling, authorities, dates of publication) <*lichensEL@btinternet.com*>
Mark Seaward (allocation of BLS numbers and abbrevations)
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Janet Simkin (Recorder and spread-sheet species dictionaries)
<*janetsimkin@btinternet.com*>

Add:			Notes
2683	*Arthonia parietinaria* #	Arthon pari #	
2682	*Bacidina flavoleprosa*	Bacidina flavo	
2685	*Biatoropsis hafellneri* #	Biatorop hafe #	
2696	*Calycina alstrupii* #	Calyc alst #	
2689	*Dacampia cyrtellae* #	Dacam cyrt #	
2695	*Dimerella tavaresiana*	Dime tava	
2692	*Endococcus pseudocarpus* #	Endococ pseu #	
2687	*Gonatophragmium licheniphilum* #	Gona lich #	
2693	*Gyalideopsis cyanophila*	Gyalideop cyan	
2691	*Leprocaulon calcicola*	Leproca calc	
2686	*Merismatium coccosporum* #	Meri cocc #	
2694	*Micarea herbarum*	Mica herb	
2676	*Pachyphiale ophiospora*	Pachyph ophi	
2677	*Parmelia saxatilis s. str.*	Parmelia saxa s.s.	1
2678	*Parmelia serrana*	Parmelia serr	1
2675	*Sphaerellothecium siphulae* #	Sphaerell siph #	
2690	*Taeniolella toruloides*	Taeniolel toru #	
2684	*Tremella rhizocarpicola* #	Tremel rhizo#	

Deleted from list:						Notes
1789	*Porocyphus rehmicus*	Poroc rehm				6

Change of genus (sometimes also species epithet):						
Change from:			Replace with:			
767	*Acarospora rhizobola*	Acar rhiz	767	*Trimmatothelo-psis rhizobola*	Trimm'sis rhiz	
59	*Arthonia endlicheri*	Arthon endl	59	*Sparria endlicheri*	Spar endl	
65	*Arthonia leucopellaea*	Arthon leuc	59	*Felipes leucopellaeus*	Felip leuc	
187	*Bryophagus gloeocapsa*	Bryoph gloe	187	*Cryptodiscus gloeocapsa*	Cryptod gloe	
1027	*Degelia atlantica*	Degelia atla	1027	*Pectenia atlantica*	Pect atla	
2540	*Degelia cyanoloma*	Degelia cyan	2540	*Pectenia cyanoloma*	Pect cyan	
1597	*Degelia ligulata*	Degelia ligu	1597	*Pectenia ligulata*	Pect ligu	
1029	*Degelia plumbea s. lat.*	Degelia plum s.l.		*Pectenia plumbea s. lat.*	Pect plum s.l.	
2541	*Degelia plumbea s. str.*	Degelia plum s.s.	2541	*Pectenia plumbea s.str.*	Pect plum s.s.	
981	*Fuscopannaria sampaiana*	Fuscopann samp	981	*Nevesia sampaiana*	Neve samp	
1587	*Lecanactis latebrarum*	Lecanac late	1587	*Dendrographa latebrarum*	Dendrog late	
597	*Lecanographa grumulosa*	Lecanog grum	597	*Paralecano-grapha grumulosa*	Paralec grum	
2084	*Lettauia cladoniicola* #	Lett clad #	2084	*Cryptodiscus cladoniicola* #	Cryptod clad #	
1774	*Leucocarpia biatorella*	Leucocarpia biat	1774	*Psoroglaena biatorella*	Psorog biat	
2108	*Marchandiobasidium aurantiacum* #	March'ium aura #	2108	*Erythricium aurantiacum* #	Eryt aura #	
2138	*Phacopsis huuskonenii* #	Phacopsis huus #	2138	*Raesaenenia huuskonenii* #	Raes huus #	
1315	*Schismatomma decolorans*	Schis deco	1315	*Dendrographa decolorans*	Dendrog deco	

Moved into synonymy:						
Change from:			Replace with:			Notes
2375	*Acremonium pedatum* #	Acrem peda #	2171	*Pronectria anisospora*	Pronectria anis #	5

Change of abbreviation:						
Change from:			Replace with:			Notes
1015	*Parmelia saxatilis*	Parmelia saxa	1015	*Parmelia saxatilis s. lat.*	Parmelia saxa s.l.	2

Change of spelling:						
Change from:			Replace with:			notes
558	*Heterodermia leucomela*	Hete leuc	558	*Heterodermia leucomelos*	Hete leuc	4
1688	*Miriquidica garovaglioi*	Miri garo	1688	*Miriquidica garovaglii*	Miri garo	3
1136	*Placynthium garovaglioi*	Placynthium garo	1136	*Placynthium garovaglii*	Placynthium garo	3

Notes
1 – Records for these should be submitted only if identification confirmed by DNAanalysis.
2 – Includes records of the *P. saxatilis* aggregate that have not been confirmed by DNA analysis.
3 – *garovaglii* is the genitive of Garovaglius, the latinized surname of Santo Garovaglio, who wrote most of his works in Latin [Nimis, *Lichens of Italy*, pp. 305 & 382, 2016].
4 – long-running controversy concerning this species epithet, now settled by the IAPT Committee for Fungi.
5 – *Acremonium pedatum* is the anamorph of *Pronectria anisospora*.
6 – *Porocyphus rehmicus* is incorrectly reported from the British Isles. Records under this name have been transferred to *Pyrenopsis furfurea* (1212), but critical study should be made on voucher specimens if they are available.

Literature pertaining to British lichens – 61

Lichenologist **49**(3) was published on 30 May 2017, **49**(4) on 24 July 2017, and **49**(5) on 19 September 2017.
Taxa prefixed by * are additions to the checklists of lichens and lichenicolous fungi for Britain and Ireland. Aside comments in square brackets are by the authors of this compilation.

ALVAREZ, J. & CARBALLAL, R. (2001). The genus *Dimerella* (Gyalectales, Ascomycotina) in Peninsular Spain and Portugal. *Nova Hedwigia* **73:** 409–418. Gives descriptions of the three European *Dimerella* species, including *D. tavaresiana* Vězda (1969), a recent addition to the British list.

BELINCHÓN, R., COPPINS, B.J., YAHR, R., ELLIS, C.J. 2016. The diversity and community dynamics of hazelwood lichens and bryophytes along a major gradient of human impact. *Plant Ecology and Diversity* **9:** 359–370. The study showed that along the gradient from 'clean-air' relict sites to 'polluted' coppiced sites: (i) epiphytic local stem-scale diversity declined, (ii) there was a loss of late-successional species including foliose cyano- and tripartite lichens and bryophytes and (iii) stem sizes were reduced, providing a further limit to the accumulation of species richness within a site. Relict hazelwoods in western Scotland are confirmed as an example of the most intact epiphyte communities. In particular, it is shown that the transition to coppicing can be clearly linked to ecological processes causing species loss,

DIVAKAR, P.K., CRESPO, A., KRAICHAK, E., LEAVITT, S.D., SINGH, G., SCHMITT. I. & LUMBSCH, H.T. 2017. Using a temporal phylogenetic method to harmonize family- and genus-level classification in the largest clade of lichen-forming fungi. *Fungal Diversity* **84:** 101–117. An interesting approach, whose recommendations include that the genus *Cetraria* be broadened to include species currently in, for example, *Cetrariella* and *Vulpicida*. The concept of *Nephromopsis* is broadened to include, for example, *Flavocetraria* and *Tuckermannopsis*. New combinations are *Nephromopsis nivalis* (L.) Divakar, Crespo & Lumbsch (syn. *Flavocetraria nivalis*) and *N. chlorophylla* (Willd.) Divakar, Crespo & Lumbsch (syn. *Tuckermannopsis chlorophylla*). The lichenicolous *Nesolechia oxyspora* is said to belong in *Punctelia*, as *P. oxyspora* (Tul.) Davakar, Crespo, D.L. Hawksw. & Lumbsch, and [even more surprisingly] *Raesaenenia huuskonenii* is said to belong in *Protousnea*, as *P. huuskonenii* (Räsänen) Davakar, Crespo & Lumbsch. If *Nesolechia* and *Punctelia* are united, then the former has priority and the authors state that a *Punctelia* will be proposed for conservation.

ELLIS, C.J. 2016. Oceanic and temperate rainforest climates and their epiphyte indicators in Britain. *Ecological Indicators* **70:** 125–133. A review of the association of common lichen epiphytes with 'oceanic' and 'temperate rainforest' British climates, and a proposed scoring system for the indicator value of species with these bioclimatic zones.

ELLIS, C.J. & EATON S. 2016. Future non-analogue climates for Scotland's temperate rainforest. *Scottish Geographical Journal* **132:** 257–268. A study comparing the future climate of nature conservation sites in Scotland (2080s) with the current climate of nature conservation sites across Europe, to identify the closest analogue conditions. Future climates in eastern Scotland match with those of southern and midland England and Wales; remarkably, future climates for western Scotland have no apparent analogue in Europe, creating uncertainty in the climate impact on oceanic lichen diversity.

ELLIS, C.J., GEDDES, H., MCCHEYNE, N., STANSFIELD, A. 2017. Lichen epiphyte response to non-analogue monthly climates: a critique of bioclimatic models. *Perspectives in Plant Ecology, Evolution and Systematics* **25:** 45–58. A direct measurement of lichen growth rates in different climates, and showing that these correlate with current species distributions; but also showing that the future response to climate change is sensitive to monthly changes in precipitation, and the interaction of thallus

wetness with seasonal light availability. Warmer, wetter winters (low light) and warmer, drier summers (high light) represent non-analogue conditions for lichen growth, creating uncertainty in the response to future climate change.

ERTZ, D., HEUCHERT, B., BRAUN, U., FREEBURY, C.E., COMMON, R.S. & DIEDERICH, P. 2016. Contribution to the phylogeny and taxonomy of the genus *Taeniolella*, with a focus on lichenicolous taxa. *Fungal Biology* **120:** 1417–1447. Includes the descriptions of three new species of lichenicolous *Taeniolella*, including *T. toruloides* Heuchert & Diederich, which has subsequently been recognized as occurring in the British Isles on *Thelotrema lepadinum.*

HAFELLNER, J. & TÜRK, R. 2016. Die lichenisierten Pilze Österreichs – eine neue Checkliste der bisher nachgewiesenen Taxa mit Angaben zu Verbreitung und Substratökolgie. *Stapfia* **104:** 1–216. A checklist of Austrian lichens. The genus *Lepra* Scop. (1777) is resurrected for the species of *Pertusaria* treated in *Pertusaria* subgenus *Variolaria* (Pers.) Erichsen (1936) or the genus *Marfloraea* S.Y. Kondr., L. Lökös & Hur (2015). British species are: *Lepra albescens* (Huds.) Hafellner, *L. amara* (Ach.) Hafellner, *L. aspergilla* (Ach.) Hafellner, *L. corallina* (L.) Hafellner, *L. dactylina* (Ach.) Hafellner, *L. excludens* (Nyl.) Hafellner, *L. leucosora* (Nyl.) Hafellner, *L. melanochlora* (DC.) Hafellner, *L. monogona* (Nyl.) Hafellner, *L. multipuncta* (Turner) Hafellner, *L. ocellata* (Körb.) Hafellner, *L. ophthalmiza* (Nyl.) Hafellner, and *L. pulvinata* (Erichs.) Hafellner (syn. *P. amara* f. *pulvinata*).

KNUDSEN, K. & KOCOURKOVÁ, J. 2017. What is *Acarospora nitrophila* (Acarosporaceae)? *Bryologist* **120:** 125–129. *Acarospora nitrophila* is lectotypified and investigated. It is apparently confined to Norway and Sweden. [The use of this name for lichens in the British Isles clearly needs to be reviewed].

MITCHELL, R.J. PAKEMAN, R.J., BROOME, A., BEATON, J.K., BELLAMY, P.E., BROOKER, R.W., ELLIS, C.J., HESTER, A.J., HODGETTS, N.G. , IASON, G.R., LITTLEWOOD, N.A., POZSGAI, G., RAMSAY, S., RIACH, D. STOCKAN, J.A., TAYLOR, A.F.S. & WOODWARD, S. 2016. How to replicate the functions and biodiversity of a threatened tree species? The case of *Fraxinus excelsior* in Britain. *Ecosystems* **19:** 573–586. A comparison of ash with other tree species, to show how they match in terms of their support for associated biodiversity, and ecosystem function; showing that no single tree can substitute for ash across the breadth of its ecological roles, and highlighting the management challenge of ash dieback.

NIMIS, P.L. 2017. *Lichens of Italy. A Second Annotated Catalogue.* Trieste: EUT – Ezizioni Università di Trieste. ISBN 978-88-8303-754-2. Pp 739. A companion volume to the 1993 catalogue, with an updated catalogue that embraces most of the recent taxonomic innovations arising from molecular studies. A scholarly reference work of much interest to lichenologists in the British Isles. The 2704 accepted species of lichenized and allied fungi include three new combinations for British species: *Collemopsidium halodytes* (Nyl.) Grube & B.D. Ryan [the 2002 combination was invalidly published], *Myriolecis actophila* (Wedd.) M. Bertrand & Cl. Roux (syn. *Lecanora actophila*), and *M. congesta* (Clauzade & Vězda) M. Bertrand & Cl. Roux (syn. *Lecanora congesta*).

ORANGE, A., EARLAND-BENNETT, P.M., HITCH, C.J.B. & POWELL, M. 2017. A new leprose *Leprocaulon* (Ascomycota, *Leprocaulales*) from Great Britain. *Lichenologist* **49:** 183–188. Describes *Leprocaulon calcicola* Orange, Earl.-Benn., Hitch & Powell, found on calcareous stonework in SE England.

PINO-BODAS, R., ZHURBENKO, M.P. & STENROOS, S. 2017. Phylogenetic placement within *Lecanoromycetes* of lichenicolous fungi associated with *Cladonia* and some other genera. *Persoonia* **39:** 91–117. Phylogenetic studies show that *Lettauia cladoniicola* should be included in *Cryptodiscus*, as *C. cladoniicola* (D. Hawksw. & R. Sant.) Pino-Bodas, Zhurb. & S. Stenroos.

PRICE, S. 2017 Lichens and lichenicolous fungi of Fair Isle - an annotated checklist. *Fair Isle Bird Observatory Report No. 68 (2016)*:171–187. This report notes the history of lichen recording on this remote northern Scottish island, presents a summary of the special lichens that occur there and gives notes on records of the 294 known taxa up to the end of 2016, including results of the extensive survey that occurred in August 2016. The report is available from the Fair Isle Bird Observatory shop in person or on-line: *www.fairislebirdobs.co.uk/shop_books.html*

SÉRUSIAUX, E. 1998. Notes on the *Gomphillaceae* (Lichens) from Guadeloupe (West Indies), with four new species of *Gyalideopsis*. *Nova Hedwigia* **67:** 381–402. Includes original description and illustrations of *Gyalideopsis cyanophila* Sérus., recently identified in collections from St. Kilda.

SUIJA, A. & MOTIEJŪNAITĖ, J. 2017. *Calycina alstrupii* sp. nov. (*Pezizellaceae*, Helotiales), a new lichenicolous fungus from Norway. *Phytotaxa* **307:** 113–122.

VAN DEN BOOM, P.P.G., BRAND, A.M., COPPINS, B.J. & SÉRUSIAUX, E. 2017. Two new species in the *Micarea prasina* group from Western Europe. *Lichenologist* **49:** 13–25. Includes description of *Micarea herbarum* Brand, Coppins, Sérus. & van den Boom, a recent addition to the British list.

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NEW, RARE AND INTERESTING LICHENS

Contributions to this section are always welcome. Submit entries to Chris Hitch, Orchella Lodge, 14, Hawthorn Close, Knodishall, Saxmundham, Suffolk, IP17 1XW, in the form of species, habitat, locality, VC no, VC name, (from 1997, nomenclature to follow that given in the appendix, see BLS Bulletin 79, which is based on the Biological Record Centre for instructions for Recorders, ITE, Monks Wood Experimental Station, Abbots Ripton, PE17 2LS, 1974). Grid Ref (GR) (please add letters for the 100km squares to aid BioBase and Recorder 2000, as these are used in

the database and on the NBN Gateway), altitude (alt), where applicable in metres (m), date (month and year). NRI records should now include details of what the entry represents, e.g. specimen in Herb. Hitch with accession number where applicable, field record or photograph, to allow for future verification if necessary or to aid paper/report writing. Determined/confirmed by, Comments, New to/the, finally Recorder. An authority with date after species is only required when the species is new to the British Isles. Records of lichens listed in the RDB are particularly welcome, even from previously known localities. In the interests of accuracy, the data can be sent to me on e-mail, my address is cjbh.orchldge@freeuk.com, or if not, then typescript. Copy should reach the subeditor at least a fortnight before the deadline for the Bulletin. Please read these instructions carefully.

Please note that from summer 2017, Grid References in NRI data should be written as follows, e.g. TM12-34-, TM441.569, or TM2468.3333

New to the British Isles

Arthonia parietinaria Hafellner & Fleischhacker (2016): lichenicolous on *Xanthoria parietina*, on roadside *Crataegus*, Burton Latimer, VC 32, Northamptonshire, GR SP901.759, February 2016. Herb. Powell 4011. While certainly not the earliest specimen collected, the above is an example of a record previously reported as *A. molendoi* in 'New, Rare and Interesting', Bull. Brit. Lichen Soc. **118:** 53. Lichenicolous *Arthonia* specimens growing on *Xanthoria parietina*, previously named *A. molendoi* (and sometimes as *A. epiphyscia*) by British lichenologists, appear to belong to the recently described *A. parietinaria*. The earliest British record traced so far is a collection made by B.J. Coppins & P. Harrold from Straun in Perthshire and originally determined as *A. epiphyscia*. *A. parietinaria* differs from *A. molendoi* and from *A. epiphyscia* in causing larger infection spots containing higher mean numbers of apothecia [(10-)20-30(-50)] per infection. *A. molendoi* has 1-5(-10) apothecia per infection and *A. epiphyscia* has (1-)5-10. For full description and illustrations see Fleischhacker *et al.* (2016) in *Fungal Biology* **120:** 1341-1353. See also the following for images and micrographs of British material: *http://fungi.myspecies.info/all-fungi/arthonia-parietinaria. BLS No. 2683*.

M. Powell

Calycina alstrupii Suija & Motiejūnaitė (2017): on underside of *Lobaria pulmonaria on Corylus*, Sian Wood SWT Reserve, Benderloch, VC 98 Argyll Main, GR NM90-41-, alt 20–30 m, October 2013, B.J. & A.M. Coppins (Coppins 24315, **E**). Determined by. A. Suija. Originally determined as *Pezizella epithallina*, a parasite confined to *Peltigera* species. Superficially similar to *P. epithallina*, but apart from the host, differing in more downy margin, and shorter (5–7 vs. 7–12 µm), fusiform- rather than oblong-ellipsoid spores. The two species are very distant phylogenetically. *Calycina alstrupii* was previously known only from Norway. For original description see Suija & Motiejūnaitė in *Phytotaxa* **307:** 113–122 (2017). **BLS No. 2696**. *B.J. Coppins*

Dimerella tavaresiana Vězda (1969) : First collection in the British Isles - on base rich flushed bark, on the edge of dry bark, on old *Quercus* by ride in wood in parkland,

Highwood Copse, Roydon Woods SSSI, VC 11, South Hampshire, SU3152.0109, alt 20 m, May 2017. *N.A. Sanderson*

Dimerella tavaresiana Further collection and determination - on trunk of veteran *Quercus*, High Park, Blenheim Park SSSI, VC 23, Oxfordshire, GR SP4325.1580, alt. 110 m, June 2017. Herb. B.J. Coppins, M. Powell, P. Shipway (Coppins 25189, (**E**). Confirmed by E. Sérusiaux. With its pinkish beige apothecia it resembles a small *Gyalecta* or *Pachyphiale carneola*, but with 1-septate spores, 12–14 × 2.5–3 µm. Previously known from southern Europe (Portugal, Spain, Italy) and the Canary Islands. For a description, see Alvarez & Carballal in *Nova Hedwigia* **73:** 409–418 (2001). If considered to belong to the broadened concept of *Coenogonium*, then the name becomes *C. tavaresianum* (Vězda) Lücking, Aptroot & Sipman (2006). **BLS No. 2695**. *B.J. Coppins, M. Powell, N.A Sanderson & P. Shipway*

Endococcus pseudocarpus Nyl. (1873): on *Collema fuscovirens* on limestone boulder, Highfolds Scar, Malham, VC 64, Mid-west Yorkshire, GR SD8924.6743, alt 430 m, April 2017. Leg. I. Blatchley (Coppins 25118, **E**). Determined by B.J. Coppins. Spores 1-septate, pale brown, ellipsoid with ±attenuated apices, 10–13.5 × 4.2–4.5 µm. **BLS No. 2692** *I. Blatchley*

Gyalideopsis cyanophila Sérus. (1998): (i) on moribund bryophytes on turf of terracettes near cliff edge, north slope of Oiseval, Hirta, St. Kilda, VC 110, Outer Hebrides, GR NF10839.99623, alt 200 m, July 2013. Herb. Coppins 24454 (**LG**); (ii) *ibid.*, GR NF10879.99577, alt 219 m. Herb. Coppins 25127 (**E**); (iii) *ibid.*, on moss on sheltered boulder, Claigeann Mòr, GR NF08667.98965, alt 257 m. Herb. Coppins 25126 (**E**); (iv) *ibid.*, on moribund moss on bank in moorland, northeast slope of Mullach Sgar, GR NF09427. 99230, alt 166 m. Herb. Coppins 25128 (**E**). Identification suggested, and later confirmed by E. Sérusiaux. The records were made as part of a commissioned lichen survey of St. Kilda for the National Trust for Scotland. Distinguished by its thin, inconspicuous, pale grey, ±shiny thallus overgrowing moribund bryophytes, and long, slender, mostly dark brown hyphophores, 1–1.8 mm tall. Tips of the hyphophores often slightly broadened and curved over, with a white, tear-drop-like conidial mass, producing colourless, filiform, multiseptate conidia (diahyphae), (60–) 100–140 × *c.* 1.5 um, with cells 5–9 um long. Ascomata are unknown in this species, which was originally described from the island of Guadeloupe in the West Indies, but subsequently found in the Azores by Prof. Sérusiaux. **BLS No. 2693.**

B.J. Coppins, A. Acton, J.R. Douglass, S.G. Price

Leprocaulon calcicola: Earl.-Benn., Orange, Hitch & M. Powell (2017): First collections - VC 19, North Essex, (i) on east-facing mossy mortar and undersides of septarian nodules and Roman tile in Roman wall, Priory Street, Colchester, GR TM000.250, October 2007, P.M. E-B.; (ii) on mossy mortar of Roman wall facing east, GR TQ 999.250, October 2007, P.M. E-B.; (iii) on east- facing mossy mortar of Roman wall, Priory Street, Colchester, GR TL999.250, March 2016, P.M. E-B. & J.F. S.; (iv) on south-facing mossy mortar crevices of Roman wall, in full sun, Vineyard Gate, Colchester, GR TL997.250, March 2016, P.M. E-B. & J.F. S.; (v) crumbling mortar of Roman wall, Balkerne Hill, Colchester, GR TL992.252, March 2016, P.M. E-B.; (vi) on mossy mortar and undersides of septarian nodules and Roman tile on west side of

bastion of Roman wall, Colchester, GR TL999.250, March 2016, P.M. E-B.; VC 25, East Suffolk, (i) on shaded mortar of flint wall facing north, GR TM302.557, October 2007, P.M. E-B.; (ii) on shaded mortar of flint wall facing north, GR TM302.557, December 2007, P.M. E-B & C.J.B.H *P.M. Earland-Bennett and C.J.B. Hitch*

Leprocaulon calcicola: Further collection and determination - on mortar and dead moss between flints of garden wall by minor road, Chapel Lane, Wickham Market, **VC 25**, East Suffolk, GR TM302.557, May 2016. Herb. Hitch [E2117] in NMW (type specimen). This leprose species is similar in appearance to *Lepraria incana* and *L. ecorticata*, although these are most abundant on acidic substrata while *L. calcicola* occurs in calcareous situations. The KC+ yellow reaction should distinguish *L. calcicola* from other leprose British species except for *L. ecorticata*. For full description and illustration see Orange *et al.* (2017) in *Lichenologist* **49:** 183-188. See also the following for further images*: http://fungi.myspecies.info/all-fungi/leprocaulon-calcicola. BLS No. 2691*

P.M. Earland-Bennett, C.J.B. Hitch, A. Orange & M. Powell

Micarea herbarum Brand, Coppins, Sérus. & van den Boom (2017): on lignum of fallen trunks of ancient *Fagus*, within old growth *Fagus – Ilex* pasture woodland, New Forest, VC 11, South Hampshire, GR SU285.062 and GR SU285.061, February 2007 and August & October 2010. Originally identified as *Micarea denigrata*, but finally determined by B.J. Coppins. Similar to a small or depauperate *M. denigrata,* but it is C– and has longer mesoconidia, 3·8–6·1 × 1·0–1·2 (–1·3) µm as opposed to 3·0–4·2(–5·0) × 1·4–1·8(–2·0) µm for *M. denigrata*. In the Netherlands it is widely recorded on soft and decaying wood, on standing dead trunks, on dead and wet stems of herbaceous plants, or directly on soil, so is likely to be widespread in Britain and not confined to ancient habitats. For a full description and illustrations see van den Boom et al. in *The Lichenologist* **49**: 13–25 (2017). **BLS No. 2694**. *N.A. Sanderson*

Taeniolella toruloides Heuchert & Diederich (2016): parasitic on *Thelotrema lepadinum* on trunks of old *Fagus*, within old growth *Fagus – Ilex* pasture woodland, New Forest, VC 11, South Hampshire, GR SU3066.1101 & GR SU3059.1100, May 2017. Determined by Damien Ertz. Also widespread, if local, elsewhere in the New Forest, see below under **Other Records**. This lichenicolous hyphomycetes forms punctiform tufts on the surface of thalli of *Thelotrema*, often becoming confluent and extensive, visually blackening the host thallus. It is similar to *Taeniolella punctata* which is mainly found on *Graphis scripta*, but *T. toruloides* has unbranched and shorter conidiophores, lacks conspicuously thickened conidial septa, has conidial chains that are not easily disintegrating and 0–2 septate conidia as opposed to the 0–3 septate conidia in *T. punctata*. For a full description and illustrations see Ertz et al. in *Fungal Biology* **120:** 1416–1447 (2016). **BLS No**. **2690**. *N.A. Sanderson*

Verrucaria ahtii Pykälä, Launis & Myllys (2017): on fragments of brick on old colliery spoil heap, Cwm Colliery, Beddau, VC 41, Glamorgan, GR ST0673.8635, alt 125 m, June 2009 Herb. A. Orange 18374 (**NMW**). A nondescript species with a scanty brown thallus and medium-sized ascospores, best identified by ITS sequence until similar species are better known. For description see Pykälä et al. (2017) in *Lichenologist* **49**: 107-116. **BLS No**. **2697** *A. Orange*

Verrucaria vitikainenii Pykälä, Launis & Myllys (2017): on bricks embedded in unshaded colliery spoil, Blaen y Cwm, Llanhilleth, VC 41, Glamorgan,GR SO2394.0142, alt 380 m, May 2016. Herb. A. Orange 23424 (**NMW**). A nondescript species with a scanty brown thallus and medium-sized ascospores, best identified by ITS sequence until similar species are better known. For description see Pykälä et al. (2017) in *Lichenologist* **49**: 107-116. **BLS No**. **2698**. *A. Orange*

Other records

Acrocordia conoidea: on tower of church (St Helena), Lundy Island, VC 4, North Devon, GR SS13-43-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Agonimia opuntiella: very sparse on darkened basal stems and leaves of moss, *Racomitrium affine*, on steeply inclined, south-facing bedrock by river edge in humid gorge, Afon Ystwyth, Cwmystwyth, VC 46, Cardiganshire, GR SN789.737, alt 206 m, July 2017. Herb. SPC. New to Cardiganshire. *S.P. Chambers*

Agyrium rufum: on lignum of standing dead decorticate *Quercus* within old-growth woodland, above the Torrent Walk, Dolgellau, VC 48, Merionethshire, GR SH760.179, alt 150 m, May 2017. Field record. New to Merionethshire. *S.P. Chambers & N. Wilkinson*

Anaptychia ciliaris: on limestone gravestone near southeast side of church (St Giles), Cheddington, VC 24, Buckinghamshire, GR SP922.180, May 2017. Specimen not retained. Not new to the Vice-county. [The first record for this species, since 1988 and probably earlier. Most of the records have a date range against them, but the precise date unknown. Six records are in the database, from Holmes, Bowen, Brightman and Rose, but nothing since. (J. Simkin)] *P. Shipway*

Anisomeridium ranunculosporum: on leached bark of veteran *Quercus* named The Milking Oak, Salcey Forest, VC 32, Northamptonshire, GR SP807.513, June 2017. Herb. Powell 4440. New to the Vice-county. *B.J. Coppins & M. Powell*

Anisomeridium viridescens: on *Corylus* stem, Old Sulehay Forest, VC 32, Northamptonshire, GR TL06-98-, June 2017. Herb. Powell 4435. New to the Vice-county. *B.J. Coppins & M. Powell*

Anisomeridium viridescens: on *Corylus* stem, West Wood, Souldrop, VC 30, Bedfordshire, GR SP99-62-, August 2017. Herb. Powell 4485. New to the Vice-county. *M. Powell*

Arthonia endlicheri: see under *Sparria endlicheri.*

Arthonia graphidicola: on thallus of *Graphis scripta* on trunk of planted *Fagus sylvatica* within partly coniferised stand of former Atlantic Oakwood under restorative management, Allt Boeth (Coed Cadw/Woodland Trust), Cwm Rheidol, VC 46, Cardiganshire, GR SN735.776, alt 130 m, June 2017. Herb. SPC. Second Vice-county and fifthWelsh record for the species. *S.P. Chambers & C.M. Forster-Brown*

Arthonia ligniaria: on bark of *Quercus cerris*, by entrance to the Conservation area, Royal Botanic Gardens, Kew, VC 17, Surrey, GR TQ177.764, October 2015. Herb. M.B. Aguire Hudson, s.n., in (**E**). Determined by B.J. Coppins. New to the Vice-county.
M.B. Aguirre-Hudson

Arthonia molendoi: in Suffolk, it was thought that we had two records of this taxon, (i) at Landguard Fort, GR TM28-31-, September 2000, on *Xanthoria parietina;* (ii) at Pound Farm Reserve, GR TM32-63-, May 2016, also on *Xanthoria parietina*. Both these collections have proved to be *A. parietinaria.* September 2017. For details of the differences, see the notes under A. *parietinaria* in the *New to the British Isles* section.
C.J.B. Hitch

Arthonia muscigena: on shaded *Sambucus* stem, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Herb. Powell 4448. New to the Vice-county.
M. Powell & P. Shipway

Arthonia parietinaria: lichenicolous on *Xanthoria parietina*, on *Crataegus* twig, Greenwich Park, VC 16, West Kent, TQ39-77-, May 2017. Herb. Powell 4418. New to the Vice-county
J. Beale, M. Powell & P. Shipway

Arthonia parietinaria: parasitising *Xanthoria parietina* on twig of *Crataegus,* amongst coastal scrub, Hythe Marina, Hythe, VC11, South Hampshire, GR, SU420.086, alt 5m, December 2016. Noted by N. Bacciu. Determined by N.A. Sanderson. This *Arthonia,* parasitic on *Xanthoria parietina,* was formerly recorded as *Arthonia molendoi*, but the latter has been demonstrated by Fleischhacker et al (2016) Fungal Biology **120**: 1341-1353 to be a separate taxa parasitic on the *Xanthoria elegans* and *Caloplaca saxicola* groups. New to Hampshire.
N. Bacciu & N.A. Sanderson

Arthopyrenia salicis: on *Corylus* stem in old coppice, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Herb. Powell 4448. New to the Vice-county.
M. Powell & P. Shipway

Arthroraphis aeruginosa: on squamules of *Cladonia coniocraea* on old inclined *Betula* stump near carpark (north), Jack's Hill. Epping Forest, VC 18, South Essex, GR TQ435.996, September 2017. Herb. P.M. Earland-Bennett. Confirmed by B.J. Coppins. New to Essex and East Anglia.
P.M. Earland-Bennett at BLS Autumn Meeting

Bacidia arceutina: on base of *Fagus* trunk, Yoesden Nature Reserve near High Wycombe, VC 24, Buckinghamshire, GR SU789.980, July 2017. Herb Shipway. Identified by M. Powell. New to Vice-county.
P. Shipway

Bacidia friesiana: on *Sambucus* stem, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Herb. Powell 4448. New to the Vice-county.
M. Powell & P. Shipway

Bacidia circumspecta: in wound track on old *Fagus*, in *Fagus – Ilex* pasture woodland, which is undergoing restoration, Ebernoe Common, VC 13, West Sussex, GR SU9748.2676, alt 50 m, June 2017. The first record for Sussex since 1973 for this Vulnerable RDB and section 41 species.
N.A. Sanderson

Bacidia vermifera: on old pasture *Populus tremula* that is now within, but at the edge of a more recent conifer plantation, east side of old railway line, Dulicht, Grantown-on-Spey VC 95, Moray, GR NJ0257.2810 December 2015. A new record for this vulnerable RDB species. *A. Acton*

Bactrospora corticola: on dry bark on over mature *Quercus*, within relic pasture woodland, Ebernoe Common, VC 13, West Sussex, GR SU9763.2774, alt 35 m, May 2017. New to the Vice-county. *N.A. Sanderson*

Baeomyces carneus: on stone in small stony 'flush' with *Gnaphalium supinum* (dwarf cudweed - *Asteraceae*), on ridge between Meall Dearg and the Aonach Eagach, Glencoe, VC 98, Argyllshire, GR NN1609.5836, August 2016. Herb. Acton. *Arthrorhaphis grisea was* recorded growing on the thallus. A new record for this vulnerable RDB species. *A. Acton*

Biatora chrysantha: on two old *Quercus petraea* within upland pasture woodland, Parc Hafod-y-llan, Nantgwynant, VC 49, Caernarvonshire, GR SH6260.5089 and GR SH6256.5091, alt 80 m and 100 m respectively, May 2017. New to Caernarvonshire. *N.A. Sanderson*

Calicium adspersum: growing amongst *Cyphelium inquinans* on giant veteran *Quercus*, girth *c.* 5 m, on crag at Grudie Oakwood, VC 106, East Ross, GR NH30555.62161, March 2016. The second record at Grudie. It was first recorded at Grudie as new to Scotland by Acton, Coppins and Taylor-Pigott in 2014, see NRI in BLS Winter *Bulletin, 115,* 2014. *A. Acton*

Calicium diploellum: in lenticels of single old *Ilex*, within *Fagus – Ilex – Quercus* pasture woodland, Eyeworth Wood, New Forest, VC 11, South Hampshire, GR SU2263.1547, alt 110 m, May 2017. A new 10 km square record for this very rare species. *N.A. Sanderson*

Caloplaca asserigena: on fallen dead *Ulex europaeus* stem, near Pig Bush, New Forest, VC 11, South Hampshire, GR SU361.048, alt 15 m, September 2016, N. Bacciu. New to Hampshire. *N. Bacciu & N.A. Sanderson*

Caloplaca cerinella: on twig of *Acer pseudoplatanus* in Millcombe Valley, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Herb. Putnam. A new record of this species for the island. *M. Putnam*

Caloplaca cerinelloides: on twig of *Acer pseudoplatanus* in Millcombe Valley, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Herb. Putnam. A new record of this species for the island. *M. Putnam*

Caloplaca limonia: on walls and buildings throughout Lundy Island, VC 4, North Devon, GR SS13-45- *et al*, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Caloplaca oasis: on concrete by The Tavern, Lundy Island, VC 4, North Devon,GR SS13-44-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

***Caloplaca vitellinula*:** on dry flushed andesite crags at base of Aonach Dubh, Glencoe, VC 98, Argyllshire, GR NN1444.5626, August 2016. Herb. Acton (**E**). Confirmed by B.J. Coppins. *A. Acton*

Candelaria pacifica: forming a sheet down the trunk of *Acer pseudoplatanus* and also *A. platanoides*, Prittlewell Chase, Westcliff-on-Sea, VC 18, South Essex, GR TQ863.872, August 2017. Herbs **E** and P.M. Earland-Bennett. Determined by B.J. Coppins. New to Essex and East Anglia. *P.M. Earland-Bennett*

Carbonea vitellinaria: lichenicolous on *Candelariella vitellina*, on ironstone roof parapet of church, Carlton (St Mary), VC 30, Bedfordshire, GR SP951.549, June 2017. Herb. Powell 4451. New to the Vice-county. *M. Powell*

***Catinaria neuschildii*:** on old pasture *Salix* that is now within, but at the edge of a more recent planation, east side of old railway line, Dulicht, Grantown-on on-Spey, VC 95, Moray, GR NJ0260.2822. December 2015. A new record for this vulnerable RDB species. *A. Acton*

Cercidospora parva: lichenicolous on *Baemoyces rufus* near the Ptarmigan station, Cairn Gorm, Cairngorms National Park, VC 96, East Inverness-shire, GR NJ00500.04905, alt 1085 m. July 2017. Otherwise only known in Britain from outcrops at Brudhach Mor, on upper slopes of Caenlochan Glen (east facing slopes of Glas Maol), alt 950-1000m. Elsewhere recorded in Norway, Sweden and Russia(*https://www.gbif.org/*).

A. Acton

Chaenotheca chrysocephala: in crevices on dry bark of over mature *Quercus*, by path in woodland within parkland, Scotney Park, VC 14, East Sussex, GR TQ6843.3553, alt 70 m, August 2017. New to East Sussex. *N.A. Sanderson*

Chaenotheca hispidula: on veteran *Fraxinus*, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Herb. Powell 4448. New to the Vice-county.

M. Powell & P. Shipway

Chaenothecopsis pusilla: on exposed lignum, on old *Quercus petraea* within upland pasture woodland, Parc Hafod-y-llan, Nantgwynant, VC 49, Caernarvonshire, GR SH6255.5079, alt 120 m, May 2017. New to the Vice-county. *N.A. Sanderson*

Chaenothecopsis savonica: on lignum of three standing dead *Quercus* within pasture woodland, Ebernoe Common, VC 13, West Sussex, GR SU9752.2653, GR SU9768.2707 & GR SU9741.2751, alt 35-55 m respectively, August 2017. New to the Vice-county. *N.A. Sanderson*

Cladophialophora normandinae: for details, see under *Melaspilea amota*.

Collema fragrans: a strong colony on lignum and bark on hollow ancient *Acer pseudoplatanus* in parkland, Pixton Park, VC 5, South Somerset, GR SS9283.2704, alt 200 m, September 2017. An important new record of a highly threatened Section 41 species. New to the Vice-county. *N.A. Sanderson*

***Corticiruptor abeloneae*:** lichenicolous on *Sticta dufourii* on Corylus at Treshnish, Mull, VC 103, Mid Ebudes, GR NM35547.48948 and at Ardtornish, northeast of Inninbeg,

VC 97, West Inverness-shire, GR NM69784.43453. July 2016. Herb. Acton. A new record for this vulnerable RDB species. *A. Acton*

Dactylospora purpurascens: on *Amygdalaria pelobotryon* on steeply sloping, northwest-facing flushed rockface, Nant-byr, Cwmystwyth, VC 46, Cardiganshire, GR SN797.736, alt 290 m, July 2017. Herb. SPC. The first Vice-county record of this species, on this host. *S.P. Chambers*

Dactylospora scapanaria*:* bryicolous on north- facing crags below the main ridge, Aonach Eagach, Glencoe, VC 98, Argyllshire*,* GR NN1601.5834*,* August 2016. Herb. Acton. Determined by B.J. Coppins *A. Acton*

***Dictyonema coppinsii*:** at the base of veteran *Fraxinus* at Inversnaid RSPB reserve, Pollohcro Woods SSSI, VC 86, Stirlingshire, GR NN33501.11162, October2016. This species appears to be not uncommon along upland watercourses with a well-developed freshwater lichen flora in western Scotland (pers. obs.) but it appears to be very rare on trees. A new record for this vulnerable RDB species. *A. Acton*

Dictyonema interruptum: For details, see under *Polyblastia terrestris.*

Didymellopsis pulposi: on *Collema tenax* var. *ceranoides* on open, stony ground contaminated by copper foundry waste, beside Pluck Lake, lower Swansea valley, VC 41, Glamorgan, GR SS669.954, alt *c.* 15 m, March 2017. Herb. SPC. New to Wales. *S.P. Chambers & C.M. Forster-Brown*

Didymocyrtis slaptoniensis: as the teleomorph, on thallus of *Xanthoria parietina* on well-lit twig of *Fraxinus excelsior* on field bank, north side of the Afon Mwyro, Cwm Mwyro, *c.* 1.5 km west of Llyn Gynon, VC 46, Cardiganshire, GR SN780.648, alt 320 m, June 2017. Herb. SPC. New to Wales. *S.P. Chambers*

Endococcus propinquus: lichenicolous on *Porpidia soredizodes*, on sandstone memorial in churchyard, Canons Ashby (St Mary), VC 32, Northamptonshire, GR SP578.505, August 2017, Herb. Powell 4470. New to the Vice-county. *M. Powell*

***Eopyrenula leucoplaca*:** on old *Populus tremula* at Dulicht, west side of old railway line, Grantown-on-Spey, VC 95, Moray, GR NJ0237.2813, December 2016. Herb. A. Acton (**E**). Determined by B.J. Coppins. The NBN database includes a number of erroneous records for this species. This is the third confirmed British record (Brian Coppins, pers. comm.) *A. Acton*

Ephebe hispidula: in quantity in two places on lake edge boulders on shore of upland lake, Llyn Gynon, above Cwm Mwyro, VC 46, Cardiganshire, GR SN79-.64-, alt 420 – 424 m, July 2017. Herb. SPC. Possibly the largest known population of *E. hispidula* in Britain. *S.P. Chambers*

Fellhanera subtilis: on *Ilex* leaves at edge of glade within pasture woodland, Homey Ridge, New Forest, VC 11, South Hampshire, GR SU2316.1588, alt 120 m, September 2017. Found as pycnidial material only. The absence of usnic acid was confirmed using a long wave UV light source and comparing with fertile material of *F. bouteillei.* This species has a strong orange fluorescence, in response to a longer wavelength UV light than is usually used by lichenologists. New to the county. *N.A. Sanderson*

Fellhaneropsis myrtillicola: on *Ilex* leaf at edge of glade within pasture woodland, Bramshaw Wood, New Forest, VC 11, South Hampshire, GR SU2548.1685, alt 70 m, September 2017. Found as pycnidial material only. Second record for the county.
N.A. Sanderson

Fuscopannaria ignobilis: large patch on *Populus tremula,* along footpath running along west side of old railway line, Grantown-on-Spey, VC 95, Moray, GR NJ0237.2803, December 2015. Sterile. Very rare in Speyside. A new record for this vulnerable RDB species. *A. Acton*

Fuscopannaria nebulosa: on soil on rocky outcrop at North West Point, Lundy Island, VC 4, North Devon, GR SS131.479, July 2017. Herb. Putnam. Confirmed by B.J. Coppins. A new record of this species for the island. *M. Putnam*

Graphina pauciloculata: on *G.ruiziana* on *Quercus* in fragment of Atlantic Oakwood, gorge of the Afon Ystwyth below Craig Golomennod, *c.* 0.5 km west of Pont-rhyd-y-groes, VC 46, Cardiganshire, GR SN732.721, alt 110 m, June 2017. Field record. The seventh Vice-county record for the species and in the same tetrad as the second record.
S.P. Chambers & the *CENNAD Lichen Apprentices*

***Graphis alboscripta*:** on several *Corylus* at Treshnish, Mull, VC103 Mid Ebudes, GR NM3555.4892. July 2016. A new record for this vulnerable RDB species. *A. Acton*

***Gomphillus calycioides*:** For details see under *Wentiomyces lichenicola.*

Imshaugia aleurites: one thallus atop of weathered softwood fencepost in fenceline beside the Afon Milwyn, *c.* 120 m south of Milwyn Cottage, Cwm Milwyn, VC 46, Cardiganshire, GR SN796.727, alt 350 m, July 2017. Herb. SPC. The second Vice-county record for this species and the first on lignum. *S.P. Chambers*

Lecanographa dilleniana: on old stone wall in churchyard (St Petrock), Parracombe, Exmoor, VC 4, North Devon, GR SS67-44-, June 2017. Herb. Putnam. Second record of this species for the Vice-county. *T. Holwill & M. Putnam*

Lecanora farinaria: very sparse on west side of decaying hardwood fencepost, associated with *Micarea melaena* & *Mycoblastus caesius*, Coed Dol-chenog, *c.* 1 km southwest of Cwmystwyth, VC 46, Cardiganshire, GR SN780.734, alt 250 m, July 2017. Herb. SPC. Second record in the Vice-county, for this species. *S.P. Chambers*

Lempholemma polyanthes: on bryophyte tufts on top of mortared boundary wall of churchyard (St Mary), Maestir, *c.* 1.5 km northwest of Lampeter, VC 46, Cardiganshire, GR SN554.493, alt 195 m, September 2017. Herb. SPC. Second Vice-county record for this species. *S.P. Chambers*

Leprocaulon calcicola: on mortar courses, Lesnes Abbey ruins, Bexley, VC 16, West Kent, GR TQ479.787, July 2017. Herb. Powell 4457. Identified by the KC+ yellow reaction (usnic acid) performed on tissue paper, and the distinctive haustoria which are not seen in look-alike *Lepraria* species. New to the Vice-county.
J. Beale, M. Powell & P. Shipway

Leprocaulon calcicola: low on east-facing wall of church (St Mary), Denver, VC 28, West Norfolk, GR TF614.016 March 2017. Determined by M. Powell. New to the Vice-county. *P.W. Lambley, M. Powell & L. Saunders*

***Leprocaulon calcicola*:** on string course shaded by butress at corner of east-facing cutback of south wall of church (St. Ethelbert), Hessett, VC 26, West Suffolk, GR TL937.618, May 2016. Herb. Hitch (J20). Determined by M. Powell. Second record for the county, for this species and new to the Vice-county. *C.J.B. Hitch & M. Powell*

Leptogium saturninum: on heavily cankered *Fraxinus* on sloping *Alnus* woodland at Inverlael, Lael Forest, VC 105 West Ross, GR NH18173.86156. August 2017. *A. Acton*

Leptorhaphis maggiana: on *Corylus* stem, Lesnes Abbey Woods, Bexley, VC 16, West Kent, GR TQ48-78-, July 2017. Herb. Powell 4458. New to the Vice-county. *J. Beale, M. Powell & P. Shipway*

Leptorhaphis maggiana: on *Corylus,* Yoesden Nature Reserve, near High Wycombe, VC 24, Buckinghamshire, GR SU790.977, July 2017. Herb. Shipway. Determined by M. Powell. New to the Vice-county. *P. Shipway*

Leptorhaphis maggiana: on *Corylus* stem, Old Sulehay Forest, VC 32, Northamptonshire, GR TL06-98-, June 2017. Herb. Powell 4432. New to the Vice-county. *B.J. Coppins & M. Powell*

Lopadium disciforme: for details, see under *Melaspilea amota*.

Marchandiomyces corallinus: lichenicolous on *Parmelia sulcata*, on old wooden gate, Canons Ashby estate, VC 32, Northamptonshire, GR SP57-50-. New to the Vice-county and rare in the south Midlands. *M. Powell*

Melaspilea amota: on *Fraxinus* in ravine pinewood, along Allt Nathrach on north shore of Loch Leven, VC 97 West Inverness-shire, GR NN16537.62943, October 2016. Other species recorded on the ash include *Lopadium disciforme, Catinaria atropurpurea,* and *Cladophialophora normandinae* lichenicolous on *Normandina pulchella*. Herb. Acton. New to Scotland. *A. Acton*

Micarea globulosella: lignicolous on wooden post in churchyard (St Mary), Carlton VC 30, Bedfordshire, GR SP951.549, June 2017. Herb. Powell 4429. New to the Vice-county. *M. Powell*

***Micarea hedlundii*:** on dead standing pine 'bone', along unnamed tributary of Allt Nathrach, north shore of Loch Leven, VC 97, West Inverness-shire, GR NN1631.6301, October 2016. Herb. Acton. A new record for this vulnerable RDB species. *A. Acton*

Micarea melaena: for details, see under *Lecanora farinaria*.

Micarea misella: on lignum of standing dead *Quercus* within upland pasture woodland, Gallt y Llyn, Parc Hafod-y-llan, Nantgwynant, VC 49, Caernarvonshire, GR SH6205.5006, alt 70 m, May 2017. New to the Vice-county. *N.A. Sanderson*

Miriquidica leucophaea: about 4 patches on the slanting upperside of a softwood strainer post in fenceline, Cwm Milwyn, 1 km south of Cwmystwyth, VC 46, Cardiganshire, GR SN796.728, alt 360 m, July 2017. Herb. SPC. The first lignicolous Vice-county record for this species. *S.P. Chambers*

Moelleropsis nebulosa: see under *Fuscopannaria nebulosa*

Multiclavula vernalis: on bare ground in rut in heathland track, north of Thorney Hill Holms, New Forest, VC 11, South Hampshire, GR SU209.007, alt 60 m, April 2017. Record by A. Newton. An exciting find of this rare lichenised basidiomycete. Previously discovered in heathland in 2010 in north Hampshire, VC 12. Normally only recorded on moorland in the far north west of Scotland.

A. Newton & N.A. Sanderson

Mycoblastus caesius: for details see under *Lecanora farinaria*.

Nectriopsis micareae: on *Micarea prasina, sensu lato*, on old inclined *Betula* stump, near to carpark (north), Jack's Hill, Epping Forest, GR TQ435.996, September 2017. Herb. P.M. Earland-Bennett. Determined by B.J. Coppins. Third British record and first record for England, for this species. *P.M. Earland-Bennett* at BLS Meeting

Parmelia serrana: on branch of *Quercus petraea* in pasture, Chirk Castle, VC 50, Denbighshire, GR SJ2607.3846, alt 235 m, May 2017. Herb. Alan Orange 23668 (**NMW**). Looked different from *P. saxatilis* in the field and confirmed by ITS sequence. New to Wales. *Alan Orange*

Pertusaria pustulata: on four old *Fagus*, within *Fagus – Ilex* pasture woodland, which is undergoing restoration, Ebernoe Common, VC 13, West Sussex, GR SU9752.2671, GR SU9747.2653, GR SU9748.2677 & GR SU9739.2653, alt 50-60 m, June & August 2017. A substantial population of this Vulnerable RDB species, with some trees supporting it, recently opened up by the cutting of dense shading *Ilex*, then followed by the reintroduction of cattle grazing. *N.A. Sanderson*

Physcia leptalea: on old *Rubus* stem in south-west facing side of hedgerow, Marsworth, VC 24, Buckinghamshire, GR SP926.144, April 2017. Herb. Shipway. Confirmed by M. Powell. New to the Vice-county. *P Shipway*

Phylloblastia fortuita: on *Ilex* leaf on edge of glade within pasture woodland, Ferny Croft, New Forest, VC 11, South Hampshire, GR SU3688.0531, alt 15 m, August 2017. New to the county. *N.A. Sanderson*

Phylloblastia inexpectata: on *Ilex* leaf on edge of glade within pasture woodland, Ferny Croft, New Forest, VC 11, South Hampshire, GR SU3688.0531, alt 15 m, August 2017. New to the county. *N.A. Sanderson*

Phylloblastia inexpectata: on *Ilex* leaves within glades in pasture woodland, Ebernoe Common, VC 13, West Sussex, GR SU97-26- and GR SU97-27-, alt 40-50 m, June 2017. New to the county. *N.A. Sanderson*

***Polyblastia terrestris*:** on rocks at base of waterfall at proposed intake on Allt Coire na h-Eirghe (a tributary of Allt Nathrach), VC 97, West Inverness-shire, GR NN16857.63211, October 2016. Herb. Acton. Generally considered a montane species and not considered to be associated with lower level upland watercourses but it has recently been recorded along several watercourses, during surveys for hydroelectric schemes in Scotland (Acton 2014, 2015; Douglass 2014, 2015). Watercourses now appear to be an important additional niche for this species. This area had a well-developed freshwater lichen flora (including *Dictyonema interruptum, Strigula confusa, Polyblastia cruenta, Polyblastia melaspora, Verrucaria rosula, Rhizocarpon*

infernulum f. sylvaticum). The developer has been asked to avoid this area. A new record for this vulnerable RDB species. *A. Acton*

Polycoccum kerneri: lichenicolous on *Lecidea fuscoatra sensu lato*, on sandstone coping of wall, near Maze Hill gate, Greenwich Park, VC 16, West Kent, GR TQ39-77-, May 2017. Herb. Powell 4417. Apparently only the second British record. New to the Vice-county. *J. Beale, M. Powell & P. Shipway*

Polysporina simplex: on rock outside the Ptarmigan station, Cairn Gorm, Cairngorms National Park, VC 96, East Inverness-shire, GR NJ00507.04886, July 2017. An unusually high altitude record at 1085m for this species (Coppins pers. comm.) Possibly on rocks brought from elsewhere during construction/landscaping of the Ptarmigan station. *A. Acton*

Porina byssophila: on *Corylus* and on wound tracks on old *Fagus*, within relic pasture woodland, Ebernoe Common, VC 13, West Sussex, GR SU97-27- and GR SU97-26, alt 35-50 m, May & June 2017. New to the county. *N.A. Sanderson*

Porina coralloidea: on old *Fagus*, within *Fagus – Ilex* pasture woodland, which is undergoing restoration, Ebernoe Common, VC 13, West Sussex, GR SU9741.2657, alt 55 m, August 2017. New to Ebernoe Common and second record for West Sussex, for this species. *N.A. Sanderson*

Porina hibernica: on large block boulders below Aonach Dubh, Glencoe, VC 98, Argyllshire, GR NN1434.5637, August 2016. Herb. Acton. A new record for this vulnerable RDB species. *A. Acton*

***Porina interjungens*:** recorded twice on rocks in the vicinity of a proposed primary intake, for a hydroelectric scheme along Allt Nathrach, VC 97 West Inverness-shire, GR NN15737.63349, October2016. Herb. Acton. The developer plans to relocate the primary intake to avoid construction impacts on this area. A new record for this vulnerable RDB species. *A. Acton*

Porina rivalis: on metamorphosed sedimentary rock in River Tavy at Horndon Bridge, VC 3, South Devon, GR SX523.795 alt 210 m, July 2017. Herb. Benfield & herb. Bacciu. Confirmed by J.R. Douglass. New to VC 3 and second Devon record for this species. *B. Benfield & N. Bacciu*

Psoroglaena stigonemoides: on *Sambucus* stem, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Herb. Powell 4448. New to the Vice-county. *M. Powell & P. Shipway*

Psorotichia schaereri: on limestone coped tomb in churchyard (All Saints), Riseley, VC 30, Bedfordshire, GR TL039.631, July 2017. Herb. Powell 4456. I have walked past this low memorial dozens of times in recent years and must have subconsciously 'written off' this dark crust as something like *Verrucaria nigrescens*. New to the Vice-county. *M. Powell*

Pyrenula acutispora: locally frequent on hazel at Treshnish, Mull, VC 103 Mid Ebudes GR NM355.489, July 2016. Herb. Acton. A new record for this vulnerable RDB species. *A. Acton*

Racodium rupestre: on soil in underhang near Millcombe House, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Herb. Putnam. A new record of this species for the island. *M. Putnam*

Ramalina fraxinea: on fallen *Quercus* bough, Pitsford Reservoir, VC 32, Northamptonshire, GR SP779.710, August 2017. Identified from excellent photographs, the specimen retained by the collector. This demonstrates the value of being a county recorder and being known as such to local naturalists and conservation volunteers. Luckily the collector was not hit when the branch fell unexpectedly, next to the lunch site of the conservation working party. New to the Vice-county.

M. Powell & M. Cross

Ramonia chrysophaea: on damp base rich bark of old *Quercus*, within relic pasture woodland, Ebernoe Common, VC 13, West Sussex, GR SU9786.2731, alt 35 m, August 2017. First record from Ebernoe Common since 1996 for this Near Threatened Section 41 species. *N.A. Sanderson*

***Rhizocarpon chioneum*:** on andesite crags at base of Aonach Dubh, Glencoe, VC 98, Argyllshire, GR NN14-56-, August 2016. Herb. Acton (**E**). Determined by B.J. Coppins. The fourth 10 km square in the British Isles. Otherwise only known from Caenlochan, Coire Cheap (at Ben Alder) and Ben Hope Glencoe. *A. Acton*

Rhizocarpon infernulum f. sylvaticum: for details, see under *Strigula confusa*.

***Rhizocarpon intersitum*:** on stone in stony flush with *Gnaphalium supinum* (dwarf cudweed - Asteraceae), on ridge between Meall Dearg and Aonach Eagach, Glencoe, VC 98, Argyllshire, GR NN1609.5836, August 2016. Herb. Acton (**E**). The third British record. The other two records are from quite different habitats, (i) in VC 83, Midlothian on roof slate, and (ii) in VC 95, Moray, on pebble amongst shingle. See the following web address, *http://fungi.myspecies.info/all-fungi/rhizocarpon-intersitum*, for details. *A. Acton*

Rinodina aspersa: on flint in coastal shingle at Browndown, Gosport, VC 11, South Hampshire, GR SZ58-98-, alt 1m, March 2017, M. Powell and J. Norton. The first modern record from Hampshire, for this species. *M. Powell, J. Norton & N.A. Sanderson*

Rinodina isidioides: on aspen in ravine pinewood above confluence of the Allt Nathrach and Allt Coire na h-Eirghe, GR NN171.621, October 2016. Herb. Acton. Previously recorded by Neil Sanderson in 2006 as 'frequent' (though presumably only very locally frequent) on old *Quercus* at lower altitudes along the north shore of Loch Leven. A new record for this vulnerable RDB species. *A. Acton*

Rhexophiale rhexoblephara: growing over bryophytes on high altitude dyke along back corrie wall of Coire an Tulaich, Glencoe, VC 98 Argyllshire, GR NN2152.5427, August 2016. Herb. Acton. A new record for this vulnerable RDB species. *A. Acton*

Roselliniella cladoniae: on *Cladonia diversa* squamules on sheep pummelled peat hag in eroding upland basin mire, *c.* 200 m east of Crug Gynon, VC 46, Cardiganshire, GR SN804.636, alt 500 m, August 2017. Herb. SPC. New to the Vice-county on this host.

S.P. Chambers

Roselliniopsis ventosa: on thallus of *Placopsis lambii* on intermittently water-washed rock slab in cascade on upland river, Afon Mwyro, Cwm Mwyro, *c*. 1.5 km west of Llyn Gynon, VC 46, Cardiganshire, GR SN783.646, alt 360 m, June 2017. Herb. SPC. New to the Vice-county and second Welsh record. *S.P. Chambers*

Sarcogyne regularis: on wall opposite shop, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Sarcosagium campestre* var. *macrosporum: an extensive colony on the limestone base of a large, ornate zinc (white bronze) memorial, West Norwood Cemetery, VC 17, Surrey, TQ322.722, June 2017. Herb. Powell 4443. [Note. This spectacular memorial has a fascinating community of metallophytes, reminiscent of mine spoil tips in the Pennines. Flaking paint is colonized by *Arthonia lapidicola*, mosses at the base, support *Vezdaea leprosa*, the limestone base and associated loose fragments have the *Sarcosagium* and abundant *Verrucaria obfuscans*. *Scoliciosporum umbrinum* grows on the stub of a former iron railing]. New to the Vice-county. *M. Powell*

Scoliciosporum pruinosum: on *Quercus* trunk, Horton Woods, VC 32, Northamptonshire, GR SP82-52-, June 2017. Field record. New to the Vice-county. *M. Powell & P. Shipway*

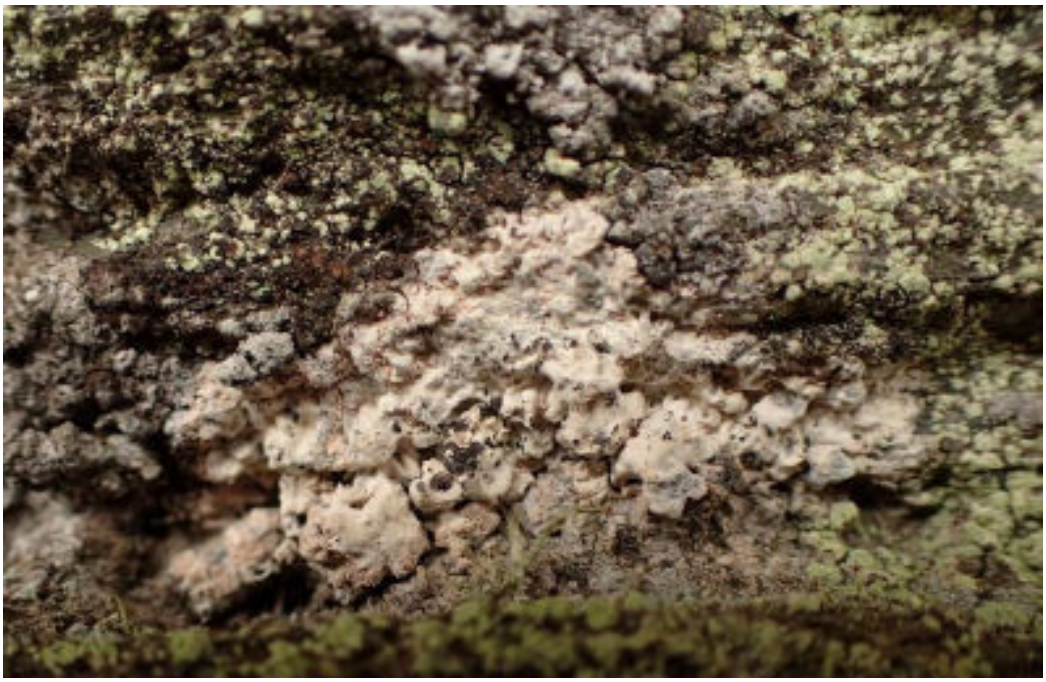
Schismatomma graphidioides: a large population on old *Fagus*, within parkland tree belt, Connigers Copse, Roydon Woods Nature Reserve, VC 11, South Hampshire, GR SU3138.0112, alt 25 m, May 2017. Another new site for this Section 41 species, which now appears to have a significant stronghold in the New Forest area. *N.A. Sanderson*

Solenopsora candicans: on tower of church (St Helena), Lundy Island, VC 4, North Devon, GR SS13-43-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Sparria endlicheri: at base of dry underhang on Morte shales facing north, Morte Point, Mortehoe, VC 4, North Devon, GR SS4497.4563, July 2017. Herbs. Bacciu and Putnam. A new site for this rare species of the *Sclerophytetum circumscriptae* which was recorded in 1993, from 5 sites along the north-facing coast to the east of Morte Point. (See photograph opposite). Note black bodies on thallus are sterile tissue and not a lichenicolous fungus. *N.G. Bacciu & M. Putnam*

Staurothele rugulosa: on shaded limestone step, Canons Ashby House, VC 32, Northamptonshire, GR SP577.506, August 2017. Herb. Powell 4465. There are some differences (especially ascospore size) from the description in TLGB&I but this name has been applied as a 'best fit,' to allow easy reference to the specimen if *Staurothele* is reviewed. New to the Vice-county. *M. Powell*

Stenocybe nitida: parasitic on small *Plagiochila* species of leafy liverworts, on two *Betula*, within upland pasture woodland, Parc Hafod-y-llan, Nantgwynant, VC 49, Caernarvonshire, GR SH6255.5077 and GR SH6244.5094, alt 115 m &136 m respectively, May 2017. First modern record for this species in Caernarvonshire. *N.A. Sanderson*



Sparria endlicheri (see opposite). Photo N.G.Bacciu

Stereocaulon dactylophyllum: one small tuft on the sawn top of softwood fencepost, on footpath by Dol-chenog Farm, Cwmystwyth, VC 46, Cardiganshire, GR SN786.737, alt 200 m, July 2017. Field record. An interesting lignicolous occurrence of this species. *S.P. Chambers*

Strigula confusa: on rocks at base of waterfall near proposed secondary intake, on Allt Coire na h-Eirghe (a tributary of Allt Nathrach), north shore of Loch Leven, VC 97, West Inverness-shire, GR NN16857.63211, October 2016. Herb. Acton. This area had a well-developed freshwater lichen flora (including *Dictyonema interruptum, Polyblastia terrestris, Polyblastia cruenta, Polyblastia melaspora, Verrucaria rosula, Rhizocarpon infernulum f. sylvaticum*) The developer has been asked to avoid this area. A new record for this vulnerable RDB species. *A. Acton*

Syzygospora bachmannii: lichenicolous on *Cladonia chlorophaea* on dead stump in wood near Caddihoe, Ashclyst Forest, VC 3 South Devon, GR SY007.999, March 2017. Herb. Benfield. New to the Vice-county. *B. Benfield*

Taeniolella toruloides: parasitic on *Thelotrema lepadinum*, widespread if local, on *Fagus*, rare on *Quercus* and *Ilex*, within old growth pasture woodland, New Forest, VC 11, South Hampshire, (i) French's Bushes, GR SU29-12-, *2001*; (ii) Busketts Wood area, GR SU30-10-, GR SU30-11-, GR SU31-11-, GR SU32-11-, *2004 – 2017*; (iii) Emery Down, GR SU28-08-, *2005*; (iv) Bramshaw Wood, GR SU25-17- and GR SU26-16-, *2006* & 2011 respectively; (v) Bignell Wood, GR SU28-13-, *2009*; (vi) Shave Wood, GR SU29-12-, *2009*; (vii) Highland Water Inclosure, GR SU25-08-, *2012*; (viii) Matley Wood, GR SU33-07-, *2016*; (ix) Mark Ash Wood, GR SU24-07, *2017*; (x) Rushpole

Wood, GR SU30-09-, *2017*; N.A. Sanderson, A.M. Cross & P.A. Wolseley. A newly described obligate parasite of *Thelotrema* species with a southern oceanic distribution. Should be looked for in other sites with large *Thelotrema lepadinum* populations in the south and west. *N.A. Sanderson*

Taeniolella toruloides: parasitising *Thelotrema lepadinum* on old *Ilex,* within relic pasture woodland, Steart Wood, Pixton Park, VC 5, South Somerset, GR SS9262.2630, alt 145 m, September 2017. New to the Vice-county. *N.A. Sanderson*

Telogalla olivieri: lichenicolous on *Xanthoria calcicola*, on top of gravestone in churchyard (St Mary), Carlton, VC 30, Bedfordshire, GR SP951.549, June 2017. Herb. Powell 4451. New to the Vice-county. *M. Powell*

Telogalla olivieri: parasitising *Xanthoria parietina* on twig of *Crataegus,* in coastal scrub, Hythe Marina, Hythe, VC 11, South Hampshire, GR SU420.086, alt 5 m, December 2016, N. Bacciu. New to the Vice-county. *N. Bacciu & N.A. Sanderson*

***Thamnogalla crombiei*:** lichenicolous on *Thamnolia vermicularis* var. *subuliformis* at Morrone, Braemar, VC 92, South Aberdeenshire, GR NO13251.88566, GR NO 13236 88548 and GR NO13354.88590, alt *c.* 850 m., Aug. 2017, Herb. Acton. Discovered by Crombie in 1862 and recorded from several sites in Scotland including Ben Lawers, Morrone and Cairn Gorm and Beinn a' Bhuird (Hawksworth, 1980). The most recent British collection is from Cader Idris in Wales by Watson (Hawksorth, 1980) but the only record on the BLS database is Ben Lawers NN64 (from 1864). The recent find was the result of a targeted search as part of the The Lost & Found Fungi Project. *A. Acton*

Thelenella muscorum* var. *muscorum: on trunk of ancient *Fraxinus* low cut pollard within floodplain pasture woodland, Lymington River, by Highwood Copse, Roydon Woods Nature Reserve, VC 11, South Hampshire, GR SU3197.0111, alt 5 m, May 2017. First localised record in the county. *N.A. Sanderson*

Toninia physaroides: terricolous on sparsely vegetated soil of former quarry, Stone Pit Close, VC 32, Northamptonshire, GR TL057.983, June 2017. Herb. Powell 4438. Only the second modern record for this Critically Endangered species. Separated from similar species by, among other characters, the very thick-walled medullary hyphae. See: *http://fungi.myspecies.info/all-fungi/toninia-physaroides*. New to the Vice-county. *B.J. Coppins & M. Powell*

Toninia verrucarioides: lichenicolous on *Placynthium nigrum*, on old ironstone chest tomb in churchyard (St Mary), Canons Ashby, VC 32, Northamptonshire, GR SP578.505, August 2017. Herb. Powell 4468. New to the Vice-county. *M. Powell*

Trapeliopsis flexuosa: on fence rail near Millcombe House, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Tremella ramalinae: lichenicolous on *Ramalina fraxinea,* fallen from the canopy of Acer pseudoplatanus in garden, Plymtree GR ST050.030 VC 3 South Devon. July 2017. Confirmed by B. J. Coppins. First English record for this species. *B. Benfield*

Tremella tuckerae: lichenicolous on thallus and apothecia of *Ramalina canariensis*, on scrub on old mine spoil heap, Gwinear, near Hayle, VC 1, West Cornwall, GR SW590.370, March 2017. Herb. Cannon P3109 (**K**). First record of this species for England, and only the second for the British Isles.

P.F. Cannon, M. Putnam & P.W. Lambley

Tubeufia heterodermiae: on *Physcia aipolia* on wooden gate rail, north bank of Afon Ystwyth, Cwmystwyth, VC 46, Cardiganshire, GR SN789.737, alt 210 m, July 2017. Herb SPC. The second Vice-county record for this species and third for Wales.

S.P. Chambers

Verrucaria bryoctona: terricolous near the Ptarmigan station, Cairn Gorm, Cairngorms National Park, VC 96, East Inverness-shire, GR NJ0046.0489, July 2017. An unusually high altitude record at 1080 m, for this species (Coppins pers. comm.)

A. Acton

Verrucaria obfuscans: for details, see under *Sarcosagium campestre* var. *macrosporum*

Verrucaria rosula: for details, see under *Polyblastia terrestris*

Vouauxiella lichenicola: sparse on thallus and apothecial discs of *Lecanora confusa,* on northwest side of trunk of old hedgebank *Quercus*, *c*. 250 m southwest of Ty Mawr Home Farm, 0.5 km northeast of Ciliau Aeron, VC 46, Cardiganshire, GR SN510.593, alt 110 m, April 2017. Herb. SPC. The first record of *V.lichenicola* on *L. confusa,* or on any *Lecanora* other than *L. chlarotera,* in the Vice-county. *S.P. Chambers*

Vouauxiella lichenicola: lichenicolous on *Lecanora chlarotera* near Millcombe House, Lundy Island, VC 4, North Devon, GR SS13-44-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Wentiomyces lichenicola: lichenicolous on *Gomphillus calycioides* within *Corylus* stand at Ardsheal Hill, Duror, VC 98, Argyllshire, GR NM9956.5581, October 2016. Herb. Acton. Determined by B.J. Coppins. A new host for this rarely recorded lichenicolous fungus. *A. Acton*

Xanthoria calcicola: on tower of Church (St Helena), Lundy Island, VC 4, North Devon, GR SS13-43-, July 2017. Field record. A new record of this species for the island. *M. Putnam*

Zevadia peroccidentalis: lichenicolous on thallus of *Usnea flammea*, on maritime granite tor, Carn Gilver, VC 1, West Cornwall, GR SW427.360, March 2017. Herb. Cannon P2937 (**K**). Previously only known from the type locality in County Mayo, Irish Republic. New to the UK. *P.F. Cannon, M. Putnam & P. Lambley*

Corrigendum: Bulletin no. 120 Summer 2017 p125 *Acarospora moenium* entry withdrawn following expert determination.

British Lichen Society Field Meetings & Workshops Programme 2018

Field Meetings Secretary: Steve Price, Woodlands, Combs Road, Combs, High Peak, Derbyshire SK23 9UP
email *fieldmeetings@britishlichensociety.org.uk*

*note: **All members** of whatever level of experience are welcomed on **all BLS Field Meetings**. No member should feel inhibited from attending by the fact that some meetings may be associated with BLS Council meetings or the AGM. Workshops, on the other hand, may be aimed at members who have some level of experience. If so this fact will be specified in the meeting notice.*

BLS AGM 2018 Field Outing – Netherby Hall, Cumbria

Sunday 21st January 2018
Leader: Allan Pentecost

A one day field outing will follow the AGM which is being held in Carlisle, Cumbria. Netherby is a large estate with extensive areas of woodland and parkland by the River Esk. It is two miles NE of Longtown and 10 miles north of Carlisle and is close to the Scottish border. It is a private estate owned by Mr & Mrs Gerald Smith. There will not be an entry charge for our group.

The suggestion is to meet outside Tullie House, the location of the AGM, at 10am to organise transport. Public transport will not be an option so private cars will be needed.

The grounds (grid reference NY3971) are covered by OS Explorer Map 324 and Landranger map 85.

BLS WINTER WORKSHOP 2018 – Cloughton, Scarborough

Bring along your problems: identification and techniques
Friday 23rd – Sunday 25th February 2018
Tutors: Brian Coppins and Mark Powell

This workshop will provide members with an opportunity to air and share their lichen identification problems and their problems in using techniques needed to aid identification.

Look out those problematic specimens which have been haunting you; they may be nameable. Problems with techniques can include issues with microscopes / chemical tests / staining etc. Problems and their solutions will be shared throughout the group.

No problem too small! However financial, political and domestic problems are out of scope!

The bulk of the time will be spent in the adequately sized meeting room. The grounds of Cober Hill and its environs offer plenty of opportunity to take a short walk and to find more question-posing material.

Meeting Base

The meeting will be residential at Cober Hill, Cloughton, Scarborough, North Yorkshire YO13 0AR
tel: 01723 870310 email: *enquiries@coberhill.co.uk*
See *www.coberhill.co.uk* to have a look at the accommodation and facilities.

Accommodation and costs

Accommodation for 20 people in single and twin en-suite rooms has been reserved and a deposit paid by the BLS. These bed spaces are being held for us until mid-August 2017 (6 months before the meeting date). Subject to availability rooms will be able to be booked after this date.

Full board accommodation (incl. dinner, breakfast and packed lunch) for the two nights is £169 per person (inc. VAT at 20%). This price includes the use of the meeting room until late Sunday afternoon. The group package is for the 2 nights and there is no reduction for a shorter stay.

The earliest check-in time for rooms is 15.00. Dinner is at 19.00.

Booking

Attendees should book their rooms with the Field Meetings Secretary, Steve Price, email: *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP and send him a £45 deposit, cheques payable to 'The British Lichen Society' (not 'BLS' please).
If members prefer to pay by bank transfer please request details from the Field Meetings Secretary.

The bookings made (and the deposits of £45 paid) by the end of August 2017 have been confirmed with Cober Hill. **Bookings can now be made subject to bedroom accommodation being available**. Please contact the Field Meetings Secretary. The deposit once paid by BLS to Cober Hill will be non-refundable.
Cancellation of places less than 16 weeks before the meeting will incur extra charges, therefore the balance (£124) needs to be paid by the end of October 2017.

Please advise of any special dietary needs and also if you do not need dinner on the evening of arrival. Note there will be no reduction in the cost if you do not take dinner that night.

Microscope work

A very large meeting room has been reserved for the duration of the meeting for microscope work and presentations. The BLS microscopes will be available for communal use.

Timetable
Meet for dinner on Friday 23rd at 19.00hrs. We need to vacate the bedroom accommodation after breakfast Sunday 24th and the meeting room by 16.00hrs on the Sunday afternoon. A packed lunch will be provided on the Sunday.
Further details of the programme will be sent out to attendees nearer the time of the meeting.

BLS SPRING FIELD MEETING - Galloway

Monday 23rd to Monday 30th April 2018
Field-sites organiser: John Douglass

This meeting will study the largely under recorded area of Galloway in South West Scotland.
Habitats will including woodland, coastal habitats, gardens and the occasional church and cemetery. Trips will be made westwards onto the Rhins of Galloway.

Meeting Base
Conifer Lodges, Minnigaff, Newton Stewart DG8 6AN
See http://solidluxury.co.uk/locations/conifer-lodges-dumfries-galloway-properties-sleeping-2-to-8/ or Google 'Conifer lodges solid luxury' to view the accommodation. We are staying in the 'Lady Galloway lodges'.

Accommodation and costs
The BLS has booked four **self-catering lodges** (luxury log cabins). Each lodge has one double and two twin bedrooms (and a hot- tub!) Should there be enough demand additional lodges may be able to be booked.

The cost per person for the week is £140 for sharing a twin / double bed room and £210 for single occupancy. In the first instance there will be a maximum of 1 single occupancy per lodge. This will leave us with 20 bed spaces.

Booking
Attendees should book onto the meeting with the Field Meetings Secretary, Steve Price, email: *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP and send him a £35 deposit per person, cheques payable to 'The British Lichen Society' (not 'BLS' please). The balance of the costs will be requested in March 2018.

If members prefer to pay by bank transfer please request details from the Field Meetings Secretary.

Microscope Work
Microscope work will have to take place in the lounge / dining areas of the lodges

Bring your own microscopes if you can. The BLS stereo and compound microscope will also be available for communal use. If possible please bring your own consumables (microslides / cover slips / razor blades / chemicals).

Timetable
Arrival time is from 16.00hrs on Monday 23 April. The meeting will run from the evening of the 23rd when we will gather in one of the lodges after dinner for an introductory meeting. We vacate the accommodation before 10.00hrs on the Monday 30th.
Further details of the programme will be sent out to attendees nearer the time of the meeting.

Maps of the area *(all of these may not be relevant)*
OS Explorer 1:25,000 - 309 - Stranrear & The Rhins
OS Explorer 1:25,000 - 310 - Glenluce & Kirkcowan
OS Explorer 1:25,000 - 311 - Wigtown, Whithorn & The Machars
OS Explorer 1:25,000 - 319 - Galloway Forest Park South
(note: map 319 includes the area around the accommodation)

British Geological Survey Scotland Sheets 1& 3 - Rhins of Galloway

BLS RECORDING MEETING - Moccas Park National Nature Reserve, Herefordshire

Wednesday 16 to Thursday 17 May 2018

A two day recording meeting at Moccas Park National Nature Reserve in Herefordshire is being planned for the summer 2018. Moccas Park is one of the largest and most diverse examples of wood pasture remaining in Britain.

The meeting time has yet to be decided; when known this will be posted on the BLS website and emailed out to those members who have meanwhile expressed an interest in attending. Members with an interest in attending should let Steve Price, the Field Meetings Secretary, know by email at *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP.

There is no limit on numbers however because we do need to let EN and Estate staff know how many will be attending. **Booking in advance is essential**. Precise joining instructions will be sent out to those who confirm their attendance.

There will no specific base for the meeting and attendees will need to make their own arrangements for accommodation.

BLS SUMMER FIELD MEETING - Borrowdale, Lake District, Cumbria

Sunday 22nd to Sunday 29th July 2018

Field-sites organiser: Allan Pentecost

This meeting, based at the head of the Borrowdale, will study nearby upland areas, lowland areas of North Cumbria and the Borrowdale valley.

Meeting Base

Glaramara House, Seatoller, Borrowdale, Nr Keswick, Cumbria, CA12 5XQ
Tel: 017687 77222
Fax: 017687 77198
Email: *info@glaramara.co.uk*
See *http://www.glaramarahouse.co.uk* to view the accommodation and facilities.

Accommodation and costs

The BLS has reserved a number of single and twin en-suite rooms and a meeting room at Glaramara House. The hotel is geared-up to accommodate groups such as ours involved in outdoor activities.

The cost per person for the week is £539 (£77 per night) for dinner, bed, breakfast and packed lunch. This cost includes the provision of the meeting room.
Other accommodation in the area includes camp-sites, bunk-barns and a Youth Hotel at Honister.

Booking

Attendees should book onto the meeting with the Field Meetings Secretary, Steve Price, email: *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP and send him a £50 deposit per person, cheques payable to 'The British Lichen Society' (not 'BLS' please). The balance of the costs will be requested in May 2018.

If members prefer to pay by bank transfer please request details from the Field Meetings Secretary.

The bedrooms are being held for us until April 2018. Subject to availability rooms will be able to be booked after this date.
Please advise of any special dietary needs.

Microscope Work

Microscope work will take place in the Fell View function room of which we have exclusive use.
Bring your own microscopes if you can. The BLS stereo and compound microscope will also be available for communal use. If possible please bring your own consumables (microslides / cover slips / razor blades / chemicals).

Timetable

Rooms are available from 15.00hrs on Sunday 22 July. The meeting will run from the evening of the 22nd when we will gather in the Fell View room after dinner for an introductory meeting. We vacate the accommodation before 10.00hrs on Sunday 29th.

Further details of the programme will be sent out to attendees nearer the time of the meeting.

Maps of the area
OS Explorer 1:25,000 - OL4 - The English Lakes - North Western
British Geological Survey 1:50,000 Sheet 29 - Keswick

BLS AUTUMN FIELD MEETING - Suffolk

Friday 5th to Monday 8th October 2018
Local organisers: Peter Lambley & Chris Hitch

The eastern coastal fringe of Suffolk has a diverse range of habitats and it is expected that the meeting will explore some of the richest ones for lichens. A highlight will be a visit to the extensive shingle spit of Orfordness, once the site for testing Britain's nuclear trigger now a nature reserve with extensive areas of shingle plus some artificial habitats. It is also hoped to visit one or more parklands, which have some of the largest lichen floras in Eastern England. In addition we intend to visit some of the magnificent medieval churches for which Suffolk is famous.

Meeting Base
Field Studies Council Flatford Mill Field Centre, East Bergholt, Suffolk CO7 6UL
Tel: 01206 297110 *http://www.field-studies-council.org/centres/flatfordmill.aspx*

Timetable
The meeting will start at a field-site on the morning of Friday 5th October. There will be an option to join the meeting at lunchtime on Friday. The meeting will finish at lunchtime on Monday 8th October.

Further details of the programme will be sent out to attendees nearer the time of the meeting.

Accommodation and costs
For the three nights Friday 5th Saturday 6th and Sunday 7th the BLS has reserved 20 bed spaces in mostly single accommodation, there will be a twin option for those wishing to share. The booking is for dinner, bed, breakfast and packed lunch.
The cost of the stay at Flatford Mill is:
£220.00 plus VAT per person for single accommodation (inc. VAT at 20% = £264) and;
£360.00 plus VAT for a couple in a twin room (inc. VAT at 20% = £432).

Flatford Mill is unable to offer accommodation for the group on the night of Thursday 4th October. If attendees wish to stay overnight before joining the meeting on the morning of Friday 5th they will need to arrange their own accommodation for that one night.

Flatford Mill may have some limited overnight accommodation available for the night of Thursday 4th but this will not be known until the first or second week in September. Enquiries, bookings and payments for any extra nights should be made directly with Flatford Mill and not through the BLS Field Meetings Secretary.

Booking

Attendees should book onto the meeting with the Field Meetings Secretary, Steve Price, *email: fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP and send him a £35 deposit per person, cheques payable to 'The British Lichen Society' (not 'BLS' please). The balance of the costs needs to be paid by August 2018. Should the VAT rate change from 20% attendees will be asked to pay the difference or be due a refund.

When booking please advise of any special dietary needs.

If members prefer to pay by bank transfer please request details from the Field Meetings Secretary.

Microscope Work

Two adjacent workrooms have been reserved for microscope work.

Bring your own microscopes if you can. The BLS stereo and compound microscope will also be available for communal use. If possible please bring your own consumables (microslides / cover slips / razor blades / chemicals).

Note: In November 1959 the second ever field meeting of the BLS was based at Flatford Mill - see *The Lichenologist* **1(3)** p.119 and *The Lichenologist* **1(4)** pp.203 - 206). There have been two subsequent meetings based in Suffolk: in September 1982 at Staverton (not written-up); and in November 1985 at Sudbury - see *BLS Bulletin* no. **57** pp.19-20.

Maps of the area

The following OS 1:50000 scale Landranger maps will be useful:

No. 156 - Saxmundham, Aldeburgh & Southwold

No. 169 - Ipswich, The Naze

Although it is extremely rare for anything to go wrong with the arrangements for our field meetings and workshops, it has happened. In 2015 the hotel we had booked for accommodation cancelled without warning and at short notice. The BLS is not liable for such actions, and will not reimburse participants for losses out of the Society's control. Attendees on our meetings are advised to at least consider holiday insurance (note that for insurance purposes our meetings are best classified as themed holidays). The Society does not arrange such cover although it does of course have Public Liability Insurance.

In the unfortunate event of an unforeseen cancellation, participants should be diligent in keeping receipts of all expenditure they incur as a result of such action. The case for re-imbursement may depend on the production of receipts.

What to do when things go wrong

Usually, our field meetings and workshops go without a hitch, largely due to the hard work put in by our Field Meetings Secretary, Steve Price, and local organisers. But occasionally things don't go as planned and, as Treasurer, I usually get involved. The purpose of this note is to give you some advice based on what I have observed.

It is very unlikely that the Society would cancel a field meeting or workshop but it is of course possible if, for instance, the organiser became suddenly very ill or weather conditions (floods, rough seas) made fieldwork impossible. In such a case the Society would reimburse costs of travel and accommodation. Whether incidental losses such as lost earnings would be reimbursed would be considered by BLS Council (or a sub-committee of it) on a case by case basis.

The field meeting planned for the Isle of Wight was cancelled at very short notice by Warner Leisure Hotels, with whom accommodation was booked, and for what seemed a flimsy reason. They reimbursed the Society promptly all the accommodation payments that had been made in advance. A claim was made for additional losses incurred by attendees, about £1,000 in all, but many claims were rejected because of lack of evidence. Where there was evidence of additional expense (receipts for alternative accommodation, booking fees, etc.) Warner Leisure paid up.

The cancellation by Warner Leisure Hotels is the only occasion I have come across where a seemingly faultless booking has gone wrong. More usual and more likely is the situation where an attendee of a course or workshop has to cancel for personal reasons, perhaps an accident, ill health or a bereavement. In such cases the Society will not reimburse losses. However, as accommodation bookings are usually made in the Society's name, the Society would initiate an insurance claim.

The key to any claim, whether it be on your own travel insurance or to an organisation such as Warner Leisure Hotels or the Field Studies Council (who have outsourced their insurance to Zurich) is evidence. If the reason is medical you will need some written note stating you are unfit from your GP. GPs are used to supplying these so don't be embarrassed about asking. If you have pre-paid for travel by rail or plane you will need to provide proof that you did not travel. Airlines can provide these although it's not straightforward. A simple ticket receipt will not do. If you have unforeseen costs such as food, keep all receipts. My observation is that a letter without evidence, however sincere and honest, will not result in reimbursement.

I sincerely hope we won't have any more cancellations and you don't suffer losses as a result. However, in the event of difficulties please feel free to contact me. It is always best for problems to be reported to insurance companies as soon as possible and I can help you with this.

John Skinner
treasurer@britishlichensociety.org.uk

NOTICE OF THE ANNUAL GENERAL MEETING 2018

Venue

The AGM and Winter Meeting for 2018 will be held at Tullie House Museum, Carlisle, Cumbria CA3 8TP (tel. 01228 618704) on Saturday 20th January.

Tullie House Museum is situated in an impressive new building overlooking Carlisle Castle close to the centre of the City. The main entrance is to be found on Annetwell Street. Carlisle is easily accessible by car via the M6 motorway, and by bus and rail. The nearest international airports are Newcastle (56 miles away) and Glasgow (103 miles). Both have good rail connections with Carlisle. The Museum car park is for staff only and you are advised to use nearby on-road parking (can be difficult in the daytime) or one of several pay-and-display car parks. The nearest is Devonshire Walk Car Park about 300 yards away. Parking charges range from £3-£6.50 per day. Note that central Carlisle has a one-way system for cars and this can be confusing if you arrive in the dark. Use of a sat-nav device is recommended. There is one railway station in the city with good connections to most large UK cities. Trains from London Euston leave every hour on weekdays and Saturday and the journey takes three hours. A town map showing locations of venues and restaurants will be available on the BLS website. There is also a city plan at *www.tulliehouse.co.uk.*

The city of Carlisle (the 'Great Border City') boasts a fine medieval cathedral dating to the 12th century and an 11th century castle, run by English Heritage. One of its best known buildings, the Citadel, with its two red sandstone towers, close to the railway station, is a useful landmark if you get disorientated. This Roman city is the county town of Cumbria and hosts the University of Cumbria and was once home of the 'Border Reivers'.

Accommodation

There is plenty of reasonably priced accommodation in the city and its environs. A list of hotels, guest houses and B&Bs will be posted on the BLS website.

Exhibition

Exhibits can be left in the Function Room next to the lecture theatre of Tullie House from 17.00 on the Friday. **Please note that we cannot use the lecture theatre here for the evening lecture so displays will need to be prepared on the Saturday morning.** Please let me [Allan P.] know if you require a display board as these will have to be brought in from outside. The Friday evening lecture will be preceded by wine and soft drinks at 18.15 at the Crown & Mitre Hotel in English Street. This hotel is opposite the Tourist Information Centre and is five minutes' walk from Tullie House, in the city centre.

Timetable

Friday 19th January

18.15 Reception at the Crown & Mitre Hotel (wine and soft drinks)

19.00-19.50 Evening lecture: Something new and something old - gleanings of lichen ecology over the past 50 years by *Allan Pentecost*.

20.15 AGM Meal. This will be at the Alexandros Greek Restaurant in Warwick Road and costs £25 per person. The meal will consist of a wide range of dishes for all to choose from including vegetarian dishes. Drinks will be extra. You can view the menu at *www.thegreek.co.uk* Booking is essential; please see the booking form posted with the *Bulletin*.

The usual sale of books will take place at the reception in the Crown & Mitre Hotel prior to the lecture.

Saturday 20th January at Tullie House Museum.

9.45 Coffee and tea, poster and other exhibits in the annexe to the lecture theatre. Displays can be set up after 9.00 am.

10.30 Annual General Meeting. Lecture Theatre.

13.00 Lunch at own expense. There is a cafeteria in the Museum and a range of restaurants and cafes nearby.

14.00 Winter Meeting - Lakeland lichens, cephalodia and the *Lobarion*

Talks:

14.00-14.15 Distribution and habitats of *Peltigera leucophlebia* in Cumbria. *David Clarke*.

14.15-14.30 The lichens of Young Wood, Cumbria. *Carrie Hedges.* The highest of three unique high-level Atlantic woodlands in Cumbria.

14.30-15.10 Nitrogen fixation and nitrogen enrichment in montane Britain: a case study with the nitrogen-fixing lichen *Stereocaulon vesuvianum*. *Peter Crittenden*

We have collected *Stereocaulon vesuvianum* from a range of upland sites representing a nitrogen deposition gradient and found a link between nitrogen enrichment and change in both thallus morphology and capacity to fix N_2.

15.10-15.30 Tracking the decline of woodland communities in the Lake District 1969-2017. *Ivan Day*

15.30-15.50 Tea/coffee break

15.50-16.15 The internal cephalodia of *Lobaria pulmonaria*. *Allan Pentecost*
Their distribution, abundance and ability to fix nitrogen using solar radiation are explored in this talk. Samples collected in Western Scotland and the Lake District will be compared.

16.15-16.35 The work of the Cumbria Biodiversity Data Centre. *Deborah Muscat*

16.35-17.00 The taxonomy of *Pseudocyphellaria* and *Megalospora*. *Kristine Bogamazova*

17.15 Arrangements for the field meeting.

17.30 Close

Post AGM meal

For those who would like to eat together after the AGM, a booking will be made at a local restaurant. Numbers and the venue will be confirmed on Saturday morning.

Nominations for officers of the Society

Nominations are invited for Officers for 2018 and for three members of Council for the period 2018-2020 (retiring at the AGM held in early 2021). Note that these dates will be provisional and may change if the Society becomes a Charitable Incorporated Organisation. Proposals should be sent by email or in writing to Pat Wolseley (email:*secretary@britishlichensociety.org.uk*) at least two weeks before the AGM. No person shall be nominated without their consent.

Richard Brinklow, Neil Sanderson and Ishpi Blatchley are due to retire from council and are not eligible for re-election. We thank them all for their service. Allan Pentecost (President) and Paul Cannon (Vice-President) will also retire from their posts at the conclusion of this AGM.

AGM Agenda

Please sign the attendance list and write your own name badge.

1. Apologies for absence
2. Minutes of the AGM held at the Natural History Museum in January 2017
3. Matters arising
4. Reports of Officers and Committee chairs

4.1 President	(Allan Pentecost)
4.2 Secretary	(Eluned Smith/Pat Wolseley)
4.3 Treasurer	(John Skinner)
4.4 Membership	(RBS)
4.5 Conservation	(Bryan Edwards)
4.6 Data	(Les Knight)
4.7 Education & Promotions	(Fay Newbery)
4.8 *Bulletin* editor	(Paul Cannon)
4.9 Senior Editor *Lichenologist*	(Peter Crittenden)
4.10 Website	(Janet Simkin)
4.11 Field Meetings Secretary	(Steve Price)
4.12 Librarian	(Ray Woods)
4.13 Archivist	(Mark Seaward)
4.14 Herbarium Curator	(Richard Brinklow)

5. Election of Officers and Committee Chairs
6. Proposal for incorporation of the BLS and the new Constitution
7. Any other business
8. Date and place of the AGM 2019

Subscription Fees 2018
No changes to annual membership are suggested for this year.

Sunday 21st January
BLS field meeting to Netherby Hall, Cumbria. Netherby is a large estate with extensive areas of woodland and parkland by the River Esk. It is two miles NE of Longtown and 10 miles north of Carlisle and is close to the Scottish border. Public transport will not be an option so private cars will be needed for transport.

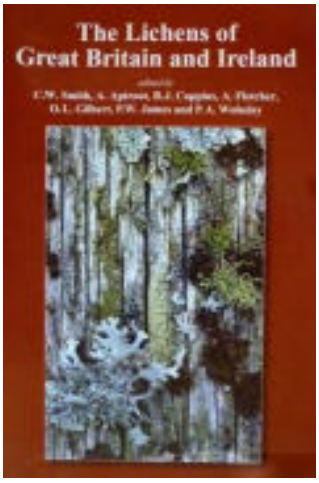
The grounds are covered by OS Explorer Map 324 and Landranger map 85. Grid reference NY3971.

Leader Allan Pentecost

An Usneioid monster up at Morangie near Tain, North Scotland (Sitka spruce). Image by Andy Acton.

Publications and other items for sale

Please contact The Richmond Publishing Co. Ltd, The Cottage, Allerds Road, Slough, SL2 3TJ, tel. (+44) (0)1753 643104, email *rpc@richmond.co.uk* to purchase these items and to enquire about overseas postage prices outside of Europe. RPC now accepts BACS transfers (account no. 90901210, sort code 20-78-58) and payments via PayPal (PayPal address rpc@richmond.co.uk).



Cat.1. The Lichens of Great Britain & Ireland. Ed. Smith et al. (2009). Hardback, 700pp. **NOW BACK IN PRINT!** This work, a much enlarged revision of 'The Lichen Flora of Great Britain and Ireland published in 1992, reflects the enormous advances in lichen taxonomy over the last two decades. There are keys to 327 genera and 1873 species, with detailed descriptions and information on chemistry and distributions. The language is accessible, avoiding obscure terminology and the keys are elegant. The Lichens of Britain and Ireland is undoubtedly the standard work for the identification of lichens in Great Britain and Ireland and will be indispensable to all serious students of lichens and to other biologists working in the related fields of ecology, pollution, chemical and environmental studies.

BLS members: £45.00, non-members £65.00
Postage & Packing £10.00 UK, £15.00 overseas (note this is a very heavy book!).

Lichen Atlas of the British Isles, ed. M.R.D. Seaward
The Atlas has been published in fascicles, unbound A4 sheets hole-punched for keeping in a ring binder. Each species account includes a distribution map and a discussion of the lichen's habitat, ecology, identification and status.
Cat.2. Fascicle 2: *Cladonia* part 1 (59 spp). 1996. **Out of print.**
Cat.3. Fascicle 3: The foliose *Physciaceae* (*Anaptychia*, *Heterodermia*, *Hyperphyscia*, *Phaeophyscia*, *Physcia*, *Tornabea*) plus *Arctomia*, *Lobaria*, *Massalongia*, *Pseudocyphellaria*, *Psoroma*, *Solorina*, *Sticta*, *Teloschistes*. (54 spp) 1998.
Cat.4. Fascicle 4: *Cavernularia*, *Degelia*, *Lepraria*, *Leproloma*, *Moelleropsis*, *Pannaria*, *Parmeliella*. (36 spp) 1999.
Cat.5. Fascicle 5: Aquatic Lichens and *Cladonia* part 2. (64 spp). 2000.
Cat.6. Fascicle 6: *Caloplaca*. (58 spp) 2001.
All fascicles are offered to members and non-members at a special price of £3.00 each , (approximately half price). Postage & Packing £3.50 UK, 10.00 overseas, per fascicle.
Cat.7. Fascicles 3 to 6 for £9.00 (Buy 3, get one free!). per fascicle. Postage and packing £8.50 UK, £25.00 overseas.

Cat.8. Microchemical Methods for the Identification of Lichens by A. Orange (2010)
2nd edition, with two colour plates. Full of useful information on pigments, crystals, colour tests with reagents and TLC.
Price £9 members, £11 non-members.
Postage & Packing £4.00 UK, £9.00 Europe

Cat.9. Conservation Evaluation of British Lichens and Lichenicolous Fungi by B.J.Coppins and R.G. Woods (2012)
An update and revision of the 2003 edition and now extended to include lichenicolous fungi. Provides a comprehensive catalogue of threat statuses. Also included are lists of specially protected species in England, Scotland and Wales and those species for which Britain has an internationally important population. It is no. 13 of the JNCC's Species Status volume series. A4 paperback 155pp. £7.00. Postage and Packing £5.00, £12.50 overseas.

Cat.13. Usnea 'Aide Memoire' by P.W. James

A5 booklet with drawings and many useful tips for identifying the British species of this difficult genus.

BLS members £2.00, non-members £3.00. Postage & Packing £1.50 UK, £2.50 overseas.

Cat.14. The Lichen Hunters by O.L. Gilbert (2004). Hardback, 208ppIf you have been on any lichen field meetings in the last fifty years, this is a book you will enjoy. The late Oliver Gilbert's boundless enthusiasm comes across in every page as he describes field meetings and explorations around Britain. Many past and present members of the Society are fondly remembered in this delightful book. Special price, now £6.00. Postage & Packing £4.50 UK, 10.50 overseas.

Cat.15. 'Understanding Lichens' by George Baron (1999). Paperback, 92pp.
An excellent introduction to lichenology, from the basic biology of lichens to their environmental importance as well as the history of the science.
BLS members £8.95, non-members £9.95. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 16. A Field Key to Common Churchyard Lichens by Frank Dobson (2003)
Spiral-bound book with strong paper. Illustrated keys to lichens of stone, wooden structures, soil and mosses. 53 colour photographs. Covers many common lowland lichens.
BLS members £6.50; non-members £7.50. Postage & Packing £2.50 UK, £6.50 overseas.

Cat. 17. A Field Key to Coastal and Seashore Lichens by Frank Dobson (2010)
A superb guide to over 400 species. 96 colour photographs. In the same format as cat. 16.
BLS members £10.00; non-members £12.00. Postage & Packing £2.50 UK, £6.50 overseas.

C**at. 18. A Field Key to Lichens on Trees by Frank Dobson (2013)**
A superb guide to around 500 species. 96 colour photographs. In the same format as cat. 16.
BLS members £15.00; non-members £17.00. Postage & Packing £2.50 UK, £6.50 overse

Cat. 21 and 22. Lichen Wall Charts illustrated by Clare Dalby.

Two beautifully illustrated wall charts, **'Lichens on Trees'(cat.21)** and '**Lichens on Rocky Seashores' (cat.22)** have been produced by artist Clare Dalby. Each is A1 size (80cm wide x 60cm high) and feature over 40 species in colour, nomenclature updated to 2010.
£5.00 per poster, £4.00 per poster for purchases of 8 or more. Postage & Packing (for up to two posters) £5.00 UK, £7.00 overseas.

Cat.25. Greetings Cards/Notelets by Claire Dalby
A set of five cards with envelopes, featuring five exquisite pen and ink illustrations of British lichens.
£2.00 per set. Postage & Packing £2.00 UK, £3.50 overseas.

Cat.26. BLS Postcards
A set of 16 beautiful photographic postcards of British lichens.
£2.00 per set. Postage & Packing £1.50 UK, £3.00 overseas.

Cat.27. Woven ties with below-knot motif of BLS logo. Attractive ties with discreet BLS logo. Colours available: maroon, navy blue, brown, black and gold.
£7.00. Postage & Packing £1.50 UK, £3.00 overseas.

Cat. 28. Car sticker
12cm. peels off easily. Recognise fellow members in the car park!

Cat. 29. Enamel badge
diam. 2.5cm, pin fixing, matt finish. A well -made attractive badge.

Cat. 30. Fabric badge
diam. 6cm. Ideal for sewing onto a rucksack or a cap.

Cat. Nos. 28, 29 and 30 £1.00 each. Postage & Packing £1.00 UK, £2.50 Europe, £3.00 rest of the world (exception: Cat. 29 £1.50 UK)

Cat. 31. Lichens – An Illustrated Guide to the British and Irish Species by Frank Dobson 7th Edition (in preparation)

This popular book provides an invaluable guide to identifying the British and Irish species, both for the beginner and the more advanced lichenologist. With detailed air pollution references and distribution maps, it offers the environmentalist and ecologist a concise work of reference, compact enough to be used in the field.
Entries usually consist of a description of each species, a photograph, notes on habitat, chemical tests, line drawings to clarify the description and a distribution map giving three date separations. There is an enlarged generic key and a much extended section on sterile species. A generic synopsis is included to assist the more experienced lichenologist.

The new edition should be published in 2018. Please contact Richmond Publishing (details at head of article) to reserve copies and be advised on publication.

Publication of the Summer 2018 Bulletin

Copy for the Summer 2018 Bulletin should reach the editor (contact details on the front cover) by 1 May 2018

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Winter 2017

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