British Lichen Society *Bulletin* no. 117 Winter 2015

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Welcome to the Winter 2015 Bulletin. The BLS is an active society, and this year has been no exception. Field meetings have included visits and surveys to Snowdonia, Unst in the Shetland Isles and the Forest of Dean. All were well attended with lots of new records, and accounts will be published in the 2016 issues.

There are major changes under way in the way in which Society adminstration functions. Until now, the BLS has relied upon volunteers to carry out almost all of the admin duties necessary to keep the Society running. The burden has fallen upon a small number of dedicated individuals who have spent much of their spare time dealing with matters such as membership issues and website support – rather than on lichens and lichenology. As the pool of volunteers has not increased despite periodic pleas for help [see e.g. page 55 of the previous Bulletin!] and the admin challenges of the modern world become more onerous, Council has decided to seek external support for some of the Society's services. This will have some impact on the BLS finances, but hopefully members will see the benefits of a more efficient operation, and we are optimistic that membership will grow as a result. Most importantly, it will free our existing volunteers to carry out more scientifically rewarding activities that will benefit us all. We hope that an announcement will be made shortly.

In the current issue, the entomolichenological article by Vince Giavarini in the Summer 2015 *Bulletin* seems to have struck a chord – we have three short accounts on similar themes. There are taxonomic accounts of *Verrucaria* and *Leptorhaphis* species, a contribution on the much neglected subject of seasonality of spore production, and a detailed study of the impact of atmospheric pollution on lichens in the Ural Mountains.

Members of the BLS have been involved in a successful training and mentoring exercise in the Atlantic woodlands of SW England, with a series of training days for 33 lichen apprentices from a range of different backgrounds. Hopefully the exercise can be repeated and extended: no fewer than 90 applications for placements were received. The Society has also been exploring the development of a curriculum for training in identification and survey work, and an outline of what might be expected of trainees at various levels is also given in this issue.

The list for the British Isles might be expected to be near-complete by now, but no fewer than 21 new species of lichens and lichenicolous fungi have been added so far in 2015 – and not all by Coppins! There's hope for us all….

Front cover: *Collemopsidium foveolatum* is a very common coloniser of marine molluscs and barnacles [with immersed perithecia visible as black dots on the shells].

Two overlooked but widespread crusts: *Verrucaria obfuscans* and *V. ochrostoma*

Verrucaria ochrostoma

These two diminutive species have been overlooked by British lichenologists. *Verrucaria ochrostoma* was described by Borrer in the first half of the nineteenth century. Victorian lichenologists such as Leighton (1879) considered *V. ochrostoma* to be a rare species of plastered walls. The BLS database indicates only three hectad records during the twentieth century and, as recently as the publication of the 2009 'Flora' (Orange *et al.* 2009), *V. ochrostoma* was considered to be a rare species of SE England. *V. obfuscans* was added to the British list in February 2015 but it is unlikely to be a recent arrival and it is not a recently described species. The nineteenth century type specimen was collected in the Jardin du Luxembourg, Paris.

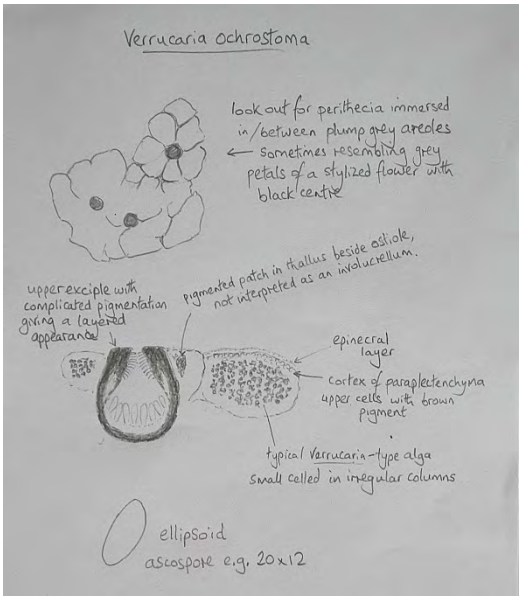
Verrucaria ochrostoma is a fairly common colonist of calcareous substrata (at least in eastern England) and can be found on dressed limestone, rendered walls, calcareous boulders, concrete and cement. Good colonies are often found on church windowsills and on war memorials (where it may be a successful pioneer following the cleaning of stonework). It is also found on the surrounds to manhole covers. It is perhaps too early to know whether *V. ochrostoma* is truly an eastern species; it may have a similar distribution pattern to that of *Caloplaca teicholyta*. Alternatively the concentration of recent records in East Anglia and the Home Counties may result from recording bias, or from the abundance of formerly polluted calcareous surfaces ready for colonisation in the East.

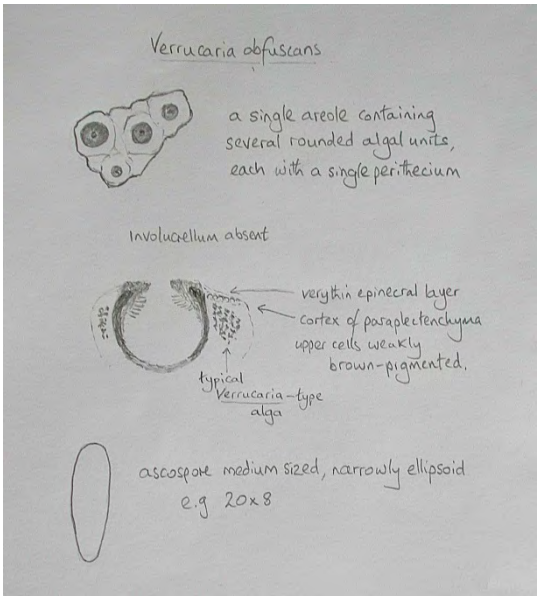
Various difficulties are encountered when attempting to identify *Verrucaria ochrostoma*, not least of which is its small size; it is easy to overlook it, or assume that it is a stunted form of a larger species such as *V. viridula*. *V. ochrostoma* is characterized by a superficial thallus and immersed perithecia which lack an involucrellum. Although the perithecia are immersed, in the sense that the apex is not prominent, the appearance is as if the rounded areoles of the thallus have been packed around the fruits. The lack of an involucrellum separates *V. ochrostoma* from most of the other *Verrucariaceae* having a superficial thallus, but there are two features which might be misinterpreted as indicating the presence of an involucrellum. The exciple is thickened towards the apex and has bands of pigmentation; the outer band might be mistaken for a structure separate from the exciple. Many specimens of *V. ochrostoma* also have patches of pigmented hyphae within the thallus close to the apex of the perithecium and these resemble a rudimentary involucrellum but are not interpreted as such. The colour of the thallus is rather variable ranging from pale grey to mid brown; the pale forms are most distinctive whereas the darker ones may be camouflaged amongst other brown *Verrucaria* species such as *V. nigrescens*. The areoles are rounded and convex and a well-developed epinecral layer gives them a waxy translucence. This leads to a distinctive appearance, like silvery bubbles

surrounding the perithecia though this effect may be lost in browsed or thickly-developed thalli.

Verrucaria obfuscans

Verrucaria obfuscans was first identified from an iron-stained church windowsill in Oxfordshire and large colonies have since been found to be relatively common on metal-contaminated limestone mouldings. *V. obfuscans* also occurs on uncontaminated limestone such as coped tombs, headstones, and boulders in a disused quarry. *V. obfuscans* shares with *V. ochrostoma* the lack of an involucrellum and in the former species this character is relatively easy to interpret if careful sections are made. The exciple is usually pigmented throughout and, although it broadens slightly near the apex, it is seen to constitute one coherent structure. The areoles of *V. obfuscans* are rounded and convex but, unlike *V. ochrostoma*, the perithecia are present *within* them and the apex usually protrudes. The effect is something like the bulging eye of an amphibian. The colour of the thallus is typically a dingy brown, usually paler than that of *V. nigrescens*, and lacking the brighter milk-chocolate tone of *V. macrostoma*. The lack of an involucrellum allows browsing molluscs to easily plane through the perithecia leaving a foam-like appearance of damaged thalli.





Further information and images of both species are available at the *fungi.myspecies* website.

The study of churchyards continues to reveal overlooked lichens. Many taxonomic problems remain. *Verrucaria ochrostoma* and *V. obfuscans* appear to be common on churches; many pairs of lichenologist's eyes will have scanned over their

colonies without registering them as distinct from other pyrenocarp crusts. How many more taxa are hiding in plain sight?

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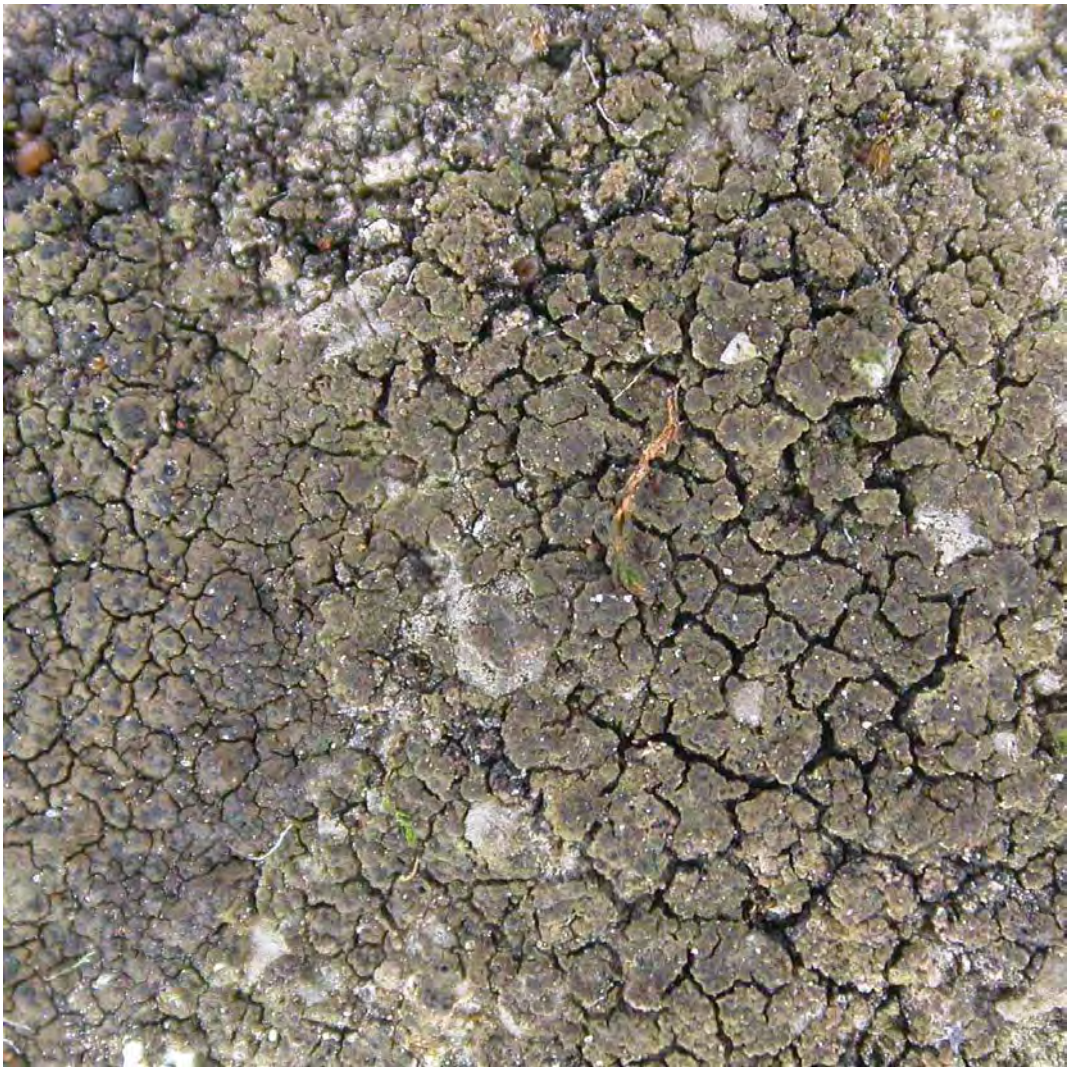
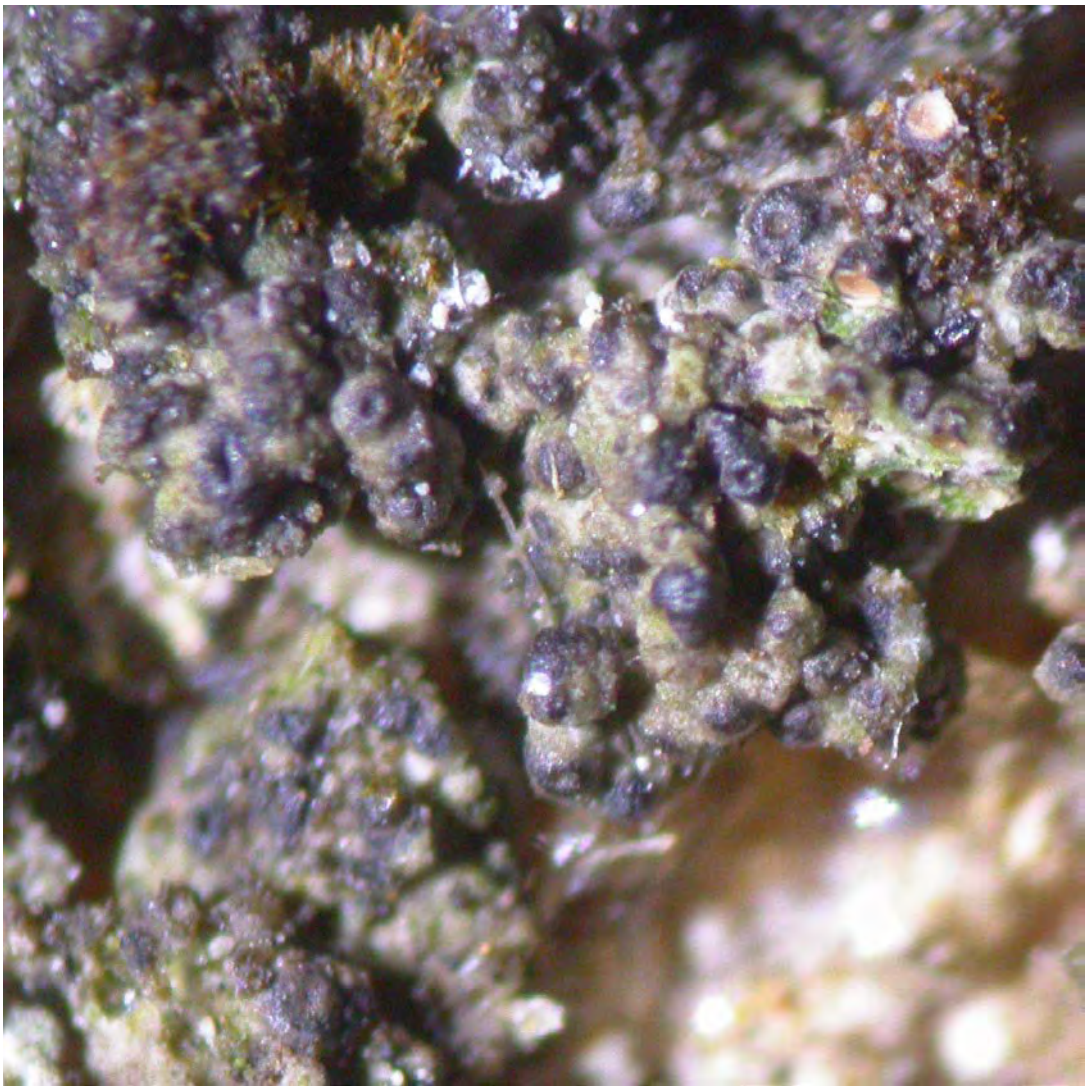
Verrucaria ochrostoma [previous page] dominating a limestone windowsill of the church at Orwell in Cambridgeshire. The thallus of this material is a distinctive pale grey colour with a waxy translucence. Each perithecium is surrounded by a small cluster of rounded, convex areoles.



Verrucaria obfuscans growing on a limestone coped tomb in Mount Pleasant Cemetery, Wisbech, Cambridgeshire. In the left hand quarter of the image *Verrucaria macrostoma* is present and provides an indication of the similarities and differences compared with the more commonly recorded brown crusts. The small perithecia of *V. obfuscans* are present within rounded areoles. The lack of an involucrellum results in susceptibility to slicing through perithecia by molluscs leading to a foam-like appearance of damaged portions.



Verrucaria obfuscans overgrowing iron-contaminated silty debris on a string course below a window on the church at Great Milton in Oxfordshire. The prominent perithecia, each set within a rounded areole, gives an 'eyeball' appearance.

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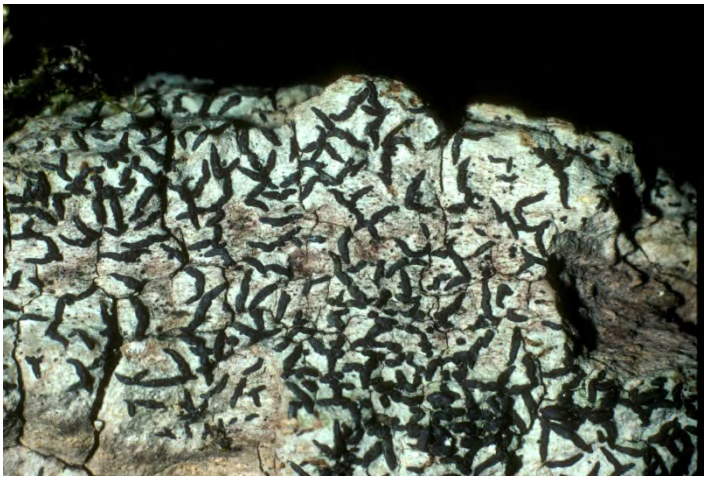
Seasonality of ascospore production in two lirellate lichens: *Alyxoria (Opegrapha) varia* and *Phaeographis dendritica*

Abstract: Ascospore liberation by *Alyxoria* (*Opegrapha*) *varia* in the field was maximal in March and November and negligible in summer. For *Phaeographis dendritica* it was maximal in winter but the total discharge was more than an order of magnitude lower than that of *Alyxoria* at the same locality. *Alyxoria* spore liberation was negatively correlated with temperature suggesting that prolonged wetting of apothecia in the colder months stimulated dispersal.



Alyxora (*Opegrapha*) *varia*, one of the species studied

The majority of lichenized fungi belong to the *Ascomycota*, most of which develop fruit bodies (ascomata) to a greater or lesser extent. Ascospore dispersal mechanisms are similar to those occurring in the non-lichenised forms and are wide-ranging. In some genera, ascospores are exuded onto the surface of the ascoma where they may be dispersed by invertebrates or water. However, for the majority they are launched explosively into the air where they are dispersed by wind (Pyatt, 1974; Bailey, 1976). The dispersal of ascomycete spores is a topic of some importance since in many cases they appear to offer the only means of propagation. The diversity of ascoma types, ascopores and asci, the sac-like bodies in which the spores develop, must reflect upon the dispersal mechanism since this is ultimately the reason for their existence. Despite this, dispersal mechanisms for lichenised species, including the mechanics of spore liberation, the energy invested in their dispersal, and the seasonality of spore liberation have received little study. Bailey (1976) reviewed the earlier literature on lichen ascospore dispersal, but there has been little research on the topic since. More recent work has focused upon spore size and dispersal rather than spore liberation (e.g. Tibell, 1994; Smith, 1995). This article describes the results of a one-year investigation into the *in vivo* liberation of ascospores by two common crustose lichens, *Phaeographis dendritica* and *Alyxoria* (*Opegrapha*) *varia*. Although phylogenetically distant, these taxa occur in similar habitats and both possess elongate ascomata known as lirellae.

Methods

This image shows the ash tree where the *Alyxoria* was studied. It is in a sheet on the lower part of the trunk. This tree is interesting as it also supports *Lobaria pulmonaria*, one of very few trees in SE England to do so. The *Phaeographis* site is also visible. It is among the small shrubby trees just behind and to the right of the ash tree.

The lichens were investigated in the ancient woodland of Eridge Old Park, East Sussex, UK (51º 06'N 0º 14'E; Nat grid ref. 51/577335; altitude 110 m). *Alyxoria varia* colonised the vertical bole of an ancient ash adjacent to a small stream. This site was used previously to study ascoma fertility (Pentecost, 2014). *Phaeographis dendritica* grew on the stems of a young oak 10 m to the north. To observe ascospore liberation, glass microscope slides were mounted over thalli so that their surface was approximately 2 mm distant using locating pins attached to the bark 1-2 m above ground. This measurement was chosen as Garrett (1971) found that most lichen ascospores were discharged to distances >2mm from apothecia. Slides were thinly smeared with petroleum jelly and left in the field for one month after which they were removed for examination and a new slide put in its place. The operation was repeated over the course of a year. Slides were examined for ascospores under a light microscope at a magnification of 250x. Between 50 and 200 fields of view were examined and the number of spores counted converted to spores cm^{-2} slide surface. Measurements of relative humidity (whirling psychrometer), air and bark temperature (thermistor) and relative light intensity (EA22 Luxmeter) were made at monthly intervals. Rainfall and mean air temperature records were obtained from a weather station located at the same altitude 6 km to the north.

Results

Monthly ascospore liberation figures as revealed by the glass slides are shown in Figures 1 and 2. Discharge of *Alyxoria varia* ascospores was found to be strongly seasonal (Fig. 1) with maxima recorded in March and November. During summer,

discharge was negligible. Bark surface temperature ranged between 5.2 and 22.4 °C (Fig. 1, Table 1), while relative humidity showed wide variation. Relative light intensity fell to low values during summer when the trees were in full leaf.

Data for *Phaeographis dendritica* are shown in Fig. 2. While maximum discharge also occurred during winter, spores were observed throughout the summer but the total number deposited on the slides was more than an order of magnitude lower than *Alyxoria*. Microclimatic measurements indicated a similar environment to the *Alyxoria* (Fig. 2, Table 1). Bark surface temperature, relative humidity and relative irradiance were all marginally lower, but in no case were the differences statistically significant.

Mean air temperature and precipitation totals for the period of study are shown in Fig. 3. These data correspond to the sampling periods and show that the coldest and warmest periods were respectively November - December (4.2 °C) and July - August (17.6 °C). The annual mean air temperature was 10.5 °C. There was no strong seasonal trend in precipitation but the highest total (140 mm) was reported for October - November and the lowest for July - August (6 mm). Total annual precipitation was 767 mm. Statistical data relating ascospore discharge to climate are shown in Table 2. Two significant associations are apparent. *Alyxoria varia* ascospore deposition and bark surface temperature was correlated negatively suggesting that as temperature rose, deposition fell. Although the mean air temperature correlation appears as non-significant in the table, a weak negative association is apparent as the P value of 0.068 is close to the critical value of 0.05. The second significant association was between *Phaeographis dendritica* spore deposition rate and relative humidity, suggesting that as humidity rose, so did deposition.

Discussion

The data demonstrate that ascospore discharge *in vivo* is highly variable but correlated with environmental conditions. However, meaningful field measurements of discharge are difficult to obtain, since spore collection requires imposition of a recording surface that will alter to some extent the local environment of the lichen. Placing a glass slide close to the lichen surface restricts the wetting and drying of apothecia although the method should allow at least approximate estimates where sampling is undertaken over periods of a month or so. One of the more surprising outcomes was the large difference in the number of trapped ascospores between the two lichens. Although differences in ascospore production are to be expected, with lichens with similar ascomata and spore types, an order of magnitude difference was not expected since both thalli were abundantly fertile. One possibility is that the *Phaeographis* ascomata were ageing and becoming senescent and thus unable to release large numbers of spores.

Discharge of ascospores has previously been found to occur when the water content of ascomata changes (ie. wetting or drying). Several workers have suggested that spore liberation was more prevalent in spring and autumn but the data were often conflicting (Bailey, 1976). More recently, Favero-Longo *et al.* (2014) found that ascospore numbers of the *Teloschistaceae* collected from the air spora were correlated with rainfall events. While this could be fortuitous, the finding supports the positive

correlation between *Phaeographis* spore emission and relative humidity obtained here. However, spore numbers were low and the investigation needs to be repeated owing to the infrequency of the microclimate measurements.

Work by Bailey & Garrett (1968) with *Lecanora conizaeoides* suggested that spore discharge was not influenced by light although lower temperatures appeared to be more favourable to discharge. These observations support those obtained here. Lower temperatures however, are likely also to correlate with longer periods of wetting owing to a reduced evaporation rate, and this may stimulate greater ascospore release. Bailey & Garrett (1968) found that *L. conizaeoides* was capable of releasing ascospores at any time of year, but earlier work on *Xanthoria parietina* (Werner, 1927) suggested that winter and spring were the best times. Studies on other lichens by Verseghy (1965) and Pyatt (1969) support this, along with the work reported here. Further research is clearly needed to clarify the relationships between discharge and microclimate and extend the work to other lichen species.

Acknowledgements

Thanks are extended to the owner of Eridge Estate for permission to undertake the study and to Mrs M. Page for the meteorological data.

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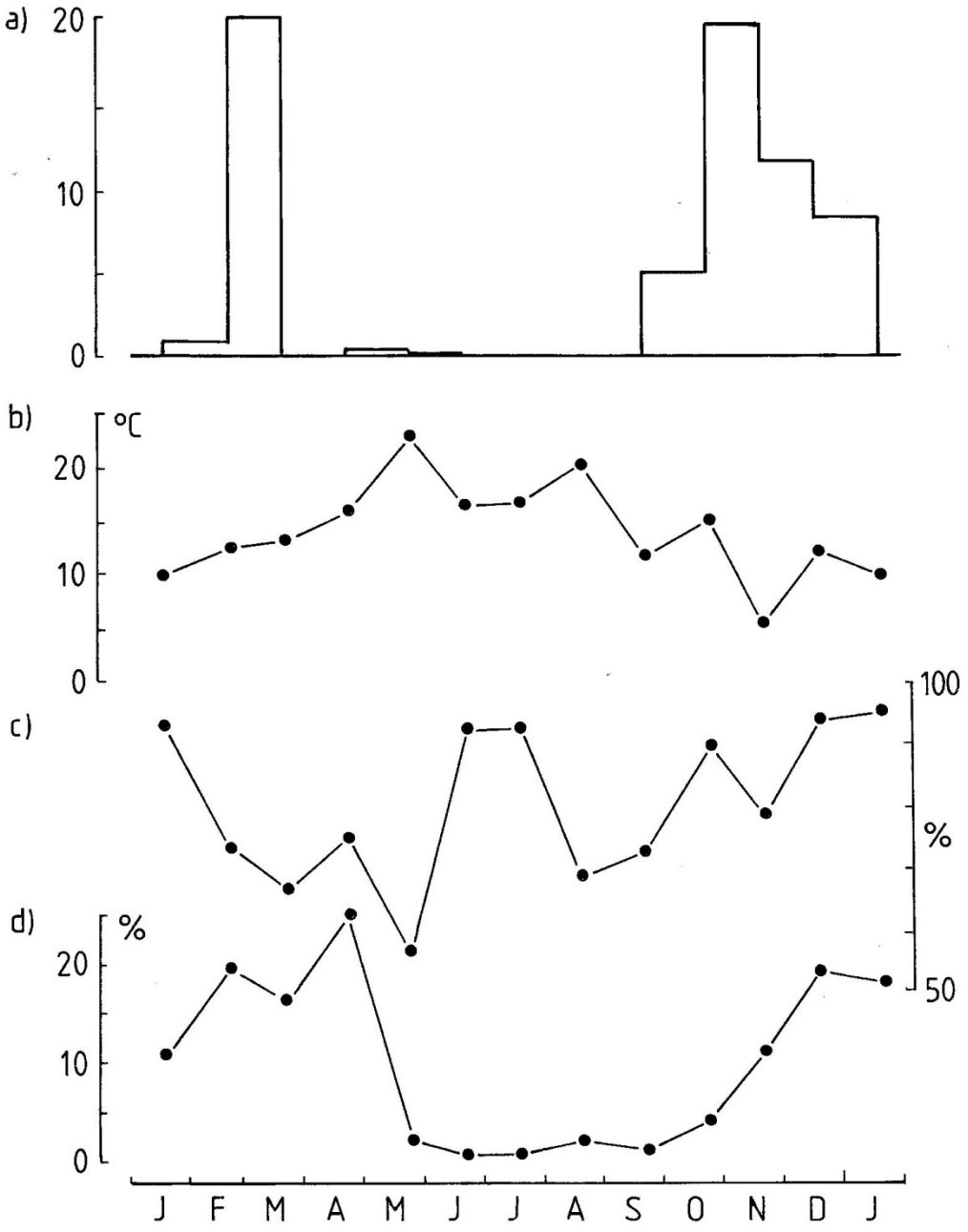

Figure 1. Monthly ascospore production and microclimate for *Alyxoria varia* during 1998-9.
a) Spore production
b) Bark surface temperature
c) Relative humidity
d) Relative light intensity compared with the open sky (100%)

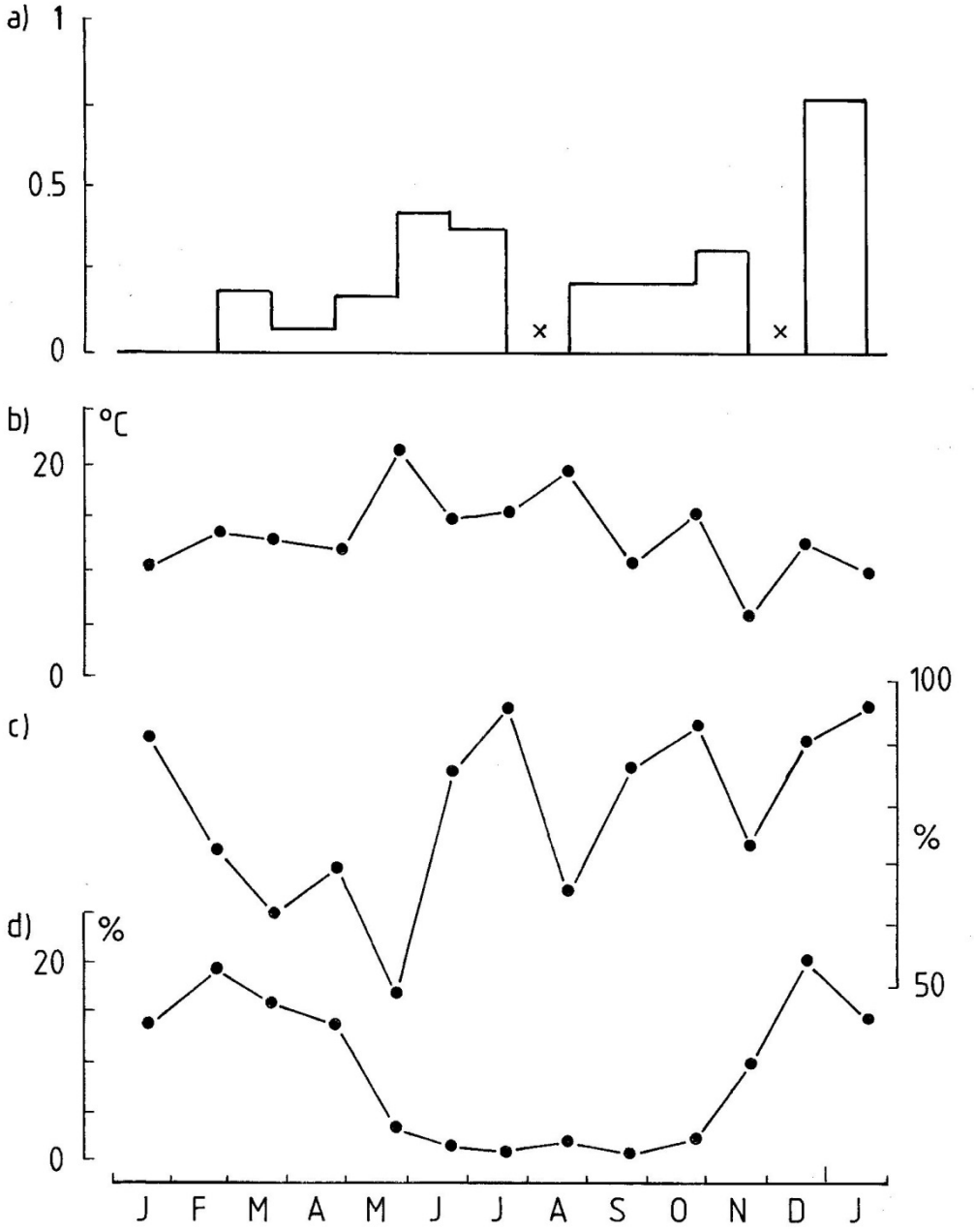

Figure 2. Monthly ascospore production and microclimate for *Phaeographis dendritica* during 1998-9. X denotes lost slide.
a) Spore production
b) Bark surface temperature
c) Relative humidity
d) Relative light intensity compared with the open sky (100%)

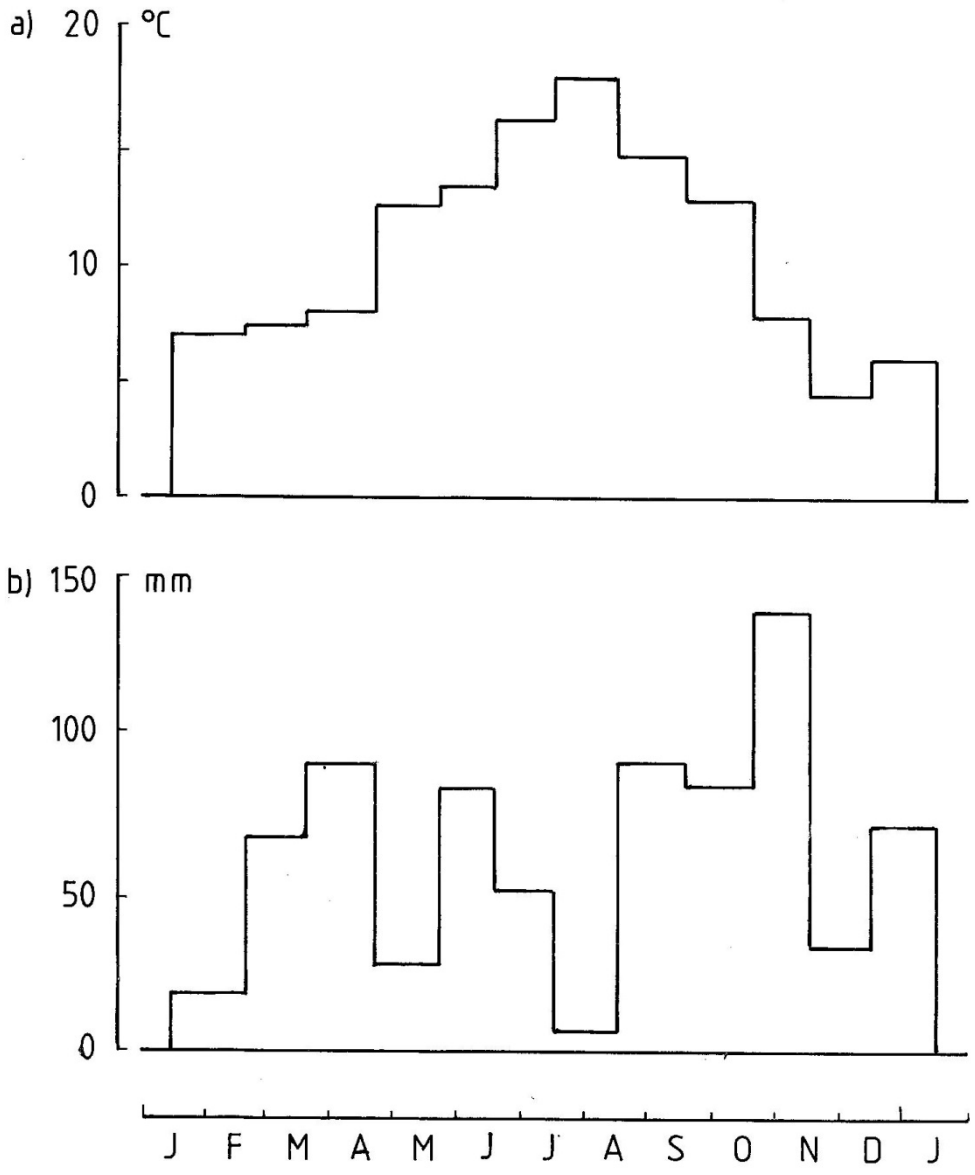

Figure 3. Mean monthly air temperature (a) and precipitation totals (b) taken from a nearby weather station. Measurements correspond to the 12 sampling periods.

Table 1. Summary microclimate data for the two sites, with means and (range).

	Bark surface temperature °C	Relative humidity %	Relative light intensity %
Alyxoria varia	13.7 (5.2-22.4)	80 (55-95)	10.0 (0.7-25)
Phaeographis dendritica	13.3 (5.4-21.4)	79 (48-96)	8.9 (0.4-21)

Table 2. Pearson product-moment correlation coefficients between ascospore deposition and climatic measurements. ns: no significant difference at p=0.05

	Mean air temperature	Bark surface temperature	Precipitation	Relative humidity	Relative light intensity
Alyxoria varia	-0.57 ns	-0.71*	0.5 ns	0.02 ns	0.32 ns
Phaeographis dendritica	-0.02 ns	-0.25 ns	0.23 ns	0.68*	-0.16 ns

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Lichens on *Betula* in the Ural Mountains; relationships with bark acidity and element concentrations as indicators of geology and anthropogenic influences

Abstract

Understanding geological, anthropogenic influences and bark pH on epiphytic lichen species richness is important in conservation, pollution monitoring and for assessing environmental health. *Hypogymnia physodes* and other lichens were found abundantly colonising birch twigs in June 2011 at Nyazminsky Ridge, 40 km SW (downwind) from Karabash, South Urals of Russia and 6 km north of Zlatoust city. A biogeochemical lichen study was carried out along a SW-NE transect centred in Karabash valley in 2001 and a second transect running WNW – ESE established in September 2011 within intermediate forests between taiga and forest-steppe zone. *Hypogymnia* is well known to be sensitive to a range of factors, including bark pH, but the extent to which bark acidity and element concentrations influence *H. physodes* and other lichen species richness on twigs is unknown. As a first step towards understanding its occurrence, the present study aims to investigate the links between *Hypogymnia* frequency and lichen species richness on *Betula* twigs and trunks (recorded in 2001) and indicators of geology and anthropogenic impacts. Impacts were assessed from selected element content, notably Sr (an analogue for Ca analysed previously) and S (a potential pollutant) and bark pH. *Hypogymnia* frequency and twig lichen richness confirm a point source influence The study highlighted the sensitivity of bark pH to assess S deposition from smelter-derived aerosols in response to weather over short (<3 month) time periods. The high Ca content recorded in *Hypogymnia* at Novoandreevka suggests geology also influences species assemblage composition on *Betula* here. The outlier appears to represent a lichen 'oasis' and provides a refugium enabling future lichen re-colonisation elsewhere under favourable atmospheric conditions.

Introduction

Developments in analytical techniques and understanding of lichen-mineral and atmospheric interactions have come a long way since pioneering studies carried out in and around Newcastle, North East England linked SO_2 produced from fuel combustion and smelting, with sulphur concentrations in thalli of *Parmelia saxatilis* (L.) Ach. and *Hypogymnia physodes* (L.) Nyl. (Purvis 2010). Areas impacted by point sources are natural laboratories to investigate the effects of pollutants and geology on vegetation. The effects of smelters as a 'point source' in creating 'industrial barrens' and recovery in response to emission reductions and other factors are well-documented. Studies investigating *H. physodes* frequency on *Betula* trunks highlight its sensitivity to SO_2 and metal deposition (Mikhailova & Vorobeichik 1999). Where insufficient natural thalli are present, *Hypogymnia* has frequently been successfully transplanted from where it is abundant to monitoring stations to assess deposition

(Mikhailova 2002). Lichens colonising twigs are excellent indicators of atmospheric deposition (Wolseley 2002). Soil and bark chemistry (pH, element concentrations and ratios) also influence epiphytic lichen assemblage composition (Gilbert 1976; Gauslaa 1985; Hauck & Paul 2005). Studies in boreal woodlands identified pH gradients in relation to canopy height associated with changes in the composition of lichen assemblages (Marmor *et al.* 2010). Further work in other areas is required to apply this knowledge e.g. in conservation. Understanding element sources and cycling and distinguishing natural biogeochemical cycles from human interference (Bargagli & Mikhailova 2002; Reimann & Caritat 2000, 2005) is important.

Frontasyeva *et al.* (2004) compared soil and moss element composition in the South Urals of Russia, including the area adjacent to Karabash copper smelter in close proximity to monitoring stations in this study. Factor analyses identified Karabash as a main pollution source for Cu, Zn, As, Ag, Cd and Sb. Cu and As deposition was mainly limited to within 30-40 km from the smelter. Evidence for significant surface soil contamination for As, Zn and Ni was also provided. Lichen transplant studies, involving removing thalli from *Betula* trunks with bark attached, were carried out over the period 2001-02 around Karabash. Transplant stations were set up and a range of environmental media assessed and sampled along a 58 km NE - SW transect centred on the smelter (reviewed in Purvis *et al.* 2013). Not all elements showed a curvilinear relationship, with increasing concentrations being recorded in samples towards the point source, emphasising biogeochemical aspects. High SO_2 levels, measured at concentrations up to 20,000 μgm^{-3} (spot measurement taken within the smelter plume, 1 km downwind), severely affected lichen richness (Udachin *et al.* 2003). However, *Usnea* species sensitive to SO_2 air pollution were found 13.25 km south of Karabash at Novoandreevka (Udachin *et al.* 2003). In the UK, *Usnea* and other sensitive species have survived high SO_2, as on *Quercus* 4.65 km from Consett Steel works, County Durham (Purvis, 2010) and in the remote limestone Derbyshire Peak District (Hawksworth 1974). Whilst epiphytic lichens under pollution stress have been observed to be restricted to particular regions of tree trunks and upper branches, the extent to which bark acidity and element concentrations influence lichen species richness on twigs has, to our knowledge, not previously been investigated.

During June 2011, *Hypogymnia physodes* and other lichens abundantly colonising *Betula* twigs were unexpectedly discovered at Nyazminsky Ridge, 40 km downwind from Karabash and 6 km north of Zlatoust, around which high anthropogenic pollutant loadings were previously identified (Frontasyeva *et al.* 2004). This outlier of the NE - SW transect centred on Karabash, was selected as a transplant site. Selected trace element data in *Hypogymnia* was considered in relation to modelling data (Pollard *et al.*, 2015). The aims of the current study were (i) to assess *Hypogymnia* frequency on *Betula* trunks as an indicator of anthropogenic activities; (ii) to investigate possible links between geology and anthropogenic activities as assessed from bark pH and element content (sulphur, a potential pollutant, and strontium, a calcium analogue) and epiphytic lichen richness colonising twigs.

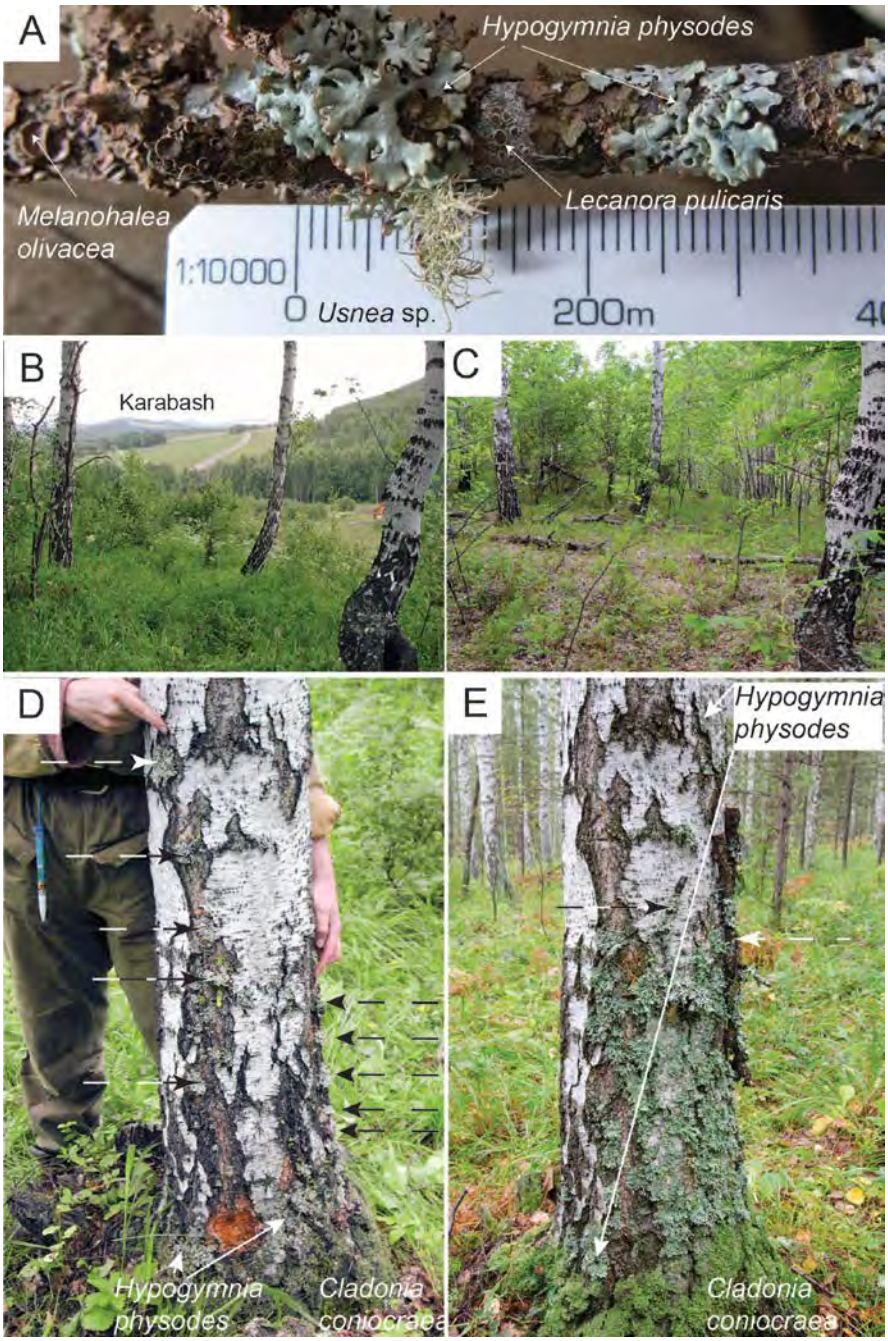

Figure 1. Sites monitored in June to September 2011 included a new outlier and transplant site at Nyazminsky Ridge, 3 June 2011 and some of the same trees previously monitored along a SW - NE transect centred on Karabash (A) *Hypogymnia physodes* colonising young *Betula* trunk at Nyazminsky Ridge, 3 June 2011; (B) View from Site 11, Novoandreevka, 8 July 2001; (C) Same view, 6 June 2011; (D) Monitoring tree no 6, Site 3, Severnye Pechi, 8 July 2001 when thalli-bark samples were glued to transplant station tree bases in two rows of five thalli; (E) two twigs each colonised by at least 5 *Hypogymnia* thalli after 3 months exposure, 13 September 2011.

Materials and Methods

Study area

Karabash lies in Chelyabinsk region within a NE-SW trending flat-bottomed valley. Prevailing winds are from the north-west (Sadykov *et al.* 1992). Phytogeographically, the region lies within intermediate forests between taiga and forest-steppe zone. Characterised by broad-leaved and coniferous forests, *Betula pubescens* and *B. verrucosa* are locally frequent due to forest management and other anthropogenic activities. Two major nature reserves are situated in the region: (i) mineralogical Zapovednik 'Ilmensky' (http://www.rusnature.info/zap/069.htm) and (ii) Taganay with a wide variety of habitats and notable ridges adjoining the northern suburbs of Zlatoust (Richmond *et al.* 2006). Nyazminsky ridge, lies 40 km SW of Karabash and 6 km N of Zlatoust city in mixed coniferous (*Abies*, *Picea*, *Pinus*) / deciduous (*Betula* and *Sorbus*) woodland in herb-rich grassland.

The Ural Mountains form a N-S trending 2000 km long belt extending from the Islands of Novaya Zemlya in the north to the Aral Sea in the south (Pushkarev *et al.*, 2013). Well known for their volcanic-hosted massive sulfide and orogenic lode gold deposits, they also host porphyry and epithermal systems. Soil cover is generally thin and sporadic and mainly consists of luvisols, with minor areas of regosols and cambisols (Udachin *et al.* 2003). Upper soil horizons around Karabash have been influenced by anthropogenic acidification leading to the mobilization of Al and other metals and the formation of soil solutions with anomalously high concentrations of potential toxins (Aminov 2010).

Sites

Sites monitored in June to September 2011 were within *ca* 500 m of 10 monitoring sites (3-12) established in medium-aged birch stands over the period 8-13 July 2001 along a SW - NE transect centred on Karabash. In some cases the same trees were monitored as 10 years randomly sampled previously (Fig. 1B-E). Exceptions were at site 12 established 3.69 km to the North and site 10 was not relocated owing to an incorrect GPS reading made in 2001. In 2011, two ca 60 km transects centred on Karabash (prefixed U) ran from U3, Severnye Peche (ca 25 km S of Karabash), to U8, Kyshtym (ca 33 km NE of Karabash), and from 3 sites up to 20.44 km W (U21) and 4 sites up to 38 km (U20) ESE of Karabash; U0, the outlier and transplant site was located at Nyazminsky Ridge (800 m elevation), 40 km SW of Karabash. Over 150 twigs, each colonised by at least 5 *Hypogymnia physodes* thalli, were collected from *Betula* from Nyazminsky Ridge in June 2011. Twigs were sampled using powder-free gloves and stored in paper capsules prior to transplantation at the outlier and across the NE-SW transect (9 stations). At each station, 6 *Betula* trees were selected and two *Hypogymnia*-colonised twigs tied securely to the tree bases in a similar position to where lichen bark pieces were previously attached using adhesive (reviewed in Purvis *et al.* 2013).

Sites were between 280 and 695 m in elevation apart from site 0 at Nyazminsky Ridge (800 m) and more than 150 m from roads, apart from site 11

(Novoandreevka). All transplanted *Hypogymnia*-covered twigs were randomly collected between 5 and 13 September after 3 months, the exposure period previously determined as being optimal (reviewed in Purvis *et al.* 2013) and stored in clean polythene bags.

Assessment of Lichen Species Richness

Hypogymnia physodes frequency in 2011 was assessed at the base of trunks and at 1.5 m above ground level on each of the 6 *Betula* trees randomly selected for monitoring in each site using a 10-field frequency net (Herzig & Urech 1991). In 2001, all epiphytic lichen species were recorded (Table 1). In 2011, accessible branches were cut at an elevation of 2-4 m and twig lichen richness (presence/absence) assessed on six 1 m length twig samples from each tree and species richness expressed in terms of % frequency for each species at each site. In addition, 2-3 mm thick, smooth and ± flat bark trunk samples measuring ca 4 x 10 cm were collected at each site between 1.5 - 2.5 m above ground level and between 1-6 per site selected for pH measurement. According to accessibility, three *Betula* twigs were sampled (ca 10 x 0.5 - 0.7 mm thick) from 6 trees (i.e. 18 twigs) at sites 0, 3, 4, 5 and 10 and from 1 tree at sites 6, 7, 8, 9, 11-16, 18-21) for pH determination. Lichens were identified, following the lichen nomenclature of Urbanavichus (2010).

pH measurement

The pH of 132 twigs and 85 trunk pieces randomly sampled in September 2011 were measured in triplicate in the laboratory. Twigs were cut into 7 cm lengths, the cut ends sealed with paraffin wax and soaked in tubes filled with 6 cm^3 25 mM KCl. Samples were shaken for 1 hour at room temperature using an automatic shaker, the twigs removed and the pH of the solution measured with a Jenway Model 370 pH/mV/Temp Meter using an epoxy combination pH electrode (924 001) and ATC probe (027 500). Small, ca. 2.5 cm^2 pieces of *Betula* bark (lower surfaces not waxed) were placed into small beakers, immersed for 5 minutes in 2 cm^3 25 mM KCl and surface bark pH measured using a BDH Gelplas Flat Tip combination membrane electrode (cat ref: 309-1070-03). Mean pH values were calculated from H^+ concentrations and average values calculated for twig and bark samples at each site.

Chemical analysis

At the Institute of Mineralogy, Miass, at least five *Hypogymnia physodes* thalli, selected at random, were removed from two twigs exposed at each site using a stainless steel knife and latex powder-free gloves. Species other than *Hypogymnia*, together with bark flakes and foreign matter, were removed under a binocular microscope. Thalli were bulked from each tree at each site (i.e. ca 30 thalli per site), with the exception of 4 stations (corresponding to 'outlier 2011' (site U0), 'reference site 2001' (site U3), 'intermediate' (site U12) and 'impact' (site U5) where samples were bulked from each tree, to provide replicate analyses for five thalli for each tree. Lichen samples were oven dried (40°C) overnight, and up to ca 10 g lichens ground in an agate pestle and mortar under liquid nitrogen to a fine powder. *Betula* bark samples (twigs and trunks) were similarly prepared for analysis. Multi-element

analysis was performed via inductively coupled plasma mass spectrometry (ICP-MS) calibrated using commercially available standard solutions for elements, including Sr. Quality control for elements, where published values were available (Sr), was provided through identical analyses of the reference materials BCR 482 Lichen and SRM 1547 Peach Leaves, accepting elements within ±10% of the published reference or information values. Analytical methods employed followed Rusu (2002). Sulphur analysis was performed on samples by ICP atomic emission spectrometry at the University of Sheffield.

Statistics

Multivariate analysis was carried out on *Hypogymnia* frequency and twig lichen richness data using non-metric multidimensional scaling and cluster analysis from the package PRIMER v6. *Hypogymnia* frequency at the base of *Betula* and at 1.5 m above ground level, and for *Betula* trunk and twig, bark pH and element concentrations were plotted as a function of distance from Karabash. The coefficient of determination (r^2) was calculated and Pearson product moment correlation coefficient (r) to assess the strength of the correlations. Student's t tests (assuming unequal variances) were used to investigate differences in sample element concentrations between lichen bark samples.

Results

***Hypogymnia* frequency and lichen species richness**

Frequency ranged from 0-100% on trunk bases and at 1.5 m above ground level, a lower frequency usually being recorded at 1.5 m, compared with at ground level (Fig. 2A-B). In spite of changes in canopy and ground cover across the SW-NE transect over the 10 year period leading to shading and competition (e.g. Fig. 1B-C), statistically highly correlated trends were observed for *Hypogymnia* frequency at both ground ($R^2 = 0.88$, $p<0.001$) and 1.5 m above ground level ($R^2 = 0.77$, $p<0.001$). The classic bell-shaped curves indicate a point source (Karabash) influence consistent with spatial atmospheric SO_2 and metal influences.

18 species were recorded on twigs at Site U0, Nyazminsky Ridge, of which 6 also occurred at Site 3, Severnye Pechi (368 m elevation) (Table 1).The most abundant recorded on twigs was *Melanohalea olivacea* (97%) followed by *Hypogymnia physodes* and *Parmelia sulcata* (both 83%). Five groups were resolved by multivariate analysis (Fig. 3B). Groups corresponded, in order of increasing similarity to:-

(A) Site '0', 39 km from Karabash. The outlier situated at 800 m elevation. Characterised by 18 epiphytic lichen species recorded on *Betula* twigs (Table 1) and the highest recorded frequency of *Hypogymnia* on *Betula* trunks at 1.5 m above ground level (100%) (Fig. 2A).

(B) Site '3', 26 km from Karabash. Southernmost site of SW transect characterised by 6 lichen species recorded on *Betula* twigs: *Cetraria sepincola*, *Hypogymnia physodes*, *Lecanora pulicaris*, *Melanohalea exasperatula*, *Parmelia sulcata* and *Scoliciosporum* sp. and the highest frequency of *Hypogymnia* recorded at the base of *Betula* (100%).

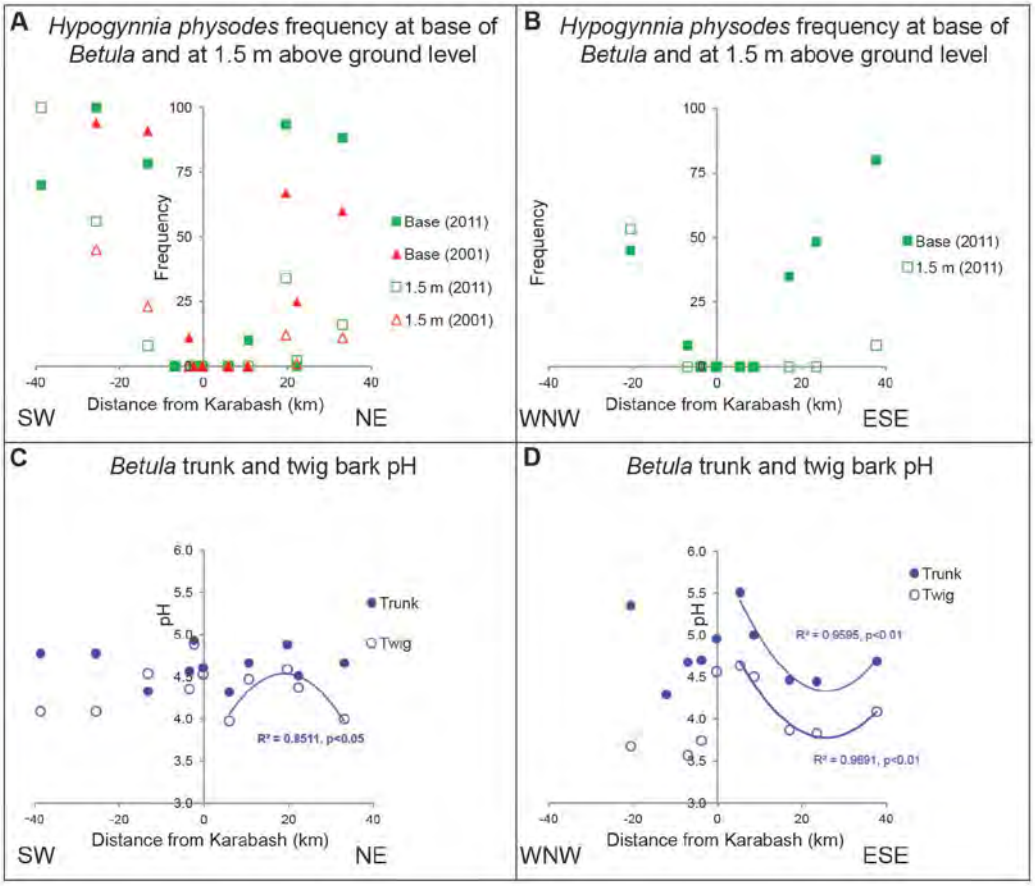

Figure 2. Temporal trends in *Hypogymnia physodes* frequency at base of *Betula* and at 1.5 m above ground level across (A) SW-NE transect in 2001 and 2011, (B) WNW-ESE transect in 2011; *Betula* trunk and twig bark pH recorded in 2011 across (C) SW-NE and (D) WNW-ESE transects.

(C) Sites '21', '8', '9', '11', and '20'. Average site distance from Karabash = 25 km. Outer sites characterised by the absence of lichens recorded on twigs but moderate frequency of average *Hypogymnia physodes* recorded at 1.5 m above ground level (26%) and high frequency at ground level (77%).
(D) Sites '18', '19', '7', '16'. Average site distance from Karabash = 14 km. Inner sites characterised by the absence of lichens recorded on twigs and at 1.5 m above ground level and low frequency at ground level (25%).
(E). Sites '12', '4', 5', '6', '10', '15', '13', and '14'. Average site distance from Karabash = 6 km. Central sites and '10' lying to the NE characterised by the absence of lichens on twigs and *Hypogymnia physodes* on trunks.

Bark trunk and twig pH

Bark pH was acidic throughout, average site values ranging from 3.57 to 4.88 (twigs) and from 4.29 to 5.51 (trunks). The pH of trunk and twig samples was correlated

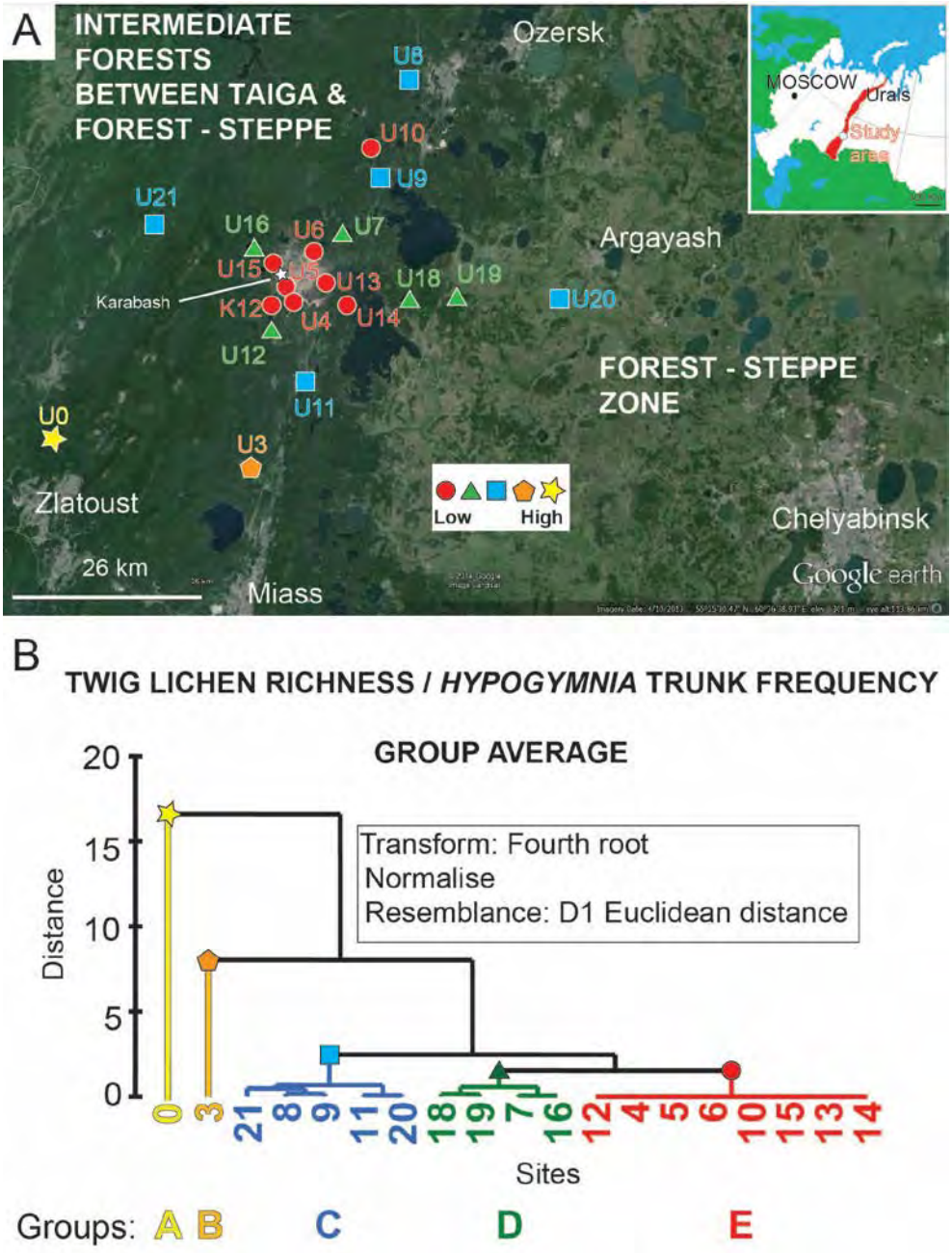

Figure 3. (A) Selected lichen monitoring sites, 2011. Colour coding corresponds to groups resolved by multivariate analysis using 2011 data (see B) Modified GeoEye Image Geocentre Consulting © 2011. Note K12 was monitored in 2001 and U12 in 2011. (B) Dendrogram from cluster analysis (Euclidean Distance, normalised data) showing site separation for twig lichen diversity and *Hypogymnia* frequency on trunks. Plot B was derived from analysing sites according to the variables 'Twig Lichen Richness and *Hypogymnia* frequency' (at ground and 1.5 m above ground level). Twig lichen richness was assessed on six 1 m length twig samples from each tree and expressed in terms of % frequency for each species at each site. These were analysed as separate variables in the CA.

(n=8, R^2 = 0.77, p<0.01) for sites lying along the SW - NE transect, within 25 km of the smelter, and similarly along the WNW - ESE transect (n=7, R^2= 0.66, p=0.05), for sites within 10 km WNW and 25 km ESE of Karabash (Fig. 2C-D). The highest bark pH (pH 5.51) was recorded at site U13, 5.34 km NE of Karabash.

Chemical data for lichens and bark

Strontium concentrations in transplants, naturally occurring *Hypogymnia* and *Betula* trunk bark showed no clear pattern in relation to the point source (Karabash) (Fig. 4A). Recorded concentrations were significantly lower (t=9.5, d.f. = 10, p<0.001) in *Betula* bark (mean 560 µg g^{-1}) than recorded in transplants (mean 1130 µg g^{-1}). Sulphur concentrations in the twigs recorded in 2011 (average 1130 µg g^{-1}) were significantly lower (t=-3.01, d.f. = 13, p<0.05) than recorded in transplants in 2011 (average 1489 µg g^{-1}). Paradoxically, the lowest S concentrations were recorded in *Hypogymnia* transplanted adjacent to the smelter and highest in the sample transplanted furthest away at the 'reference' site U0 (Fig. 4B).

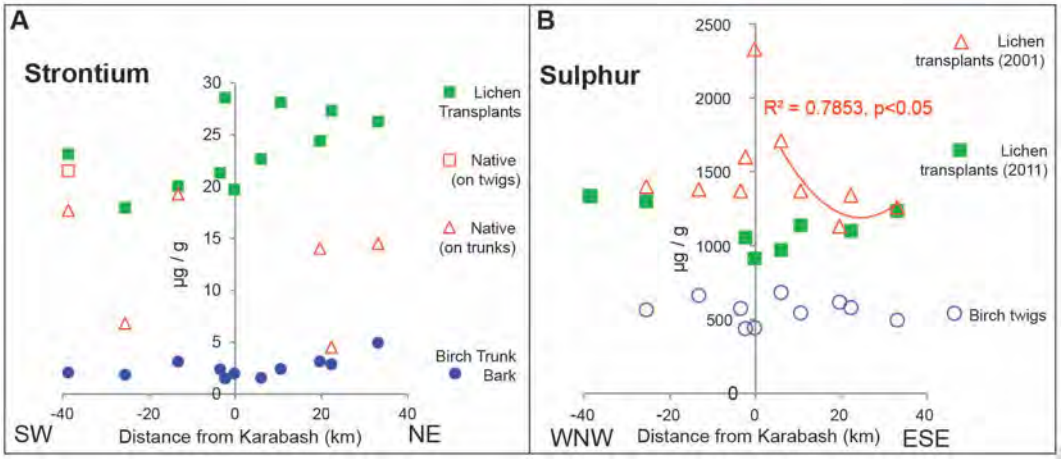

Figure 4. (A) Sr concentrations in transplants, naturally occurring (native) *Hypogymnia* thalli sampled on trunks and twigs, and *Betula* trunk bark across the transect in 2011, with Karabash at the centre; (B) Sulphur concentrations in *Hypogymnia* transplants across the same transect in 2001 and 2011 and birch twigs in 2011.

Discussion

Influence of the point source

Statistically significant *Hypogymnia* frequency bell-shaped patterns recorded at both tree bases and at 1.5 m above ground level over the 10 year period (Fig. 2A), trunk and twig bark pH trends (Fig. 2C-D) and lichen species richness confirm anthropogenic point source influence(s). Statistically significant trends were apparent in both trunk and twig bark pH values sampled E of Karabash, and in twigs sampled WNW and NE of Karabash. This emphasises the importance of weather over the

transplant period leading to short term deposition corresponding to the predominant wind direction (i.e. from the SW) over the 3-month transplant period.

Geological influence on lichen assemblage composition

In the 2001 study, Ca reached the highest concentration (60,300 mg kg^{-1}) of all elements analysed in *Hypogymnia* thalli at site 11, Novoandreevka (Purvis *et al.* 2006) where *Usnea* was also recorded (Udachin 2003). *Diploschistes muscorum*, a lichen initially parasitic on *Cladonia coniocraea* squamules, and characteristic of calcareous soils (Smith *et al.* 2009), was recorded here on *Betula* trunks in 2001 (Table 1) and also noted to be present in 2011. Geological influences are implemented, either from terrestrial sources, or aerial deposition. Particles, which if deposited on bark and twig surfaces could significantly raise pH, include limestone or lime (CaO), or its hydrated equivalent (calcium hydroxide $CaOH_2$) (Gilbert 1976) often used as fluxes in smelter operations.

Presence of the outlier at Nyazminsky Ridge

Discovery of 6 species colonising twigs at a lower elevation (365 m) at Site U3 suggests that elevation (and associated factors such as precipitation) is not responsible for the lack of colonisation of twigs by lichens elsewhere. The outlier appears to represent a lichen 'oasis', possibly present due to topographic influences. It provides a refugium enabling future lichen re-colonisation elsewhere under favourable atmospheric conditions. Further study of adjacent areas at higher elevations need to be undertaken in relation to herbarium collections and atmospheric pollution, climatic and geological data in order to fully put the present assemblages into an historical context.

Lichen sulphur contents and spatial patterns of environmental acidification

Sulphur concentrations in transplants sampled furthest from Karabash, at Severnye Pechi and Kyshtym, in 2001 and 2011 were similar (Fig. 4B). However, in 2011 the highest concentration (1335 μg g^{-1}) was recorded in transplants sampled from the outlier, Nyazminsky Ridge and not adjacent to the point source as recorded in 2001 (Fig. 4B). Levels were lower than those reached across transects in Isle Royale National Park, wilderness island in north western Lake Superior, North America (Bennett 1995) and Voyageur's National Park, in Northern Minnesota, North America (Bennett & Wetmore 1997), but higher than recorded in *Hypogymnia physodes* from 'background areas' in Finland (Manninen *et al.* 1991). This contrasts with previous studies in boreal regions which reported curvilinear trends in sulphur contents of *H. physodes* from areas with point sources, the highest levels near the point source corresponding to areas with lower lichen diversity (e.g. Manninen *et al.* 1991; Bennett & Wetmore 1997).

Conclusions

Statistically significant trends in bark pH and *Hypogymnia* frequency confirm a point source relationship. *Hypogymnia physodes* and *Melanohalea olivacea*, the two most abundant species colonizing twigs, were also the most abundant epiphytic lichens on

Betula in northern Fennoscandia near smelters from sea level to the tree line (Aamlid & Skogheim 2001; Bjerke *et al.* 2006). The study highlighted the sensitivity of *Hypogymnia* bark pH to assess sulphur deposition from smelter-derived aerosols over short (<3 month) time periods. Links between *Hypogymnia* frequency and lichen species richness on *Betula* and pH were not made due to the weather over the transplant period. Element cycling via the soil - tree - lichen system must also be considered.

Acknowledgements

This paper is dedicated to the memory of Peter James who did so much to stimulate interest and foster collaboration in lichenology worldwide. William warmly thanks his colleague, Marina Frontasyeva, and Alan Davison for many useful discussions. We thank Vladimir Domnin and Karina Aminova and our driver Ivan Startsev for kind assistance with field work in 2011, Natalaya Valizer for assistance with pH analyses, Jason Lewis for guidance over pH measurement, Jim Chimonides for help with statistics, the editors and anonymous referees who kindly provided valuable comments on previous accounts submitted to the *Science of the Total Environment* and the *Lichenolgogist*, Liis Marmor for kindly providing literature and Pat Wolseley for advice. Studies were carried out as part of a 3 year (2000-2002), EU FP5 INCO-Copernicus 2 contract 'Mineral resources of the Urals: origin, development and environmental impacts' (MinUrals, Contract: ICA2-CT-2000-10011) awarded to the Natural History Museum where this work was initiated, with additional funding provided by a Royal Society Joint Project Collaborative Grant with Russia (gt/fSU/JP). Follow-up studies were funded during a 3 year (2010-2012) EU FP7 contract 'Impact Monitoring of Mineral Resources Exploitation' (ImpactMin, Contract: 244166). Pavel Aminov and Valerie Udachin also gratefully acknowledges RSF (Russian Scientific Fund, N 14-17-00691). We gratefully acknowledge support from the British Lichen Society. This article represents the views of the authors alone.

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Table 1. Epiphytic Lichens recorded during quantitative recording along SW - NE transect in 2001 and the same transect and outlier site U0 in 2011.

Lichen Species	on Trunks (2001)	on Twigs (2011)
Candelariella vitellina	+	
Cetraria sepincola	+	+*
Cladonia botrytes	+	
C. cenotea	+	
C. coniocraea	+	
C. digitata	+	
C. fimbriata	+	
C. macilenta	+	

Cladonia rei	+	
Diploschistes muscorum	+	
Evernia mesomorpha	+	+
Flavopunctelia soredica	+	
Hypocenomyce friesii	+	
H. scalaris	+	
Hypogymnia physodes	+	+*
Lecanora chlarotera		+*
Lecanora pulicaris	+	+
Lecanora cf. confusa		+
L. swartzii subsp. *nylanderi*	+	+
L. symmicta s. lat.	+	
Lepraria sp.	+	
Melanohalea olivacea	+	+*
Melanohalea exasperatula		+
Micarea denigrata	+	
M. prasina	+	
Parmelia sulcata	+	+*
Parmeliopsis ambigua	+	
P. hyperopta	+	
Physcia tenella		+
Physconia sp.	+	
Placythiella cf. *dasaea*	+	
P. icmalaea	+	+
P. uliginosa	+	
Pseudevernia furfuracea		+
Ropalospora cf. *viridis*	+	
Rinodina sp.		+
Scoliciosporum chlorococcum	+	+*
Trapeliopsis flexuosa	+	
T. granulosa	+	
Usnea sp.	+	+
Vulpicida pinastri	+	
Sterile crust		+
Fertile sp.		+
TOTAL	**35**	**18**

All lichens on twigs were recorded from Site U0, Nyazminsky Ridge, and *+ additionally recorded from Site U3, Severnye Pechi.

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Current status of the genus *Leptorhaphis* in the British Isles

A detailed description of the genus *Leptorhaphis* is available in the extended edition of the *Lichens of Great Britain and Ireland* by Smith *et al.* (2009), based on the modern circumscription of the genus introduced by Aguirre-Hudson (1991). The genus is only facultatively lichenised, i.e. the thallus consists of fungal hyphae loosely associated to clusters of chlorococcoid - and more rarely - trentepohlioid algae. This can be confirmed in squash mounts and microscope sections of the ascomata. It is distinguished from similar perithecial microfungi with bitunicate asci, by the narrowly fusiform to filiform and arcuate, 1–3 septate, always colourless ascospores. Its current systematic placement in the family *Naetrocymbaceae* was first suggested by Harris (1995: 59), on the basis that *Arthopyrenia*, and therefore the *Arthopyreniaceae* as understood until then, contained two unrelated groups based on the morphology of the hamathecial filaments: i.e. pseudoparaphyses *versus* paraphysoids. Also, as a result of the proposal to typify *Arthopyrenia* with *A. analepta*, which was later rejected in favour of *A. cerasi* [see Proposal to Conserve and Reject names no. 933 in *Taxon* **48**: 807 (1999)], some species formerly in *Arthopyrenia* are now referred elsewhere; e.g. the ubiquitous and pioneer species on smooth bark *Naetrocymbe punctifomis*. *Leptorhaphis*, as with species of the genus *Naetrocymbe* possesses pseudoparaphyses, which according to Eriksson (1981) consist of cellular, richly branched filaments, with cells constricted at the septum. The filaments originate from the upper part of the hymenium and grow downwards, attaching themselves to the base of the ascomal cavity, and afterwards often become detached in the upper part. This type of development is difficult to interpret from squash mounts, but the almost moniliform appearance of the interthecial filaments is diagnostic.

Three species were included in *Leptorhaphis* by Smith *et al.* (2009): *L. atomaria*, usually found on poplars, *L. epidermidis*, the type of the genus, which is solely found on birch bark, and *L. maggiana*, known from branches and young (coppiced) trunks of hazel and chestnut trees. Photographs and illustrations of the species can be found in Aguirre-Hudson (1991) and Aguirre-Hudson *et al*. (2002), and a distribution map for *Leptorhaphis epidermidis* was published by Dobson (2011). Since, two other species have been found in Great Britain: *Leptorhaphis confertior* and *L. laricis*. With this contribution we provide further taxonomic information on these species, and an updated key to all the species of the genus found in the British Isles.

Leptorhaphis confertior was found on holly trees in the Isle of Skye during an IAL organised excursion, and was reported in this journal by Cannon & Aguirre-Hudson (2012) as the second known world record. The species was known previously only from material collected by the XIX century Norwegian lichenologist J.M. Norman in the Island of Florø, situated at 61 degrees latitude north off the coast of Norway. It is distinguished from the other species in the genus by its clustered

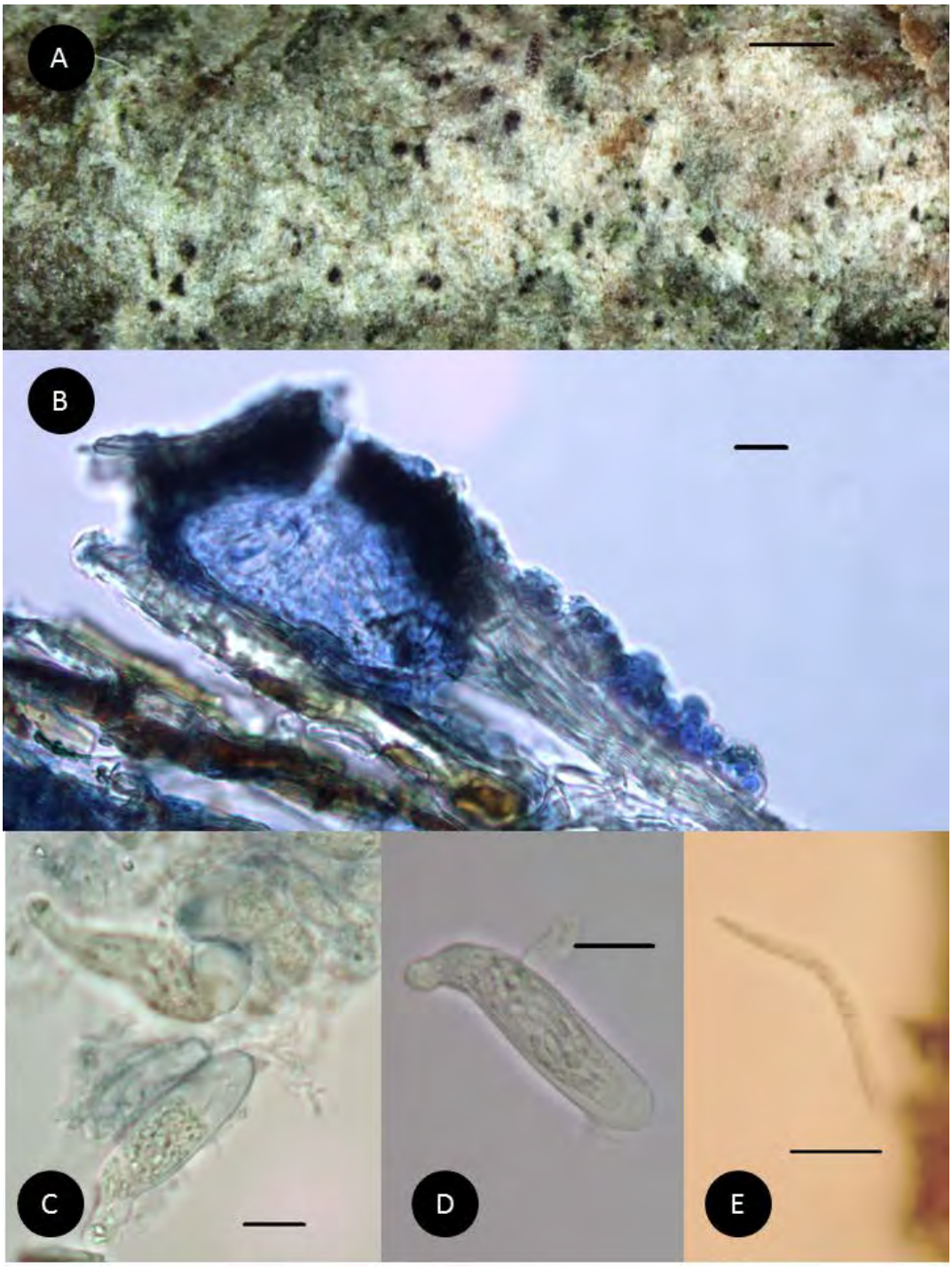
perithecia, and though inconspicuous, it is obviously very rare. A detailed description and further images of *L. confertior* can be found in Aguirre-Hudson (1991: 103–106); though in this monograph, the species was treated as a later synonym of *Leptorhaphis deformis* Norman, due to their microscopic similarities and lack of modern voucher material to confirm otherwise.

Amongst the British species of *Leptorhaphis*, *L. confertior* has relatively short ascospores, and is the sole one found on holly. As the perithecia group in irregular patches, superficially it might be confused with various arthonioid species on that host, but the presence of ostioles and the ascospore morphology are diagnostic.

British material of *Leptorhaphis laricis* was first found in the county of Essex in 2014 growing on the bark of twigs and branches of cedars, cultivated in parks and public spaces. A year later the species was found associated with the same conifer hosts and habitat in three further counties of southern England (Somerset, Suffolk and Surrey; see the section of New, Rare and Interesting Lichens of this *Bulletin*). In continental Europe it is known from *Larix* - the type, but also from deciduous trees and shrubs; e.g. birch, ash and *Genista* species (Aguirre-Hudson 1991, Aguirre-Hudson *et al*. 2005). A detailed description of this species follows:

Thallus not well delimited, immersed, visible only under the compound microscope as a thin fungal layer with hyphae occasionally associated with chlorococcoid and/or *Trentepohlia* algae around the ascomata. *Ascomata* perithecial, 100–150 (–200) µm diam., mostly circular, well delimited and arising singly, semi-immersed in the substratum with a central ostiole situated in a small depression; dimidiate (flattened) in section, up to 65 µm tall. *Involucrellum* clypeate, dark brown, almost black in water mounts, remaining unchanged after adding K, and not extending into the thallus to form a basal fringe; composed of *textura epidermoidea-intricata*, becoming *globulosa* towards the ostiole. *True exciple* colourless, consisting of a few layers of isodiametric cells forming a pseudoparenchymatous tissue and continuing below the ascoma. *Hamathecium* consisting of richly branched and cellular pseudoparaphyses *ca* 1.5 µm in diam. Hymenial gelatine blueish after IKI (check the Lugol solution is fresh by testing it first on a piece of tissue; it should change to blue not brownish). *Asci* (30–) 35–50 (–55) x 9–12 µm, cylindrical to broadly clavate, geniculate at the base, mostly 8-spored, and releasing the spores asynchronously; functionally bitunicate, the endotunica with a broad and truncated apex. *Ascospores* (27–) 34–40 x 1.5–2.5 µm, arranged in a single fascicle in the ascus, slightly twisted, narrowly fusiform, arcuate to sigmoidal, 1-septate, not constricted at the septum, apices pointed, cells ± equal, cell wall smooth, without a mucilaginous sheath. *Conidiomata* not observed.

Fig.1 (next page). *Leptorhaphis laricis*. (A) General view of ascomata and 'thallus' on substrate. (B) Cross section of ascoma showing a clypeate involucrellum and a 'thallus' consisting of hyphae with clusters of algae. (C) Hymenial gel bluish in Lugol's iodine. (D) Ascus. (E) Ascospore. (scale bar for A = 500 µm; for B, C, D & E = 20 µm).


A
B
C
D
E

Key to the species of *Leptorhaphis* found in the British Isles

1. Perithecia circular, sometimes confluent, less than 300 µm diam.; if surrounded by a dark basal fringe, this is less than 50 µm wide; hymenial gel and hosts various ……..….**2**
Perithecia ellipsoidal, 300–525 µm diam., surrounded by a distinct dark basal fringe (about 50–75 µm wide), remaining as a distinct scar once the ascomata fall; hymenial gel unchanged, at most amber in Lugol's iodine; always on birch ……..…… ***Leptorhaphis epidermidis***

2. Perithecia arising singly; hymenial gel in Lugol's iodine various; ascospores 1 to 3 septate, but always > 25 µm long ……..……**3**
Perithecia confluent, 140-200 µm diam.; hymenial gel blueish in Lugol's iodine; ascospores 1-septate, 15–20 (–25) x 1.5–2 µm; on holly.... ***Leptorhaphis confertior***

3. Hymenial gel blueish in iodine ……..…….. **4**
Hymenial gel not changing colour in Lugol's iodine, at most amber; perithecia spherical to slightly ellipsoidal, 135–300 µm diam.; involucrellum of *textura epidermoidea-intricata*; ascospores 1–3 septate, (30–) 35 – 45 (–50) x 1.5 – 2.5 µm; on hazel & chestnut ..……..…….. ***Leptorhaphis maggiana***

4. Thallus whitish-grey; perithecia sessile 100–250 µm diam.; involucrellum mostly non-clypeate, of *textura globulosa*, becoming *epidermoidea-intricata* only at the base; ascospores 1–3 septate, 25–32 x 2–3.5 µm, with rounded apices; on poplars …….. ***Leptorhaphis atomaria***
Thallus inconspicuous; perithecia semi-immersed, 100–150 (–200) µm diam.; involucrellum clypeate, of *textura epidermoidea-intricata*; ascospores 1-septate, 30–40 x 1.5–2.5 µm, with pointed apices; on conifer bark, mostly larch & cedars ……..... ***Leptorhaphis laricis***

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Lichens on man-made substrates

It is well known that the surface of all materials exposed to the environment will, sooner or later, become colonized by different groups of living organisms. The extent of colonization will depend on the environmental conditions and on the characteristics of the substratum. Lichens are well adapted to colonize bare and stable surfaces in many climatic conditions, giving rise to a biological mosaic of colours and textures. In addition to natural substrata, these include a host of human-manipulated or manufactured ones (i.e. artifacts), including fashioned stonework, asphalt, glass, concrete, cement, plaster, ceramic and terracotta tiles, bricks, processed wood products, and various types of metals (Brightman & Seaward 1977).

Peculiarities and colonization of lichens

Growth on external surfaces, whether natural or man-made, presents challenges especially of water availability. Owing to their poikilohydric nature lichens can survive in various climatic conditions. Many lichens have limited mechanisms to prevent desiccation; they dehydrate and remain dormant when their environment dries out, but can rehydrate when water becomes available again. Lichens usually absorb water directly into the thallus through aerosol, mist and water vapors, due to this nature lichens can live long in dry areas.

Lichens are well known natural sensors of changing environment and the presence or absence of particular species and the composition of communities may be indicative of one or more identifiable factors. Lichens can be used as an early warning system for other biota which without remedial action would subsequently

suffer stress or indeed extinction through human mismanagement (Aptroot & James 2002).

Plate 1: **A-B** Vehiculicolous lichens: Lichen mosaic on abandoned car. **C.** Ferricolous lichens: *Heterodermia diademata* on electric iron pole. **D.** *Ramalina conduplicans* on plastic rope.

Lichen communities in urban areas are frequently lacking in diversity and complexity. The major factors leading to loss of diversity of lichens in an area may include local accumulation of high concentrations of toxic airborne contaminants produced by various urban related activities, removal and/or replacement of natural substrata and alteration of natural hydrological cycles. The impact of urban development, especially air pollution, often extends into adjacent natural lichen communities. Prior to the onset of the industrial age, stone and wooden buildings, gates, fences and tombstones as well as glass, bricks and tiles in urban areas supported quite diverse lichen communities. As industrial activities developed in and around human population centres, lichen communities on natural substrata declined with the available man-made substrata supporting limited lichen assemblages. However, in recent years many urban centres have experienced a recovery of lichen

populations due to a widespread switch to cleaner fuels and greater efforts to control or at least reduce emissions from some of the more damaging air pollution sources (Seaward 1997).

Plate 2: **E-H:** Fabricolous lichens, **E.** *Lecanora achroa*. **F.** *Micarea excipulata*. **G.** *Ramalina conduplicans*. **H.** *Flavopunctelia soredica*.

The association of lichens with human artifacts has attracted the attention of many researchers, not only by cataloguing species but also investigating the effects lichen growth has on them. India exhibits rich diversity of different organism groups including lichens, and most of the phytogeographical regions of the country are well explored. The following report provides notes on lichen colonization of a variety of artifacts, observed during the last few years during collection trips to many different regions of the country.

1. Lichens on iron poles (*ferricolous*): The Lingmala forest area of the north-western Ghats has moist damp climatic conditions which provides excellent habitats for many lichen taxa to colonize different substrates. In addition to many other substrates, *Heterodermia diademata* was also found growing widely over iron

electric poles. The electric poles erected inside dense forest, have rusted, rough moist surfaces (Fig. C).

2. Lichens growing on abandoned motor cars (*vehiculicolous*): Cars provide a mixture of materials suitable for lichen growth such as metal, glass, plastic and rubber, substrata of considerable dimension and diversity, provided they are not moving or regularly cleaned and the environmental conditions are favourable. Aptroot *et al*. (2014) enumerated 40 species of lichens found growing on vehicles and termed such lichens as vehiculicolous. Brodo *et al*. (2001), Tucker (2001) and Bennett (2002) also listed lichens found growing on abandoned cars. The city of Darjeeling in the Eastern Himalayas has a moist climate throughout the year and vehicles abandoned along the road side in open places exhibit good growth of *Phaeophyscia hispidula, Heterodermia diademata, Lecanora* sp. and *Leptogium* sp. (Figs A, B).
3. Lichens on decayed cloth (*fabricolous*): In the Tawang area of Arunachal Pradesh, traditionally prayer flags with small colourful cloth pieces are hosted in and around monasteries in high places. The cloth pieces fallen on the ground decay and become laden with soil, provide suitable habitat for lichens. Such prayer flags bear luxuriant growth of *Flavopunctelia soredica*, *Lecanora achroa* and *Micarea excipulata* (Figs D-H). Earlier Upreti and Dixhit (2002) reported *Heterodermia diademata*, *H. firmula*, *H. incana, Lecanora flavidofusca, Micarea* sp*., Parmotrema nilgherrense*, *P. tinctorum*, *Pertusaria* sp., *Phaeophyscia endoccoccina*, *P. hispidula* and *Xanthoria candelaria* growing on plastic netting in the nursery of the Royal Botanic Garden, Kathmandu, Nepal.

   Aptroot *et al*. (2014) suggested that such substrata covered with lichens might make a truly eye-catching tourist attraction while serving as outreach objects for public education about lichens and their importance. Our observations suggest that ferricolous, vehiculicolous and fabricolous lichens are a rather frequent phenomenon if conditions for such growth are suitable.

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A humungous *Verrucaria* thallus?

Seen in a salt march on the Adriatic coast of Slovenia. Jesting aside, presumably the areoles seen in many *Verrucaria* thalli are also formed by contractions in response to desiccation? Comments welcomed…..

Luffia ferchaultella – the moth in lichen clothing

Keep an eye out for lichens that move! Continuing the theme of lichen-looking and mothing introduced by Vince Giavarini in the Summer 2015 issue of the *Bulletin*…..

On 30 May 2015 my brother drew my attention to some tiny cones, about 6mm long, on his garden seat in Hartpury, West Gloucestershire. In warm conditions they were quite active, moving faster than a snail, when you could see their little dark heads and legs, but clamping down when threatened. They were covered in bits of lichen, obtained, no doubt, from his bench which has a beautiful covering including *Candelariella vitellina*, *Flavoparmelia caperata*, *F. soredians*, *Hypogymnia tubulosa*, *Lecanora expallens*, *L. pulicaris*, *Lepraria incana*, *Melanelixia subaurifera*, *Parmelia sulcata*, *Punctelia jeckeri* and *P. subrudecta*.

Well-camouflaged moths (above and to left of the finger-tip!)

After some time with my books and on the internet, I made the tentative identification of the micro-moth *Luffia ferchaultella*, subsequently supported by Robert Homan, County Recorder for moths in East Gloucestershire and by Guy Meredith the county micro-moth specialist. *L. ferchaultella* is a case-bearing moth. It lives gregariously on suitable lichen-covered trunks, worked timber or occasionally stones,

and the cases, sometimes unoccupied, can be found all year round with old cases fixed to the spot for several years. The case is made of silk and covered with lichen, and immediately makes one think of a caddis fly. The larvae feed on lichen and pupate in early June. When the wingless adult females emerge they immediately start to lay eggs on or in their larval cases.

I searched other suitable places in my brother's garden, but found no more. *Luffia ferchaultella* is a self-fertile species (there are no males), but considered by some to be a parthenogenetic form of *L. lapidella*. A link to the map on the NBN gateway is *https://data.nbn.org.uk/Taxa/MM0001Z100BUSK11/Grid_Map*. In the UK mainland *L. lapidella* as such is only known in the far south west.

Close-up of the moth in its case

I showed an earlier version of this article to Mark Powell, who said "oh yes, Bagworms!". He comes across them quite regularly in his east Midlands home patch, especially in cracks in ash bark. Armed with a new term – bagworm – I quickly came across an article on *Psychidae* moths in Nottinghamshire, Leicestershire and *Derbyshire. See http://www.eakringbirds.com/eakringbirds2/mothspsychids.htm*. It would appear that there is more than one of these micro-moths that eat and camouflage themselves with lichens. Indeed some species are probably common and the only reason for the gappy distribution maps is lack of recording.

There's a challenge for us! To make it harder, I wonder if we could work out the species of lichen that decorate the bag. I also wonder if such ambulant creatures provide a mechanism for translocation of lichen propagules and their subsequent fixation to new areas of substrate.

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Lichenised Leafhopper

On a recent field meeting in Pod's Wood, Essex, while looking at *Fuscidea lightfootii* on an oak branch, I noticed a very odd-looking insect. It is the nymph stage of the Leafhopper *Ledra aurita,* supposedly the only member of the subfamily Ledrinae found in Europe. The texture and coloration of the pronotum afford it a remarkable degree of crypsis against branches covered in algae and lichen, upon which it feeds. It

Ledra aurita nymph on oak branch

is interesting to hypothesise about the selection pressures that resulted in its exceptional camouflage: Those individuals that most resembled the lichen against which they spend a large amount of their time, feeding, were less likely to be detected and selected as prey. This increased chance of survival, multiplied over evolutionary timescales, has resulted in a curious-looking animal that has, in a fanciful sense, become lichenised, just like the fungus it feeds on. I couldn't find much in the way of published literature on the species, but an image search reveals a certain degree of intraspecific variation in colour in both the adults and the nymphs. This raises a number of questions: Are there various morphotypes that feed on different lichen? If so, how does their distribution and abundance correlate with that of their food lichen? It has only been recorded in 71 grid squares (10km) on the NBN gateway,

Exceptional camouflage of *Ledra aurita*

suggesting that it has been under-recorded; unsurprising given its singular ability to blend in to the background! However, if anyone is likely to encounter this interesting species, it is the lichenologists, who are well-equipped (and perhaps inclined!) to reveal more about the ecology of *L. aurita*.

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Lichen Leaf Miners

In January, 2014, while participating in a research project at La Fortuna Cloud Forest in Panama (alt. 1200 m), Jean Gagnon observed miner insects making burrows in a *Sticta* sp. (Figure 1). This foliose lichen has both photobionts (green algae & cyanobacteria), but the miner appeared to prefer those parts containing cyanobacteria. Dr Donald Windsor, entomologist at the Smithsonian Tropical Research Institute in Panama City, who has been studying miner insects in vascular plants for over 30 years in Panama, told us that he has never observed this in lichens before.

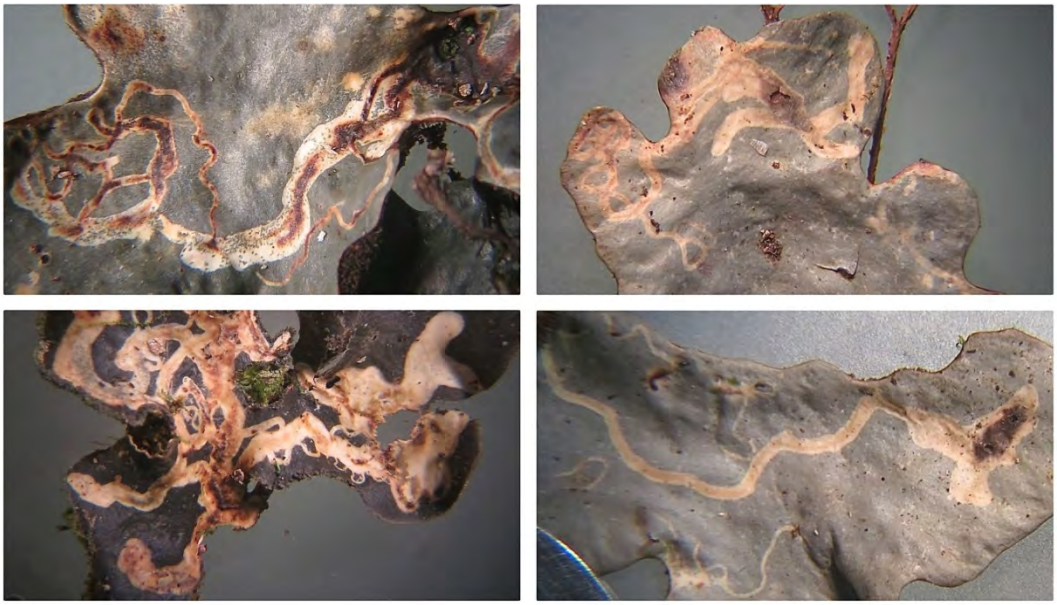

Fig. 1. Leaf miner insect burrows on *Sticta* sp. in the Panama cloud forest (photos D. Windsor).

Jean wrote to Mark Seaward, who has studied lichen-invertebrate associations (e.g. Gerson & Seaward 1977) enquiring whether he had observed such miner insects in foliose lichens or was aware of any literature documenting miner insects on lichens. Although aware of mollusca in this respect, he was at that time not aware of such damage by insects; however, he did mention past work on selective grazing of photobiont (algae and/or cyanobacteria) *versus* mycobiont by invertebrates, particularly psocopteran species (Broadhead 1958). In June 2014, Mark and I visited Maine, USA to give our Annual Lichen Ecology Course at the Eagle Hill Institute at Steuben. During our fieldwork, we came across a second example of lichen grazing, this time associated with *Umbilicaria mammulata* (Figure 2), their abundant thalli, some as large as dinner plates, on very large glacial erratics north of Steuben. Are these the marks of a Mollusc radula? Or could they be the result of grazing by another leaf miner?

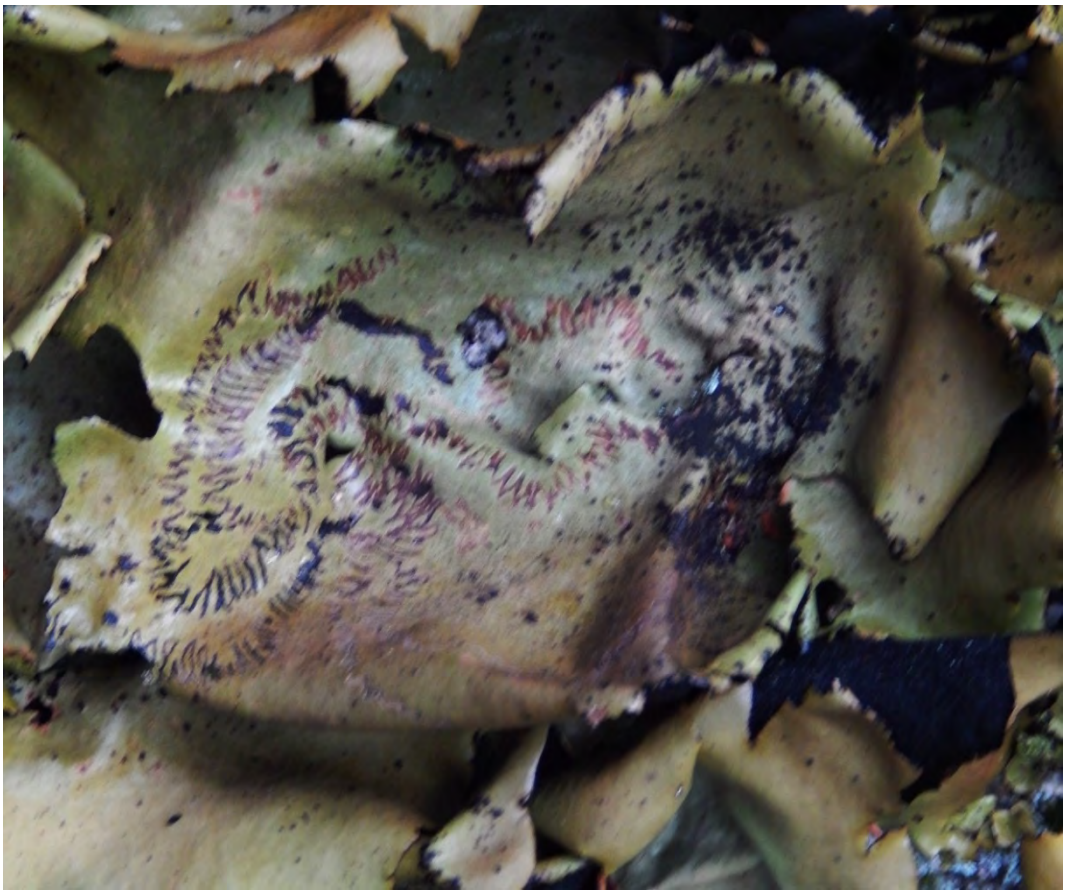

Figure 2. Invertebrate damage to *Umbilicaria mammulata* growing near Steuben, Maine, USA

There are relatively few papers that demonstrate actual damage to lichens by insects or gastropods (e.g. Powell 1980, Poykko 2006, Rawlins 1984) and we have been unable to trace any which refer to leaf miners, although there is one which suggests that the foliicolous lichen *Strigula fossulicola* has a preference for colonizing leaves adjacent to the excavations of leaf-mining insects (McCarthy *et al*. 1996)

We would be interested to hear from other biologists who have observed leaf miners on lichens or who have studied them.

Acknowledgements
We thank Dr Donald Windsor for his help and interest and Professor Mark Seaward for comments and suggestions with respect to this short note.

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My pet hate: combined locality names

The recording of lichens involves the use of the names of localities. Usually this does not raise any problems. However, difficulties occur where two names are united into a single name, a custom apparently favoured by Ordnance Survey. I believe that such names should not be combined, but that they should remain separate. Three examples are as follows:

1. Clay Coton, not Claycoton. A Northamptonshire village.
2. Eye Brook Reservoir, not Eyebrook Reservoir. A lake in Leicestershire and Rutland.
3. Wood Walton Fen, not Woodwalton Fen. A nature reserve in Cambridgeshire.

For other possible combinations of words, such as whether to use fish pond, fish-pond or fishpond, one can consult the latest editions of the *Oxford Dictionary*, fish pond being accepted usage.

Please send me your own pet hate. It should be relevant to lichens or lichenology.

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I Denounce: Binomial Nomenclature!

I will come straight out with it: Linnaeus's big mistake was binomial nomenclature.

We name species so that we can retrieve and communicate information about them. The lure of the binomial is that a group of similar species share part of their name, that of the 'genus'. Thus *Sticta* is a recognisable genus of lichens, and *Sticta limbata* and *Sticta sylvatica* are different kinds of stictas. This is helpful to memory.

The fatal flaw in the system is that the binomial is not only a label for a species, but carries information on perceived (close) relatedness. If opinions on the degree of relatedness change, as they always have, then the label will change, and the primary function of the name is impaired.

Is the phylogenetic information carried by the binomial really that useful? Sharing a generic name implies that a set of species are closely related, but it tells us nothing about relationships within the genus nor the relationship to any other genus of living thing. Also, many recently-erected genera are scarcely recognisable by appearance. This is not helpful to memory.

The snippet of information carried by the name would make the binomial system worthwhile if the concept of genus were stable, but in fact concepts change regularly. Each change implies that the information that the name conveyed previously was wrong. We were misled, and now we are asked to believe the new arrangement. The cost of change is chaos for all types of inventories, databases, floras, ecological studies, conservation effort, herbaria, personal memory, and an increase in the widespread distaste for taxonomy.

It might be tempting to hope that molecular methods will uncover true phylogeny and create real stability. There are several reasons why this is a false hope: there are not the resources to investigate every species in depth, sequencing technology and analysis will continue to improve, and the limits of a genus, even if it is monophyletic, are a matter of opinion and fashion. Names will continue to change as authors issue the latest bulletin of microphylogeny.

An alternative? Ultimately, to remove the information-content of names. An agreed name could be hyphenated to give an unchanging mononomial, such as '*Verrucaria-maura*'. This species would always be called *Verrucaria-maura*, but if you really need to know, you can rapidly discover that it is currently considered to belong to the *Hydropunctaria* clade and you can peruse its position in a cladogram. It could formally be called '*Verrucaria-maura* [*Hydropunctaria*] Wahlenb.' If the genus *Hydropunctaria* is dumped or split (and who can say it will not be?) then the latest genus can serve its time in the square brackets.

A change in genus is of course not the only way that names change. For good reasons, species can be split or merged. Ironically, this need not affect the name: '*Caloplaca citrina*' persists, but implies a very different entity to twenty years ago. To

specify what we mean by this label we need to refer to a particular circumscription of the species, such as a description in a flora (a return to the polynomial?).

Maybe one day lists of species will have three headings: the mononomial, the current placement, and a statement of the circumscription. Until then, remember that names are primarily labels; if a species is moved to a new genus and the name changes, at least be cautious in adopting it, and perhaps even ignore it. It doesn't really matter!

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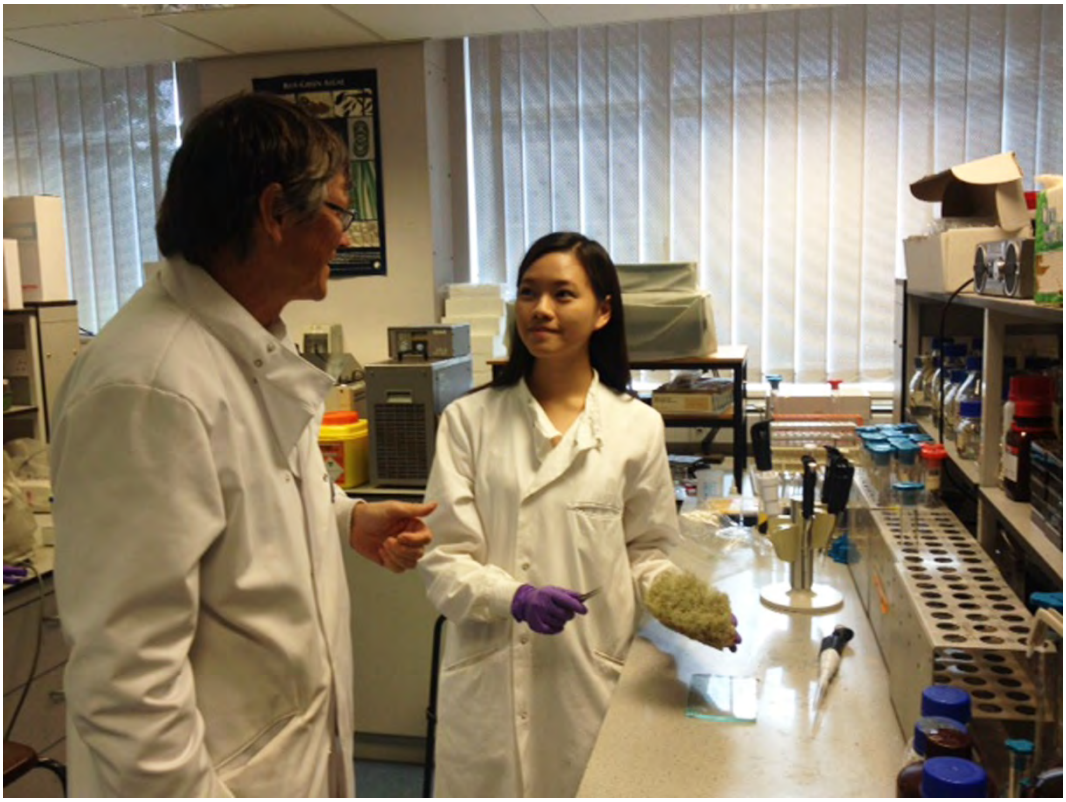
Report - British Lichen Society Summer Vacation Scholarship



Frida Latif and Peter Crittenden in the lichen research lab at the University of Nottingham

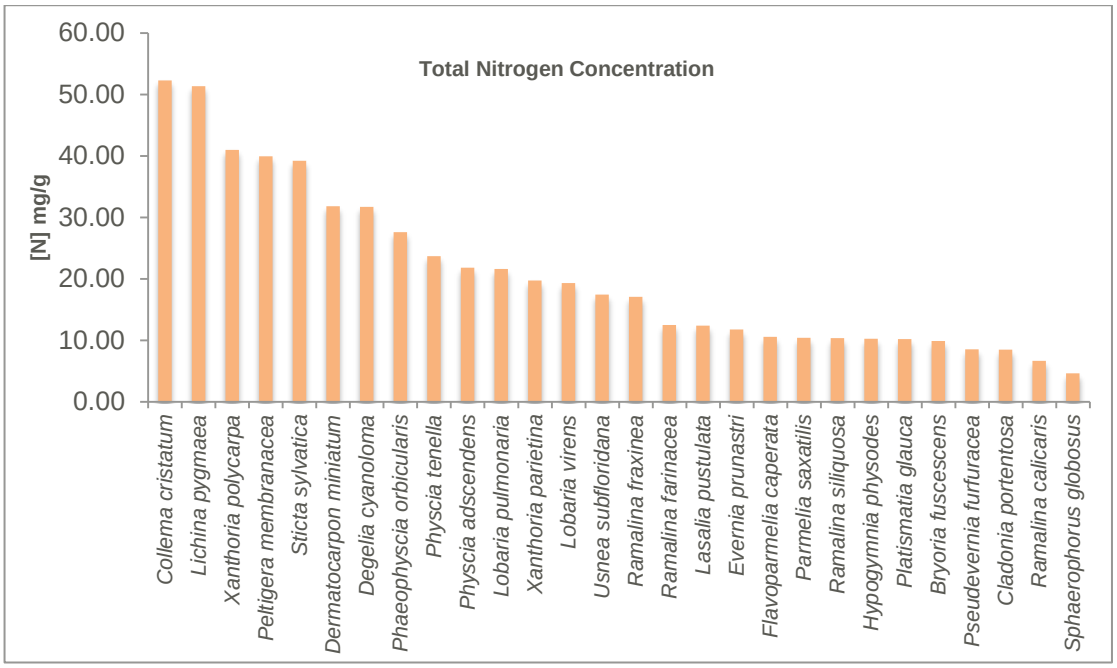
This summer I spent 10 weeks working on a BLS Summer Vacation Scholarship at the University of Nottingham. I was supervised by Peter Crittenden and Niall

Higgins. I am an international student from Indonesia studying at the University of Nottingham, and I have just completed the second year of a Biology degree programme. Since my first year, I have studied several plant science modules that have deepened my interest in plants. As I was planning to select a plant-related topic in my third year research project, I was looking for a way to broaden my knowledge in that topic area. This scholarship from the BLS has provided me with a great opportunity to do so. The School of Life Sciences has a lichen research laboratory that is actively researching, amongst other things, surface bound enzymes in lichens. Lichens typically occur in oligotrophic habitats, in which there are low availabilities of both nitrogen and phosphorus. In contrast, some lichen species occur in eutrophic habitats. Because of their different habitat preferences and apparent different tolerances to nitrogen pollution, some lichen species have been referred to as being nitrophobic and some others as nitrophitic. Recent work in the lichen laboratory at Nottingham has suggested that these two ecological groups of lichens have different types and levels of surface enzyme activities. For example, nitrophobic lichens have a higher activity of surface-bound phosphatases compared to nitrophitic species (1&2). Conversely, and perhaps surprisingly, nitrophitic species have been shown to have higher aminopeptidase activites (in prep). Enzyme activity within a species can also vary depending on where it is growing (1-3). For example, phosphatase activity in the Antarctic Lichen *Usnea sphacelata* was found to be negatively related to the distance from a penguin rookery; this was interpreted to be the result of the lichen's attempt to maintain a favouable N:P ratio in an environment where nitrogen in the form of ammonia is in excess, inducing a deficiency in phosphorus. The aim of my project was to investigate whether the activities of different surface-bound enzymes in a range of lichen species was related to concentrations of total N and P (and N:P ratio) in the thallus.

My task was to measure the total N and P concentrations in 28 species of lichen collected by Niall and Peter from locations in the University Park Campus, Derbyshire (Peak District), North Wales, and several sites in Scotland. Each lichen was represented by ten independent collections. Samples of each lichen were first digested in sulphuric acid-hydrogen peroxide solution and the nitrogen and phosphorus concentrations in the resultant digest were then measured by two different methods. The total nitrogen in the digest was measured flourometrically, whereas total phosphorus was measured colormetrically. I learnt the importance of cleanliness and accuracy in analysis; for example, digestion tubes were only ever rinsed in ultra pure water, and calibration curves were run daily. The first three weeks were spent practicing the methods before I began analyzing the collections. My findings showed that nitrophytes and nitrogen fixing lichens tend to have a relatively higher concentration of both phosphorus and nitrogen compared to nitrophobes, but the N:P ratios between these groups were not characteristically different (Fig. 1a+b). Two particularly interesting lichens were the nitrophyte *Xanthoria polycarpa,* which has almost twice the total nitrogen and phosphorus concentration of most nitrophytes, and *Dermatocarpon miniatum*, which was found to have nitrogen and phosphorus levels as high as nitrophytes. Some striking relationships between surface enzyme activities and lichen nitrogen and phosphorus

concentration exist and Niall and Peter are already incorporating my data into publications they are currently writing. This is very exciting and rewarding for me.

a



b

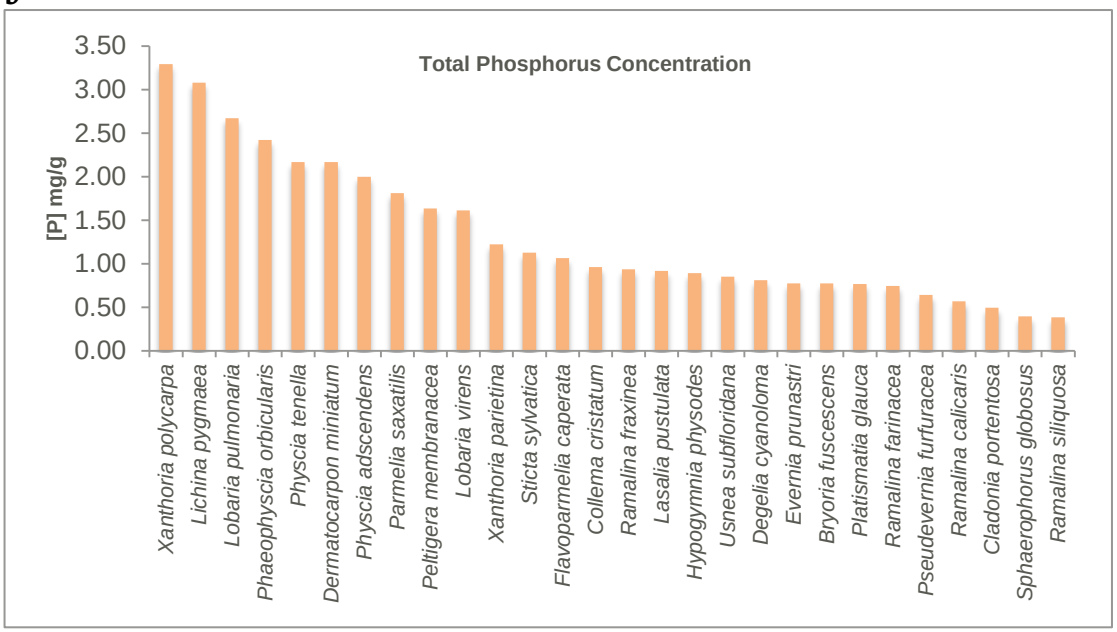


Figure 1a-b. Total nitrogen and phosphorus concentrations in the 28 lichen species studies. Each value is a mean of ten replicates and species are presented in order of decreasing concentration.

My time in the lichen research laboratory has been an invaluable experience in which I have extensively improved my laboratory skills. Furthermore, it has allowed me to experience the environment of a busy laboratory, and be a part of a research team. I hope to be able to utilize the skills I have gained for not only my dissertation, but also for a laboratory based career after finishing my course.

Acknowledgements
I would like to thank the British Lichen Society for funding this research, Peter Crittenden for his patience during my training, Niall Higgins for his advice throughout my placement and last but not least, Pubudu Gunawardhana for her assistance in a number of methodologies.

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1. Crittenden, P. D., Scrimgeour, C. M., Minnullina, G., Sutton, M. A., Tang, Y. S. & Theobald, M.R. (2015). Lichen response to ammonia deposition defines the footprint of a penguin rookery. *Biogeochemisty* **122:** 295-311.
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Skills and knowledge for Lichenologists

To be a proficient lichenologist you have to develop a wide range of skills which may take a number of years to acquire. This may take the form of formal courses, workshops, field meetings and mentoring. To help you make the most of the support on offer and to identify areas where additional knowledge will be helpful the Education and Publications Committee has produced a list of skills and knowledge for lichenologists. In addition, this list may be used by tutors when designing courses aimed at students at Beginner, Intermediate and Advanced stages, although the BLS does not recognise this as a formal accreditation scheme.

The list is of skills and knowledge is given below and a pdf proforma for use by course tutors is available on the BLS website.

Beginner stage students should:

1. Understand the concept of lichen symbiosis and how lichens are named
2. Understand basic lichen morphology e.g. crustose, foliose and fruticose
3. Be familiar with terminology associated with asexual reproduction
4. Be familiar with terminology associated with sexual reproduction
5. Use FSC identification guides
6. Use "Dobson" for species identification purposes
7. Use a hand lens
8. Use the C and K chemical tests
9. Use appropriate collecting and storage techniques and protocols
10. Be aware of the BLS website and local groups/meetings

Intermediate stage students should:

1. Understand the meaning of the terms associated with lichen structure and be able to recognise these structures
2. Understand the meaning of the terms associated with asexual reproduction and be able to recognise these structures
3. Understand the meaning of the terms associated with sexual reproduction and be able to recognise these structures
4. Use "The Flora" (The Lichens of Great Britain and Ireland)
5. Use the BLS and other websites to aid lichen ID
6. Use the Pd chemical test
7. Use a UV lamp
8. Recognise acidic and basic rocks
9. Recognise acidic and basic barked trees
10. Use a dissecting microscope
11. Use a compound microscope
12. Prepare a slide for microscopy e.g. squashes and sections
13. Calibrate a microscope and measure dimensions
14. Be familiar with recording procedures using the BLS database and spreadsheets
15. Understand the concept of environmental drivers of lichen distribution
16. Assist in the surveying of specific lichen habitats e.g. using Scheidegger quadrats

Advanced stage students should be able to:

1. Develop and demonstrate confidence in the identification of specific genera
2. Be confident in setting up a compound microscope
3. Use oil immersion
4. Prepare slides of key lichen structures to aid identification, including the use of stains e.g. for asci and spores
5. Identify lichen communities
6. Recognise habitats and key indicator species
7. Be able to access and use "grey literature"
8. Make up chemicals for ID purposes

9. Carry out advanced survey techniques using quadrats and releves
10. Be familiar with the conservation status of lichens
11. Plan and effectively carry out a lichen survey
12. Write up the findings of a lichen survey in report format
13. Undertake both generic and dynamic risk assessments

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Making the Small Things Count in Atlantic woodlands in the South West

Making the Small Things Count is a Plantlife project to get citizens learning about identifying and surveying lichens and bryophytes in the Atlantic woodlands of the South West and the BLS have been closely involved with the lichen part of the project. The project is managed by Plantlife and funded by the Heritage Lottery Fund's Our Heritage programme and focuses on the Atlantic woodlands with a range of actions including development of a land management toolkit; broad public engagement including a photo competition; the development of lichen walks and the delivery of the apprenticeship scheme. See the website for an outline of the project; *http://www.wildaboutplants.org.uk/england/projects/make-the-small-things-count/*

Development of the scheme

The BLS have been involved from the start when Sally Eaton at BLS, the BLS education committee, Rachel Jones (MTSTC project manager, Plantlife) and Felicity Harris (Head of Outreach, Plantlife) started to think about development of a learner portfolio. Sally produced outlines for the apprenticeship training programme and for the walks within Dartmoor and Exmoor National Parks and the Quantock AONB. Plantlife's specialists Tim Wilkins and Dave Lamacraft produced beautiful laminated fold out keys to characteristic Atlantic woodland lichens that people could use in the field. Graham Boswell, based in Minehead, became the leader of the apprentices programme which included training days in centres in Somerset and Devon and survey days in the field operating on a monthly or two monthly basis throughout the project. The training days needed microscopes and basic teaching and lab equipment to allow people to get acquainted with specimens. The survey days were based in

accessible sites where apprentices could be introduced to specialist lichens characteristic of the Atlantic habitats in the Southwest. Other lichen specialists came on board including Maxine Putnam and Pat Wolseley to assist with developing the programme and with running training and survey days and Frank Dobson supplied enough Lichen books at a cut rate price so that every apprentice could have one.

The response to Plantlife's advertisement was huge and over 90 applications for the apprenticeship scheme were received with a result that 33 people from a wide geographical area were accepted. As the training was designed to be delivered through 5 training days and 3 survey days over a period of 18 months, it meant that people who were already in employment could obtain time off for the training and survey days. The days ran from 10AM to 4PM which was essential as some people were travelling huge distances, but that also meant that the programme had to be pretty intensive in order to achieve results and that support material had to be produced and available so that apprentices could consolidate and continue their interest between the sessions. The Field Studies Council provided lab space and meeting places were found with the help of the National Trust and National Parks and occasionally village halls provided a meeting place.

Lichen apprentices on Exmoor: Graham Boswell with lichen apprentices (from left) Adam Smith, Tracey Bell, GB, and Paula Hewitson. Image courtesy Ruth Worsley.

The results

The last year has been a steep learning curve for the BLS contributors to this project both in practical terms of transporting microscopes and literature and in coordination of people and places across a large geographical region, especially as Sally is now at the Royal Botanic Garden, Edinburgh doing a PhD and a full time job as Scottish Plant Conservation Officer. Meanwhile the apprentices proved their interest and

commitment by turning up at all the sessions and in developing their interest at home with local projects that meant they got involved with bringing their own specimens to the training days. The survey days allowed them to put their knowledge into practice and to discuss their own projects with lichenologists in the field. We very much hope that soon we will have a contribution from them to the *Bulletin*! So here are a few comments from them about the project which highlight the interest as well as the difficulties.

From Stuart Bardsley – Mendips project officer

"Since undertaking the course I have increased my knowledge of lichens immensely, as well as realising I have a long way to go to becoming an expert. The new knowledge has been put to good use working with schools and the public on educational events as part of my work as a project Officer in the Mendip hills. The patience and enthusiasm of the tutors as well as their knowledge and enthusiasm have greatly helped with the difficult task of learning the identification of the lichens which mostly only have Latin names. The lesson where we all went through the identification features of the different types of lichens and were given examples to keep, was invaluable. The best way to learn the identification of such a tricky set of organisms is to constantly look, identify and learn. For this reason I think the only negative aspect of the course was that the training days were spaced too far apart making the learning process that much harder. By having the course more compact the fascination for lichens and a familiarity with the terminology and Latin names will become second nature."

From Jane Hart – Apprentice and project officer at the Silvanus Trust

"Enjoying walks through local Dartmoor woodland I've long held an interest in the resident ferns, mosses, lichens and the Plantlife apprenticeship has provided a much valued insight into the diverse ecology of these lichens. Developing identification skills in woodland Lichenology has also contributed to my professional development – building on general understanding of woodland ecology and management. The local field visits are particularly rewarding and the laboratory sessions fascinating - analysing finely sliced sections of lichen through the microscope could easily become my new hobby! The tutors have shared their in-depth knowledge through a mix of enthusiasm, support and patience, and further surveying opportunities have been offered by scheme partner Natural England. I'm looking forward to further workshops and field visits and hope to one day achieve a level of identification skills and knowledge that I can share with others. I will likely join a local survey group on Dartmoor after the apprenticeship as there is clearly so much more to learn about lichens!"

In addition to the apprenticeship scheme several of us have been involved with preparing walks within the area concentrating on lower plants. These will be turned into a fold out walk with illustrations, maps and information that will be available to download from the Plantlife website (for an example of a Plantlife walk see *http://www.plantlife.org.uk/uploads/documents/PL_Deep_dale_walk_.pdf*)

Looking at a veteran tree in Quantock AONB woodlands: GB with (from left) Tracey Bell, Stuart Bardsley and David Brabban. Image courtesy Ruth Worsley

In addition to Stuart & Jane other apprentices came from professional backgrounds. One is a University student doing his thesis on lichens. Two of the group are ecological consultants. The majority work in conservation and many of these have an educational role within their organisations, thus are able to 'spread the word' to a broader audience. One of them works full time for Somerset Environmental Records centre, another apprentice owns a nursery, a few others are conservation volunteers, two are land owners with lichens on their site's; and one, dare I say describes herself as a housewife with an interest in lichens.

Included in the MTSTC project were two workshops, on Exmoor and Dartmoor, aimed at introducing land owners and managers to the importance and status of lichens in Atlantic woodlands and to management of woodlands for lichens. The workshops were attended by a variety of organisations and individuals including: the National Parks, Natural England, National Trust, private woodland owners and a couple of college groups.

I can hear many of you say that this is a great program but how do they continue after an introduction and at the most 5 training days? All trainees have been put in touch with BLS members working in their area and so we hope that you will meet keen apprentices at future BLS meetings. Plantlife are also planning to find more funds to support a continuation of the programme. They are also planning to overcome the problem of access to microscopes and labs by acquiring a mobile lab. The British Lichen Society will support the application and we hope to be able to continue the collaboration and training of apprentices in the South West where we have such good lichen communities.

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British Isles List of Lichens and Lichenicolous Fungi

September 2015 update to list

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

We are indebted to Paul Diederich, Peter Earland-Bennett, Alan Orange, Mark Powell 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 abbreviations) *m.r.d.seaward@bradford.ac.uk*
Janet Simkin (Recorder and spread-sheet species dictionaries) *janetsimkin@btinternet.com*

Add:		
2655	*Arthonia protoparmeliae*#	Arthon prot'ae
2643	*Burgellopsis nivea* #	Burgel nivea #
2644	*Burgoa angulosa* #	Burgoa angu #
2645	*Burgoa splendens* #	Burgoa sple #
2647	*Catillaria fungoides*	Catil fung
2642	*Ceratobasidium bulbillifaciens* #	Cerat bulb #
2656	*Cercidospora caudata* #	Cerc caud #
2662	*Didymocyrtis melanelixiae* #	Didymoc mela #
2646	*Diplolaeviopsis symmictae* #	Diplolaev symm #
2650	*Lecidea huxariensis*	Lecidea huxa
2660	*Leptorhaphis laricis* ##	Leptorh lari ##
2651	*Phaeospora everniae* #	Phaeospora ever #
2659	*Polycoccum hymeniicola* #	Polycoc hyme #
2661	*Porina rivalis*	Porina riva
2648	*Puttea caesia*	Putt caes
2657	*Stigmidium epistigmellum* #	Stig epistig #
2652	*Thelidium rehmii*	Theli rehm
2653	*Verrucaria alpicola*	Verrucar alpi
2654	*Verrucaria humida*	Verrucar humi
2649	*Verrucaria obfuscans*	Verrucar obfu
2658	*Zwackhiomyces martinatianus* #	Zwac mart #

Change of genus (sometimes also species epithet):

Change from:			Replace with:		
2604	*Arthonia byssacea*	Arthon byss	2604	*Inoderma byssaceum*	Inod byss
63	*Arthonia pruinata*	Arthon prui	63	*Pachnolepia pruinata*	Pachno prui
135	*Bacidia beckhausii*	Baci beck	135	*Biatora beckhausii*	Biatora beck
2107	*Diederichia pseudeverniae* #	Died pseu #	2107	*Didymocyrtis pseudeverniae* #	Didymoc pseu #
831	*Epiphloea byssinum*	Epiph byss	831	*Leptogium byssinum*	Leptogium byss
1702	*Graphis alboscripta*	Graphis albo	1702	*Fissurina alboscripta*	Fiss albo
575	*Hypocenomyce anthracophila*	Hypocen anth	575	*Carbonicola anthracophila*	Carbonic anth
576	*Hypocenomyce caradocensis*	Hypocen cara	576	*Xylopsora caradocensis*	Xylops cara
577	*Hypocenomyce friesii*	Hypocen frie	577	*Xylopsora friesii*	Xylops frie
596	*Lecanactis dilleniana*	Lecanac dill	596	*Lecanographa dilleniana*	Lecanogr dill
606	*Lecanactis subabietina*	Lecanact suba		*Inoderma subabietinum*	Inod suba
2579	*Lecanora filamentosa*	Lecanora fila	2579	*Palicella filamentosa*	Pali fila
790	*Lecidea ahlesii*	Lecidea ahle	790	*Bryobilimbia ahlesii*	Bryobil ahle
730	*Lecidea hypnorum*	Lecidea hypn	730	*Bryobilimbia hypnorum*	Bryobil hypn
1629	*Lepraria lobificans*	Leprar lobi	1629	*Lepraria finkii*	Leprar fink
2587	*Leptosphaeria ramalinae* #	Leptosphaeria rama #	2587	*Didymocyrtis ramalinae* #	Didymoc rama #
2104	*Lichenostigma rugosum* #	Lichenostigma rugo #	2104	*Lichenothelia rugosa* #	Lichenoth rugo #
992	*Melanelia disjuncta*	Melanelia disjun	992	*Montanelia disjuncta*	Monta disj
873	*Micarea bauschiana*	Mica baus	873	*Brianaria bauschiana*	Brian baus
882	*Micarea lutulata*	Mica lutu	882	*Brianaria lutulata*	Brian lutu
893	*Micarea sylvicola*	Mica sylv	893	*Brianaria sylvicola*	Brian sylv
896	*Micarea tuberculata*	Mica tube	893	*Brianaria tuberculata*	Brian tube
2376	*Odontotrema pertusariae* #	Odont pert #	2376	*Sphaeropezia pertusariae* #	Sphaeropez pert #

2143	*Phaeosporobolus alpinus* #	Phaeosporob alpi #	2143	*Lichenostigma alpinum* #	Lichenostigma alpi #
2150	*Phoma physciicola*	Phoma phys #	2150	*Didymocyrtis epiphyscia* #	Didymoc epip #
2166	*Polycoccum slaptoniense* #	Polycoc slap #	2166	*Didymocyrtis slaptoniensis* #	Didymoc slap #
1868	*Pycnora leucococca*	Pycnora leuc	1868	*Toensbergia leucococca*	Toens leuc
2439	*Roccellographa sorediata*	Roccellogr sore	2439	*Fulvophyton sorediatum*	Fulv sore
1305	*Sarcogyne privigna*	Sarcog priv	1305	*Sarcogyne hypophaea*	Sarcog hypo
1318	*Schismatomma cretaceum*	Schis cret	1318	*Sporodophoron cretaceum*	Sporod cret
1409	*Thelotrema isidioides*	Thelot isid	1409	*Leucodecton isidioides*	Leucodect isid
1412	*Thelotrema petractoides*	Thelotr petr	1412	*Crutarndina petractoides*	Crut petr

Moved into synonymy:						
Change from:			Replace with:			Notes
2144	*Phaeosporobolus usneae* #	Phaeosporobolus usne #	2103	*Lichenostigma mauereri* #	Lichenostigma maur #	
2512	*Verrucaria andesiatica*	Verrucar ande	1488	*Verrucaria elaeomelaena s. lat.*	Verrucar elaeomel s.l.	1

Change of abbreviation:						
Change from:			Replace with:			Notes
2631	*Arthonia protoparmeliopseos* #	Arthon prot #	2631	*Arthonia protoparmeliopseos* #	Arthon prot'opseos #	
2393	*Carbonea aggregantula* #	Carb aggr #	2393	*Carbonea aggregantula* #	Carbonea aggr #	
1860	*Carbonea assimilis*	Carb assi	1860	*Carbonea assimilis*	Carbonea assi	
706	*Carbonea supersparsa* #	Carb supe #	706	*Carbonea supersparsa* #	Carbonea supe #	
1880	*Carbonea vitellinaria* #	Carb vitel #	1880	*Carbonea vitellinaria* #	Carbonea vitel #	
793	*Carbonea vorticosa*	Carb vort	793	*Carbonea vorticosa*	Carbonea vort	
2052	*Didymellopsis collematum* #	Didy coll #	2052	*Didymellopsis collematum* #	Didymel coll #	

2053	*Didymellopsis pulposi* #	Didy pulp #	2053	*Didymellopsis pulposi* #	Didymel pulp #	
1332	*Sphaerophorus fragilis*	Sphaerop frag	1332	*Sphaerophorus fragilis*	Sphaeroph frag	
1333	*Sphaerophorus globosus*	Sphaerop glob	1333	*Sphaerophorus globosus*	Sphaeroph glob	
2224	*Stigmidium epiramalina* #	Stig epir #	2224	*Stigmidium epiramalina* #	Stig epiram #	
1488	*Verrucaria elaeomelaena*	Verrucar elaeomel	1488	*Verrucaria elaeomelaena s.l.*	Verrucar elaeomel s.l.	1
1532	*Xylographa parallela*	Xylo para	1532	*Xylographa parallela*	Xylogr para	
1533	*Xylographa trunciseda*	Xylo trun	1533	*Xylographa trunciseda*	Xylogr trun	
1534	*Xylographa vitiligo*	Xylo viti	1534	*Xylographa vitiligo*	Xylogr viti	

Note
1 According to Thüs *et al*. (2015) in *Phytotaxa* **197:** 161–185, the status of *Verrucaria elaeomelaena* in the British Isles remains unresolved, and records under this name are best regarded as being *V. elaeomelaena* s. lat. This unresolved complex includes material previously identified as *V. andesiatica*.

B.J. Coppins, M.R.D. Seaward & J. Simkin

Literature pertaining to British Lichens - 57

Lichenologist **47**(3) was published on 19 May 2015, **47**(4) on 23 July 2015, and **47**(5) on 9 September 2015.

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 author of this compilation.

DILLMAN, K.L., AHTI, T, BJÖRK, C.R., CLERC, P., EKMAN, S., GOWARD, T., HAFELLNER, J., PÉREZ-ORTEGA, S., PRINTZEN, C., SAVIĆ, S., SCHULTZ, M., SVENSSON, M., THOR, G., TØNSBERG, T., VITIKAINEN, O., WESTBERG, M & SPRIBILLE, T. 2012. New records, range extensions and nomenclatural innovations for lichens and lichenicolous fungi from Alaska, U.S.A. *Herzogia* **25:** 177–210. This includes a treatment of *Puttea caesia*, since added to the British list.

DIVAKAR, P.K. et al. 2015. Evolution of complex symbiotic relationships in a morphologically derived family of lichen-forming fungi. *New Phytologist* **doi:** 10.1111/nph.13553. This multi-authored study of the phylogeny and evolutionary history of the *Parmeliaceae* includes the introduction of the generic name *Raesaenenia* D. Hawksw., Boluda & H. Lindgr. for *R. huuskonenii* (Räsänen) D. Hawksw., Boluda & H. Lindgr. (syn. *Phacopsis huuskonenii*).

ERTZ, D. DIEDERICH, P., LAWREY, J.D., BERGER, B, FREEBURY, C.E, COPPINS, B., GARDIENNET, A. & HAFELLNER, J. 2015. Dismantling *Dacampiaceae* (*Pleosporales*): *Didymocyrtis* (*Pleosporales*) with *Phoma*-like anamorphs resurrected and segregated from *Polycoccum* (*Trypetheliales*, *Polycoccaceae* fam. nov.). *Fungal Diversity* **doi:** 10.1007/s13225-015-0345-6. Studies on the *Dacampiaceae* (*Pleosporales*) show that *Polycoccum* and *Clypeococcum*, as represented by their type species, are better placed in a new family, *Polycoccaceae* Ertz, Hafellner & Diederich, belonging to the order *Trypetheliales*. However, some species of *Polycoccum* are found to belong to the order Pleosporales, but in the large family *Phaeosphaeriaceae*. An available generic name for these lichenicolous species is *Didymocyrtis* Vain. (1921). From DNA sequence data, some anamorphic fungi are also found to belong to this genus, including the type species of *Diederichia*. Consequent nomenclatural changes and additions to the British Isles list are: *Didymocyrtis epiphyscia* Ertz & Diederich (syn. *Phoma physciicola*); **Didymocyrtis melanelixiae* (Brackel) Diederich, R.C. Harris & Etayo; *Didymocyrtis pseudeverniae* (Etayo & Diederich) Ertz & Diederich (syn. *Diederichia pseudeverniae*); *Didymocyrtis ramalinae* (Roberge ex Desm.) Ertz, Diederich & Hafellner (syn. *Leptosphaeria ramalinae*); *Didymocyrtis slaptoniensis* (D. Hawksw.) Hafellner & Ertz. (syn. *Polycoccum slaptoniense*).

FRISCH, A., OHMURA, Y., ERTZ, D. & THOR, G. 2015. *Inoderma* and related genera in the *Arthoniaceae* with elevated white pruinose pycnidia or sporodochia. *Lichenologist* **47:** 233–256. Supported by DNA sequence data, the generic name *Inoderma* (Ach.) Gray (1821) is resurrected to accommodate *I. byssaceum* (Weigel) Gray (1821) (syn. *Arthonia byssacea*), *I. subabietinum* (Coppins & P. James) Ertz & Frisch (syn. *Lecanactis subabietina*) and two other, non-British species from Japan and Uganda. The 'soralia' of *Schismatomma cretaceum* are shown to be sporodochia, and this species is placed in the new genus *Sporodophoron* Frisch, Y. Ohmura, Ertz & G. Thor as *S. cretaceum* (Hue) Ertz & Frisch, along with three other non-British species from USA, Japan and the Russian Far East.

KOCKOURKOVÁ, J & KNUDSEN, K. 2012. *Stigmidium stigmatellum* (*Mycosphaerellaceae*), a lichenicolous fungus from maritime *Caloplaca* in North America. *Bryologist* **112:** 578–583. Detailed, illustrated description of *S. stigmatellum*, since discovered in Scotland.

KONDRATYUK, S. Y., JEONG, M.-H., YU, N.-N., KÄRNEFELT, I., THELL, A., ELIX, J.A., KIM, J., KONDRATIUK, A.S., HUR, J.-S. 2014. A revised taxonomy for the subfamily *Caloplacoideae* (*Teloschistaceae*, Ascomycota) based

on molecular phylogeny. *Acta Botanica Hungarica* **56**: 93–123. The new genus *Huneckia* S.Y. Kondr. *et al.* is introduced for *H. pollinii* (A. Massal.) S.Y. Kondr. *et al.* (syn. *Caloplaca pollinii*) and an Australasian species.

KONDRATYUK, S. Y., KÄRNEFELT, I., THELL, A. ELIX, J.A., KIM, J., JEONG, M.-H., YU, N.-N., KONDRATIUK, A.S., HUR, J.-S. 2014. A revised taxonomy for the subfamily *Xanthorioideae* (*Teloschistaceae*, Ascomycota) based on molecular phylogeny. *Acta Botanica Hungarica* **56**: 141–178. The new genus *Scythioria* S.Y. Kondr. *et al.* is introduced for the single species *S. phlogina* (Ach.) S.Y. Kondr. *et al.* (syn. *Caloplaca phlogina*) and the new genus *Verrucoplaca* S.Y. Kondr. *et al.* for the single species *V. verruculifera* (Vain.) S.Y. Kondr. *et al.* (syn. *Caloplaca verruculifera*).

MOORE, O. & CRAWLEY, M.J. 2015. Red deer impact on the montane *Racomitrium lanuginosum* moss-heath community in north-west Scotland. *Plant Ecology & Diversity* **8:** 427–436.

PRICE, S. 2015 ["2014"]. Lichen recorder's report 2014, and an update to the checklist of Derbyshire lichens. *Sorby Record* **50:** 48–61. This paper reports 78 additional taxa to the county list of lichens and lichenicolous fungi since the last update in 2010. Also two species thought to be extinct in the county (*Cresponea premnea* and *Sphaerophorus globosus*) have been re-discovered.

THÜS, H., APTROOT, A. & SEAWARD, M.R.D. 2014. Freshwater Lichens. In JONES, E.B.G., HYDE, K.D. & PANG, K.-P. (eds). *Freshwater Fungi*, pp 333–358. Berlin: De Gruyter. A review of the biology and ecology of freshwater lichens.

YUZON, J., ROUX, C., LENDEMER, J. & GUEIDAN, C. 2014. Molecular phylogeny and taxonomy of the endolithic lichen genus *Baglietoa* (Ascomycota: *Verrucariaceae*). *Taxon* **63:** 1177–1192. The genus has 12 currently recognized species, three of which occur in the British Isles [*B. baldensis*, *B. calciseda*, *B. parmigerella*, currently listed under *Verrucaria*].

ZHURBENKO, M. & DILLMAN, K. 2010. *Polycoccum hymeniicola* comb. nov. (*Dacampiaceae*) and other interesting lichenicolous fungi from southeastern Alaska. *Bryologist* **113:** 260–266. Includes description, illustrations and discussion of *Polycoccum hymeniicola*, since added to the British list.

B.J. Coppins
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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, eg specimen in Herb. **E**, Hitch etc., 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*.

New to the British Isles

Arthonia protoparmeliae Etayo (2010): on *Protoparmelia badia* on standing stone Bordastubble standing stone, Lund, Unst, VC 112, Shetland, GR 412(HP)/578.033, alt 20 m, July 2015. Herb. Coppins 24818 (**E**). Apothecia black, convex, 0.2–0.25 mm diam., hypothecium dark brown, K–, spores 1-septate, hyaline, 13–14.8 × 4–4.5 µm. For full description see Etayo in *Guineana* **16:** 41–43. **BLS No. 2655.** *B.J. Coppins*

Cercidospora caudata Kernst. (1894): on apothecia and thallus of *Caloplaca arenaria*, on top of massive pyroclastic boulder, Hafod-y-llan, Nantgwnant, Snowdonia, VC 49, Caernarvonshire, GR 23(SH)/62200.51332, alt 201 m, May 2015. Herb. Douglass D-2015-1017. Determined by B.J. Coppins. Collected during BLS Field Meeting. Recognized by its immersed, black perithecia, green-pigmented perithecial wall (in section) and colourless, caudate ascospores, (17–) 21–27 × 5–7 µm. The attenuated lower cell being about twice the length of the broader upper cell. For further details and spore illustrations see Hafellner in *Herzogia* **7:** 353–365 (1987) and notes in Navarro-Rosinés *et al*. in *Lichen Flora of the Greater Sonoran Desert Region* **2:** 635–639 (2004). See also ***Other Records***. **BLS No. 2656.** *J. R. Douglass*

Didymocyrtis melanelixiae (Brackel) Diederich, R.C. Harris & Etayo (2015)*:* on *Hypotrachyna taylorensis*, wood near the coast north of the Isle of Ornsay, Broadford, Skye, VC 104, North Ebudes, 18(NG)/70-14-, 1987. Herb. Diederich 8793.

Anamorph ("*Phoma*") only. Pycnidia black, 50–100 µm diam., immersed, within pale necrotic areas of the thallus surrounded by a black line; pycnidia wall brown, K–; conidia broadly ellipsoid, 1(–2)-guttulate, (3.5–)3.8–5.1(–6.2)×(2.8–)3.2–3.8(–4.3) µm. Originally described from *Melanelixia*, but occurs on a wide range of hosts in the *Parmeliaceae*. Record extracted from Ertz *et al*. in *Fungal Diversity* (see Literature Pertaining in this issue). **BLS No. 2662**. *B.J. Coppins*

Leptoraphis laricis (J. Lahm) M.B. Aguirre (1991): on *Cedrus deodara* on lawn, in park, Southchurch Park, Southend-on-Sea, VC, 18, South Essex, GR 51(TQ)/896849, 5th June 2014. Herb. **K**(M) 199655, ex P.M. Earland-Bennett. Determined by M.B. Aguirre-Hudson. Also examined by B.J. Coppins. For full description see Aguirre-Hudson & Earland-Bennett, *British Lichen Society Bulletin* **117**: 29-33 (this issue) See also *Other Records*. **BLS No. 2660**. *C.J.B. Hitch*

Polycoccum hymeniicola (Berk. & Broome) Zhurb. (2010): on thallus of *Lobaria pulmonaria*: (i) east of hotel, Applecross, VC 105, West Ross, GR 18(NG)/7180.4458, alt 60–70 m, August 2003. Herb. B. J. & A. M. Coppins and A. Orange, Coppins 20983 (**E**); (ii) Barnluasgan Hazelwood, Seil, VC 98, Argyll Main, GR 17(NM)/762.149, September 2012. Herb. Coppins 24128 (**E**); (iii) Barnluasgan Hazelwood, Knapdale Woods SSSI, VC 101, Kintyre, GR 16(NR)/79-91, alt *c*. 50 m, September 2013. Herb. B. J. Coppins & R. K. Brinklow (BLS *Usnea* Workshop), Coppins 24309 (**E**), anamorph only. (iv) Barnluasgan Hazelwood, Seil, VC 98, Argyll Main, GR 17(NM)/7625.1522, August 2014. Herb. Coppins 24718 (**E**); (v) Old Poltalloch, Kilmartin, VC 98, Argyll Main, GR 17(NM)/80581.00350, August 2014. Herb. Coppins 24717 (**E**). A distinctive species with circular, aggregated groups of sessile, black perithecia and often pycnidial conidiomata, or sometime conidiomata alone. The perithecia are rough-walled, *c*. 0.1–0.25 mm diam., and the pycnidia are similar but smaller, 0.08–0.17 mm diam. At maturity the ascospores are 1-septate, golden brown, *c*. 16–32 × 6.5–8.3 µm. The conidia are simple, golden brown, *c*. 9–16.5 × 7–10 µm. This species was originally described from Central America, and has since been found in Akaska on *Lobaria linita* and *L. oregana*. In all the American collections, it is confined to the apothecia of the host, but in all the British collections the fructifications are only on the host's thallus. The generic position of this species is uncertain. It has also been included in *Endococcus* as *E. hymeniicola* (Berk. & Broome) D. Hawksw., but it probably does not belong in either genus. I wish to thank Paul Diederich for alerting me to this species. For a recent account of the species in North America see Zhurbenko & Dillman in *Bryologist* **113:** 260–266 (2010). **BLS No. 2659.** *B.J. Coppins*

Stigmidium epistigmellum (Nyl. ex Vouaux) Kocourk. & K. Knudsen (2009): on thallus and apothecia of *Caloplaca marina* (i) west of Sùileabhaig, south coast of Sanday, VC 104, North Ebudes, 18(NG)/275.039, April 2015, Douglass D-2015-1015 & D-2015-1016 (**E**); (ii) Druim an Lochain, north coast of Sanday, VC 104, North Ebudes, 18(NG)/278 046, April 2015, Coppins 24892 (**E**). New to Europe. Ascospores in Scottish material: 11.5–18.2 × 3.8–4.8 µm. Previously known from maritime *Caloplaca* spp. on the west coast of North America. For a detailed treatment

and illustrations see Kocourková & Knudsen in *Bryologist* **112:** 578–583 (2009). **BLS No. 2657.** *B.J. Coppins & J.R. Douglass*

Zwackhiomyces martinatianus (Arnold) Triebel & Grube (1990): forming galls on thallus of *Porpidia crustulata*, on pebbles in riverside shingle heath, by River Dulnain, east of Sluggan, Kinveachy Forest SSSI, VC 95, Morayshire, GR 28(NH)/877.217, alt 290 m, August 2015 Herb. Coppins 24914 (**E**). Perithecia *c.* 70–100 µm diameter, immersed in galls *c.* 0.2–0.6 mm diameter. Asci cylindrical, 6–8/spored; spores 1-septate, hyaline. 10–13 × 4.2–4.8 µm. The galls are similar in appearance to those found on *Porpidia* species and caused by *Cecidonia xenophana*, but with smaller 'fruits'. For full descriptions and illustrations see Triebel in *Bibliotheca Lichenologica* **35** (1989) and Grube & Hafellner in *Nova Hedwigia* **51:** 383–360. **BLS No. 2658.** *B.J. Coppins*

Other Records

Abrothallus bertianus: on *Cetraria sepincola* on *Juniperus*, Well of Lecht car park, Ladder Hills SSSI, VC 94, Banffshire, GR 38(NJ)/234.153, alt 470 m, August 2015 (**E**). Determined by B. J. Coppins. The identification follows Scandinavian usage, but further studies are needed to confirm that this is the same fungus that more usually parasitizes *Melanelixia glabratula*. *H. Paul*

Abrothallus parmotrematis: frequent on *Parmotrema crinitum* on vertical, south-facing, but sheltered, rockface in old woodland, Craig y Chwarel, Coed Penybannau, east of Pontrhydfendigaid, VC 46, Cardiganshire, GR 22(SN)/740.664, alt 260 m, June 2010. Herb. SPC. Confirmed by B.J. Coppins. New to Wales. *S.P. Chambers*

Agonimia opuntiella: on silt-encrusted bryophyte mats on steep northeast-facing side of large river boulder under trees, Afon Marteg, Gilfach (Radnorshire Wildlife Trust), VC 43, Radnorshire, GR 22(SN)/954.714, alt 230 m, June 2015. Herb. SPC. Confirmed by B. J. Coppins. The 423rd lichen (inc. lichenicolous fungi) record for the Gilfach Nature Reserve. New to the Vice-county. *S.P. Chambers*

Agonimia repleta: on soft, cattle-scuffed bark on south-facing base of old field *Quercus robur* standing in floodplain pasture south of Afon Aeron, 500 m west of Capel Betws Lleucu, VC 46, Cardiganshire, GR 22(SN)/600.581, alt 85 m, September 2015. Herb. SPC. Second Vice-county record for this species and in a practically identical habitat to the first. *S.P. Chambers*

Agyrium rufum: on untreated hardwood handrail of comparatively new footbridge, crossing stream within old woodland, Afon Peris, Cwm Peris, east of Llan-non, VC 46, Cardiganshire, GR 22(SN)/534.671, alt 70 m, April 2014. Herb. SPC. Confirmed by B. J. Coppins. New to the Vice-county. *S.P. Chambers & H.F. Clow*

Anisomeridium robustum: on bark of mature *Platanus* in parkland, Temple Lea, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6861.1415, June 2015. New to Sussex. *N.A. Sanderson*

Arthonia anombrophila: on trunk of *Ulmus* in planted mixed woodland, Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24855 (**E**). New to Shetland. *B.J. & A.M. Coppins*

***Arthonia coronata**:* on *Cladonia subulata* on river shingle heath, south side of River Dulnain, east of Sluggan, Kinveachy SSSI, VC 95, Morayshire, GR 28(NH)/877.217, alt 290 m, August 2015. Herb. Coppins 24907 (**E**). Third British locality. *B.J. Coppins*

Arthonia pruinata: on trunk of *Acer pseudoplatanus*, in urban street, Newington Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/902.868, June 2015.Herb. Rarely seen in South Essex. *P.M. Earland-Bennett*

Arthonia zwackhii: parasitic on *Phlyctis argena* on old *Carpinus* in parkland, Temple Lea, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6863.1409, June 2015. New to the Vice county. *N.A. Sanderson*

Arthopyrenia analepta: microconidia only, present on sloping Betula trunk, Westleton Common, Westleton, VC 25, East Suffolk, GR 62(TM)/441.687, June 2015. Herb. Hitch. Determined by B. J. Coppins. Second time recorded for East Anglia, both from East Suffolk. *P.M. Earland-Bennett & C.J.B. Hitch*

Arthrorhaphis muddii: parasitising *Dibaeis baeomyces*, on soil, Wheel Betsy Mine, West Dartmoor, VC3, South Devon, GR 20 (SX)/509.810, alt 254 m, May 2015. Herb. Bacciu. New to Vice-County. *N.G. Bacciu*

***Bacidia delicata**:* on trunk of *Acer pseudoplatanus* in planted mixed woodland, Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24851 **(E)**. New to Shetland. *B.J. & A.M. Coppins*

Bacidia friesiana: on *Sambucus* stem, Jones's Covert, Hampton Nature Reserve, VC 31, Huntingdonshire, GR 52(TL)/15-93-, July 2015. Herb. Powell 3779. New to the Vice-county. *M. Powell*

Bacidia incompta: in wound tracks on three trees, *Quercus ilex*, *Acer campestre* and *Fagus* in parkland, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6910.1445, 51(TQ)/6973.1485 & 51(TQ)/6975.1474, June 2015. Previously recorded from *Ulmus* in this important parkland site. These are the first records for this species since 1967. *N.A. Sanderson*

Bacidia sulphurella: fertile on trunk of *Acer pseudoplatanus* in planted mixed woodland, Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24852 (**E**). New to Shetland. *B.J. & A.M. Coppins*

Bacidia sulphurella: fertile, on nutrient-enriched bark on west side of trunk of mature *Acer pseudoplatanus,* at edge of sheep pasture, south of Cefn-grugos-fawr, Synod Inn, VC 46, Cardiganshire, GR 22(SN)/414.542, alt 235 m, November 2013. Herb. SPC. Confirmed by B. J. Coppins. New to the Vice-county. *S.P. Chambers*

Caloplaca alstrupii: (i) on bark plate of *Acer pseudoplatanus trunk,* with *Arthonia didyma* and *Rinodina* cf. *laevigata*, campsite area northwest of Raasay House, Raasay, VC 104, North Ebudes, GR 18(NG)/546.366, alt 10 m, July 2009. Herb. Powell 821 (**E**); (ii) on branch of *Ulmus*, about 100 m west of Raasay House, GR 18(NG)/545.365, July 2009. Herb. Powell 848 (**E**). Confirmed by B.J. Coppins. New to the Inner Hebrides. *M. Powell*

Caloplaca asserigena: on lip of small low boulder in open *Ulex gallii* grass-heath vegetation in sheep-grazed hill pasture, near Cilgwyn, west end of the Nantlle valley, VC 49, Caernarfonshire, GR 23(SH)/487.540, alt 230 m, May 2015. Field record. The first saxicolous record of this rapidly increasing (in Wales at least) species. *S.P. Chambers*

Caloplaca chalybaea: on top of limestone table tomb, St. Decumans churchyard, Watchet, VC 5, South Somerset, GR 31(ST)/064.427, alt 50 m, September 2015. Specimen not retained. Thallus blue-grey, areolate ("*Aspicilia*-like"). New to the Vice-county. *B.J. Coppins & M. Powell*

Candelariella vitellina f. ***flavovirella***: about 27 thalli (1 with ascocarps) and about 43 thalli of forma *vitellina,* on brick wall tops of two urban gardens, 57 and 59, Oakleigh Park Drive, Leigh-on-Sea, VC 18, South Essex, GR 51(TQ)/845.859, March 2011. A remarkably high proportion of the green form at this site. *P.M. Earland-Bennett*

Catillaria fungoides: (i) on thin, leaning *Fraxinus* stem, Kingston Wood, VC 29, Cambridgeshire, GR 52(TL)/3247.5410, April 2015. Herb. Powell 3680. New to the Vice-county; (ii) on *Fraxinus* stem in the nearby Pincote Wood, GR 52(TL)/3280.5368. *C. fungoides* has now been found in Bedfordshire, Cambridgeshire and Huntingdonshire, in an area spanning about twenty miles. Putative specimens from elsewhere in England have so far proved to be dark algal crusts or colonies of brown fungal hyphae. *M. Powell*

Celothelium ischnobelum: on *Corylus*, Den of Airlie SSSI, VC 90, Angus, GR 37(NO)/25-51-, December 1967, leg. P.B. Topham (**E**, sub *Arthonia cinnabarina*). Determined by B.J. Coppins. Pycnidia only, on specimen of *Arthonia cinnabarina*. Not found during subsequent surveys of this site. New to the Vice-county. *B.J. Coppins*

Ceratobasidium bulbillifasciens: (i) directly on bark, but near to *Xanthoria parietina* on dead *Fraxinus* branch on ground, in town centre, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/890.850, December 2014. Herb. **E**. ex P.M. Earland-Bennett; (ii) on *Acer pseudoplatanus* bark, but with a few bulbils associated with *Physcia adscendens*, in urban street, Newington Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/902.868, December 2014. Herbaria **E, K(M),** Hitch and M. Powell, ex P.M. Earland-Bennett. Both records confirmed by B.J. Coppins. Second and third British records for this species. *P.M. Earland-Bennett*

Cercidospora caudata: Note - recorded as "on several other *Caloplaca* species", see under ***New to the British Isles***. *J.R. Douglass*

Chaenothecopsis pusilla: on lignum of four trees, two dead standing *Quercus*, a dead standing *Castanea* and exposed lignum on alive ancient *Quercus*, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6933.1442, 51(TQ)/6938.1439, 51(TQ)/6967.1474 & 51(TQ)/6933.1481, June 2015. New to Sussex. *N.A. Sanderson*

Corticifraga fuckelii: on *Peltigera didactyla* on coastal shingle ridge, Blue Anchor, VC 5, South Somerset, GR 31(ST)/01-43-, September 2015. Herb. Powell 3837. New to Somerset. *B.J. Coppins, M. Powell & P.A. Wolseley*

Echinodiscus lesdainii: parasitic on *Lecania cyrtella* on *Sambucus* stem, Jones's Covert, Hampton Nature Reserve, VC 31, Huntingdonshire, GR 52(TL)/15-93-, July 2015. Herb. Powell 3778. New to the Vice-county. *M. Powell*

Endococcus macrosporus: on *Rhizocarpon geographicum*, southwest coast of Shuna, VC 98, Argyll Main, GR NM/7678.0674, alt <10 m, April 2013. Herb. Coppins 24932 (**E**). New to Scotland. *B.J. Coppins, J.R. Douglass, S.G. Price, P. Harrold & P. Aspen*

Enterographa sorediata: on three ancient *Quercus* in The Grove and Deer Park Farm, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6921.1450, 51(TQ)/7002.1493 & 51(TQ)/7004.1490, June 2015. New to East Sussex. *N.A. Sanderson*

Fellhaneropsis vezdae: fertile on trunk of *Acer pseudoplatanus* in planted mixed woodland , Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24852 (**E**). New to Shetland. *B.J. & A.M. Coppins*

Fulgensia fulgens: a new site for 200+ thalli, some fertile, amongst short turf overlying clinker, Upton Towans, VC 1, West Cornwall, GR 10(SW)/578.405, April 2015. *P. Gainey*

Hawksworthiana peltigericola: on *Peltigera didactyla* on coastal shingle ridge, Blue Anchor, VC 5, South Somerset, GR 31(ST)/01-43-, September 2015. Herb. Coppins 24969 (**E**). New to Somerset. *B.J. Coppins, M. Powell & P.A. Wolseley*

Heterodermia obscurata: on mossy horizontal branch of *Quercus,* Stockhill, Forestry Commission plantation, Mendip Hills, VC 6, North Somerset, GR 31(ST)/55115.51138, January 2015. *D.J. Hill*

Intralichen baccisporus: on thallus and discs of *Lecanora hagenii*, turning them black and on an indeterminate sorediate thallus on trunk of young *Acer campestre* in urban street, Newington Avenue, Southchurch, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/902.868, July 2015. Herbaria. P.M. Earland-Bennett and duplicate to M. Powell. New to Essex. *P.M. Earland-Bennett*

Lecanora farinaria: (i) sterile, on decaying bark of *Picea sitchensis* stump in clear-felled upland conifer plantation, about 350 m northwest of Esgair Fawr, above Cwm Berwyn, VC 46, Cardiganshire, GR 22(SN)/734.588, alt 460 m, May 2015. Herb. SPC. First Vice-county and second Welsh record for this species. *S.P. Chambers*

Lecanora quercicola: small population on single ancient *Quercus,* Deer Park Farm, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6985.1500, June 2015. First record from the park for this species, since 1967. *N.A. Sanderson*

Lecidea nylanderi: on trunk of *Quercus* by footpath, upstream of Rumbling Bridge, by River Devon, VC 85, Fife, GR 36(NT)/02078.99887, alt 130 m, September 2015. Herb. Coppins 24975 (**E**). New to the Vice-county. *B.J. Coppins & J.R. Douglass*

Lecidea turgidula: on lignum of dead standing *Quercus* within relic *Fagus – Ilex* pasture woodland, Burrage Wood, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6938.1439, June 2015. New to Sussex. *N.A. Sanderson*

Leptogium subtile: (i) growing amongst moss, over brick fragments lying on clay bank of former brick pit, Hampton Nature Reserve, VC 31, Huntingdonshire, GR

52(TL)/1599.9375, Jul. 2015. Herb. Powell 3804; also present at the same site on thin soil over shale boulder, GR 52(TL)/1649.9461. New to the Vice-county. *M. Powell*

Leptoraphis laricis: in VC, 18, South Essex – (i) on *Cedrus deodara* in rose garden, Southchurch Park, Southend-on-Sea, VC, South Essex, GR 51(TQ)/896849, 5th June 2014. Herb. **K(M)** 199658, ex PME-B; (ii) on *Cedrus deodara*, Southchurch Park, Southend-on-Sea, VC, South Essex, GR 51(TQ)/896849, 6th June 2014. Herb. **K(M)** 199656, ex PME-B; (iii) on *Cedrus atlantica* on Norman Hams roundabout, Southend-on-Sea, GR 51(TQ)/ 889853, 8th June 2014. Herb. **K(M)** 199654 ex PME-B.; (iv) on *Cedrus atlantica,* Southchurch Road, Southend-on-Sea, GR 51(TQ)/888858 10th June 2014. Herb. **K(M)** 199657 ex PME-B; (v) on *Cedrus deodara* in churchyard , Leigh-on-Sea, GR 51(TQ)/842858/ 30th June 2014. Herb. **K(M)** 199653 ex PME-B; (vi and vii) on *Cedrus deodara,* Priory Park, Prittlewell, Southend-on Sea, GR 51(TQ)/875874, Herb. **K(M)** 199660 and TQ/876874, herb. **K(M)** 199652 ex PME-B, 7th March; (viii) on *Cedrus atlantica,* Priory Park, Prittlewell, Southend-on Sea, GR 51(TQ)/875874, 12th March 2015. Herb. **K(M)** 199659 ex PME-B. All determined by M.B. Aguirre-Hudson. See also ***New to the British Isles***. *C.J.B. Hitch*

Leptoraphis laricis: in VC, 25, East Suffolk – (i) on young *Cedrus* deodara in churchyard, Kesgrave, Ipswich, GR 62(TM)/218.457, 11th June 2015. Herb. K(M) 199651 ex Hitch (E14 , PME-B); (ii) on Cedrus atlantica in front garden, 33, Judith Avenue, Knodishall, 62(TM)43733.60722, 12th June 2015. Herb. K(M) 199.650 ex PME-B; (iii) on young fenced in *Cedrus* sp. in sheep pasture, Stanny House Farm, Iken, GR 62(TM)/43554.55377, 4th July 2015. Herb K(M) 199651 ex Hitch (P15). Collected by C.J.B. Hitch and K. Carr-Tansley. Determined by M.B. Aguirre-Hudson. New to Suffolk. *C.J.B. Hitch*

Leptoraphis laricis: on *Cedrus atlantica* (1969-13151), Royal Botanic Gardens, Compt. 163, Kew, VC 17, Surrey, GR 51(TQ)/185.770, 15th May 2015. Herb **K(M)** 199597, M.B. Aguirre-Hudson. Determined by M.B. Aguirre-Hudson. New to Surrey. *C.J.B. Hitch*

Lichenochora epifulgens: abundant on *Fulgensia fulgens on dunes*, Perranporth/Penhale, VC 1, West Cornwall, GR 10(SW)/758.550 to 10(SW)764.573, first recorded October 2013 and seen many times since. *P. Gainey*

Lichenochora epifulgens: small amounts on *Fulgensia fulgens*, Upton Towans, VC 1, West Cornwall, GR 10(SW)/578.405, April 2015. *P. Gainey*

Lichenochora epifulgens: small amounts on *Fulgensia fulgens* on dunes, Rock, VC 1, West Cornwall, GR 10(SW)/929.759, November 2014 & August 2015. *P. Gainey*

Lichenochora weillii: on *Physconia grisea* on large *Sambucus*, track running southeast from near to Belton House, Pitcox, VC 82, East Lothian, GR 36(NT)/647.760, alt 40 m, August 2015. Herb. Coppins 24905 (**E**). New to southeast Scotland and third British record. *B.J. Coppins*

Lichenodiplis pertusariicola: on *Buellia disciformis* on trunk of old *Fagus sylvatica* atop hedgebank, south side of minor road 200 m east-northeast of Tal Fedw, Capel Betws Lleucu, VC 46, Cardiganshire, GR 22(SN)/611.584, alt 110 m, September 2015.

Herb. SPC. First Vice-county record for this species on this host. Previously found in VC 46 only on *Pertusaria leioplaca*. *S.P. Chambers*

Melanohalea exasperatula: on low branch of *Acer pseudoplatanus* in planted mixed woodland, Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24850 (**E**). New to Shetland. *B.J. & A.M. Coppins*

Micarea ternaria: on pebbles of river shingle heath, south side of River Dulnain, east of Sluggan, Kinveachy SSSI, VC 95, Morayshire, 28(NH)/877.217, alt 290 m, August 2015. Herb. Coppins 24908 (**E**). New to the Vice-county. *B.J. Coppins*

Minutoexcipula tephromelae: (i) on thallus of *Tephromela atra* on sandstone headstone, St. Decumans churchyard, Watchet, VC 5, South Somerset, GR 31(ST)/064 427, alt 50 m, September 2015. Herb. Powell 3864; (ii) also at St. Peter's churchyard, Treborough, VC 5, South Somerset, 31(ST)/010.363, alt 300 m, September 2015. Specimen not retained. New to southern England. *B.J. Coppins & M. Powell*

Minutoexcipula tephromelae: on moribund thalli of *Tephromela atra* on Ordovician Pwntan sandstone block faces *c.* 10-12ft up on west-facing gable end of church wall, Church of St Michael & All Angels, Tremain, VC 46, Cardiganshire, GR 22(SN)/235.486, alt 110 m, January 2015. Herb. SPC. Confirmed by B.J. Coppins. New to Wales. *S.P. Chambers & T.A. Lovering*

Mycoglaena myricae: on *Myrica gale*, Yarner Wood, East Dartmoor Nature Reserve, VC3, South Devon, GR 20(SX)/786.789, alt 111 m, September 2014. Herb. Bacciu. Confirmed by B. Benfield. New to County. *N.G. Bacciu*

Mycoporum lacteum: on 12 old *Ilex* within relic *Fagus – Ilex* pasture woodland, Burrage Wood, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/69.14, June 2015. New to Ashburnham Park and likely to be one of the largest recorded British populations, outside the New Forest. *N.A. Sanderson*

Opegrapha glaucomaria*:* on *Lecanora rupicola,* on basalt of low southeast-facing cliff, Sanday, VC 104, North Ebudes, GR 18(NG)/27142.04211, April 2015. Herb. Coppins 24897 (**E**). New to the Vice-county. *B.J. Coppins*

Paranectria superba: on apothecia of moribund *Peltigera rufescens*, Findhorn Dunes, VC 95, Morayshire, GR 38(NJ)/04671.64122, March 2015. Herb. H. Paul (**E**). Determined by B. J. Coppins. The ascospores are 2–4/ascus, but the dimensions of the spore 'body' are larger than in the protologue (Hawksworth in *Notes RBG Edinburgh* **40:** 390–392, 1982), 38–70 × 23–29 µm vs. 30–45.5 × 13–18 µm, although the caudae [appendages] to the spores are the same, at mostly 15–18 um long. Apparently the second ever record of this species. *H. Paul*

Phaeospora rimosicola: on *Rhizocarpon petraeum* on small outcrop of metamorphosed limestone, Catfirth SSSI, Shetland Mainland, VC 112, Shetland, GR 411(HU)/437.538, alt 10 m, July 2015. Herb. Coppins 24810 (**E**, sub *Rhizocarpon petraeum*). New to Shetland. *B.J. & A.M. Coppins and O. Moore*

Phylloblastia inexpectata: plentiful on leaves of *Ilex* and all but 2 without perithecia, Pods Wood, Tiptree, VC 19, North Essex, GR 52(TL)/899.177, July 2015. Herb. P. M. Earland-Bennett. Determined by B.J. Coppins. New to the Vice-county.
P.M. Earland-Bennett, J.F. Skinner, et al.

Physcia clementei: widespread on isolated and exposed *Acer pseudoplatanus* in cattle trodden area, near Worthygate WoodBucks Mills, VC4, North Devon, GR 21(SS)/36661.23583, Alt 150 m, September 2015. Herbaria T Holwill and M. Putnam. Previously recorded in VC 4 in 1972 by Peter W. James at Frithelstock. Determined by M. Putnam and T. Holwill. *M. Putnam*

Physcia tribacioides: on trunk of *Tilia* in approach avenue to Farley Chambelayne Church, VC 11, South Hampshire, 41(SU)/39702.27437, alt 135 m, August 2015. Herb. Coppins 24966 (**E**). Apparently the first modern (post-1980) record for Hampshire of this RDB Vulnerable species. *B.J. & A.M. Coppins*

Polyblastia philaea: (i) growing on thin soil over concrete boulder, Hampton Nature Reserve, VC 31, Huntingdonshire, GR 52(TL)/1649.9461, July 2015. Herb. Powell 3803; (ii) also present at same site on clay bank of former clay pit, GR 52(TL)/1622.9450. Herb. Powell 3780. New to the Vice-county. *M. Powell*

Polycoccum microsticticum: on *Acarospora fuscata* on basalt of southeast-facing cliff, Sanday, VC 104, North Ebudes, GR 18(NG)/2714.0421, April 2015. Herb. Coppins 24869 (**E**). New to the Vice-county. *B. J. Coppins*

Porina byssophila: in quantity on sheltered northwest-facing trunk base of *Fraxinus excelsior* in burial ground extension, Church of St James The Great, Dauntsey House, 1km east of Great Somerford, VC 7, North Wiltshire, GR 31(ST)/980.823, alt 60 m, September 2015. Herb. SPC. Confirmed by M. Powell. New to the Vice-county.
S.P. Chambers & BLS Churchyards Group

Porina rosei: large population on single ancient *Quercus,* Deer Park Farm, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6987.1494, June 2015. New to the Vice-county. *N.A. Sanderson*

Porpidia islandica: on basalt of southeast-facing cliff, Druim an Lochain, Sanday, VC 104, North Ebudes, GR 18(NG)/27847.04582, alt 10 m, April 2015. Herb. Coppins 24891 (**E**). New to the Vice-county and third record for Scotland. *B.J. Coppins*

Protopannaria pezizoides: on mossy, mostly dead boughs of seven *Salix cinerea* and one *Sorbus aucuparia*, on flushed slope and on river bank in wet ravine and woodland, Afon Berwyn, Cwm Berwyn, VC 46, Cardiganshire, GR 22(SN)/726-8.579, alt 285 m, May 2015. Herb. SPC. First verified Vice-county record for this species. A pre-1960 record in the 1999 Welsh Census Catalogue is untraceable. *S.P. Chambers*

Pycnora praestabilis: on chestnut fence rail, Hever Castle, VC 16, West Kent, GR 51(TQ)/ 4853.4518, alt 40 m, October 2014, Coppins 24624 (E). Found on BLS Field Meeting. Previously known from SE Scotland (see BLS *Bulletin* **108:** 54, 2011). Second British record and new to England. *B.J. Coppins*

Pyrrhospora quernea: fertile, on vertical face of sandstone headstone, St Margaret churchyard, Upton VC 31, Huntingdonshire, GR 52(TL)/174.785, July 2015. Herb.

Powell 3800. Churchyard recorders have suspected that *P. quernea* grows on old sandstone gravestones and some record the usual sterile colonies. This welcome discovery of fertile material by Paula Shipway proves that *P. quernea* occurs as a saxicolous species in churchyards. *Lecanora expallens*, *L. orosthea*, *Lecidella scabra* and *P. quernea* all form pale green to buff coloured sorediate crusts on the sides of sandstone headstones and may be difficult to distinguish. *M. Powell*

Rhizocarpon distinctum: on top of sandstone headstone, St Andrew churchyard, Abbots Ripton VC 31, Huntingdonshire, GR 52(TL)/230.780, June 2015. Herb. Powell 3776. New to the Vice-county. *M. Powell*

Rinodina biloculata: on softwood handrail in early stage of weathering on footbridge under trees, in nitrophilous community, with *Bacidia caligans*, *Halecania viridescens* & *Physcia aipolia*, footpath entrance to woodland 150 m NW of Pen-cnwc, Capel Betws Lleucu, VC 46, Cardiganshire, GR 22(SN)/608.581, alt 100 m, September 2015. Herb. SPC. First lignicolous record of this increasing species, which by moving onto worked wood, could be in the process of expanding its substrate repertoire.

S.P. Chambers

Roselliniopsis ventosa: frequent on *Placopsis lambii* on exposed sloping top of siliceous boulder, southwest shore of Claerwen Reservoir, VC 46, Cardiganshire, GR 22(SN)/825.666, alt 370 m, August 2015. Herb. SPC. New to Wales. *S.P. Chambers*

Sagediopsis campsteriana: on thallus of *Ochrolechia androgyna* on low rock outcrop, near "Auld Wife" standing stone, Skellister, Shetland Mainland, VC 112, Shetland, GR 411(HU)/463/552, alt 40 m, July 2015. Herb. Coppins 24849 (*E*). The small specimen from Unst collected on the BLS Excursion, had only simple spores. This specimen also had mainly simple spores, but a few 3-septate spores were seen. Second record for Shetland. *B.J. & A.M. Coppins*

Sclerococcum tephromelarum: on *Tephromela atra* on inside face of wall garden, Barford House, VC 5, South Somerset, GR 31(ST)/233.359, alt 60 m, September 2015. Herb. Coppins 24974 (E). New to England. *B.J. Coppins & M. Powell*

Sticta canariensis: independent green morphotype, locally abundant on coastal cliff behind shore, Port na Cro, Shuna, VC 98, Argyll Main, GR 17(NM)/7636.0939, alt 10 m, April 2013. Herb. Coppins 24924 (**E**).

B.J. Coppins, J.R. Douglass, S.G. Price, P. Harrold & P. Aspen

Stigmidium congestum: on apothecia of *Lecanora chlarotera* on *Acer pseudoplatanus,* by cottage, Cnoc an Tionail, Sanday, VC 104, North Ebudes, GR 18(NG)/27101.04514, April 2015, Coppins 24895 (**E**). New to the Vice-county.

B.J. Coppins

Stigmidium fuscatae: on *Acarospora fuscata* on basalt of southeast-facing cliff, Sanday, VC 104, North Ebudes, GR 18(NG)/27312.04297, April 2015. Herb. Coppins 24868 (**E**). New to Scotland. *B.J. Coppins*

Strigula taylorii: on old *Acer campestre*, Kingston Wood, VC 29, Cambridgeshire, GR 52(TL)/3241.5389, April 2015. Herb. Powell 3680. This species has also been added to the lists of Bedfordshire, Hertfordshire and Huntingdonshire in the past year and is

presumably expanding its territory into the East of England. New to the Vice-county. *M. Powell*

Strigula taylorii: on trunk of *Ulmus* in planted mixed woodland, Kergord House, Weisdale, Shetland Mainland, VC 112, Shetland, GR 411(HU)/394.541, alt 40–50 m, July 2015. Herb. Coppins 24857 (**E**). Second record for Shetland for this species. *B.J. & A.M. Coppins*

Taeniolella phaeophysciae: with *Buelliella physciicola* and *Athelia arachnoidea,* on *Phaeophyscia orbicularia* turning it white, on *Acer platanoides*, Archer Avenue, Temple Sutton, Southend-on-Sea, VC 18, South Essex, GR 51(TQ)/901.821, January 2015. Herb. P. M. Earland-Bennett. The third time that *Taeniolella* and *Buelliella* have been recorded in South Essex. *P.M. Earland-Bennett*

Teloschistes chrysophthalmus: 3 thalli (2 juvenile) on *Prunus spinosa* just above HWST, Penryn Estuary, VC 1, West Cornwall, GR 10(SW)/791.344, March 2015. *P. Gainey*

Teloschistes chrysophthalmus: 5 or 6 thalli on *Prunus spinosa,* south-facing edge of Camel Estuary, VC 2, East Cornwall. GR 10(SW)/952.743, May 2013. *P. Gainey*

Teloschistes chrysophthalmus: one large thallus high up in canopy of *Prunus spinosa,* Mawnan Smith, opposite Padstow, VC 1, West Cornwall, GR 10(SW)/766.273, March 2015. *P. Gainey*

Thelocarpon lichenicola: on *Baeomyces rufus*, on east facing cutting in shaded woodland, Honeywell Wood, near Bittadon, VC4, North Devon, GR 21(SS)/546.397, Alt 180 m, July 2015. Herb. T. Hollwill. Determined by B. Benfield and B.J. Coppins. New to Devon. *T. Holwill*

Trapelia corticola: on bark and lignum of *Castanea,* Burrage Wood, Ashburnham Park, VC 14, East Sussex, GR 51(TQ)/6920.1429, June 2015. New to the Vice-county. *N.A. Sanderson*

Verrucaria calciseda: on small outcrop of metamorphosed limestone, Catfirth SSSI, Shetland Mainland, VC 112, Shetland, GR 411(HU)/437.538, alt 10 m, July 2015, Herb. Coppins 24811 (**E**). New to Shetland. *B.J. & A.M. Coppins and O. Moore*

Verrucaria obfuscans: growing on obelisk-shaped limestone memorial, All Saints churchyard, Leighton Buzzard, VC 30, Bedfordshire, GR 42(SP)/919.248, June 2015. Herb. Powell 3753. *V. obfuscans* is often associated with metal-contaminated limestone on church buildings but records such as this show that it also grows on un-contaminated limestone. New to the Vice-county. *M. Powell*

Verrucaria obfuscans: in small quantity on west-sloping windowsill of church, St Margaret churchyard, Spaxton VC 5, South Somerset, GR 31(ST)/225.370, September 2015. Herb. Powell 3843. New to Somerset. *B.J. Coppins & M. Powell*

Verrucaria obfuscans: on limestone coped tomb, Mount Pleasant Cemetery, Wisbech, VC 29, Cambridgeshire, GR 53(TF)/464.105, March 2015. Herb. Powell 3646. New to the Vice-county. *M. Powell, P. Shipway & L. Saunders*

Verrucaria obfuscans: on limestone headstone, Holy Trinity churchyard, Quemerford VC 7, North Wiltshire, GR 41(SU)/003.702, September 2015. Herb. Powell 3860. New to the Vice-county. *M. Powell and the BLS Churchyard Sub-committee*

Verrucaria obfuscans: on north-facing limestone windowsill, All Saints churchyard, Ellington VC 31, Huntingdonshire, GR 52(TL)/160.718, March 2015. Herb. Powell 3639. New to the Vice-county. *M. Powell*

Verrucaria ochrostoma: (i) on concrete sea-wall, Blue Anchor, VC 5, South Somerset, GR 31(ST)/022.435, September 2015. Herb. Powell 3861; (ii) on south wall of church, The Blessed Virgin Mary churchyard, Nettlecombe, VC 5, South Somerset, GR 31(ST)/056.377, alt 110 m, September 2015. Field record. New to Somerset.
B.J. Coppins & M. Powell

Verrucaria pinguicula: on small outcrop of metamorphosed limestone, Catfirth SSSI, Shetland Mainland, VC 112, Shetland, GR 411(HU)/437538, alt. 10 m, July 2015. Herb. Coppins 24809 (**E**, sub *Thelidium papulare*). New to Shetland.
B.J. & A.M. Coppins and O. Moore

Verrucaria squamulosa: on brickwork of gutter at base of church wall, The Blessed Virgin Mary churchyard, Nettlecombe, VC 5, South Somerset, 31(ST)/056.377, alt. 110 m, September 2015. Field record. New to Somerset. *B.J. Coppins & M. Powell*

Xanthoparmelia tinctina: on south facing slate roof, Friernhay Street, Exeter, VC3, South Devon, GR 20(SX)/917.924, alt 38m, July 2015. Herb. Bacciu. Second record of this species for Devon. *N.G. Bacciu*

Corrigenda

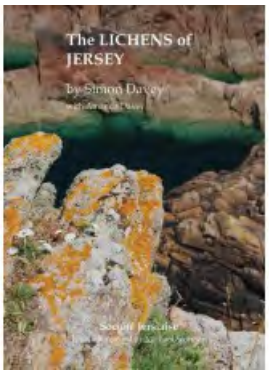
Gyalideopsis crenulata

I wish to thank A. Hochkiss and S.P. Chambers for correcting an error in BLS *Bulletin* 116, p. 65, Summer 2015, under entry *Gyalideopsis crenulata*, where this species was said to be new to the Vice-county. It is in fact the second record for this species for VC 47 and a new tetrad.

Ceratobasidium bulbillifasciens

A typographical error has occurred in "NRI" in the section ***New to the British Isles***, BLS *Bulletin* **116** p. 60, Summer 2015. The name *Ceratobasidium bulbilliformis* does not exist. It should of course be *C. bulbillifasciens*. However, all the data accompanying this item are correct.

Book review



The Lichens of Jersey. By Simon Davey & Amanda Davey. Societé Jersiaise, Jersey, 2015. ISBN978-0-901897-58-9 paperback; IX + 195 pp. Available from the Société Jersiaise, *http://shop.societe-jersiaise.org* or by telephone 01534 758314. Price £15 + postage.

This book is more than a catalogue of the lichens found in Jersey (Channel Islands) since Dillenius' *Historia Muscorum* in 1742 to date − it is a complete natural history of the lichens found in the island. The authors have provided a clear and brief introduction to the subject (in 6 pages), a historical background of collectors and collecting in the island, especially of C. du Bois Larbalestier and his relationship with other collectors from Britain and abroad (12 pages), some account of the difficulty in interpreting old records and species names (4 pages), and the topography and geology of the island (4 pages). These are followed by a detailed account of lichen habitats, supplemented with species lists of those more characteristic, and notes on the health of the lichen communities (36 pages). The main part of the book comprises an account of 560 lichens, many illustrated in colour, and information about their conservation status in the island and elsewhere in the UK (101 pages). Finally, there are details of herbaria housing Jersey lichens (8 pages), a glossary, bibliography, and subject and species indices (22 pages).

I was aware of Simon's commitment to Jersey's lichens, but had not realised this was a double act! The collaboration has been really positive as I imagine Amanda, coming from a more practical discipline, has helped to shape this book into a less esoteric topic of research. Despite my overall enthusiasm for the final product, I have a few criticisms, especially as I think the book can be well used by non-professionals. Some of the images are not very clear; see for example *Collema nigrescens* (page 92) and *Verrucaria nigrescens* (page 157). This is, I am sure, an issue of image reproduction and printing quality, which I hope can be resolved in a second edition. Also, on the first page of the species accounts, the entry for *Abrothallus parmeliarum* has the image of *Acarospora fuscata* within its text (see page 63); it confused me at first as to which image went with which species. As captions, instead of providing details of where the picture was taken, it would have been better to have the name of the lichen in addition. Further, it is a pity that keys to genera and species, or at least diagnostic taxonomic features, were not included. The user will need to carry in addition a copy of Dobson's *Lichens: an illustrated guide to the British and Irish species* (2011) or Smith *et al.*'s *Lichens of Great Britain & Ireland* (2009) to ascertain if they have the correct species. I am conscious that addressing this would make the book longer, but it could be included in the form of a chapter or supplement, like the glossary.

Though it is well known that most lichens, especially types, were transferred from the Royal Botanic Gardens, Kew (K) to the Natural History Museum, London (BM) back in the early seventies, some non-type historical vouchers were kept as reference collections, and new ones have been added since, e.g. collections of G. Morgan-Jones. Searching for Jersey lichen records in Kew's Fungarium catalogue, I found a species not included in this work: *Opegrapha viridis* (syn. *Zwackhia viridis*) with K(M) 116056. Whether this voucher is correctly named will need further assessment, so I would like to invite the authors to visit Kew whether or not they prepare a new edition. I am also aware that K's fungarium holds duplicate material of C. Larbalestier, and with the aid of this publication I will be able to understand and curate those better.
In conclusion, this is a book which can be enjoyed not only by lichenologists visiting Jersey, but also more widely by other natural history enthusiasts. I very much hope that its reading encourages many uninitiated to take the study of lichens further.

Begoña Aguirre-Hudson

British Lichen Society Field Meetings & Workshops Programme 2016

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 Field Outing – Wallington Hall (National Trust), Northumberland

Sunday 17th January 2016
Local organiser - Janet Simkin

A one day field outing will follow the AGM. This year we will visit Wallington Hall in Northumberland [grid reference NZ027843, postcode NE61 4AR, website *www.nationaltrust.org.uk/wallington*.]

Wallington Hall was the home of the Trevelyan family (formerly of Nettlecombe) until it was gifted to the National Trust in 1941. The house was rebuilt in the early 18th century, and the extensive grounds were redesigned at the same time and planted with trees that are now large and mature. There are also woodlands, ponds, and a large walled garden. None of this has been thoroughly surveyed for lichens. The house will not be open to the public that day, but there is plenty to keep us busy in the grounds and of course there is a tea shop and all the usual facilities.

Travel & Access
Wallington is about 20 miles north-west of Newcastle, just off the A696, and about a 35 minute drive from the university. On departure it is easy to get to the A1 south, the A69 west, the A696 to Scotland, or to return to Newcastle for trains or coaches. There is no public transport to Wallington on a Sunday so we will arrange car shares the day before, and we may also have the use of a minibus. We will plan to depart Newcastle at 09.30 am and to meet at Wallington Hall in the car park at 10.30 am. The NT Countryside Manager will then give us a brief introduction to the site and take us through to the gardens.

National Trust members should show their cards on entry and for non-members free access is being arranged, more details of this arrangement will be given at the AGM. If you are not attending the AGM please contact Janet Simkin beforehand (*janetsimkin@btinternet.com*, 07833 964031) to receive the latest information.

BLS WINTER WORKSHOP - University of Bristol

The lesser used stains, tests and techniques in lichen identification

Friday 19th to Sunday 21nd February 2016
Host - David Hill
Tutors **-** Brian Coppins, David Hill and Mark Powell

This workshop will be based on the less-used stains, tests, features and techniques helpful in lichen identification. There are quite a few tests for features in apothecial sections like sedifolia grey, HNO_3 reactions, crystal tests for lecanoric/gyrophoric acids. Not all the colour changes in for example apothecial sections that are described in keys and descriptions are correctly observed, especially if one does not know exactly what to look for e.g. how much does the colour actually change. Additionally there are the less obvious spore characters and anatomical characters e.g. tissue types such as in cortex of Physciaceae and exciples of Collema and epinecral layers.

Costs
There is a charge of £50 per attendee to cover part of the cost of using the laboratory, the balance of the cost is being subsidised by the BLS.

Outline timetable
Friday 19th 19.30 – introduction and evening tuition;
Saturday 20th morning – field trip to local site;
Saturday 20th afternoon – tuition and laboratory work;
Sunday 23rd to 16.00 – tuition and laboratory work.

Booking on the workshop
Places on the workshop are limited. Expressions of interest and booking should be made through David Hill email: *D.J.Hill@bristol.ac.uk* and send the workshop fee of £50 to him at Yew Tree Cottage, Yew Tree Lane, Compton Martin, Bristol BS40 6JS . Cheques to be made payable to 'The British Lichen Society' (not 'BLS' please).

Further information
Maps, site plans and further details of the workshop and accommodation will be sent out to attendees prior to the meting.

BLS SPRING MEETING 2016 – Isle of Wight

Friday 15th to Friday 22th April 2016
Local Organisers – Sheila and Les Street

The County of the Isle of Wight is relatively small. Its diamond shape measures 37 km west to east and 22km north-south. Crammed into its 380 sq. km, however, are most of the important semi-natural habitats found in southern England. These comprise nationally important areas of chalk downland and other grasslands, nationally important coastal and intertidal mudflat, dune, shingle and saltmarsh habitats ranging from the calm Solent to the windswept south coast. Its three rivers are short, flow northwards and hold some important freshwater marshlands and a few tiny acid bogs. Heavy clays in the northern half of the island contain interesting broadleaved woodlands and some confiner plantations. The eroding southern coastline provides ecologically important transient habitats for plants and invertebrates. Farming impacts are generally less intense than nearby counties and the patchwork of arable and grass fields are mostly surrounded by hedges. Substantial areas in the southern part of the island rise to well over 150 metres AOD and comprise interesting heathland habitats, in addition to chalk downland.

This habitat diversity is largely due to its extremely varied geology ranging from Cretaceous sands, chalk, flints and assorted clays in the south, mixed with greensands along the centre and overlain with recent Pleistocene alluvium and plateau gravels in the north. The island's mild and sunny climate also exerts a major influence over species and habitats.

Over 400 species of lichens have been recorded and the most interesting habitats comprise ancient broadleaved woodlands and meadows, lowland heathland, old churches, chalk outcrops and downland, cliffs and dunes. We will visit England's most extensive *Fulgensia/ Squamarina* clifftop community, *Cladonia-rich* heaths and ancient churches with excellent saxicolous lichen assemblages including one with abundant *Roccella phycopsis.* Coastal scrublands contain several thalli of *Teloschistes chrysopthalmus.* Several new lichen species have been added in recent years and there are undoubtedly more to discover.

Meeting Base

The meeting will be based in the Norton Grange Coastal Village, Yarmouth, Isle of Wight PO41 0SD. Telephone: 01983 760323

See *http://www.warnerleisurehotels.co.uk/hotels/norton-grange-holiday-village* to have a look at the accommodation, facilities and entertainment on offer. *Who needs entertainment when there is microscope work to do?*

The approximate grid reference for the venue is SZ345896

Accommodation and costs

Accommodation in 17 single and 4 twin chalets has been booked by the BLS.

Including breakfast, and three course dinner the cost per person is £298.00 for the week. If we have enough attendees to take all 25 places booked then the cost per person will reduce to £255.00 for the week.

Packed lunches are available from Norton Grange and there is a bakery, sandwich bar & delicatessen in nearby Yarmouth (approximately 1/2 mile) and more options, plus two supermarkets, in Freshwater (approx. 2 miles).

Microscope work

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

Booking

To stay in the accommodation in Norton Grange bookings are to be made through the Field Meetings Secretary, Steve Price, by email: *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP. Bookings need to be confirmed with a £35 deposit –

cheques made payable to 'The British Lichen Society' (not 'BLS') please. The balance will be paid by BLS 10 weeks before the meeting – and will be requested from attendees by the end of February.

Transport

Ferries:

Wightlink ferries run from Portsmouth to Fishbourne and from Lymington to Yarmouth. *http://www.wightlink.co.uk/* enquiries: 0871 376 1000

Redfunnel ferries run from Southampton to Cowes. see *http://www.redfunnel.co.uk/* enquiries: 0844 844 9988

Discounted fares for these ferry services are available. These fares cost £55 return for a car and up to 5 passengers. They are to be booked through the Field Meetings Secretary. Details required for the booking are: Ferry route; Outward date & time; Homeward date & time; Car reg no.; No of passengers (incl. driver - max 5); and Drivers name. Send these details and the £55 payment to the Field Meetings Secretary, Steve Price. Cheques payable to The British Lichen Society. These requests will be forwarded to Norton Grange who will make the ferry bookings.

Buses: Local Bus Traveline: 0870 608 2608

Frequent services operated by Southern Vectis and local community FYT (Freshwater-Yarmouth-Totland) minibus

By car:

From Yarmouth Ferry Terminal: Leaving Yarmouth harbour, turn right at the roundabout and follow the road across Yarmouth Bridge (A3054). After approximately 1/2 mile, Norton Grange Coastal Village is on the right hand side after sharp left hand bend.

From Fishbourne Ferry Terminal Follow the A3054 to Newport. At Newport follow the signs for Cowes onto the short dual carriageway. At the end of the dual carriageway there is a roundabout, take the first exit signposted Yarmouth (A3054). Stay on this road all the way into Yarmouth. Turn left at the roundabout and follow the road across Yarmouth Bridge (A3054). After approximately 1/2 mile, Norton Grange Coastal Resort is on the right hand side.

Local Taxi Services: Norton Taxis: 01983 759 955.

Provisional Programme

The meeting will run from the evening of Friday 15th when we will gather at 20.30 after dinner for an introductory meeting. We vacate the accommodation first thing on Friday 22nd April.

Check in is from 12 noon on Friday 15th.

Dinner on Fri–Sun is at 18.30 to 20.00 and on Mon-Thur at 18.00 to 19.30.

Friday 15th April
After dinner a short presentation by former Isle of Wight County Ecologist **Dr Colin Pope**: `History of recording lichens on the Isle of Wight'

Site visits:

Saturday 16th April
Tennyson Down NT SSSI (morning) SZ330855
Directions & parking: Drive south uphill from Norton grange on the A3054 & after three-quarters of-a-mile turn left at the right-hand bend at top of hill following this into the outskirts of Freshwater then take the A3055 left at a mini-roundabout & head south to Freshwater Bay.
Please park at the large public car park opposite the lifeboat station in Freshwater Bay (grid ref SZ346857). *n.b. this is the only place all week where we will need to pay for car parking*
Our walk follows the coastal footpath uphill to the `wheel-cross shaped' Tennyson monument via UK's most extensive *Fulgensia/Squamarina* clifftop chalk grassland lichen community. West from the monument a mix of chalk & acid grassland with gorse/thorn scrub includes some thalli of *Teloschistes chrysopthalmus.* We can return to the car park either choosing the deciduous woodland edge on the downland crest or the parallel footpath below it to Freshwater Bay.
Headon Warren NT SSSI (afternoon) SZ313862
Directions & Parking: Turn left and follow A3055 road from Freshwater Bay car park and drive north through Freshwater village taking the left turn marked Totland at the crossroads end of the one-way road section. Follow the B3322 through Totland until you exit the village and take a sharp right-hand turn at Headon Rise. Parking is available on the verge on the right-hand side of the road for about 8 cars. On foot, take the path westwards at SZ319863 (by the small sewage treatment plant) and carry on uphill to Headon Warren. Dry *Calluna/Erica* heathland dominates the plateau gravel area where recent Wessex Lichen group meeting recorded twenty *Cladonia* species.

Sunday 17th April
Newtown NNR NT woodlands & meadows. Grid ref (approx centre): SZ435895
Directions & Parking: Drive east from Norton grange & follow A3054 for approx 5 miles. Turn left after passing through the one-way lights at Shalfleet village & follow brown tourist signs signposted Newtown, turning left again, until your reach Newtown NNR National Trust car park opposite the small old town hall.

We can explore the herb-rich meadows which contain several old oaks & belts of trees, then head north, crossing the lane, into Town copse & Walters copse ancient woodlands. Options later in the day are to explore the harbour area (northwest from the NT car park) or drive eastwards to Jersey Camp; an SSSI MoD firing range which contains some old trees, ancient woodland, tidal creeks and a lichen-species rich wooden bridge.

Monday 18th April

Carisbrooke Castle. Grid ref: SZ486876

Toby & Brett at English Heritage have kindly allowed free entry for the BLS party in return for a species list and a lichen management plan following our visit.

Duration – 4-5 hours but optionally longer

We will be able to access all areas of the site normally open to the public. The upper castle wall walks are very popular and single file width, so it would be useful to bear in mind other visitors' access when members study lichens there. There are trees outside of the castle, especially the north east area of the site, so if we wish to come and go from inside the castle walls to the outside and perimeter lower ancient outer walls, we will have to do so through visitor reception and let the staff know we are part of the lichen group.

Directions: From Norton Grange, turn left then take the right-turn onto the B3401 before leaving Yarmouth then take a left at T-junction after nearly three miles onto the B3399/3401 & drive to Carisbrooke. Look out for the Eight-Bells pub on your right in Carisbrooke then turn right at the next mini roundabout, then a sharp 3rd exit right again at the next mini-roundabout in Cedars road uphill to the Castle.

Parking: Plenty of space available at main English Heritage car park, but, as always, we would hope to double up in cars.

BLS last visited the site in 1982 and just over 100 lichen species were recorded.

Additionally, we hope to pay a visit in the afternoon to

Carisbrooke St Mary church Medieval church. SZ485882

Direction & parking: Backtrack to Carisbrooke village. Public car cark is located nearby on opposite side of road to church.

Surveyed by BLS in 1982, only 34 lichen species observed and there are undoubtedly many more to discover.

After dinner: a short presentation by **Dr Jonathan Cox**, Ecologist Advisor to Peoples' Trust for Endangered Species (PTES) Briddlesford Nature Reserve & SSSI in preparation for following day's visit.

Tuesday 19th April

Briddlesford woods PTES reserve & SSSI. Grid ref (for parking): SZ541902

Directions & parking: Follow main West-East IW A3054 road from Yarmouth. Take dual carriageway onto A3020, then turn left on A3054 exiting Newport. After approximately three miles turn right onto minor road approx 300 metres after crossing the roundabout intersection with the A3021. Follow this road southwards for a mile-and-a-half and turn left onto a track at Knights Farm. *n.b. look for the BLS Briddlesford sign* we will post at this tight junction on this fast straight. Follow gravel road westwards past Doreshill farm and take a left turn after passing woodland on right hand side. Parking for a maximum of a dozen cars is located at the PTES workbase building a short way along on your left.

This very large, species-rich woodland overlying neutral to acid heavy clay is bisected by the IW steam railway. Surveys in 1995 & 2007 have recorded several ancient woodland lichens including *Lobaria pulmonaria*.

Wednesday 20th April

St Catharine's Point. Grid ref SZ493759 `Windy gap' NT car park

Directions: Make your way southwards onto the main A3055 southern coastal road `Military Road' and drive eastwards until it runs inland past Niton church. Turn right at junction shortly afterwards and follow southwards being sure to take the right-hand turn onto the one-way minor road leading to St Catherine's Point, but keep on this circular one-way road and look out for the small minor left turn leading west to Windy Gap cap park. Probably best to follow one of the local leaders for this complex access. The NT car park is situated at the end of this tiny road.

The huge vertical sandstone Gore cliff lies to your right, but is virtually inaccessible. Similar laminar rock strata lie jumbled in the NT SSSI south of the car park and include thalli of *Teloschistes chrysopthalmus* plus an exciting range of saxicolous outcrop communities amid flower-rich downland & dense scrub leading steeply down to St Catharine's Point lighthouse. There are also grassland and coastal maritime lichen communities near the shore. This appears to be the most easterly location for western maritime lichen *Anaptychia runcinata.*

Godshill Church of the Holy Cross. Grid ref SZ527818

Directions: Please use free public car park at northern end of village and walk back to church

A fine mediaeval church with unique wall paintings and the most vigorous & extensive *Roccella phycopsis* community along England's central southern coast.

After dinner: a short presentation by **Paul Davies** National Trust West Wight Warden

Thursday 21st April

Ventnor/Bonchurch Downs. Grid ref: SZ573787

Directions: Drive east from Yarmouth, via Newport, taking A3056 then A30020 past Godshill, then the right hand at the junction with B3327 to Wroxhall. At Lowtherville village look for a small left turning called Down Lane and follow the steep tarmac road then park at end of the gravel track beyond the radar station.

A plateau gravel heathland area with exposed pebble & gravel lichen communities holding several corticolous lichens in saxicolous habitats. Key species seen so far include *Usnea flammea.*

Additional sites that afternoon could include maritime-influenced escarpment ancient broadleaved woodland nearby at Wroxhall Manor or The Landslip at Dunnose.

Directions: **Wroxall manor woodland** SZ562786 is easily accessed by driving back to radar station then walking north a short distance on public footpath then entering wood below downland.

Directions: **Landslip at Dunnose** SZ582802 Return to Lowtherville, turn left, then join the A3055 for a mile. The Landslip car park is located on the right-hand side of the road.

Friday 22nd April – a morning outing for attendees who are able to stay on the island for Friday morning.

Shalfleet church St Michael the Archangel. Grid ref: SZ405892

Part early-Norman church and square bastion tower with interesting north-facing lichen communities including *Opegrapha areniceda.*

Useful Maps

OS Landranger 1:50,000 - OS Landranger - 196 The Solent & Isle of Wight, Southampton & Portsmouth

OS Explorer Leisure 1: 25,000 - OS Explorer Leisure - OL29 - Isle of Wight

BGS 1:50,000 – Special Sheet – Isle of Wight – bedrock and superficial deposits

BLS SUMMER MEETING 2016 – Sleat, Isle of Skye

Saturday 11th to Saturday 18th June 2016

Local sites organisers – John Douglass & Andy Acton

This peninsula at the southern end of Skye has many unrecorded coastal areas and is within easy reach of the complex geology of central Skye.

Meeting Base

The meeting will be residential in the Sabhal Mòr Ostaig UHI, Sleat, Isle of Skye, Scotland IV44 8RQ (Slèite,
An t-Eilean Sgitheanach, Alba IV44 8RQ) tel.+44 (0) 1471 888000

See *www.smo.uhi.ac.uk* to have a look at the accommodation and facilities.

Accommodation and costs

Accommodation for 27 people in mostly single rooms has been reserved. Twin rooms are also available. These bed spaces are being held for us until the **beginning of February 2016** after which they will become available for public booking. Subject to availability rooms may be able to be booked after this date.

The prices for 2016 are: single room £42.00 per night b&b; twin room £75.00 per night b&b;.a 2 course dinner £12.95.

The accommodation is spread over two adjacent campus's and as such for most people about a two minute walk will be required between bedrooms, restaurant and microscope room.

The check-in time for rooms is after 15.00.

Microscope work
A meeting room in the college has been reserved for the duration of the meeting for microscope work and presentations.

Booking
Attendees should book rooms directly with the college referencing '*The British Lichen Society Meeting*'. Contact Annette Kerr email: *ak.smo@uhi.ac.uk* or by post to the above college address. You will be able to pay the college by credit / debit card.
Please advise Annette if you need dinner on the evening of arrival and of any dietary needs. Dinner is between 17.30 and 18.30.
Having made a booking with the college please advise the Field Meetings Secretary, Steve Price, email: *fieldmeetings@britishlichensociety.org.uk* or by post to Woodlands, Combs Road, Combs, High Peak SK23 9UP.

Timetable
The meeting will run from the evening of Saturday 11th when we will gather after dinner for an introductory meeting. We vacate the accommodation first thing on the Saturday 18th.

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

Transport
The Skye: Mallaig to Armadale car ferry arrives on Skye 3.5 km south of the college. See *https://www.calmac.co.uk/* for ferry details. Mallaig can be reached by rail from Glasgow and Fort William.

Relevant Maps
OS Explorer Leisure 1: 25,000 - OS Explorer - 412 - Skye - Sleat
OS Explorer Leisure 1: 25,000 - OS Explorer - 411 - Skye - Cuillin Hills
OS Landranger - 32 - South Skye & Cuillin Hills
BGS 1:50,000 – Scotland 071E – Kyle of Lochalsh – bedrock and superficial deposits
BGS 1:50,000 – Scotland 071W - Broadford – bedrock and superficial deposits
BGS 1:50,000 – Scotland 061 - Arisaig – bedrock and superficial deposits
BGS 1:25000 – Classic Area 48 – Skye Central Complex

BLS AUTUMN MEETING 2016 – North York Moors

Monday 26th – Friday 30th September 2016
Organisers – Steve Price and Peter O'Neill

The North York Moors offers a range of wooded valleys, moorland and coast. Churchyards aside the area is in general lichenologically under-recorded. This meeting gives us an opportunity to improve this situation.

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-March 2016** (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 four nights is £256 per person (inc. VAT at 20%). The group package is for the 4 nights and there is no reduction for a shorter stay.

The earliest check-in time for rooms is 14.30. 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 £60 deposit, cheques payable to 'The British Lichen Society' (not 'BLS' please).

Bookings need to be made and the deposit of £60 paid before 21st March 2016. 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 (£196) needs to be paid by the end of May.

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

Microscope work
A 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 Monday 26th at 19.00. We vacate the accommodation first thing on the Friday 30th.

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

Steve Price, BLS Field Meetings Secretary

Notice of Annual General Meeting 2016

Venue
The AGM and Winter Meeting for 2016 will be held at Newcastle University, Newcastle upon Tyne NE1 7RU, on Saturday 16 January 2016.

The university campus is in the centre of Newcastle upon Tyne, close to the main shopping area and easily accessible by car, bus, rail and air. Parking on campus is very limited but there is street parking nearby and Claremont car park (£1.30 an hour until 6 pm) is only a short walk from the venues. Rail travellers should come in to Newcastle Central Station and then walk (20 mins) or take the metro to Haymarket. Air passengers can travel in from Newcastle Airport on the metro to Haymarket (30 mins). Maps and further details are available on the BLS website, or contact the local organiser for further information.

Accommodation
There is a wide range of accommodation available within walking distance of the university, including hotels, B&B and a youth hostel. There is a pedestrian route from Jesmond to the university that avoids the central motorway.

Exhibition
Exhibits can be put up in the Clore Suite from 17.00 on Friday, or in the Agriculture Building from 9.30 on Saturday. Please advise Janet Simkin by e-mail (*janetsimkin@btinternet.com*) of your requirements for tables or display stands before **Monday 4 January** as these have to be ordered in advance, and arrange with her if you need access by car when bringing any bulky or heavy items.

Timetable

Friday 15th January:

18.00 – Reception (wine and soft drinks) and Exhibition of specimens, books and exsiccatae from the collection of the Natural History Society of Northumbria, in the Clore Suite of the Great North Museum: Hancock (formerly known as the Hancock Museum). Enter through the side doors, and you will be directed to the Clore Suite. The museum itself will be open until 5pm.

19.00 – Talk on **Lichens and Lichenology in North-east England**, in the Clore Suite. This will be a joint meeting with the Natural History Society of Northumbria.

20.15 – Northumberland Buffet meal at Northern Stage, cost £20. Booking is essential, please see the form posted to you with this *Bulletin*.

The usual sale of books will take place either at the reception or after the meal.

Saturday 16 January:

9.45 – Coffee and tea, poster and other exhibits in the Agriculture Building
10.30 – Annual General Meeting, Clement Stephenson Lecture Theatre, Agriculture Building
13.00 – Lunch (at own expense). There are several coffee and sandwich shops within a few minutes walking distance of the venue, and Leazes Park and Exhibition Park are also close by.
14.00 Winter Meeting
Talks and shorter snippets to include:

Going, going, gone? – Preventing lichen losses in England. *Tim Wilkins (Natural England)*
From Contamination to Conservation: the aftermath of lead mining in the North Pennines and mid-Wales. *Janet Simkin*
Lichens in God's Acre: a Lincolnshire idyll? *Mark Seaward*
Overlooked Churchyard Lichens. *Mark Powell*
River Jelly Lichen and hydro schemes. *John Douglass and Brian Coppins*
Lucid Cladonia key. *Les Knight*

17.15 Arrangements for field meeting to Wallington Hall. *Janet Simkin*
17.30 Close

Post-AGM meal
For those who would like to eat together after the AGM, a booking can 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 2016 and for three members of Council for the period 2016–2019 (retiring at the AGM held in early 2019). Proposals should be sent by e-mail or in writing to the Secretary (Dr. Chris Ellis, Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh, EH3 5LR, Scotland *C.Ellis@rbge.ac.uk*) at least two weeks before the AGM. No person may be nominated without their consent.

Juliet Bailey, Sheila Quin and Pat Wolseley are due to retire from Council and are not eligible for re-election. Chris Ellis is standing down as Secretary, David Hill as Chair of Management Services Committee and Sally Eaton as Chair of the Education and Promotions Committee. We thank them all for their service.

AGM Agenda

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

1. Apologies for absence
2. Minutes of the Annual General Meeting held at Kew in January 2015
3. Matters arising
4. Reports of Officers and Committee Chairs:

4.1	President	(Janet Simkin)
4.2	Secretary	(Christopher Ellis)
4.3	Treasurer	(John Skinner)
4.4	Membership Secretary	(Heidi Döring)
4.5	Conservation	(Bryan Edwards)
4.6	Data	(Les Knight)
4.7	Education and Promotions	(Sally Eaton)
4.8	Members' Services	(David Hill)
4.9	*Bulletin* Editor	(Paul Cannon)
4.10	Senior Editor *Lichenologist*	(Peter Crittenden)
4.11	Website Editor	(Janet Simkin)
4.12	Field Meetings Secretary	(Steve Price)
4.13	Librarian	(Ray Woods)
4.14	Archivist	(Mark Seaward)
4.15	Herbarium Curator	(Richard Brinklow)

5. Election of Officers, including three members of Council
6. Subscription Fees 2017
7. Any other business
8. Date and place of AGM 2017

Subscription Fees 2017

No changes to annual membership fees are suggested (so these remain the same in 2017 as agreed for 2016). However, an adjustment of Life membership fees from 2017 onwards is proposed.

The Life membership fees for 2016 were calculated as 10x annual Regular membership fee, plus 10x *The Lichenologist* subscription. The 10x ratio was based on the single Life membership category we used to have, and how it related to our previous annual Ordinary membership fees (both included subscription to *The Lichenologist*). Senior members not taking *The Lichenologist* had previously no option to take out Life membership. Now we have the Life membership option for all categories, and members aged 65 or above have the choice to take up Life membership or to continue annual fees with Senior discount. Hence, the comparison

for the actual costs of Life membership is better made with the discounted fee (without *The Lichenologist* subscription). On this basis Life membership in 2016 will equal a different number of membership years with Senior discount depending on whether you subscribe to *The Lichenologist* or not (20x without, 16x with online only access, 15x with online plus print version; see table for figures). This effect was not fully appreciated when the fees were suggested last year, and we suggest that for 2017 all Life memberships should equal 20x the annual Senior membership fee. As a result, the fee for Life membership including a subscription to *The Lichenologist* will increase to £500 and £600, respectively (highlighted in red in the table).

		2016 *10x Regular*	**2017** **20x Senior**
Annual fee	Regular without *Lichenologist*	£30	£30
Annual fee + subscription	Regular with e-*Lichenologist*	£40	£40
Annual fee + subscription	Regular with print *Lichenologist*	£45	£45
Annual fee	Senior Discounted without *Lichenologist*	£15	£15
Annual fee + subscription	Senior Discounted with e-*Lichenologist*	£25	£25
Annual fee + subscription	Senior Discounted with print *Lichenologist*	£30	£30
Life fee	without *Lichenologist*	£300	£300
Life fee + subscription	with e-*Lichenologist*	£400	£500
Life fee + subscription	with print *Lichenologist*	£450	£600

Post-AGM excursion

On Sunday 17th January we will visit Wallington Hall, near Cambo in Northumberland (grid reference NZ027843, postcode NE61 4AR).

Wallington is 20 miles north-west of Newcastle, just off the A696 and about a 35 minute drive from the university. On departure it is easy to get to the A1 south, the A69 west, the A696 to Scotland, or to return to Newcastle for trains or coaches. There is no public transport to Wallington on a Sunday so we will arrange car shares the day before, and we may also have the use of a minibus. It would be helpful if you could let the organiser know whether you will be bringing your own car, and whether you can offer seats to other people.

We will plan to depart Newcastle at 09.30 am and to meet at Wallington Hall in the car park at 10.30 am. The NT Countryside Manager will then give us a brief introduction to the site and take us through to the gardens. National Trust members should show their cards on entry and for non-members free access is being arranged, more details of this arrangement will be given at the AGM.

Local Organiser

Dr Janet Simkin, 41 North Road, Ponteland, Newcastle upon Tyne NE20 9UN, email *janetsimkin@btinternet.com*.

Insurance cover for BLS local groups

Last year I was asked by Council to look at the possibility of arranging public liability insurance for the activities of local groups of the Society. There are a number of groups of lichen enthusiasts that meet and record in various parts of the country and they vary in how formally they are set up. Several groups are covered by insurance of natural history societies in their areas but others are not and this has been a source of concern to those people organising the activities of local groups.

I was not able to arrange insurance without some conditions and if you are a local group organiser, you will need to meet these conditions for insurance cover to apply. Please don't be alarmed – what you should do is not very onerous:

Firstly, give the group a name, designate a leader/organiser and let me know. The organiser should be a member of the Society but the group can include anyone.

Secondly, make a list of people attending any field meetings you organise.

Thirdly, you need to undertake a risk assessment of the areas you visit. This need not be a huge exercise but there should be some evidence that you have considered safety before the meeting. For example, if someone from the group knows the site, they could be contacted to ask about potential hazards. At the time of arranging a meeting, participants can be advised about say, parking on a main road, very slippery conditions, tides, etc. It is possible that a reconnaissance visit is considered necessary and as long as the visit is within the area covered by the group, the Society will assist with reasonable travelling expenses.

It would be helpful to me if anyone organising local group activities could let me know about meetings they organise to help me obtain a better deal for the Society from insurance companies. Council is very keen to encourage and facilitate the formation of local groups and insurance cover is one of the supports it is giving.

John Skinner, BLS Treasurer
treasurer@britishlichensociety.org.uk

NEW MEMBERS
since publication of the 2014 Winter Bulletin

Welcome to the following new members of the British Lichen Society …

Mr Jonathan Agnew, Alyth, Perthshire, UK
Mr David Anderson, Loughborough, Nottinghamshire, UK
Mr Calum Beck, Livingston, West Lothian, UK
Mr Alexander Bell, Sandbach, Cheshire, UK
Mrs Tracey Bell, Dunkeswell, Devon, UK
Miss Kristine Bogomazova, Aberdeen, UK
Dr Lars Borg, Bergkvara, SWEDEN
Mr R Borthwick, Chichester, West Sussex, UK
Mr Paul Bowyer, Weston-Super-Mare, Somerset, UK
Dr David Brabban, Tiverton, Devon, UK
Mr Julian Branscombe, Papa Westray, Orkney, UK
Ms Elizabeth Brooke Ward, Stroud, Gloucestershire, UK
Ms Barbara Brown, Cardiff, UK
Ms Theresa Bukovics, St. Catharines, Ontario, CANADA
Mrs Anne Bull, Welshpool, Powys, UK
Dr David Cummins, Rickmansworth, Hertfordshire, UK
Dr Chantel Davies, Selby, North Yorkshire, UK
Mr Richard Dorman, Bangor, Co Down, UK
Miss Katarina Dziubinska, Blackpool, Lancashire, UK
Miss Lorraine Ezra, Guildford, Surrey, UK
Ms Ann A Fosaa, Torshavn, FAROE ISLANDS
Mr Justin Gant, Manningtree, Essex, UK
Ms Elisabeth Gash, Beaumaris, Gwynedd, UK
Mr Roger Green, Shrewsbury, Shropshire, UK
Mr John Hannah, Glasgow, UK
Mr Kerry Harrison, Bourne, Lincolnshire, UK
Mr Joe Higman, Plymouth, UK
Mr David Hill, Rhyl, Denbighshire, UK
Miss Rowena Hill, Leatherhead, Surrey, UK
Mrs Karen Johnson, Folkstone, Kent, UK
Mr Ryan Knight-Fox, Llanarth, Ceredigion, UK
Mr Philip Lusby, Galashiels, Selkirkshire, UK
Mr Peter Martin, Bangor, Gwynedd, UK
Mr Marcus Militello, Durham, County Durham, UK
Mr Alex Newnes, Conwy, Clwyd, UK
Ms Dongling Niu, Ningxia, P.R. CHINA
Dr Martin Page, Carnforth, Cheshire, UK
Miss M Rae, Dunfermline, Fife, UK

Dr Tristan ap Rheinalllt, Stornoway, Isle of Lewis, UK
Mr Roy Rhodes, Bolton, Lancashire, UK
Mr Michael Robinson, Bexleyheath, Kent, UK
Mr Frederick Seavey, Homestead, Florida, U.S.A.
Mr Stephen Shepherd, Bristol, UK
Mr Adam Smith, Shapwick, Somerset, UK
Mr Frank Smith, Folkstone, Kent, UK
Ms Susie Smith, Cirencester, Gloucestershire, UK
Mr Carl Sprake, Oxford, UK
Miss Frances Stoakley, Edinburgh, UK
Dr Hazel Trenbirth, Swansea, UK
Mrs Pat Tulley, Coupar Angus, Perthshire, UK
Mr David Vaudoré, Giel-Courteilles, FRANCE
Ms Carrie Wallace, Penrith, Cumbria, UK
Mr Alexander Watmore, Sheffield, South Yorkshire, UK
Miss Karen West, Cheltenham, Gloucestershire, UK
Mr Robert Willis, Birmingham, UK
Dr Sue Wolfe, Tywyn, Gwynedd, UK
Ms Sue Yates, Barnsley, South Yorkshire, UK

OBITUARY

Sadly we have to inform you that the following members of our society have passed away:

Dr Vagn Alstrup, Brondby, Denmark
Mr Uwe de Bruyn, Oldenburg, Germany
Dr David Galloway, Dunedin, New Zealand
Prof Hildur Krog, Oslo
Mr L-E Muhr, Karlskoga, Sweden
Dr Oliver Rackham, Cambridge, UK

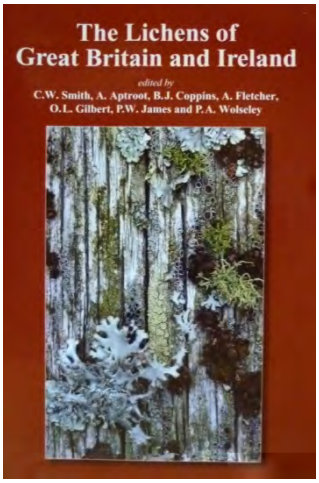
THANK YOU

for kindly supporting the British Lichen Society with a donation:

Mr S Allmand, Dr CAJ Brightman, Mr JA Butt, Dr P Crittenden, Mrs BD Haynes, Mr D Jordaens, Ms T Kyriakópoulos, Ms EJ Mackintosh, Dr H Oakley, Mr H Oberhollenzer, Ms H Paxman, Dr H Sipman and Dr I Wall.

Publications and other items for sale

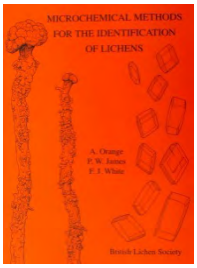
Please contact The Richmond Publishing Co. Ltd, P.O. Box 963, Slough SL2 3RS, tel. (+44) (0)1753 643104, email rpc@richmond.co.uk to purchase these items.



Cat.1. The Lichens of Great Britain & Ireland. Ed. Smith et al. (2009). Hardback, 700pp.
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 indispensible 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 £7.50 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 at a special price of £4.00 each , (approximately half price). Price to non-members is £6.00 per fascicle. Postage & Packing £3.50 UK, 10.00 overseas, per fascicle.
Cat.7. Fascicles 3 to 6 for £12.00 (Buy 3, get one free!). Price to non-members is £6.00 per fascicle. Postage and packing £8.50 UK, £25.00 overseas.

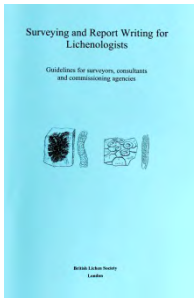


Cat.8. Microchemical Methods for the Identification of Lichens by A. Orange (2010)

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.

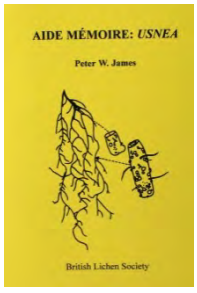
Cat.9. Conservation Evaluation of British Lichens and Lichenicolous Fungi by B.J.Coppins and R.G. Woods (2012)

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 now no. 13 of the JNCC's Species Status volume series. A4 paperback 155pgs. £7. Postage and Packing £5.00, £12.50 overseas.



Cat.10. Surveying and Report Writing for Lichenologists Ed. D.J. Hill (2006)

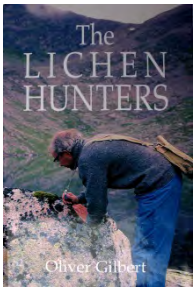
Guidelines on commissioning surveys, fieldwork, identification and report writing, aimed principally at those people and organisations commissioning surveys and at those undertaking them. However, much of the information is of value to any lichenologist engaged in field recording.
BLS members £7.00; non-members £10.00. Postage & Packing £2.50 UK, £6.50 overseas.



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

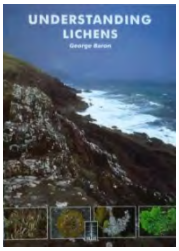
A5 booklet with drawings and many useful tips for identifying the British species of this difficult genus.

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, 208pp.

If 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.

Cat. 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 overseas.

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) £3.00 UK, £6.50 overseas.

Cat.23. Parmelia identification CD-Rom
Although the nomenclature has been superceded, this CD provides a useful range of photographs and other information for identification.
BLS members: £5.00; non-members £7.00. Postage & Packing £2.00 UK, £5.00 overseas.

Cat.24. Lichen Identifier CD-Rom
This is a simple to use multi-access computer key that enables the user to find the species name and characteristics of most British and Irish lichens. It is divided into field and microscopical characters and any information available may be entered in any order to obtain a solution. With the majority of species, a few characters, noted in the field, are sufficient to identify the species. A brief note on each species further assists separation of similar species. It was originally based on *The Lichen Flora of Great Britain and Ireland* by O.W. Purvis et al (1992). It includes every species mentioned in that book plus many that have been more recently described or added to the British list. The nomenclature agrees with the most recent version of the BLS checklist. It can therefore be used to identify any of the lichens contained in the above *Flora*. In addition, it includes many species that have been added to the British and Irish lists since that time.

Lichen-Identifier will run on a PC with a 486 DX or later processor running Windows NT, 95, 98, 2000, XP, Vista and Windows 7. We regret that it is not available for Apple Mac except under PC emulation or 'Boot Camp'.

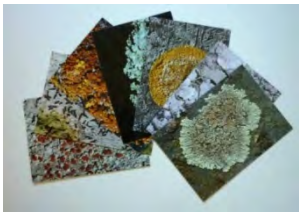
Improvements in Version 3 of *Lichen-Identifier* include: Completely revised data, where possible, using the completed sections of the new Flora, plus many recently described species. The conservation evaluation from *A Conservation Evaluation of British Lichens* is given for each species. Over 750 colour photographs of improved quality with a scale added to each. Every map has been updated and maps of lichenicolous fungi are included, although these are not part of the actual key.

Please note that this program includes a DataPower 2 reader which will run on an individual computer. It will not run on a multiple system in client/server mode. If you are using a server system, a site licence for DataPower 2 is required.

BLS members £26.00 for version 3, (£15.00 for upgrade from version 2).
Non-members £28.00 for version 3, (£15.00 for upgrade from version 2).
Postage & Packing £2.50 UK, £6.50 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

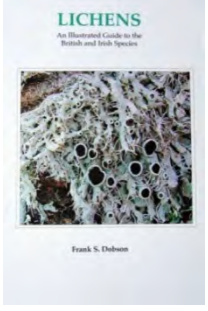
A set of 16 beautiful photographic postcards of British lichens.
£2.00 per set. Postage & Packing £1.50 UK, £3.00 overseas.

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, diam. 12cm. peels off easily. Recognise fellow members in the car park!
£1.00. Postage & Packing £1.00 UK, £2.50 Europe, £3.00 rest of world.

Cat. 29. Enamel badge, diam. 2.5cm, pin fixing, matt finish. A well -made attractive badge.
£1.50. Postage & Packing £1.50 UK, £2.50 Europe, £3.00 rest of world.

Cat. 30. Fabric badge, diam. 6cm. Ideal for sewing onto a cap or rucksack.
£1.00. Postage & Packing £1.00 UK, £2.50 Europe, £3.00 rest of world.



Cat. 31. Lichens – An Illustrated Guide to the British and Irish Species 6th Edition (2011)

This latest enlarged edition (496pp) of 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. The 6th edition has been revised to conform with the nomenclature of 'The Lichens of Great Britain and Ireland' ed. Smith, C.W. et al. (2009) and more recent changes. Over 160 additional species to the previous edition have been added so over 1,000 species are now treated.

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.
Paperback £35.00, hardback £50.00. Postage & packing £7.00 UK, overseas £10.00.

Membership Matters – from the Membership Secretary

Membership categories and subscription to *The Lichenologist* – new options for next year: The last AGM agreed changes to our membership categories. We have now Regular members (who may be entitled to a Student or Senior discount) and Family members. All Regular members receive the *Bulletin* and have the option to subscribe to *The Lichenologist* at a members' rate. The subscription to *The Lichenologist* is no longer part of a particular membership category, but an option for all Regular members. As an existing member you have been transferred to the category & subscription that corresponds exactly to your status as at the beginning of 2015.
The new system, however, offers options that have not been available before, and you are welcome to take these up when renewing for 2016:

- Student members can take up a subscription for *The Lichenologist.*
- all Senior members (age 65 and above) renewing annually are now entitled to a discounted membership fee [including those who subscribe to *The Lichenologist*, however, the journal subscription is without discount].
- all Senior members have now the option to take out a Life membership [irrespective whether or not you subscribe to *The Lichenologist*].

Fees 2016: Due on or before 1st January 2016. The AGM 2015 agreed to raise rates for next year for all Regular members and *Lichenologist* subscriptions (Family membership remains the same as before). Our US dollar rates have been adjusted taking developments of exchange rates into account.

Details of the new categories and fees are given on the inside back cover of this *Bulletin*.

New membership administration and renewal procedure for 2016: We are currently, while this volume of the *Bulletin* goes to print, in the process of finalizing a new system for managing our membership administration. We hope to improve membership services in several ways. Among others, we will have an online portal on our web site, which will allow you to manage their membership record yourself, you will be able to call us on a dedicated phone line, and there will be further payment options such as direct debit payments or making credit card payments over the phone.

New arrangements are scheduled to be in place at the beginning of November for handling the renewal for next year. We anticipate that we will have contacted you with details of the new arrangements and renewal procedure by the time you will read this. If we have your e-mail address on record we will get in touch by e-mail, if not you will receive a postal letter. You should have been contacted by us by mid of November, although letters to destinations outside of the UK may take longer to arrive. **Please, keep us up to date when your contact details change, postal and/or e-mail address.** In case you find that you have not received any information from us by the end of November, please, get in touch with the Membership Secretary (contact details on the inside covers). Information will also be posted on the web site.

Publication of the Summer 2016 Bulletin

Copy for the Summer 2016 Bulletin should reach the editor (contact details on the inside front cover) by 1 May 2016

British Lichen Society Bulletin no. 117
Winter 2015

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