LICHEN TRAINING DAY AT GREGYNOG GREAT WOOD, POWYS

1.0 INTRODUCTION

1.1 Brief

Neil A Sanderson was contracted by Plantlife International to lead a training day on parkland lichens for the Lichen Apprenticeship Scheme, the Countryside Council for Wales and Plantlife. The aim of the day was to give participants an understanding of the needs of parkland lichens regarding management, to highlight key species and help with their identification. A record of species found was to be made.

2.0 METHODS

2.1 Data

2.1.1 Nomenclature

The nomenclature in the text follows Smith et al (2009) for lichens, and for lichenicolous fungi (fungi parasitic on lichens) Hawksworth (2003) (The BLS Recorder import spreadsheet nomenclature is not up to date).

2.1.2 Ancient Woodland Indicators

Dr Francis Rose (Rose, 1992 & Coppins & Coppins, 2002a) devised several indicator lists that can be used to assess the diversity and conservation value of woodland epiphytic lichen assemblages in different climatic areas. These replace an earlier more general indicator list the 'Relative Index of Ecological Continuity' (RIEC) Rose (1976). The indexes are ideally applied to about 100ha of woodland.

These lists indicate habitat quality; the total number of species found is the important parameter. The indicator species are associated with late succession stands with veteran trees (old growth stands i.e. stands more than 200 years old), especially those stands with a past continuity of old trees (Alexander et al, 2002). Woods that have been clear felled, but regenerated, within the last 200 years (young growth stands) are therefore likely to be poorer in lichen indicator species than less disturbed stands. The lichen ancient woodland indicator lists are different from similar ancient woodland indicator lists composed of vascular plants or bryophytes. The latter reflect ancient sites rather than stands and are much less affected by the management of the trees.

The appropriate list for most of Wales and England is the New Index of Ecological Continuity (NIEC) (Ancient Woodland Indicators). This is designed for oceanic temperate woodland south of the Scottish Highlands.

The NIEC ancient woodland indicator list consists of more than 70 species with the index giving a maximum score of 70. Hodgetts (1992) regarded sites with an index score of 20 or more as being of SSSI quality for their lichen assemblages. Sites with a score of more than 30 are likely to be of international significance. Such woods are usually old growth stands with a strong continuity of veteran trees. Below this, as a rough guide, woods with a score of 10 to 19 could be regarded as of county importance and those with a score of 5 to 9 are of high local significance for their woodland lichen assemblage.

The East Scotland Index of Ecological (ESIEC) can be applied in the rain shadow areas of eastern Wales, but in this case give a lower relative score than the NIEC,

so is not considered further.

2.2.3 Rarity & Threat

The above indicator lists assess the quality of whole woodland assemblages but the rarity of individual species is also important. The British Lichen Society reassessed the rarity and level of threat to lichen species (Woods & Coppins, 2003) and this replaces previous Red Data Books and lists of Nationally Rare and Scarce species. A second review is in its last stages and will be published latter in 2011 (Woods & Coppins, 2011). Woods (2010) gives the Red Data Book status for Welsh lichens. The conservation status given in the text follows Woods (2010) and Woods & Coppins (2011).

Methods of assessing lichen assemblages using these sources including the National Rare/Scarce scoring method (Hodgetts, 1992) and a proposed alternative, the Red Data Book/Notable method, are discussed in Sanderson (2011)

Abbreviations used in the text are listed below:

RDB = Red Data Book Species, (CR, EN, VU & NT Species)
CR = Critically Endangered Red Data Book species
EN = Endangered Red Data Book species
VU = Vulnerable Red Data Book species
NT = Near Threatened Red Data Book species
DD = Species listed as Data Deficient in the Red Data Book
Nb = Notable species (NR, NS, IR or BAP species not RDB NT or higher)
NR = Nationally Rare
NS = Nationally Scarce
IR = International Responsibility species
BAP = Priority Biodiversity Action Plan species (in Wales listed under Section 42 of the NERC Act 2006)

Species of conservation interest are all RDB, Nb and woodland indicator species, including species on other regional indicator lists which may or not be of interest in this area (*Buellia griseovirens* & *Sphaerophorus globosus* (the oceanic pluvial EUOIEC) & *Calicium glaucellum*, *Calicium salicinum*, *Calicium viride*, *Chaenotheca ferruginea*, *Lopadium disciforme* & *Pertusaria hemisphaerica* (Eastern Scotland ESIEC). *Parmeliopsis hyperopta*, which seems to be closely associated with ancient woodland and is rare in the south, is also included.

2.2.4 Communities

Most lichens species have limited tolerances of bark and habitat conditions. This allows the formation of distinctive communities (James et al, 1977). Simple English names have been invented below with the technical names given in brackets.

3.0 DESCRIPTION OF SURVEY

3.1 Visit

3.1.1 Timing and Conditions

The wood was visited on the 28th October 2011. Neil Sanderson, Botanical Survey & Assessment, lead the lichen side, with Alastair Hotchkiss of CCW guiding us around the site. The day was organised by Alan Hale of CCW, Alastair Hotchkiss of CCW and Tim Wilkins of Plantlife. Steve Chambers provided further lichen expertise and taught the leader at least one species. Attending were:

Steve Chambers, Frances Gillett, Alan Hale, Alastair Hotchkiss, Tracey Lovering, Graham Motley, Heather Scott, Tim Wilkins

We had remarkable weather, after a week of rain, we had a bright sunny day with the tree bark dried out in all but the wettest situations.

3.1.2 Route

Map 1 shows the context of the visit. We circled around the eastern half of Great Wood, but as can be seen there were extensive areas of pasture woodland both to the west in the rest of Gregynog Great Wood and the parkland beyond and in the Warren to the south. A closer view of our route after the GPS was turned on at about lunchtime is given in **Map 2**.

3.2 Parkland and Pasture Woodland

3.2.1 What is Parkland?

The purpose of parkland has changed greatly in the last millennium (Rackham 1986 & 2003). They have always been symbol of conspicuous consumption indulged in by rich landowners. In medieval period (i.e pre Tudor) they were deer parks; areas of wild countryside, usually including woodland, typically enclosed from common land or unproductive land to keep deer in. They were to provide the social status of being able to provide deer hunting, a very aristocratic pastime, with keeping deer a privilege granted by the king. The land would also provide meat, timber and wood and excess grazing could rented, but all of this could be done more efficiently in other ways. In landscape terms an important difference with later parks is that they tended not use the most productive land and they were not lived in. Rather than a big house, a small hunting lodge, is typically all that would be found inside a park. A consequence of this is that deer parks often enclosed areas of existing old growth pasture woodland, which was already rich in old growth dependant lichens.

Changes in the early modern period (i.e Tudor to sometime in the 18th century or even latter depending where you are, in landscape terms enclosure of a parish usually marks the arrival of the modern period) began with existing medieval deer parks being regarded as attractive and prestigious places to build the new unfortified big houses, which made possible by the more peaceful conditions of Tudor England. As having a deer park was an indication of a long aristocratic ancestry, new deer parks were also created near big houses whose families did not have quite such along aristocratic ancestries as they would like you to think.

From this, grew the tradition of the landscape park, this could have a deer park as part of it, but might not, and would extend out well beyond the deer park. These were often created by ripping out the hedges from farmland and leaving the trees

to create instant parkland, but with new planting and landscaping schemes devised by fashionable designers to improve on the initial result. The important feature of these changes that the conspicuous consumption represented by a park, was no longer expressed by the status of being allowed to keep deer by the king, but by the profligate use of highly productive land within the core areas of estates.

For lichens this has quite significant consequences, parks that originated in medieval deer parks are likely to have a high degree on continuity back to the old growth pasture woodland that they were enclosed from. Parks with latter origins could have been created from ordinary farmland, and have no continuity back to old growth woodland at all. It is for this reason that Harding & Rose (1986) explicitly separate parks originating from medieval deer parks as a habitat from parkland in general.

Since the great agricultural depression started in the 1870s (which lasted, with a break for WWI, until WWII), the conspicuous consumption aspect of landscape parks placed on good productive land led to them becoming white elephants. This is reflected in the frequent gap in tree planting from the mid 19th century until increasing heritage concerns in the 1960s or later, led to much new planting in those that survived. Nonetheless, a considerable generation gap exists in some parks of interest for lichens, although lateral thinking can often solve this; there are frequently areas of denser treed park that were taken out of the park and planted with Oak in the 19th century. The missing generation is often nearby in areas that could be restored to pasture woodland.

Landscape parks originating from modern (as in post 17th C) landscaping of farmland are not necessarily of no conservation consequence. They were often created from farmland with ancient trees in the hedges and they can now conserve field tree lichens that were once more widespread in the wider countryside but are now rare. Parks originating from medieval deer parks, however, are conserving species that were once widespread in woodland across the lowlands but have been declining for millennia in the face of intensive woodland management, clearance and pollution.

Post WWII, both types of parks faced threats from subsidised intensive agriculture. For classic landscape parks and surviving deer parks the situation is now much better and most parks are now well managed. Agricultural de-intensification and new tree planting are general. There are now far more challenges with managing lichen-rich old growth woodland than parklands, as the former are much less well understood.

3.2.2 Wood Pasture or Pasture Woodland

The term wood pasture is very fashionable but is not a very helpful in my opinion. Lichenologists have tended to follow Harding & Rose (1986) and use the more specific term pasture woodland. The latter refers specifically to traditionally grazed woodland, which supports a woodland flora. This is important to lichenologists as the lichen assemblages of old growth woodlands and field trees are very different. The former is much richer in rare and declining species, most of which are dependant on both high humidity and good light levels than the specialist lichens of field trees. The latter includes some very rare veteran tree specialist lichens that require well lit sunny trees and are not dependant on high humidity. Over all landscape parks created from farmland usually have a much lower diversity of species of conservation interest. Pasture woodlands typically consist of grazed high forest cores and fringes of more park or “savannah” like

stands. Grazed high forest with glades and "savannah" are found in complex mosaics in the largest pasture woodlands (Chatters & Sanderson, 1994). Pasture woodlands have normally survived by natural regeneration (or strictly "wild regeneration" see Vera, 2000) not planting.

Examples of pasture woodland include the New Forest, the denser wooded areas in Melbury Park, Dorset and many upland woodlands not damaged by 18th or 19th century coppicing of Oak. Gregynog Great Wood is also a fine example. The name is very informative, it is called a wood and the term "Great" is intriguing. This or the term "High Wood" are commonly found in or by landscape parks derived from medieval Deer Parks. I interpret these as referring to uncoppiced woods with big trees. Great Wood is not very big, so it size hardly justifies the appellation great. In many parks, the great or high wood has long been enclosed and flattened and replanted by 19th or 20th C foresters. As we heard, this nearly happened to Great Wood, with only Ray Woods' heroic work saving it. This loss of gladed grazed high forest from many parks might partly explain the mismatch between lichenologists view of pasture woodland, as including quite well wooded areas like Great Wood and the general image of wood pasture as much more open habitat of scattered trees over grass.

Oliver Rackam invented the term wood pasture (curiously translating from the Latin term "silva pastilis" in Doomsday, a term surely correctly translated into English as pasture wood any way!). He defines this as treed land where the canopy is maintained as open enough to allow grass to grow. He was clear when I discussed the matter with him that the term did not cover grazed high forest sites such as the New Forest (or Great Wood for that matter). The problem is that while landscape parks now do represent this habitat, in Britain it is rarely found outside of this situation. Traditionally grazed woodlands such as the New Forest (Sanderson, 2011) or the native Pine Woods of Scotland (Smout et al, 2005) were never managed with this in mind. They were multi-use systems, with different people having different rights. The graziers rarely had the right to manage the trees, although the tree manager (the lord of the soil) often received both rent from the graziers and income from the trees. The lord of the soil generally had to balance the demands and rights of graziers (usually commoners) with any aims in wood and timber production. Usually where the grazing was best, trees were lost or removed all together and the most wooded areas were (and in the New Forest still are) valued by the graziers not for grazing but for shelter and browse. In early modern Scotland, many Highland woods were of far greater value as shelter for stock (via rents from tenants) than they were for timber (Watson, 1997). Allowing woods to become open parkland like stands would remove the shelter and winter feed for which they were most valued.

In conclusion the term wood pasture appears to be a synonym for landscape parks and its definition excludes most traditionally grazed woodland in Britain. The more specific term pasture woodland is more useful in delimitating the most important habitats for old growth dependent lichens.

3.3 The Lichens Recorded

3.3.1 Species Recorded

Our visit did not include systematic recording, combining this and tutoring is not possible. We concentrated on looking at the species characteristic of old woodland and veteran trees and in particular the dry bark communities, which are particularly well developed in this site.

All the species recorded have been entered into a BLS Recorder Import Spreadsheet. Those of conservation interest are listed in **Species List 1** (table below), along with the species, recorded by earlier surveys we missed, taken from CCW data.

The site has an impressive lichen assemblage with a total NIEC ancient woodland index score of 26, with 21 seen in our partial survey (a score of 20 or more indicates a site of national importance). The number of National RDB and Notable species are listed in **Table 1** and the Nationally Rare and Nationally Scarce species in **Table 2**. (For the RDB/Nb score, 600 or more suggests a site of national importance & the NR/NS score, 200 or more suggests a site of national importance).

TABLE 1
Numbers of Red Data Book & Notable Species

Status	CR	EN	VU	NT	Nb	RDB/Nb score	IR	BAP
All Records	1	0	2	4	25	2250	13	6
2011	0	0	0	3	16	1100	9	3

TABLE 2
Numbers of Nationally Rare and Nationally Scarce Species

Status		NR	NS	NR/NS score
All Records		3	20	1300
2011		1	11	650

We did well recording half or more of the species recorded in all but the most threatened or rarest categories. In terms of the Welsh Conservation Evaluation there are even more RDB species present, showing the very high significance of this site in Wales.

Two species were new to Wales: *Enterographa sorediata* NT (NS/IR/BAP) and *Cliostomum flavidulum* Nb (NS). Three were new to VC 47 *Abrothallus bertianus*, *Arthonia anombrophila* Nb (NS/IR) and *Opegrapha fumosa* Nb (NS/IR), while *Lopadium disciforme* had been recorded from Gregynog previously under the wrong name and had not been reported for the vice-county until now. Five other species were new to the site.

The discovery of the BAP priority species *Enterographa sorediata* is particularly exciting as this is considered an endemic species which so far has only been found from Britain and Ireland (**Map 3**). Note that *Enterographa sorediata* is currently only listed under Section 41 of NERC Act (2006) as a Species of principle importance to England; its discovery at Gregynog suggests it will be added to Section 42 as a Species of principle importance to Wales at the next revision.

SPECIES LIST 1
Species of Conservation Interest

Species	Record	National Conservation Status	Welsh Conservation Evaluation	NIEC
Abrothallus bertianus	1	[NS]		
Abrothallus parmeliarum	1	[NS]		
Anisomeridium ranunculosporum	1			1
Arthonia anombrophila	1	Nb (NS/IR)	NT	

Arthonia vinosa	0			1
Bacidia biatorina	1		NT	1
Buellia griseovirens	1			
Buellia pulverea	0	Nb (NS)		
Calicium adspersum	0	CR (NR)	CR	
Calicium glaucellum	1			
Calicium salicinum	0			
Calicium viride	1			
Caloplaca herbidella	0	VU (NR/BAP)	VU	
Catinaria atropurpurea	1		NT	1
Chaenotheca brachypoda	0	Nb (NS)	VU	(1)
Chaenotheca brunneola	1			(1)
Chaenotheca chrysocephala	0			(1)
Chaenotheca ferruginea	1			
Chaenotheca furfuracea	1			(1)
Chaenotheca hispidula	1	Nb (NS)		(1)
Chaenotheca trichialis	1			(1)
Cladonia parasitica	1			1
Cliostomum flavidulum	1	Nb (NS)	(NA)	
Cresponea premnea	1	Nb (IR)	NT	1
Dimerella lutea	1		NT	1
Enterographa sorediata	1	NT (NS/IR/BAP)	(NA)	1
Imshaugia aleurites	0			
Lecanactis subabietina	0	Nb (IR)		1
Lecanographa amylacea	0	VU (NS/IR/BAP)	EN	1
Lecanographa lyncea	1	Nb (IR)	EN	1
Lecanora albellula var albellula	0	Nb (NS)		
Lecanora argentata	0	Nb (NS)		
Lecanora quercicola	0	NT (NS/BAP)	VU	1
Lecanora sublivescens	1	NT (NS/BAP)	NT	1
Lecidea doliiformis	1	Nb (NS)		
Lepraria ecorticata	1	Nb (NS)		
Leptogium subtile	0	Nb (NS)		
Lobaria pulmonaria	1	Nb (IR)	VU	1
Lobaria virens	1	Nb (IR)	EN	1
Lopadium disciforme	1			
Loxospora elatina	1			1
Melaspilea ochrothalamia	1	Nb (NS)		
Microcalicium disseminatum	1	Nb (NR)	VU	
Milospium graphideorum	1	[NS]		
Opegrapha fumosa	1	Nb (NS/IR)	VU	
Pachyphiale carneola	1		NT	1
Parmeliopsis hyperopta	1			
Pertusaria coronata	1	Nb (NS)	NT	
Pertusaria hemisphaerica	1			
Pertusaria multipuncta	1			1
Pertusaria pupillaris	1			1
Phyllopsora rosei	0	Nb (NS/IR)	NT	1
Schismatomma cretaceum	1	Nb (IR)	VU	
Schismatomma niveum	1	Nb (IR)	VU	1
Sphaerophorus globosus	1			
Sphinctrina turbinata	1	Nb (NS)		
Steinia geophana	0	Nb (NS)		
Sticta limbata	0	Nb (IR)	NT	1
Thelotrema lepadinum	1		NT	1
Usnea florida	1	NT (BAP)		1

KEY

Record
1 = Seen 28/10/11
0 = Earlier record

National Conservation Status
CR = Critically Endangered Red Data Book species
VU = Vulnerable Red Data Book species
NT = Near Threatened Red Data Book species
Nb = Notable (NR, NS or IR which are not NT or higher threat)
NR = Nationally Rare
NS = Nationally Scarce
IR = International Responsibility Spp
BAP = Priority Biodiversity Action Plan Species
[NS] = Parasite not in LGBI, so likely to be very under recorded

Welsh Conservation Evaluation
CR = Critically Endangered Red Data Book species
VU = Vulnerable Red Data Book species
NT = Near Threatened Red Data Book species
(NA) = Not assessed

NIEC: Ancient Woodland Lichen Indicator Species
1 = Species counted once
(1) = The presence of one or more *Chaenotheca* species except *Chaenotheca ferruginea* adds 1 to the index score.

3.3.2 Communities

The complex distributions of lichens on a tree show patterns reflecting differing responses to light levels, bark nutrient status, water supply and exposure (i.e. humidity). This complex continuum can be summarised as communities. These are abstract entities with no real existence, all grade imperceptibly into others, but classifying them does help understanding.

The main communities looked at are described below.

Dry Bark: much of my attention was on the dry bark communities in the wood, which are rich in species of conservation interest and are a major feature of interest at Gregynog.

Dry Bark and Lignum Communities (*Calicietum hyperelli* & *Calicietum abietinae*): these are communities of the dry sides of mature to ancient trees, particularly in the less oceanic parts of Britain. I am not entirely clear on the separation between these communities but I think *Calicietum hyperelli*, represents younger dry bark communities, often in exposed areas with characteristic species including *Chrysothrix candelaris*, *Cliostomum griffithii*, *Calicium viride* and *Chaenotheca ferruginea*. Species of conservation interest are not frequent but *Chaenotheca trichialis* can occur. This grades though more extreme and older dry bark to communities on dry lignum, which are probably accommodated in the *Calicietum abietinae*. This is marked by the disappearance of crustose species such as *Chrysothrix candelaris* and *Cliostomum griffithii* and increases in pinhead species. The dry lignum habitat on standing dead wood has been much reduced by past dead wood removal or felling dying trees but is now developing as these are left and standing dead wood increasing but still not mature as a habitat. Species characteristic of this community were *Calicium glaucellum* and *Chaenotheca brunneola* on lignum and *Chaenotheca trichialis* and *Microcalicium disseminatum* Nb (NR) (Welsh VU), the latter a remarkable outlier of a species mainly found in the Native Pinewoods of Scotland. More species would be expected in a site this good as this, and have been recorded in the past, but this habitat needs intense concentration to study properly.

Mature Woodland Dry Bark Community (*Lecanactidetum abietinae*): found on the rough bark on the dry sides of mature woodland Oak trees in more humid locations, where it replaces *Calicietum hyperelli*. Usually very species poor and dominated by *Lecanactis abietina* (foaming beer mugs), but occasionally ancient woodland species can occur, especially in the transition to communities of the wetter side. Here the most notable species seen in this community was *Lepraria ecorticata* Nb (NS), a species usually thought of as a species of rock under hanging but also typical of deep bark crevices within the *Lecanactidetum abietinae* in old woodland.

Ancient Dry Bark Community (*Lecanactidetum premneae*): this replaces the mature dry bark community (*Lecanactidetum abietinae*) on the dry sides of ancient Oaks. The community is strongly associated with veteran Oaks and old growth woodland. It is internationally very rare, and otherwise known only from a few sites in France, but is widespread in Britain (James et al, 1977). Several characteristic species are hence International Responsibility species, and the community is of great conservation importance. In the New Forest evidence of chronosequences indicates that this community takes over 400 years to fully recolonise clear felled sites (Sanderson, 1996 & 2010). The community is southern oceanic and requires frequent periods of high humidity as the lichens mainly obtain their water from dew, or rare floods of stem flow water. Replaced by the *Calicietum abietinae* in the driest areas of bark and possibly more acidic bark in more eastern sites, as here. It avoids high rainfall areas, as frequent stem flow is more likely to penetrate to the driest parts of trees allowing in competitor lichens and mosses. The widespread lichen species *Schismatomma decolorans* usually dominates, with *Enterographa crassa* often frequent, although this is rare at Gregynog. The characteristic specialist lichen species seen in 2011 include *Cresponea premnea* Nb (IR) (Welsh NT), *Enterographa sorediata* NT (NR/IR/BAP), *Lecanographa lyncea* Nb (IR) (Welsh EN), *Milospium graphideorum* (parasitic on *Lecanographa lyncea*), *Opegrapha xerica* Nb (NS), *Schismatomma cretaceum* (Nb IR) (Welsh VU) and *Schismatomma niveum* Nb (IR) (Welsh VU), *Lecanographa amylacea* VU (NS/IR) (Welsh EN) and *Lecanactis subabietina* (Nb IR) have been reported in the past. This is a near complete set of rare species characteristic of this community, remarkable in a site on the north west edge of the communities distribution.

Damp Lignum Community (*Cladonietum coniocraeae*): fallen dead wood, unless it is large trunks propped up on branches, is much damper than standing dead wood. Felled large trunks invariably have had their branches trimmed and are in close contact with the ground as was seen at Gregynog. Such damp wood is typically dominated by *Cladonia* species with common crust forming *Trapeliopsis* and *Placynthiella* species and this is a community found widely beyond old growth stands. This is a visually striking community but has much fewer rare species than found on standing dead wood. Standing dead wood is rare in managed woods, while stumps are frequent. Large bits of damp fallen dead wood do, however, have a few specialist species including *Cladonia parasitica*, seen on several trunks during the visit, and some rare and difficult to spot *Micarea* species. The latter have not yet been found here. We did record the under recorded widespread *Placynthiella dasaea*, which is a species the leader did not know well, and has now learned.

The wetter sides of the trees: these were also looked at and are collectively of great interest.

Acid Bark Woodland Community (*Parmelion laevigatae*): distinctive communities develop on well lit but sheltered acid bark in woodlands in oceanic areas. The best known form (*Parmelietum laevigatae*) is characteristic of old growth high altitude 'cloud forest' in very wet areas but a less well known lowland form occurs in drier lower altitude sites (*Cladonia – Thelotrema* Community, Sanderson, 1998 & 2010) on Oak, Beech and Alder. In old growth stands it can be very rich in uncommon species and the community appears very sensitive to woodland management. Many species which are quite mobile in areas with large areas of surviving habitat can become rare in areas without large undisturbed refugia. At Gregynog the more acid Oaks supported characteristic species seen in 2011: *Cliostomum flavidulum* Nb (NS), *Lecidea doliiformis* Nb (NS), *Loxospora elatina*, *Opegrapha fumosa* Nb (NS/IR) (Welsh VU), *Parmeliopsis hyperopta*, *Pertusaria hemisphaerica*, *Pertusaria pupillaris*, *Sphaerophorus globosus* and *Thelotrema lepadinum* (Welsh NT).

Mature Mesic Bark Community (*Pertusarietum amarae*): found on mature less acidic bark on the wet side of mature trees in sheltered woodland conditions. Replaced by communities dominated by *Parmelia* sl, on well lit exposed trees (Well Lit Mature Bark Community *Parmelietum revolutae*). The basic community is composed of widespread lichen species, especially *Pertusaria* species including *Pertusaria hymenea*, *Pertusaria pertusa*, *Pertusaria amara* f. *amara* and *Pertusaria flavida*, along with *Phlyctis argena* but ancient woodland species can occur in older woodland stands. At Greynog this community merges into the previous one on the Oaks and also occurs on Ash. Here species of nature conservation interest seen in 2011 were *Anisomeridium ranunculosporum*, *Bacidia biatorina*, *Lecanora sublivescens* NT (NS/BAP) (Welsh NT), *Lopadium disciforme*, *Melaspilea ochrothalamia* Nb (NS), *Pertusaria coronata* Nb (NS) (Welsh NT), *Pertusaria multipuncta*, *Sphinctrina turbinata*, Nb (NS) and *Thelotrema lepadinum* (Welsh NT). The *Lecanora sublivescens* was seen on several trees and has an important population here.

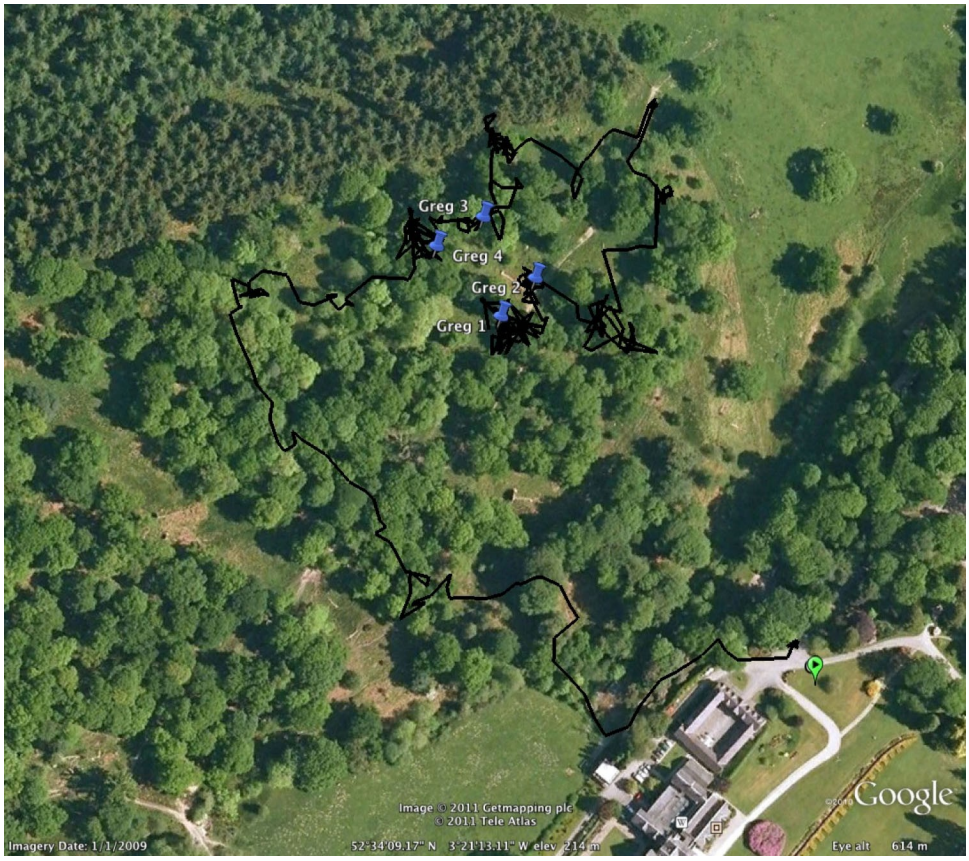
Base Rich Bark Woodland Community (*Lobarion*): a very rich community best developed on veteran trees with base rich bark. Typically found on bark that is by flushed base rich water from above. Unlike many other communities the basic community is composed of ancient woodland species so any occurrence is of interest. In the New Forest evidence of chronosequences indicates that this community takes between 200 to 300 years to fully recolonise clear felled sites (Sanderson, 1996). On the damp bark, base demanding mosses are usually prominent with a rich and a distinctive assemblage of prominent leafy lichens and, where the mosses are not so dominant, characteristic crustose species.

At Gregynog, we saw only a few trees with well developed *Lobarion*, but the one at the top of the slope was impressive with vigorous *Lobaria pulmonaria* Nb (IR) (Welsh VU) and *Lobaria virens* Nb (IR) (Welsh EN) along with *Catinaria atropurpurea* (Welsh NT), *Dimerella lutea* (Welsh NT) and *Pachyphiale carneola* (Welsh NT).

3.4 Maps

MAP 1
General Area

MAP 2
Area Visited



GPS turned on about lunch time

Key
Greg 1 = The first *Enterographa sorediata* tree
Greg 2 = A fallen dead tree from which an unidentified non-lichenised fungi was collected
Greg 3 = A rich tree with *Lecidea sublivescens* and *Arthonia anombrophila*
Greg 4 = The second *Enterographa sorediata* tree

MAP 3
Known World Distribution of *Enterographa sorediata*

From BLS data on NBN, edited to remove errors and add new data

4.0 REFERENCES

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Report date: 10/11/2011 16:41:00

Plantlife would like to acknowledge the financial assistance of the Countryside Council for Wales in the publication of this report, which was produced as part of the CCW/Plantlife Cymru Strategic Partnership. We would also like to thank the University of Wales and Gregynog Hall for permission to use the grounds and facilities.

Cyngor Cefn Gwlad Cymru
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