

A Lichen Survey of Bwlch Corog (Cefn Coch), Glaspwll



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1. Introduction

Bwlch Corog, SW of Cefn Coch Farm, Glaspwll, is the site of an application for woodland creation. The site mostly comprises open hill land, with some semi-natural woodland in the valley of the Llyfnant river at the north end of the site. A lichen survey mainly of the open land was carried out.

2. Methods

The site occupies west-, north- and east-facing ground on Bwlch Corog, Glaspwll. The area surveyed ranges from 230 to 388 m altitude (Fig. 1). The site is underlain by Ordovician and Silurian mudstones and sandstones. The existing semi-natural woodland at the north end of the site was not covered by the survey, although some trees amongst old fields were included. All parts of the site are within the botanical vice-county of Cardiganshire (V.C. 46), and the hectad 22/79.

The site was visited on 30 July 2015, in dry weather. All substrates were potentially examined for lichens. Taxonomy and nomenclature of lichens follows Smith *et al.* (2009) unless stated. Location was recorded using a hand-held GPS receiver.

Lichens species were regarded as 'notable' and potentially of conservation concern if they met any of the following criteria:

- Graded as Critically Endangered, Endangered, Vulnerable, Near Threatened or Data Deficient in the Welsh red data list (Woods 2010).
- Graded as Critically Endangered, Endangered, Vulnerable, Near Threatened or Data Deficient in the Great Britain red data list (Woods & Coppins 2012).
- Indicated as Nationally Rare (recorded in 1-15 hectads in Great Britain) or Nationally Scarce (in 16-100 hectads in Great Britain) in Woods & Coppins (2012).
- Indicated as International Responsibility (British populations considered to be of international importance due to their abundance in Britain compared to the rest of the world) in Woods & Coppins (2012).
- Listed in the Section 42 list of habitats and species of principal importance in Wales (<http://biodiversitywales.org.uk/Section-42-Lists>).
- Used in the calculation of the New Index of Ecological Continuity (NIEC) (Coppins & Coppins 2002). Sites containing a high number of species from a list of indicator species are considered to have a high likelihood of ancient origin, but individual NIEC species are not necessarily of conservation interest.

3. Results

Most of the site is of gently sloping or undulating ground; most of the area is covered by species-poor vegetation dominated by *Molinia caerulea* (Purple Moor-grass) (species-poor variant of M25 *Molinia caerulea-Potentilla erecta* mire: National Vegetation Classification, Rodwell 1991, 1992) (Fig. 3). There are much smaller quantities of other communities, including M25a *Molinia caerulea-Potentilla erecta* mire, *Erica tetralix* sub-community on level wet ground; M6c *Carex echinata-Sphagnum recurvum/auriculatum* mire, *Juncus effusus* sub-community in seepage zones; U2b *Deschampsia flexuosa* grassland, *Vaccinium myrtillus*

sub-community; and U4 *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland, the last two on drier areas (Fig. 4). Lichens were virtually absent in these communities, with only *Cladonia portentosa* occurring very locally in M25a. The site appears not to have been grazed for a number of years.

Rock outcrops were few and scattered, and all of very small extent. Most were very low, and many would be flushed from nearby turf during wet weather (Fig. 9). A small number of stone piles and broken-down walls were seen (Fig. 8). Frequent species on rock included *Fuscidea cyathoides*, *Ochrolechia androgyna*, *Miriquidica leucophaea*, *Parmelia saxatilis*, *Pertusaria corallina*, *P. pseudocorallina*, *Porpidia tuberculosa*, with *Immersaria athroocarpa*, *Lecidea phaeops*, *Porpidia irrigua* and *Rhizocarpon lavatum* occasional on moister surfaces.

In the area surveyed, trees were confined to the north-east part, with mature oak and ash on obsolete field boundaries (Fig. 2). Apart from one oak stump, wood was represented at the site only by old fence posts; these supported a community of lichens tolerant of low pH, including *Cyphelium inquinans*, *Evernia prunastri*, *Lecanora aitema*, *L. pulicaris*, *L. symmicta*, *Parmelia sulcata* and *Usnea subfloridana* (Figs. 12, 13). This is a community which has declined in lowland Britain over the past few decades due to increasing pH levels due to reduction in SO₂ levels, and influence of ammonia and other nitrogen compounds. Nutrient-enriched communities were scarcely present, indicated only by *Xanthoria parietina* on ash twigs, and *X. polycarpa* on the tops of fenceposts, the latter probably enriched by perching birds.

A total of 105 lichen species was recorded, including 57 on rock, or associated with rock outcrops, and 48 on bark and wood, including fence posts (Table 1).

In all, seven species were 'notable' according to the criteria above:

- Lecanora jamesii* a species used in the calculation of the NIEC (see above), but widespread in Wales, and only of significance if other old-forest species occur.
- Lecidea fuliginosa* a species of exposed outcrops, confined to the north and west of Britain, Nationally Scarce; widespread in Wales but uncommon.
- Lepraria sylvicola* a species of mature oaks in semi-natural woodland, mainly in the more humid north and west of Wales; Nationally Scarce.
- Porpidia irrigua* a recently distinguished species of seasonally irrigated rocks, Nationally Scarce, though widespread in the Welsh uplands.
- Porpidia melinodes* widespread in upland Wales on rocks away from nutrient-enrichment; Nationally Scarce.
- Porpidia striata* widespread in upland Wales, often on disturbed stones, Nationally Scarce.
- Rhizocarpon infernulum* widespread in upland Wales, often on slightly flushed rocks in shade; Nationally Scarce.
- Stereocaulon leucophaeopsis* fairly widespread in upland Wales; Nationally Scarce, designated as Near Threatened by Woods (2010) due to the relatively small number of records.

4. Discussion

The richness of the lichen flora of the site is severely limited by the scarcity of exposed rocks. The outcrops which occur have a reasonably species-rich flora for their size, composed of species typical of upland Wales on siliceous rocks not much influenced by agriculture. The most significant species is perhaps *Lecidea fuliginosa*, which is uncommon in Wales.

If afforestation of the site were to go ahead, the modest lichen interest would be best maintained by avoiding planting near to rock outcrops and stone piles, to avoid shading and litter accumulation. Although outcrops and stone piles are of small size and scattered in distribution (Fig. 1, Table 2), they could be incorporated in any open areas or corridors which may be planned for provision for biodiversity within the created woodland. Three main areas may be suggested:

1. The small outcrop at 73797.95611 (locality no 3/3, Fig. 5), which has a colony of *Lecidea fuliginosa*, and the adjacent low rocks on or beside the bridleway at 73823.95598 (locality no 3/4, Fig. 6).
2. The low outcrops beside a shallow gully at 73526.95706 (locality no 4/5, Fig. 10), extending to a small knoll at 73645.95736 (locality no 4/7, Fig. 11).
3. The north-eastern part of the site (the area with localities 1/1, 1/2, 5/1, 5/2, 5/3), which already has a greater diversity of plant communities than most of the site, and of which some may represent former enclosed pasture.

In the long term, some degree of grazing would be ideal for these areas to avoid the development of scrub.

5. References

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Table 1. Lichen species recorded.

species	notes
<i>Acarospora fuscata</i>	On rocks, rare. 4/7.
<i>Arthonia radiata</i>	On ash branch. 1/1.
<i>Aspicilia caesiocinerea</i>	On rocks, especially where slightly flushed, occasional.
<i>Aspicilia grisea</i>	On rock, rare. 1/3.
<i>Buellia griseovirens</i>	On fenceposts. 3/2.
<i>Candelariella vitellina</i>	On fenceposts. 3/2.
<i>Cladonia cervicornis</i>	On rocks, occasional.
<i>Cladonia chlorophaea</i>	On oak. 1/3.
<i>Cladonia coccifera</i>	On low rocks and small boulders, occasional.
<i>Cladonia digitata</i>	On oak stump. 1/1.
<i>Cladonia furcata</i>	On low rocks and small boulders, occasional.
<i>Cladonia gracilis</i>	On rocky outcrops, occasional. 3/9, 4/5.
<i>Cladonia polydactyla</i>	On oak stump. 1/1.
<i>Cladonia portentosa</i>	On low rocks, occasional; rarely on the ground.
<i>Cladonia pyxidata</i>	On ash trunk. 1/1.
<i>Cladonia squamosa</i> var. <i>squamosa</i>	On rocks, occasional.
<i>Cladonia subcervicornis</i>	On low rocks and small boulders, occasional.
<i>Cladonia uncialis</i>	On low rocks and small boulders, occasional.
<i>Cyphelium inquinans</i>	On fenceposts. 3/2, 4/6.
<i>Diploschistes scruposus</i>	On rocks, rare. 3/1.
<i>Evernia prunastri</i>	On fenceposts. 3/2, 4/6.
<i>Flavoparmelia caperata</i>	On ash branch and on oak. 1/1, 1/3.
<i>Fuscidea cyathoides</i>	On rocks, frequent.
<i>Fuscidea lightfootii</i>	On ash branch, fenceposts.
<i>Fuscidea praeruptorum</i>	On low rocks, rare. 3/3, 3/10.
<i>Graphis scripta</i>	On oak. 1/1.
<i>Hypogymnia physodes</i>	On ash branch, oak stump and fenceposts. 1/1.
<i>Hypogymnia tubulosa</i>	On fenceposts. 4/6.
<i>Hypotrachyna afrorevoluta</i>	On ash branch. 1/1.
<i>Hypotrachyna britannica</i>	On low rocks, rare. 3/3, 3/10, 5/3.
<i>Immersaria athroocarpa</i>	On low moist rocks, rare. 4/5.
<i>Lasallia pustulata</i>	On low, flushed bedrock. 3/4.
<i>Lecanora aitema</i>	On fenceposts. 4/6.
<i>Lecanora chlarotera</i>	On ash and oak. 1/1.
<i>Lecanora confusa</i>	On fenceposts. 3/2.
<i>Lecanora conizaeoides</i>	On fenceposts. 3/2.
<i>Lecanora intricata</i>	On rocks, frequent.
<i>Lecanora jamesii</i>	On ash and oak. 1/1.
<i>Lecanora polytropia</i>	On rocks, frequent.
<i>Lecanora pulicaris</i>	On fenceposts. 3/2.
<i>Lecanora soralifera</i>	On rocks, occasional. 3/1.
<i>Lecanora symmicta</i>	On fenceposts. 3/2.
<i>Lecidea fuliginosa</i>	On low rocks, rare. 3/3, 3/6.
<i>Lecidea furvella</i>	On rocks. 3/9.
<i>Lecidea lithophila</i>	On stone pile. 5/2.

<i>Lecidea phaeops</i>	On seasonally flushed rocks, rare. 3/1, 4/5.
<i>Lecidella elaeochroma</i>	On ash. 1/1.
<i>Lecidella scabra</i>	On low rocks, rare. 1/1.
<i>Lepraria caesioalba</i>	On low rocks and small boulders, occasional.
<i>Lepraria incana</i>	On shaded rocks, rare. 1/1.
<i>Lepraria rigidula</i>	On ash trunk. 1/1.
<i>Lepraria sylvicola</i>	On oak trunk. 1/3.
<i>Lichenomphalia ericetorum</i>	On oak stump. 1/1.
<i>Megalania pulverea</i>	On oak. 1/1.
<i>Melanelixia fuliginosa</i>	On rocks. 3/9.
<i>Melanelixia glabrata</i>	On ash trunk. 1/1.
<i>Melanelixia subaurifera</i>	On oak, fencepost. 1/1,
<i>Micarea lignaria</i> var. <i>lignaria</i>	On rocks, occasional. 3/1.
<i>Miriquidica leucophaea</i>	On low rocks and small boulders, frequent.
<i>Mycoblastus caesius</i>	On oak. 1/3.
<i>Mycoblastus fucatus</i>	On ash branch. 1/1.
<i>Ochrolechia androgyna</i>	On low rocks and small boulders, frequent.
<i>Parmelia ernstiae</i>	On ash trunk. 1/1.
<i>Parmelia omphalodes</i>	On low rocks and small boulders, occasional 1/2, 3/4b.
<i>Parmelia saxatilis</i>	On rocks, bark and wood, frequent.
<i>Parmelia sulcata</i>	On ash branch and on fenceposts. 1/1.
<i>Parmotrema perlatum</i>	On ash branch. 1/1.
<i>Peltigera hymenina</i>	On low rocks or rocky banks, very local. 1/1, 5/4.
<i>Pertusaria albescens</i>	On ash trunk. 1/1.
<i>Pertusaria amara</i>	On oak. 1/3.
<i>Pertusaria aspergilla</i>	On broken down wall. 1/3.
<i>Pertusaria corallina</i>	On low rocks and small boulders, occasional.
<i>Pertusaria lactea</i>	On rocks, occasional. 3/1, 3/3.
<i>Pertusaria pertusa</i>	On ash trunk. 1/1.
<i>Pertusaria pseudocorallina</i>	On low rocks, frequent.
<i>Physcia aipolia</i>	On ash branch. 1/1.
<i>Physcia tenella</i>	On ash branch. 1/1.
<i>Placynthiella icmalea</i>	On fenceposts. 3/2.
<i>Platismatia glauca</i>	On ash branch. 1/1.
<i>Porpidia cinereoatra</i>	On low rocks and small boulders, frequent.
<i>Porpidia irrigua</i>	On low rocks where occasionally flushed, occasional. 1/2, 3/4.
<i>Porpidia macrocarpa</i>	On rocks, rare. 4/7.
<i>Porpidia melinodes</i>	On rocks, occasional. 3/4b, 5/2.
<i>Porpidia rugosa</i>	Very small damp face. 5/5.
<i>Porpidia striata</i>	On stone on rocky bank. 5/4.
<i>Porpidia tuberculosa</i>	On low rocks and small boulders, frequent.
<i>Psilolechia lucida</i>	On shaded rocks, rare. 1/1.
<i>Punctelia jeckeri</i>	On oak. 1/1.
<i>Punctelia subrudecta</i>	On ash branch. 1/1.
<i>Rhizocarpon geographicum</i>	On rocks, especially where not flushed, occasional.
<i>Rhizocarpon infernulum</i>	On rocks, rare. 3/1.
<i>Rhizocarpon lavatum</i>	On low, flushed bedrock. 3/4.
<i>Rhizocarpon reductum</i>	On rocks, frequent.

<i>Stereocaulon leucophaeopsis</i>	On boulder, rare. 5/1.
<i>Stereocaulon vesuvianum</i>	On unflushed rocks, rare. 5/2, 5/4.
<i>Trapelia coarctata</i>	On rocks, occasional.
<i>Trapelia glebulosa</i>	On low rocks and small boulders, frequent.
<i>Trapelia placodioides</i>	On low rocks, rare. 2/1, 3/4b.
<i>Trapeliopsis flexuosa</i>	On fencepost. 3/1.
<i>Trapeliopsis granulosa</i>	On oak stump. 1/1.
<i>Trapeliopsis pseudogranulosa</i>	On rocks, occasional. 3/1.
<i>Tremolechia atrata</i>	On rocks, occasional.
<i>Usnea subfloridana</i>	On fenceposts. 3/2, 4/6.
<i>Xanthoparmelia conspersa</i>	On low, lightly flushed rocks, occasional.
<i>Xanthoria parietina</i>	On ash branch. 1/1.
<i>Xanthoria polycarpa</i>	On fenceposts. 3/2, 4/6.
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Number of species:	106
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Number of species on rock or thin soil over rock:	58
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Number of species on bark and wood:	48
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Numbers in the notes column refer to field localities (see Table 2); a full list of localities is given only for rare species.	
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Table 2. List of temporary locality numbers

These are numbers assigned during field survey, and may be referred to in the report.

number	GPS reading	GPS accuracy (± m)	notes
1/1	74209.95972	10	Low rocks, mature oak and ash.
1/2	74176.95978	5	Low, unshaded rocks, with <i>Porpidia irrigua</i> .
1/3	74084.95945	7	Oaks on old field boundaries.
2/1	73979.95999	6	Boulder.
3/1	73805.95807	3	Low outcrop, and old fence posts.
3/2	73794.95795	4	Fence posts.
3/3	73797.95611	4	Small outcrop, with <i>Lecidea fuliginosa</i> .
3/4	73823.95598	4	Low flushed bedrock on bridleway, with <i>Lasallia pustulata</i> , <i>Porpidia irrigua</i> .
3/4b	73762.95402	5	Stones of ?old wall.
3/5	73718.95370	4	Small outcrop.
3/6	73672.95219	5	Very small outcrop, with <i>Lecidea fuliginosa</i> .
3/7	73531.95145		Sparse dwarf shrubs amongst <i>Molinia</i> , some <i>Cladonia portentosa</i> .
3/8	73417.95124	3	Small low outcrop.
3/9	73370.95065	4	Small low outcrop.
3/10	73285.94923	3	Very small outcrops on E side of ridge.
3/11	73157.94738	3	
4/1	73134.94635	3	Small stone pile or cairn.
4/2	72977.95058	3	
4/3	73017.95298		Very low outcrop.
4/4	73307.95387	3	Small rock exposed in very shallow gully.
4/5	73526.95706		Low rocks in a shallow gully.
4/6	73553.95725	4	Fenceposts.
4/7	73645.95736	4	Small knoll with low outcrops.
5/1	73979.95998	4	Boulder with <i>Stereocaulon leucophaeopsis</i> .
5/2	73971.96103	4	Stone pile.
5/3	73981.96150	4	Low rock, with <i>Hypotrachyna britannica</i> .
5/4	73932.96262	4	Very low outcrops with a little scree.
5/5	73984.96064	3	Very small face with <i>Porpidia rugosa</i> .

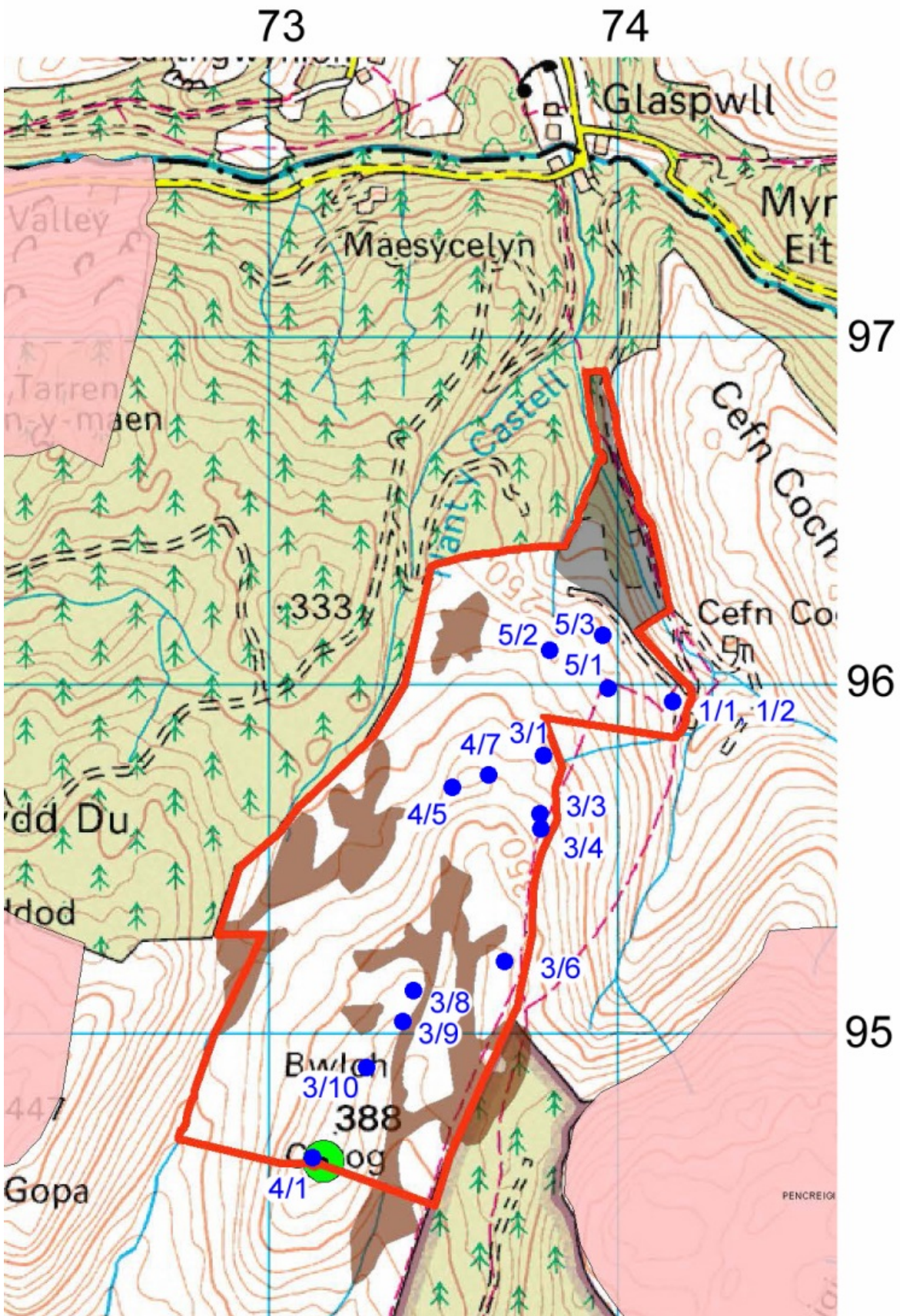


Fig. 1. The site, with approximate position of selected field localities mentioned in text (see Table 2). Red line = legal boundary of site; grey = area not surveyed



Fig. 2. The NE part of the site has mature trees on old field boundaries.



Fig. 3. A sea of ungrazed *Molinia*, with local *Juncus effusus*, and very small rock outcrops on steeper slopes in the distance; looking S from 73794.95795.



Fig. 4. Near the top of the hill, looking SE across *Molinia*, *Juncus* and *Deschampsia* swards to adjacent conifer plantations.



Fig. 5. An outcrop supporting *Lecidea fuliginosa* at 7379.9561 (locality 3/3).



Fig. 6. Low, flushed bedrock at 7382.9559 (locality 3/4).



Fig. 7. The brown, pancake-like thalli of *Lasallia pustulata* on flushed rocks at locality 3/4.



Fig. 8. Old wall (locality 3/4b) with *Pertusaria corallina* (white), *Porpidia melinodes* (sandy), *Fuscidea cyathoides* (grey-brown, right of centre).



Fig. 9. A small outcrop (locality 3/5), seasonally flushed from surrounding turf.



Fig. 10. Low outcrops by shallow gully at 7352.9570 (locality 4/5).



Fig. 11. Outcrop on small knoll at 7364.9573 (locality 4/7).



Fig. 12. Old fence posts support an acid-loving community, here with a pale tuft of *Usnea subfloridana*.



Fig. 13. The fruiting bodies of *Cyphelium inquinans* are covered with a sooty powder; this species has probably declined in Wales due to increasing pH levels.