

# Monitoring & managing the Epiphytic Lichen assemblage features in the Gwaun Valley SSSI Woodlands, Pembrokeshire



Jon Hudson Ecological Consultancy February 2026

Evidence Report No 984

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## Table of contents

About Natural Resources Wales .....	1
Evidence at Natural Resources Wales.....	1
1.1. Distribution list (electronic).....	2
1.2. Recommended citation for this report: .....	2
Table of contents .....	1
1.3. List of maps .....	2
1.4. List of figures .....	3
1.5. List of tables.....	3
2. Crynodeb gweithredol .....	4
3. Executive summary.....	6
4. Background & aims.....	7
4.1. Site description .....	7
4.2. Previous surveys and monitoring.....	8
4.3. Aims of this report.....	9
5. Developing attributes & targets for Common Standards monitoring .....	10
5.1. Establishing monitoring attributes and targets .....	10
5.2. Setting appropriate direct attribute targets.....	10
5.3. Direct attributes - SOWI and URI assemblage “Target Species” .....	12
5.4. Direct attributes - Independently Qualifying Feature species.....	14
5.5. Direct attributes - Southern Oceanic Woodland Index (SOWI) & Upland Rainforest Index scores .....	15
5.6. Indirect attributes - Habitats.....	16
5. Methods .....	18
5.1. Establishing monitoring plots .....	20
5.2. Monitoring the assemblages using “Target Species” .....	21
5.3. Monitoring the Independently Qualifying Feature species .....	22
6. Monitoring results.....	23
6.1. Monitoring results - Assemblage & IQF species .....	24
6.1.1. Allt Pontfaen – Coed Gelli-fawr SSSI.....	24
6.1.2. Cwm Bach Sychpant SSSI .....	30
6.1.3. Dyffryn Gwaun SSSI.....	35
6.1.4. Gallt Llanerch - Coed Gelli-deg SSSI .....	40
6.1.5. Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI.....	45
6.2. Assessment of the health & viability of the assemblage Target Species populations.....	51

6.3. Assessment of health & viability of the Independently Qualifying Features populations .....	53
6.4. Key lichen areas .....	53
7. Reasons for the condition of the lichen assemblages and the Independently Qualifying Feature lichens.....	55
8. Management recommendations & threats .....	56
8.1. Woodland management.....	56
8.2. The main threats and management requirements for lichen conservation.....	57
8.3. Woodland grazing.....	59
8.4. Mechanical interventions in key lichen areas.....	59
8.4.1. Halo thinning (“haloing”):.....	60
8.4.2. Veteranisation.....	65
8.4.3. Managing ivy.....	66
8.5. Ash dieback .....	68
8.6. Air quality .....	69
8.7. Climate change.....	70
9. Future monitoring.....	71
10. References & further reading.....	72
11. Acknowledgements.....	73
12. Appendix 1: Maps of lichens of conservation interest .....	74
12. Appendix 2: Summary of lichens of conservation interest recorded during the present monitoring project (September & October 2025).....	82
13. Appendix 3: CSM location comparison photos 2008 & 2025 .....	85
<b>15. Appendix 4: Glossary &amp; list of acronyms .....</b>	<b>95</b>

### List of maps

Map 1 Map of monitoring plots.....	21
Map 2 Distribution of notable species in the five SSSIs.....	74
Map 3 Lobarion community species.....	75
Map 4 Other species of conservation importance .....	76
Map 5 Allt Pontfaen North and Dyffryn Gwaun species of conservation importance .....	77
Map 6 Allt Pontfaen south species of conservation importance.....	78
Map 7 Cwm Bach Sychpant species of conservation importance.....	79
Map 8 Gallt Llanerch Coed Gelli Deg species of conservation importance.....	80
Map 9 Garn Wood, Kilkiffeth, Cwm Felin Ban & Dan Deri. Species of conservation importance .....	81

## List of figures

Figure 1 "Algal gunge" .....	17
Figure 2 IQF species <i>Allographa pauciloculata</i> on <i>Graphina ruiziana</i> .....	26
Figure 3 Natural colonisation of Ash trees by <i>Lobaria pulmonaria</i> and <i>Sticta</i> spp. on young Ash trees around CSM loc 4 .....	32
Figure 4 Fertile <i>Sticta ciliata</i> (left) and <i>Hypotrachyna laevigata</i> (right).....	37
Figure 5 <i>Ricasolia virens</i> new to the SAC and <i>Sticta canariensis</i> (dufourii) on rocks near CSM loc 6.....	42
Figure 6 Luxuriant growth of <i>Cetrelia olivetorum</i> and <i>Sticta sylvatica</i> .....	47
Figure 7: Examples of veteranisation techniques used to halo around an AVT ..	64

## List of tables

Table 1 SOWI & URI assemblage species used in monitoring .....	13
Table 2 Independently Qualifying lichen species at each SSSI .....	15
Table 3 SOWI and URI scores for each SSSI.....	15
Table 4 Suggested targets for SOWI & URI monitoring scores .....	16
Table 5 Woodland habitat monitoring attributes.....	16
Table 6 Saxicolous habitat monitoring attributes .....	18

## 1. Crynodeb gweithredol

Mae'r adroddiad hwn yn cyflwyno canlyniadau Monitro Safonau Cyffredin y crynodiad o gennau epiffytig a rhywogaethau o gennau sy'n cymhwyso'n annibynnol ar draws sawl Safle o Ddiddordeb Gwyddonol Arbennig (SoDdGA) o fewn Cwm Gwaun, Sir Benfro, sydd gyda'i gilydd yn rhan o Ardal Cadwraeth Arbennig (ACA) Coetiroedd Gogledd Sir Benfro. Mae'r safleoedd sy'n cael eu monitro yn cynnwys SoDdGA Allt Pontfaen–Coed Gelli-fawr, Gallt Llanerch–Coed Gelli-deg, Cwm Bach/Sychpant, Dyffryn Gwaun, a Garn Wood–Kilkiffeth Wood–Dan-deri–Cwm Felin-ban. Mae'r coetiroedd hyn o bwysigrwydd cenedlaethol oherwydd eu cymunedau o gennau, yn enwedig casgliadau sy'n gysylltiedig â pharhad ecolegol hir, fel y'i hadlewyrchir gan sgoriau Mynegai Coetiroedd Cefnforol Deheuol uchel ac, mewn rhai safleoedd, sgoriau Mynegai Coedwigoedd Glaw'r Ucheldir.

Cynhaliwyd y monitro gan ddefnyddio fframwaith Monitro Safonau Cyffredin, yn defnyddio priodoleddau uniongyrchol (yn seiliedig ar dacson) ac anuniongyrchol (yn seiliedig ar gynefin) i asesu cyflwr y nodwedd. Defnyddiwyd cyfres darged o rywogaethau o gennau cymharol amlwg ac adnabyddadwy fel dirprwy ar gyfer cyflwr y cynulliad, gan ganiatáu dull asesu cyflym ond cadarn y gellir ei atgynhyrchu heb ddibynnu ar arbenigedd tacson arbenigol iawn. Canolbwyntiodd y monitro ar ailrolygu lleoliadau Monitro Safonau Cyffredin hanesyddol o 2007–2008, wedi'i ategu gan chwiliadau yn seiliedig ar leiniau wedi'u canolbwyntio ar glystyrau o leoliadau monitro blaenorol. Cynhaliwyd gwaith maes dros chwe diwrnod, gyda deuddeg llain monitro wedi'u sefydlu ar draws y SoDdGAau.

Mae canlyniadau'n dangos, er gwaethaf presenoldeb parhaus llawer o rywogaethau nodweddiadol o gennau, bod cyflwr cyffredinol y casgliadau o gennau a'r nodweddion cymhwyso annibynnol ar draws yr holl SoDdGAau sy'n cael eu monitro yn cael ei asesu fel anffafriol. Mae cymariaethau ag arolygon o 1985 a 2007–2008 yn dangos dirywiad hirdymor ym mhoblogaethau cennau — gostyngiadau o ran eu helaethrwydd, a cholledion lleol o rai rhywogaethau nodedig. Er bod rhai canfyddiadau cadarnhaol wedi'u cofnodi — gan gynnwys darganfod sawl rhywogaeth newydd i ACA Coetiroedd Gogledd Sir Benfro, gan gynnwys *ricasolia virens* yn SoDdGA Gallt Llanerch–Coed Gelli-deg, a *chaenotheca brunneola* a *skyttea nitschkei* (ffyngau llawn cennau ar *thelotrema lepadinum*) yn SoDdGA Garn Wood–Kilkiffeth Wood–Dan-deri–Cwm

Felin-ban, nid yw'r enillion hyn yn gwrthbwysu'r tueddiadau negyddol ehangach. Ymddengys bod *ricasolia virens* yn gytfrefiaeth newydd go iawn, ond mae'n debygol iawn bod y ddwy rywogaeth olaf wedi cael eu hesgeuluso yn y gorffennol.

Y prif ffactorau sy'n achosi cyflwr anffafriol yw dirywiad parhaus cynefinoedd a phroblemau rheoli. Mae'r rhain yn cynnwys brigdwf yn cau yn dilyn rhoi'r gorau i bori traddodiadol a rheoli coetiroedd, colli coed hynafol, gormodedd o iorwg, mieri, glasbrennau a phrysgwydd, effeithiau clefyd coed ynn ar goed cynnal allweddol, a thystiolaeth o ewtroffigedd ac effeithiau ar ansawdd aer mewn rhai ardaloedd. Mae darnio coetiroedd cyfagos ac ynysu poblogaethau cennau sy'n weddill yn lleihau gwydnwch a hyfywedd hirdymor ymhellach.

Mae'r adroddiad yn dod i'r casgliad bod y poblogaethau cennau presennol wedi'u cyfyngu i ychydig o "Ardaloedd Cennau Allweddol" (y lleiniau monitro) a'u bod yn gyffredinol yn rhy fach a dan fygythiad i gael eu hystyried mewn cyflwr ffafriol, a bod data arolwg hanesyddol o 2008 (a hyd yn oed 1985) yn debygol o gynrychioli cymunedau cennau a oedd eisoes wedi diraddio yn hytrach na llinell sylfaen o gyflwr iach. Er bod yr holl Ardaloedd Cennau Allweddol hyn o bwysigrwydd mawr o ran cadwraeth cennau, Kilkiffeth1 a Kilkiffeth2 yn SoDdGA Garn Wood, Kilkiffeth Wood a Dan-deri-Cwm Felin-ban, ynghyd â GLCGD1 yn SoDdGA Gallt Llanerch-Coed Gelli-Deg, yw'r safleoedd cennau cyfoethocaf sydd ar ôl yng Nghwm Gwaun. Ni ellir gorbwysleisio pwysigrwydd sefydlu prosesau rheoli addas yn yr ardaloedd hyn. Mae angen ymyriadau rheoli ar unwaith i atal dirywiad pellach, gan gynnwys adfer systemau pori priodol, rheoli llystyfiant goresgynnol a chysgodol, amddiffyn a meithrin coed hynafol, a lliniaru pwysau llygredd. Wrth ymgymryd ag unrhyw waith rheoli coed yn yr Ardaloedd Cen Allweddol, mae'n hanfodol ceisio cyngor cennegydd a bod gwaith yn cael ei wneud fel rhan o'r "Cynllun Gwella Cynefin Cen" yn unig.

Argymhellir monitro parhaus gan ddefnyddio ffotograffiaeth pwynt sefydlog (i asesu effeithiolrwydd prosesau rheoli) a'r dull Monitro Safonau Cyffredin wedi'i fireinio, wedi'i gefnogi gan arolygon arbenigol llawn achlysurol, i olrhain ymatebion i brosesau rheoli ac i ailasesu'r cyflwr dros amser.

## 2. Executive summary

This report presents the results of the Common Standards Monitoring (CSM) of the epiphytic lichen assemblages and independently qualifying lichen species across several Sites of Special Scientific Interest (SSSIs) within the Gwaun Valley, Pembrokeshire, which together form part of the North Pembrokeshire Woodlands Special Area of Conservation (SAC). The monitored sites include Allt Pontfaen–Coed Gelli-fawr, Gallt Llanerch–Coed Gelli-deg, Cwm Bach/Sychpant, Dyffryn Gwaun, and Garn Wood–Kilkiffeth Wood–Dan-deri-Cwm Felin-ban SSSIs. These woodlands are of national importance for their lichen communities, particularly assemblages associated with long ecological continuity, as reflected by high Southern Oceanic Woodland Index (SOWI) and, in some sites, Upland Rainforest Index (URI) scores.

Monitoring was undertaken using the CSM framework, employing both direct (taxon-based) and indirect (habitat-based) attributes to assess feature condition. A targeted suite of relatively conspicuous and identifiable lichen species was used as a proxy for assemblage condition, allowing a rapid but robust assessment method that can be replicated without reliance on highly specialist taxonomic expertise. Monitoring focused on re-surveying historic CSM locations from 2007–08, supplemented by plot-based searches centred on the clusters of former monitoring locations. Fieldwork was carried out over six days, with twelve monitoring plots established across the SSSIs.

Results show that, despite the continued presence of many characteristic lichen species, the overall condition of lichen assemblages and independently qualifying features across all monitored SSSIs is assessed as unfavourable. Comparisons with surveys from 1985 and 2007–08 indicate a long-term decline in lichen populations - reductions in abundance, and localised losses of some notable species. Although some positive findings were recorded — including the discovery of several species new to the North Pembrokeshire Woodlands SAC, including *Ricasolia virens* in Gallt Llanerch - Coed Gelli-deg SSSI, and *Chaenotheca brunneola* and *Skyttea nitschkei* (a lichenicolous fungi on *Thelotrema lepadinum*) in Garn Wood–Kilkiffeth Wood–Dan-deri-Cwm Felin-ban SSSI, these gains do not offset the broader negative trends. *Ricasolia virens* seems to be a genuine new colonisation, but the latter two species have quite likely simply been overlooked in the past.

The principal drivers of unfavourable condition are ongoing habitat deterioration and management issues. These include canopy closure following abandonment of traditional grazing and woodland management, loss of veteran and ancient trees, proliferation of ivy, bramble, saplings and scrub, impacts of ash dieback on key host trees, and evidence of eutrophication and air-quality effects in some areas. Fragmentation of surrounding woodland and the isolation of remaining lichen populations further reduce resilience and long-term viability.

The report concludes that the existing lichen populations are restricted to a few “Key Lichen Areas” (the monitoring plots) and that they are generally too small and vulnerable to be considered in favourable condition, and that historical survey data from 2008 (and even 1985) likely represent already degraded lichen communities rather than a baseline of healthy condition. Whilst all of these Key Lichen Areas (KLAs) are of high lichen conservation importance, Kilkiffeth1 & Kilkiffeth2 in Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI, together with GLCGD1 in Gallt Llanerch – Coed Gelli – Deg SSSI, are the richest lichen sites left in the Gwaun Valley. The importance of establishing suitable management in these areas cannot be overstated. Immediate management interventions are required to halt further decline, including reinstatement of appropriate grazing regimes, control of invasive and shading vegetation, protection and recruitment of veteran trees, and mitigation of pollution pressures. When undertaking any tree management work in the Key Lichen Areas, it is essential that advice from a lichenologist is sought and that works are only carried out as part of a “Lichen Habitat Improvement Plan”.

Continued monitoring using fixed point photography (to assess the effectiveness of management) and the refined CSM approach, supported by occasional full specialist surveys, is recommended to track responses to management and to reassess condition over time.

### **3. Background & aims**

#### **3.1. Site description**

The North Pembrokeshire Woodlands Special Area of Conservation (SAC) includes five separate Sites of Scientific Interest (SSSI) in the Gwaun Valley (Garn Wood, Kilkiffeth Wood & Dan-Deri-Cwm Felin-Ban SSSI, Gallt Llanerch - Coed Gelli-deg SSSI, Cwm Bach/Sychpant SSSI, Dyffryn Gwaun SSSI and Allt Pontfaen - Coed Gelli-

fawr SSSI) as well as Coed Ty canol NNR to the northeast. Each SSSI is described in more detail in Section 6.

The woodland SSSIs in the Gwaun Valley have long been known for their exceptional lichen communities. The woodlands range from extensive areas of Oak-dominated woodland along the north and south sides of the valley, with Ash-dominated stream gullies and ravines, to extensive areas of Salix-dominated wet/alluvial woodland and small, Alder-dominated areas such as Llanerch Alder Carr. The valley is surrounded for the most part by fairly intensive agriculture. Within the valley itself, agriculture is less intensive, with lots of rough grazing land and small areas of arable. Small areas of commercial coniferous plantation remain, and these present an ongoing threat as conifers readily seed into the woods.

The individual SSSIs in the valley score highly on the “Southern Oceanic Woodlands Index” (SOWI) and two of them, on the “Upland Rainforest Index” (URI), the appropriate indices of ecological continuity for this part of Wales. The species that make up these assemblages contribute to the calculation of the SOWI and URI scores for each SSSI, which are used as the criteria for the selection of the lichen assemblages as SSSI features here.

### **3.2. Previous surveys and monitoring**

The British Lichen Society/Francis Rose visit in April 1973 listed 98 species from 3 sites (Rose, 1975). In March 1985, a full survey of all SSSI woodlands in the Gwaun valley was undertaken over a period of four and a half weeks (Wolseley, 1985). This survey identified 165 lichens, 53 of which were indicators of ancient woodland.

In 2007 and 2008, Wolseley and Douglass (Wolseley & Douglass 2008) undertook a site-wide lichen survey of the Gwaun Valley woodlands for the Countryside Council for Wales (CCW). This survey was undertaken in November 2007 and February 2008. Lichens and lichen communities containing species of importance were noted together with their substrate, position and associated species. Where previous surveys had been conducted, the survey attempted to find the sites that were noted in those surveys in order to identify and photograph the locations of importance for lichens to allow the future identification of important areas and species. The 2007/08 survey of each woodland section was comparatively brief and concentrated on returning to sites

where species were found in 1985. This survey highlighted a loss of species and changes in habitat conditions across all the sites in the intervening 23 years. The present survey took place in November 2025, 17 years after the last survey and shows that the issues identified in 2008 remain unaddressed and indicates that the situation continues to deteriorate. It should be noted that the 2008 report was unfinished and contains several errors, such as incorrect NGRs and incorrect tree species for some CSM locations.

### **3.3. Aims of this report**

This monitoring report covers Allt Pontfaen – Coed Gelli-fawr SSSI, Gallt Llanerch - Coed Gelli-deg SSSI, Cwm Bach Sychpant SSSI, Dyffryn Gwaun SSSI and Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI all of which form part of the North Pembrokeshire Woodlands Special Area of Conservation (SAC).

By monitoring in larger plots around the 2007/08 CSM Locations (individual trees or rocks), it aims to provide a rapid yet robust and meaningful monitoring methodology that can be used to assess the condition of and changes in the SOWI and URI Lichen Assemblage features in each SSSI. This is achieved by focusing on a restricted number of species from each assemblage that are reasonably easy to find and identify in the field. Furthermore, it covers the IQF lichens and should allow monitoring to be undertaken by someone with a reasonable level of lichen identification skills without the need for specialists able to locate and identify the more difficult and/or obscure crustose and leprose species. The monitoring method assumes that the condition of the selected target species will serve as a proxy measure for the condition of the assemblage features as a whole. This assumption needs to be treated with caution and should be tested by occasional full surveys of all relevant species, carried out by suitably experienced lichen specialists. This will be required to ensure that the present monitoring method is appropriate, sufficient and robust. This assessment also allows threats and management issues to be identified, and recommendations to be made regarding future management and monitoring.

## **4. Developing attributes & targets for Common Standards Monitoring**

### **4.1. Establishing monitoring attributes and targets**

It seems that, despite an impressive number of lichen taxa having been recorded here, many lichen populations have declined in the last 30-50 years. The woods seem to have changed significantly in recent decades, from open wood pastures with a mixture of patches of coppice, glades, and small fields with veteran trees to a taller, more closed canopy of neglected Oak coppice with fewer and smaller open areas and fewer veteran trees. The woods must therefore be considered as in suboptimal condition for many lichens and lichen communities. The extensive fragmentation and degradation of the surrounding woodlands will have further exacerbated problems, leaving many lichen populations small and isolated.

It is considered that, for the SOWI and URI lichen assemblages here to be considered in “Favourable Condition”, a significant number of the target species should have healthy populations which are of sufficient size to be viable for the foreseeable future, and that the habitat and management practices must be such as to provide continuously suitable conditions into the future. The site should also score highly on the SOWI and URI indices.

### **4.2. Setting appropriate Direct attribute targets**

In attempting to set appropriate and meaningful targets for these species attributes, some questions arise. How large were the lichen populations here in the past? How do the lichen populations currently present compare to this? Have things got better or worse for lichens here? Do the previous surveys record a lichen “golden age” or the remnants of once much larger populations? In the Gwaun Valley woodlands, it is possible to attempt to answer some of these questions.

Wolseley & Douglass (2008) note many negative changes in the woodlands and losses in the lichen flora that took place between 1985 and 2008. It is clear from that report that the abandonment of grazing and the loss of Ancient and Veteran Trees (AVTs) have been the primary causes of this deterioration. These are both trends that continue and remain unaddressed.

From the 2008 report, it is clear that the lichen populations here were larger and more widespread when the first comprehensive survey of the site was undertaken in 1985. It shows that the lichen populations in 2008 had declined since then and that the habitat conditions had also deteriorated. The 2008 survey certainly did not record a lichen “golden age”, and even the 1985 survey is likely to have recorded the remnants of once larger populations. The earlier lichen surveys, therefore, cannot be considered to provide a “baseline” of what healthy and viable lichen communities might look like here, but they do show that the site was richer in the past. The present survey results (see Section 6) suggest that the decline has continued and that things have got worse for lichens here. In summary, the woods appear to be suboptimal for many of the key lichen species, which have been in decline for at least 40 years.

So, the question arises - how much of each species should be present, and what should the habitats look like for the lichen feature to be considered in favourable condition? Few woodlands in Wales support thriving old forest lichen populations, and there are therefore few woods that can provide us with an idea of what a “viable and healthy” old forest lichen community in this part of Southwest Wales should look like, but Goulthrop Roads Wood (part of St Brides Bay SSSI) may give some indication. The low, open woodland there clings to steep, north-facing coastal cliffs and extends down to the water’s edge. These inaccessible slopes are far richer in lichens than the more accessible parts of the wood and appear to be relatively undisturbed, having apparently never been clear-felled or extensively coppiced. This lack of disturbance, coupled with a relative freedom from aerial pollution, has allowed the lichens to flourish here. Although not a “pristine” woodland, it scores very highly (29) on the Southern Oceanic Woodland Assemblage, and the populations of “old forest” lichens are thriving with many large, leafy and fertile specimens of *Lobaria pulmonaria*, *Ricasolia virens*, *Nephroma laevigatum*, *Degelia atlantica*, *D. ligulata*, *D. plumbea*, *Nephroma parile*, *Sticta fuliginosa*, *S. sylvatica* and *S. limbata*. The presence of many young, small thalli of most species also shows that populations of most species are mobile within the sites, regularly colonising and establishing new habitats.

This suggests that high targets for each of the species in each of the SSSIs are desirable and appropriate, and that lichens should be actively colonising suitable habitats, of which there should be plenty. At the present time, populations of most species in the Gwaun woodlands are small and restricted in their distribution and may

not represent sustainable, long-term populations, especially given the largely unsuitable habitat they now find themselves in. It is therefore not currently practical to attempt to set meaningful targets – ideal “lichen-friendly” management must be put in place in as many “key Lichen areas” as possible (or, more preferably, across all of each SSSI) to first attempt to halt further declines. Assuming this can be achieved, it may then be possible to realistically assess the amount of suitable habitat and what sort of population sizes could be hoped for. For now, we must accept that the habitats are in poor condition, the lichen populations are not large or widespread enough and that they must start increasing before they can be considered as anything other than in unfavourable condition.

#### **4.3. Direct attributes - SOWI and URI assemblage “Target Species”**

The monitoring results for the assemblage features are derived primarily from the monitoring of the direct attributes (the “target” lichen species set out in Table 1 below). From the SOWI and URI assemblage lists from previous surveys, 20 SOWI and 7 URI species were selected for use in monitoring on the basis that they are:

- Species that are believed to be characteristic of woodland of high ecological continuity in this part of Wales, and which are rare or absent in disturbed woodland.
- Species that are relatively easy to find and identify.

Therefore, the following “target species” were used as direct attributes for monitoring: Whilst no targets are set for the abundance or distribution of these species at present (see Section 4.2 above), as an absolute minimum, all of the target species seen in 2008 are expected to at least be present and to not have declined or been lost since 2008.

Table 1 SOWI & URI Assemblage Species used in Monitoring

Site	Direct attribute (SOWI Target Species)	Direct attribute (URI Target Species)
<b>Garn Wood, Kilkiffeth Wood, &amp; Dan-Deri-Cwm Felin-Ban SSSI</b>	<i>Cetrelia olivetorum s. lat.</i> <i>Leptogium lichenoides</i> <i>Lobaria pulmonaria</i> <i>Nephroma laevigatum</i> <i>Nephroma parile</i> <i>Pannaria conoplea</i> <i>Parmeliella triptophylla</i> <i>Peltigera horizontalis</i> <i>Pertusaria multipuncta</i> <i>Phyllopsora rosei</i> <i>Punctelia reddenda</i> <i>Sticta fuliginosa s. lat.</i> <i>Sticta limbata</i> <i>Sticta sylvatica</i> <i>Thelotrema lepadinum</i> <i>Usnea ceratina</i>	Not a qualifying feature, not monitored.
<b>Gallt Llanerch - Coed Gelli-deg SSSI</b>	<i>Cetrelia olivetorum s. lat.</i> <i>Leptogium cyanescens</i> <i>Leptogium lichenoides</i> <i>Leptogium teretiusculum</i> <i>Lobaria pulmonaria</i> <i>Nephroma laevigatum</i> <i>Nephroma parile</i> <i>Pannaria conoplea</i> <i>Parmeliella triptophylla</i> <i>Parmotrema crinitum</i> <i>Punctelia reddenda</i> <i>Sticta fuliginosa s. lat.</i> <i>Sticta limbata</i> <i>Sticta sylvatica</i> <i>Thelotrema lepadinum</i>	<i>Cetrelia olivetorum s. lat.</i> <i>Hypotrachyna laevigata</i> <i>Hypotrachyna taylorensis</i> <i>Lepraria membranacea</i> <i>Parmeliella parvula</i>

Site	Direct attribute (SOWI Target Species)	Direct attribute (URI Target Species)
<b>Cwm Bach/Sychpant SSSI</b>	<i>Leptogium cyanescens</i> <i>Leptogium lichenoides</i> <i>Lobaria pulmonaria</i> <i>Nephroma parile</i> <i>Pannaria conoplea</i> <i>Parmeliella triptophylla</i> <i>Parmotrema crinitum</i> <i>Peltigera horizontalis</i> <i>Phyllopsora rosei</i> <i>Punctelia reddenda</i> <i>Sticta fuliginosa s. lat.</i> <i>Sticta limbata</i> <i>Sticta sylvatica</i> <i>Thelotrema lepadinum</i> <i>Usnea ceratina</i>	Not a qualifying feature, not monitored.
<b>Dyffryn Gwaun SSSI</b>	Not a qualifying feature, not monitored	<i>Cetrelia olivetorum s. lat.</i> <i>Hypotrachyna laevigata</i> <i>Hypotrachyna sinuosa</i> <i>Menegazzia terebrata</i> <i>Parmeliella parvula</i>
<b>Allt Pontfaen - Coed Gelli-fawr SSSI</b>	<i>Leptogium lichenoides</i> <i>Lobaria pulmonaria</i> <i>Nephroma parile</i> <i>Parmotrema crinitum</i> <i>Peltigera collina</i> <i>Peltigera horizontalis</i> <i>Sticta limbata</i> <i>Sticta sylvatica</i> <i>Thelotrema lepadinum</i> <i>Usnea ceratina</i>	Not a qualifying feature, not monitored

#### 4.4. Direct attributes - Independently Qualifying Feature species

Desk studies identified seven lichen species as meeting the criteria for Independently Qualifying Features (IQFs). However, three of these (*Fuscopannaria mediterranea*, *Schismatomma niveum* and *Usnea articulata*) were dropped from monitoring as they are no longer considered to meet the SSSI selection criteria. The old record for *Fuscopannaria mediterranea* was thought to be possibly a misidentification of *Parmeliella parvula*. This species is probably not present and was removed from the list of IQFs. An old record for *Schismatomma niveum* was from a single tree that had died, decayed and lost its bark by 2008. This species does not qualify as an IQF because the Stackpole SSSI population is the largest in the Area of Search (AoS).

*Usnea articulata* is now spreading in Wales and is no longer suitable as an IQF species. This left the following IQF species in need of monitoring.

Table 2 Independently Qualifying lichen species at each SSSI

SSSI	Direct attribute (IQF species)
Garn Wood, Kilkiffeth Wood, & Dan-Deri-Cwm Felin-Ban SSSI	<i>Lobaria pulmonaria</i>
Gallt Llanerch - Coed Gelli-deg SSSI	<i>Lobaria pulmonaria</i>
Cwm Bach/Sychpant SSSI	<i>Lobaria pulmonaria</i>
Dyffryn Gwaun SSSI	<i>Menegazzia terebrata</i>
Allt Pontfaen - Coed Gelli-fawr SSSI	<i>Graphina pauciloculata</i> <i>Lobaria pulmonaria</i> <i>Phaeographis lyellii</i>

#### 4.5. Direct attributes - Southern Oceanic Woodland Index (SOWI) & Upland Rainforest Index scores

In Pembrokeshire, and much of the rest of Wales outside of the extreme Northwest, any site that scores twenty or more on the SOWI meets the criteria for SSSI selection. A review of the previous survey reports shows that 4 out of 5 of the Gwaun Valley woodlands score SSSI highly in the SOWI.

In Pembrokeshire and much of the rest of Wales, outside of the extreme Northwest, any site that scores ten or more on the URI meets the criteria for SSSI selection. A review of the previous survey reports indicates that the URI Index scores for the Gwaun Valley woodlands are variable but never particularly high, and that just 2 of the sites qualify for this feature.

Table 3 below shows the SOWI and URI scores (using all previous records) for each SSSI and indicates which assemblages are qualifying features at which SSSI.

Table 3 SOWI and URI scores for each SSSI

SSSI	SOWI score	Qualifying feature?	URI score	Qualifying feature?
Garn Wood, Kilkiffeth Wood & Dan-Deri-Cwm Felin-Ban	28	Yes	8	No
Gallt Llanerch - Coed Gelli-deg	27	Yes	10	Yes
Cwm Bach, Sychpant	22	Yes	2	No
Dyffryn Gwaun	17	No	10	Yes
Allt Pontfaen - Coed Gelli-fawr	20	Yes	8	No

An in-depth, whole-site survey of each of the woodlands could be expected to produce the SOWI and URI scores as set out in Table 3. However, because the monitoring methodology used here only utilises a selection of assemblage species for monitoring and, given that most time on-site will be spent finding these “target species”, it is suggested that the SOWI and URI scores set out in Table 4 below are appropriate for monitoring purposes.

Table 4 Suggested targets for SOWI & URI monitoring scores

<b>SSSI</b>	<b>SOWI score</b>	<b>Acceptable score in monitoring</b>	<b>URI Score</b>	<b>Acceptable score in monitoring</b>
<b>Garn Wood, Kilkiffeth Wood &amp; Dan-Deri-Cwm Felin-Ban</b>	28	17	8	6
<b>Gallt Llanerch - Coed Gelli-deg</b>	27	19	10	6
<b>Cwm Bach, Sychpant</b>	22	17	2	1
<b>Dyffryn Gwaun</b>	17	15	10	10
<b>Allt Pontfaen - Coed Gelli-fawr</b>	20	15	8	6

#### 4.6. Indirect attributes - Habitats

The habitat characteristics (indirect attributes) listed below are based on the generic guidance produced by JNCC (2005). These indirect attributes are recorded in the field along with the direct attributes. However, it should be noted that these indirect attributes are not easy to measure in an objective and repeatable way in a few days of monitoring. Indirect Attributes for woodland trees include:

Table 5 Woodland habitat monitoring attributes

<b>Attribute</b>	<b>Measure</b>
<b>Niche availability</b>	There must be no loss of area of woodland
<b>Stand structure</b>	Percentage canopy cover appropriate for the wood, as an absolute minimum to be greater than 20%. (apart from in wood pasture plots). A varied age range of trees must be present, from saplings to over mature with dead wood present
<b>Stand composition</b>	The range of tree/shrub species must be maintained to ensure the continuation of habitat and niches for the species-rich lichen flora in mixed native woodlands

Attribute	Measure
<p><b>Negative indicators</b></p>	<p>Non-native species. Rhododendron, Cherry laurel, Holm Oak, Japanese knotweed and Himalayan Balsam or coniferous trees must be absent in all monitoring plots and controlled throughout the Gwaun Valley Woodland SSSI's.</p>
<p><b>Negative indicators: shade</b></p>	<p>A balance between no grazing and overgrazing. A mosaic of open glades and closed tree canopy to be maintained. Ivy/Bramble/Bracken should not be present on more than 10% tree trunks in each monitoring plot.</p>
<p><b>Negative indicators: Pollution</b></p>	<p>Where the woodland abuts on to agricultural land; trunks and branches at the periphery should not have a cover of green, algal 'gunge' deposits. <i>Xanthoria</i> species should not be present on Oak, Birch or Alder twigs.</p> <div data-bbox="513 864 1278 1507" data-label="Image"> </div> <p><b>Figure 1 "Algal gunge"</b></p> <p>This is not easy to describe and is therefore illustrated in the figure above. Where present, there is an amorphous, thick somewhat gelatinous "gloop" of greenish-brown algal growth on trees. This is most easily seen in wet conditions.</p> <p>And</p> <p><i>Physcia</i> and <i>Xanthoria</i> Absent/very rare on <b><u>oak and birch twigs</u></b></p>

Indirect attributes for lichens growing on rocks include:

Table 6 Saxicolous habitat monitoring attributes

Attribute	Measure
<b>Niche availability</b>	No loss of area of rocks (or numbers of rocks)
<b>Land use</b>	No input of inorganic fertilisers or slurry or other concentrated organicfertilisers on land adjacent to the rock outcrops/stones or significant change in type or numbers of grazing stock
<b>Lichen communities</b>	No visible change in extent of open rock habitat dominated by lichens
<b>Negative indicators: shade</b>	No measurable change in quantity of open ground and exposed rock faces and no increase in cover of climbers or shaded area from adjacent trees or scrub, e.g., ivy
<b>Negative indicators: pollution</b>	No atmospheric pollution effects. No evidence of hypertrophication, in particular no evidence of increasing algal dominanceand never more than 5% - 10% algal cover on rock surfaces
<b>Negative indicators: burning</b>	No evidence of fires in thevicinity of the rocks
<b>Negative indicators: Disturbance</b>	No widespread damage from recreational activities(localised tracks and paths or regularly used sites for rock climbing are acceptable). No movement of rocks alongside tracks.

## 5. Methods

This monitoring report follows the Common Standards Monitoring (CSM) approach, which is used to evaluate and report on the condition of key features on statutory sites. Features are assessed, where possible, using a combination of direct (taxon-related) and indirect (habitat-related) attributes, with targets set for each attribute. The methods, attributes and targets are designed to be sufficiently clear and repeatable to allow future reassessment and comparison of results.

This report focuses on woodland lichens, including assemblages of Nationally Rare and Nationally Scarce “old forest” species of the Southern Oceanic Woodland Index

(SOWI), species of the Upland Rainforest Index (URI), and a selection of Independently Qualifying lichens. Monitoring was undertaken in twelve monitoring plots in November 2025 (see Map 1).

The SSSIs included in this study are large and complex, encompassing a range of habitats and often difficult terrain. Lichen interest is frequently confined to individual trees or rocks, or small groups of these, within restricted parts of each site. Previous monitoring (Wolseley & Douglass, 2008) relied on re-finding individual trees or rocks designated as Common Standards Monitoring Locations (CSM Locations) and recording notable lichen species at each location.

For the current monitoring, a three-stage process was followed.

- Each SSSI was walked systematically to ensure that no previously unrecorded lichen-rich areas (“hotspots”) were overlooked. This broader reconnaissance helped confirm whether monitoring effort should remain focused on historically recorded areas or whether additional plots were required.
- Efforts were made to locate as many historic CSM Locations as possible. This proved time-consuming and was complicated by several issues within the 2008 dataset, including incorrect or missing grid references, discrepancies in recorded tree species, and inconsistencies between the CSM proformas and the main report text. In addition, some original CSM trees have since fallen, or habitat changes have made locations difficult or impossible to relocate.
- Monitoring plots were delineated around clusters of successfully located CSM Locations. These plots form the basis for the current monitoring approach. Within each plot, original CSM Locations were re-recorded where possible, alongside searches of other trees, rocks and microhabitats that appeared suitable for supporting SOWI or URI lichens. This approach combines the historic CSM framework with the broader “search area” methodology described by Bosanquet (2020), which focuses on recording a suite of target species within defined areas rather than on individual fixed trees.

The assumption underlying this approach is that previous surveys have identified the most important lichen-rich areas within these woods. This appears largely valid, as few additional areas of interest were identified during the initial site walkovers.

However, some *Salix*-dominated wet woodland not surveyed in 2007 was noted to support species such as *Sticta*, and there are also inaccessible areas of oak woodland that may warrant further investigation in future surveys

### **5.1. Establishing monitoring plots**

In 2008, 85 CSM Locations were used to monitor lichens across the five SSSIs: 29 at Gallt Llanerch – Coed Gelli-deg, 22 at Allt Pontfaen – Coed Gelli-fawr, 8 at Dyffryn Gwaun, 7 at Cwm Bach Sychpant, and 19 across Garn Wood, Kilkiffeth Wood and Den-deri – Cwm Felin-ban. During the present survey, 79 of these locations were successfully mapped in GIS and used to inform the creation of monitoring plots. The remaining six locations could not be used due to missing or wholly inaccurate grid references in the 2008 report.

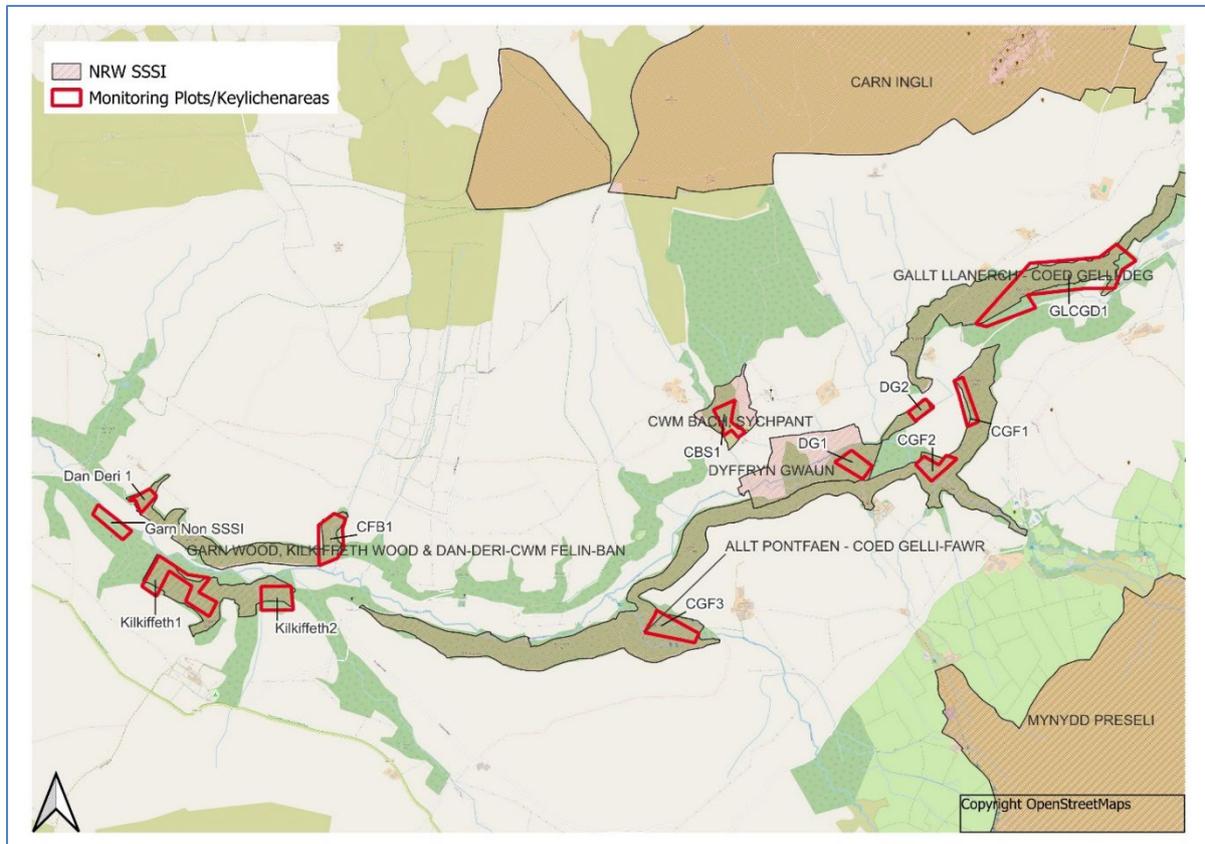
The 2025 monitoring plots were created by delineating broader areas around clusters of mapped CSM Locations, within which monitoring was undertaken. Plot locations are shown in Map 1. The plots are not physically marked on the ground but exist as digitised polygon boundaries within a GIS shapefile provided alongside this report.

Because many lichens are associated with specific microhabitats or particular stages of ecological succession, it is not always possible to re-find species on the same tree or rock, especially where conditions have changed. Locating the original monitoring trees used in 2008 can also be difficult or impossible. For these reasons, relatively large monitoring plots were established, with the expectation that species formerly recorded at a given location are most likely to persist or re-establish on nearby substrates with similar conditions. Historic CSM locations were therefore amalgamated into plot-level assessment units. Species presence and absence in 2025 was assessed at the plot level. CSM Locations not included in plots were not monitored and are not interpreted as absences.

The monitoring plots are intended primarily to focus survey effort and to provide a framework for setting plot-based species and habitat targets in future monitoring. If a target species is not recorded within a particular plot, additional searches should be undertaken in other plots or more widely across areas of suitable habitat within the site.

Monitoring was undertaken within twelve plots over six days in November 2025, with additional time spent at each site locating historic CSM Locations, delineating plot boundaries and searching adjacent areas.

Map 1 Monitoring plots



## 5.2. Monitoring the assemblages using “Target Species”

To allow a reasonably rapid and simple monitoring method to be developed, a suite of SOWI and/or URI “target species” was agreed with the Natural Resources Wales (NRW) Specialist advisor for Non-vascular Plants. These species were chosen as the direct attributes used to monitor the SOWI and URI assemblages. The target species are those that are reasonably large, obvious, easily found and identifiable yet are “meaningful” species whose condition can tell us something about the health and condition of the assemblages as a whole. This suite of target species is set out in Section 4.3.

Very small species which require searching for with a hand lens (and those that are very difficult to identify in the field) were not used as they are very time-consuming to find and identify, and it is almost impossible to judge their distribution and frequency

given the time constraints of this project. The SOWI and URI scores for the reserve are also used as direct attributes (See Section 4.5).

Information regarding the habitat (indirect) attributes is also recorded in each monitoring plot. Taken together, these direct and indirect attributes allow an assessment of the current condition of the lichen assemblages and Independently Qualify Feature (IQF) lichen species to be made.

Each monitoring plot was searched for 4 – 7 hours, depending on the size of the plot and the abundance and diversity of target species within it. The plot boundaries were digitised into a QGIS shapefile and uploaded to a tablet computer and viewed using “QField”, a standalone Android-based data collection application linked to QGIS. Whilst monitoring, care was taken to remain within plot boundaries (all other areas having been checked previously). Within each monitoring plot, all suitable-looking trees were searched for the target species, with searches being focused on trees that support the small-scale habitat niches occupied by the target species (e.g., areas with well-lit, base-rich tree bark, mossy patches on stems and rocks, leaning boughs, dry overhangs, smooth bark, etc.). The locations of all target species were recorded in QField and are provided as ten figure grid reference points on a GIS (Shapefile) layer. During monitoring, QField was not set to record tracks in order to save battery power. In future monitoring, track recording could be enabled to help ensure that all parts of each plot are visited.

### **5.3. Monitoring the Independently Qualifying Feature species**

All IQF species were searched for during the assessment of the assemblages. However, little information is available as to the locations of these species, apart from for *Lobaria pulmonaria* and most proved impossible to find in the short amount of time available.

***Allographa pauciloculata*** recorded under its old name (***Graphina pauciloculata***), was found for the first time in 2008 in Allt Pontfaen - Coed Gelli-fawr SSSI. At CSM Location “Pentrisil 17” (SN 05652 34724). Searches for this readily seen species in 2025 were initially focused on this SSSI, but later in all other SSSIs where stands of smooth-barked trees were present, as the species appeared to be relatively widespread.

***Lobaria pulmonaria*** was historically known from five trees in the Gwaun Valley. Wolseley and Douglass (2008) noted that *Lobaria pulmonaria* was present on veteran Oak and Ash trees on the south-facing side of the valley at Sychpant SSSI (CSM Location 4, SN0475334895), at Felin Ban Wood in Garn Wood, Kilkiffeth Wood & Dan-Deri-Cwm Felin-Ban SSSI (CSM Location Felin ban 13, SN02121 34479) and on two trees in Gallt Llanerch-Coed Gelli-Deg SSSI at Penrhiw (CSM Location Penrhiw 9, SN0630435773) and CSM Location Penrhiw 5, SN0636135801). On the north-facing side of the valley, it was known from a single veteran Ash tree on the edge of a small meadow at CSM location “Cwm Ddu 20” above Allt Hendy in Allt Ponfaen- Coed Gelli Fawr SSSI. No grid reference is provided, but the location was known to the surveyor as being around SN040338. In 2025, all historic sites and their surroundings were searched, and a constant eye was kept out for this readily seen species elsewhere in all SSSIs.

***Menegazzia terebrata*** Wolseley and Douglass (2008) noted that whilst present at Dyffryn Gwaun in 1975, it was not re-found in 1985 or 2008. Searches in 2005 were focused on this SSSI, and it was looked for in the wet woodland in Gallt Llannerch Coed Gelli Deg.

***Phaeographis lyellii*** Wolseley and Douglass (2008) recorded this species from Dyffryn Gwaun SSSI only. Searches in 2005 were focused on this SSSI.

## 6. Monitoring results

In 2025, “Monitoring Plots” were created by delineating broader areas around clusters of the 1985/2008 CSM locations. These areas are where the main lichen interest in each SSSI occurs, and within which monitoring took place. These areas are also considered to be “Key Lichen Areas” in which management should be focused (see Section 8).

Each monitoring plot was searched for the assemblage “target species”. Within each plot, the CSM locations were located (where possible) and the target species searched for. If a CSM location could not be found, or the target species were missing from relocated CSM locations, any other suitable habitats around them (within “the plot”) were then searched. Where found, each species was then recorded with a ten-figure grid reference. Target species are recorded as “absent in 2025” where they were

absent from *both* the original CSM locations *and* the rest of the plot. Where present at the CSM location, or elsewhere in the plot, they are recorded as “present in 2025”, see the Monitoring Results tables in Sections 6.1.1 to 6.1.5 below. Photographs showing changes at a selection of the old CSM Locations between 2008 and today are also provided in Appendix 3.

## **6.1. Monitoring results - assemblage & IQF species**

### **6.1.1. Allt Pontfaen – Coed Gelli-fawr SSSI**

The woods around CGF1 & CGF2 were extensively coppiced in the last century, and as a result, veteran trees are limited to boundaries at the lower and upper margins of the woods and a few along parts of the valley bottoms. “Old Forest Lichens” are conspicuously rare in these coppiced areas. The absence of grazing in the woods has also had a negative effect on the lichen communities. Tree trunks are now dominated by ivy, and many of the old, small meadows/wood pasture areas are now overgrown. The meadow at Allt Hendy (CGF3) is still grazed, and the veteran Oak on the west side of the field still supports *Peltigera collina* and *Sticta* species, although these are now reduced to small thalli (as they were in 2008). The *Lobaria pulmonaria* noted in 2008 was lost from this tree many years ago, but PCNPA have trialled translocation of fallen material from Sychpant onto this and other nearby trees. If grazing cannot be reestablished in this SSSI, the Key Lichen Areas (monitoring plots) will require management as set out in Section 8.



Map 2 Monitoring Plots in the north of Allt Pontfaen – Coed Gelli-fawr SSSI



Map 3 Monitoring Plot in the South of Allt Pontfaen Coed -Gelli Fawr SSSI

## Monitoring results

Most species recorded on CSM location trees in 2008 are still present in the plots, even if not always on the same trees. Several species were not re-found. Of these, the losses of species such as *Graphina ruiziana*, *Lepra (Pertusaria) multipuncta* and *Phaeographis inusta* in **CGF1** appear to be genuine – the hazels on which they were recorded have become shaded and unsuitable. **CGF2** is centred around a ruined cottage and an old meadow area. It remains relatively open. The loss of *Nephroma parile* in CGF2, where it was “abundant” in 2008, appears genuine. *Scytinium lichenoides* is frequent on the lime-rich mortar of the cottage walls and occurs on the bases of a few Ash trees – there is no obvious reason for the loss of *N. parile* here, and *Allographa pauciloculata* is occasional on smooth-barked trees.



Figure 2 IQF species *Allographa pauciloculata* on *Graphina ruiziana*

**CGF3** covers the woodland on either side of the track to Allt Hendy Meadows and the trees in and bordering the meadows. All species were re-found here apart from the original patch of *L. pulmonaria* at CSM 20, which was known to have disappeared many years ago (PCNPA have recently (summer 2025) translocated some fallen *L. pulmonaria* fragments from Sychpant to loc 20 and a few nearby hazel trees). The *Peltigera collina* at CSM 20 remains as a tiny fragment, as it was in 2008, but at CSM loc 19 beside the track, *P. horizontalis* had increased significantly. In common with many other parts of the Gwaun Valley woodlands, *Punctelia reddenda* appears to have increased and is now rather frequent within the plot.

## Note on plot structure

CSM locations 2-5 represent historic monitoring points that are now amalgamated into a single plot, CGF1. Species listed as present or absent in 2025 for plot CGF1 are derived from combined records across CSM locations 2 - 5. Species presence and absence in 2025 are assessed at the plot level only.

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species Absent in 2025
Coed Gelli fawr	CSM 2–5	<i>Parmotrema crinitum</i> ; <i>Graphina ruiziana</i> ; <i>Sticta sylvatica</i> ; <i>Sticta fuliginosa</i> ; <i>Pertusaria multipuncta</i> ; <i>Phaeographis inusta</i> ; <i>Usnea florida</i>	<b>CGF1</b>	<i>Parmotrema crinitum</i> (decreased); <i>Phaeographis dendritica</i> (increased); <i>Sticta fuliginosa</i> ; <i>Thelotrema lepadinum</i> (increased); <i>Usnea florida</i>	<i>Graphina ruiziana</i> ; <i>Lepra</i> ( <i>Pertusaria</i> ) <i>multipuncta</i> ; <i>Phaeographis inusta</i>
Coed Gelli fawr	CSM 6	No SOWI or URI species	<b>Not included in any plot</b>	Not monitored	Not monitored
Coed Gelli fawr / Tregynon / Pentrisil	CSM 7, 8, 9, 10, 17, 18	<i>Nephroma parile</i> ; <i>Leptogium lichenoides</i> ; <i>Sticta fuliginosa</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Hypotrachyna laevigata</i> ; <i>Phaeographis inusta</i> ; <i>Megalaria pulverea</i> ; <i>Japewiella tavaresiana</i>	<b>CGF2</b>	<i>Allographa</i> ( <i>Graphina</i> ) <i>pauciloculata</i> (IQF); <i>Graphina ruiziana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Leptogium lichenoides</i> ; <i>Punctelia reddenda</i> (increased); <i>Sticta fuliginosa sensu lato</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Thelopsis rubella</i>	<i>Nephroma parile</i> ; <i>Phaeographis inusta</i> ; <i>Megalaria pulverea</i>
Pentrisil	CSM 15	<i>Japewiella tavaresiana</i>	<b>Not included in any plot</b>	Not monitored	Not monitored

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species Absent in 2025
Pentrisil	CSM 16	<i>Pertusaria multipuncta</i>	<b>Not included in any plot</b>	<i>Not monitored</i>	<i>Not monitored</i>
Cwm Ddu	CSM 19, 20, 22	<i>Peltigera horizontalis</i> ; <i>Lobaria pulmonaria</i>	<b>CGF3</b>	<i>Lepra multipuncta</i> ; <i>Parmeliella parvula</i> (new); <i>Peltigera collina</i> ; <i>Peltigera horizontalis</i> (increased); <i>Phaeographis dendritica</i> (new); <i>Punctelia reddenda</i> (increased); <i>Scytinium teretiusculum</i> (new); <i>Sticta fuliginosa</i> ; <i>Sticta limbata</i> (new); <i>Sticta sylvatica</i>	<i>Lobaria pulmonaria</i> lost. Transplants present on old host tree at CSM 20; considered unfavourable as an IQF due to transplant-only presence.

**Species Condition Assessment:** Some positive signs, including the finding of *Parmeliella parvula* (new to CSM 20), increased cover of *P. horizontalis* (at CSM 19). Due to the loss of some species and the small populations of others, the feature is considered to be in **unfavourable condition**.

#### Habitat attributes

Habitat attribute	Target	Result	Comments
Niche availability	There must be no loss of area of woodland	Yes	No loss of woodland area recorded
Stand structure	Canopy cover greater than 20 percent (except CGF3); varied tree age range from saplings to over-mature; dead wood present	Yes	Stand structure appropriate
Stand composition	Range of native tree and shrub species maintained	No	Ash dieback is reducing key habitat niches

Habitat attribute	Target	Result	Comments
Negative indicator: non-native species	Rhododendron, cherry laurel, Quercus ilex and conifers absent	Yes	Yes apart from in CGF2 where cherry laurel is a major and urgent threat to a Key Lichen Area
Negative indicator: shade	Ivy, bramble or bracken present on fewer than 10 percent of trunks	No	Ivy and Bramble are a major problem in CGF1 and CGF2
Negative indicator: pollution (algal deposits)	No green algal deposits on trunks and branches at woodland edges	Not applicable	Woodland does not adjoin agricultural land
Negative indicator: pollution (lichen indicators)	<i>Physcia</i> and <i>Xanthoria</i> absent or very rare on oak and birch twigs	Yes	No pollution-indicator lichens recorded

**Habitat Condition Assessment:** Unfavourable

### SOWI & URI assemblage scores and Notable / IQF species

Taxon name	Conservation status	SOWI score	URI score
<i>Allographa pauciloculata</i> (IQF)	VU D2 NR E P Eng Wa IR	0	0
<i>Graphis ruiziana</i>	LC NS Sc IR	0	1
<i>Hypotrachyna laevigata</i>	LC	0	1
<i>Lepra multipuncta</i>	LC	1	0
<i>Parmeliella parvula</i>	LC Sc L* IR	0	1
<i>Lobaria pulmonaria</i> (as transplants)	LC Sc L IR	1	0
<i>Parmotrema crinitum</i>	LC L	1	0
<i>Peltigera collina</i>	LC Sc L IR	1	0
<i>Peltigera horizontalis</i>	LC L*	1	0
<i>Phaeographis dendritica</i>	LC Sc	1	0
<i>Punctelia reddenda</i>	LC L	1	0
<i>Scytinium lichenoides</i>	LC	1	0
<i>Scytinium teretiusculum</i>	LC L*	1	0
<i>Stenocybe septata</i>	LC Sc IR	1	0
<i>Sticta fuliginosa sensu lato</i>	LC Sc L IR	1	0

Taxon name	Conservation status	SOWI score	URI score
<i>Sticta limbata</i>	LC Sc L IR	1	0
<i>Sticta sylvatica</i>	LC Sc L IR	1	0
<i>Thelopsis rubella</i>	LC L	1	0
<i>Thelotrema lepadinum</i>	LC L*	1	0
<i>Usnea florida</i>	NT ? P Eng Sc Wa	1	0

### SOWI & URI totals

Assessment period	SOWI score	URI score
2025	16	3
All time	20	8

**SOWI and URI score assessment:** Favourable

### Condition Assessment

Based on the results of this monitoring project, it is considered that the SOWI Lichen Assemblage at Allt Pontfaen – Coed Gelli-fawr is in **Unfavourable condition**

AND

it is considered that the Independently Qualifying Species features are in

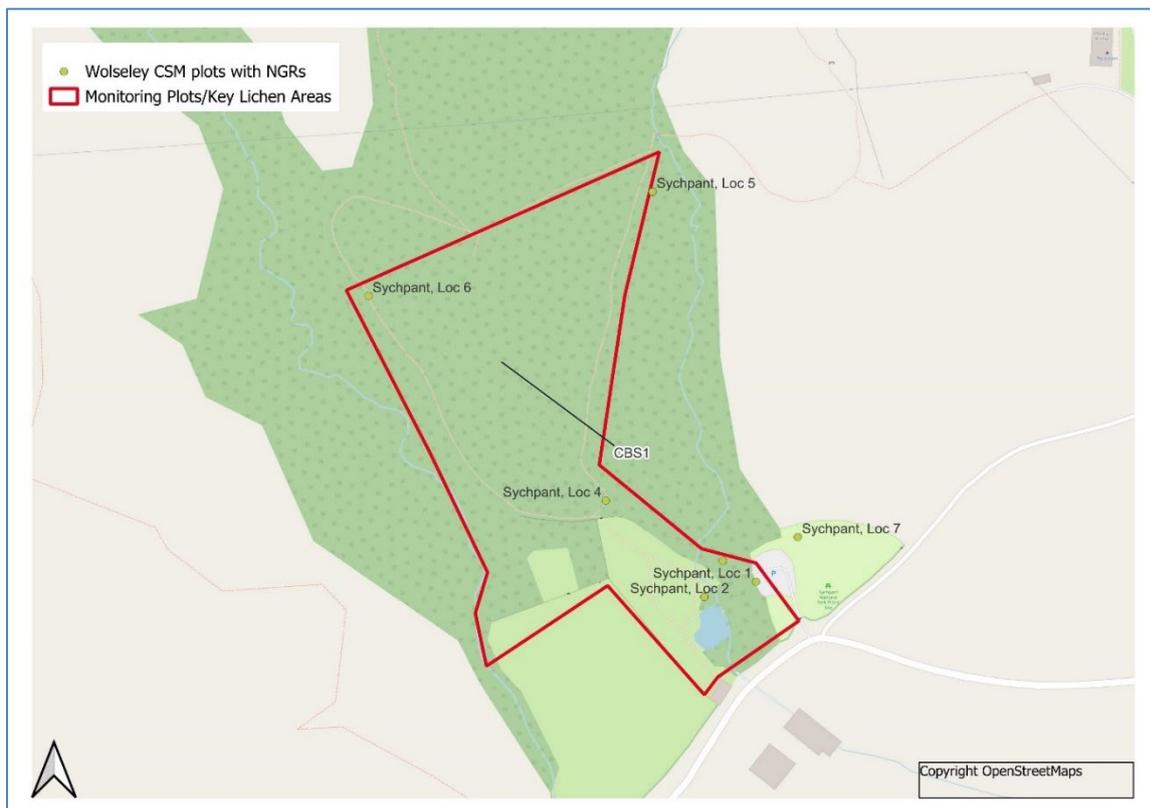
**Unfavourable condition**

#### 6.1.2. Cwm Bach Sychpant SSSI

The open nature of this site, with many mature to over-mature trees, remains. However, grazing has been insufficient to keep the Bramble and Ivy in check, and scrub and sapling regeneration is invading much of the former wood pasture area. Bracken and Bramble are now invasive, swamping the trunks of many otherwise suitable trees. The whole site needs more effective grazing, and any potentially suitable 'lichen trees' must be managed (see Section 8). This particularly applies to all

healthy Ash on the site and must be undertaken as the key short-term management action. Recent clearance around some trees has been beneficial, but without grazing will need to be repeated every 2-3 years.

The vast majority of SOWI lichens here are on Ash. Most of the Ash here is affected by *Chalara* Dieback of Ash and seems likely to die, taking with it most of the SOWI species. The only other tree species with much lichen interest here is Hazel, which supports smaller populations of the three *Sticta* species, and a single naturally colonised thallus of *Lobaria pulmonaria*. Hazel is also important for *Graphidion* species, including *Allographa ruiziana* and *Phaeographis dendritica*. Whilst there is plenty of Grey Willow here, most of it is dense and heavily shaded. If a suitably high grazing regime cannot be established here, the Key Lichen Area (monitoring plot) will require management as set out in Section 8.



Map 4 Monitoring Plot in Coed Bach Sychpant SSSI

### Monitoring results:

Plot in **CBS1** covers the majority of the remaining open, lichen-rich habitat in the SSSI. Most species recorded on CSM location trees in 2008 are still present in the plot,

although not always on the same trees. Several notable species were not re-found. At least some of these losses appear to be genuine – CSM loc 1 has recently been cleared of Ivy and has lost *Sticta sylvatica*, *Catinaria atropurpurea*, *Phyllopsora rosei* and *Parmeliella triptophylla* but still supports *S. limbata* and *S. fuliginosa*. The loss of tree CSM loc 2 accounts for the loss of *Nephroma spp* (as recorded in 2008). *Peltigera horizontalis* and *Lobaria pulmonaria* had increased significantly at loc 4. *L. pulmonaria* had also spread onto numerous nearby Ash trees, and all three *Sticta* species were reasonably frequent and also actively colonising younger Ash trees (many of which are unfortunately affected by Ash Dieback). A tiny fragment of *Leptogium cyanescens* was found on the burry base of CSM loc 4, where it was recorded in 2008.



Figure 3 Natural colonisation of Ash trees by *Lobaria pulmonaria* and *Sticta spp.* on young Ash trees around CSM loc 4

**Note on plot structure:**

CSM locations 1–6 are amalgamated into Plot CBS1. Species presence and absence in 2025 are assessed at the plot level only. CSM location 7 is not part of any plot and was not monitored in 2025. Species presence and absence in 2025 are assessed at the plot level only.

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Sychpant	CSM loc 1–6	<i>Sticta fuliginosa</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Catinarina atropurpurea</i> ; <i>Parmeliella triptophylla</i> ; <i>Phyllopsora rosei</i> ; <i>Nephroma spp.</i> ; <i>Leptogium lichenoides</i> ; <i>Leptogium cyanescens</i> ; <i>Lobaria pulmonaria</i> ; <i>Graphina ruiziana</i> ; <i>Punctelia reddenda</i>	<b>CBS1</b>	<i>Graphis ruiziana</i> (increased); <i>Leptogium cyanescens</i> (decreased); <i>Lobaria pulmonaria</i> (increased, IQF); <i>Peltigera horizontalis</i> ; <i>Phaeographis dendritica</i> ; <i>Scytinium (Leptogium) lichenoides</i> ; <i>Scytinium teretiusculum</i> ; <i>Sticta fuliginosa</i> (increased); <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea articulata</i>	<i>Catinarina atropurpurea</i> ; <i>Nephroma spp.</i> ; <i>Parmeliella triptophylla</i> ; <i>Phyllopsora rosei</i>
Sychpant	CSM loc 7	No SOWI or URI species	<b>Not part of any plot</b>	Not monitored	Not monitored

**Species Condition assessment:** Some positive signs, including the finding of increased cover of *Peltigera horizontalis* and *Lobaria pulmonaria*. However, the overall trend appears to be one of continuing decline. Due to the loss of some notable species, the small populations of others and the imminent loss of many Ash trees, the feature is considered to be in **unfavourable condition**.

## Habitat assessment

Habitat attribute	Target	Result	Comments
Niche availability	There must be no loss of area of woodland	Yes	No loss of woodland area recorded
Stand structure	Canopy cover greater than 20 percent (except CGF3); varied tree age range from saplings to over-mature; dead wood present	Yes	Stand structure appropriate
Stand composition	Range of native tree and shrub species maintained	No	Ash dieback is reducing key habitat niches
Negative indicator: non-native species	Rhododendron, cherry laurel, Quercus ilex and conifers absent	Yes	No problematic non-native species recorded
Negative indicator: shade	Ivy, bramble or bracken present on fewer than 10 percent of trunks	No	Ivy and bramble are a major problem
Negative indicator: pollution (algal deposits)	No green algal deposits on trunks and branches at woodland edges	Not applicable	Woodland does not adjoin agricultural land
Negative indicator: pollution (lichen indicators)	<i>Physcia</i> and <i>Xanthoria</i> absent or very rare on oak and birch twigs	Yes	No pollution-indicator lichens recorded

**Habitat Condition Assessment:** Unfavourable

## SOWI & URI assemblage scores and Notable / IQF species

Taxon name	Conservation status	SOWI score	URI score
<i>Graphis ruiziana</i>	LC NS Sc IR	0	1
<i>Leptogium cyanescens</i>	LC Sc IR	1	0
<i>Lobaria pulmonaria</i> (IQF)	LC Sc L IR	1	0
<i>Peltigera horizontalis</i>	LC L*	1	0
<i>Phaeographis dendritica</i>	LC Sc	1	0
<i>Punctelia reddenda</i>	LC L	1	0
<i>Scytinium lichenoides</i>	LC	1	0

Taxon name	Conservation status	SOWI score	URI score
<i>Scytinium teretiusculum</i>	LC L*	1	0
<i>Sticta fuliginosa s. lat.</i>	LC Sc L IR	1	0
<i>Sticta limbata</i>	LC Sc L IR	1	0
<i>Sticta sylvatica</i>	LC Sc L IR	1	0
<i>Thelotrema lepadinum</i>	LC L*	1	0
<i>Usnea articulata</i> (increasing; no longer valid as IQF)	NT P Eng Wa IR	0	0

### SOWI & URI scores

Assessment period	SOWI score	URI score
2025	11	1
All time	22	2

**SOWI and URI Score Assessment:** Favourable

### Condition Assessment

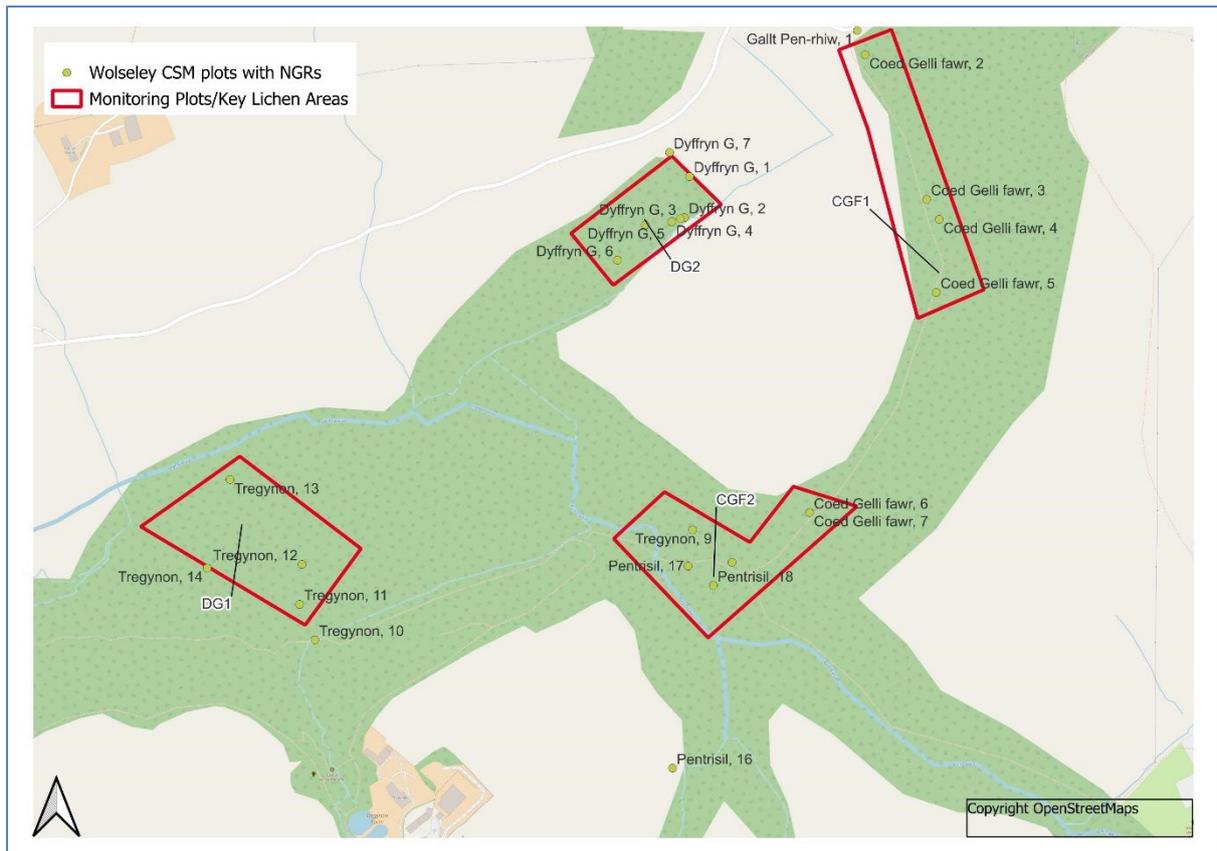
Based on the results of this monitoring project, it is considered that the SOWI Lichen Assemblage at Cwm Bach Sychpant is in **Unfavourable condition**

### **AND**

It is considered that the Independently Qualifying Species features are in **Unfavourable condition**

#### **6.1.3. Dyffryn Gwaun SSSI**

The site comprises an area of *Salix*-dominated alluvial/wet woodland (**DG1**) and an area of ancient Alder coppice, Llanerch Alder Carr (**DG2**). There are also areas of Hazel on the better-drained soils, together with scattered Oaks at the southern boundary. There has been a considerable increase in bramble (which was noted in 2008) in Llanerch Alder Carr (probably due to gradual drying of the site), and *Salix* scrub is expanding and closing over in the other areas (several of the CSM locations in DG1 were no longer accessible and would now be too shaded to be of interest). It is essential to get grazing into the *Salix* areas and to raise water levels in the Alder Carr. If grazing cannot be reestablished here, the Key Lichen Areas (monitoring plots) will require management as set out in Section 8.



Map 5 Monitoring Plots in Dyffryn Gwaun SSSI

### Monitoring results:

Most species recorded on CSM location trees in 2008 are still present in the plots, even if not always on the same trees. Two notable species were not re-found in 2025: *Parmeliella parvula* and *Menegazzia terebrata* (an IQF species) were recorded in 1985 but not seen in 2008. In such a large site, these two species could easily be missed and may still be present. *Allographa pauciloculata* (IQF) was found, new to the site, in **DG1**, where it was reasonably frequent. *Cetrelia olivetorum s. lat.*, *Hypotrachyna laevigata* and *Punctelia reddenda* were occasional to frequent in **DG1** and **DG2**, and *Sticta* species (including fertile *S. ciliata*) were abundant. The general impression was that (in common with other areas of wet woodland in the Gwaun) the wet woodland has largely remained open and supports reasonably healthy lichen populations.



Figure 4 Fertile *Sticta ciliata* (left) and *Hypotrachyna laevigata* (right)

### Note on plot structure

CSM locations 1–7 at Dyffryn Gwaun (Llanerch Alder Carr) are amalgamated into Plot DG1. CSM locations 11–13 at Tregynon are amalgamated into Plot DG2. Species presence and absence in 2025 are assessed at the plot level only.

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Dyffryn Gwaun (Llanerch Alder Carr)	CSM loc 1–7	<i>Graphina ruiziana</i> ; <i>Phaeographis dendritica</i> ; <i>Japewiella tavaresiana</i> ; <i>Sticta sylvatica</i> ; <i>Sticta fuliginosa</i> ; <i>Phaeographis inusta</i> ; <i>Parmeliella parvula</i> ; <i>Megalania pulvereana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Usnea ceratina</i> ; <i>Hypotrachyna sinuosa</i> ; <i>Cladonia caespiticia</i>	<b>DG1</b>	<i>Allographa pauciloculata</i> (IQF) (new); <i>Cetrelia olivetorum sensu lato</i> (increased); <i>Cladonia caespiticia</i> ; <i>Graphis ruiziana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Japewiella tavaresiana</i> ; <i>Lecanora jamesii</i> ; <i>Megalania pulvereana</i> ; <i>Phaeographis dendritica</i> ; <i>Phaeographis inusta</i> ; <i>Punctelia reddenda</i> ; <i>Sticta fuliginosa sensu lato</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea ceratina</i>	<i>Parmeliella parvula</i> ; <i>Menegazzia terebrata</i> (IQF recorded in 1985; not seen in 2008)

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Tregynon	CSM Loc 11–13	<i>Lecanora jamesii</i> ; <i>Sticta fuliginosa</i> ; <i>Parmotrema reddenda</i> ; <i>Japewiella tavaresiana</i> ; <i>Parmotrema ernstiae</i> (not SOWI or URI)	DG2	<i>Cetrelia olivetorum sensu lato</i> (increased); <i>Cladonia caespiticia</i> ; <i>Graphis ruiziana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Japewiella tavaresiana</i> ; <i>Lecanora jamesii</i> ; <i>Megalania pulverea</i> ; <i>Phaeographis dendritica</i> ; <i>Phaeographis inusta</i> ; <i>Punctelia reddenda</i> (increased); <i>Sticta fuliginosa sensu lato</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea ceratina</i>	<i>Parmotrema ernstiae</i> (not SOWI or URI)

**Species Condition assessment:** Some positive signs, such as the re-finding of the majority of species, indicate the lichen feature in the area is possibly in favourable condition (assuming *Parmeliella parvula* and *Menegazzia terebrata* are in fact still present).

### Habitat assessment

Habitat attribute	Target	Result	Comments
Niche availability	There must be no loss of area of woodland	Yes	No loss of woodland area recorded
Stand structure	Canopy cover greater than 20 percent (except CGF3); varied tree age range from saplings to over-mature; dead wood present	Yes	Stand structure appropriate
Stand composition	Range of native tree and shrub species maintained	Yes	Mostly Salix Alluvial/wet woodland

Habitat attribute	Target	Result	Comments
Negative indicator: non-native species	Rhododendron, cherry laurel, Quercus ilex and conifers absent	No	conifers are establishing in Alder Carr (DG2)
Negative indicator: shade	Ivy, bramble or bracken present on fewer than 10 percent of trunks	No	Bramble is a major problem in the Alder Carr and scrub willow regen in the Salix areas
Negative indicator: pollution (algal deposits)	No green algal deposits on trunks and branches at woodland edges	Not applicable	Woodland does not adjoin agricultural land
Negative indicator: pollution (lichen indicators)	<i>Physcia</i> and <i>Xanthoria</i> absent or very rare on oak and birch twigs	Yes	No pollution-indicator lichens recorded

**Habitat Condition assessment:** Unfavourable

### SOWI & URI assemblage scores and Notable / IQF species

Taxon name	Conservation status	SOWI score	URI score
<i>Allographa pauciloculata</i> (IQF)	VU D2 NR E P Eng Wa IR	0	0
<i>Cetrelia olivetorum s. lat.</i>	LC	1	1
<i>Cladonia caespiticia</i>	LC	1	0
<i>Graphis ruiziana</i>	LC NS Sc IR	0	1
<i>Hypotrachyna laevigata</i>	LC	0	1
<i>Hypotrachyna sinuosa</i>	LC Sc IR	0	1
<i>Japewiella tavaresiana</i>	LC	0	1
<i>Lecanora jamesii</i>	LC	1	0
<i>Megalaria pulverea</i>	LC	0	1
<i>Phaeographis dendritica</i>	LC Sc	1	0
<i>Phaeographis inusta</i>	LC NS IR	1	0
<i>Punctelia reddenda</i>	LC L	1	0
<i>Sticta fuliginosa s. lat.</i>	LC Sc L IR	1	0
<i>Sticta limbata</i>	LC Sc L IR	1	0
<i>Sticta sylvatica</i>	LC Sc L IR	1	0
<i>Thelotrema lepadinum</i>	LC L*	1	0
<i>Usnea ceratina</i>	LC Sc	1	0

### SOWI & URI Scores

Assessment period	SOWI score	URI score
2025	11	6
All time	17	10

**SOWI and URI Score Assessment:** Favourable

## **Condition Assessment**

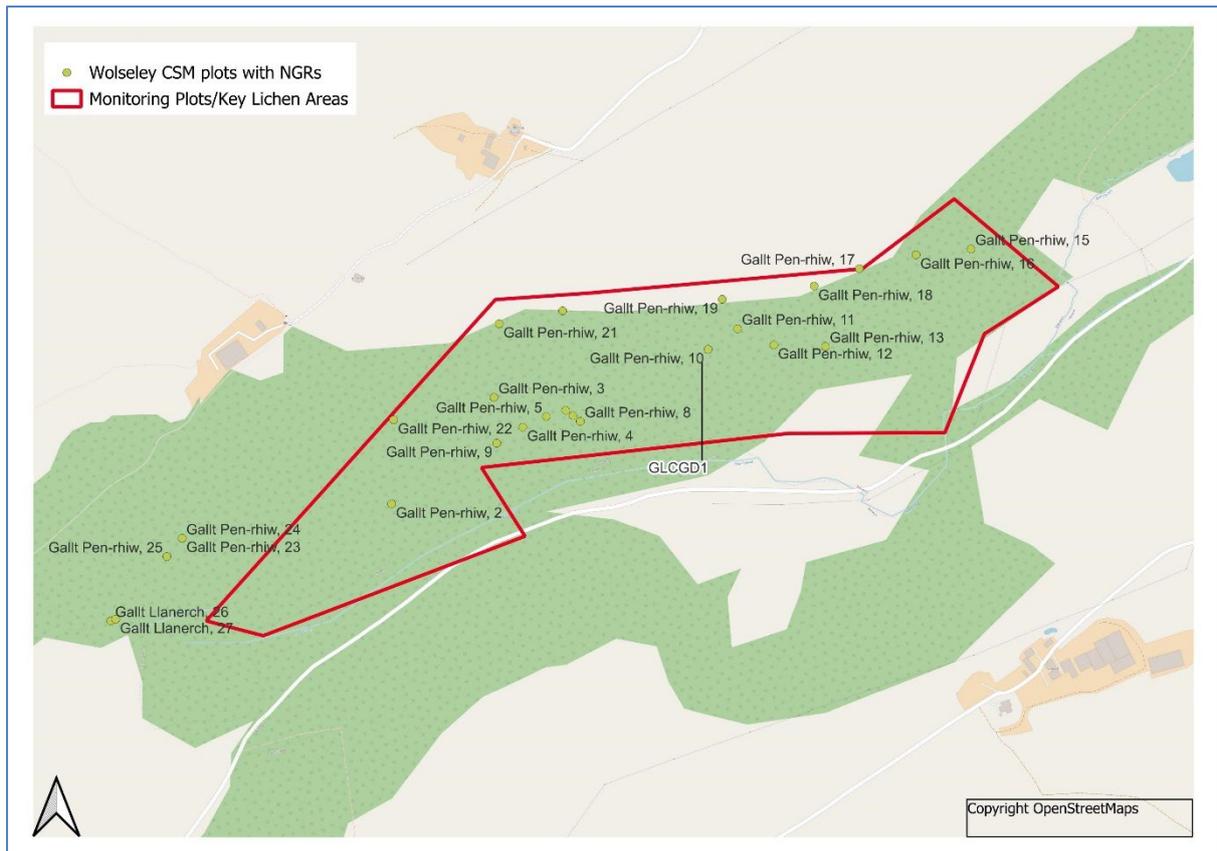
Based on the results of this monitoring project, it is considered that the SOWI & URI Lichen Assemblages at Dyffryn Gwaun are in **Unfavourable condition**

**AND**

it is considered that the Independently Qualifying Species features are in **Unfavourable condition**

### **6.1.4. Gallt Llanerch - Coed Gelli-deg SSSI**

Monitoring took place in Penrhiw Wood. Unlike much of the Gwaun Valley, this area escaped wartime felling and contains many mature and post-mature maiden trees. The main area of Gallt Pen-rhiw was grazed at very low levels for a long period, but even this was abandoned years ago. This has resulted in dense areas of bramble and ivy growth within large areas of the woodland, and this has decreased its lichen interest. In 2007/8 a fence was placed through many of the areas formerly identified as areas of lichen interest, and much of the Hazel coppice was cut and cleared in the process. Disturbance has occurred to the mossy boulders along the lower track, leading to the loss of several populations of *Sticta canariensis (dufourii)*. If grazing cannot be reestablished here, parts of the Key Lichen Area (mainly alongside the lower track) will require management as set out in Section 8.



Map 6 Monitoring Plot in Galt Llanerch - Coed Gelli-deg SSSI

**Monitoring results:** Lichen interest is still reasonably widespread in this SSSI, and hence, plot **GLCGD1** is a very large plot. *Lobaria pulmonaria* was formerly found in 3 Locations here, but between 1985 and 2008, two were lost: In 2008, the remaining population consisted of two depauperate thalli on an Ash tree that were heavily grazed by molluscs. By 2025, none could be found, and it appears that the Ash host tree had fallen. At CSM loc 4, populations of *Leptogium cyanescens* and *Sticta canariensis (dufourii)* on mossy boulders beside the lower track had been decimated by the stones being moved – no *S. canariensis* remained on these rocks, but a single small patch of *L. cyanescens* was still present. Fortunately, *S. canariensis* was still occasional around CSM loc 6 and a large patch of *L. cyanescens* was found on an Ash tree on the eastern boundary. **One large and two small patches of *Ricasoli virens* were found new to the North Pembrokeshire Woodlands SAC on two rocks near CSM loc 6.** This seems to be a genuine new colonisation event as it occurs on mossy rocks, which would certainly have been searched for *S. canariensis (dufourii)* in previous surveys. Unfortunately, it is already threatened by Ivy overgrowing the rocks. The wet woodland

at the southwestern end of the plot is the only area in which *Nephroma laevigatum* was found in the Gwaun Valley. It was abundant here, as were *Sticta* species and *Peltigera horizontalis*. *Allographa pauciloculata* (IQF) was occasional to the west of the track to Parc y Dyffryn.



Figure 5 (Left) *Ricasolia virens* new to the SAC and (Right) *Sticta canariensis* (*dufourii*) on rocks near CSM loc 6

**Note on plot structure:**

CSM locations 2–24 at Gallt Pen-rhiw are amalgamated into a single plot (GLCGD1). There are no other plots at this site. Species presence and absence in 2025 are assessed at the plot level only.

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Gallt Pen-rhiw	CSM loc 2–24	<i>Lecanora jamesii</i> ; <i>Phaeographis dendritica</i> ; <i>Sticta fuliginosa</i> ; <i>Sticta sylvatica</i> ; <i>Bacidia biatorina</i> ; <i>Biatora sphaeroides</i> ; <i>Leptogium cyanescens</i> ; <i>Lobaria pulmonaria</i> ; <i>Catinaria atropurpurea</i> ; <i>Nephroma parile</i> ; <i>Parmeliella triptophylla</i> ; <i>Sticta limbata</i> ; <i>Sticta canariensis</i> ; <i>Peltigera horizontalis</i> ; <i>Leptogium lichenoides</i> ; <i>Graphina ruiziana</i> ; <i>Thelotrema lepadinum</i> ; <i>Parmeliella parvula</i> ; <i>Lecidea sanguineoatra</i> ; <i>Pertusaria multipuncta</i> ; <i>Punctelia reddenda</i> ; <i>Megalania pulverea</i> ; <i>Schismatomma quercicola</i> ; <i>Dimerella lutea</i>	GLCGD1	<i>Allographa pauciloculata</i> (IQF); <i>Cetrelia olivetorum sensu lato</i> (increased); <i>Cladonia parasitica</i> (new); <i>Graphina ruiziana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Japewiella tavaresiana</i> ; <i>Lecanora jamesii</i> ; <i>Leptogium cyanescens</i> ; <i>Megalania pulverea</i> ; <i>Mycobilimbia sphaeroides</i> ; <i>Mycoporum antecellens</i> ; <i>Nephroma laevigatum</i> (new); <i>Parmeliella parvula</i> ; <i>Parmeliella thriptophylla</i> ; <i>Peltigera horizontalis</i> ; <i>Phaeographis dendritica</i> ; <i>Punctelia reddenda</i> (increased); <i>Ricasolia virens</i> (new); <i>Scytinium lichenoides</i> ; <i>Scytinium teretiusculum</i> (new); <i>Stenocybe septata</i> ; <i>Sticta canariensis</i> ; <i>Sticta limbata</i> ; <i>Sticta fuliginosa</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea ceratina</i>	<i>Bacidia biatorina</i> ; <i>Lobaria pulmonaria</i> (IQF); <i>Bryobilimbia sanguineoatra</i> ; <i>Schismatomma quercicola</i>

**Species Condition assessment:** Some positive signs, including the finding of many species and new species, such as *Ricasolia virens*. However, the overall trend appears to be one of continuing decline. Due to the loss of some notable species (e.g. *Lobaria pulmonaria*), the small populations of others and the imminent loss of many Ash trees, the feature is considered to be in **unfavourable condition**.

#### Habitat assessment

Habitat attribute	Target	Result	Comments
Niche availability	There must be no loss of area of woodland	Yes	No loss of woodland area recorded

Habitat attribute	Target	Result	Comments
Stand structure	Canopy cover greater than 20 percent; varied tree age range from saplings to over-mature; dead wood present	Yes	Stand structure appropriate
Stand composition	Range of native tree and shrub species maintained	No	Ash dieback is reducing key habitat niches
Negative indicator: non-native species	Rhododendron, cherry laurel, Quercus ilex and conifers absent	Yes	No problematic non-native species recorded
Negative indicator: shade	Ivy, bramble or bracken present on fewer than 10 percent of trunks	No	Ivy and bramble are a major problem
Negative indicator: pollution (algal deposits)	No green algal deposits on trunks and branches at woodland edges	Not applicable	Woodland does not adjoin agricultural land
Negative indicator: pollution (lichen indicators)	<i>Phycia</i> and <i>Xanthoria</i> absent or very rare on oak and birch twigs	Yes	No pollution-indicator lichens recorded

**Habitat Condition assessment:** Unfavourable

### SOWI & URI assemblage scores and Notable / IQF species

Taxon name	Conservation status	SOWI score	URI score
<i>Allographa pauciloculata</i> (IQF)	VU D2 NR E P Eng Wa IR	0	0
<i>Cetrelia olivetorum s. lat.</i>	LC	1	1
<i>Cladonia parasitica</i>	LC	1	0
<i>Graphis ruiziana</i>	LC NS Sc IR	0	1
<i>Hypotrachyna laevigata</i>	LC	0	1
<i>Japewiella tavaresiana</i>	LC	0	1
<i>Lecanora jamesii</i>	LC	1	0
<i>Lepra multipuncta</i>	LC	1	0
<i>Leptogium cyanescens</i>	LC Sc IR	1	0
<i>Megalaria pulverea</i>	LC	0	1
<i>Mycobilimbia sphaeroides</i>	LC L*	1	0
<i>Mycoporum antecellens</i>	LC	1	0
<i>Nephroma laevigatum</i>	LC Sc L IR	1	0
<i>Parmelia ernstiae</i>	NE ?	0	0

Taxon name	Conservation status	SOWI score	URI score
<i>Parmeliella parvula</i>	LC Sc L* IR	0	1
<i>Parmeliella thriptophylla</i>	LC Sc L IR	1	0
<i>Peltigera horizontalis</i>	LC L*	1	0
<i>Phaeographis dendritica</i>	LC Sc	1	0
<i>Punctelia reddenda</i>	LC L	1	0
<i>Ricasolia virens</i> (new to NP Woodlands SAC)	LC Sc L IR	1	0
<i>Scytinium lichenoides</i>	LC	1	0
<i>Scytinium teretiusculum</i>	LC L*	1	0
<i>Stenocybe septata</i>	LC Sc IR	1	0
<i>Sticta canariensis</i> (dufourii)	LC Sc L IR	0	0
<i>Sticta fuliginosa</i> s. lat.	LC Sc L IR	1	0
<i>Sticta limbata</i>	LC Sc L IR	1	0
<i>Sticta sylvatica</i>	LC Sc L IR	1	0
<i>Thelotrema lepadinum</i>	LC L*	1	0
<i>Usnea ceratina</i>	LC Sc	1	0

### SOWI & URI scores

Assessment period	SOWI score	URI score
2025	20	6
All time	27	10

**SOWI and URI score assessment:** Favourable

### Condition Assessment

Based on the results of this monitoring project, it is considered that the SOWI and URI Lichen Assemblages at Gallt Llanerch – Coed Gelli-deg are in **Unfavourable condition**

**AND**

it is considered that the Independently Qualifying Species features are in

**Unfavourable condition**

#### **6.1.5. Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI**

This SSSI is made up of four distinct woodland sections. Monitoring took place in Kilkiffeth, Dan-deri and Felin-Ban woods. Kilkiffeth has a range of lichen habitats from stands of Hazel scrub, neglected coppice and ancient boundary trees (which are now rather shaded) and *Salix*-dominated wetland areas near the river. The most important

lichen areas at Kilkiffeth are covered by plots Kilkiffeth 1 and 2. At Dan-deri, the lichen interest is very limited and restricted to a few isolated trees on the edge of the wood – most of it is dense young Oak and Holly with a great deal of Bramble. Felin-ban is a steep-sided valley with open areas at the upper end. This wood is still grazed by sheep and, despite some declines, is still of high lichen interest. Kilkiffeth 2 and CFB1 are both grazed. If grazing cannot be re-established in Kilkiffeth1, the plot area will require management as set out in Section 8. Dan-deri1 is of low interest and is a low priority for management. The Upper area of the Dan Deri Valley is grazed, and it would be best to try to expand this grazing further down into the main plot area.



Map 7 Monitoring Plots in Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI

### Monitoring results:

At **Kilkiffeth1** & **Kilkiffeth2**, all 2008 target species were re-found. These two areas are both known to have been open meadows/wood pastures in the past and, despite much infilling, they remain somewhat open with abundant old Hazels and some Ancient & veteran trees. *Pannaria conoplea* was recorded, new to the SSSI, in

Kilkiffeth 1 and *Allographa pauciloculata* (IQF), *Chaenotheca brunneola*, *Parmeliella parvula*, *Scytinium teretiusculum*, *Skyttea nitschkei* were all found new to Kilkiffeth 2, which, together with Gallt Llanerch – Coed Gelli – Deg SSSI, are the richest lichen sites left in the Gwaun Valley. *Cetrelia olivetorum* s. lat., *Hypotrachyna laevigata*, *Punctelia reddenda* and *Sticta sylvatica* were found to be occasional to frequent in both plots, with *Sticta sylvatica* appearing to be exceptionally healthy. Outside of the SSSI, in Clyn Wood (Clyn Wood non-SSSI plot), *Allographa pauciloculata* (IQF)\* was occasional.



Figure 6 Luxuriant growth of *Cetrelia olivetorum* (left) and *Sticta sylvatica* (right)

**Felin Ban** (CFB1) is in an area of grazed Oak, Ash, Hazel wood on more gentle slopes that lead to a very deep, steep-sided ravine that receives little if any grazing. Many mature maiden trees are present on the West side, with younger coppiced oak on the East side. A good number of species, including a population of *Schizotrema* (*Schismatomma*) *quercicola*, were found on several mature Oaks. However, the *Lobaria pulmonaria* population is now gone, and the tree from which it was known has been felled.

At **Dan-deri**, the 2008 CSM locations targeted a few more common SOWI species, most of which were not found. Despite the presence of much shaded Holly, *Stenocybe septata* was also not re-found. **Garn Wood** was not monitored as the locations of the CSM plots could not be found.

**Note on plot structure:**

CSM locations 1–4 form Plot Kilkiffeth1. CSM locations 6–8 form Plot Kilkiffeth2. CSM locations 9–13 form Plot CFB1. CSM locations 14–15 form Plot Dan Deri1. CSM locations 16–19 are not included in any plot. A CSM location labelled N/a forms the

Garn non-SSSI plot. Species presence and absence in 2025 are assessed at the plot level only.

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Kilkiffeth	CSM loc 1–4	<i>Usnea articulata</i> (not SOWI or URI); <i>Graphina ruiziana</i> ; <i>Phaeographis dendritica</i> ; <i>Sticta fuliginosa</i> ; <i>Sticta sylvatica</i> ; <i>Cetrelia olivetorum</i>	<b>Kilkiffeth1</b>	<i>Cetrelia olivetorum sensu lato</i> (increased); <i>Graphina ruiziana</i> ; <i>Hypotrachyna laevigata</i> ; <i>Lobaria pulmonaria</i> (PCNPA translocation); <i>Megalaria pulvereana</i> ; <i>Pannaria conoplea</i> (new); <i>Phaeographis dendritica</i> ; <i>Punctelia reddenda</i> (increased); <i>Stenocybe septata</i> ; <i>Sticta fuliginosa sensu lato</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea articulata</i>	None recorded
Kilkiffeth	CSM loc 6–8	<i>Graphina ruiziana</i> ; <i>Thelotrema lepadinum</i> ; <i>Phaeographis dendritica</i> ; <i>Sticta sylvatica</i> ; <i>Sticta fuliginosa</i> ; <i>Sticta limbata</i> ; <i>Usnea articulata</i> ; <i>Pertusaria multipuncta</i>	<b>Kilkiffeth2</b>	<i>Allographa pauciloculata</i> (IQF) (new); <i>Cetrelia olivetorum sensu lato</i> (increased); <i>Chaenotheca brunneola</i> (new); <i>Graphina ruiziana</i> ; <i>Lepra multipunctata</i> ; <i>Megalaria pulvereana</i> ; <i>Parmeliella parvula</i> (new); <i>Phaeographis dendritica</i> ; <i>Punctelia reddenda</i> ; <i>Scytinium teretiusculum</i> (new); <i>Skyttea nitschkei</i> (new; not SOWI or URI); <i>Stenocybe septata</i> ; <i>Sticta fuliginosa sensu lato</i> ; <i>Sticta limbata</i> ; <i>Sticta sylvatica</i> ; <i>Thelotrema lepadinum</i> ; <i>Usnea articulata</i> (not SOWI or URI); <i>Usnea florida</i> (new)	None recorded

Woodland name	CSM locations	2008 target species (SOWI & URI only)	2025 plot	Species present in 2025	Species absent in 2025
Felin Ban	CSM loc 9–13	<i>Megalaria pulverea</i> ; <i>Thelotrema lepadinum</i> ; <i>Schismatomma quercicola</i> ; <i>Catinarina atropurpurea</i> ; <i>Sticta fuliginosa</i> ; <i>Lobaria pulmonaria</i> ; <i>Pertusaria multipuncta</i>	CFB1	<i>Schizotrema quercicola</i> ; <i>Graphis ruiziana</i> ; <i>Scytinium lichenoides</i> ; <i>Scytinium teretiusculum</i> ; <i>Megalaria pulverea</i> ; <i>Phaeographis dendritica</i> ; <i>Punctelia reddenda</i> ; <i>Stenocybe septata</i> ; <i>Thelotrema lepadinum</i>	<i>Catinarina atropurpurea</i> ; <i>Sticta fuliginosa</i> ; <i>Lobaria pulmonaria</i> ; <i>Pertusaria multipuncta</i>
Dan Deri	CSM loc 14–15	<i>Stenocybe septata</i> ; <i>Thelotrema lepadinum</i>	Dan Deri1	<i>Phaeographis dendritica</i> ; <i>Thelotrema lepadinum</i>	<i>Stenocybe septata</i> (not recorded despite extensive holly)
Garn (non SSSI)	CSM loc 16–19	<i>Graphina ruiziana</i> ; <i>Phaeographis dendritica</i> ; <i>Thelotrema lepadinum</i>	Not in any plot	Not monitored (brief walkover; species present; site of low interest)	Not assessed
Garn (non SSSI)	CSM n/a	Not previously monitored	Garn non SSSI	<i>Allographa pauciloculata</i> (IQF) (new); <i>Graphis ruiziana</i> (new); <i>Sticta fuliginosa sensu lato</i> (new)	N/a

**Species Condition assessment:** The overall impression is that Kilkiffeth is of very high lichen importance, Felin Ban less so, and it appears that *Catinarina atropurpurea*, *Sticta fuliginosa* and *Lobaria pulmonaria* have been lost from this wood. Dan-deri and Garn Wood appear to be of lower importance. Due to the losses/declines in the latter two sites, the feature is considered to be in **unfavourable condition**.

### Habitat assessment

Habitat attribute	Target	Result	Comments
Niche availability	There must be no loss of area of woodland	Yes	No loss of woodland area recorded

Habitat attribute	Target	Result	Comments
Stand structure	Canopy cover greater than 20 percent; varied tree age range from saplings to over-mature; dead wood present	Yes	Stand structure appropriate
Stand composition	Range of native tree and shrub species maintained	No	Ash dieback is reducing key habitat niches
Negative indicator: non-native species	Rhododendron, cherry laurel, Quercus ilex and conifers absent	Yes	No problematic non-native species recorded
Negative indicator: shade	Ivy, bramble or bracken present on fewer than 10 percent of trunks	No	Ivy and bramble are a major problem
Negative indicator: pollution (algal deposits)	No green algal deposits on trunks and branches at woodland edges	Not applicable	Woodland does not adjoin agricultural land
Negative indicator: pollution (lichen indicators)	<i>Phycia</i> and <i>Xanthoria</i> absent or very rare on oak and birch twigs	Yes	No pollution-indicator lichens recorded

**Habitat Condition assessment:** Unfavourable

### SOWI & URI assemblage scores and Notable / IQF species

Taxon name	Conservation status	SOWI score	URI score
<i>Allographa pauciloculata</i> (IQF)	VU D2 NR E P Eng Wa IR	0	0
<i>Cetrelia olivetorum s. lat.</i>	LC	1	1
<i>Chaenotheca brunneola</i> (new to NP Woodlands SAC)	LC	1	0
<i>Graphis ruiziana</i>	LC NS Sc IR	0	1
<i>Hypotrachyna laevigata</i>	LC	0	1
<i>Japewiella tavaresiana</i>	LC	0	1
<i>Lepra multipuncta</i>	LC	1	0
<i>Lobaria pulmonaria</i> (translocation)	LC Sc L IR	1	0
<i>Loxospora elatina s. lat.</i>	LC	1	0
<i>Megalaria pulvereae</i>	LC	0	1
<i>Pannaria conoplea</i>	LC Sc L IR	1	0
<i>Parmeliella parvula</i>	LC Sc L* IR	0	1

Taxon name	Conservation status	SOWI score	URI score
<i>Phaeographis dendritica</i>	LC Sc	1	0
<i>Punctelia reddenda</i>	LC L	1	0
<i>Schizotrema quercicola</i>	LC Sc IR	1	0
<i>Scytinium lichenoides</i>	LC	1	0
<i>Scytinium teretiusculum</i>	LC L*	1	0
<b><i>Skyttea nitschkei</i> (new species NP woodlands)</b>	LC	1	0
<i>Stenocybe septata</i>	LC Sc IR	1	0
<i>Sticta fuliginosa s. lat.</i>	LC Sc L IR	1	0
<i>Sticta limbata</i>	LC Sc L IR	1	0
<i>Sticta sylvatica</i>	LC Sc L IR	1	0
<i>Thelotrema lepadinum</i>	LC L*	1	0
<i>Usnea articulata</i> (increasing; no longer valid as IQF)	NT P Eng Wa IR	0	0
<i>Usnea florida</i>	NT ? P Eng Sc Wa	1	0

### SOWI & URI scores

Assessment period	SOWI score	URI score
2025	18	6
All time	28	8

**SOWI and URI score assessment:** Favourable

### Condition Assessment

Based on the results of this monitoring project, it is considered that the SOWI Lichen Assemblage at Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban is in **Unfavourable condition**

**AND**

it is considered that the Independently Qualifying Species features are in **Unfavourable condition**

### 6.2. Assessment of the health & viability of the assemblage Target Species

SOWI Target Species	2025 occurrence/health/viability
<i>Cetrelia olivetorum s. lat.</i>	Widespread, appears to be more widespread than in 2008, healthy, actively colonising
<i>Leptogium cyanescens</i>	Rare, 2 locations, possibly stable
<i>Leptogium lichenoides</i>	Rare, stable

<b>SOWI Target Species</b>	<b>2025 occurrence/health/viability</b>
<i>Leptogium teretiusculum</i>	Rare, possibly stable
<i>Lobaria pulmonaria</i>	Rare, declining generally but healthy and colonising at Sychpant
<i>Nephroma laevigatum</i>	Rare, declined but frequent and healthy and colonising in wet woodland at Penrhiw
<i>Nephroma parile</i>	Not seen, declined, possibly lost
<i>Pannaria conoplea</i>	Rare, 1 location, declined but new colonisation at Kilkiffeth?
<i>Parmeliella parvula</i>	Rare, declined
<i>Parmeliella triptophylla</i>	Rare, declined
<i>Parmotrema crinitum</i>	Rare, 1 location, declined
<i>Peltigera collina</i>	Stable (poor, single location)
<i>Peltigera horizontalis</i>	Stable increasing at Sychpant and Cwm Ddu
<i>Pertusaria multipuncta</i>	Stable
<i>Phyllopsora rosei</i>	Not seen, declined, possibly lost
<i>Punctelia reddenda</i>	Widespread, appears to be more widespread than in 2008, healthy, actively colonising
<i>Sticta fuliginosa s. lat.</i>	Widespread, healthy, actively colonising
<i>Sticta limbata</i>	Widespread, healthy, actively colonising
<i>Sticta sylvatica</i>	Widespread, healthy, actively colonising
<i>Thelotrema lepadinum</i>	Occasional, stable?
<i>Usnea ceratina</i>	Not seen, declined, possibly lost

<b>URI Target Species</b>	<b>2025 occurrence/health/viability</b>
<i>Cetrelia olivetorum s. lat.</i>	Widespread, appears to be more widespread than in 2008, healthy, actively colonising
<i>Hypotrachyna laevigata</i>	Widespread, appears to be more widespread than in 2008, healthy, actively colonising
<i>Hypotrachyna sinuosa</i>	Not seen, possibly declined/lost
<i>Hypotrachyna taylorensis</i>	Not seen, possibly declined/lost
<i>Lepraria membranacea</i>	Not seen, possibly declined/lost
<i>Menegazzia terebrata</i>	Not seen, possibly declined/lost
<i>Parmeliella parvula</i>	Rare, declined or possibly stable

### 6.3. Assessment of health & viability of the Independently Qualifying Features populations

IQF species	2025 occurrence/health/viability
<p><b><i>Allographa pauciloculata</i></b> recorded under its old name (<i>Graphina pauciloculata</i>) was found at a single location for the first time in 2008 in Allt Pontfaen - Coed Gelli-fawr SSSI.</p>	<p>2025. Found in Allt Pontfaen Coed Gelli Fawr SSSI, Garn Wood Kilkiffeth &amp; Dan Deri Cwm Felin Ban SSSI and Garn Wood Kilkiffeth &amp; Dan Deri Cwm Felin Ban SSSI. Occasional to locally frequent, appears to have increased since 2008. This species is likely to be more widespread in parts of the woods outside of the Key Lichen Areas and seems to be actively colonising new habitats - <b>may be in favourable condition.</b></p>
<p><b><i>Lobaria pulmonaria</i></b> was historically known from five trees.</p> <p>A single small thallus on an Ash tree at Sychpant SSSI at CSM Location 4, at SN0475334895.</p> <p>One thallus c. 20x20 cm. on Oak at Felin Ban Wood in Garn Wood Kilkiffeth Wood &amp; Dan-Deri-Cwm Felin-Ban SSSI at CSM Location Felin ban 13, at SN02121 34479.</p> <p>Two Oak trees in Gallt Llanerch-Coed Gelli-Deg SSSI at Penrhiw - 1 thallus c. 20 cm wide x 11cm at CSM Location Penrhiw 5, SN0636135801 and two thalli 3x18 cm and 5 x 13 cm at CSM Location Penrhiw 9, at SN0630435773.</p> <p>One very small thallus on a single veteran Ash tree on the edge of a small meadow at CSM location Cwm Ddu 20 at SN040338.</p>	<p>2025. Declined but localised recovery. Lost from all sites apart from Sychpant, where it is healthy and spreading – it extends several metres up the main branches of the tree, on which in 2008 it was said to occur as a single patch of 15cm. This tree has very Severe ADB, but <i>L. pulmonaria</i> has recently naturally colonised a further 4 trees at Sychpant, 3 Ash and 1 Hazel. Due to the losses of this species from four of its five historic locations and the ongoing threat to it from Ash Dieback, it is <b>likely to be in unfavourable condition</b>, despite the fact that it is actively colonising trees at Sychpant.</p> <p>A total of 46 <i>Lobaria pulmonaria</i> transplants have been translocated to a total of 20 trees (12 transplants on 6 trees at Sychpant, 18 transplants on 8 trees at Coed Gelli Fawr and 16 transplants on 6 trees at Kilkiffeth See Hudson 2024.</p> <p>Transplants are not counted towards the feature condition as their establishment and survival is not certain.</p>
<p><b><i>Menegazzia terebrata</i></b> Recorded from Dyffryn Gwaun SSSI in 1985. 2008: Not seen.</p>	<p>2025. Possibly declined/lost (Several other URI species appear to have declined, see Section 6.2). Not seen during the present survey but could still be present in Dyffryn Gwaun SSSI. <b>The condition of this IQF is unknown but likely to be unfavourable.</b></p>
<p><b><i>Phaeographis lyellii</i></b> 2008. was recorded from Dyffryn Gwaun SSSI</p>	<p>2025. Possibly declined/lost. Not seen during the present survey, but could still be present in Dyffryn Gwaun SSSI. <b>The condition of this IQF is unknown but likely to be unfavourable.</b></p>

### 6.4. Key lichen areas

The monitoring plots established during this monitoring project outline broadly the “key lichen areas” (KLAs) in the Gwaun Valley woodlands. During monitoring, the following species of conservation interest were recorded in these areas. The actual number of species of conservation interest is likely to be higher than this, given that this was not a comprehensive survey but a monitoring project focusing on the SOWI and URI and IQF species only.

Species of Conservation Interest in the KLAs in the Gwaun Valley Woodlands	Number of species
Lobarion community species	19
IR species	19
NS species	2
NR species	1
Notable species	17
Priority Taxon species	1
NT species	3
SOWI Assemblage species	31
URI Assemblage species	7

It is in these KLAs that “lichen-friendly” management must be urgently focused (see Section 8). This report sets out generic lichen-friendly management, but it does not attempt to prescribe detailed works for each KLA. Individual “Lichen Habitat Management Plans” for each KLA will need to be developed. Whilst all of these areas are of high lichen conservation importance, **Kilkiffeth1 & Kilkiffeth2** in Garn Wood, Kilkiffeth Wood and Dan-deri-Cwm Felin-ban SSSI, together with **GLCGD1** in Gallt Llanerch – Coed Gelli – Deg SSSI, **are the richest lichen sites left in the Gwaun Valley. The importance of establishing suitable management in these areas cannot be overstated.**

## 7. Reasons for the condition of the lichen assemblages and the Independently Qualifying Feature lichens

It is clear from the 2008 report (Wolseley & Douglass 2008) that the number of lichen species, their frequency throughout the Gwaun Valley woodlands and the habitats they rely upon (often the well-lit trunks of Ancient & Veteran trees) had all declined since 1985. In 2008, the lichen features were considered to be in unfavourable condition (see Wolseley & Douglass 2008, Section 4 in particular). Since 2008, there has been little, if any, grazing in most of the woods and almost no targeted management for lichens, apart from some recent work at Cwm Bach Sychpant by PCNPA to remove scrub and ivy from a number of important lichen-bearing trees. As a result, the woods have become denser and more heavily shaded, with ivy and bramble increasing in many areas, and key features have continued to decline since 2008. The SOWI and/or URI scores for each SSSI are reasonably high, indicating that most species survive here still. However, the populations of many species are small, and some species appear to be more or less “relict species” persisting as old thalli that are unable to reproduce and spread. This is most likely due to the lack of suitable habitat available for colonisation.

The key reasons for the poor condition of the lichen features appear to be:

- Increased shading due to ongoing canopy closure
- Increased shading and smothering of trunk habitats due to increased growth of saplings, Ivy, Bramble, Bracken and other coarse vegetation due primarily to a lack of grazing
- Loss of Ancient and Veteran trees
- Lack of suitably managed mature trees (FLVTs, see Section 8) to bridge the “generational gap” and that are in a suitable condition to support lichens
- Loss of Ash trees due to Ash Dieback

Pollution from intensive agriculture appears to have little impact in the more sheltered valley bottoms (where the majority of the KLAs are located). It is however likely to impact some of the upper edges of the woods and may therefore limit the distribution of pollution sensitive lichens.

It is notable that the larger, older stands of *Salix*-dominated wet woodland (e.g. at Dyffryn Gwaun SSSI and Gallt Llanerch – Coed Gelli-Deg SSSI) support important populations of some species - casual observations suggest that the populations of some of the target species (such as *Sticta* spp., *Nephroma laevigatum*, *Hypotrachyna laevigata* and *Cetrelia olivetorum* s. lat.) are larger and show more signs of active colonisations in the wet woodlands than they generally do in the “dry” woods. This is likely to be due to the higher levels of humidity in wet woodlands, but also the fact that the *Salix*-dominated woodlands usually have a lower, more open canopy that allows in more light is likely to be important.

## 8. Management recommendations & threats

### 8.1. Woodland management

The lichen flora in the Gwaun Valley woodlands is indicative of ancient woodland with a high degree of ecological continuity, as shown by its SOWI and URI scores. In terms of its lichen communities, the woodlands must, however, be considered impoverished, and many of the old forest lichen species appear to be endangered. Many of the old-forest and other notable species are present in rather small quantities, and their distribution is limited. Their future is uncertain due to a combination of a scarcity of suitable mature and over-mature trees with well-lit trunks and the low likelihood that the small number of propagules produced by these reduced populations will be able to become established in the increasingly unsuitable habitats.

The reasons for this impoverishment are likely to include things such as centuries of woodland exploitation (particularly periods of intensive felling of coppices which is likely to have removed at least some important lichen trees) followed by the almost complete cessation of woodland management which, along with a reduction or often the complete cessation of grazing and increased Nitrogen deposition has led to changes in the woodland structure and in the light and humidity as the tree canopy has become more closed.

Most of the sites are now dominated by extensive areas of closed canopy, ungrazed woodland, but some glades and old fields with large older trees along their boundaries remain. Some Ancient & Veteran Trees (AVTs) also remain, mostly as large maiden Oaks and Ashes and as gnarled and twisted coppice stools and low pollards. The “dry”

woodland canopy is generally dominated by Oak, Ash, Hazel and Willow with some stands of Beech and Sycamore. Seedling establishment appears limited for the more light-demanding species (such as Oak and Ash). Ivy, Bramble and Bracken growth often obviously affects many populations of lichens, and these species seem to have increased since 2008 and, unless managed, will only become more problematic in the future.

For the long-term security of the epiphytic lichens here, there must be a continuous supply of mature trees with the correct bark characteristics, combined with glades and/or a fairly open canopy.

In general terms, the habitat requirements of lichen assemblages in lichen-rich ancient woodlands are similar in all types of British and Irish woodlands. The availability of light is a major constraint for leafy *Lobarion* community species in humid rainforest sites, but many of the Southern Oceanic Woodland Assemblage species can be much more sensitive to the availability of shelter from summer sun in drier Southern Oceanic Woodland sites. The exact demands of many species are unknown, and managing for specific species is not a practical option. The only viable, long-term method of ensuring the maintenance of rich lichen assemblages is through the instigation of woodland or landscape-scale management practices that can sustain suitable habitat structures and niches. The best conditions for woodland lichen assemblages are typically found in extensively grazed old-growth pasture woodland with a mixture of open canopied high forest and glades. Establishing suitable grazing regimes is therefore the ideal management in all of the SSSIs. Further details on managing woodlands for their lichen interests are available from the British Lichen Society at

<https://britishlichensociety.org.uk/conservation/management/advice/woodland-management> and at the Plantlife Website Rainforest lichens and bryophytes - [a toolkit for woodland managers](#).

## **8.2. The main threats and management requirements for lichen conservation**

Whilst it is crucial to ensure that the existing ancient and veteran trees (AVTs) are managed appropriately, it is equally important that any potential “future veteran” trees are identified and retained into old age to become the veterans of the future. As well as managing the veterans and future veterans, any trees that have good potential to

be important for any of the key lichen species and communities should be retained and managed appropriately. As these trees require similar management to ensure their longevity and suitability for lichens, the term “Future Lichen/Veteran Tree” (FL/VT) was developed. See below for a more detailed definition of AVTs and FL/VTs, and Sections 8.3 – 8.8 for their management requirements.

**AVTs are defined as:**

- Ancient trees:
  - Trees that are in the ancient life phase
  - Trees that are old, relative to their species
- Veteran trees:
  - Trees of any age with significant decay/damage/hollowing

**FL/VTs are defined as:**

- Any tree with good potential to form part of the next generation of AVTs, no matter its age, size, growth form or species.
- Any mature or post-mature trees with potential to be important for lichens that are currently unsuitable due to being ivy-covered or in dense shade, usually with heavily moss-dominated stems (often close to areas with dense broadleaved regeneration).
- Trees of any size with alkaline bark, such as Elm, Ash, Grey/Goat Willow, Hazel, Sycamore, Field Maple and Non Native species such as Horse chestnut and Poplars, particularly if they are large, damaged, gnarled, burred, leaning or horizontal, or otherwise unsuitable as timber trees.
- Any trees selected for veteranisation work.
- Trees with wound tracks (sap runs).

**The main threats to the lichen interest on the Ancient & Veteran Trees (AVTs) & “Future Lichen/Veteran Trees” (FL/VTs) are:**

- Loss of AVTs due to age, disease or storms and shade from over-topping, or surrounding younger, competing trees.
- A lack of Future Lichen/Veteran Trees” (FL/VTs) in a suitable condition for colonisation by lichens.

- Dense shading of the trunks of AVTs and FL/VTs trees from the surrounding (usually) young trees, Ivy, Bramble and other tall vegetation, due to a lack of suitable grazing regimes.
- The fencing off of trees from grazing.

**The main management requirements of the lichens associated with Ancient & Veteran Trees (AVTs) & “Future Lichen/Veteran Trees” (FL/VTs) are:**

- Haloing/reducing shade around important trees.
- Ivy control on important trees
- Glade creation or thinning around stands of important trees (where they occur in dense woodland).
- Introduction of grazing across as much of the area as possible.
- The ability to have control over grazing levels so that grazing pressure can be directed where most needed (e.g. in KLAs).

**A detailed “Lichen Habitat Improvement Plan” will be required for each KLA, which will need to be developed and overseen by a lichenologist.**

### **8.3. Woodland grazing**

The key step in attempting to improve and maintain conditions for lichens in all of the SSSIs (or at least in the Key Lichen Areas) will be to ensure that they each have a suitable, sustainable long-term grazing regime (and the necessary fencing/virtual fence systems, livestock managers, livestock management and handling facilities, etc. in place. Where grazing is not possible, it will be necessary to undertake the mechanical management methods set out in Section 8.4 below in the Key Lichen Areas in an attempt to retain the lichen interest in each SSSI. This will require long-term commitment and expense and should be viewed as a stopgap until grazing can be reestablished.

### **8.4. Mechanical interventions in key lichen areas (KLAs)**

Management for lichen conservation should focus on old Oaks and any surviving Ash that appears to have some resistance to Ash Dieback. Stands of Grey Willow and Hazel are also key lichen habitats. Where AVTs and FL/VTs are present alongside

boundaries, roads, forest tracks and footpaths, or in areas where glades are being created or maintained, it would be sensible to ensure their management is tied into the management of these features. It will be easier and cheaper to ensure that, whilst managing these features, the adjacent AVTs and FL/VTs are managed at the same time – for example, if a glade is to be managed, can it be expanded to ensure it encompasses several AVTs and FL/VTs? Similarly, where path maintenance or clearance is required, can this work include some thinning or vegetation management around AVTs and FL/VTs?

**When undertaking any tree management work in the Key Lichen Areas, it is essential that advice from a lichenologist is sought and that works are only carried out as part of a “Lichen Habitat Improvement Plan”.**

### **8.5. Halo thinning (“haloing”):**

Haloing is a woodland management practice that involves removing competing vegetation, such as shrubs, saplings, small trees and dense Bracken and Brambles, from around an ancient or veteran tree to create a "halo" or clear space to allow more light onto the trunk. Some of the AVTs and FL/VTs in and around the KLAs need to be freed from shade by halo thinning, using veteranisation techniques (see Box 1 below and Section 8.4.2). Many also need to have Ivy removed from their trunks (see Section 8.4.3). Such work needs to be carefully planned and undertaken, and often only a small amount of work is required to have a big effect.

Haloing around AVTs and FL/VTs is usually undertaken by felling vigorous young or semi-mature trees that cause excessive shading. However, when simply felled to ground level, they usually produce substantial “coppice” regrowth within two to three years. In the absence of sufficiently high grazing and browsing levels, this regrowth can rapidly create greater shading of the veteran tree trunk than the original stems, thereby exacerbating the issue that haloing sought to address. It is crucial that haloing attempts to reduce any regrowth. An experimental method of haloing using veteranisation techniques (see Section 8.4.2) that aims to restrict regrowth is set out in the guidance below. This should be trialled to see if it reduces the amount and/or vigour of regeneration around haloed trees. The effectiveness of this form of

management should be monitored and compared to traditional haloing methods (simply cutting competing trees) to see if it is more effective.

### **An alternative method of halo thinning for lichen management**

Even where grazing animals are present, when haloing around AVTs or FL/VTs, it will be important to minimise the amount of regrowth that occurs after cutting. An alternative to simply cutting the competing trees around the veterans is suggested here. This method aims to cause damage to the young trees and shrubs competing with the AVTs, to reduce and slow their regrowth and potentially kill them off. It will also provide deadwood habitats and veteran tree features. This method should be trialled.

A mixture of the various techniques set out below may be required and should be used around each tree to be halo thinned.

### **Remember – small stems and younger, smooth-barked species can also host some of the key lichen species; these need to be checked before any management takes place**

1. For small, multi-stemmed coppice regrowth (up to c. 4 m high) that is shading the AVT trunk. Targeted damage that suppresses regrowth rather than felling should be the primary method.
  - Cut the stems using techniques that deliberately damage the coppice stools and/or stumps.
    - Cut the stems from the stool using inwardly sloping flush cuts, and rough, ragged or splintered cuts.
    - Partially cut some stems and pull them away from the coppice stool to strip bark from the stool/stump.
    - Additional damage should be caused to the stool/stump to create open wounds using coronet cuts, rough, ragged or splintered cuts deep into the stool.
  
2. For small, single-stemmed slender saplings with limited branching, and bark that is still smooth and thin that are shading the AVT trunk but are not shading the canopy. Targeted damage and “veteranisation” rather than felling should be the primary methods.
  - Some stems should be retained and fully ring barked.
  - Some stems should be retained and damaged as follows:
    - Remove side branches using poor pruning cuts (flush, rough, ragged or splintered cuts), with some branches partially cut and pulled away to strip bark from the stem.

- Further damage the stem by a combination of ring-barking, partial ring-barking, bark stripping and poor pruning cuts, with stems partially cut, pulled or snapped to strip bark from the stem.
- Some stems may be cut to ground level, with their stumps damaged as for coppice stools (see 1 above).

3. For young and semi-mature trees that are beginning to shade the AVT canopy as well as the trunk. Targeted damage and veteranisation rather than felling should be the primary methods.

- Most stems should be retained but fully ring-barked to prevent regrowth and allow standing deadwood development.
- Some retained stems should be damaged as follows:
  - Damage the stem by extensive use of a variety of veteranisation techniques.
  - Remove low side branches using poor pruning cuts (flush, rough, ragged or splintered cuts), with some branches partially cut and pulled away to strip bark from the stem.
- Some stems may be cut to ground level, with their stumps damaged as for coppice stools (see 1 above).

### **Key points when undertaking this work.**

1. Best practice for tree pruning and coppicing should not be adhered to.
2. The aim is to maximise the damage caused to retained stems, stumps and stools.
3. The aim is to create as many veteranisation features as possible in larger retained stems.
4. This work would be best undertaken during periods of very low temperatures or severe drought to cause maximum stress, i.e. in late summer (outside of bird nesting season) and/or winter (December/January).
5. Cutting in September, when the trees are in leaf, will also cause stress and reduce the amount and height of regrowth in the first few years following cutting.
6. Brash and logs must be removed from under the canopy of the haloed tree, although further away from the AVT, small amounts could be used to cover any cut stumps to try to shade out regrowth.
7. Dense Bracken, Brambles or other vegetation will also need to be removed.
8. All areas in which haloing occurs will need to be grazed as soon as possible after haloing.

**The aim of this method is to:**

1. Minimise the dense and rapid regrowth that usually occurs from felling or “coppicing” the competing growth of shrubs and young trees around AVTs.
2. Reduce the overall vigour and ability to recover of the haloed shrubs and young trees.
3. Leave behind only spindly, straggling trees with poor canopies that lack vigour and cast little shade.
4. Encourage the formation of veteran tree features and deadwood habitats close to the AVT’s.

**The anticipated benefits of this method are:**

1. It minimises the shade from coppice regrowth, which would be detrimental to the lichen communities on the AVT trunks.
2. It maximises the amount of deadwood habitats and veteran tree features in close proximity to existing AVT’s.
3. Cattle drawn to any regrowth are likely to rub against AVTs, potentially damaging lichen populations. The retention of some living, damaged stems and ring-barked trees around AVTs will help reduce rubbing by restricting access and providing alternative “rubbing posts”.
4. It will reduce the vigour and slow the development of the competing trees (reducing their capacity to compete with the AVTs' canopy for light)
5. It creates deadwood habitat.
6. It reduces the shock from a rapid change in light levels (which full removal could cause)
7. It may be more efficient and cost-effective – fewer arisings need to be moved away from the base of the AVT.

**The efficacy of this form of haloing should be assessed (see Section 7).**



Figure 7 Examples of veteranisation techniques used to halo thin around an AVT

## 8.6. Veteranisation

Veteranisation is the process of causing damage to trees in a variety of ways to mimic the kind of injuries a tree might sustain during its lifetime. The aim of most veteranisation techniques is similar – deliberate damage forms or encourages the formation of a feature typically found on an ancient tree. The habitats thus created can be home to some rare, tree-dependent species that are often isolated in the landscape due to the sparsity of these ancient and veteran tree features. Veteranisation helps bridge the generational gap in veteran tree populations by more rapidly creating the necessary habitats for specialist species that depend on these trees and their features to survive. Veteranisation can also be used to reduce regrowth following haloing around important lichen trees. The features formed by damage caused to a tree and the tree's natural processes of compartmentalisation provide valuable habitats. These features are mostly found in ancient or veteran trees, but with modern techniques, can be mimicked in younger trees. These features include things like hollow stems, rot holes, cavities, snapped branches, canopy deadwood, water-filled cavities and flaking bark.

**Creation of cavities:** Using chainsaws, it is possible to create cavities suitable for nesting birds and bat roosts. Removal of parts of the bark and the cambium allows for the ingress of water and fungal spores. This rather harsh treatment of a tree is only to be done to suitable candidates, where the tree has been carefully chosen and is a suitable “sacrifice” for such work. The idea is to continue the survival of the tree so that the features created continue, evolve, and change over time, becoming as close to a natural feature as possible.

**Ring barking:** where part, or all of the bark around a branch or the main stem is carved off using a chainsaw. This severs the route for transportation of water to the desired branch and results in either partial or, usually, complete dieback of the branch or tree.

**Coronet cuts:** This is where branches are removed, and the stub that is left is sculpted into a shape resembling the remains of a snapped limb using a chainsaw. This creates some aerial deadwood features but also encourages the response production of epicormic growth, which is essential to the survival of ancient veteran trees.

**Natural fracture pruning:** Where the desired result is to mimic storm damage. It involves cutting the holding wood on the back of the branch and then, using a winch, the limb is snapped off.

### 8.7. Managing ivy

Ivy is a problem with regard to many lichens, particularly those associated with the trunks of well-lit, open-grown trees in the **Key Lichen Areas**. Its management, however, needs careful consideration and should take place only as part of a Lichen Habitat Management Plan and needs to be carried out carefully. Lichens generally thrive in open, well-lit areas and are particularly sensitive to shade, and the dense shade of Ivy can negatively impact their growth and lead to their loss. However, Ivy is of considerable value to other taxa, and the benefits of Ivy must not be overlooked.

Removing Ivy from trees in areas with little existing lichen interest that are already densely covered is generally unlikely to be beneficial and could be detrimental to other taxa. However, where populations of rare lichens are present nearby and are restricted to just a small number of suitable trees (e.g. in the Key Lichen Areas), Ivy control will be necessary in order to conserve lichen populations and maximise the amount of habitat available for colonisation.

Where trees support (or are close to populations of rare lichens), it is worth controlling Ivy at an early stage. Grazing is the best and least damaging way to manage Ivy. If the Ivy is young and small, this may be all that is needed to control it. Browsing will remove the Ivy leaves and some small shoots on the trunk (usually the key lichen habitat) and keep it Ivy-free. At the same time, some Ivy is likely to escape browsing, and a crown Ivy habitat can continue to be maintained.

The following approach to Ivy management should be adopted: (Even in grazed woodlands, interventions to control Ivy may initially be required, especially where grazing is being reintroduced to a site or where the appropriate level of grazing has not yet been established).

- Within **Key Lichen Areas**, all or most small-diameter Ivy on trunks on AVTs and FL/VTs should be cut to kill off most of the Ivy in the stand.

- Small-diameter Ivy that is shading trunks (see figure 8) should be cut near the base of the tree, with the stems above not pulled off - it will die off slowly and cause less disturbance and damage to pre-existing biodiversity.
- Long-established and larger-diameter Ivy climbing up trunks and forming canopy Ivy can often be left untouched – it often causes minimal shading to the trunk (See Figure 8).
- In and adjacent to Key Lichen Areas, the aim should be to retain a scatter of trees with crown Ivy within the stand, preferably leaving less than 15% of the older trees with crown Ivy or the potential for crown Ivy to develop in the near future. In the best areas, an even lower threshold may be justified.
- In areas close to any **Key Lichen Areas**, the aim should be to control Ivy (using the above approaches) only on a selection of trees that have good potential to host lichens (e.g. existing reasonably well-lit AVTs and trees selected as FL/VTs that are in suitable locations, e.g. along woodland edges, paths, glades or other more open areas).
- Ivy in areas of shaded, closed canopy woodland should be left alone.
- If any larger Ivy stems are cut, the stumps may need herbicide treatment.

Where grazing is not possible, a more hands-on, regular approach to Ivy control will be required, with widespread repeat cutting likely to be needed every few years. This is unlikely to be a practical option across the whole site, but such works could be focused on a few Key Lichen Areas.



Figure 8 (Left) Old stems of canopy Ivy having no effect on trunk lichens, (Right) young trunk Ivy obliterating lichen trunk habitats

Ivy removal may also be required where unhealthy/retrenching trees (particularly open, light-canopied species like Ash) have a very dense covering of Ivy in the canopy that may be affecting their ability to put on new growth. If this is required, it is better if the stems above are not pulled off, as pulling them off can dislodge larger leafy lichens and bryophyte mats.

### 8.8. Ash dieback

During the present monitoring project, it was found that most records for SOWI species were from Ash trees and over-mature and veteran Oaks. Many of the larger foliose SOWI lichens have small populations here. The chance of at least some of these species spreading and colonising new areas in the future probably depends heavily on the presence of Ash, particularly mature to over-mature trees.

Ash Dieback often rapidly kills Ash saplings and young trees, but older trees can survive for longer periods. Many old Ash trees are likely to succumb eventually, and others will require felling or lopping to make them safe. The best-case scenario is that

old Ashes will have a much-increased death rate, and there will be fewer opportunities for regeneration. Assuming at least some trees are resistant/resilient to the disease, it will take at least 150 years for the old Ash tree habitat to start developing again and over 250 years for the full range of habitats currently present on old Ash trees to be restored. Management must aim to retain all Ash trees wherever possible. Felling must be avoided where practicable, and other means of making trees safe (such as lopping and pollarding must be the preferred management method. Of course, only trees where there are safety issues need to be managed, and where possible, preference should be given to retaining the tree and considering other mitigation measures such as re-routing public paths, etc. Any healthy, resilient trees should not be felled and must be looked after, as they may provide important seed sources for natural regeneration or replanting. Further plantings of seed collected from “resilient” Ash trees in the Gwaun Valley could be considered.

Along footpath routes, if management of any infected Ash trees is required, rather than felling and logging the tree, it should (if at all possible) be partially cut through and felled/leaned away from the path to replicate windthrow and thereby create the sloping/horizontal lichen habitat suitable for colonisation by species such as *Peltigera horizontalis*, *Scytinium lichenoides* and *Sticta* spp.

### **8.9. Air quality**

Historic (mostly sulphur dioxide, SO<sub>2</sub>) and present-day (mostly nitrogen deposition and ammonia, NH<sub>3</sub> from intensive agriculture) aerial pollution is known to adversely affect lichen populations. Elevated levels of acidity, nitrogen and ammonia (a stable compound of hydrogen and nitrogen) are known to cause decreases in fungal mycorrhizae, loss of epiphytic lichens and changes in ground vegetation. Historically, sulphur dioxide pollution was the primary pollutant affecting lichen distribution in the UK. Since the Clean Air Act was implemented, sulphur dioxide levels have been decreasing for several decades. Across Wales, ammonia from intensive farming is now the primary cause of changes in lichen communities. One way or another, aerial pollution is likely to have had a significant effect on the lichen populations within the survey area.

In sheltered valley systems such as the Gwaun, reduced wind speeds and complex air flow patterns often limit the penetration of ammonia-rich air masses, particularly where valleys are narrow, deeply incised, and buffered by woodland. This can result in lower ammonia loading compared to more exposed slopes and the upper edges of the woods. It was therefore felt that an assessment of air quality using the Apis Air Quality model was not appropriate, as this would not account for the local differences between the upper edges of the woods and the lower valley floors. Instead, whilst surveying, observations were made of lichen species/communities present on the twigs of acid-barked tree species (Oak and Birch) for evidence of pollution in each monitoring plot, and in a few locations along the upper woodland edges. Generally, the observed twigs and small branches supported few “N-tolerant” species and abundant populations of “N-sensitive” lichen species such as *Usnea* spp., *Parmotrema perlatum*, and *Hypotrachyna laevigata*. A few “N-tolerant” lichen species were seen including *Lecidella elaeochroma*, *Arthonia radiata*, and *Amandina punctata*). Key indicators of N pollution, *Xanthoria* species, and *Physcia adscendens/tenella* were more or less absent in the monitoring plots (most of which are located on the sheltered valley floor). These species were present in places along the upper edges of the woods, where they abut improved agricultural land. The lichen communities are, therefore, generally indicative of relatively clean air with some ammonia pollution affecting the more exposed parts of the SSSIs.

### **8.10. Climate change**

With changes in climate and air quality, range shifts in lichen species have been observed (Aptroot and Van Herk 2007), and further rapid change can be expected. Bioclimatic models for oceanic lichens indicate that there could be a loss of bioclimatic space for “northern oceanic” species but show mixed results for “southern oceanic” lichens (Ellis, C. 2015). Whilst the distribution of oceanic species is most obviously associated with frequent precipitation, increased warming may favour some oceanic species. However, it is worth noting that the oceanic epiphytic lichen flora includes many ‘cyanolichens’ (lichen fungi with a cyanobacterial partner). Whilst these species may respond positively to an increase in warmth and wetness, they may also be

vulnerable to longer periods of summer dryness, which can inhibit N-fixing activity. Increased storminess is likely to lead to more losses of veteran trees.

## 9. Future monitoring

Until the woodland habitats start to become more "lichen-friendly", there seems little point in further detailed lichen monitoring. It will, however, be important to monitor the impacts of grazing and other woodland management practices on lichens. It will be most cost-effective and informative to undertake fixed point photo monitoring in the KLAs, every few years, to see if management is achieving better outcomes for lichens and their habitats.

Once the habitats seem to be improving, it may be appropriate to undertake further lichen monitoring. This should follow the methods set out in this report. The lichen monitoring plots established here should be used in future monitoring. These "digital" plots should be uploaded to a hand-held computer running suitable software that allows the surveyor to record their track in order to ensure all parts of the plot are visited. Where target lichens are seen, these should be entered as GPS points with ten-figure grid references. Details recorded at each sample should include the following: lichen species name, Substrate and host tree species with an indication of abundance/frequency and the extent of individual patches of each target species.

Only lichen records from within the plot boundaries should be used to compare changes from this baseline report. However, searches should be made in suitable habitats adjacent to plots to check if the plots remain relevant and to see if the lichen communities are expanding or shifting within the woods.

The monitoring method adopted in this report assumes that the condition of the target species will serve as a proxy measure for the condition of the feature as a whole. This assumption needs to be treated with caution and should be tested by occasional full surveys of all notable species, carried out by lichen specialists, to support this monitoring method and to confirm that the monitoring is appropriate, sufficient and robust.

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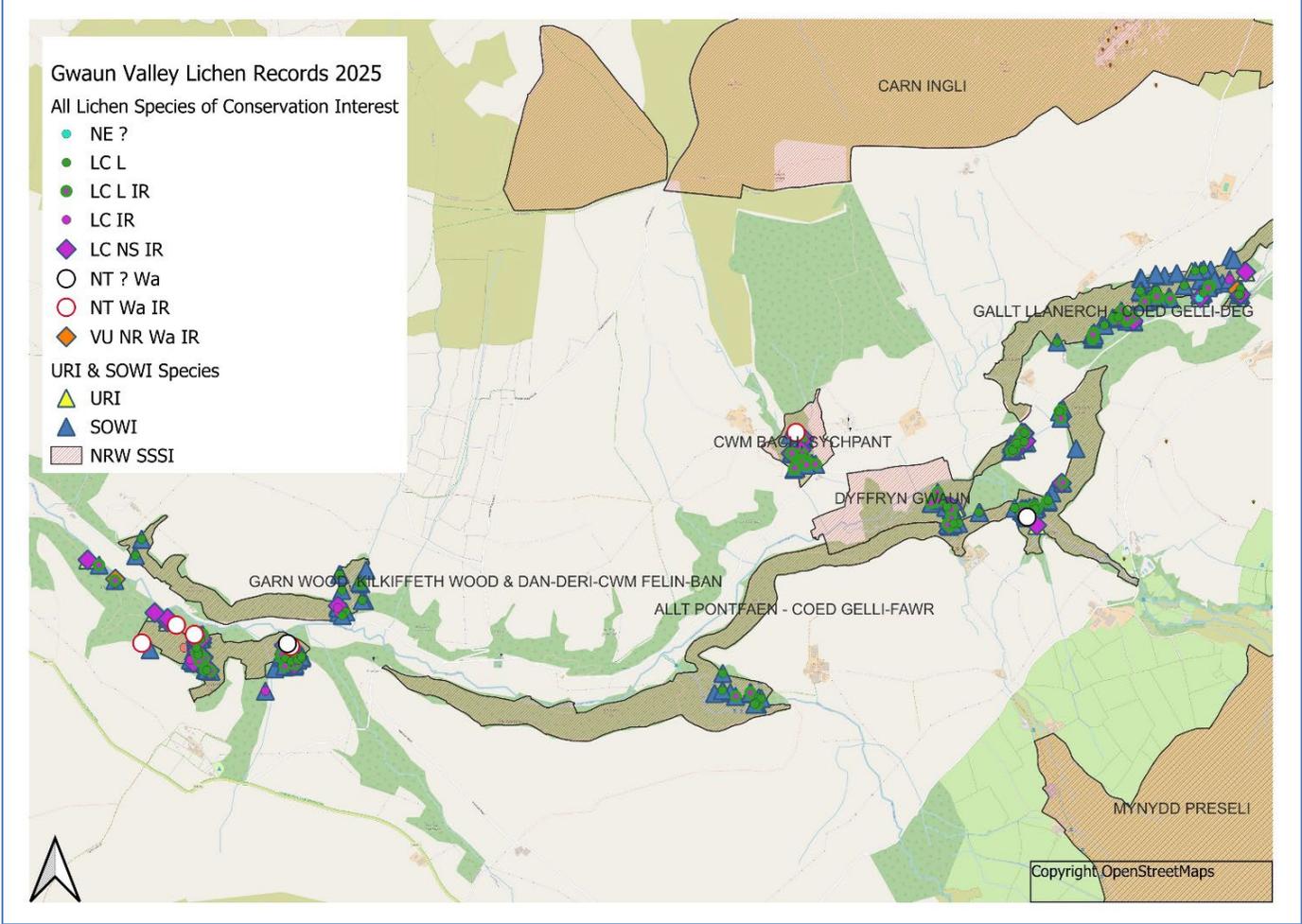
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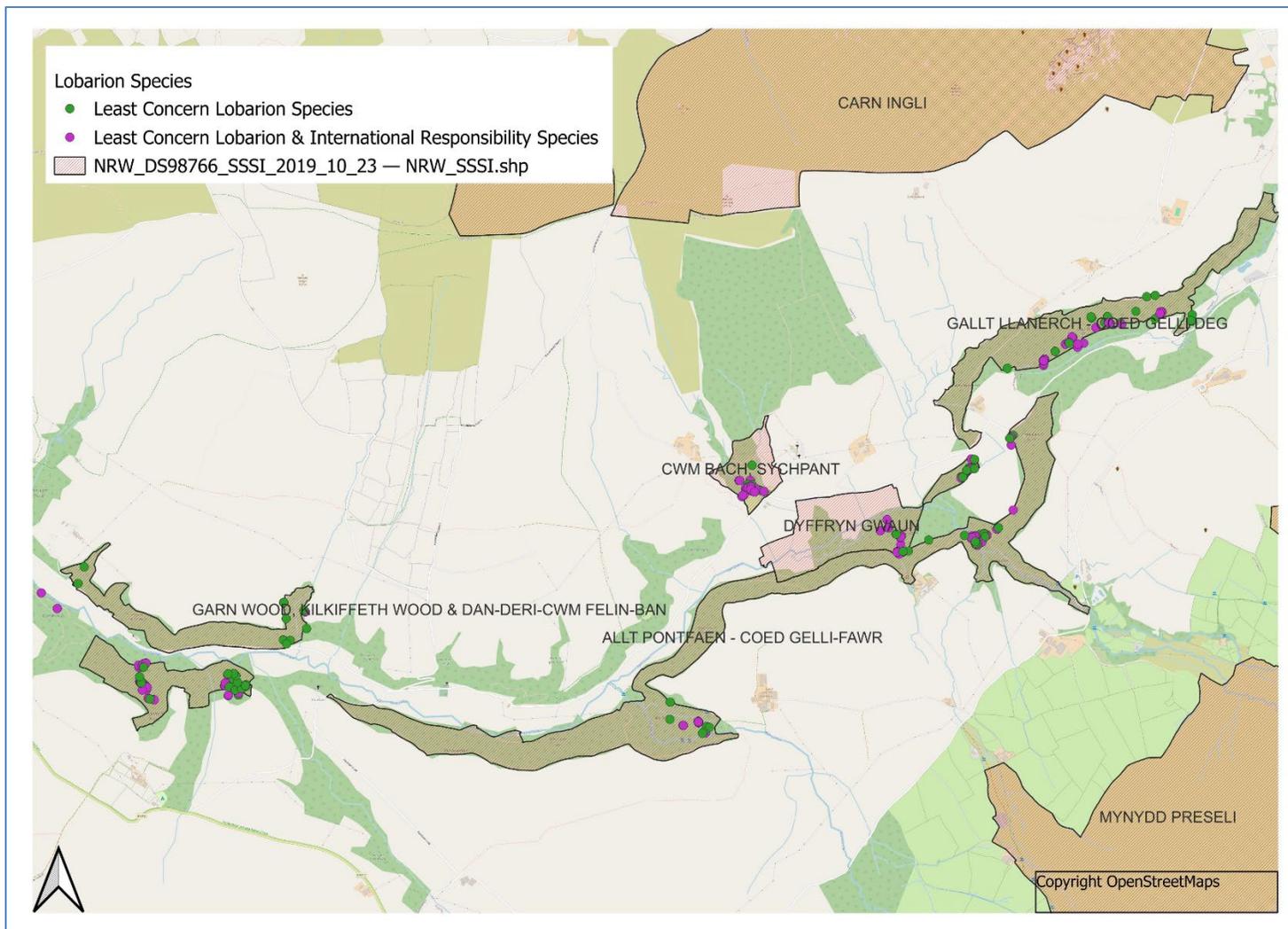
## **11. Acknowledgements**

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# Appendix 1: Maps of lichens of Conservation Interest



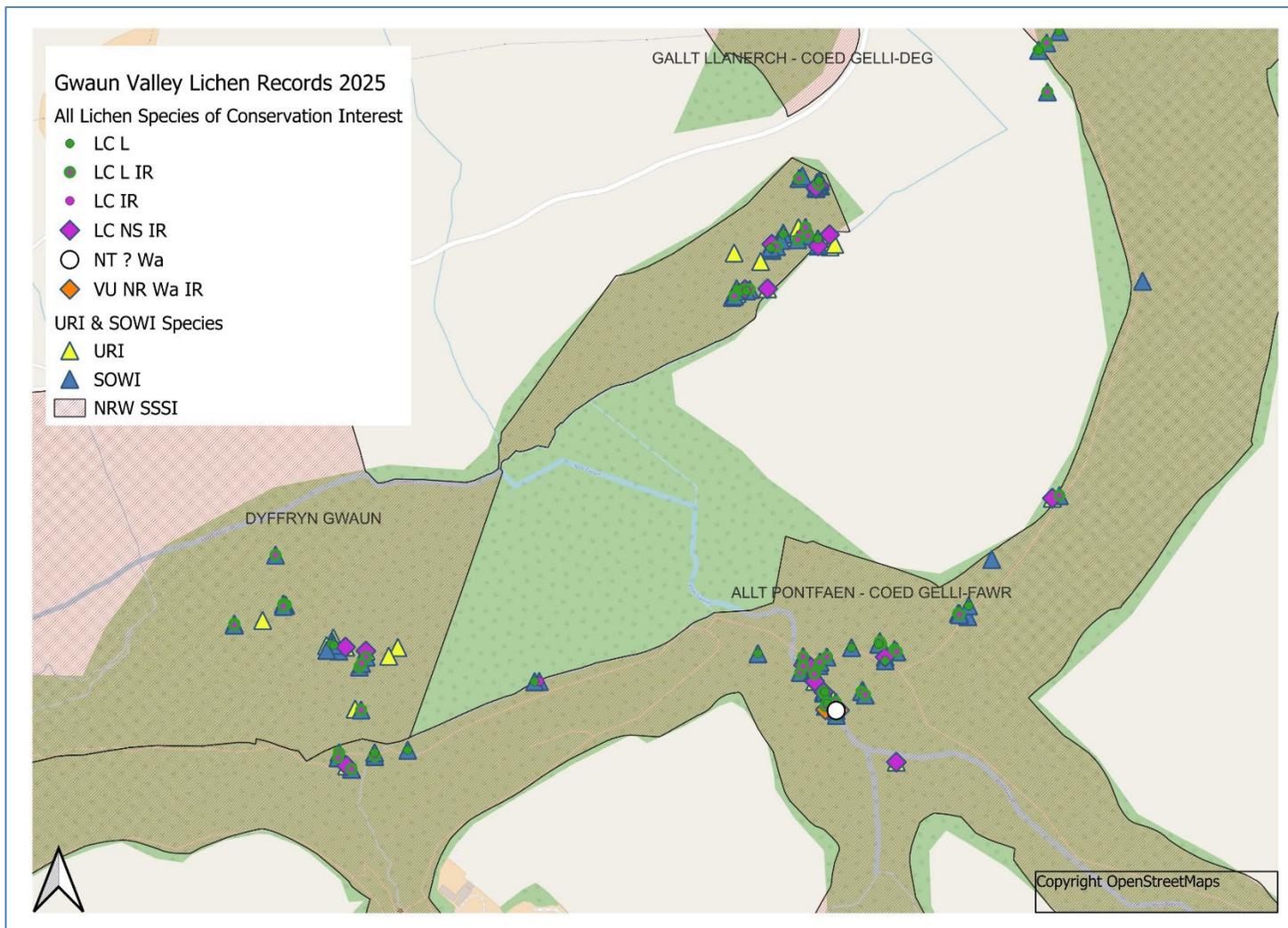
Map 8 Distribution of notable species in the five SSSIs



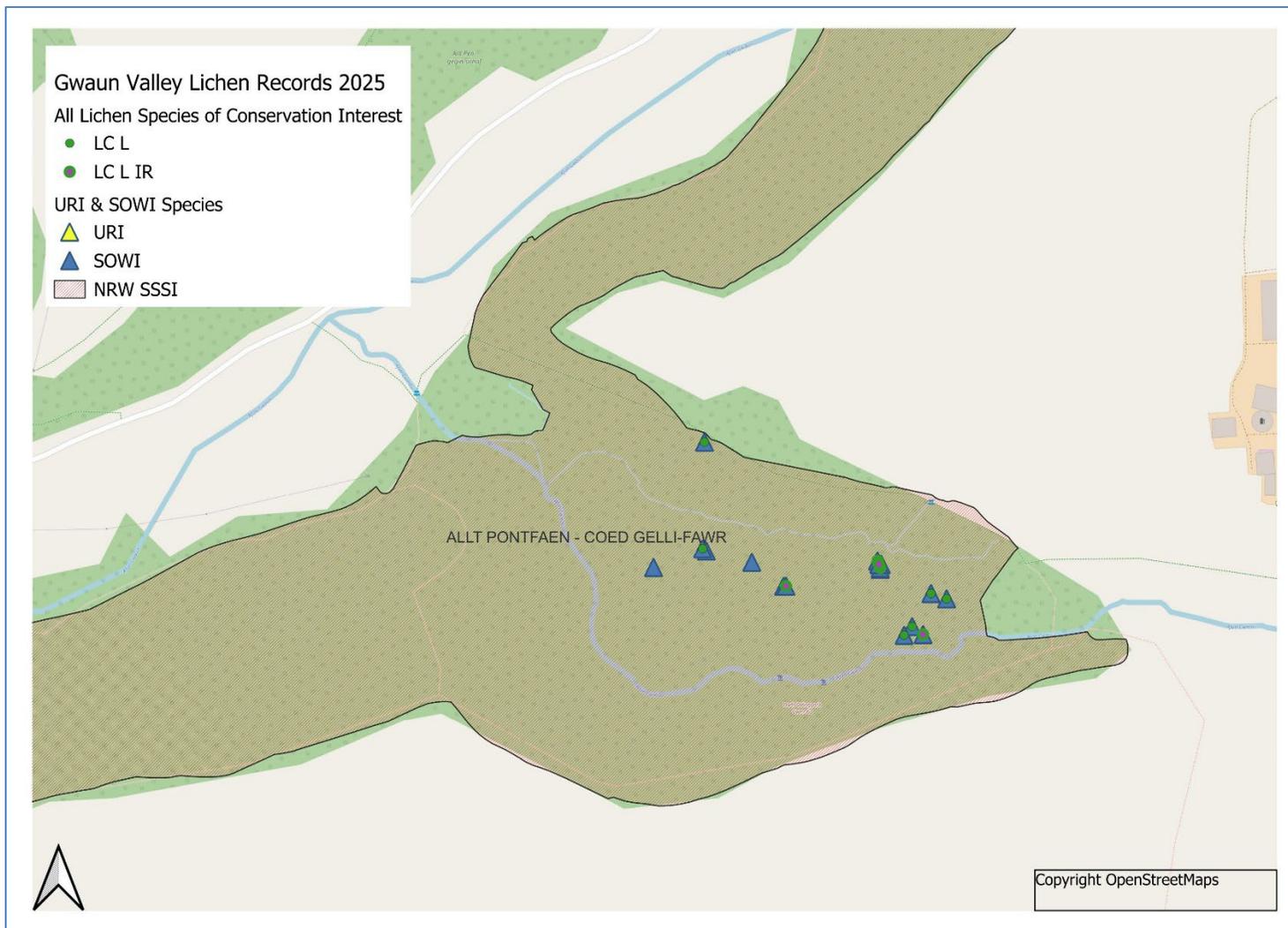
Map 9 Distribution of Lobarion community species



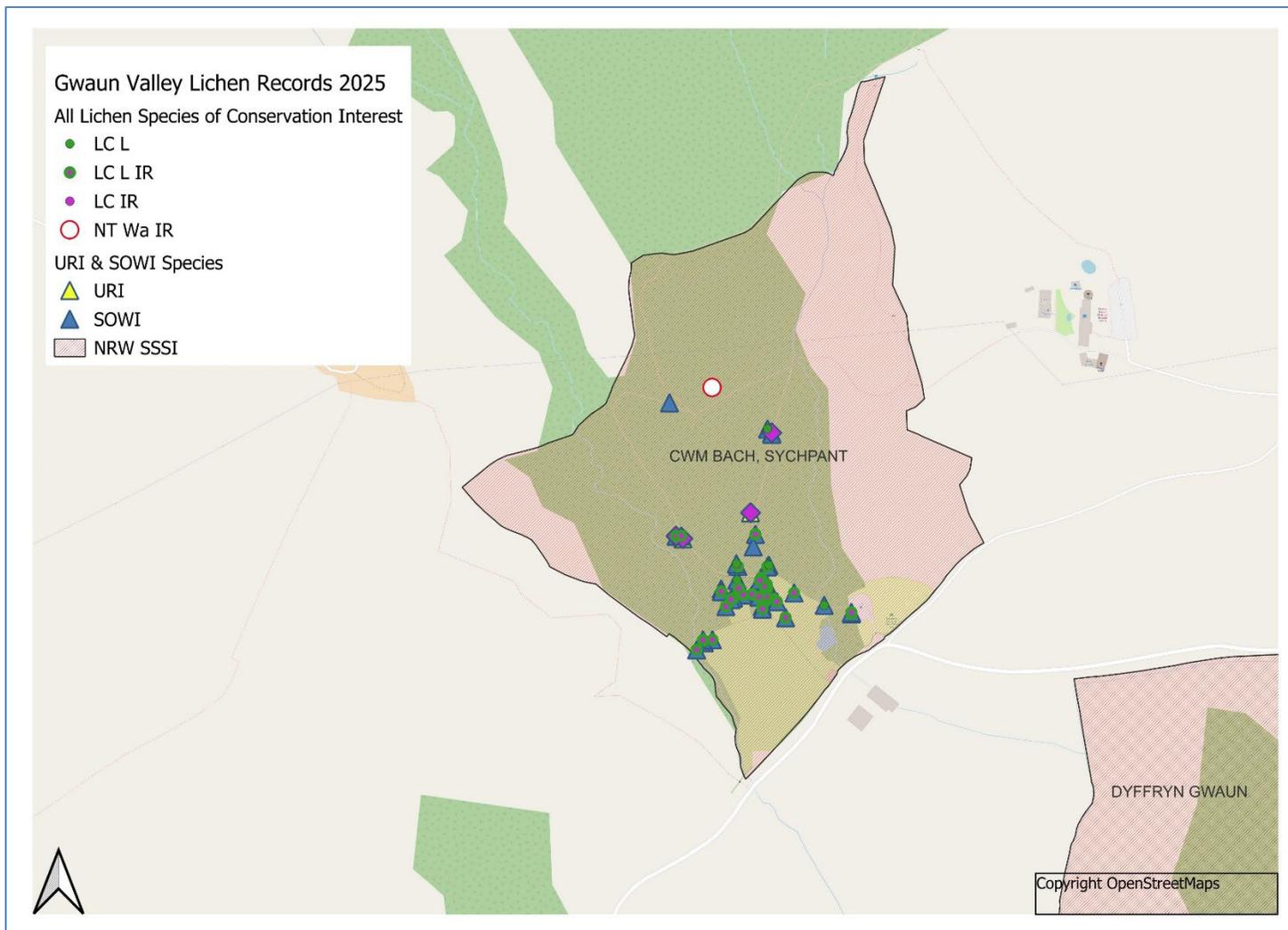
Map 10 Distribution of other species of conservation importance



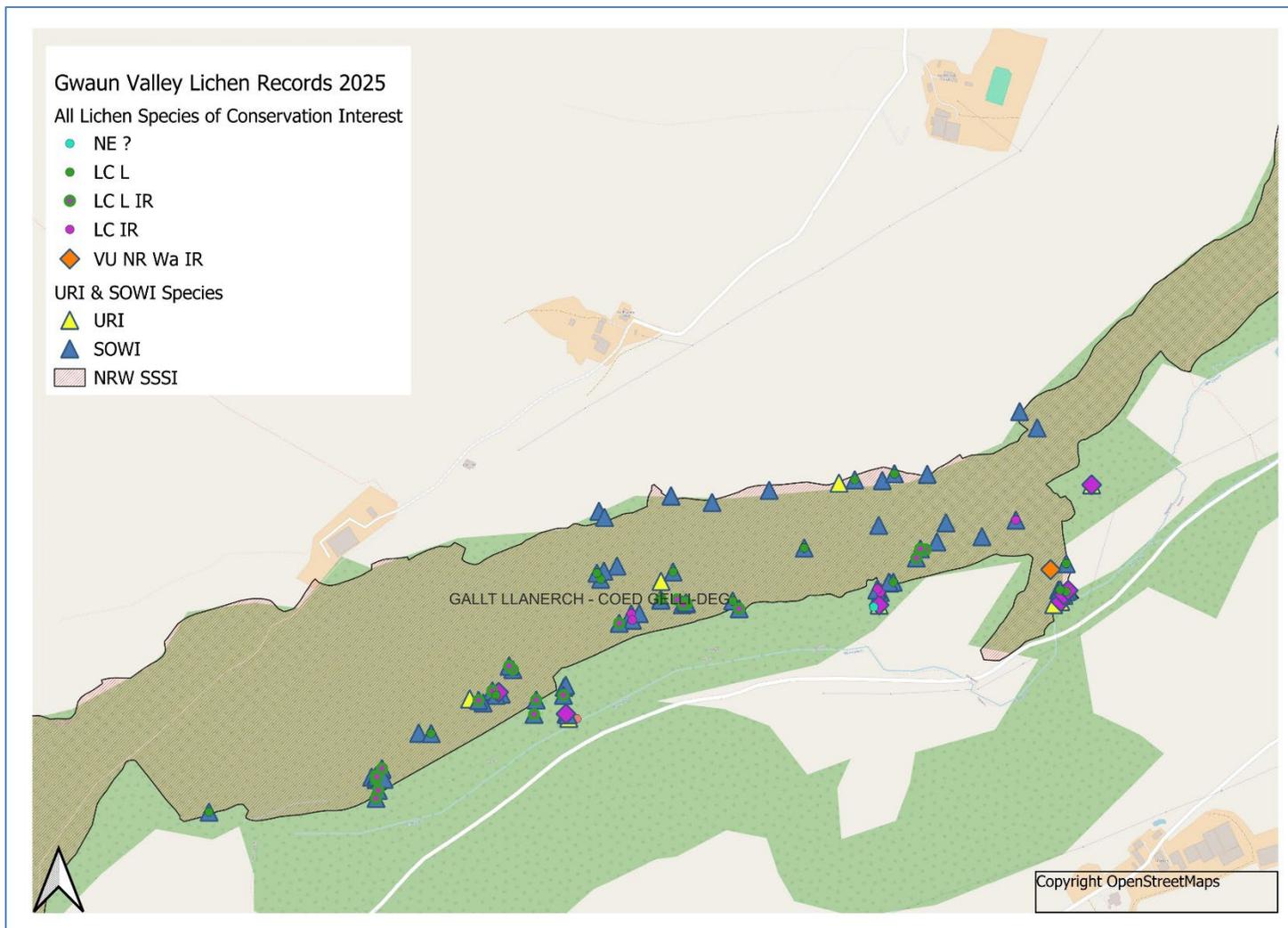
Map 11 Allt Pontfaen North and Dyffryn Gwaun species of conservation importance



Map 12 Allt Pontfaen south species of conservation importance



Map 13 Cwm Bach Sychpant species of conservation importance



Map 14 Gall Llanerch Coed Gelli Deg species of conservation importance



Map 15 Garn Wood Kilkiffeth, Cwm Felin Ban & Dan Deri species of conservation importance

## Appendix 2: Summary of lichens of Conservation Interest recorded during the present monitoring project (September & October 2025)

Taxon	Status	Substrate	Small-scale habitats	Abundance
<i>Allographa pauciloculata</i>	VU D2 NR E P Eng Wa IR	Corticolous	<i>Alnus</i>	A/O
<i>Graphis ruiziana</i>	LC NS Sc IR	Corticolous	<i>Alnus</i>	A/F
<i>Cetrelia olivetorum s. lat.</i>	LC	Corticolous	<i>Salix, Corylus, Quercus</i>	A/O
<i>Chaenotheca brunneola</i>	LC	Lignicolous	<i>Quercus</i>	A/R
<i>Cladonia caespiticia</i>	LC	Corticolous	<i>Salix</i>	A/R
<i>Cladonia parasitica</i>	LC	Lignicolous	<i>Quercus</i>	A/R
<i>Coenogonium luteum</i>	LC L*	Corticolous	<i>Salix, Corylus, Quercus</i>	A/O
<i>Hypotrachyna afrorevoluta</i>	LC	Corticolous	<i>Alnus</i>	A/O
<i>Hypotrachyna laevigata</i>	LC	Corticolous	<i>Quercus, Corylus</i>	A/F
<i>Hypotrachyna sinuosa</i>	LC Sc IR	Corticolous	<i>Salix</i>	A/R
<i>Japewiella tavaresiana</i>	LC	Corticolous	<i>Corylus</i>	A/R
<i>Lecanora jamesii</i>	LC	Corticolous	<i>Betula</i>	A/O
<i>Leptogium cyanescens</i>	LC Sc IR	Corticolous	<i>Fraxinus</i>	A/R
<i>Scytinium lichenoides</i>	LC	Corticolous	<i>Fraxinus</i>	A/O
<i>Scytinium teretiusculum</i>	LC L*	Corticolous	<i>Fraxinus</i>	A/R
<i>Lobaria pulmonaria</i>	LC Sc L IR	Corticolous	<i>Fraxinus</i>	A/R
<i>Ricasolia virens</i>	LC Sc L IR	Saxicolous	-	A/R
<i>Megalaria pulverea</i>	LC	Corticolous	<i>Corylus, Alnus, Betula</i>	A/O
<i>Mycobilimbia sphaeroides</i>	LC L*	Corticolous	<i>Quercus</i>	A/R

Taxon	Status	Substrate	Small-scale habitats	Abundance
<i>Mycoporum antecellens</i>	LC	Corticolous	<i>Quercus</i>	A/R
<i>Nephroma laevigatum</i>	LC Sc L IR	Corticolous	<i>Fraxinus, Salix</i>	A/O
<i>Alyxoria ochrocheila</i>	LC	Corticolous	<i>Fraxinus</i>	A/R
<i>Pannaria conoplea</i>	LC Sc L IR	Corticolous	<i>Salix</i>	A/R
<i>Parmelia ernstiae</i>	NE?	Corticolous	<i>Acer pseudoplatanus</i>	A/R
<i>Parmeliella parvula</i>	LC Sc L* IR	Corticolous	<i>Quercus</i>	A/R
<i>Parmeliella thriptophylla</i>	LC Sc L IR	Corticolous	<i>Quercus</i>	A/R
<i>Parmotrema crinitum</i>	LC L	Saxicolous	-	A/R
<i>Peltigera collina</i>	LC Sc L IR	Corticolous	<i>Fraxinus</i>	A/R
<i>Peltigera horizontalis</i>	LC L*	Corticolous	<i>Fraxinus, Quercus</i>	A/O
<i>Lepra multipuncta</i>	LC	Corticolous	<i>Corylus, Salix, Quercus</i>	A/O
<i>Phaeographis dendritica</i>	LC Sc	Corticolous	<i>Corylus, Salix, Quercus</i>	A/F
<i>Phaeographis inusta</i>	LC NS IR	Corticolous	<i>Alnus</i>	A/R
<i>Punctelia reddenda</i>	LC L	Corticolous	<i>Quercus, Corylus</i>	A/O
<i>Schizotrema quercicola</i>	LC Sc IR	Corticolous	<i>Quercus</i>	A/R
<i>Skyttea nitschkei</i>	LC	Lichenicolous	<i>Thelotrema lepadinum</i>	A/R
<i>Stenocybe septata</i>	LC Sc IR	Corticolous	<i>Ilex</i>	A/R
<i>Sticta canariensis (dufourii)</i>	LC Sc L IR	Saxicolous	-	A/R
<i>Sticta fuliginicolousinosa s. lat.</i>	LC Sc L IR	Corticolous	<i>Fraxinus, Corylus, Salix, Quercus, Sorbus</i>	A/O
<i>Sticta limbata</i>	LC Sc L IR	Corticolous	<i>Fraxinus, Corylus, Salix, Quercus,</i>	A/O

Taxon	Status	Substrate	Small-scale habitats	Abundance
<i>Sticta sylvatica</i>	LC Sc L IR	Corticolous	<i>Fraxinus, Corylus, Salix, Quercus,</i>	A/O
<i>Thelopsis rubella</i>	LC L	Corticolous	<i>Quercus</i>	A/R
<i>Thelotrema lepadinum</i>	LC L*	Corticolous	<i>Corylus, Ilex, Quercus</i>	A/O
<i>Usnea articulata</i>	NT P Eng Wa IR	Corticolous	<i>Crataegus, Quercus</i>	A/O
<i>Usnea ceratina</i>	LC Sc	Corticolous	<i>Betula</i>	A/R
<i>Usnea florida</i>	NT ? P Eng Sc Wa	Corticolous	<i>Corylus, Quercus</i>	A/O
<i>Usnea rubicunda</i>	LC	Corticolous	<i>Salix</i>	A/R

### Appendix 3: CSM location comparison photos 2008 & 2025

A selection of CSM locations is shown below (2008 images on the right and 2025 images on the left) to show changes in the last 17 years.

#### Allt Pontfaen Coed Gelli Fawr SSSI

CSM loc 4 2008 (left) and much infilling 2025 (right)



CSM loc 19 *P. horizontalis* increased. 2008 (left) and 2025 (right)



CSM loc 20 in Allt Hendy Meadow, largely unchanged. 2008 (left) and 2025 (right)



## Cwm Bach Sychpant SSSI

CSM loc 1 shading scrub and ivy had increased since 2008, but has recently been cleared by PCNPA. 2008 (left) and 2025 (right)



## **Dyffryn Gwaun SSSI**

Not possible to replicate any photos

## Gallt Llanerch Coed Gelli Deg SSSI

CSM loc 2 showing little change. 2008 (left) and 2025 (right)



**CSM loc 3** Much infilling with dense sapling growth. 2008 (left) and 2025 (right)



**CSM loc 6** showing a huge increase in Bramble. 2008 (left) and 2025 (right)



**CSM loc 20** showing a huge increase in Ivy and Bramble, particularly on the large Oak in the centre. 2008 (left) and 2025 (right)



## Garn Wood, Kilkiffeth, Dan Deri Cwm Felin Ban SSSI

CSM loc 13 The right-hand limb that supported *L. pulmonaria* (arrowed) has been felled between 2008 and 2025. 2008 (left) and 2025 (right)



## Appendix 4: Glossary & list of acronyms

### Land use:

Key Lichen Areas (KLAs): Areas identified as being of high importance for lichen conservation, containing rich lichen assemblages and often clusters of AVTs.

Lapsed Wood Pasture: Wood pasture in which the management practices which sustain the habitat no longer occur (see wood pasture).

Naturalistic Grazing: Grazing systems using free-ranging livestock to mimic natural herbivory and maintain open woodland conditions.

Wood Pasture: A semi-natural mosaic of scattered trees, grassland, and scrub, shaped by grazing animals and maintained through the interaction of grazing, natural regeneration, and traditional tree practices such as pollarding.

### Trees:

Ancient Tree: A tree with major branch dieback and/or extensive, visible heart rot. Often extremely old with significant ecological and historical value.

Future Lichen/Veteran Tree (FL/VT): A tree with potential to develop the characteristics of an Ancient or Veteran Tree (AVT), and/or to support important lichen species (especially those with alkaline bark).

Haloing: A management technique involving the selective removal of surrounding vegetation to increase Lignicolous and air circulation around a target tree, particularly to benefit lichens.

Pollard: A tree cut above ground level to promote new branch growth; old pollards often support rich lichen and saproxylic communities.

Ring-Barking (Girdling): The intentional removal of bark around a tree's circumference to create standing deadwood habitats, including potential sap runs

Sap Run / Slime Flux: Long-lasting, slow-flowing sap exudation from trees, often forming valuable microhabitats for specialist lichens.

Veteran Tree: A tree showing features of old age (e.g., cavities, deadwood, fungi, rot holes), providing habitat for many species. All ancient trees are veterans, but not all veterans are ancient.

Veteranisation: Artificially accelerating the ageing process of trees (e.g., through cutting, wounding, or pruning) to create habitat features associated with old trees.

### Lichens:

Acidophyte: A lichen species adapted to grow on acidic substrates such as bark with low pH (e.g. birch, oak). Sensitive to nitrogen and ammonia pollution.

Dry Bark & Lignicolous Communities: Lichen assemblages associated with old oaks and deadwood in drier conditions. An important community for rare species.

Lobarion Community: A group of pollution-sensitive lichens typically found on mature, well-lit trees with alkaline bark (e.g. ash, elm, maple). Indicative of high ecological continuity.

Nitrophilic Species: Species tolerant of or favoured by elevated nitrogen levels; often dominate polluted sites (e.g. *Xanthoria parietina*).

Pre-Lobarion Community: Lichen assemblages preceding the establishment of Lobarion communities, often with species tolerant of denser shade.

Xanthorion Community: A group of nitrophilic lichens characteristic of nutrient-enriched bark and woodland edges affected by ammonia pollution.

**Pollution:**

Air Pollution Information System (APIS): UK database providing estimates of atmospheric pollutant concentrations and deposition for ecological impact assessments.

Ammonia (NH<sub>3</sub>): A gaseous form of nitrogen emitted mainly from agriculture (slurry, manure, fertiliser). A major source of nitrogen deposition affecting sensitive lichens

Critical Load / Critical Level: The threshold level of pollutant deposition or concentration above which harmful effects on sensitive ecosystems are likely to occur.

Diffuse Pollution: Pollution arising from multiple, widespread sources rather than a single identifiable point (e.g. agricultural ammonia emissions).

**List of acronyms**

Acronym	Meaning
AVT	Ancient & Veteran Tree
BAP	Biodiversity Action Plan
FL/VT	Future Lichen/Veteran Tree
INNS	Invasive Non-Native Species
IR	International Responsibility species
KLA	Key Lichen Area
LC	Least Concern
NE NR	Nationally Rare (Not Evaluated)
NNR	National Nature Reserve

Acronym	Meaning
Non-KLA	Non-Key Lichen Area
NRW	Natural Resources Wales
NS	Nationally Scarce
NT	Near Threatened
SOWI	Southern Oceanic Woodland Index
SSSI	Site of Special Scientific Interest
TNTN	Near Threatened and Notable Index
URI	Upland Rainforest Index
VU	Vulnerable

## 12. Data Archive Appendix

Data outputs associated with this project are archived on server-based storage at Natural Resources Wales.

The data archive contains:

- [A] The final report in Microsoft Word and Adobe PDF formats;
- [B] A spreadsheet of records using British National Grid.

Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue <https://libcat.naturalresources.wales> (English Version) and <https://catllyfr.cyfoethnaturiol.cymru> (Welsh Version) by searching 'Dataset Titles'.

The metadata is held as record no NRW\_DS161506

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