



Llywodraeth Cymru  
Welsh Government



# The Environmental Impact Assessment (Agriculture) (Wales) Regulations 2017

## Significance decision-making within the EIA (Agriculture) screening and investigation process

October 2020



## Preamble

The EIA (Agriculture) Regulations consider the effects of agricultural projects on habitats, species and historic features (Welsh Government, 2017). During the assessment process it is necessary to classify areas of semi-natural habitats as either 'significant' or 'not significant', the definition of significance relating to the level of 'national or local importance' of the semi-natural habitat.

It has often been attempted to classify the 'worth', or 'importance' of elements, or biological systems within the natural environment. This is what the EIA (Agriculture) Unit in Welsh Government aims to do during its significance decision making. There are elements within the natural environment which are recognised as being so rare or threatened in a Welsh or wider context that the decision is relatively straightforward, for example a particularly large area of a scarce habitat type or a large population of a rare species. However, scenarios of this type are not often encountered, and therefore the EIA (Agriculture) Unit must quantify and qualify all features within an area of interest to reach a decision.

This paper will categorise the different factors which EIA (Agriculture) Unit will consider when classifying the significance of an area of land. There is also a template which the EIA team will complete detailing the discussions held and evaluation of the site. This document will be used to justify the decisions made.

# 1. Section 7 habitats

These are habitats listed under the Environment (Wales) Act 2016 as being “*of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales*” (see Fig.1) and are also often referred to as Priority Habitats. The list includes a full range habitats, from upland to lowland and terrestrial to freshwater and marine. In an agricultural setting, grassland habitats are the most commonly encountered, along with, less frequently, heathland and wetland habitats. Woodland creation and deforestation are covered by separate EIA (Forestry) regulations.

Section 7 of the Act requires Welsh Ministers to “*take all reasonable steps to maintain and enhance the ... types of habitat included in any list published under this section*”. Therefore, when considering the significance of a semi-natural area, if an area of Section 7 habitat has been recorded then that area will be deemed significant, so long as that Section 7 habitat is confirmed as still being present.

Any potential detrimental impacts of a proposed project on an area of Section 7 habitat should be considered. This could include direct effects such as cultivation or fertilisation of land, or indirect effects such as from agricultural runoff. Indirect effects are hardest to evaluate, but are most likely to occur when habitat land is situated immediately adjacent to and/or down-slope from intensively-managed land.

## Environment (Wales) Act: Section 7 (parts (1) to (3))

- (1) The Welsh Ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.
- (2) Before publishing a list under this section the Welsh Ministers must consult the Natural Resources Body for Wales (“NRW”) as to the living organisms or types of habitat to be included in the list.
- (3) Without prejudice to section 6, the Welsh Ministers must –
  - (a) take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and
  - (b) encourage others to take such steps.

Fig.1: Section 7 extract



## 2. Other semi-natural habitats

Wales supports a range of other semi-natural habitats not listed under Section 7 of the Environment (Wales) Act 2016 examples include upland acid grassland and semi-improved neutral grassland. Acid grassland is not a Section 7 habitat when in the unenclosed uplands, due to its prevalence there and the fact that some areas have been derived from overgrazing of heathlands (lowland examples are much less common and much more fragmented however, and are therefore listed under Section 7). Semi-improved neutral grassland typically contains a proportion of agricultural grasses such as ryegrass, but at less than the 25% cover limit used to define semi-natural habitats under the EIA (Agriculture) Regulations 2017.

A number of factors should be considered in the assessment of semi-natural habitats that are not on the Section 7 list. These include:

### a. Habitat size

The EIA (Agriculture) (Wales) Regulations 2017 do not specify semi-natural area/size thresholds within the statutory instrument. Therefore, there are no areas which will be considered too small to affect the final 'significance' decision. If small areas of semi-natural habitat are found within a project area, then the EIA (Agriculture) Unit will attempt, through communication with the landowner, to exclude them from any screening application, thereby allowing management on the rest of the application area to be intensified.

It is, however, generally considered that the larger an area of habitat, be it of one type or a mosaic of habitats, then the more valued or, under the definitions used by EIA (Agriculture) (Wales) Regulations, 'significant' that semi-natural habitat is.

Patches of contiguous semi-natural habitat in lowland Wales are generally small, with 68% of non-maritime habitat patches being less than 1 ha in size and 94% under 10ha. (Stevens, 2005). Even habitat patches of less than 1 ha may therefore be considered significant, especially if they are of uncommon types of habitat.

### b. Species diversity

Diversity, if measured simply by the number of different species present in an area of habitat, is an imperfect guide to assessing the significance of a habitat. Species diversity assessment should primarily consider the frequency and abundance of those species particularly characteristic of, and therefore indicative of, unimproved habitats.

Recourse to habitat classifications is useful at this stage, particularly the National Vegetation Classification (NVC). Placement of areas of habitat into NVC communities or sub-communities helps in the assessment of significance. Some NVC types are considered agriculturally modified, while others are considered rare and/or can be related directly to Section 7 habitat types (for grasslands, see Jefferson et al., 2014). Comparison of the text and floristic tables in the NVC volumes (Rodwell (ed), 1991 et seq.) shows which species are more characteristic of unimproved habitats, for example, for neutral grasslands species such as common bird's-foot trefoil and black knapweed.

Conversely, the abundance of species indicative of agricultural improvement, such as ryegrass and white clover, is likely to reduce the significance of an area of habitat, although generally the presence/abundance of species indicative of unimproved habitats is the overriding factor in diversity assessment.

For assessment of uncommon species, see Species and Local Context.

### 3. Habitat mosaics

Habitat may occur as individual 'stands' or may be intermixed with other habitats, sometimes intricately so in the form of habitat mosaics. Evaluating the significance of habitat mosaics should take into account the component parts of the mosaic, which might comprise: a mixture of Section 7 habitats; a mixture of Section 7 and non-Section 7 habitats; or a mixture of habitat and non-habitat land. Mixtures of biodiverse habitats are likely to be of higher value than their component parts and may be of importance for species which rely on juxtapositions between habitats.

Assessment of the significance of mosaics should include assessment of the composition and diversity of the different habitat patches, and estimation of the proportions of the different habitat/non-habitat components within the mosaic area.

Mosaics of Section 7 habitats are the most straightforward to evaluate, but a mixture of habitats with low or medium level diversity could be accumulated to create a mosaic species diversity which would in itself be great enough to confer the classification of 'significant'.

Mixtures of semi-natural habitat and highly-modified habitat are particularly problematic. A land parcel containing a proportion of Section 7 habitat would ideally always be considered significant, but if the proportion of the semi-natural habitat in the mosaic is particularly small and very widely dispersed, retention of that habitat may not be practicable, especially if the habitat patches are surrounded by heavily 'improved' grassland.

### 4. Species

A range of species (*"living organisms...of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales"*) is listed under Section 7 of the Environment (Wales) Act. Effects of agricultural projects on these Priority Species should be considered, with the aim being to at least maintain populations.

The potential impact of projects adjacent to populations of Section 7 species should also be considered, as projects may affect the resilience of populations (see below).

Wales supports other species of conservation interest which are not listed under Section 7 of the Environment (Wales) Act, including species that are rare or scarce either locally, nationally (Wales) or within the UK. The potential of detrimental impact on these species should be considered on a case-by-case basis (see also Local Context).

Effects on species may be particularly hard to evaluate and where there is doubt, expert opinion should be sought.

## 5. Ecological resilience

Maintaining and enhancing the resilience of ecosystems is an objective of the sustainable management of natural resources (SMNR): as described in the Environment (Wales) Act. Ecological resilience includes five aspects (i) diversity between and within ecosystems; (ii) the connections between and within ecosystems; (iii) the scale of ecosystems; (iv) the condition of ecosystems (including their structure and functioning); (v) the adaptability of ecosystems.

The resilience of areas of habitat and populations of species is an additional factor to consider in the assessment of significance. It means that areas of habitat which are close to other habitat patches, or which might provide 'stepping stones' between different habitat patches, may be of enhanced significance, even if of comparatively low diversity or small size. This is particularly relevant where proposed projects are close to, for example, Sites of Special Scientific Interest with relevant habitat or species 'features'; are near to large areas of Section 7 habitat; or could form part of the range of mobile notable animal species.

## 6. Local context

Assessment of significance should take into account the local as well as the national importance of different habitats and species. Habitats and species listed under Section 7 of the Environment (Wales) Act are of national (Welsh) importance by definition, and some non-Section 7 species are scarce or rare in a Welsh or UK context, so are clearly also of importance (refer to country and UK Red Lists). However, some habitats or species may be patchily distributed so that they are relatively common in some parts of Wales but are locally rare. For semi-natural habitats this may be particularly the case in parts of Wales heavily dominated by agriculturally improved grassland, where even moderately diverse patches of habitat are locally uncommon and thus of increased value. Conversely, patches of habitat in localities where semi-natural habitat is especially frequent may also be of enhanced value for ecosystem resilience (see part 5).

Patchy distribution of species may be due to a number of factors, including geographical range limits, with populations towards the edge of a species range being generally considered to be of increased importance. Note should also be taken of a species' wider distribution. For example, certain species may be comparatively common in Wales or parts of Wales, but are highly restricted in Europe or internationally, one example being whorled caraway, which can appear common in wet grasslands in parts of south Wales, but is highly restricted internationally, to the western fringes of Europe.

## 7. Designated sites

Statutory protected sites are those receiving legal protection in recognition of their biodiversity or geodiversity interest. They include Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

Sites of local importance include Regionally Important Geodiversity Sites (RIGS), recognised for their local geodiversity importance, Sites of Importance for Nature Conservation (SINCs), sites of local biodiversity interest, which are typically designated by local authorities. Although lacking legal protection, local authorities are expected to take account of the need to protect them in deciding their planning and development policies. Sites may also be recognised for their historic importance as Scheduled Monuments (SM).

Land managers may apply for screening for land which has been designated by a statutory authority. Therefore, it is necessary to ensure that any decisions made by the EIA (Agriculture) Unit do not adversely affect any designated areas, and especially the features of interest which underpin the designation. The EIA (Agriculture) Unit will therefore, on these occasions, liaise with the statutory authority with over-arching supervision of these designated areas, for instance for SM sites, CADW is the statutory authority, and consider and discuss the advice those bodies provide.

The designation of a site will not inevitably lead to a 'significant' decision on the classification of the land. If the feature, or features of the designation are going to be adversely affected by the proposed works, or enacted works (in the case of a breach investigation), then the site will be deemed 'significant' for those reasons alone. However, if the features of the designated area will not be adversely affected by the works, then the designation status of the site will not bear any further influence on the significance level of the site, and level of significant will be determined as for undesignated land.



## Discussion

Due to the ever-changing and varying instances where there needs to be a decision of the significance of the features of a site, it is impossible to set definitive thresholds as to when something becomes significant and when it does not.

When considering partially modified semi-natural habitats and features, the EIA (Agriculture) Unit will always try and balance the need for negating the impacts of agriculture on those features with the need for the landowner to run a sustainable business. The EIA (Agriculture) Unit will always discuss an application with a landowner, and where appropriate will suggest the omission, if practical, of all areas of significant semi-natural habitat. This often allows the passing of screening applications, whilst retaining any significant areas of habitat.

All of the above categories should be considered in unison to ascertain the significance of a site. One of the above, a Section 7 habitat/species for instance, could provide reason enough to label an area 'significant', or several (if not all) of the above categories could combine to create a robust argument for the area to be considered 'significant'. The use of strict national thresholds and limits, where a feature/area under consideration falls automatically into the significant or non-significant category, can be problematic because, as previously discussed, an area in one location could have a different level of significance when compared to an apparently similar area in another location. Therefore, strict thresholds have been purposely avoided.

The EIA (Agriculture) Unit will capture information for each site on a standard form, indicating which features are relevant to the level of significance, and stating how the decision was reached. This will serve as a record of the assessment process and ensure consistency of decision-making.

## References

- Stevens, J.P. 2005.** Setting land cover data for the proposed Merthyr Village development area into a wider context: an analysis of CCW's Phase 1 habitat survey data. Countryside Council for Wales internal document produced for Merthyr Village Judicial Review 2006.
- Jefferson, R.G., Smith, S.L.N. & MacKintosh, E.J. 2014.** Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 3 Lowland Grasslands. Joint Nature Conservation Committee, Peterborough.
- Rodwell, J.S. (ed.). 1991.** British Plant Communities. Volumes 1–4, et seq. Cambridge: Cambridge University Press.
- Rodwell, J.S. 2006.** National Vegetation Classification users' handbook. Joint Nature Conservation Committee, Peterborough.

# Annex 1

## 1. Methodology Overview

- The EIA (Agri.) Unit utilises the National Vegetation Classification (NVC) system (Rodwell 2006) methodology to ascertain the habitats type. The NVC system classifies all habitats found within the UK in a systematic way, and is accepted as standard methodology in the UK when classifying a habitat.
- To assess the significance of the NVC Habitat DOMIN values will be used; any other methodology, eg. DAFOR may be used for the initial assessment
- A search of the EIA (Agri) Units database will also be undertaken for the site to see what historical data on the site WG holds.
- External consultation with other bodies will be undertaken on semi- natural sites, to ascertain whether any further historical evidence/ information is available, eg CADW, NRW.
- In order to classify the habitat under investigation random quadrat - 2m x 2m squares of the homologous stands within the area of interest will be taken. All the plant species, with their percentage cover, within the quadrats are recorded.
- It is not always possible to utilise the random aspect of the methodology when investigating breaches of the Regulations, as surveyors have to identify indicators of the previous habitat. In these situations the quadrats are placed in areas where there is remnant vegetation present in the sward. Or DAFOR can be utilised initially.
- When classifying the habitat type(s) within the area of interest, the level of species diversity for each of the different habitat types within the area is also attained.
- The surveyor will also log other species that are present in the stand which had not occurred within the quadrats which will also add to the species diversity of the habitats in the area of interest
- Within each of the habitats described in the NVC literature there are 'Notable' species. Inclusion of these 'Notable' species, will also assist the decision making of the significance of the site.
- During the botanical surveying, observations will be made of any fauna using the site. This will complement the sites zoological interest obtained via the consultation responses from stakeholder groups.
- The fauna information will then be considered in unison with the botanical data gathered. The main driver indicating the sites biological diversity will be from the botanical surveys.
- The level of the species diversity of the habitat(s) within the area of interest will then be discussed to determine the significance of the site.

## 2. Section 7 Species and Habitats

### Habitats

Habitats	Priority Habitats
Terrestrial, coastal & freshwater	
Broadleaved, mixed and yew woodland	Traditional orchards
	Wood pasture and parkland
	Upland oak woodland
	Lowland beech and yew woodland
	Upland mixed ash woodland
	Wet woodland
	Lowland mixed deciduous woodland
Boundary and linear features	Hedgerows
Arable and horticultural	Arable field margins
Improved grassland	Coastal and floodplain grazing marsh
Neutral grassland	Lowland meadows
Calcareous grassland	Lowland calcareous grassland
	Upland calcareous grassland
Acid grassland	Lowland dry acid grassland
Dwarf shrub heath	Lowland heathland
	Upland heathland
Fen, marsh and swamp	Upland flushes, fens and swamps
	Lowland fens
	Purple moorgrass and rush pastures
	Reedbeds
Bogs	Lowland raised bog
	Blanket bog
Montane Habitats	Mountain heaths and willow scrub
Rivers and Streams	Rivers
Standing open waters and canals	Oligotrophic and dystrophic lakes
	Ponds
	Mesotrophic lakes
	Eutrophic standing waters
	Aquifer-fed naturally fluctuating water bodies

Habitats	Priority Habitats
Inland rock	Inland rock outcrop and scree habitats
	Calaminarian grasslands
	Open mosaic habitats on previously developed land
	Limestone pavement
Supralittoral rock	Maritime cliff and slopes
Supralittoral sediment	Coastal sand dunes
	Coastal vegetated shingle
<b>Marine</b>	
Littoral Rock	Intertidal boulder communities
	<i>Sabellaria alveolata</i> reefs
	Estuarine rocky habitats
Littoral sediment	Coastal saltmarsh
	Intertidal mudflats
	Seagrass beds
	Sheltered muddy gravels
	Horse mussel beds
	Maerl beds
	Saline lagoons
	Peat and clay exposures
Sublittoral rock	Tidal swept channels
	Fragile sponge and anthozoan communities on subtidal rocky habitats
	Carbonate reefs
Sublittoral sediment	Subtidal sands and gravels
	Subtidal mixed muddy sediments
	Mud habitats in deep water
	<i>Musculus discors</i> beds
	Blue mussel beds

## Species

¥ Wales only species; † original S74 species

Mammals (17 species)		Revisions
<i>Arvicola terrestris</i>	Water vole†	
<i>Barbastella barbastellus</i>	Barbastelle bat†	
<i>Erinaceus europaeus</i>	West European hedgehog	
<i>Lepus europaeus</i>	Brown hare†	
<i>Lutra lutra</i>	Otter†	
<i>Martes Martes</i>	Pine marten	
<i>Micromys minutus</i>	Harvest mouse	
<i>Muscardinus avellanarius</i>	Dormouse†	
<i>Mustela putorius</i>	Polecat	
<i>Myotis bechsteinii</i>	Bechstein's bat†	
<i>Nyctalus noctula</i>	Noctule	
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle†¥	
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle†	
<i>Plecotus auritus</i>	Brown long-eared bat	
<i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat†	
<i>Rhinolophus hipposideros</i>	Lesser horseshoe bat†	
<i>Sciurus vulgaris</i>	Red squirrel†	

Birds (51 species)		Revisions
<i>Acrocephalus paludicola</i>	Aquatic warbler†	
<i>Alauda arvensis subsp. arvensis/scotica</i>	Skylark†	
<i>Anser albifrons subsp. flavirostris</i>	Greenland greater whitefronted goose	
<i>Anthus trivialis</i>	Tree pipit	
<i>Botaurus stellaris</i>	Great bittern†	
<i>Branta bernicula subsp. bernicula</i>	Dark-bellied brent goose	
<i>Caprimulgus europaeus</i>	European nightjar†	
<i>Carduelis cabaret</i>	Lesser redpoll	
<i>Carduelis cannabina subsp. autochthona/cannabina</i>	Common linnet†	
<i>Carduelis flavirostris subsp. bensonorum/pipilans</i>	Twite	
<i>Charadrius hiaticula</i>	Ringed plover ¥	



Birds (51 species)		Revisions
<i>Circus cyaneus</i>	Hen harrier†¥	
<i>Coccothraustes coccothraustes</i>	Hawfinch	
<i>Crex crex</i>	Corncrake†	
<i>Cuculus canorus</i>	Common cuckoo	
<i>Cygnus columbianus subsp. Bewickii</i>	Tundra swan = Bewick's swan	
<i>Dendrocopus minor subsp. Comminutus</i>	Lesser spotted woodpecker	
<i>Emberiza calandra subsp. calandra/clanceyi</i>	Corn bunting†	
<i>Emberiza citrinella</i>	Yellowhammer†	
<i>Emberiza schoeniclus</i>	Reed bunting†	
<i>Falco tinnunculus</i>	Kestrel ¥	
<i>Ficedula hypoleuca</i>	Pied flycatcher ¥	
<i>Lagopus lagopus subsp. scotica</i>	Red grouse	
<i>Lanius collurio</i>	Red-backed shrike	
<i>Larus argentatus subsp. argenteus</i>	Herring gull	
<i>Larus ridibundus</i>	Black-headed Gull ¥	
<i>Limosa lapponica</i>	Bar-tailed godwit ¥	
<i>Locustella naevia</i>	Common grasshopper warbler	
<i>Lullula arborea</i>	Woodlark	
<i>Melanitta nigra</i>	Common scoter†	
<i>Motacilla flava subsp. flavissima</i>	Yellow wagtail	
<i>Muscicapa striata</i>	Spotted flycatcher†	
<i>Numenius arquata</i>	Eurasian curlew†	
<i>Parus montanus subsp. Kleinschimdti</i>	Willow tit	
<i>Parus palustris subsp. palustris/dresseri</i>	Marsh tit	
<i>Passer domesticus</i>	House sparrow	
<i>Passer montanus</i>	Eurasian tree sparrow†	
<i>Perdix perdix</i>	Grey partridge†	
<i>Phylloscopus sibilatrix</i>	Wood warbler	
<i>Pluvialis apricaria</i>	Golden plover† ¥	

Birds (51 species)		Revisions
<i>Prunella modularis subsp. Occidentalis</i>	Hedge accentor (Dunnock,Hedge sparrow)	
<i>Puffinus mauretanicus</i>	Balearic shearwater	
<i>Pyrhocorax pyrrhocorax</i>	Chough†	
<i>Pyrhula pyrnhula subsp. pileata</i>	Common bullfinch†	
<i>Sterna dougallii</i>	Roseate tern†	
<i>Streptopelia turtur</i>	European turtle dove†	
<i>Sturnus vulgaris subsp. vulgaris</i>	Common starling	
<i>Tetrao tetrix subsp. britannicus</i>	Black grouse†	
<i>Turdus philomelos subsp. clarkei</i>	Song thrush†	
<i>Turdus torquatus</i>	Ring ouzel	
<i>Vanellus vanellus</i>	Northern lapwing†	

Fish (10 species)		Revisions
<i>Alosa alosa</i>	Allis shad†	
<i>Alosa fallax</i>	Twaite shad†	
<i>Anguilla anguilla</i>	European eel	
<i>Coregonus lavaretus</i>	Whitefish (Powan, Gwyniad, or Schelly)	
<i>Lampetra fluviatilis</i>	River lamprey	
<i>Osmerus eperlanus</i>	Smelt (Sparling)	
<i>Petromyzon marinus</i>	Sea lamprey	
<i>Salmo salar</i>	Atlantic salmon	
<i>Salmo trutta</i>	Brown / Sea trout	
<i>Salvelinus alpinus</i>	Arctic char	

Reptiles and amphibians (8 species)		Revisions
<i>Anguis fragilis</i>	Slow-worm	
<i>Bufo bufo</i>	Common toad	
<i>Epidalea calamita</i>	Natterjack toad†	
<i>Lacerta agilis</i>	Sand lizard†	
<i>Zootoca vivipara</i>	Common lizard	
<i>Natrix natrix</i>	Grass snake	
<i>Triturus cristatus</i>	Great crested newt†	
<i>Vipera berus</i>	Adder	

Invertebrates (188 species)		Revisions
<i>Acronicta psi</i>	Grey dagger	
<i>Acronicta rumicis</i>	Knot grass	
<i>Adscita statices</i>	The forester	
<i>Agonopterix atomella</i>	A micro-moth	
<i>Agonum scitulum</i>	A ground beetle	
<i>Agrochola helvola</i>	Flounced chestnut	
<i>Agrochola litura</i>	Brown-spot pinion	
<i>Agrochola lychnidis</i>	Beaded chestnut	
<i>Allophyes oxyacanthae</i>	Green Brindled crescent	
<i>Amphipoea oculea</i>	Ear moth	
<i>Amphipyra tragopoginis</i>	Mouse moth	
<i>Anania funebris</i>	A Pyralid moth	
<i>Andrena tarsata</i>	A mining bee (yn GyrA)	
<i>Apamea anceps</i>	Large nutmeg	
<i>Apamea remissa</i>	Dusky brocade	
<i>Aporophyla lutulenta</i>	Deep-brown dart	
<i>Arctia caja</i>	Garden tiger	
<i>Argynnis adippe</i>	High brown fritillary†	
<i>Asilus crabroniformis</i>	Hornet robber fly†	

Invertebrates (188 species)	Revisions	
<i>Asteroscopus sphinx</i>	The sprawler	
<i>Atethmia centrago</i>	Centre-barred sallow	
<i>Austropotamobius pallipes</i>	White-clawed freshwater crayfish†	
<i>Bembidion quadripustulatum</i>	A ground beetle	
<i>Bembidion testaceum</i>	A ground beetle†	
<i>Bidessus minutissimus</i>	A diving beetle†	
<i>Blepharita adusta</i>	Dark brocade	
<i>Boloria euphrosyne</i>	Pearl-bordered fritillary†	
<i>Boloria selene</i>	Small pearl-bordered fritillary	
<i>Bombus humilis</i>	Brown-banded carder-beet†	
<i>Bombus muscorum</i>	Moss carder-bee	
<i>Bombus ruderarius</i>	Red-shanked carder-bee	
<i>Bombus ruderatus</i>	Large garden bumblebee	
<i>Bombus sylvarum</i>	Shrill carder-beet†	
<i>Brachylomia viminalis</i>	Minor shoulder-knot	
<i>Brachyptera putata</i>	Northern February red†	
<i>Calosoma inquisitor</i>	A ground beetle	
<i>Carabus monilis</i>	A ground beetle	
<i>Caradrina morpheus</i>	Mottled rustic	
<i>Celaena haworthii</i>	Haworth's minor	
<i>Celaena leucostigma</i>	The crescent	
<i>Chesias legatella</i>	The streak	
<i>Chesias rufata</i>	Broom-tip	
<i>Chiasmia clathrata</i>	Latticed heath	
<i>Chlaenius tristis</i>	A ground beetle	
<i>Chrysis fulgida</i>	A ruby-tailed wasp	
<i>Cicindela hybrida</i>	A tiger beetle†	
<i>Clorismia rustica</i>	A Stiletto-fly†	
<i>Coenagrion mercuriale</i>	Southern damselfly†	

Invertebrates (188 species)	Revisions	
<i>Coenonympha pamphilus</i>	Small heath	
<i>Coenonympha tullia</i>	Large heath	
<i>Cosmia diffinis</i>	White-spotted pinion†	
<i>Cossus cossus</i>	Goat moth	
<i>Cryptocephalus decemmaculatus</i>	A leaf beetle / Ten spotted beetle	
<i>Cupido minimus</i>	Small blue	
<i>Cyclophora pendularia</i>	Dingy mocha	
<i>Cylindera germanica</i>	A tiger beetle†	
<i>Cymatophorima diluta</i>	Oak lutestring	
<i>Dasypolia templi</i>	Brindled ochre	
<i>Diarsia rubi</i>	Small square-spot	
<i>Diloba caeruleocephala</i>	Figure of eight	
<i>Dipoena inornata</i>	A Comb-footed spider	
<i>Dolomedes plantarius</i>	Fen raft spider†	
<i>Donacia aquatica</i>	A reed beetle	
<i>Donacia bicolora</i>	A reed beetle	
<i>Ecliptopera silaceata</i>	Small phoenix	
<i>Empis limata</i>	A dance fly	
<i>Ennomos erosaria</i>	September thorn	
<i>Ennomos fuscantaria</i>	Dusky thorn	
<i>Ennomos quercinaria</i>	August thorn	
<i>Entephria caesiata</i>	Grey mountain carpet	
<i>Epirrhoe galiata</i>	Galium carpet	
<i>Erigone welchi</i>	A money-spider	
<i>Eriopygodes imbecilia</i>	The silurian ¥	
<i>Erynnis tages</i>	Dingy skipper	
<i>Eucera longicornis</i>	Long-horned Bee	
<i>Eugnorisma glareosa</i>	Autumnal rustic	
<i>Eulithis mellinata</i>	The spinach	



<b>Invertebrates (188 species)</b>		<b>Revisions</b>
<i>Eurodryas aurinia</i>	Marsh fritillary†	
<i>Eustroma reticulatum</i>	Netted carpet moth†	
<i>Euxoa nigricans</i>	Garden dart	
<i>Euxoa tritici</i>	White-line dart	<b>Added SG6 item 13</b>
<i>Formicoxenus nitidulus</i>	Shining guest ant	
<i>Graphiphora augur</i>	Double dart	
<i>Gryllotalpa gryllotalpa</i>	Mole cricket	
<i>Hagenella clathrata</i>	A caddis fly (yn gyra)	
<i>Haplodrassus dalmatensis</i>	A spider	
<i>Harpalus melancholicus</i>	A ground beetle	
<i>Heliophobus reticulata</i>	Bordered gothic†	
<i>Hemaris tityus</i>	Narrow-bordered bee hawkmoth†	
<i>Hemistola chrysoprasaria</i>	Small emerald	
<i>Hepialus humuli</i>	Ghost moth	
<i>Hipparchia semele</i>	Grayling	
<i>Hoplodrina blanda</i>	The rustic	
<i>Hydraecia micacea</i>	Rosy rustic	
<i>Hydrochara caraboides</i>	Lesser silver water beetle† ¥	
<i>Hydroporus rufifrons</i>	A diving beetle†	
<i>Idea contiguaria</i>	Weaver's wave¥	
<i>Idaea dilutaria</i>	Silky wave†	
<i>Idiocera sexguttata</i>	A crane fly	
<i>Isogenus nubecula</i>	A stonefly	
<i>Jodia croceago</i>	Orange upperwing†	
<i>Lampronia capitella</i>	Currant shoot-borer	
<i>Lasiommata megera</i>	Wall brown	
<i>Leptidea sinapis</i>	Wood white	
<i>Limenitis camilla</i>	White admiral	
<i>Lipsothrix errans</i>	A crane fly†	

Invertebrates (188 species)	Revisions	
<i>Lipsothrix nervosa</i>	A crane-fly†	
<i>Lipsothrix nigristigma</i>	A crane-fly	
<i>Lophopus crystallinus</i>	A freshwater bryozoan	
<i>Lucanus cervus</i>	Stag beetle†	
<i>Lycia hirtaria</i>	Brindled beauty	
<i>Lycia zonaria subsp. britannica</i>	Belted beauty†	
<i>Macaria wauaria</i>	V moth	
<i>Malacosoma neustria</i>	The lackey	
<i>Margaritifera margaritifera</i>	Freshwater pearl mussel†	
<i>Mecopisthes peusi</i>	A money spider	
<i>Meioneta mollis</i>	A money spider	
<i>Melanchra persicariae</i>	Dot moth	
<i>Melanchra pisi</i>	Broom moth	
<i>Melanthia procellata</i>	Pretty chalk carpet	
<i>Meloe proscarabaeus</i>	An oil-beetle	
<i>Meloe rugosus</i>	An oil-beetle	
<i>Meloe violaceus</i>	An oil-beetle	
<i>Meotica anglica</i>	A rove beetle†	
<i>Mesoligia literosa</i>	Rosy minor	
<i>Minoa murinata</i>	Drab looper	
<i>Monocephalus castaneipes</i>	A money spider	
<i>Mythimna comma</i>	Shoulder-striped wainscot	
<i>Myxas glutinosa</i>	Glutinous snail†	
<i>Nemapogon picarella</i>	A micro-moth	
<i>Nematopogon magna</i>	A micro-moth	
<i>Nigrobaetis niger</i>	Iron blue mayfly	
<i>Noctua orbona</i>	Lunar yellow underwing†	
<i>Notioscopus sarcinatus</i>	A money spider	
<i>Ochthebius poweri</i>	A water beetle	

Invertebrates (188 species)		Revisions
<i>Odontomyia hydroleon</i>	A soldier fly†	
<i>Odynerus melanocephalus</i>	A mason-wasp	
<i>Omphiscola glabra</i>	Mud snail	
<i>Orthonama vittata</i>	Oblique carpet	
<i>Orthosia gracilis</i>	Powdered quaker	
<i>Osmia parietina</i>	A mason bee†	
<i>Osmia xanthomelana</i>	A mason bee†	
<i>Panagaeus cruxmajor</i>	A ground beetle†	
<i>Pelurga comitata</i>	Dark spinach	
<i>Perizoma albulata subsp. albulata</i>	Grass rivulet	
<i>Philodromus fallax</i>	A running crab-spider	
<i>Phyllonorycter sagitella</i>	A micro-moth	
<i>Pisidium tenuilineatum</i>	Fine-lined pea mussel†	
<i>Plebejus argus</i>	Silver-studded blue†	
<i>Polia bombycina</i>	Pale shining brown†	
<i>Potamanthus luteus</i>	A mayfly	
<i>Pseudanodonta complanata</i>	Depressed river mussel†	
<i>Pyrausta sanguinalis</i>	A pyralid moth	
<i>Pyrgus malvae</i>	Grizzled skipper	
<i>Rhabdomastix japonica</i>	A crane fly	
<i>Rheumaptera hastata</i>	Argent and sable†	
<i>Rhizedra lutosa</i>	Large wainscot	Added SG6 item 13
<i>Saaristoa firma</i>	A money spider	
<i>Sabra harpagula</i>	Scarce hook tip ¥	
<i>Satyrium w-album</i>	White letter hairstreak	
<i>Scopula marginepunctata</i>	Mullein wave	
<i>Scotopteryx bipunctaria</i>	Chalk carpet	
<i>Scotopteryx chenopodiata</i>	Shaded broad-bar	
<i>Sitticus caricis</i>	A jumping spider	

Invertebrates (188 species)		Revisions
<i>Spilosoma lubricipeda</i>	White ermine	
<i>Spilosoma luteum</i>	Buff ermine	
<i>Stilbia anomala</i>	The anomalous	
<i>Synanthedon scoliaeformis</i>	Welsh clearwing† ¥	
<i>Synaptus filiformis</i>	Hairy click beetle†	
<i>Thecla betulae</i>	Brown hairstreak†	
<i>Thinobius newberyi</i>	A rove beetle†	
<i>Tholera cespitis</i>	Hedge rustic	
<i>Tholera decimalis</i>	Feathered gothic	
<i>Timandra comae</i>	Blood-vein	
<i>Trichiura crataegi</i>	Pale eggar	
<i>Tyria jacobaeae</i>	The cinnabar	
<i>Vertigo angustior</i>	Narrow-mouthed whorl snail†	
<i>Vertigo geyeri</i>	Geyer's whorl snail†	
<i>Vertigo moulinsiana</i>	Desmoulin's whorl snail†	
<i>Watsonalla binaria</i>	Oak Hook-tip	
<i>Xanthia gilvago</i>	Dusky-lemon sallow	
<i>Xanthia icteritia</i>	The sallow	
<i>Xanthorhoe decoloraria</i>	Red carpet	
<i>Xanthorhoe ferrugata</i>	Dark-barred twin-spot carpet	
<i>Xestia agathina</i>	Heath rustic	
<i>Xestia ashworthii</i>	Ashworth's rustic	
<i>Xestia castanea</i>	Neglected rustic	
<i>Xylena exsoleta</i>	Sword-grass†	

Vascular plants (77 species and 1 Hieracium sp. Group)		Revisions
<i>Artemisia campestris</i> subsp. <i>maritima</i>	Field wormwood	
<i>Asparagus prostratus</i>	Wild asparagus†	
<i>Asplenium trichomanes</i> subsp. <i>pachyrachis</i>	A maidenhair spleenwort ¥	
<i>Blysmus compressus</i>	Flat-sedge	
<i>Bupleurum tenuissimum</i>	Slender Hare`s-ear	
<i>Campanula patula</i>	Spreading bellflower†	
<i>Carex divisa</i>	Divided sedge	
<i>Centaurea cyanus</i>	Cornflower	
<i>Centaureum scilloides</i>	Perennial centaury	
<i>Cephalanthera longifolia</i> <i>Helleborine</i>	Narrow-leaved Brown long-eared bat	
<i>Cerastium nigrescens</i> (= <i>Cerastium arcticum</i> )	Arctic mouse-ear	Taxonomic revision SG13 <sup>1</sup>
<i>Chamaemelum nobile</i>	Chamomile†	
<i>Cicendia filiformis</i>	Yellow centaury	
<i>Clinopodium acinos</i>	Basil thyme	
<i>Cotoneaster cambricus</i>	Wild cotoneaster†	
<i>Dactylorhiza purpurella</i> var. <i>cambrensis</i> (= <i>Dactylorhiza purpurella</i> subsp. <i>cambrensis</i> )	A Marsh orchid	Taxonomic revision SG13 <sup>1</sup>
<i>Dactylorhiza viridis</i>	Frog orchid	
<i>Dianthus armeria</i>	Deptford pink†	
<i>Euphrasia cambrica</i>	An eyebright†	
<i>Euphrasia officinalis</i> subsp. <i>anglica</i> (= <i>Euphrasia anglica</i> )	Glandular eyebright	Taxonomic revision SG13 <sup>1</sup>
<i>Euphrasia ostenfeldii</i>	An eyebright	
<i>Euphrasia pseudokernerii</i>	Chalk eyebright	
<i>Euphrasia rivularis</i>	An eyebright†	
<i>Euphrasia officinalis</i> subsp. <i>monticola</i> (= <i>Euphrasia rostkoviana</i> subsp. <i>montana</i> )	An eyebright	Taxonomic revision SG13 <sup>1</sup>
<i>Fumaria purpurea</i>	Purple ramping-fumitory†	
<i>Galeopsis angustifolia</i>	Red hemp-nettle†	
<i>Galeopsis segetum</i>	Downy hemp-nettle ¥	
<i>Galeopsis speciosa</i>	Large-flowered hemp-nettle ¥	
<i>Gentianella anglica</i>	Early gentian	



Vascular plants (77 species and 1 Hieracium sp. Group)		Revisions
<i>Gentianella campestris</i>	Field gentian†	
<i>Gentianella uliginosa</i>	Dune gentian†	
<i>Gymnadena borealis</i>	Northern fragrant orchid ¥	
<i>Gymnadena conopsea</i>	Fragrant orchid ¥	
<i>Gymnadena densiflora</i>	Marsh fragrant orchid ¥	
<i>Hammerbya paludosa</i>	Bog orchid ¥	
<i>Hieracium</i> spp.: <i>Hieracium angustatifforme</i> <i>Hieracium breconicola</i> <i>Hieracium reticulum</i> <i>Hieracium radyrense</i> <i>Hieracium snowdoniense</i> <i>Hieracium subminutidens</i>	6 threatened endemic species ¥	
<i>Hordeum marinum</i>	Sea barley	
<i>Hypopitys monotropa</i> (= <i>Monotropa hypopitys</i> )	Yellow bird's-nest	Taxonomic revision SG13 <sup>1</sup>
<i>Hypopitys monotropa</i> subsp <i>hypophegea</i> (= <i>Monotropa</i> <i>hypopitys</i> subsp <i>hypophegea</i> )	A bird's-nest	Taxonomic revision SG13 <sup>1</sup>
<i>Hypopitys monotropa</i> subsp <i>monotropa</i> (= <i>Monotropa</i> <i>hypopitys</i> subsp <i>hypopitys</i> )	A bird's-nest	Taxonomic revision SG13 <sup>1</sup>
<i>Juniperus communis</i>	Juniper†	
<i>Juniperus communis</i> subsp. <i>hemisphaerica</i>	A juniper ¥	
<i>Liparis loeselii</i>	Fen orchid†	
<i>Luronium natans</i>	Floating water plantain†	
<i>Lycopodiella inundata</i>	Marsh clubmoss†	
<i>Lycopodium clavatum</i>	Stag's-horn clubmoss ¥	
<i>Matthiola sinuata</i>	Sea stock	
<i>Melittis melissophyllum</i>	Bastard balm	
<i>Mentha pulegium</i>	Pennyroyal†	
<i>Neotinea ustulata</i>	Burnt orchid	
<i>Oenanthe fistulosa</i>	Tubular water-dropwort	
<i>Ophrys insectifera</i>	Fly orchid	
<i>Pilularia globulifera</i>	Pillwort†	
<i>Platanthera bifolia</i>	Lesser butterfly-orchid	
<i>Poa glauca</i>	Glaucous meadow-grass	

Vascular plants (77 species and 1 Hieracium sp. Group)		Revisions
<i>Polystichum lonchitis</i>	Holly-fern	
<i>Potamogeton compressus</i>	Grass-wrack pondweed†	
<i>Potentilla rupestris</i>	Rock cinquefoil†	
<i>Pseudorchis albida</i>	Small-white orchid	
<i>Pulicaria vulgaris</i>	Small fleabane	
<i>Ranunculus arvensis</i>	Corn buttercup	
<i>Ranunculus tripartitus</i>	Three-lobed water-crowfoot†	
<i>Rumex rupestris</i>	Shore dock†	
<i>Salsola kali subsp. kali</i>	Prickly saltwort	
<i>Saxifraga cespitosa</i>	Tufted saxifrage	
<i>Scandix pecten-veneris</i>	Shepherd's needle†	
<i>Scleranthus annuus</i>	Annual knawel	
<i>Scleranthus annuus subsp. annuus</i>	Annual knawel	
<i>Silene gallica</i>	Small - flowered catchfly†	
<i>Sorbus eminens</i>	A whitebeam	
<i>Sorbus leptophylla</i>	A whitebeam	
<i>Sorbus leyana</i>	Ley's whitebeam†	
<i>Sorbus minima</i>	A whitebeam	
<i>Stellaria palustris</i>	Marsh stitchwort	
<i>Trollius europaeus</i>	Globe-flower ¥	
<i>Vicia orobus</i>	Wood bitter-vetch ¥	
<i>Viola lactea</i>	Pale dog-violet	
<i>Woodsia ilvensis</i>	Oblong woodsia†	

Lichens (67 species and 2 communities)		Revisions
<i>Anaptychia ciliaris</i> subsp. <i>ciliaris</i>	A lichen	
<i>Arthonia atlantica</i>	A lichen	
<i>Bacidia circumspecta</i>	A lichen	
<i>Bacidia incompta</i>	A lichen†	
<i>Biatoridium monasteriense</i>	A lichen†	
<i>Blarneya hibernica</i>	A lichen	
<i>Bryoria smithii</i>	A lichen†	
<i>Buellia hyperbolica</i>	A lichen	
<i>Calicium adpersum</i>	A lichen	
<i>Caloplaca atroflava</i>	A lichen	
<i>Caloplaca flavorubescens</i>	A lichen	
<i>Caloplaca herbidella</i>	A lichen	
<i>Caloplaca lucifuga</i>	A lichen	
<i>Caloplaca luteoalba</i>	Orange-fruited elm lichen†	
<i>Chaenotheca phaeocephala</i>	A lichen†	
<i>Cladonia peziziformis</i>	A lichen†	
<i>Collema dichotomum</i>	River-jelly lichen†	
<i>Collema fasciculare</i>	A lichen	
<i>Collema fragile</i>	A lichen	
<i>Collema fragrans</i>	A lichen	
<i>Cryptolechea carneolutea</i>	A lichen	Added SG 13 G
<i>Endocarpon adscendens</i>	A lichen	
<i>Fulgensia fulgens</i>	A lichen	
<i>Fuscopannaria sampaiana</i>	A lichen	
<i>Gomphillus calycioides</i>	A lichen	
<i>Graphina pauciloculata</i>	A lichen†	
<i>Gyalecta flotowii</i>	A lichen ¥	
<i>Heterodermia leucomela</i>	Ciliate strap-lichen†	
<i>Lecania chlorotiza</i>	A lichen	

Lichens (67 species and 2 communities)		Revisions
<i>Lecanographa amylicata</i>	A lichen	
<i>Lecanora achariana</i>	Tarn lecanora	
<i>Lecanora quercicola</i>	A lichen	
<i>Lecanora sublivescens</i>	A lichen	
<i>Leptogium brebissonii</i>	A lichen	
<i>Leptogium cochleatum</i>	A lichen	
<i>Lobarion</i> community	A lichen community †	See Annex 1
<i>Megalospora tuberculosa</i>	A lichen	
<i>Melaspilea lentiginosa</i>	A lichenicolous fungus	
Mine site community	A lichen community †	See Annex 1
<i>Opegrapha prosodea</i>	A lichen	
<i>Parmelina carporrhizans</i> [= <i>Parmelina quercina</i> ]	A lichen	Taxonomic revision SG13 G <sup>3</sup>
<i>Parmeliella testacea</i>	A lichen	
<i>Parmelinopsis horrescens</i>	A lichen †	
<i>Parmotrema robustum</i>	A lichen	
<i>Peltigera venosa</i>	A lichen	
<i>Pertusaria velata</i>	A lichen	
<i>Physcia tribacioides</i>	Southern grey physcia	
<i>Porina effilata</i>	A lichen	
<i>Porina hibernica</i>	A lichen	
<i>Pseudocyphellaria intricata</i>	A lichen	
<i>Pseudocyphellaria lacerata</i>	Ragged pseudocyphellaria	
<i>Pseudocyphellaria norvegica</i>	A lichen †	
<i>Pyrenula hibernica</i>	A lichen	
<i>Pyrenula nitida</i>	A lichen	
<i>Ramonia chrysophaea</i>	A lichen	
<i>Ramonia dictyospora</i>	A lichen	
<i>Rinodina isidioides</i>	A lichen	

<b>Lichens (67 species and 2 communities)</b>		<b>Revisions</b>
<i>Schismatomma graphidioides</i>	A lichen†	
<i>Stereocaulon delisei</i>	A lichen	
<i>Stereocaulon symphycheilum</i>	A lichen	
<i>Sticta canariensis</i>	A lichen	
<i>Strangospora microhaema</i>	A lichen ¥	
<i>Strigula stigmatella</i> var. <i>stigmatella</i>	A lichen	
<i>Synalissa symphorea</i>	A lichen	
<i>Teloschistes flavicans</i>	Golden hair-lichen	
<i>Toninia sedifolia</i>	A lichen	
<i>Usnea articulata</i>	A lichen	
<i>Usnea florida</i>	A lichen	
<i>Wadeana dendrographa</i>	A lichen	

<b>Mosses and liverworts (52 species and 1 assemblage)</b>		<b>Revisions</b>
<i>Anoina rigida</i>	Rigid Aloe-moss ¥	<b>Added SG15 H</b>
<i>Anomodon longifolius</i>	Long-leaved tail-moss†	
<i>Barbilophozia kunzeana</i>	Bog paw-wort	
<i>Bartramia stricta</i>	Rigid apple-moss	
<i>Bryum calophyllum</i>	Matted bryum	
<i>Bryum gemmiparum</i>	Welsh thread-moss	
<i>Bryum intermedium</i>	Many seasoned Thread-moss ¥	<b>Added SG15 H</b>
<i>Bryum knowltonii</i>	Knowlton's thread-moss	
<i>Bryum marratii</i>	Baltic bryum	
<i>Bryum muehlenbeckii</i>	Muehlenbeck's Threadmoss ¥	<b>Added SG15 H</b>
<i>Bryum warneum</i>	Sea bryum†	
<i>Buxbaumia aphylla</i>	Brown Shield-moss ¥	<b>Added SG15 H</b>
<i>Cephaloziella calyculata</i>	Entire threadwort	
<i>Cephaloziella nicholsonii</i>	Greater copperwort†	

Mosses and liverworts (52 species and 1 assemblage)		Revisions
<i>Cephaloziella massalongii</i>	Lesser Copperwort ¥	Added SG15 H
<i>Daltonia splachnoides</i>	Irish Daltonia	Added SG13 G
<i>Dendrocryphaea lamyana</i> (= <i>Cryphaea lamyana</i> )	Multi-fruited river moss†	Taxonomic revision SG13 G <sup>2</sup>
<i>Dicranodontium asperulum</i>	Orange Bow-moss ¥	Added SG15 H
<i>Dicranum undulatum</i> (= <i>Dicranum bergeri</i> )	Waved Fork-moss	Taxonomic revision SG13 G <sup>2</sup>
<i>Didymodon tomaculosus</i>	Sausage beard-moss	
<i>Ditrichum plumbicola</i>	Lead-moss†	
<i>Ditrichum subulatum</i>	Awl-leaved ditrichum	
<i>Entosthodon pulchellus</i> (= <i>Funaria pulchella</i> )	Pretty cord-moss	Taxonomic revision SG13 G <sup>2</sup>
<i>Fissidens curvatus</i>	Portuguese pocket-moss	
<i>Fossombronia fimbriata</i>	Fragile Frillwort ¥	Added SG15 H
<i>Fossombronia foveolata</i>	Pitted frillwort	
<i>Grimmia arenaria</i>	Nodding Donn's Grimmia ¥	Added SG15 H
<i>Habrodon perpusillus</i>	Lesser squirrel-tail moss	
<i>Leiocolea fitzgeraldiae</i>	Fitzgerald's Notchwort ¥	Added SG15 H
<i>Leptodon smithii</i>	Prince of Wales feather-moss ¥	
<i>Meesia uliginosa</i>	Broadnerved Hump-moss ¥	Added SG15 H
<i>Micromitrium tenerum</i>	Milimetre Moss	Added SG15 H
<i>Oceanic Ravine Assemblage</i>	A Bryophyte Assemblage ¥	Added SG13 G
<i>Orthotrichum obtusifolium</i>	Blunt leaved Bristle-moss	Added SG15 H
<i>Orthotrichum pumilum</i>	Dwarf Bristle-moss	Added SG13 G
<i>Pallavicinia lyellii</i>	Veilwort†	
<i>Paraleptodontium recurvifolium</i>	Drooping leaved Beard-moss ¥	Added SG15 H
<i>Petalophyllum ralfsii</i>	Petalwort†	
<i>Pseudocalliergon lycopodioides</i>	Large Hookmoss ¥	Added SG15 H
<i>Radula voluta</i>	Pale Scalewort ¥	Added SG15 H
<i>Riccia canaliculata</i>	Channelled crystalwort	

<b>Mosses and liverworts (52 species and 1 assemblage)</b>		<b>Revisions</b>
<i>Riccia nigrella</i>	Black crystalwort	
<i>Scopelophila cataractae</i>	Tongue-leaved copper-moss	
<i>Seligeria oelandica</i>	Irish Rock-bristle	Added SG13 G
<i>Sematophyllum demissum</i>	Prostrate Signal-moss† ¥	Added SG15 H
<i>Sphagnum balticum</i>	Baltic Bog-moss†	Added SG13 G
<i>Tomentypnum nitens</i>	Woolly Feather-moss ¥	Added SG15 H
<i>Tortula canescens</i>	Dog Screw-moss ¥	Added SG15 H
<i>Tortula cuneifolia</i>	Wedge-leaved screw-moss	
<i>Tortula wilsonii</i>	Wilson's pottia	
<i>Weissia levieri</i>	Levier's beardless-moss	
<i>Weissia multicapsularis</i>	Many-fruited Beardless-moss†	Added SG13 G
<i>Weissia squarrosa</i>	Spreading-leaved beardless-moss	

<b>Fungi (27 species)</b>		<b>Revisions</b>
<i>Amanita friabilis</i>	Fragile amanita	
<i>Armillaria ectypa</i>	Agaric marsh honey fungus†	
<i>Chrysomyxa pirolata</i>	Wintergreen rust	
<i>Clavaria zollingeri</i>	A fairy club/violet coral† ¥	
<i>Cotylidia pannosa</i>	Woolly rosette	
<i>Entoloma bloxamii</i>	Big blue pinkgill	
<i>Geastrum elegans</i>	Elegant earthstar	
<i>Geoglossum atropurpureum</i>	Dark-purple earthtongue	
<i>Hericium erinaceus</i>	Bearded tooth fungus†	
<i>Hohenbuehelia culmicola</i>	Marram oyster	
<i>Hydnellum concrescens</i>	A tooth fungus zoned tooth†	
<i>Hydnellum scrobiculatum</i>	A tooth fungus ridged tooth†	
<i>Hydnellum spongiosipes</i>	Velvet tooth†	
<i>Hygrocybe spadicea</i>	Date-coloured waxcap date waxcap†	
<i>Hypocreopsis lichenoides</i>	Willow gloves	
<i>Hypocreopsis rhododendri</i>		Added SG13 G
<i>Microglossum olivaceum</i>	Olive earthtongue†	



Fungi (27 species)		Revisions
<i>Phellodon confluens</i>	A tooth fungus (fused tooth)	
<i>Phellodon melaleucus</i>	A tooth fungus (grey tooth)	
<i>Phellodon tomentosus</i>	A tooth fungus Woolly tooth	
<i>Phylloporus pelletieri</i>	Golden gilled bolete	
<i>Piptoporus quercinus</i>	Oak polypore	
<i>Poronia punctata</i>	Nail fungus†	
<i>Puccinia scorzonerae</i>	Scorzonera rust	
<i>Tremellodendropsis tuberosa</i>	Ashen coral	
<i>Tulostoma melanocyclum</i>	Scaly stalkball	
<i>Urocystis colchici</i>	Colchicum smut	

Stoneworts (5 species)		Revisions
<i>Chara baltica</i>	Baltic stonewort	
<i>Chara curta</i>	Lesser bearded stonewort† ¥	
<i>Nitella gracilis</i>	Slender stonewort†	
<i>Nitella tenuissima</i>	Dwarf stonewort†	
<i>Nitellopsis obtusa</i>	Starry stonewort	

NB: At present we have standard Welsh names for vertebrates, flowering plants, ferns and conifers. All other names are liable to change as a result of current and ongoing work on Welsh environmental terms and names.

<i>Degelia</i>	<i>Menegassia</i>	<i>Parmeliella</i> (except <i>Parmeliella parvula</i> – see below)
<i>Fuscopannaria</i>	<i>Nephroma</i>	<i>Psuedocyphellaria</i>
<i>Heterodermia</i>	<i>Pannaria</i>	<i>Sticta</i>
<i>Lobaria</i>		

## References

- <sup>1</sup> Stace, C.A. (2010). New Flora of the British Isles, Third Edition. Cambridge University Press, Cambridge.
- <sup>2</sup> Hill, M.O., Blackstock, T.H., Long, D.G. & Rothero, G.P. (2008). A Checklist and Census Catalogue of British and Irish Bryophytes. British Bryological Society, Middlewich.
- <sup>3</sup> Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. W., and Wolseley, P.A. (eds.). (2009). The Lichens of Great Britain and Ireland. The British Lichen Society, London.

## Annex 2

### Section 42 Communities and Assemblages

#### Lichens /Gen Communities

##### The Lobarion Community

The following provides some guidance on the identification of the Lobarion lichen community. For fuller details see James, P.W., Hawksworth, D.L., & Rose, F. (1977) **Lichen Communities in the British Isles** pages 322-327 in Seward, M.R.D. (Ed.) (1977) *Lichen Ecology*, Academic Press, London.

When well-developed this is a spectacular community that can include some of the largest foliose lichens. Unfortunately most of its constituent species are highly sensitive to sulphur dioxide, acid rain and excessive ammonia levels and many examples of the Lobarion in Wales are now species poor.

The Lobarion is likely to be present on a tree or shrub or any rock face that supports the following:-

**Any species** of the genera:

**Any of the following species** (\*=species individually listed in Section 42):

<i>Agonimia octospora</i>	<i>Leptogium brebissonii</i> *	<i>Phyllopsora rosei</i>
<i>Collema fasciculare</i> *	<i>Leptogium cochleatum</i> *	<i>Porina coralloidea</i>
<i>Collema furfuraceum</i>	<i>Pachyphiale carneola</i>	<i>Porina hibernica</i> *
<i>Gyalecta flotowii</i> *	<i>Parmotrema crinitum</i>	<i>Punctelia reddenda</i>
<i>Gomphillus calycioides</i>	<i>Peltigera collina</i>	<i>Thelopsis rubella</i>
<i>Leptogium burgessii</i>		

**Any three of the following species:**

<i>Acrocordia gemmata</i>	<i>Leptogium lichenoides</i>	<i>Opegrapha sorediifera</i>
<i>Arthonia vinosa</i>	<i>Leptogium teretiusculum</i>	<i>Parmeliella parvula</i>
<i>Catinaria atropurpurea</i>	<i>Loxospora elatina</i>	<i>Peltigera horizontalis</i>
<i>Dimerella lutea</i>	<i>Mycobilimbia pilularis</i>	<i>Pertusaria hemisphaerica</i>
	<i>Normandina pulchella</i>	<i>Thelotrema lepadinum</i>

<i>Placynthiella hyporhoda</i>	<i>Stereocaulon symphycheilium</i>
<i>Polyblastia agraria</i>	<i>Vezeadaea spp.</i>
<i>Psilolechia lepraria</i>	
<i>Rhizocarpon cinereovirens</i>	
<i>Rhizocarpon furfurosum</i>	

### Mine site community (Metallophytes).

Once Wales probably supported a significant assemblage of lichens associated with natural outcrops of heavy metal-rich rock. Due to the destruction of these outcrops by our mining activities the survival of metallophyte lichens are now almost entirely dependant upon the conservation of old mine sites.

Two special types of lichens are almost completely confined to these sites in Wales:-

**1. Obligate metallophytes.** Those lichens that appear, in some way, to require heavy metals and only occur on heavy metal-rich substrates.

**2. Faculative metallophytes.** Those lichens which can tolerate heavy metals, but can be found elsewhere in sites, without such heavy metals. Most of these species are probably poor competitors but can survive extreme conditions. In Wales, they are mostly confined to metal-rich sites but also occur, for example, on exposed peat on the summit ridges of high mountains.

The following species fall into one or other of these two categories in Wales and any threatened site **supporting more than three of these species** should be subject to a detailed assessment:

<i>Acarospora sinopica</i>	<i>Rhizocarpon oederi</i>
<i>Baeomyces placophyllus</i>	<i>Sarcosagium campestre</i>
<i>Belonia incarnata</i>	<i>Steinia geophana</i>
<i>Epilichen scabrosus</i>	<i>Stereocaulon condensatum</i>
<i>Gyalidea subscutellaris</i>	<i>Stereocaulon dactylophyllum</i>
<i>Lecanora epanora</i>	<i>Stereocaulon delisei</i>
<i>Lecanora gisleriana</i>	<i>Stereocaulon glareosum</i>
<i>Lecanora handelii</i>	<i>Stereocaulon leucophaeopsis</i>
<i>Lecanora subaurea</i>	<i>Stereocaulon nanodes</i>
<i>Placopsis lambii</i>	<i>Stereocaulon pileatum</i>

## Mosses and liverworts

The Oceanic Ravine Assemblage of bryophytes is likely to be present if a site supports:-

**Any one of the following species;** \*=species individually listed in Section 42

<i>Aphanolejeunea microscopica</i>
<i>Campylopus setifolius</i>
<i>Daltonia splachnoides*</i>
<i>Drepanolejeunea hamatifolia</i>
<i>Hageniella micans</i>
<i>Harpalejeunea molleri</i>
<i>Leptoscyphus cuneifolius</i>
<i>Metzgeria leptoneura</i>
<i>Paraleptodontium recurvifolium*</i>
<i>Placopsis lambii</i>
<i>Plagiochila exigua</i>
<i>Plagiochila heterophylla</i>
<i>Radula volute*</i>
<i>Sematophyllum demissum*</i>

## Three or more of the following species

<i>Adelanthus decipiens</i>
<i>Andreaea megistospora</i>
<i>Dicranum scottianum</i>
<i>Fissidens polyphyllus</i>
<i>Jubula hutchinsiae</i>
<i>Lepidozia cupressina</i>
<i>Lepidozia pearsonii</i>
<i>Radula aquilegia</i>

**Five or more of the following species**

<i>Anastrepta orcadensis</i>
<i>Colura calyptrifolia</i>
<i>Douinia ovata</i>
<i>Heterocladium wulfsbergii</i>
<i>Hygrobiella laxifolia</i>
<i>Hygrohypnum eugyrium</i>
<i>Isothecium holtii</i>
<i>Marchesinia mackaii</i>
<i>Plagiochila bifaria</i>
<i>Plagiochila punctata</i>
<i>Platyhypnidium lusitanicum</i>
<i>Porella pinnata</i>
<i>Rhabdoweisia crenulata</i>
<i>Sphenolobopsis pearsonii</i>

**Eight or more of the following species**

<i>Bazzania trilobata</i>
<i>Fissidens bryoides</i> var. <i>caespitans</i>
<i>Hyocomium armoricum</i>
<i>Lejeunea lamacerina</i>
<i>Lejeunea patens</i>
<i>Lophocolea fragrans</i>
<i>Plagiochila spinulosa</i>
<i>Saccogyna viticulosa</i>
<i>Scapania gracilis</i>
<i>Solenostoma paroicum</i>
<i>Sphagnum quinquefarium</i>
<i>Porella pinnata</i>
<i>Rhabdoweisia crenulata</i>
<i>Sphenolobopsis pearsonii</i>

## Species removed from the Section 42 list.

Lichens		Revisions
<i>Arthothelium dictyosporum</i>	A Lichen	Removed SG13 G – never recorded in Wales

Mosses and liverworts		Revisions
<i>Atrichum angustatum</i>	Lesser smoothcap	Removed SG15 H – presumed extinct
<i>Fissidens serrulatus</i>	Large Atlantic pocket- moss	Removed SG15 H – presumed extinct
<i>Grimmia elongata</i>	Brown grimmia	Removed SG15 H – Conservation status change
<i>Rhytidiadelphus subpinnatus</i>	Scarce turf-moss	Removed SG15 H – Conservation status change