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**Guidelines for the selection of biological SSSI's
Part 2: Detailed guidelines for habitats and species groups**

9 UPLAND HABITATS

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9 UPLAND HABITATS

1 Introduction

- 1.1 The uplands contain by far the most extensive of Britain's semi-natural habitats, occupying large and continuous expanses of the north and west and still covering at least 6.5 Mha (or 28% of the country). The principle of site selection by choice of exemplary areas must therefore apply to the more widespread features; for rare or highly localised features or those of outstanding international importance, however, the selection of all examples above a given quality should apply (see A, 4.4 and 4.6). Within uplands, a distinction is made between a lower **sub-montane** and a higher **montane** zone, the boundary corresponding to the potential climatic tree-line. An actual tree-line is seldom observable in Britain, where deforestation has been so prevalent, but the potential limit appears to be at just over 600 m in South Wales and the eastern Highlands, descending lower in more oceanic districts and reaching only about 300 m in the far north-west of Scotland (Thompson, Galbraith & Horsfield 1987). The distinction between the sub-montane and montane zones is thus often blurred, and the two usually merge through a broad band of transitional vegetation. In some districts the altitudinal range of uplands falls entirely within the sub-montane zone, and only in the Scottish Highlands is the montane zone strongly represented. Since it is the montane zone that contains outliers of true Arctic-Alpine habitats and species associated with the cold climates of high latitudes and altitudes and because it is in a relatively natural state, **the Highlands assume a particular importance for the selection of upland SSSIs.**
- 1.2 The uplands also contain some of the best and most extensive examples of natural vegetation in Britain. Cliff faces and ledges, whether on open hillsides or in enclosed ravines and gills, usually support fragmentary occurrences of plant communities which have been modified or eradicated by land management practices in more accessible situations. Within the sub-montane zone these include certain types of woodland and their characteristic herbaceous field layer communities, so widespread in the mountains of Scandinavia. Islands in lakes and rivers sometimes support fragments of original woodland, scrub or heath, but some have been modified by grazing and/or burning. Cliffs within the montane zone often provide refuges for relict communities and assemblages of Arctic-Alpine plants which are sensitive to grazing, fire or competition. They are also the important habitat of rupestral mosses, liverworts and lichens. The higher levels of many remoter and more acidic mountains in the Highlands have escaped significant modification by grazing animals and show relatively large areas of natural montane vegetation in accessible situations (Thompson, Galbraith & Horsfield 1987). While blanket bog has been extensively degraded, evidently by past land-use, there

still remain numerous areas, especially in northern Scotland, with relatively undisturbed surfaces dominated by Sphagnum species (see C.8).

- 1.3 Within any upland district, variations in geology and topography produce differences in drainage, aspect and soil fertility which have considerable influence on the nature of the terrain, flora and fauna and land-use history (Pearsall 1950; Ratcliffe & Thompson 1988). There are sharp contrasts between steep-sided and rocky mountains, with mainly thin, well-drained soils, crags and screes, and the gentler, undulating moorlands, which are often largely peat-covered and almost devoid of exposed rock. Whilst there is a prevalence of hard acidic rocks which give infertile soils and low carrying capacity for animals, local areas of limestone or other calcareous rock yield fertile soils and good productivity for both domestic stock and wild animals. Uplands typically contain a varied range of habitats, including kinds which are dealt with as quite separate categories in these guidelines. They virtually all have flowing fresh waters, originating as springs, flushes and rills which feed into larger watercourses, and many of them have tarns and lakes (see C.6). Blanket bog is so characteristically an upland and northern habitat type that it is dealt with again in this chapter, and most uplands also have a variety of soligenous mires (see C.7 and C.8). Some uplands have escaped the almost total deforestation of the past and have variously-sized expanses of native, semi-natural woodland (see C.2) on their lower slopes, albeit mostly well below the true climatic limit.
- 1.4 Since native woodland is now so fragmentary, the lower limits of upland sites are most usually defined by the boundary walls, fences or hedges of the uppermost enclosed fields of the hill farms. The distinction between upland and lowland is useful, though arbitrary, and cannot be expressed by any single altitudinal level applicable across Britain, for it has a latitudinal component, in the sense of northern, as distinct from southern, ecological and biogeographical features. The gradual descent of the lower limits of the sub-montane zone of the uplands (as defined above) in a north-westerly direction is, indeed, an important gradient of climatically-induced variation which the national SSSI series should seek to represent. Transitional communities between upland/northern and lowland/southern types are also of much interest. Under the extreme cool oceanic climate of the north and west of the Highlands, the lower agricultural zone is extinguished altogether in places, and the uplands become continuous with the coastlands. Where extensive afforestation of sub-montane uplands has occurred, as in so many areas, there is now a new kind of artificial lower limit, and such truncation tends to reduce appreciably the nature conservation value of the massifs concerned.
- 1.5 For practical reasons of site definition, it has seemed necessary to deal with uplands as geographical/topographical units and where appropriate to include, in the assessment of an upland unit, the evaluation of other major

habitats within or contiguous with that unit. This follows the procedure in A Nature Conservation Review, which should be consulted for a summary of the geographical and ecological diversity of upland ecosystems (Vol. 1, pp. 312-329) and for a discussion of the definition of the lower limits of the upland formation (Vol. 1, pp. 22-23 and 288-289). An apparent difficulty now arises over the use of the National Vegetation Classification, because this makes no distinction between upland and lowland types but classifies plant communities purely on floristic affinities, so that, for example, all dwarf shrub heaths (Rodwell 1988) or all calcicolous grasslands (Rodwell 1985) are grouped together, regardless of geographical or altitudinal distribution. There is no real problem provided that it is remembered that the reference classification for upland plant communities is distributed between different main classes of vegetation (see Table 22).

2 International importance (see also Ratcliffe & Thompson 1988)

2.1 The hyperoceanic climate at the most insular, western Atlantic edge of the European continent, combined with historically widespread human impact, has produced a distinctive landscape and range of ecosystems, which are not duplicated anywhere in the world. There is an unusually wide range of podsollic soils, grading into blanket bog peat, which in Britain has one of its most extensive world occurrences (see C.8, 1.4 and 2.2). The following biological features are particularly important.

2.2 Acidophilous dwarf shrub heath and scrub

These include not only sub-montane types dominated by Calluna vulgaris, Vaccinium myrtillus and Ulex spp. (H4, 8, 9, 10, 12, 16, 18 and 21 of Rodwell 1988 and W23 of Rodwell 1986), but also montane types with a wider range of ericoids (H13, 14, 15, 17, 19, 20 and 22).

2.3 Acidic and calcicolous grassland

Both sub-montane and montane types are dominated by species of wide distribution, but their occurrence as widespread communities (U1, 2, 3, 4, 5, 6, 7, 16, 17c and 20 of Rodwell 1989, CG9, 10, 11, 12, 13 and 14 of Rodwell 1985, and M25 of Rodwell 1986-1987) is often limited to Britain and Ireland.

2.4 Fern- and bryophyte-rich vegetation

Many upland plant communities are rich in ferns, and there are distinctive scree types (U18, 19, 21, 22 and 23). The presence of a bryophyte layer, usually dominated by mosses, is characteristic of many heaths, but in the western Highlands there is a very local community in which this layer beneath dwarf shrubs is dominated by leafy liverworts - a type probably unique in the world (H21b) (Ratcliffe 1968; Hobbs 1988). The extent of montane moss

heaths dominated by Racomitrium lanuginosum and Rhytidiadelphus loreus is also a globally rare feature (U10 and 13 and H20).

2.5 Montane plant communities generally

These represent southern and oceanic outliers of Arctic-Alpine fell-field and mountain tundra and are especially important in the Scottish Highlands. Though these cover only a small area compared with the main continental occurrences, they show considerable diversity and presence of distinctive oceanic facies of some communities (H19 and U8, 9, 11, 12 and 14).

2.6 Blanket bog (see also C.8, 2.2-2.6)

Soligenous mire and wet heath communities (M6, 10, 11, 15, 16, 17, 18, 19, 20 and 23) are included here.

2.7 Phytogeographical interest

In addition to the uniqueness in floristic composition of many upland plant communities, there are unusual combinations of species representing different geographical elements of flora - Arctic-Alpine, Arctic, Alpine, Southern Atlantic, Mediterranean, Northern Continental, Southern Continental, etc. (Matthews 1955).

2.8 Ornithological features

These are dealt with under C.14. They include large and important populations of some species (e.g. golden eagle and peregrine), high breeding densities (e.g. raven, buzzard and ptarmigan), insular races (red grouse and golden plover), ecological adaptations (greenshank and wood sandpiper) and southern tundra assemblages (notably in the Flow Country and on large mountain plateaux).

2.9 Other faunal features

These are less well studied, but they certainly include relict assemblages of invertebrates of considerable zoogeographical interest.

2.10 The recommendation in World Conservation Strategy (IUCN 1980) that the Scottish Highlands should be regarded as a "priority biogeographical province for the establishment of protected areas" is a recognition that in this most mountainous part of Britain various wildlife elements combine to give a region of outstanding nature conservation interest.

3 Habitat selection requirements

3.1 The overall requirement is that sites be selected which represent adequately the variety and extent of upland habitats, flora and fauna present within each

AOS, and thus within Britain as a whole. In some districts, such as south-west England, the choice is very limited, whereas in parts of the Highlands it is extremely wide. In districts with a wide range of upland features, the following habitats are characteristically present:

- Dwarf shrub heath, dry to wet
- Grassland, dry to wet
- Moss and lichen heath (both fell-field and snow-bed types)
- Flush and valley bogs (soligenous mires)
- Blanket bogs (ombrotrophic mires)
- Crags, screes and boulder-fields
- Springs, rills and flushes
- Rivers
- Lakes and tarns

- 3.2 Each of these habitats has both sub-montane and montane types, and all the variants present must be represented, as well as the strictly montane late snowbeds, fell-fields and solifluction and ablation features. All except the blanket bogs also have a range of types according to varying soil base status, from acidic to calcareous, and this range of variation must also be represented. Other geological differences reflected in soils and vegetation, within the ranges of both acidic rocks (gritstone, granite, rhyolite, quartzite, etc.) and basic rocks (dolerite, gabbro, peridotite, serpentine, etc.), need to be represented also.
- 3.3 The general range of variation in upland habitats within an AOS has to be determined by survey. While there will always be local climatic gradients and variations, especially according to altitude, the major climatic differences (in comparing similar situations) will be **between** and not within AOSs, and these main geographical gradients and their ecological expression are covered by the national network principle. Nevertheless, in some parts of Britain there are fairly steep regional gradients of climate, especially in an east-to-west direction, and, where these produce clear vegetational differences between different upland areas within an AOS, they should be represented by the selection of separate sites to represent such variation. Major differences in vegetation within the uplands of any one AOS are, nevertheless, related mainly to geology and topography. **The primary choice is thus to select areas representing those main geological formations which appear to account for significant ecological variability between upland massifs within the AOS.** This does not necessarily mean that all the main formations have to be represented as a matter of course; for example, the greywackes and shales of the Ordovician Series often give very similar ecological conditions to the comparable rocks of the Silurian. It is more important to be aware of pedogenically important differences in petrology within rocks of

similar age, for example between the calcareous mica-schists and the acidic granulites and gneisses of the Moine Series.

- 3.4 In assessing these geologically-determined ecological differences between uplands, there are three major kinds of variation to consider:
 - 3.4.1 differences in physiographic and especially glacial history, which can produce large topographic differences;
 - 3.4.2 physical differences in rock types, especially in weathering properties of rocks, which give rise to differences in topography, permeability of soils and development of erosion and solifluction features;
 - 3.4.3 chemical differences in rock types, especially those affecting the base-status (notably Ca^{++}) of the derived soils and drainage waters and reflected in vegetation and land-use history (see McVean & Ratcliffe 1962, Chapter 12).
- 3.5 In the most mountainous AOSs, the selection of sites will usually include at least one of the highest massifs, because these have the greatest development of montane habitats. It may be that a single area can be identified which contains a good range of variation in most of the important upland habitat types present within an AOS. More usually, the best examples of various major features will occur in separate massifs, so that their representation will require choice of more than one upland area. The steep mountain terrain with an abundance of open rock habitats tends to occur in different areas from the gentle, heathery grouse moors and extensive blanket bogs. Important areas of calcareous rocks may be well separated from the best acidic mountains. The best montane areas do not always adjoin the best sub-montane ground. Ornithological interest may not coincide with that for botanical features, and so on.
- 3.6 In fact, a single massif hardly ever contains all the distinctive features, and certainly not all the best examples of these, in an AOS with extensive occurrence of uplands. **It is thus necessary to build up a suite of sites for each AOS according to the amount of ecological variety present and how it chances to be distributed.** So much depends on the extent of upland habitats and their variability that more precise guidance is difficult, but the aim should be to select sites sufficient in both number and extent to represent the best examples of the main features listed above, in so far as they are present within an AOS. While no figures can yet be prescribed, there should be a presumption that AOSs with the most extensive occurrence of uplands will require the largest representation of sites, as regards both number and extent.

4 Delineation of sites: the topographic unit, minimum size and site integrity

- 4.1 Since upland ecosystems usually extend continuously over large tracts of country, sites are seldom self-defined in the manner of those representing habitats which now exist as fragmented 'islands' in the lowlands. The definition of boundaries is thus a most crucial part of the identification and selection of upland sites. This at once raises questions about the appropriate size of each site and the extent of its component features. Its area must be large enough to give adequate representation of the important features which it is desired to conserve, but not so large as to incur unjustifiable resource costs or land-use constraints or to negate the concept of "specialness". There is next presented, accordingly, a discussion of general principles to be considered and followed in the delineation of upland site boundaries. It follows the precepts on boundary definition set out in B, 5 and the general guidance, referring particularly to uplands, given in B, 5.8; these should be consulted.
- 4.2 Most mountain massifs have a common topographic structure consisting of main summit, upper slopes and shoulders, subsidiary summits and spurs, lower slopes and drainage streams. There is also a range of aspects, signifying varying exposure to sun and wind, which becomes more pronounced with increasing steepness of slope. Variation within, as well as between, massifs arises from differences in altitude, aspect, exposure and steepness and from presence and extent of crags, screes, ridges, hollows, lakes and other topographic structures, of which the biological features are a product. High and heavily glaciated mountains tend to have the greatest variety of these geological/topographic features. Yet even low moorlands often have a variety of terrain, producing wide differences in ground wetness and depth of peat and in standing water bodies ranging from small pools to large lakes.
- 4.3 Site selection has to make the best of the particular situation. The aim should be to select a topographic unit as complete as possible in regard to these physical features, so that it runs from the highest to the lowest feasible elevation, in relation to all directional aspects. Ideally, this means representing all the different catchments which drain from the main watershed, down to the point at which open hill ground changes to enclosed farmland or plantation woodland. The walls, fences or hedges forming the edges of these contrasting habitats often make appropriate boundaries, but stream and river courses, lake margins or roads sometimes best delimit part of a site (see Figure 7). High watersheds should preferably not be used as boundaries. They produce very artificial limits to an upland site, effectively reducing it to an inadequate segment of the full massif and especially curtailing the extent of the summit habitats, communities and species which are usually amongst the most important but most restricted features. In an extensive massif, a relatively high-level boundary may, however, be necessary for part of the site. In

coastal massifs, where there is continuity between upland and maritime habitats, the site boundary may be best defined, at least in part, by the seashore.

- 4.4 The use of transects or vertical belts and slices to delineate upland SSSIs will not suffice. Such a procedure gives a wholly artificial character to the site, omits the full pattern of relationships between the different physical and biological site features, and tends to exclude many of the important site attributes. It also puts the viability of many animal species at risk, especially the more mobile which need to cover a large area. Each pair of the larger predators may need an area of a few thousand hectares to support it, and species such as the golden eagle, merlin and hen harrier are especially vulnerable to habitat fragmentation. Some birds, such as twite, golden plover and greenshank, also feed in one habitat but breed in another, often some distance apart. In Wales, the woodland-nesting population of red kites depends largely on open hill ground as feeding range.

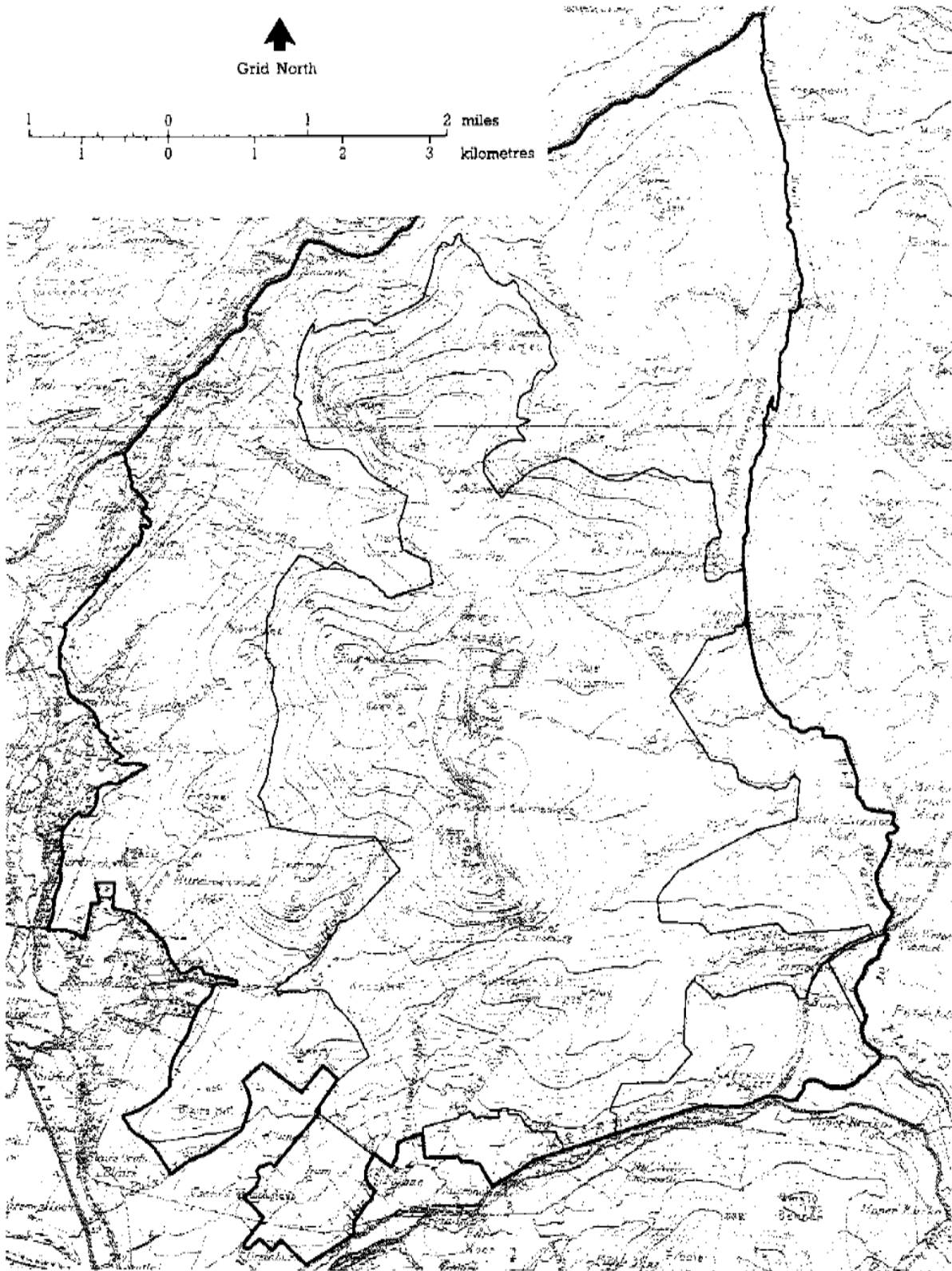


Figure 7 Selection of a topographic unit (see 4.3): map of Cairnmore of Fleet, Galloway, showing (thicker line) what might once have been an ideal SSSI boundary, following rivers, roads, limits of enclosed land, etc., and the much less satisfactory boundary finally notified (thinner line), which was determined by the intrusion of large blocks of conifer plantations. Reproduced from the 1946 Ordnance Survey 1:63,360 map (One-inch Popular Edition, Sheet 87) with the permission of the Controller of Her Majesty's Stationery Office C Crown Copyright

- 4.5 The ecological complexity that needs to be represented within a single site can be illustrated through the example of a widespread plant community, that which is dominated by heather (or ling) and termed *Callunetum vulgaris* (McVean & Ratcliffe 1962, pp. 28-30). *Callunetum* varies in form and floristic composition according to aspect and altitude within a single massif and usually also shows a series of growth stages resulting from rotational burning. The full range of flora and fauna of *Callunetum* depends on this ecological diversity, which changes both spatially and in time. Golden plover will, for instance, only breed on heather ground while the growth is fairly short. The population sizes of the associated species also depend on the extent of *Callunetum*. Red grouse numbers are much affected by heather management, but the retention of a viable population in isolation from other populations must depend partly on a sufficient extent of heather ground within the site; and while smaller birds, such as meadow pipits, and many insects could survive within much smaller areas, the merlin which feeds on them needs quite a large extent of heather moorland to support each pair.
- 4.6 Within a single massif, *Callunetum vulgaris* shows a range of variation to other types of heather community, such as the kinds with Sphagnum carpet as the ground becomes wetter, those with an abundance of liverworts on steep and shaded slopes, a prostrate growth form with an abundance of lichens with increasing altitude and exposure, and combinations with other montane dwarf shrubs or with herbaceous plants on base-rich soils. Heather-dominated vegetation also gives way to blanket bog on the wettest ground, to flush bog where seepage water comes to the surface, to snow-bed communities in sheltered hollows, to moss and lichen heaths on high exposed tops, and to grasslands on base-rich soils. Some of these variations and transitions are encountered only on different massifs or even in different districts, but the representation of the range of heather communities and of the totality of their relationships even within a single massif usually requires selecting a fairly large area of hill ground.
- 4.7 **The selection objective is to represent within each upland site the range of recorded features in their particular dynamic and spatial relationships.** Selection of topographic units is the best way of achieving this and also helps to keep the proportional areas of the different habitats in appropriate balance. For instance, except where afforestation or hill land reclamation has removed large areas, the sub-montane zone will usually occupy a far more extensive area than the montane zone. While the sub-montane zone may sometimes be considered to contain only large areas of widespread vegetation types, most of these are confined to Britain and Ireland (see 2.3 above) and are crucially important as the primary habitat for many of the vertebrate animal populations. Whenever possible, the important and varied relationship between these two zones should be represented by the

continuity which exists within a single site. The topographic unit expresses the completeness of this range of habitats, communities and species and their relationships, but it is a concept best appreciated on the ground or from a map (see Figure 7). The scientific case for representing topographic completeness is exemplified by the need for lakes and streams within completely unafforested upland catchments in current studies of acid deposition. Critical studies revealing the onset of acidification and its continuing trend in the Galloway uplands have only been possible because certain hill lochs have chanced to survive in unmodified catchments: lochs in even partly afforested catchments show a distorted picture which masks the acidification trend revealed by the diatom sediments in the undisturbed lochs (Flower & Battarbee 1983). It is necessary to retain, in any one massif, the fullest available range of peat deposits and lake sediments for their importance in palaeoecological studies (Birks 1988).

- 4.8 There are, nevertheless, situations in which selection of an upland topographic unit is inappropriate and can be waived. This applies especially where there has been substantial encroachment on the lower slopes of an upland area by land reclamation or afforestation, but where the remaining semi-natural habitats above this enclosed ground retain a high interest or are the only good examples within the AOS. Another example is where the interest lies mainly in cliff and scree vegetation and these habitats are located within areas where the surrounding land has vegetation of much lower nature conservation value (e.g. Nardus grassland) which is adequately represented within other sites chosen as topographic units. In these situations, boundary determination will be a matter of taking each case on its own merits. Conversely, there are some areas, especially with ornithological interest, where it will be desirable to include within a site some of the enclosed marginal land lying below the upland boundary and consisting of grassland, mire or even woodland. Such cases will require wider consultation with the relevant CSD habitat and species specialists in order to select appropriate areas and boundaries. Marginal land is often of considerable importance for certain species-groups, especially of animals; and for some it is the juxtaposition between the enclosed and unenclosed land which is important, the two types both being essential segments of a home range.
- 4.9 When all these factors are considered, the desirable **minimum size** for an upland site, based on selection of a topographic unit, will be of the order of 4,000 ha (10,000 acres), though some isolated, compact or especially steep massifs or those with special but localised geological features may be smaller. Other situations where it is not appropriate to select topographic units are given in 4.8, and these areas will also tend to be less than 4,000 ha. Other sites, with more massive mountain landforms or more varied geology or with important features spread over a large area, need to be larger still.

- 4.10 Once an upland site is thus delineated, it is considered to have a completeness or **integrity** which should be defended against damaging operations, as indicated in B, 5.13.

5 Total extent of upland SSSIs

- 5.1 For many of the widespread upland habitats, it will be sufficient that the best example within an AOS be represented, with their extent determined by the choice of the appropriate topographic unit for the site as a whole. Vegetation types of wide ecological amplitude may, however, receive multiple representation when several sites are selected to represent the range of upland habitats within an AOS: this is appropriate for reasons discussed in 4 above. For rare and specialised features, and particularly for those habitats which occur only within one or a few AOSs, single examples will not be enough and larger representation should be sought. For the following rare habitats, there should be a presumption in favour of selecting all good examples, quality being determined by extent, floristic conformity with NVC types, lack of disturbance and presence of any features special to the particular habitat.

5.1.1 Calcareous habitats forming notable montane plant refugia (cliffs, screes, grasslands, marshes and flushes) (CG9, 10, 11 and 12 (see also 5.2.4) of Rodwell 1985, M7, 10, 11 and 12 of Rodwell 1986-1987, and U14, 15 and 17 (see also 5.1.5) of Rodwell 1989)

5.1.2 Calcicolous heaths of mixed dwarf shrubs and herbs (including Dryas octoyetala and species-rich Calluna vulgaris heaths) (CG13 and 14, and H10d and 16a of Rodwell 1988)

5.1.3 Limestone pavements (see also C.5, 1 and Table 11)

5.1.4 Serpentine habitats -
Open rock
Closed heath (except in Shetland, where the best area on Unst and the best on Fetlar should be selected)

5.1.5 Ungrazed ledge vegetation (willow scrub, tall herbs and ferns) (U16, 17 (see also 5.1.1), 19 and 24, and W20 of Rodwell 1986)

5.1.6 Hepatic-rich dwarf shrub heath (H21b) (see 2.4)

- 5.2 Some habitats have an extremely localised distribution but can be fairly extensive within their range (e.g. some communities of late snow-beds in the Scottish Highlands). For these, representation should lie somewhere between one and every example within an ADS: up to five of the best examples will often be appropriate, but this may sometimes be increased. Published descriptions in McVean & Ratcliffe (1962) and those available in the NVC

indicate distribution and size range of types against which to judge selection needs, but the opinion of CSD specialists should be sought. The following vegetation types belong to this category, and any others becoming rare through land-use impacts should be added, e.g. Calluna heath in Wales.

- 5.2.1 Montane dwarf shrub heaths (examples particularly rich in Arctostaphylos uva-ursi, Arctous alpinus, Loiseleuria procumbens, Salix herbacea and Juniperus communis ssp. nana) (H13, 14, 15, 17 and 19)
 - 5.2.2 Lichen heaths (H13 and 19 - stands with abundant lichens)
 - 5.2.3 Moss heaths (U10 and 13 and H20) -
Species-poor Racomitrium lanuginosum (extensive areas in the Highlands; any remaining area south of the Highlands) (U10a, b, and H20)
Species-rich Racomitrium lanuginosum (U10c)
Rhytidiadelphus - Hylocomium (U13)
 - 5.2.4 Montane fell-fields and patterned ground (Juncus trifidus and dwarf herb communities) (CG12 (see also 5.1.1) and U9)
 - 5.2.5 Late snow-bed communities (Sibbaldia procumbens, Salix herbacea, Dicranum starkei and Cryptogramma crista - Athyrium alpestre) (U11, 12, 14 and 18)
 - 5.2.6 Complexes of montane springs, rills and flushes
 - 5.2.7 A number of plant communities are restricted in their distribution outside the Scottish Highlands, but because of their international importance merit special attention further south. These communities are H4 (present in south-west England), H8 (restricted to south-west England, Wales and Shropshire), H10 (rare south of Scotland), U13 (rare in the Southern Uplands of Scotland), U16 (rare south of Scotland), U17c and CG11 (very rare south of the Scottish Highlands), M10 (rare in Wales) and M11 (very rare in North Wales). The international importance of some other communities is still debatable, but nevertheless H9, 12, 19, 21a and 22a and U17 should also be given special attention outside Scotland.
- 5.3 The combined extent of upland habitats within SSSIs, as a proportion of the total area remaining, will vary between AOSs because of geographical differences in occurrence of the specially important features. Because they represent the last large expanses of undeveloped semi-natural and natural habitat in Britain, the uplands as a whole have a particularly high value for nature conservation. But, although they may still be extensive at present,

some upland habitats are highly vulnerable to further loss or deterioration, and outside SSSIs their long-term survival is at best uncertain. The pressure for development of hill land is substantial and quite open-ended, and an average of about 25,000 ha is lost annually to afforestation alone. It appears a fair assumption that, outside SSSIs, all uplands are at considerable risk of declining in nature conservation interest through change or intensification of land-use. This does not mean that all the other remaining uplands are going to be rapidly transformed; substantial areas will no doubt remain more or less unchanged into the foreseeable future. The problem is much more that, in the absence of specific site protection, the largely unplanned and haphazard incidence of development will continue, so that:

- 5.3.1 important areas will be just as much at risk as all other areas, according to statistical probabilities deriving from their relative extent or other factors which affect their vulnerability;
 - 5.3.2 there will be a piecemeal, random geographical impact of development, giving a high probability that every major upland massif in the country will sooner or later suffer some such intrusion.
 - 5.3.3 For some forms of development there is also a tendency to concentrate selectively on certain habitats, with little if any limit to demand.
- 5.4 The continuing expansion of both hill land reclamation and afforestation already amply illustrates the truth of 5.3.1 and 5.3.2, while the particular focus of downhill ski developments on mountains with the greatest occurrence of late snow-bed habitats is a good example of 5.3.3.
- 5.5 Another factor relevant to upland site selection is that, although the wildlife includes so many important animal species, their populations are often thinly scattered in comparison, for instance, with those of coastal habitats. This is mostly and with low carrying capacity, so that relatively large areas are necessary to support a reasonable population segment of many species.
- 5.6 Only a few upland birds are so rare or localised (e.g. snow bunting and whimbrel) that most of their breeding populations can be contained within a few sites. For the rest, including those species for which Britain has an international conservation obligation (see B, 3), both a considerable number and a substantial extent of sites are necessary to safeguard even as much as a quarter of their populations (see Thompson, Stroud & Pienkowski 1988).
- 5.7 Upland sites should be selected sufficient in both variety and total extent to represent adequately the various features of international importance (see 2 above). In most instances, this need will be satisfied by taking account of the

guidance given here: the international factors then reinforce the justification for site selection.

- 5.8 Finally, in considering the desirable extent of upland sites, there is the question of the perception of nature by those whose concern is to observe and enjoy wildlife. Such people generally wish and expect to see plants and animals in settings which approach as closely as possible to their conception of the natural. To them, the uplands often appear as the last extensive refuge of wild nature, and it does not matter, even if they are aware of it, that much of the apparently natural hill terrain has been profoundly altered by man long ago. The visual evidence of this past disturbance is subdued, and present human activity often slight, so that the hills have the appearance of authentic wild country and are valued as such. It is thus important to people's appreciation to be able to see mountain ecosystems on their natural scale, since the extent and openness of mountains and moorlands are their most striking visual feature. It is also important that large enough areas should continue to be free from intrusions such as commercial conifer plantations, reclamation and enclosure for agriculture, roads and ski developments, which are so destructive to the sense of wildness in the uplands. Because of the high risk of such intrusions expanding, there is good reason to choose areas which are large enough, and have appropriate boundaries, to maintain this essential character even if all the surrounding or intervening land were to become changed.
- 5.9 To take the example of heather moorland again, its uniqueness to Britain lies in the **extent** of Calluna- and Erica-dominated vegetation, and its visual impact as a spectacle in flowering time also depends on scale. Heather moorland is important not just as the habitat for a variety of other plants and animals, but in its own right, as one of the most distinctive wildlife features of this country. Much of the present heather moorland occupies ground which was once largely covered by woodland, but this does not diminish the high value now placed upon Callunetum. The habitat is one of the most important semi-natural types to have developed under our oceanic climate during a period of low-intensity land-use; and it was in any case extensively present as a field layer or glade community in many of the original hill woodlands. Callunetum is vulnerable to land-use change, such as increased grazing and afforestation, and it is imperative that adequate areas be maintained within the SSSI series.
- 5.10 The total area of uplands (including blanket bogs) will be by far the largest of all habitats in the SSSI series: this is entirely appropriate, and in proportion to the extent of uplands in Britain. The proportional area will, however, vary between AOSs and will tend to be highest in the Scottish Highlands because of their relatively greater importance compared with other districts.

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For further information see <http://jncc.defra.gov.uk/page-2303>

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Table 22 Synonymy of Birks & Ratcliffe's (1980) upland vegetation types and those of the National Vegetation Classification

The vegetation type codes used on the NCC's Upland Survey vegetation maps are mostly those of Birks & Ratcliffe (1980), though some additional codes (marked with an asterisk) in common use are also included. Where applicable, codes are referred to a type given by McVean & Ratcliffe (1962). The McVean & Ratcliffe (McV & R) association, trivial name and page and table number follow the Birks & Ratcliffe (or other) type name. Most of the types additional to Birks & Ratcliffe's are derived from McVean & Ratcliffe.

High-rank categories and codes

Birks & Ratcliffe (1980)		National Vegetation Classification (NVC)	
A	Medium-shrub communities	W	Woodlands (Rodwell 1986)
B	Dwarf-shrub communities	H CG	Heaths (Rodwell 1988) Calcicolous grasslands (Rodwell 1985)
C	Grasslands	U CG M	Upland communities (Rodwell 1989) Calcicolous grasslands (Rodwell 1985) Mires (Rodwell 1986-1987)
D	Herb- and fern-rich communities	U CG	Upland communities (Rodwell 1989) Calcicolous grasslands (Rodwell 1985)
E	Bryophyte heaths	U H	Upland communities (Rodwell 1989) Heaths (Rodwell 1988)
G	Blanket bogs (ombrogenous mires)	M	Mires (Rodwell 1986-1987)
H	Flush bogs and fens (soligenous and topogenous mires)	M	Mires (Rodwell 1986-1987)
I	Flushes and springs	M	Mires (Rodwell 1986-1987)
J*	Woodlands	W	Woodlands (Rodwell 1986)

Birks & Ratcliffe		National Vegetation Classification	
A	Medium-shrub communities	W	Woodlands
A1	<u>Juniperus communis</u> - fern scrub <u>Juniperus</u> - <u>Thelypteris nodum</u> (McV & R p.25, Table 9)	W19	<u>Juniperus communis</u> - <u>Oxalis acetosella</u> woodland
A2	<u>Salix lapponum</u> - <u>Luzula sylvatica</u> scrub <u>Salix lapponum</u> - <u>Luzula sylvatica</u> nodum Montane willow scrub (McV & R p.26, Table 10)	W20	<u>Salix lapponum</u> - <u>Luzula sylvatica</u> scrub
A3	<u>Salix aurita</u> scrub	W1 W7	<u>Salix cinerea</u> - <u>Galium palustre</u> woodland <u>Alnus glutinosa</u> - <u>Fraxinus excelsior</u> - <u>Lysimachia nemorum</u> woodland c <u>Deschampsia cespitosa</u> sub-community
A4*	<u>Ulex europaeus</u> scrub	W23	<u>Ulex europaeus</u> - <u>Rubus fruticosus</u> agg. Scrub
B	Dwarf-shrub communities	H CG	Heaths Calcicolous grasslands
B1	Sub-montane <u>Calluna vulgaris</u> heaths	H9, H10, H12, H16, H21	
B1	a <u>Calluna</u> dry heath <u>Callunetum vulgaris</u> Dry heather moor (McV & R p.28, Table 11)	H9	<u>Calluna vulgaris</u> - <u>Deschampsia flexuosa</u> heath a <u>Hypnum cupressi forme</u> sub-community b <u>Vaccinium myrtillus</u> – <u>Cladonia</u> spp. sub-community c Species-poor sub-community d <u>Galium saxatile</u> sub-community e <u>Molinia caerulea</u> sub-community
		H10	<u>Calluna vulgaris</u> - <u>Erica cinerea</u> heath a Typical sub-community b <u>Racomitrium lanuginosum</u> sub-community c <u>Festuca ovina</u> – <u>Anthoxanthum odoratum</u> sub-community
		H12	<u>Calluna vulgaris</u> - <u>Vaccinium myrtillus</u> heath a <u>Calluna vulgaris</u> sub-community b <u>Vaccinium vitis-idaea</u> – <u>Cladonia impexa</u> sub-community c <u>Galium saxatile</u> - <u>Festuca ovina</u> sub-community

Birks & Ratcliffe**National Vegetation Classification**

A1 b Calluna vulgaris - Sphagnum damp heath
Vaccineto-Callunetum, suecicosum facies
(McV & R p.31, Table 13)

Calluna vulgaris - Sphagnum damp heath
sensu Upland Survey

H22 Vaccinium myrtillus - Rubus chamaemorus heath
a Polytrichum commune - Galium saxatile sub-community

H21 Calluna vulgaris - Vaccinium myrtillus - Sphagnum capillifolium heath
a Typical sub-community

B1 c Calluna vulgaris - hepatic heath
Vaccineto-Callunetum, hepaticosum facies
(McV R p.31, Table 13)

H21 Calluna vulgaris - Vaccinium myrtillus - Sphagnum capillifolium heath
b Mastigophora woodsii - Herbertus aduncus hutchinsiae sub-community

B1 d Calluna vulgaris - Danthonia decumbens heath
Callunetum vulgaris, herb-rich facies
(McV & R p.29, Table 11A)

H10 Calluna vulgaris - Erica cinerea heath
d Thymus praecox - Carex pulicaris sub-community

B1 e Arctostaphylos uva-ursi – Calluna vulgaris heath
Arc tostaphyleto-Callunetum
Arctostaphylos uva-ursi-rich heather moor
(McV & R p.30, Table 12)

H16 Calluna vulgaris - Arctostaphylos uva-ursi
a Lathyrus montanus Pyrola media sub-community
b Vaccinium myrtillus - V. vitis-idaea sub-community
c Cladonia impexa sub-community

B2 Montane (prostrate) Calluna vulgaris heaths

H13, H14, H15, H17

B2 a Species-poor dwarf Calluna heath
Cladineto-Callunetum, typicum
Lichen-rich dwarf Calluna heath pp.
(McV & R p.35, Table 16)

H13 Calluna vulgaris - Cladonia arbuscula heath
a Cladonia arbuscula - C. Rangiferina sub-community

B2 b Calluna - Racomitrium lanuginosum heath
Rhacomitreto – Callunetum
Racomitrium-rich dwarf Calluna heath
(McV & R p.38, Table 17)

H14 Calluna vulgaris - Racomitrium lanuginosum
a Festuca ovina sub-community
b Empetrum nigrum ssp. Hermaphroditum sub-community
c Arctostaphylos uva-ursi sub-community

Birks & Ratcliffe**National Vegetation Classification**

B2 c Calluna-lichen heath
Cladineto-Callunetum, sylvaticosum facies
Lichen-rich dwarf Calluna heath p.p.
(McV & R p.35, Table 16)

Cladineto-Callunetum,
arctostaphyletosum facies
Lichen-rich dwarf Calluna heath p.p.
(McV & R p.35, Table 16)

H13 Calluna vulgaris Cladonia arbuscula heath
a Cladonia arbuscula - C. rangiferina
sub-community
b Empetrum nigrum ssp. hermaphroditum
Cetraria nivalis sub-community
c Cladonia crispata - Loisleuria procumbens
sub-community

B2 d Mixed prostrate dwarf shrub heath
(i) Arctoeto - Callunetum
Species-rich dwarf shrub heath
(McV & R p.34, Table 15)

H17 Calluna vulgaris - Arctostaphylos alpinus heath
a Loisleuria procumbens - Cetraria glauca
sub-community
b Empetrum nigrum ssp. nigrum
sub-community

B2 d Mixed prostrate dwarf shrub heath
(ii) Loiseleuria - Empetrum
provisional nodum
(McV & R p.35, Table 15)

H13 Calluna vulgaris - Cladonia arbuscula heath
b Empetrum nigrum ssp. hermaphroditum -
Cetraria nivalis sub-community

B2 d Mixed prostrate dwarf shrub heath
(iii) Juniperetum nanae
Dwarf juniper scrub
(McV & R p.33, Table 14)

H15 Calluna vulgaris - Juniperus communis ssp.
nana heath

B3 Vaccinium myrtillus - Empetrum nigrum
heath

H18, H19, H20, H22

B3 a Southern Vaccinium myrtillus heath
Sub-montane Vaccinium myrtillus
heath

H18 Vaccinium myrtillus - Deschampsia flexuosa
heath
a Hylocomium splendens - Rhytidiadelphus
loreus sub-community
c Empetrum nigrum ssp. nigrum
Racomitrium lanuginosum sub-community

B3 b Snow-bed Vaccinium myrtillus heath
Vaccinetum chionophilum
Vaccinium myrtillus snow-bed
(McV & R p.39, Table 18)

H22 Vaccinium myrtillus - Rubus chamaemorus
heath
a Polytrichum commune - Galium saxatile
sub-community
b Plagiothecium undulatum - Anastrepta
orcadensis sub-community

Birks & Ratcliffe	National Vegetation Classification
B3 c Species-rich <u>Vaccinium</u> heath Festuce to-Vaccinetum <u>Alchemilla</u> -rich <u>Festuca</u> - <u>Vaccinium</u> heath (McV & R p.45, Table 21)	H18 <u>Vaccinium myrtillus</u> - <u>Deschampsia flexuosa</u> heath b <u>Alchemilla alpina</u> - <u>Carex pilulifera</u> sub-community
B3 d <u>Vaccinium myrtillus</u> - <u>Nardus stricta</u> heath	H18 <u>Vaccinium myrtillus</u> - <u>Deschampsia flexuosa</u> heath c <u>Empetrum nigrum</u> ssp. <u>nigrum</u> - <u>Racomitrium lanuginosum</u> sub-community
B3 e <u>Vaccinium myrtillus</u> - <u>Empetrum</u> <u>nigrum</u> ssp. <u>hermaphroditum</u> heaths Vaccineto-Empetretum <u>Vaccinium</u> - <u>Empetrum</u> heath (McV & R p.41, Table 19) <u>Empetrum nigrum</u> ssp. <u>hermaphroditum</u> hypnaceous moss heath (McV & R p.42, Table 19)	H18 <u>Vaccinium myrtillus</u> - <u>Deschampsia flexuosa</u> heath a <u>Hylocomium splendens</u> - <u>Rhytidiadelphus</u> <u>loreus</u> sub-community c <u>Empetrum nigrum</u> ssp. <u>nigrum</u> - <u>Racomitrium lanuginosum</u> sub-community H20 <u>Vaccinium myrtillus</u> - <u>Racomitrium</u> <u>lanuginosum</u> heath d <u>Rhytidiadelphus loreus</u> - <u>Hylocomium</u> <u>splendens</u> sub-community
B3 f <u>Vaccinium</u> - lichen heath Cladineto-Vaccinetum Lichen-rich <u>Vaccinium</u> heath (McV & R p.43, Table 20)	H19 <u>Vaccinium myrtillus</u> - <u>Cladonia arbuscula</u> heath a Typical sub-community b <u>Racomitrium lanuginosum</u> sub-community c <u>Empetrum nigrum</u> - <u>Cladonia rangiferina</u> sub-community
B3 g <u>Vaccinium vitis-idaea</u> heaths Peak District only	H9 <u>Calluna vulgaris</u> - <u>Deschampsia flexuosa</u> heath b <u>Vaccinium myrtillus</u> - <u>Cladonia</u> spp. sub- community
B4 <u>Dryas octopetala</u> heaths	CG13, CG14
B4 a Low altitude <u>Dryas</u> heath On Durness limestone and shell sand <u>Dryas</u> - <u>Carex rupestris</u> nodum, <u>Dryas</u> - <u>Carex flacca</u> nodum (McV & R p.47, Table 23)	CG13 <u>Dryas octopetala</u> - <u>Carex flacca</u> heath a <u>Hieracium pilosella</u> - <u>Ctenidium</u> <u>molluscum</u> sub-community b <u>Salix repens</u> - <u>Empetrum nigrum</u> ssp. <u>nigrum</u> sub-community
B4 b High altitude <u>Dryas</u> heath On ledges of mica-schist mountains <u>Dryas</u> - <u>Salix reticulata</u> nodum (McV & R p.47, Table 23)	CG14 <u>Dryas octopetala</u> - <u>Silene acaulis</u> ledge community

Birks & Ratcliffe	National Vegetation Classification
B4 x* <u>Arctostaphylos</u> - grass heath (McV & R p.50)	CG10
B4 y* <u>Dryas</u> - <u>Arctostaphylos</u> heath (McV & R p.50)	CG13
C Grassland	U Upland communities CG Calcareous grasslands M Mires
C1 <u>Agrostis</u> - <u>Festuca</u> grasslands Agrostio-Festucetum (McV & R p.52-57, Tables 24, 25, 26)	U1, U2, U4, CG9, CG10, CG11
No Birks & Ratcliffe equivalent sub-community, though C1b may have been used	U1 <u>Festuca ovina</u> - <u>Agrostis capillaris</u> - <u>Rumex acetosella</u> grassland f <u>Hypochaeris radicata</u> sub-community
C1 a <u>Agrostis canina</u> - <u>A. capillaris</u> (<u>tenuis</u>) grassland Species-poor Agrostio-Festucetum <u>Agrostis</u> - <u>Festuca</u> acid grassland p.p. (McV & R p.52, Table 24)	U4 <u>Festuca ovina</u> - <u>Agrostis capillaris</u> - <u>Galium saxatile</u> grassland a Typical sub-community b <u>Holcus lanatus</u> - <u>Trifolium repens</u> sub-community c <u>Lathyrus montanus</u> - <u>Stachys betonica</u> sub-community d <u>Luzula multiflora</u> - <u>Rhytidadelphus</u> loeus sub-community e <u>Vaccinium myrtillus</u> - <u>Nardus stricta</u> sub-community
C1 b <u>Festuca ovina</u> grassland Species-poor Agrostio-Festucetum <u>Agrostis</u> - <u>Festuca</u> acidic grassland p.p. (McV & R p.52, Table 24)	U4 <u>Festuca ovina</u> - <u>Agrostis capillaris</u> - <u>Galium saxatile</u> grassland a Typical sub-community b <u>Holcus lanatus</u> - <u>Trifolium repens</u> sub-community c <u>Lathyrus montanus</u> - <u>Stachys betonica</u> sub-community d <u>Luzula multiflora</u> - <u>Rhytidadelphus</u> loeus sub-community e <u>Vaccinium myrtillus</u> - <u>Nardus stricta</u> sub-community
C1 c <u>Deschampsia flexuosa</u> grassland	U2 <u>Deschampsia flexuosa</u> grassland a <u>Festuca ovina</u> - <u>Agrostis</u> <u>capillaris</u> sub-community b <u>Vaccinium myrtillus</u> sub-community

Birks & Ratcliffe**National Vegetation Classification**

No Birks & Ratcliffe equivalent

U3 Agrostis curtisii grassland

C1 d Alchemilla - Festuca grassland
 Alchemilleto - Agrostis - Festucetum
Alchemilla-rich Agrostis - Festuca
 grassland
 (McV & R p.53, Table 25)

CG11 Festuca ovina - Agrostis capillaris -
Alchemilla alpina grass-heath
a Typical sub-community
b Carex pulicaris - Carex panicea
 sub-community

C1 e Southern species-rich Agrostis -
Festuca grassland
 Species-rich Agrostis-Festucetum
Agrostis - Festuca basic grassland p.p.
 (McV & R p.54, Table 26)

CG10 Festuca ovina - Agrostis capillaris -
Thymus praecox grassland
a Trifolium repens Luzula campestris
 sub-community
b Carex pulicaris - Carex panicea
 sub-community

C1 f Northern species-rich Agrostis -
Festuca grassland
 Species-rich Agrostis-Festucetum
Agrostis Festuca basic grassland p.p.
 (McV & R p.54, Table 26)

CG10 Festuca ovina - Agrostis capillaris
Thymus praecox grassland
c Saxifraga aizoides Ditrichum flexicaule
 sub-community

Saxifrageto-Agrostis-Festucetum
Saxifraga aizoides-rich Agrostis -
Festuca grassland
 (McV & R p.54, Table 26)

C1 g Sesleria albicans - Festuca ovina
 grassland

CG9 Sesleria albicans - Galium sternerii
 grassland
a Helianthemum canum - Asperula cynanchica
 sub-community
b Typical sub-community
c Carex pulicaris - Carex panicea
 sub-community
d Carex capillaris - Kobresia simpliciuscula
 sub-community
e Saxifraga hypnoides - Cochlearia alpine
 sub-community

C2 Nardus stricta grasslands**U5, U7**

C2 a Sub-montane Nardus grassland
 (species-poor)
 Nardetum sub-alpinum, species-poor
 facies
 Sub-alpine Nardus grassland
 (McV & R p.58, Table 28)

U5 Nardus stricta. - Galium saxatile grassland
a Species-poor sub-community
b Agrostis canina - Polytrichum commune
 sub-community
d Calluna vulgaris - Danthonia decumbens
 sub-community
e Racomitrium lanuginosum sub-community

Birks & Ratcliffe	National Vegetation Classification
<p>C2 b Snow-bed <u>Nardus</u> grassland Low-alpine <u>Nardus noda</u> <u>Nardus</u> snow-beds <u>Nardus</u> - Pleurozium nodum <u>Nardus</u> - Scirpus (Trichophorum) nodum <u>Nardus</u> - Racomitrium provisional nodum (McV & R p.67-68, Table 32) Nardetum medio-alpinum Alpine <u>Nardus</u> grassland (McV & R p.69, Table 33)</p>	<p>U7 <u>Nardus stricta</u> – <u>Carex bigelowii</u> grass-heath a <u>Empetrum nigrum</u> ssp. <u>Hermaphroditum</u> - <u>Cetraria islandica</u> sub-community b Typical sub-community c <u>Alchemilla alpina</u> – <u>Festuca ovina</u> sub-community</p>
<p>C2 c Species-rich <u>Nardus</u> grassland Nardetum sub-alpinum, species-rich facies Sub-alpine <u>Nardus</u> grassland (McV & R p.58, Table 29)</p>	<p>U5 <u>Nardus stricta</u> - <u>Galium saxatile</u> grassland c <u>Carex panicea</u> - <u>Viola riviniana</u> sub-community</p>
<p>C3 <u>Juncus squarrosus</u> grasslands Juncetum squarrosi sub-alpinum Sub-alpine <u>Juncus squarrosus</u> 'grassland' (McV & R p.59, Tables 28, 29)</p>	<p>U6 <u>Juncus squarrosus</u> - <u>Festuca ovina</u> grassland</p>
<p>C3 a Species-poor <u>Juncus squarrosus</u> grassland Juncetum squarrosi sub-alpinum, species-poor facies (McV & R p.59, Table 28)</p>	<p>U6 b <u>Carex nigra</u> - <u>Calyogeia trichomanis</u> sub-community c <u>Vaccinium myrtillus</u> sub-community</p>
<p>C3 b Sphagnum-rich <u>Juncus squarrosus</u> grassland <u>Juncus squarrosus</u> bogs (McV & R p.59, Table 28)</p>	<p>U6 a <u>Sphagnum</u> sub-community</p>
<p>C3 c Species-rich <u>Juncus squarrosus</u> grassland Juncetum squarrosi sub-alpinum, species-rich facies (McV & R p.59, Table 29)</p>	<p>U6 d <u>Agrostis capillaris</u> – <u>Luzula multiflora</u> sub-community</p>
<p>C3 x* <u>Juncus squarrosus</u> with short <u>Calluna</u> (McV & R p.60)</p>	<p>U6 No NVC equivalent</p>
<p>C4 <u>Molinia caerulea</u> grasslands/bog (McV & R p.64)</p>	<p>M25 <u>Molinia caerulea</u> - <u>Potentilla erecta</u> mire</p>

Birks & Ratcliffe		National Vegetation Classification	
C4	a Species-poor <u>Molinia</u> grassland	M25	b <u>Anthoxanthum odoratum</u> sub-community
C4	b Species-rich <u>Molinia</u> grassland	M25	c <u>Angelica sylvestris</u> sub-community
C4	c* <u>Sphagnum</u> -rich <u>Molinia</u> bog	M25	a <u>Erica tetralix</u> sub-community
C5	<u>Deschampsia cespitosa</u> grasslands Deschampsietum caespitosae alpinum Alpine <u>Deschampsia cespitosa</u> grassland (McV & R p.61, Table 30)	U13, U17	
C5	a Species-poor <u>Deschampsia cespitosa</u> grassland Deschampsietum caespitosae alpinum, species-poor facies (McV & R p.61, Table 30)	U13	<u>Deschampsia cespitosa</u> - <u>Galium saxatile</u> grassland a <u>Anthoxanthum odoratum</u> - <u>Alchemilla alpina</u> sub-community
C5	b Species-rich <u>Deschampsia cespitosa</u> grassland Deschampsietum caespitosae alpinum, species-rich facies (McV & R p.61, Table 30)	U17	<u>Luzula sylvatica</u> - <u>Geum rivale</u> tall-herb community c <u>Agrostis capillaris</u> - <u>Rhytidiadelphus loreus</u> sub-community
C6	<u>Carex bigelowii</u> snow-beds/heaths Polytricheto-Caricetum bigelowii <u>Polytrichum alpinum</u> - <u>Carex bigelowii</u> snow-beds (McV & R p.72, Table 34) Dicraneto-Caricetum bigelowii <u>Kiaeria</u> (<u>Dicranum</u>) <u>fuscescens</u> - <u>Carex bigelowii</u> heath (McV & R p.73, Table 35)	U8 U8 U8	<u>Carex bigelowii</u> - <u>Polytrichum alpinum</u> grass-heath a <u>Polytrichum alpinum</u> - <u>Ptilidium ciliare</u> sub-community b <u>Dicranum fuscescens</u> - <u>Racomitrium lanuginosum</u> sub-community
C7	<u>Juncus trifidus</u> heaths Cladineto-Juncetum trifidi Lichen-rich <u>Juncus trifidus</u> heath (McV & R p.75, Table 36)	U9	<u>Juncus trifidus</u> - <u>Racomitrium lanuginosum</u> rush-heath a <u>Cladonia arbuscula</u> - <u>Cetraria islandica</u> sub-community b <u>Salix herbacea</u> sub-community

Birks & Ratcliffe	National Vegetation Classification
C8* <u>Luzula sylvatica</u> grassland <u>Luzula sylvatica</u> Grassland nodum (McV & R p.64, Table 31)	U16 <u>Luzula sylvatica</u> - <u>Vaccinium myrtillus</u> community c Species-poor sub-community
D Herb- and fern-rich communities	U CG Upland communities Calcicolous grasslands
D1 <u>Sedum rosea</u> - <u>Alchemilla glabra</u> communities Tall Herb nodum (McV & R p.80, Table 38)	U17 <u>Luzula sylvatica</u> - <u>Geum rivale</u> tall-herb community a <u>Alchemilla glabra</u> - <u>Bryum pseudotriquetrum</u> sub-community b <u>Geranium sylvaticum</u> sub-community d <u>Primula vulgaris</u> - <u>Hypericum pulchrum</u> sub-community
D2 <u>Cryptogramma crispera</u> communities	U18, U21
D2 a Southern, scree <u>Cryptogramma</u> community	U21 <u>Cryptogramma crispera</u> - <u>Deschampsia flexuosa</u> fern community
D2 b Northern, snow-bed <u>Cryptogramma</u> - <u>Athyrium alpestre</u> community Cryptogrammeto-Athyrietum chionophilum <u>Cryptogramma</u> - <u>Athyrium</u> snow-bed (McV & R p.82, Table 39)	U18 <u>Cryptogramma crispera</u> - <u>Athyrium alpestre</u> snow-bed
D3 <u>Silene acaulis</u> - <u>Festuca ovina</u> sward (typical)	CG12 <u>Festuca ovina</u> - <u>Alchemilla alpina</u> - <u>Silene acaulis</u> dwarf-herb community
D3 a Closed <u>Silene</u> - <u>Festuca</u> community Dwarf Herb nodum (McV & R p.84, Table 40) <u>Silene acaulis</u> , with other herbs and grasses on basic soil	
D3 b Open <u>Silene</u> - <u>Festuca</u> community of rock faces Small herbs, grasses and bryophytes on basic rock faces	
D3 x* <u>Alchemilla</u> - <u>Sibbaldia</u> nodum (McV & R p.85, Table 41) <u>Alchemilla alpina</u> - <u>Sibbaldia procumbens</u> snow-bed Often mapped as E3	U14 <u>Alchemilla alpina</u> - <u>Sibbaldia procumbens</u> dwarf-herb community

Birks & Ratcliffe	National Vegetation Classification
D4 <u>Asplenium</u> - <u>Fissidens cristatus</u> crevice community Rupestral ferns and calcicolous bryophytes in crevices on basic rock faces	NVC equivalent not yet available
D5 <u>Saxifraga aizoides</u> banks Saxifragetum aizoidis (McV & R p.87, Table 42)	U15 <u>Saxifraga aizoides</u> - <u>Alchemilla glabra</u> banks
D6 <u>Luzula sylvatica</u> – <u>Dryopteris</u> communities	U16, U19
D6 a* <u>Vaccinium</u> - <u>Luzula</u> Betuletum Oxaletum-Vaccinetum, treeless facies (McV & R p.17, Table 6)	U16 <u>Luzula sylvatica</u> - <u>Vaccinium myrtillus</u> community a <u>Dryopteris dilatata</u> - <u>Dicranum majus</u> sub-community b <u>Agrostis capillaris</u> - <u>Anthoxanthum odoratum</u> sub-community c Species-poor sub-community
D6 b* <u>Betula</u> - herb nodum, fern dominated treeless facies p.p. (McV & R p.17, Table 6)	U19 <u>Thelypteris limbosperma</u> - <u>Blechnum spicant</u> community
D7* <u>Pteridium aquilinum</u> communities	U20 <u>Pteridium aquilinum</u> - <u>Galium saxatile</u> community
D7 a Dense stands of <u>Pteridium</u> with sparse ground flora	U20 c Species-poor sub-community
D7 b <u>Pteridium</u> with woodland ground flora <u>Betula</u> - herb nodum, treeless facies p.p. (McV & R p.17, Table 6)	U20 a <u>Anthoxanthum odoratum</u> sub-community
No Birks & Ratcliffe equivalent	U20 b <u>Vaccinium myrtillus</u> - <u>Dicranum scoparium</u> sub-community
E Bryophyte heaths	U Upland communities H Heaths
E1 <u>Racomitrium lanuginosum</u> – <u>Carex bigelowii</u> heaths	U10, H20

Birks & Ratcliffe		National Vegetation Classification	
E1	a Species-poor <u>Racomitrium</u> heath Cariceto-Rhacomitretum lanuginosi <u>Racomitrium</u> heath (McV & R p.89, Table 43) Typical facies Cushion herb facies <u>Juncus trifidus</u> -rich facies	U10	<u>Carex bigelowii</u> - <u>Racomitrium lanuginosum</u> moss-heath b Typical sub-community
E1	b Species-rich <u>Racomitrium</u> heath Poiygoneto-Rhacomitretum lanuginosi Species-rich <u>Racomitrium</u> heath (McV & R p.92, Table 44)	U10	<u>Carex bigelowii</u> – <u>Racomitrium lanuginosum</u> moss-heath c <u>Silene acaulis</u> sub-community
E1	c <u>Festuca ovina</u> - <u>Deschampsia flexuosa</u> - <u>Racomitrium</u> heath Abundant grasses among the <u>Racomitrium lanuginosum</u>	U10	<u>Carex bigelowii</u> – <u>Racomitrium lanuginosum</u> moss-heath a <u>Galium saxatile</u> sub-community
E1	d <u>Empetrum nigrum</u> ssp. <u>hermaphroditum</u> – <u>Racomitrium</u> heath Rhacomitreto-Etnpetretum <u>Racomitrium</u> - <u>Empetrum</u> heath (McV & R p.46, Table 12)	H20	<u>Vaccinium myrtillus</u> - <u>Racomitrium lanuginosum</u> heath b <u>Cetraria islandica</u> sub-community c <u>Bazzania tricrenata</u> - <u>Mylia taylori</u> sub-community
E1	e <u>Juncus trifidus</u> - <u>Racomitrium</u> heath <u>Juncus trifidus</u> - <u>Festuca ovina</u> nodum (McV & R p.77, Table 37)	U10	<u>Carex bigelowii</u> – <u>Racomitrium lanuginosum</u> moss-heath c <u>Silene acaulis</u> sub-community
E2	<u>Rhytidiadelphus loreus</u> - <u>Deschampsia cespitosa</u> heaths Deschampsieto-Rhytidiadelphum <u>Rhytidiadelphus</u> snow bed Species-poor typicum facies Species-rich triquetrosom facies (McV & R p.94, Table 45)	U13	<u>Deschampsia cespitosa</u> – <u>Galium saxatile</u> grassland b <u>Rhytidiadelphus loreus</u> sub-community
E3	<u>Kiaeria</u> (<u>Dicranum</u>) <u>starkei</u> snow-bed heaths	U11	<u>Polytrichum norvegicum</u> - <u>Kiaeria starkei</u> snow-bed
		U12	<u>Salix herbacea</u> – <u>Racomitrium heterostichum</u> snow-bed
	Polytricheto-Dicranetum starkei <u>Polytrichum sexangulare</u> (<u>norvegicum</u>) - <u>Kiaeria</u> (<u>Dicranum</u>) <u>starkei</u> snow-bed (McV & R p.96, Table 46)	U11	a Typical sub-community
		U11	b Species-poor sub-community

Birks & Ratcliffe		National Vegetation Classification	
E3 (contd)			
	Rhacomitretum-Dicranetum starkei <u>Racomitrium</u> - <u>Kiaeria</u> (<u>Dicranum</u>) <u>starkei</u> snow-bed (McV & R p.96, Table 47)	U12	a <u>Silene acaulis</u> – <u>Luzula spicata</u> sub-community
	Gymnomitretum-Salicetum herbaceae <u>Gymnomitrium</u> - <u>Salix herbacea</u> snow-bed (McV & R p.97, Table 48)	U12	c <u>Marsupella brevissima</u> sub-community
		U12	b <u>Gymnomitrium concinatum</u> sub-community
G	Blanket bog (ombrogenous mires)	M	Mires
G1	<u>Scirpus cespitosus</u> - <u>Myrica gale</u> mire Trichophoretum - Eriophoretum typicum Western blanket bog (McV & R p.101, Table 49)	M17	<u>Scirpus cespitosus</u> - <u>Eriophorum vaginatum</u> blanket mire
G1	a <u>Sphagnum</u> -rich <u>Scirpus</u> - <u>Myrica</u> mire	M17	a <u>Drosera rotundifolia</u> - <u>Sphagnum</u> sub-community
G1	b <u>Racomitrium</u> -rich	M17	b <u>Cladonia</u> sub-community
G1	c Lichen-rich	M17	b <u>Cladonia</u> sub-community
	No equivalent Birks & Ratcliffe sub-community	M17	c <u>Juncus squarrosus</u> - <u>Rhytidiadelphus</u> <u>loreus</u> sub-community
G2	<u>Scirpus cespitosus</u> - <u>Calluna vulgaris</u> mire Trichophoretum-Callunetum <u>Scirpus</u> (<u>Trichophorum</u>) - <u>Calluna</u> bog (McV & R p.106, Table 52)	M15	<u>Scirpus cespitosus</u> - <u>Erica tetralix</u> wet heath
		M16	<u>Erica tetralix</u> - <u>Sphagnum compactum</u> wet heath
G2	a Typical <u>Scirpus</u> - <u>Calluna</u> mire	M15	b Typical sub-community
		M16	d <u>Juncus squarrosus</u> – <u>Dicranum</u> <u>scoparium</u> sub-community
G2	b <u>Racomitrium</u> -rich	M15	c <u>Cladonia</u> sub-community
G2	c Lichen-rich	M15	c <u>Cladonia</u> sub-community

Birks & Ratcliffe		National Vegetation Classification	
G2	d <u>Scirpus</u> mire	M15	b Typical sub-community
No equivalent Birks & Ratcliffe sub-community		M15	d <u>Vaccinium myrtillus</u> sub-community
G3	<u>Molinia caerulea</u> - <u>Calluna vulgaris</u> mire Moliniето-Callunetum <u>Molinia</u> - <u>Calluna</u> bog (McV & R p.108, Table 52)	M15	<u>Scirpus cespitosus</u> - <u>Erica tetralix</u> wet heath b Typical sub-community
G4	<u>Calluna vulgaris</u> - <u>Eriophorum vaginatum</u> mire Calluneto-Eriophoretum Pennine blanket bog (McV & R p.103, Table 50)	M19	<u>Calluna vulgaris</u> - <u>Eriophorum vaginatum</u> blanket mire
		M20	<u>Eriophorum vaginatum</u> blanket and raised mire
G4	a Typical <u>Calluna</u> - <u>Eriophorum</u> mire	M19	a <u>Erica tetralix</u> sub-community b <u>Empetrum nigrum</u> ssp. <u>nigrum</u> sub-community c <u>Vaccinium vitis-idaea</u> - <u>Hylocomium splendens</u> sub-community ii Typical variant
G4	b <u>Sphagnum</u> -rich	M19	a <u>Erica tetralix</u> sub-community b <u>Empetrum nigrum</u> ssp. <u>nigrum</u> sub-community c <u>Vaccinium vitis-idaea</u> - <u>Hylocomium splendens</u> sub-community ii Typical variant
G4	c Lichen-rich	M19	a <u>Erica tetralix</u> sub-community b <u>Empetrum nigrum</u> ssp. <u>nigrum</u> sub-community c <u>Vaccinium vitis-idaea</u> - <u>Hylocomium splendens</u> sub-community ii Typical variant
G4	d Montane dwarf shrub-rich	M19	c <u>Vaccinium vitis-idaea</u> - <u>Hylocomium splendens</u> sub-community i <u>Betula nana</u> variant
G4	a <u>Vaccinium</u> -rich	M20	<u>Eriophorum vaginatum</u> blanket and raised mire b <u>Calluna vulgaris</u> - <u>Cladonia</u> sub-community

Birks & Ratcliffe		National Vegetation Classification	
G4	f <u>Eriophorum</u> -dominated mire Dwarf shrubs sparse owing to burning and grazing	M20	<u>Eriophorum vaginatum</u> blanket and raised mire a Species-poor sub-community b <u>Calluna vulgaris</u> - <u>Cladonia</u> sub-community
G5*	<u>Empetrum</u> - <u>Eriophorum</u> mire Empetreto-Eriophoretum High-level blanket bog (McV & R p.106, Table 51)	M19	<u>Calluna vulgaris</u> - <u>Eriophorum vaginatum</u> blanket mire c <u>Vaccinium vitis-idaea</u> - <u>Hylocomium</u> <u>splendens</u> sub-community iii <u>Vaccinium uliginosum</u> - <u>Polytrichum</u> <u>alpestre</u> variant
No Birks & Ratcliffe equivalent		M18	<u>Erica tetralix</u> - <u>Sphagnum papillosum</u> raised and blanket mire a <u>Sphagnum rnegellanicum</u> - <u>Andromeda</u> <u>polifolia</u> sub-community b <u>Empetrum nigrum</u> ssp. <u>nigrum</u> - <u>Cladonia</u> sub-community
No Birks & Ratcliffe equivalent		M21	<u>Narthecium ossifragum</u> - <u>Sphagnum</u> <u>papillosum</u> valley mire a <u>Sphagnum auriculatum</u> - <u>Rhynchospora</u> <u>alba</u> sub-community b <u>Sphagnum recurvum</u> - <u>Vaccinium</u> <u>oxycoccus</u> sub-community
H	Flush bogs and fens (soligenous and topogenous mires)	M	Mires
H1	<u>Myrica gale</u> - <u>Molinia caerulea</u> mire <u>Molinia</u> - <u>Myrica nodum</u> (McV & R p.112, Table 53)	M15	<u>Scirpus cespitosus</u> - <u>Erica tetralix</u> wet heath a <u>Carex panicea</u> sub-community
		M25	<u>Molinia caerulea</u> - <u>Potentilla erecta</u> mire a <u>Erica tetralix</u> sub-community
H2	<u>Juncus</u> - moss mire	M6, M23	
H2	a <u>Juncus effusus</u> – <u>Sphagnum</u> <u>recurvum</u> mire Sphagneto-Juncetum effuse <u>Juncus effusus</u> - <u>Sphagnum</u> mire (McV & R p.113, Table 54)	M6	<u>Carex echinata</u> - <u>Sphagnum recurvum</u> / <u>auriculatum</u> mire c <u>Juncus effusus</u> sub-community i <u>Sphagnum recurvum</u> variant ii <u>Sphagnum auriculatum</u> variant

Birks & Ratcliffe		National Vegetation Classification	
H2	b <u>Juncus acutiflorus</u> - <u>Sphagnum recurvum</u> mire	M6	<u>Carex echinata</u> - <u>Sphagnum recurvum/auriculatum</u> mire d <u>Juncus acutiflorus</u> sub-community i <u>Sphagnum recurvum</u> variant ii <u>Sphagnum auriculatum</u> variant
H2	c <u>Juncus acutiflorus</u> - herb- and moss-rich mire <u>Juncus acutiflorus</u> - <u>Calliergon</u> (<u>Acrociadium</u>) <u>cuspidatum</u> nodum (McV & R p.117, Table 56)	M23	<u>Juncus effusus/acutiflorus</u> - <u>Galium palustre</u> rush-pasture a <u>Juncus acutiflorus</u> sub-community b <u>Juncus effusus</u> sub-community
H3	<u>Carex</u> - moss mire	M4, M6, M7, M8, M9, M10, M12, M15	
H3	a <u>Erica tetralix</u> - <u>Carex panicea</u> mire Trichophoreto-Eriophoretum caricetosum <u>Scirpus</u> (<u>Trichophorum</u>) - <u>Carex</u> mire (McV & R p.112, Table 49)	M15	<u>Scirpus cespitosus</u> - <u>Erica tetralix</u> wet heath a <u>Carex panicea</u> sub-community
H3	b Sub-montane <u>Carex echinata</u> - <u>Sphagnum recurvum</u> mire Sphagneto- Caricetum sub-alpinum Sub-alpine <u>Sphagnum</u> - <u>Carex</u> mire (McV & R p.114, Table 55)	M6	<u>Carex echinata</u> - <u>Sphagnum recurvum/auriculatum</u> mire a <u>Carex echinata</u> sub-community i <u>Sphagnum recurvum</u> variant ii <u>Sphagnum auriculatum</u> variant b <u>Carex nigra</u> - <u>Nardus stricta</u> sub-community i <u>Sphagnum recurvum</u> variant ii <u>Sphagnum auriculatum</u> variant
H3	c Sub-montane <u>Carex rostrata</u> <u>Sphagnum recurvum</u> mire	M4	<u>Carex rostrata</u> - <u>Sphagnum recurvum</u> mire
H3	d Sub-montane <u>Carex nigra</u> <u>Sphagnum contortum</u> mire	M9	<u>Carex rostrata</u> - <u>Calliergon cuspidatum</u> mire a <u>Campylium stellatum</u> - <u>Scorpidium scorpioides</u> sub-community
H3	e Sub-montane <u>Carex rostrata</u> <u>Sphagnum contortum</u> mire <u>Carex rostrata</u> - <u>Sphagnum warnstorffii</u> (<u>warnstorffianum</u>) nodum (McV & R p.119, Table 57)	M8	<u>Carex rostrata</u> - <u>Sphagnum warnstorffii</u> mire

Birks & Ratcliffe**National Vegetation Classification**

H3 f Sub-montane Carex nigra - brown moss mire
Carex panicea – Campyllum stellatum nodum
(McV & R p.120, Table 58)

M10 Carex dioica - Pinguicula vulgaris mire
a Carex demissa - Juncus bulbosus/kochii sub-community
i Eleocharis quinqueflora variant
ii Carex hostiana - Ctenidium molluscum variant
(**iii** Schoenus nigricans variant = **H4**)
b Briza media - Primula farinosa sub-community
i Cirsium palustre variant
ii Molinia caerulea - Eriophorum latifolium variant
iii Thymus praecox - Racomitrium lanuginosum variant
c Gymnostomum recurvirostrum sub-community

H3 i Montane Carex nigra – brown moss mire
Hypno-Caricetum alpinum
Carex - brown moss mire
(McV & R p.118, Table 29)

M10 Carex dioica - Pinguicula vulgaris mire
U5 Nardus stricta - Galium saxatile grassland
c Carex panicea - Viola riviniana sub-community

H3 j Montane Carex saxatilis mire
Caricetum saxatilis
(McV & R p.125, Table 59)

M12 Carex saxatilis mire

H3 g Sub-montane Carex rostrata - brown moss mire
Carex rostrata - brown moss provisional nodum
(McV & R p.112, Table 58)

M9 Carex rostrata - Calliergon cuspidatum mire
a Campyllum stellatum - Scorpidium scorpioides sub-community
b Carex diandra - Calliergon giganteum sub-community

H3 h Montane Carex echinata - Sphagnum recurvum mire
Sphagneto-Caricetum alpinum
Alpine Sphagnum - Carex mire
(McV & R p.115, Table 55)

Carex aquatilis - rariflora nodum
(McV & R p.115, Table 55)

M7 Carex curta - Sphagnum russowii mire
a Carex bigelowii - Sphagnum lindbergii sub-community
b Carex aquatilis - Sphagnum recurvum sub-community

H4 Schoenus nigricans mire
Schoenus nigricans provisional nodum
(McV & R p.124, Table 64)

M10 Carex dioica - Pinguicula vulgaris mire
a Carex demissa - Juncus bulbosus/kochii sub-community
iii Schoenus nigricans variant

Birks & Ratcliffe**National Vegetation Classification****H4** (contd)Schoenus nigricans also in:**M11** Carex demissa - Saxifraga aizoides mire**M15** Scirpus cespitosus - Erica tetralix wet heath
a Carex panicea sub-community**M17** Scirpus cespitosus - Eriophorum vaginatum
blanket mire
a Drosera rotundifolia - Sphagnum sub-community**I Flushes and springs****M Mires****I1** Open Carex sward**M11, M10****I1 a** Carex hostiana – Eriophorum latifolium flush**M10** Carex dioica - Pinguicula vulgaris mire**I1 b** Sub-montane Carex demissa - Saxifraga aizoides flush Cariceto-Saxifragetum aizoidis
Carex - Saxifraga aizoides flush, low-level facies
(McV & R p.133, Table 64)**M11** Carex demissa - Saxifraga aizoides mire
b Cratoneuron commutatum - Eleocharis quinqueflora sub-community**I1 c** Montane Carex demissa - Saxifraga aizoides flush
Cariceto-Saxifragetum aizoidis
Carex - Saxifraga aizoides flush, high-level facies
(McV & R p.133, Table 64)**M11** Carex demissa - Saxifraga aizoides mire
a Thalictrum alpinum - Juncus triglumis sub-community
i Polygonum viviparum variant
ii Juncus bulbosus/kochii - Saxifraga stellaris variant**I2** Eleocharis multicaulis - Rhynchospora alba flush**M30** Miscellaneous Littorellion vegetation**I3** Narthecium ossifragum - Sphagnum flush
Narthecium - Sphagnum provisional nodum
(McV & R p.132, Table 62.)**M15** Scirpus cespitosus - Erica tetralix
a Carex panicea sub-community (?)**M16** Erica tetralix - Sphagnum compactum
wet heath (?)

Birks & Ratcliffe		National Vegetation Classification	
I4	Bryophyte springs	M31, M32, M33, M37, M38	
I4	a <u>Philonotis fontana</u> - <u>Saxifraga stellaris</u> springs Philonoto-Saxifragetum stellaris Oligotrophic bryophyte springs (McV & R p.130, Table 60)	M32	<u>Philonotis fontana</u> - <u>Saxifraga stellaris</u> spring a <u>Sphagnum auriculatum</u> sub-community b <u>Montia fontana</u> - <u>Chrysosplenium oppositifolium</u> sub-community
I4	b <u>Anthelia julacea</u> springs <u>Anthelia</u> - <u>Deschampsia cespitosa</u> provisional nodum (McV & R p.132, Table 61)	M31	<u>Anthelia julacea</u> - <u>Sphagnum auriculatum</u> spring
I4	c <u>Pohlia wahlenbergii</u> var. <u>Glacialis</u> springs Pohlietum glacialis (McV & R p.131, Table 60)	M33	<u>Pohlia wahlenbergii</u> var. <u>glacialis</u> spring
I4	d <u>Saxifraga rivularis</u> - <u>Philonotis Seriata</u> springs	M32	<u>Philonotis fontana</u> - <u>Saxifraga stellaris</u> spring
I4	e <u>Cratoneuron commutatum</u> springs <u>Cratoneuron commutatum</u> - <u>Saxifraga aizoides</u> nodum (McV & R p.133, Table 63)	M37	<u>Cratoneuron commutatum/filicinum</u> - <u>Festuca rubra</u> spring
		M38	<u>Cratoneuron commutatum</u> - <u>Carex nigra</u> spring

Birks & Ratcliffe**National Vegetation Classification****J* Woodlands****W Woodlands**

- J1** Scots pine woods
a Pinetum Hylocomieto-Vaccinetum
Pinewood Vaccinium - moss association
(McV & R p.11, Table 4)
b Pinetum Vaccineto-Callunetum
Pinewood Vaccinium - Calluna
association
(McV & R p.13, Table 5)

- W18** Pinus sylvestris - Hylocomium splendens woodland
a Erica cinerea - Goodyera repens sub-community
b Vaccinium myrtillus - Vaccinium vitis-idaea sub-community
c Luzula pilosa sub-community
d Sphagnum capillifolium/quinquefarium - Erica tetralix sub-community
e Scapania gracilis sub-community

- J2** Birch woods
(McV & R p.15, Table 6)
a Betuletum Oxaletum-Vaccinetum
Vaccinium-rich birch wood
(McV & R p.15, Table 6)
b Betula-herb nodum
Herb-rich birch wood
(McV & R p.16, Table 6)

- W11** Quercus petraea - Betula pubescens
Oxalis acetosella woodland
a Dryopteris dilatata sub-community
b Blechnum spicant sub-community
c Anemone nemorosa sub-community
d Stellaria holostea - Hypericum pulchrum sub-community
- W17** Quercus petraea - Betula pubescens -
Dicranum majus woodland
a Isoetecium myosuroides - Diplophyllum athicans sub-community
b Typical sub-community
c Anthoxanthum odoratum - Agrostis capillaris sub-community
d Rhytidiadelphus triquetrus sub-community

- J3** Ash woods
Fraxinus - Brachypodium sylvaticum
nodum
Brachypodium-rich ash wood
(McV & R p.20, Table 8)

- W9** Fraxinus excelsior - Sorbus aucuparia -
Mercurialis perennis woodland

- J4** Mixed deciduous woodland
(McV & R p.11, Table A)

- W7** Alnus glutinosa - Fraxinus excelsior -
Lysimachia nemorum woodland
- W9** Fraxinus excelsior - Sorbus aucuparia -
Mercurialis perennis woodland

- J5** Alder woods
(McV & R p.23, Table B)

- W7** Alnus glutinosa - Fraxinus excelsior -
Lysimachia nemorum woodland

NVC mires (Rodwell 1986-1987) with no Birks & Ratcliffe (1980) equivalent

- M1** Sphagnum auriculatum bog pool community
- M2** Sphagnum cuspidatum/recurvum bog pool community
a Rhynchospora alba sub-community
b Sphagnum recurvum sub-community
- M3** Eriophorum angustifolium bog pool community
- M5** Carex rostrata - Sphagnum squarrosum mire
- M13** Schoenus nigricans - Juncus subnodulosus mire
a Festuca rubra - Juncus acutiflorus sub-community
b Briza media - Pinguicula vulgaris sub-community
c Caltha palustris - Galium uliginosum sub-community
- M14** Schoenus nigricans - Narthecium ossifragum mire
- M15** Scirpus cespitosus - Erica tetralix wet heath
d Vaccinium myrtillus sub-community
- M16** Erica tetralix - Sphagnum compactum wet heath
a Typical sub-community
b Succisa pratensis - Carex panicea sub-community
c Rhynchospora alba - Drosera intermedia sub-community
d Juncus squarrosus - Dicranum scorparium sub-community
e Impoverished stands lacking Sphagna
- M17** Scirpus cespitosus - Eriophorum vaginatum blanket mire
c Juncus squarrosus - Rhytidiadelphus loreus sub-community
- M18** Erica tetralix - Sphagnum papillosum raised and blanket mire
a Sphagnum magellanicum - Andromeda polifolia sub-community
b Empetrum nigrum ssp. nigrum - Cladonia sub-community
- M21** Narthecium ossifragum - Sphagnum papillosum valley mire
a Sphagnum auriculatum - Rhynchospora alba sub-community
b Vaccinium oxycoccus - Sphagnum recurvum sub-community
- M22** Juncus subnodulosus - Cirsium palustre mire
- M24** Molinia caerulea - Cirsium dissectum fen-meadow
- M26** Molinia caerulea - Crepis paludosa mire
a Sanguisorba officinalis sub-community
b Festuca rubra sub-community
- M29** Hypericum elodes - Potamogeton polygonifolius soak way
- M34** Carex demissa - Koenigia islandica flush
- M35** Ranunculus omiophyllus - Montia fontana rill

NVC heaths (Rodwell 1988) with no Birks & Ratcliffe (1980) equivalent

- H1** Calluna vulgaris - Festuca ovina heath
a Hypnum cupressiforme sub-community
b Hypogymnia physodes - Cladonia impexa sub-community
c Teucrium scorodonia sub-community
d Carex arenaria sub-community
e Species-poor sub-community
- H2** Calluna vulgaris - Ulex minor heath
a Typical sub-community
b Vaccinium myrtillus sub-community
c Molinia caerulea sub-community
- H3** Ulex minor - Agrostis curtisii heath
a Typical sub-community
b Cladonia spp. sub-community
c Agrostis curtisii sub-community
- H4** Ulex gallii - Agrostis curtisii heath
a Agrostis curtisii - Erica cinerea sub-community
b Festuca ovina sub-community
c Erica tetralix sub-community
d Scirpus cespitosus sub-community
- H5** Erica vagans - Ulex europaeus heath
a Typical sub-community
b Eleocharis multicaulis sub-community
- H6** Erica vagans - Ulex europaeus heath
a Typical sub-community
b Festuca ovina sub-community
c Agrostis curtisii sub-community
d Molinia caerulea sub-community
- H7** Calluna vulgaris - Scilla verna heath
a Armeria maritima sub-community
b Viola riviniana sub-community
c Erica tetralix sub-community
d Empetrum nigrum ssp. nigrum sub-community
e Calluna vulgaris sub-community
- H8** Calluna vulgaris - Ulex gallii heath
a Species-poor sub-community
b Danthonia decumbens sub-community
c Sanguisorba minor sub-community
d Scilla verna sub-community
e Vaccinium myrtillus sub-community

NVC calcifugous grasslands (Rodwell 1989) with no Birks & Ratcliffe (1980) equivalent

- U1** Festuca ovina - Agrostis capillaris - Rumex acetosella grassland
- U3** Agrostis curtisii grassland

NVC herb- and fern-rich communities (Rodwell 1989) with no Birks & Ratcliffe (1980) equivalent

- U20** Pteridium aquilinum - Galium saxatile community
b Vaccinium myrtillus - Dicranum scoparium sub-community