CG13
Dryas octopetala-Carex flacca heath

Synonymy
Dryas heaths Poore & McVean 1957, Gimingham 1972 *p.p.*; *Dryas-Carex flacca* nodum McVean & Ratcliffe 1962; *Dryas-Carex rupestris* nodum McVean & Ratcliffe 1962 *p.p.*; *Plantagino-Dryadetum* Shimwell 1968*a*; *Dryas octopetala* localities Elkington 1971 *p.p.*; Invernarver *Calluna-Arctostaphylos* heath Ward 1971*a*; *Dryas octopetala* heath Ratcliffe 1977 *p.p.*

Constant species
Bellis perennis, *Carex flacca*, *Dryas octopetala*, *Festuca ovina*, *Linum catharticum*, *Lotus corniculatus*, *Plantago lanceolata*, *P. maritima*, *Thymus praecox*, *Viola riviniana*, *Ditrichum flexicaule*.

Rare species
Agropyron donianum, *Alchemilla glaucescens*, *Arctostaphylos uva-ursi*, *Arenaria norvegica* ssp. *norvegica*, *Carex capillaris*, *C. rupestris*, *Draba incana*, *Dryas octopetala*, *Epipactis atrorubens*, *Oxytropis halleri*, *Amblystegium compactum*, *Brachythecium erythrorrhizon*, *Schistidium apocarpum* var. *homodictyon*, *S. trichodon*, *Seligeria trifaria*, *Tortella densa*.

Physiognomy
The *Dryas octopetala-Carex flacca* heath has a low patchy cover of sub-shrubs over what is essentially a sub-montane grassland sward. *D. octopetala* is usually the most abundant species, though its appearance (and the look of the vegetation as a whole) varies with the amount of grazing: in close-cropped swards, it has a prostrate much-nibbled habit but where there is no grazing it can grow more bushy and floriferous. Even in ungrazed stands, however, the plants often have small leaves, which suggests some genotypic distinction from the forms typical of the montane *Dryas-Silene* community (Elkington 1971). Intermixed with the *D. octopetala* there is commonly, in one sub-community, some *Calluna vulgaris* and, in the other, a little *Salix repens* and *Empetrum nigrum* ssp. *nigrum* (less often *E. nigrum* ssp. *hermaphroditum*). Very occasionally, *Arctostaphylos uva-ursi* is found and, in some stands, it replaces *D. octopetala* in vegetation which is otherwise unchanged (e.g. Ward 1971*a*, *b*, Birks 1973). *Thymus praecox* is constant and locally abundant.

Grasses and sedges show considerable diversity in one sub-community but the species common throughout are few. *Festuca ovina* and *Carex flacca* are both constant and they often make up the bulk of the sward between the sub-shrubs but other species are only occasional and rarely abundant: *Koeleria macrantha*, *Agrostis capillaris*, *Festuca rubra* and *Carex panicea*. *Festuca vivipara* has been recorded in only one of the sub-communities.

Although some montane species occur in this vegetation (including certain Arctic-Alpines which attain their lowest altitudinal limit in the community), most of the other common herbaceous associates are species well represented in the more calcicolous sub-montane grasslands. Thus, there are frequently scattered plants of *Viola riviniana*, *Plantago lanceolata*, *Linum catharticum*, *Lotus corniculatus*, *Bellis perennis*, *Antennaria dioica*, *Selaginella selaginoides* and, more occasionally, *Cerastium fontanum* and *Luzula campestris*. In contrast to communities like the *Festuca-Agrostis-Thymus* grassland and the *Festuca-Agrostis-Alchemilla* grass-heath, there is, though, no consistently strong Nardo-Galion element present. One other distinction from these swards is the constancy here of *Plantago maritima* but, though the *Dryas-Carex* heath can occur in very close contact with coastal grasslands and heaths, other maritime species, such as *Armeria maritima* and *Scilla verna*, are characteristically scarce in the community.

The bryophyte component of the vegetation is frequently rich and varied but the species common throughout the community are few : *Ditrichum flexicaule* and *Hylocomium splendens* are most frequent with *Fissidens cristatus*, *Hypnum cupressiforme* and *Homalothecium lutescens* occasional. There is sometimes a little *Cladonia rangiformis*.

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Sub-communities

***Hieracium pilosella-Ctenidium molluscum* sub-community:** *Dryas-Carex rupestris* nodum Poore & McVean 1957, McVean & Ratcliffe 1962 *p.p.*; *Dryas-Carex flacca* nodum McVean & Ratcliffe 1962 *p.p.*; *Plantagino-Dryadetum typicum* Shimwell 1968*a*; *Dryas octopetala-Carex flacca* Association Birks 1973. Although *D. octopetala* is frequently joined here by *Calluna vulgaris*, the most obvious feature of the vegetation is a richness and diversity among the herbaceous and bryophyte elements. *Carex flacca* and *C. panicea* are often accompanied by *C. pulicaris* and, as well as *Festuca ovina*, there are frequent records for *Danthonia decumbens* and *Anthoxanthum odoratum*. Then, among the dicotyledons, *Hieracium pilosella*, *Potentilla erecta*, *Prunella vulgaris*, *Hypericum pulchrum* and *Succisa pratensis* occur commonly with, less often, *Hypochoeris radicata* and *Euphrasia officinalis* agg. (including *E. confusa* and *E. scottica*). *Rubus saxatilis* and the rare *Epipactis atrorubens* are scarce but distinctive. Bryophytes are often abundant in crevices within or over the surfaces of the exposures among which the vegetation is disposed: *Ctenidium molluscum* and *Tortella tortuosa* are constant and *Thuidium tamariscinum*, *Racomitrium lanuginosum*, *Dicranum scoparium*, *Breutelia chrysocoma*, *Neckera crispa* and *Hylocomium brevirostre* occasional. *Rhytidium rugosum* and *Tortella densa* occur rarely.

Within this general definition, the vegetation shows a certain amount of physiognomic and floristic variation which reflects, on a smaller scale, that seen within communities like the *Sesleria-Galium* and *Festuca-Agrostis-Thymus* grasslands. Over the fractured tops of low-altitude exposures, and especially where these face south or west and catch more of the sun, the sward is often open and fragmentary and the vegetation comes to resemble the more xeric swards of the English and Welsh coastal limestones. Where the exposures are cut by grikes, as on southern Skye (Birks 1973) or in parts of the mainland Durness Limestone (Ratcliffe 1977), the inaccessibility of the vegetation to grazing may allow a more luxuriant growth and there can be an additional enrichment from tall herbs such as *Filipendula ulmaria*, *Centaurea nigra*, *Solidago virgaurea* and *Daucus carota* and ferns like *Polystichum aculeatum*, *P. lonchitis*, *Asplenium viride* and *A. marinum* growing from sheltered crevices. In other places, there is flushing from springs and seepage lines and the sward can have an unusual abundance of *Selaginella selaginoides* and *Carex panicea*, and species like *Pinguicula vulgaris*, *Saxifraga aizoides*, *Molinia caerulea* and *Schoenus nigricans* may make an appearance (e.g. the flushed facies of Birks 1973). Conversely, the vegetation may show signs of a floristic transition to a more calcifugous sward with a local prominence of *Calluna vulgaris*, *Danthonia decumbens* and *Anthoxanthum odoratum* (e.g. Birks 1973 leached facies). Finally, where this sub-community reaches its upper altitudinal limit on ungrazed ledges above Inchnadamph, it begins to approach the *Dryas-Silene* community in its structure and composition with occasional records for Arctic-Alpine rarities such as *Carex rupestris*, *C. capillaris* and *Draba incana* and some of the very few British occurrences of the Arctic-Subarctic *Agropyron donianum* and *Arenaria norvegica* ssp. *norvegica* (Raven & Walters 1956, Ratcliffe 1977). Here, too, the bryophyte component may be enriched with such rare sub-montane calcicoles as *Amblystegium compactum*, *Schistidium apocarpum* var. *homodictyon*, *S. trichodon*, *Seligeria trifaria* and *Tortula princeps* (Ratcliffe 1977).

***Salix repens-Empetrum nigrum* ssp. *nigrum* sub-community:** *Dryas-Carex flacca* nodum Poore & McVean 1957, McVean & Ratcliffe 1962 *p.p.*; *Dryas-Carex rupestris* nodum McVean & Ratcliffe 1962 *p.p.*; *Plantagino-Dryadetum* maritime Sub-association Shimwell 1968*a p.p. Dryas octopetala* remains frequent and abundant here but the sub-shrub canopy is more varied and extensive with some *Salix repens* and *Empetrum nigrum* ssp. *nigrum* and, more occasionally, *E. nigrum* ssp. *hermaphroditum* and *Juniperus communis* (approaching ssp. *nana* in its procumbent habit). Among the herbaceous species, *Galium verum*, *Campanula rotundifolia* and *Luzula campestris* are frequent preferentials, and *Polygonum viviparum*, *Orchis mascula* and *Listera ovata* distinctive occasionals. As in the former sub-community, various Arctic-Alpines can be found in some stands, here descending almost to sea-level, e.g. *Saxifraga aizoides*, *S. oppositifolia*, *Draba incana*, *Silene acaulis*, and this vegetation also provides a major locus for the lovely Alpine rarity *Oxytropis halleri*. Preferential bryophytes are *Pseudoscleropodium purum*, *Rhytidiadelphus triquetrus*, *Homalothecium lutescens* and *Scapania undulata* with, less often, *Thuidium delicatulum* and *Pleurozium schreberi*. *Brachythecium erythrorrhizon* occurs at its only known British locality in this sub-community (Barkman 1955).

Again, there is some structural and floristic variation in the vegetation but here this is due not only to the configuration of bedrock exposures (which, as before, can be variously broken into small cliffs and pavement with flushing or drift cover) but also to the amount and disposition of wind-blown shell-sand over which this sub-community commonly occurs. Where this becomes fixed among the low branches of the sub-shrubs, there can be extensive stands of more stable machair-like vegetation with an even or hummocky surface. Elsewhere, localised erosion produces a more open and fragmentary cover and there may be occasional occur-

rences of therophytes typical of unstable maritime habitats (as in some samples of the maritime Sub-association of the *Plantagino-Dryadetum* of Shimwell 1968*a*). In other places, a thin layer of shell-sand may be blown over adjacent peat deposits so that the vegetation takes on some characteristics of blanket-mire edge vegetation with a more extensive cover of *Empetrum nigrum*.

Habitat

The *Dryas-Carex* heath is restricted to calcareous lithomorphic soils in the cool, oceanic lowlands of north-west Scotland. Although the community extends up to about 140 m on the hills above Inchnadamph, most stands occur below 70 m and, along the north Sutherland coast, they can be found down to about 15 m above sea-level. The regional climate is cool with a mean annual maximum temperature generally less than 23 °C (Conolly & Dahl 1970), but the annual accumulated temperature is of the same order as that over much of lowland Scotland and the winters especially are distinctly milder than on higher ground to the east with only 20–60 frost days and February minima often a degree or so above freezing (*Climatological Atlas* 1952). Although annual precipitation reaches over 1600 mm along the north-western seaboard, with up to 200 wet days yr^{-1} (Ratcliffe 1968), there is little or no snow-lie. The summers are humid but there is rather less daytime cloudiness than on higher ground inland.

Within this area of regional climate, the community occurs only where the influence of calcareous soil parent material is sufficiently great to offset the effect of leaching in the high rainfall. The major calcareous bedrocks in the region are the Durness Limestone, which is exposed on southern Skye and on the mainland along the Moine Thrust from Inverpolly through Inchnadamph to Durness itself on the north coast, and the Jurassic limestones on Skye and Raasay (Birks 1973, Ratcliffe 1977, Whittow 1979). Over these exposures, the *Dryas-Carex* heath is largely confined to the drift-free surfaces of cliffs, talus and, on the Durness Limestone, pavements, which carry shallow rendzinas. These are sometimes little more than skeletal accumulations of rock fragments and organic detritus but, even where the soil cover is more substantial, the profiles are consistently base-rich with pH values generally between 6.5 and 7.5 (Poore & McVean 1957, McVean & Ratcliffe 1962, Shimwell 1968*a*, Elkington 1971, Birks 1973). There is usually much free calcium carbonate, although over dolomitised sections of the Durness Limestone (as around Durness itself), magnesium may be the major cation present (Elkington 1971). Sometimes deeper profiles with a reddish B horizon are encountered but the community does not extend far on to drift-contaminated soils except where these are flushed with calcareous waters. Fragmentary stands of *Dryas-Carex* heath also occur over similar rendziniform soils on the more calcareous parts of the Skye Tertiary basalts, as for example where these have tumbled in the complex of rotational landslips beneath The Storr and The Quiraing but the *Dryas* vegetation of more high-altitude ledges on the Trotternish ridge is best considered as fragments of the *Dryas-Silene* community.

Along the north coast of Scotland, fine calcareous shell-sand, blown from the shore and deposited over the surfaces of projecting headlands (not always themselves made up of calcareous bedrocks), provides an important alternative soil parent material. Here, the soils are calcareous sand pararendzinas, sometimes shallow smears over rock or peat, in other cases, where topographic variation or the vegetation itself has encouraged accumulation, of more substantial depth, but always, as before, base-rich. Very fine and extensive stands of the community occur on this substrate around Durness and, further east, at Invernarver (Ratcliffe 1977). Along this coast, the *Dryas-Carex* heath is found quite close to sea-level but, though the climate is considerably drier here than along the north-west seaboard, rainfall seems to be sufficient to ameliorate any deposition of salt-spray.

The milder character of the climate is reflected in the vegetation in its generally sub-montane nature. Only where the winters become sharper on higher-altitude ledges above Inchnadamph and along the Sutherland coast, do other Arctic-Alpines apart from *D. octopetala* make an appearance in the vegetation and, even here, they do not make a consistent contribution. Rather, there is something of a resurgence in the community of Mesobromion calcicoles, such as *Carex flacca* and *Linum catharticum*, which gives the vegetation a similar feel to many lowland calcicolous swards. Indeed, where the cover becomes fragmented over the fractured tops of cliffs close to sea-level, the community looks like a northern oceanic equivalent of the Xerobromion swards of the south-west. Such similarities are accentuated by the highly calcareous nature of the soils which, as a rule, prevents the development of any marked Nardo-Galion element such as is characteristic of other sub-montane swards in the north-west.

What part climate and soil variations play in influencing the floristic differences between the sub-communities is unknown. Strictly speaking, the *Salix-Empetrum* sub-community is no more maritime than the *Hieracium-Ctenidium* sub-community, even though it occurs more frequently in close association with maritime grasslands and heaths near to the sea (cf. Shimwell 1968*a*). Part of the answer may be found in the coincidental occurrence of the different substrates characteristic of the community in areas of slightly different climate. The *Hieracium-Ctenidium* sub-community, with its abundance of calcicolous bryophytes, is more common over the hard limestones along the wetter and

milder north-west coast, whereas the *Salix-Empetrum* sub-community is more abundant along the drier, cooler north coast where its greater diversity of sub-shrubs is perhaps easily able to survive the shifting of shell-sand.

Although *Empetrum nigrum* itself is unpalatable to sheep (Bell & Tallis 1973), it is also possible that differences in grazing intensity play some part in the composition and distribution of the sub-communities. There is no doubt that the community as a whole attains its greatest luxuriance when it is ungrazed and, at some sites, like Durnesss (Ratcliffe 1977), the boundaries of stands apparently coincide with grazing limits but, on Skye at least (Birks 1973), this vegetation is quite heavily grazed by sheep and, in parts, rabbits, and nibbling perhaps contributes to the generally low and varied swards of the *Hieracium-Ctenidium* sub-community which is most abundant there. The *Salix-Empetrum* sub-community, on the other hand, may be grazed less, though no data are available to confirm this.

Zonation and succession

Most often, zonations involving the *Dryas-Carex* heath are related to edaphic variation which is dependent upon the topography and geology. The exposures of calcareous bedrocks in the north-west of Scotland, of which the *Hieracium-Ctenidium* sub-community is especially characteristic, are usually of limited extent and surrounded by more acid rocks. Stands of this vegetation are thus often small and they make up part of the patchworks of calcicolous communities that provide such a startling intrusion of fresh green into the dull brown cover that characterises much of this area. The outcrops are also frequently broken into cliffs, and dissected by crevices and grikes. Typically, therefore, this sub-community occurs in complex mosaics with fern-domination in crevice protorendzinas and woodland fragments in sheltered clefts and ravines. Such patterns are very well seen in the Suardal area of Skye (Birks 1973) and, to a more limited extent, around Durness (Ratcliffe 1977). At higher altitudes, on the hills above Inchnadamph, comparable mosaics involve montane chasmophytic vegetation, tall-herb communities and willow scrub (Poore & McVean 1957, McVean & Ratcliffe 1962, Ratcliffe 1977).

Very often, too, the exposures, especially on flatter land at lower altitudes, are smeared with varying amounts of drift which introduces a further element of complexity. Then the *Dryas-Carex* heath may pass to more calcifugous heath, perhaps through an intermediate zone in which *Calluna vulgaris* and Nardo-Galion grasses show an increase in cover. Flushing can complicate the pattern still further. Where this is intermittent, the community may persist with scattered Caricion davallianae species in the sward but, where it is more pronounced, there are transitions to sub-montane soligenous mires. Where base-poor waters flow through drift-contaminated soils adjacent to *Dryas-Carex* heath, the community may show a sharp transition to some kind of calcifuge mire.

Comparable patterns to these can be seen within and around areas of shell-sand along the north Scottish coast, where the *Salix-Empetrum* sub-community is more common, though here the zonations can have more diffuse boundaries because of the continuously variable thicknesses of sand that are laid down. The open chasmophytic communities of bare rock are also replaced by vegetation typical of raw sand and, with increasing proximity to the sea, there is the additional feature of maritime influence. Thus, around Invernarver, *Dryas-Carex* heath occurs behind dune communities and among maritime heath, notably the *Empetrum* sub-community of the *Calluna-Scilla* heath. Disturbed areas within stands of the community may carry small patches of the *Armeria-Cerastium* maritime therophyte community. Further away from the sea, where the influence of deposited sand peters out, there can be gradations to various kinds of inland heath over acidic mineral soils and peat. As before, varying degrees of flushing with waters of differing base-status result in the scattered occurrence of small-sedge mires of various kinds (Ratcliffe 1977).

Both sub-communities are also frequently found in close association with small patches of sub-montane swards, such as the *Festuca-Agrostis-Thymus* grassland or, along the north Scottish coast, the *Festuca-Plantago* maritime grassland. At somewhat higher altitudes, as along the slopes of the Trotternish ridge in Skye or above Inchnadamph, it may grade to the *Festuca-Agrostis-Alchemilla* grass-heath (Birks 1973, Ratcliffe 1977). The presumption is that such zonations are mediated primarily by grazing which, when very prolonged or heavy, is supposed to wipe out the *D. octopetala* (McVean & Ratcliffe 1962). However, the survival of the community under grazing on Skye (Birks 1973, see above), like the persistence of *D. octopetala* in *Sesleria-Galium* grassland on the Pennines, suggests that this relationship may be quite complex (Elkington 1971). Enclosure experiments at Inchnadamph may help reveal some of the answers to this problem (Ratcliffe 1977).

Distribution

The community is confined to the lowlands of north-west Scotland. The *Hieracium-Ctenidium* sub-community is the more widespread, the *Salix-Empetrum* sub-community having been recorded only from Raasay and the Sutherland coast.

Affinities

The *Dryas-Carex* heath, though it grades floristically to the *Dryas-Silene* community at higher altitudes, is quite

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distinct in its general lack of Arctic-Alpines and grazing-sensitive tall herbs and willows. As defined here, the community cuts across the provisional distinction made by McVean & Ratcliffe (1962) between stands with or without *Carex rupestris* and corresponds with Shimwell's (1968*a*) *Plantagino-Dryadetum*, though it excludes his more maritime stands which are here considered as mosaics. It also takes in some more calcicolous stands of *Arctostaphylos uva-ursi* heath (e.g. Ward 1971*a*, *b*).

As both Shimwell (1968*a*) and Birks (1973) have remarked, the affinities of the community with the montane calcicolous dwarf-shrub heaths of the Kobresio-Dryadion in the Elyno-Seslerietea are by no means as clear as they are in the *Dryas-Silene* community. Like the *Sesleria-Galium* grassland of the Pennines, the *Dryas-Carex* heath appears to be intermediate between this kind of vegetation and the lowland swards of the Mesobromion. On balance, both Shimwell (1968*a*) and Birks (1973) favoured a position in the Kobresio-Dryadion but rather similar Irish vegetation has been grouped within the Mesobromion by both Braun-Blanquet & Tüxen (1952) and Ivimey-Cook and Proctor (1966*b*).

Floristic table CG13

	a	b	13
Dryas octopetala	V (3–10)	V (1–10)	V (1–10)
Thymus praecox	V (1–5)	V (1–5)	V (1–5)
Carex flacca	V (1–7)	V (4–8)	V (1–8)
Viola riviniana	IV (1–4)	V (1–3)	V (1–4)
Plantago maritima	V (1–4)	IV (1–3)	V (1–4)
Plantago lanceolata	IV (1–4)	V (1–3)	IV (1–4)
Ditrichum flexicaule	IV (1–4)	V (1–3)	IV (1–4)
Linum catharticum	IV (1–4)	IV (1–3)	IV (1–4)
Festuca ovina	IV (1–4)	IV (3–6)	IV (1–6)
Lotus corniculatus	IV (1–5)	IV (1–4)	IV (1–5)
Bellis perennis	IV (1–3)	IV (1–2)	IV (1–3)
Hieracium pilosella	V (1–4)		III (1–4)
Ctenidium molluscum	V (1–4)		III (1–4)
Tortella tortuosa	IV (1–6)		II (1–6)
Potentilla erecta	IV (1–4)		II (1–4)
Festuca vivipara	IV (1–4)		II (1–4)
Prunella vulgaris	III (1–3)	I (1)	II (1–3)
Hypericum pulchrum	III (1–2)	I (1)	II (1–2)
Carex pulicaris	III (1–4)		II (1–4)
Calluna vulgaris	III (1–6)		II (1–6)
Succisa pratensis	III (1–4)	I (1–3)	II (1–4)
Anthoxanthum odoratum	III (1–4)	I (1)	II (1–4)
Danthonia decumbens	III (1–4)		II (1–4)
Thuidium tamariscinum	II (1–3)	I (1)	I (1–3)
Racomitrium lanuginosum	II (1–4)		I (1–4)
Dicranum scoparium	II (1–3)		I (1–3)
Carex rupestris	II (4–6)		I (4–6)
Breutelia chrysocoma	II (1–4)		I (1–4)
Pinguicula vulgaris	II (1–3)		I (1–3)
Neckera crispa	II (1–4)		I (1–4)
Molinia caerulea	II (1–3)		I (1–3)
Hylocomium brevirostre	II (1–4)		I (1–4)
Euphrasia confusa	II (1–4)		I (1–4)
Hypochoeris radicata	II (1–3)		I (1–3)
Saxifraga aizoides	II (1–3)		I (1–3)

Floristic table CG13 (*cont.*)

	a	b	13
Rhytidiadelphus squarrosus	I (1–3)		I (1–3)
Agrostis canina	I (1–2)		I (1–2)
Solorina saccata	I (1–3)		I (1–3)
Cynosurus cristatus	I (1–4)		I (1–4)
Gentianella amarella	I (1–3)		I (1–3)
Taraxacum officinale agg.	I (1–3)		I (1–3)
Rubus saxatilis	I (1–3)		I (1–3)
Neckera complanata	I (1–3)		I (1–3)
Lathyrus montanus	I (1)		I (1)
Daucus carota	I (1)		I (1)
Filipendula ulmaria	I (1)		I (1)
Solidago virgaurea	I (1)		I (1)
Primula vulgaris	I (1–3)		I (1–3)
Centaurea nigra	I (1)		I (1)
Epipactis atrorubens	I (1–2)		I (1–2)
Polystichum aculeatum	I (1)		I (1)
Senecio jacobaea	I (1–3)		I (1–3)
Trifolium pratense	I (1)		I (1)
Rhytidium rugosum	I (1)		I (1)
Pseudoscleropodium purum	II (1–4)	V (1–3)	III (1–4)
Salix repens		V (1–3)	III (1–3)
Rhytidiadelphus triquetrus	II (1–3)	IV (1–4)	III (1–3)
Empetrum nigrum nigrum		IV (1–4)	II (1–4)
Luzula campestris	II (1–3)	III (1–3)	II (1–3)
Homalothecium lutescens	II (1–3)	III (1–3)	II (1–3)
Galium verum	I (1)	III (1–3)	II (1–3)
Campanula rotundifolia	I (1–3)	III (1–3)	II (1–3)
Scapania undulata		III (1–3)	II (1–3)
Polygonum viviparum	I (1–3)	II (1–3)	II (1–3)
Pleurozium schreberi	I (1)	II (4–5)	I (1–5)
Orchis mascula	I (1)	II (1–3)	I (1–3)
Empetrum nigrum hermaphroditum		II (1–3)	I (1–3)
Thuidium delicatulum		II (1–3)	I (1–3)
Juniperus communis		II (1–3)	I (1–3)
Listera ovata		II (1)	I (1)
Plantago media		I (1–2)	I (1–2)
Plagiochila asplenoides		I (1–3)	I (1–3)
Avenula pratensis		I (1)	I (1)
Antennaria dioica	III (1–3)	III (1–3)	III (1–3)
Selaginella selaginoides	III (1–3)	III (1–3)	III (1–3)
Hylocomium splendens	III (1–4)	II (1–3)	III (1–4)
Fissidens cristatus	II (1–3)	III (1–3)	II (1–3)
Koeleria macrantha	II (1–3)	III (1–3)	II (1–3)
Carex panicea	II (2–5)	III (1–3)	II (1–5)
Agrostis capillaris	II (1–3)	II (1–3)	II (1–3)
Hypnum cupressiforme	II (1–3)	II (1–3)	II (1–3)

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Cerastium fontanum	II (1)	II (1–3)	II (1–3)
Festuca rubra	II (1–4)	I (1–3)	II (1–4)
Frullania tamarisci	I (1–3)	II (1–3)	I (1–3)
Anthyllis vulneraria	I (1)	II (1–3)	I (1–3)
Cladonia rangiformis	I (1)	II (1–2)	I (1–2)
Trifolium repens	I (1–3)	II (1–3)	I (1–3)
Arctostaphylos uva-ursi	I (5–6)	II (1–3)	I (1–6)
Thalictrum alpinum	I (1)	I (1–3)	I (1–3)
Euphrasia officinalis agg.	I (1–3)	I (1)	I (1–3)
Ranunculus acris	I (1)	I (1)	I (1)
Galium saxatile	I (1–3)	I (4)	I (1–4)
Leontodon autumnalis	I (1–3)	I (1)	I (1–3)
Entodon concinnus	I (1)	I (1)	I (1)
Schoenus nigricans	I (1–3)	I (1–3)	I (1–3)
Polygala serpyllifolia	I (1–3)	I (1)	I (1–3)
Number of samples	37	17	54
Number of species/sample	31 (18–63)	25 (16–37)	28 (16–63)

a *Hieracium pilosella-Ctenidium molluscum* sub-community
b *Salix repens-Empetrum nigrum* sub-community
13 *Dryas octopetala-Carex flacca* heath (total)

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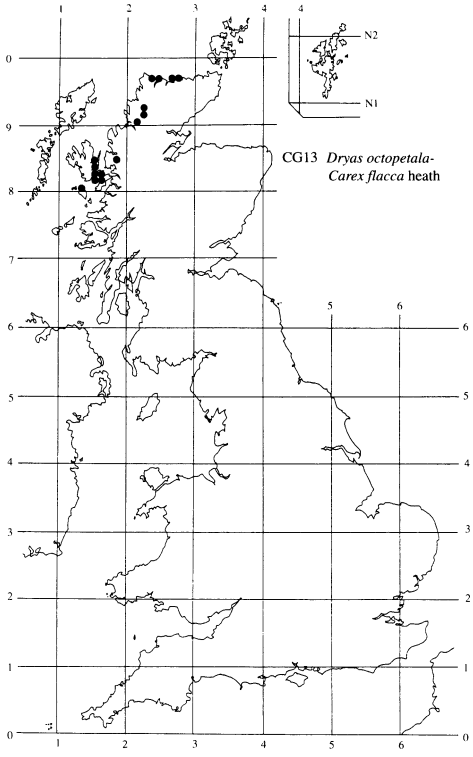

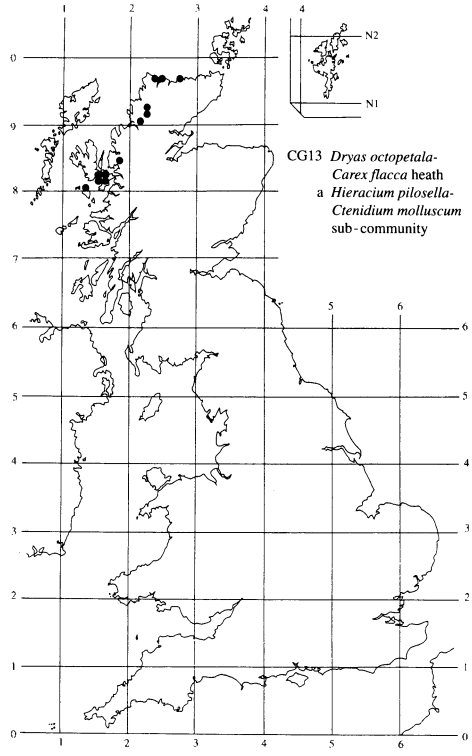

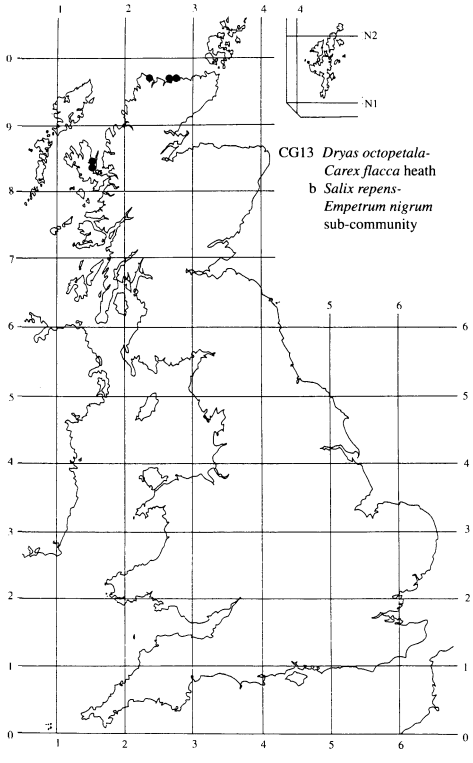

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