M17
Scirpus cespitosus-Eriophorum vaginatum blanket mire

Synonymy

Scirpetum cespitosi Watson 1932, Fraser 1933, Tansley 1939 *p.p.*; *Trichophoreto-Eriophoretum typicum* McVean & Ratcliffe 1962, Birks 1973, Evans *et al.* 1977; *Juncus squarrosus* bog McVean & Ratcliffe 1962 *p.p.*; *Pleurozia purpurea-Erica tetralix* Association Br.-Bl. & Tx. 1952 *sensu* Moore 1968 *p.p.*; *Eriophorum vaginatum* bog, low-level facies Edgell 1969; Blanket bog Ward *et al.* 1972; Mire nodum 12 Daniels 1978; *Calluno-Molinietum*: Hill & Evans 1978 *p.p.*; *Vaccinio-Eriophoretum* Hill & Evans 1978 *p.p.*; *Erico-Sphagnetum papillosi* Moore (1964) 1968 *emend.* Birse 1980 *p.p.*; *Erica tetralix-Sphagnum papillosum* mire Ratcliffe & Hattey 1982 *p.p.*; *Pleurozio-Ericetum tetralicis* Dierssen 1982 *p.p.*; Virgin peatland 1.ii & 1.iii Hulme & Blyth 1984; Disturbed peatland 3.iv Hulme & Blyth 1984.

Constant species

Calluna vulgaris, *Erica tetralix*, *Eriophorum angustifolium*, *E. vaginatum*, *Molinia caerulea*, *Narthecium ossifragum*, *Potentilla erecta*, *Scirpus cespitosus*, *Sphagnum capillifolium*, *S. papillosum*.

Rare species

Campylopus atrovirens var. *falcatus*, *C. setifolius*, *C. shawii*, *Sphagnum imbricatum*, *S. strictum*.

Physiognomy

The *Scirpus cespitosus-Eriophorum vaginatum* mire is a blanket bog community dominated by mixtures of monocotyledons, ericoid sub-shrubs and Sphagna, the two former groups of plants usually giving the vegetation its distinctive character when it is seen from a distance, but the last often occupying more of the ground, at least in wetter stands. The community can occur as extensive, fairly uniform tracts in which there is a fine-grained alternation of dominance among the species in these different elements from place to place; or, on mires with strong surface undulations, it can comprise the hummock component, with the plants showing a more obvious zonation in relation to the height of the water-table and the vegetation giving way in the hollows to Rhynchosporion pools.

Among the bulkier vascular species, the most common are *Scirpus cespitosus*, *Eriophorum vaginatum*, *Molinia caerulea*, *Calluna vulgaris* and *Erica tetralix*, mixtures of which form an uneven-topped tier, 2–3 dm tall and often rather open. The high frequency of *E. vaginatum* is one of the features which helps distinguish this vegetation from the most closely-related kind of wet heath, the *Scirpus-Erica* community, with which it is often associated; though, in fact, *E. vaginatum* is rarely very abundant here and never a consistent co-dominant, as it is in most types of *Calluna-Eriophorum* mire. *Molinia*, on the other hand, and, to a lesser extent, *Scirpus*, are more frequent than they are in either the *Calluna-Eriophorum* or the *Erica-Sphagnum papillosum* mire, and usually more abundant: together with *Calluna*, they often contribute most of the vascular cover in this community. *E. tetralix* is generally less extensive and, on drier ground, it becomes distinctly patchy but, with *Molinia*, it can extend into somewhat wetter situations than the other dominants and typically replaces *Calluna* as the leading ericoid in transitions to Rhynchosporion hollows. Variation in the proportions of these species is also affected by treatments and different patterns of dominance have sometimes been recognised in the names given to this kind of vegetation, as in the *Scirpetum* of Tansley (1939), the *Calluno-Molinietum* of Hill & Evans (1978) and the *Calluna* mire of Hulme & Blyth (1984).

One other species represented with occasional local abundance in this stratum of the vegetation and, among Sphagnetalia mires, preferential to this community and the *Narthecio-Sphagnetum*, is *Myrica gale*, but it is largely confined to the wetter *Drosera-Sphagnum* subcommunity and, even there, is rather patchy. Where *Myrica* is prominent, it can run on from stands of this community into neighbouring areas of *Scirpus-Erica*

wet heath, tending to mask floristic distinctions among smaller associates. *Erica cinerea*, *Vaccinium myrtillus* and *Empetrum nigrum* ssp. *nigrum* can also occur, but they are preferential to the drier *Cladonia* and *Juncus-Rhytidiadelphus* sub-communities and typically of low cover. The limited role of the last two of these sub-shrubs is a further contrast with the *Calluna-Eriophorum* mire where, with the Arctic-Alpine *E. nigrum* ssp. *hermaphroditum* and *V. vitis-idaea*, they are of much importance. *Rubus chamaemorus*, an Arctic-Subarctic plant also very characteristic of that community, is likewise very scarce here.

Among the vascular associates, *Eriophorum angustifolium* and *Narthecium ossifragum* maintain high frequencies throughout and each can be found with moderate local abundance, tending to become more noticeable on wetter ground, as around hollows, where the cover of some of the vascular dominants thins. *Drosera rotundifolia* also becomes very common in wetter areas but *Vaccinium oxycoccos* and *Andromeda polifolia*, which often accompany it in the *Erica-Sphagnum papillosum* mire, are characteristically very scarce. On the positive side, the *Scirpus-Eriophorum* mire can be distinguished from most other kinds of Sphagnetalia mires by the constancy of *Potentilla erecta* and the occasional occurrence of *Polygala serpyllifolia*. Other species found at low frequencies throughout are *Pedicularis sylvatica* (including ssp. *hibernica*: Webb 1956), *Huperzia selago*, *Juncus acutiflorus*, *Festuca ovina* and *Carex echinata*, and the community provides an important locus for *C. pauciflora*, though it is not very common. Transitions to Rhynchosporion hollows are often marked by a marginal band of *Rhynchospora alba* and, particularly where there is soligenous influence, *Carex panicea* and *Pinguicula vulgaris* can occur. *Schoenus nigricans* can very occasionally be found in such places, though most occurrences of this plant on our blanket mires are in the *Carex* soakways of *Scirpus-Erica* wet heath, a striking contrast to the situation in western Ireland, where this plant is a constant in the counterpart of the *Scirpus-Eriophorum* mire (Doyle & Moore 1980, Doyle 1982). Nardetalia herbs are generally of restricted occurrence here, but *Juncus squarrosus* and *Nardus stricta* are found in drier situations and become especially frequent, with a number of other preferentials, in the *Juncus-Rhytidiadelphus* sub-community, which represents a floristic transition to the *Calluna-Eriophorum* mire and wet heath.

In the ground layer of the *Scirpus-Eriophorum* mire, Sphagna are of supreme importance though, even in the wettest stands, they are generally not so extensive as in the *Erica-Sphagnum papillosum* mire. Nonetheless, *Sphagnum capillifolium* and *S. papillosum* figure among the community constants and, particularly in the *Drosera-Sphagnum* sub-community, may be accompanied by *S. tenellum*, *S. subnitens* and, rather less frequently, by *S. compactum*, *S. palustre* and *S. auriculatum* in luxuriant carpets covering more than half of the ground. *S. cuspidatum* occurs occasionally throughout and wetter stands provide a locus for species of more restricted distribution like *S. strictum*, *S. fuscum* and *S. imbricatum*, though the last two are rather more characteristic of the *Calluna-Eriophorum* and *Erica-Sphagnum* mires respectively. *S. magellanicum*, a major peat-builder in the *Erica-Sphagnum* mire, is typically scarce here, though it tends to increase in blanket mire vegetation which is transitional to that community (on the Silver Flowe mires, for example: Ratcliffe & Walker 1958). Over more even stretches of wet ground, carpets and tussocks of the Sphagna form an irregular patchwork, variously tinted in shades of green, yellow, pink and ochre, but, with more marked differentiation of hummocks they show a clear zonation in relation to the height of the water-table (see below).

Very characteristically, the *Sphagnum* carpet provides a congenial habitat for a variety of leafy hepatics which occur as scattered shoots or in sometimes quite extensive mats. The community shares with other Sphagnetalia mires *Odontoschisma sphagni* and *Mylia anomala* (common also in the *Erica-Sphagnum papillosum* mire) and *Mylia taylori* (perhaps more typical of eroding *Sphagnum* and bare peat and frequent in some types of *Calluna-Eriophorum* mire). More distinctly preferential to the *Scirpus-Eriophorum* mire (and used to name its Irish equivalent) is *Pleurozia purpurea*, very obvious with its succulent purple or dark-orange shoots. Other hepatics recorded occasionally include *Kurzia pauciflora*, *Diplophyllum albicans*, *Scapania gracilis*, *Calypogeia fissa*, *C. sphagnicola*, *Cephalozia connivens*, *C. media*, *C. macrostachya* and *C. loitlesbergeri* (e.g. Birks 1973).

There is a complete transition within the community from stands of this kind, in which Sphagna and the associated hepatics are especially numerous and abundant, and those where only *S. papillosum* and/or *S. capillifolium* retain any frequency or prominence. In these latter situations, other species become important. *Racomitrium lanuginosum*, for example, is fairly common throughout but it increases in frequency and particularly in abundance on hummock tops and in degraded mires, helping to define the vegetation included in the *Cladonia* sub-community. Then, in the *Juncus-Rhytidiadelphus* sub-community, pleurocarpous mosses, such as *Hypnum jutlandicum*, *Rhytidiadelphus loreus*, *Pleurozium schreberi* and *Plagiothecium undulatum*, together with *Dicranum scoparium* and *Polytrichum commune*, all of them species of low frequency in wetter stands, become a common feature among the Nardetalia herbs. Other species which can be found in two or more of the sub-communities include *Campylo-*

pus atrovirens, *C. shawii*, *C. setifolius*, *C. paradoxus*, *Hylocomium splendens* and *Breutelia chrysocoma*.

Finally, lichens, especially larger *Cladonia* spp., can be a prominent element in the ground carpet. In general, they tend to follow *Racomitrium lanuginosum* in their frequency and abundance, becoming particularly important on the sides and tops of taller hummocks and over degraded surfaces. *C. impexa*, *C. uncialis* and *C. arbuscula* are the commonest species overall but individual stands of the *Cladonia* sub-community can show considerable enrichment. *Cornicularia aculeata* also occurs occasionally thoughout.

Sub-communities

***Drosera rotundifolia-Sphagnum* spp. sub-community:** *Trichophoreto-Eriophoretum typicum* McVean & Ratcliffe 1962 *p.p.*; *Pleurozia purpurea-Erica tetralix* Association Br.-Bl. & Tx. 1952 *sensu* Moore 1968 *p.p.*; *Trichophoreto-Eriophoretum* Birks 1973 *p.p.*; *Calluno-Molinietum*, wetter facies Hill & Evans 1978; *Erico-Sphagnetum papillosi*, Typical subassociation Moore (1964) 1968 *emend.* Birse 1980 *p.p.*; *Erica tetralix-Sphagnum papillosum* mire Ratcliffe & Hattey 1982 *p.p.*; Typical virgin mire 1.ii Hulme & Blyth 1984. This sub-community has generally formed the core of previous definitions of this kind of mire and it has the most consistent representation of all the community constants and the richest and most extensive carpets of Sphagna. Among the vascular dominants, mixtures of *Calluna* and *Scirpus* or *Calluna* and *Molinia* usually make up the bulk of the cover overall, with *Eriophorum vaginatum* sometimes showing local abundance on more elevated areas, *Erica tetralix* tending to increase in the wetter, such zonations being especially obvious where hummocks and hollows are strongly differentiated. Occasionally, *Molinia* can be much more obviously dominant over the other species, a situation that seems to be particularly associated with a reduction in the cover of *Scirpus* and, more noticeably, of *E. vaginatum*. *Myrica* is preferentially frequent in this sub-community and locally abundant, but it is rather irregular in its representation and can be totally absent from some areas (as on Rhum, for example: McVean & Ratcliffe 1962). *Vaccinium myrtillus* and *Empetrum nigrum* ssp. *nigrum* hardly ever occur but *Erica cinerea* can be found occasionally in drier places, where the vegetation grades to the *Cladonia* sub-community.

Among the vascular associates, *Drosera rotundifolia* is strongly preferential here and particularly frequent around wetter hollows, where it can occasionally be accompanied by *D. anglica* or *D. intermedia*. In such situations, too, there can be a little *Carex echinata*, *C. pauciflora* or *C. limosa* and, in more obvious transitions to Rhynchosporion hollows, the *Drosera-Sphagnum* sub-community terminates below in a fringe of *Rhynchospora alba*, among which there may be scattered plants of *Juncus bulbosus/kochii*, *Menyanthes trifoliata* and *Utricularia* spp. Areas with some soligenous influence can show a local abundance of *Carex panicea* and *Pinguicula vulgaris*, with scattered tussocks of *Schoenus nigricans*.

Sphagna are especially varied and extensive in this sub-community and, over undulating ground, they show an obvious zonation over the hummocks and transitions to hollows. The most abundant species are generally *S. capillifolium*, which is concentrated over the hummock sides and tops, and *S. papillosum*, which assumes dominance around the lower fringes of the hummocks and sometimes forms tussocky lawns in flatter wet areas, at around the level of the water-table. *S. compactum* occurs occasionally, mostly among the *S. capillifolium*, with *S. tenellum* and *S. subnitens* frequent among the *S. papillosum*. *S. auriculatum* and *S. cuspidatum* can also be found in the wetter zone, and it is these which become dominant with the switch to Rhynchosporion pool vegetation.

Leafy hepatics are common among the *Sphagnum* carpet, with *Pleurozia purpurea* and *Odontoschisma sphagni* strongly preferential to this sub-community, *Mylia anomala* and *M. taylori* also occurring occasionally. *Campylopus atrovirens* is also somewhat better represented here than elsewhere in the community and there are records, too, for *C. shawii* and *C. setifolius*. *Racomitrium lanuginosum* is also frequent, occurring generally as scattered shoots among the Sphagna right down to water-level, but, with the larger *Cladonia* spp., it does not make the prominent contribution to the ground cover typical of the next sub-community.

***Cladonia* spp. sub-community:** *Trichophoreto-Eriophoretum typicum p.p.* & *Rhacomitrium*-rich type McVean & Ratcliffe 1962; *Pleurozia purpurea-Erica tetralix* Association Br.-Bl. & Tx. 1952 *sensu* Moore 1968 *p.p.*; *Trichophoreto-Callunetum* Birks 1973 *p.p.*; *Calluno-Molinietum*, drier facies Hill & Evans 1978; Mire nodum 12 Daniels 1978; *Erico-Sphagnetum papillosi*, Typical subassociation Moore (1964) 1968 *emend.* Birse 1980 *p.p.*; Dry virgin mire 1.iii Hulme & Blyth 1984. *Calluna* and *Scirpus* are fairly consistent co-dominants in this sub-community, with *Molinia* and *Erica tetralix* generally playing a subordinate role and *Eriophorum vaginatum* distinctly patchy and usually of low cover. *Myrica* is scarce and never abundant but *Erica cinerea* becomes quite frequent and can be locally prominent. *Drosera rotundifolia* and species associated with transitions to Rhynchosporion hollows are uncommon but there are occasional records for Nardetalia herbs such as *Nardus stricta* and *Juncus squarrosus*.

The ground layer, too, shows distinctive features.

Most obviously, the *Sphagnum* carpet is much impoverished compared with the previous sub-community, with even *S. papillosum* much reduced in frequency and *S. tenellum*, *S. subnitens* and *S. auriculatum* very scarce, leaving *S. capillifolium* as the leading species and this often rather patchy. The associated leafy hepatics of the *Drosera-Sphagnum* sub-community are likewise uncommon here, though *Mylia taylori* and *Diplophyllum albicans* are preferential at low frequencies and locally prominent amongst decaying *Sphagnum* tussocks and on patches of exposed bare peat. Much more obvious, however, is the increased frequency and abundance of *Racomitrium lanuginosum* and *Cladonia* spp., with *C. impexa*, *C. uncialis* and *C. arbuscula* sometimes exceeding the Sphagna in their cover, and *C. coccifera* and *C. pyxidata* occurring less commonly as a crust on bare peat. *Hypnum cupressiforme/jutlandicum* is frequent and *Dicranum scoparium* and *Campylopus paradoxus* are occasionally found.

***Juncus squarrosus-Rhytidiadelphus loreus* sub-community:** *Juncus squarrosus* bog McVean & Ratcliffe 1962 *p.p.*; *Eriophorum vaginatum* bog, low-level facies Edgell 1969; *Vaccinio-Eriophoretum* Hill & Evans 1978 *p.p.*; *Calluna* mire 3.iv Hulme & Blyth 1984 *p.p. Calluna* and *Scirpus* are again the usual vascular dominants in this kind of *Scirpus-Eriophorum* mire, with *Erica tetralix* and especially *Molinia* reduced in frequency and abundance. *Eriophorum vaginatum*, however, is more common than in the last sub-community and locally of quite high cover. *Myrica* is absent and *Erica cinerea* very scarce but the sub-shrub component is frequently enriched by small amounts of *Vaccinium myrtillus* and, rather less commonly, by *Empetrum nigrum* ssp. *nigrum* and it is in this sub-community that the very few records for *V. vitis-idaea*, *E. nigrum* ssp. *hermaphroditum* and *Rubus chamaemorus* in the *Scirpus-Eriophorum* mire generally occur.

Associated with these features is a marked increase in the frequency of *Juncus squarrosus*, *Nardus stricta*, *Deschampsia flexuosa* and *Carex nigra* with, somewhat less common but still preferential, *Agrostis canina* ssp. *canina*, *Anthoxanthum odoratum* and *Luzula multiflora*. The first four of these species can be found in some moderate abundance but typically they all occur as scattered tufts.

As in the *Cladonia* sub-community, the *Sphagnum* cover consists of but few species with only *S. capillifolium* and *S. papillosum* being frequent and *S. subnitens* occurring occasionally. Here, however, *S. papillosum* is usually the most abundant member of the suite, being best represented in stands where *Erica tetralix* and *Eriophorum vaginatum* also show some prominence and where Nardetalia herbs are more sparse. *Racomitrium* is quite frequent but *Cladonia* spp. are uncommon and the most distinctive feature of the ground layer is the strong contingent of pleurocarpous and some acrocarpous mosses. *Hypnum cupressiforme/jutlandicum*, *Rhytidiadelphus loreus*, *Pleurozium schreberi* and *Dicranum scoparium* are all very frequent, *Polytrichum commune*, *P. alpestre*, *Plagiothecium undulatum*, *Aulacomnium palustre*, *Ptilidium ciliare*, *Pohlia nutans* and *Campylopus paradoxus* more occasional but still preferential. *Lophocolea bidentata s.l.* and *Lophozia ventricosa* can also sometimes be found. As with most of the preferential herbs, these plants are generally not abundant but the total effect they create can give the vegetation a quite different look from other kinds of *Scirpus-Eriophorum* mire.

Habitat

The *Scirpus-Eriophorum* mire is the characteristic blanket bog vegetation of the more oceanic parts of Britain, occurring extensively on waterlogged ombrogenous peat that has accumulated in the consistently humid climate of the far-west. It is essentially a community of lower altitudes and the composition of the vegetation reflects the relative mildness of the climate, but floristics and structure have also been widely affected by a variety of treatments, including burning, grazing, draining and peat-cutting, and these have often contributed, perhaps with climatic change, to the deterioration and loss of the community.

Blanket peat in Britain is confined to those parts of the country with a consistently wet climate, generally where there are more than 1200 mm of precipitation annually (*Climatological Atlas* 1952) or, more precisely, over 160 wet days yr^{-1} (Ratcliffe 1968, 1977), and where cool and cloudy conditions help maintain high humidity throughout the year, restricting even summer potential water deficit to near-zero. Within this zone, which corresponds by and large with the western and northern uplands, the *Scirpus-Eriophorum* mire is characteristic of lower altitudes where extreme humidity is combined with relative mildness of winter climate. It is most extensive in areas with more than 200 wet days yr^{-1} and over 2000 mm of rain but largely restricted to sites below 500 m, where the annual temperature range is comparatively small. Its range is thus centred in the lower hills of the western Highlands of Scotland and in the Isles, where accumulation of blanket peat has been especially widespread, extending down almost to sea-level, on to moderately steep slopes and over pervious and non-acidic substrates. In areas with a drier climate, such topographic and geological factors increasingly inhibit the development of a peat mantle so, to the south and east, the community tends to be of more restricted occurrence and to penetrate to somewhat higher altitudes where moderately heavy rainfall is maintained. It can be found in south-west Scotland, the Lake District

and Wales and on Dartmoor and Bodmin Moor where there are 180–200 wet days yr^{-1} and it occurs locally in the eastern Highlands. But the effect of decreasing oceanicity of climate is especially marked in traversing Scotland and, where blanket peat has accumulated in the wet but harsh climate of high plateaus, both there and all down the Pennines, the *Scirpus-Eriophorum* mire is replaced by the *Calluna-Eriophorum* mire. Altitudinal separation of the two communities is fairly well maintained throughout their ranges: the mean level of the former is around 300 m, that of the latter over 550 m.

Over the blanket peats of the oceanic zone, the *Scirpus-Eriophorum* mire is typically found on deposits that are maintained in a permanently waterlogged state by a high and generally stagnant water-table. It thus usually occurs on deeper peats (2–4 m or so) over flat or gently-sloping ground (mean 4°, range 0–25°), on broader valley bottoms and their immediate surrounds and on low-level plateaus and watersheds. In more rugged country, as in the west-central Highlands and the Lake District, it therefore tends to be of rather restricted occurrence; whereas, on extensive plains, like those of the Sutherland flow country, stands of the community can stretch virtually uninterrupted for many square kilometres, making a major contribution to a bleak landscape that is almost unrivalled in scale through the whole of western Europe (McVean & Ratcliffe 1962, Ratcliffe 1977).

The peats show varying degrees of humification but are typically highly acidic, with a surface pH usually not much above 4 and often less, and very impoverished. The difference which permanent waterlogging of such substrates makes to the character of the vegetation is best seen by comparing the *Scirpus-Eriophorum* mire with the *Scirpus-Erica* wet heath, the Ericetalia community which has virtually the same oceanic distribution, but which is characteristic of better-drained and usually shallower peats (often less than 2 m) on steeper slopes (mean 8°, range 0–42°). The two vegetation types have many species in common, including potential Oxycocco-Sphagnetea dominants like *Scirpus*, *Molinia* and *E. tetralix*, and also *Calluna*, *Potentilla erecta*, *Polygala serpyllifolia* and *Pedicularis sylvatica*. But the switch to Sphagnetalia vegetation in the very wet conditions here is marked by the great increase in the importance of Sphagna to the composition of the vegetation and the maintenance of a thick organic substrate. In the *Scirpus-Erica* wet heath, the *Sphagnum* carpet is rather patchy and *S. capillifolium* is generally the leading species, with increase in abundance and diversity in this element of the vegetation usually being associated with local soligenous influence. In the *Scirpus-Eriophorum* mire, by contrast, fairly luxuriant *Sphagnum* cover is the rule with *S. papillosum*, a species of restricted occurrence in the *Scirpus-Erica* wet heath, becoming of major significance as a peat-builder on the mire plane, tending to dominate the carpet around the level of the water-table, with other species disposed among it or above and below it where there is differentiation of surface relief. The occurrence of hummocks and hollows here, and of full transitions to Rhynchosporion vegetation in pools, is in fact very variable: it tends to be more pronounced on bogs in the extreme oceanic zone of which the *Scirpus-Eriophorum* mire is most typical, but even there can be quite local. How it develops and what part it plays in bog growth are subjects of considerable discussion: deep peat-cuttings sometimes reveal stratigraphical patterns which suggest a cyclical alternation of hummock and hollow at particular points (e.g. Osvald 1949), but this is not always seen. What does seem certain is that Sphagna have generally made the major contribution to autogenic peat accumulation here, at least on deeper, level bogs (McVean & Ratcliffe 1962).

One other important floristic distinction between the *Scirpus-Eriophorum* mire and the *Scirpus-Erica* wet heath, and likewise signalling the shift from Ericetalia to Sphagnetalia vegetation with more consistent waterlogging, is the constancy of *Eriophorum vaginatum*. However, although remains of this species, together with *E. angustifolium*, *Scirpus* and the ericoids, can be seen in shallower peats where the community extends on to sloping ground (McVean & Ratcliffe 1962), *E. vaginatum* itself is not usually very abundant: it is locally prominent on hummocks but, as noted above, is nothing like so consistently important as in the *Calluna-Eriophorum* mire. This is probably a response to climate: *E. vaginatum* is a circumpolar plant and, in the very extreme oceanic climate of western Ireland, it becomes an even more insignificant component of blanket mire vegetation (Tansley 1939, Moore 1968, Doyle & Moore 1980, Doyle 1982).

The influence of oceanicity on the floristics of the *Scirpus-Eriophorum* mire can be seen in a number of other features of the community which set it apart from the *Calluna-Eriophorum* mire. First, there is the almost total exclusion at these lower altitudes of the Arctic-Subarctic *Rubus chamaemorus* and the Arctic-Alpine *Vaccinium vitis-idaea*, *V. uliginosum* and *Empetrum nigrum* ssp. *hermaphroditum*. Second, on the positive side, there is the constancy and abundance of *Molinia* and the frequent occurrence of *Myrica*, essentially a lowland species, in the *Scirpus-Eriophorum* mire. *E. tetralix* is also better represented here and *E. cinerea* figures on drier peats in the community: both these subshrubs are physiologically active in winter and somewhat oceanic in their British distribution (Gimingham 1972). Then, there are differences among the bryophytes, not so much among the Sphagna, where only *S. auriculatum* and the low-frequency *S. strictum* and *S. imbricatum* show preferences for a western climate (Rat-

cliffe 1968), but in species like *Odontoschisma sphagni*, *Pleurozia purpurea*, *Campylopus atrovirens* and *C. setifolius*. The last three of these tend overall to be more characteristic of wet rocks and banks but, in the extremely wet climate of western Britain, they move in to the blanket mire habitat (Ratcliffe 1968). Various of these floristic trends continue into the blanket mires of western Ireland where, in the *Pleurozio-Ericetum*, *Molinia* is often very prominent and *C. atrovirens* and the leafy hepatics of high frequency (Braun-Blanquet & Tüxen 1952, Moore 1968, Doyle & Moore 1980, Doyle 1982). One important difference between this Irish vegetation and the *Scirpus-Eriophorum* mire is that, in the very oceanic climate typical of the former, *Schoenus nigricans* becomes very common and often abundant on the mire plane, more or less as a physiognomic replacement for *E. vaginatum*. Within the range of the *Scirpus-Eriophorum* mire, by contrast, *Schoenus* is usually confined to soligenous areas where there is some local amelioration of the high concentrations of aluminium ions, to which it is very sensitive (Sparling 1962*b*, 1967*a*, *b*, 1968). It occurs very occasionally in the *Drosera-Sphagnum* sub-community, often with species like *Carex panicea* and *Pinguicula vulgaris*, indicative of modest base-enrichment (pH rising to above 5) but, for the most part, *Schoenus* flushes within tracts of the *Scirpus-Eriophorum* mire are best seen as a particular kind of soligenous *Scirpus-Erica* wet heath.

Much of the floristic character of the *Scirpus-Eriophorum* mire can thus be understood in relation to a gradient of oceanicity, which shows a fairly sudden rise with the altitudinal shift from cold, wet higher plateaus to the more equable western sea-board, and then a further, but gradual increase with the geographical move to western Ireland. Other features of the community seem to be related to the particular hydrological conditions that pertain within blanket peat as opposed to the ombrogenous deposits in raised bogs because, in the latter, the *Scirpus-Eriophorum* mire tends to be replaced by the *Erica-Sphagnum papillosum* mire. This community is concentrated in a somewhat less oceanic zone than the *Scirpus-Eriophorum* mire where massive peat accumulation is partly dependent upon the existence of a topogenous base developed in waterlogged hollows, but there is a considerable geographical and altitudinal overlap between the two communities and their habitats are not sharply separated: within stretches of blanket mire, local areas can have something of the character of raised bog, as on watershed cols or where flows occur over deeper, drift-lined basins, and some raised mires are so extensive as to be locally like blanket bogs (Ratcliffe & Walker 1958, McVean & Ratcliffe 1962, Ratcliffe 1977). In such situations, the communities grade one into another, but one character of fairly general significance for separating them seems to be the preference of *Sphagnum magellanicum* for the *Erica-Sphagnum* mire: Typically, this is not a major peat-builder in the *Scirpus-Eriophorum* mire. Also, two Continental Northern plants, *Vaccinium oxycoccos* and *Andromeda polifolia*, have their distributions very much centred on lowland, raised bogs of the *Erica-Sphagnum* type, and their conspicuous absence from the *Scirpus-Eriophorum* mire has often been remarked on (e.g. Birks 1973, Moore 1968, Doyle & Moore 1980, Doyle 1982).

Floristic variation within the *Scirpus-Eriophorum* mire can be related in part to differences in the factors already outlined. The *Drosera-Sphagnum* sub-community constitutes the core of the community, occurring throughout the range on the wettest peats, but being especially well developed in areas of highest rainfall and mildest climate. It comprises the bulk of the cover of oceanic blanket bog where this occurs as flat or gently undulating lawns, with *Sphagnum papillosum* and species like *Narthecium ossifragum* and *Drosera rotundifolia* becoming especially conspicuous, and, on mires with more pronounced surface relief, it includes most of the vegetation between the Rhynchosporion pools and the tops of the taller and drier hummocks, with an extensive and rich *Sphagnum* cover disposed in relation to the height of the water-table. It can also include bog runnels in which there is some slight soligenous influence and a modest representation of Caricion nigrae species.

The greater the proportion of drier peats within stretches of the *Scirpus-Eriophorum* mire, the more important is the contribution of the *Cladonia* sub-community. On virgin bogs within the oceanic zone, such a habitat is provided by the tops of the taller hummocks which are far removed from the direct influence of the water-table, so here there is a shift towards *Calluna* and *Scirpus* among the vascular dominants and away from the massive and diverse *Sphagnum* cover typical of wetter situations, its place in the ground layer being taken by *Racomitrium lanuginosum* and larger *Cladonia* spp., with sporadic occurrence of Nardetalia plants. *Erica cinerea* is also able to colonise, being perhaps less restricted on these ombrogenous peats than it is around Sphagnetalia valley bogs in the English lowlands by lower concentrations of toxic ferrous ions (Jones 1971*a*, *b*). Greater surface dryness is also a feature of virgin *Scirpus-Eriophorum* mire developed in areas of somewhat drier climate and many stands of the community in the zone of 180–200 wet days yr^{-1}, notably in south-west Scotland, are predominantly of the *Cladonia* type.

Some natural climatic change to drier atmospheric conditions may also have contributed to the development of the *Cladonia* sub-community on deeper peats but, very often, surface drying of these blanket peats has been accentuated (perhaps sometimes initiated) by treatment and this kind of *Scirpus-Eriophorum* mire has become very extensive, even within areas that still experience an extremely humid climate, because of

burning, peat-cutting and draining (e.g. McVean & Ratcliffe 1962, Hulme & Blyth 1984). Burning stretches of the community has a particularly drastic effect on the *Sphagnum* cover, even very wet carpets becoming susceptible to fire-damage in periods of drier weather in spring and summer, and it produces just the kind of dominance by *Scirpus* tussocks and *Racomitrium* hummocks so characteristic of some tracts of the *Cladonia* sub-community (McVean & Ratcliffe 1962). Marginal wastage of relatively undisturbed mantles of this oceanic blanket peat is not so pronounced as in the *Calluna-Eriophorum* mire but, where peat-cutting has occurred, or where there has been some attempt at marginal reclamation for grazing, the *Cladonia* sub-community can spread over drying baulks or the fretted margins of the bogs (e.g. Hulme & Blyth 1984).

Burning, and perhaps grazing, may also have contributed to the distinctive character of the *Juncus-Rhytidiadelphus* sub-community, but this, too, shows some relationship to natural differences in climate. Thus, though many of its preferentials are plants which become common in poor-quality Nardetalia hill-grazings, notably *Juncus squarrosus* and *Nardus stricta*, others are also very frequent plants in the *Calluna-Eriophorum* mire, like *Vaccinium myrtillus*, *Deschampsia flexuosa* and the hypnaceous mosses, and this sub-community includes some stretches of fairly undisturbed blanket bog occurring in environments intermediate between those of the two communities. Most of its occurrences are outside the very oceanic parts of western Britain, in eastern and south-west Scotland, and are at altitudes which have a mean some 250 m above those of the *Drosera-Sphagnum* sub-community. Here, *Eriophorum vaginatum* can assume a greater importance in the vegetation cover and there are very occasional records for such characteristic *Calluna-Eriophorum* associates as *Rubus chamaemorus*, *Vaccinium vitis-idaea* and *V. uliginosum*.

Zonation and succession

Zonations between the different kinds of *Scirpus-Eriophorum* mire and to other vegetation types are most often related to the height of the water-table and the degree of soligenous influence within stretches of blanket peat. Effects of treatment can overlie such transitions and they may precipitate a run-down of the vegetation through wet heath to dry heath and grassland. Without disturbance or any natural shift in the extreme oceanic conditions, the community subsists as a climatic climax.

Internal vegetational patterning on virgin tracts of oceanic blanket bog is most commonly related to the differentiation of surface microrelief. Then, the *Drosera-Sphagnum* sub-community occupies the bulk of the wetter ground, with the *Cladonia* sub-community picking out the tops of the drier hummocks, and Rhynchosporion vegetation occurring in the pools. Typically, within the range of the *Scirpus-Eriophorum* mire, this latter is represented by the *Sphagnum auriculatum* community: species like *Eriophorum angustifolium*, *Molinia*, *Narthecium* and *Drosera rotundifolia* may run some way into this vegetation, but there is a pronounced shift in the *Sphagnum* carpet to dominance of *S. auriculatum* and *S. cuspidatum* and stands are commonly marked by a fringe of *Rhynchospora alba*. It is in this kind of situation that species such as *Hammarbya paludosa* and *Scheuchzeria palustris* are recorded within tracts of *Scirpus-Eriophorum* mire. The clarity of differentiation of these pools, and the proportion of the mire surface occupied by their Rhynchosporion vegetation, vary considerably: they are best developed and most extensive in the zone with more than 200 wet days yr^{-1}, becoming less important in the southern part of the range of the community, as in Wales and on Dartmoor (Lindsay *et al.* 1984). But, even in the far north-west, their occurrence is quite variable and seems to be related to local accumulation of waters over depressions in the underlying ground or where there is channelling from the mire surrounds. Quite commonly, it is in just such situations that the *Scirpus-Eriophorum* mire approaches most closely to the *Erica-Sphagnum papillosum* mire, and is sometimes replaced by it (as in certain of the Silver Flowe mires: Ratcliffe & Walker 1958). The relationships between the two communities in these habitats, which are transitional between blanket and raised bogs, need further investigation.

Where there is a thinning of the cover of blanket peat and better drainage, as on steeper ground around valley bottoms or where plateaus give way to fringing hills above or slopes below, the *Scirpus-Eriophorum* mire is typically replaced throughout its range by the *Scirpus-Erica* wet heath. Some important vascular species, like *Scirpus*, *Molinia*, *Calluna* and *E. tetralix*, run on into this vegetation and their dominance throughout may mask other floristic changes, but *Eriophorum vaginatum* declines greatly in frequency, the *Sphagnum* carpet loses its variety and luxuriance, and any differentiation of surface relief is lost as the peat cover becomes drier and thinner. Such zonations can be quite abrupt where there is a fairly marked change of slope, but often they are gradual and the *Sphagnum* sub-community of the *Scirpus-Erica* wet heath, with its modest frequencies of *S. papillosum* and *E. vaginatum*, may then form a transitional zone. And the relative proportions of the two communities vary with regional climate and local topographical modification of it: in drier areas or on south-facing slopes, the whole sequence tends to move downslope, the mire becoming more confined to the flattest ground, the wet heath more extensive.

Such general zonations are complicated by soligenous influence which tends to cut across the transitions down the lines of steeper slope. Most often, in these oceanic

blanket mires, areas of more pronounced seepage are marked by the *Carex* sub-community of the *Scirpus-Erica* wet heath, which can form quite extensive stands over slopes with some through-put or narrow, sinuous strips along obvious soakways. These can run through both the wet heath and the *Scirpus-Eriophorum* mire and then out of the bog along the silty margins of streams. They are frequently marked by a local dominance of *Molinia* and *Myrica* but more open stands can provide the most usual locus for *Schoenus nigricans* within British blanket mire.

Altitudinal zonations from the *Scirpus-Eriophorum* mire to the *Calluna-Eriophorum* mire are not very frequent because low- and high-level stretches of flatter ground are often separated by intervening slopes: in the north-west Highlands, for example, the two communities are separated by a zone of the *Scirpus-Erica* wet heath on better-drained blanket peat. But, in some places, generally between 300 and 450 m, the two can grade imperceptibly one into the other and, in eastern Scotland particularly, the *Juncus-Rhytidiadelphus* sub-community represents an intermediate kind of blanket mire.

Treatments, among which burning has probably been of special importance, can modify all these kinds of zonations and induce successional changes in the *Scirpus-Eriophorum* mire. In some cases, where differences of surface-drainage are very marked, burning may actually sharpen up the vegetation boundaries by allowing different species to gain ascendancy on wetter or drier ground: *Eriophorum vaginatum*, for example, may become locally dominant after fire in the *Scirpus-Eriophorum* mire but not in the adjoining heath. In other cases, burning may impose a fairly uniform dominance of *Scirpus* or *Molinia* throughout the sequence, blurring zonations among the associates, and some tracts of such fire-climax vegetation may have been partly or wholly derived from the community.

But, apart from such modifications of dominance, burning has probably played a major part, along with marginal peat-cutting and draining, in the surface-drying of the peats that precipitates more dramatic changes in the vegetation. The *Cladonia* sub-community can represent the first stage in such a development which, with the final elimination of *E. vaginatum* and further impoverishment of the *Sphagnum* carpet, perhaps moves to the *Cladonia* sub-community of the *Scirpus-Erica* wet heath. *Erica cinerea* is the potential vascular dominant that seems to gain ascendancy on such drying peats in more oceanic regions (e.g. Goode & Lindsay 1979, Hulme & Blyth 1984) and *Calluna-Erica* heath may represent an end point in such a run-down. At higher altitudes, in areas with a somewhat drier climate, an analogous trend may involve the conversion of the *Juncus-Rhytidiadelphus* sub-community of the *Scirpus-Eriophorum* mire to the *Vaccinium* sub-community of the *Scirpus-Erica* wet heath, where *Vaccinium myrtillus* can become an important sub-shrub, perhaps presaging a switch to *Calluna-Vaccinium* heath. Certainly, complex mosaics of intermediate stages in such processes, approximating to various kinds of *Scirpus-Erica* heath, with fragments of *Scirpus-Eriophorum* mire, are of widespread occurrence on deeper peats that would naturally be expected to be clothed with extensive tracts of the latter. Grazing and improvement may take the process further beyond the dry-heath phase to grasslands of various kinds: on Lewis, for example, the crofting townships are fringed by Junco-Molinion swards and *Lolio-Cynosuretum* that have been derived from blanket mire by top-sowing and the addition of shell-sand and ratio fertilisers (Hulme & Blyth 1984).

It is possible that natural climatic change has played some part in the degeneration of blanket peats occupied by the *Scirpus-Eriophorum* mire. This kind of ombrogenous bog appears to have been initiated locally at the Boreal/Atlantic transition about 7000 years ago and to have resumed rapid growth following climatic deterioration between 600 BC to 500 AD, often spreading to replace forest, tree stumps of which are frequently preserved beneath the peat. However, despite some subsequent amelioration of the climate, it probably remains a climax vegetation type in more oceanic parts of the country.

Distribution

The *Scirpus-Eriophorum* mire is largely confined to western Britain, being especially widespread in the western Highlands of Scotland and the western Isles and running down through south-west Scotland, the Lake District, Wales and south-west England. The *Drosera-Sphagnum* sub-community occurs throughout the range, but is particularly extensive in north-west Scotland. The *Cladonia* and *Juncus-Rhytidiadelphus* sub-communities also occur in the west, but they extend the range of the community on to drier peats, in areas with lower rainfall and at higher altitudes, most notably in south-west and eastern Scotland.

Affinities

As defined here, the *Scirpus-Eriophorum* mire represents an expanded version of the vegetation type first described as *Trichophoreto-Eriophoretum typicum* by McVean & Ratcliffe (1962) and later by Birks (1973) and Evans *et al.* (1977), though not by Eddy *et al.* (1969) whose community of that name can be largely subsumed within the *Calluna-Eriophorum* mire. In these schemes, *Trichophoreto-Eriophoretum* consists largely of the vegetation included here in the *Drosera-Sphagnum* sub-community, though some samples approach the *Cladonia* sub-community in their composition. The *Calluno-*

Molinietum of Hill & Evans (1978), although named by the pattern of dominance, is essentially *Scirpus-Eriophorum* mire and it very obviously takes in both these sub-communities, which these authors distinguished as wetter and drier facies. And their *Vaccinio-Eriophoretum* corresponds closely with the *Juncus-Rhytidiadelphus* sub-community, vegetation previously given only scant recognition in, for example, part of the *Juncus squarrosus* bog of McVean & Ratcliffe (1962). The study of Hebrides mires by Hulme & Blyth (1984) provides a local definition of all three sub-communities, together with transitions to degraded and improved peatland vegetation.

Many accounts of British ombrogenous bogs follow McVean & Ratcliffe (1962) in recognising just two major communities, diagnosed here as the *Scirpus-Eriophorum* mire and the *Calluna-Eriophorum* mire (an expanded version of their *Calluneto-Eriophoretum*). These grade one into the other, through the *Juncus-Rhytidiadelphus* sub-community of the former, but are generally well defined, both floristically and environmentally, the former as our major low-altitude and more oceanic blanket bog, the latter the predominant type of higher altitudes and less oceanic climates. The situation has been complicated by the recognition of a third type of ombrogenous mire, best represented in low-altitude raised bogs in moderately oceanic areas, but showing some geographical overlap with and floristic transition to both the communities. This is the vegetation type which Moore (1968) termed the *Erico-Sphagnetum magellanici*, and which is here called the *Erica-Sphagnum papillosum* mire. Some early accounts of British mires include ombrogenous vegetation which is essentially of this kind (e.g. Godwin & Conway 1939, Pearsall 1941, Ratcliffe & Walker 1958), though they did not distinguish it explicitly from the *Scirpus-Eriophorum* type. In fact, the separation of the two communities can be difficult, particularly if individual samples are examined in isolation but, in their typical forms, they are quite distinct: the contrast between them has sometimes been recognised in the conspicuous absence from the *Scirpus-Eriophorum* mire of *Vaccinium oxycoccos* and *Andromeda polifolia* (e.g. Birks 1973). Some recent studies have, however, confounded distinctions between the communities: the *Erica-Sphagnum magellanicum* mire of Ratcliffe & Hattey (1982), for example, includes samples better seen as *Scirpus-Eriophorum* mire (as well as much *Scirpus-Erica* wet heath) and the *Erico-Sphagnetum papillosi* of Birse (1980) takes in parts of the *Scirpus-Eriophorum*, *Erica-Sphagnum papillosum* and *Calluna-Eriophorum* mires.

The general similarity between the *Scirpus-Eriophorum* mire and the blanket bog vegetation of western Ireland has long been recognised (e.g. Tansley 1911, 1939, Osvald 1949, McVean & Ratcliffe 1962) and the two were grouped together by Moore (1968: see also Doyle & Moore 1980) in a single association, the *Pleurozio-Ericetum tetralicis*, first defined from Eire by Braun-Blanquet & Tüxen (1952). Subsequent detailed description of Irish stands of this vegetation type (Doyle 1982) has emphasised the very close relationships, but we have preferred here to maintain a distinction on the basis of the poorer representation in the *Scirpus-Eriophorum* mire of *Schoenus nigricans*, *Rynchospora alba*, *Drosera anglica*, *Campylopus atrovirens* and the numerous algae grouped as *Zygogonium ericetorum*, and its higher frequency of *Eriophorum vaginatum*.

Nonetheless, the *Scirpus-Eriophorum* mire and its Irish counterpart together clearly represent an oceanic extreme within the western European mires of the Sphagnetalia which Moore (1968), following Schwickerath (1940) and Duvigneaud (1949), grouped into a single alliance, which he termed the Erico-Sphagnion, distinguished from the Sphagnion fusci peatland communities of the central European uplands and Scandinavia by the absence of Arctic-Alpine and Boreal plants. In the *Scirpus-Eriophorum* mire, the floristic boundary between the Sphagnetalia and the wet-heath vegetation of the Ericetalia is fairly well defined, though the community is often found in contact with the *Scirpus-Erica* wet heath and can be converted to it with drying of the peats.

Floristic table M17

	a	b	c	17
Scirpus cespitosus	V (1–8)	V (1–8)	V (1–9)	V (1–9)
Calluna vulgaris	V (1–7)	V (1–8)	V (1–9)	V (1–9)
Erica tetralix	V (1–5)	V (1–6)	III (1–6)	V (1–6)
Narthecium ossifragum	V (1–5)	V (1–6)	IV (1–9)	V (1–9)
Eriophorum angustifolium	IV (1–6)	IV (1–5)	IV (1–9)	IV (1–9)
Eriophorum vaginatum	IV (1–8)	III (1–6)	IV (1–5)	IV (1–8)
Potentilla erecta	IV (1–4)	III (1–4)	IV (1–4)	IV (1–4)

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Floristic table M17 *(cont.)*

	a	b	c	17
Sphagnum capillifolium	V (1–8)	IV (1–6)	III (1–4)	IV (1–8)
Sphagnum papillosum	IV (1–9)	II (1–8)	IV (1–6)	IV (1–9)
Molinia caerulea	V (1–8)	IV (1–7)	II (1–6)	IV (1–8)
Drosera rotundifolia	IV (1–4)	II (1–4)	I (1–3)	III (1–4)
Sphagnum subnitens	III (1–4)	I (1–4)	II (1–6)	III (1–6)
Pleurozia purpurea	III (1–4)	I (1–3)	I (1–3)	II (1–4)
Sphagnum tenellum	III (1–4)	I (1–4)	I (1–4)	II (1–4)
Odontoschisma sphagni	III (1–3)	I (1–4)	I (1–4)	II (1–4)
Myrica gale	III (1–6)	I (1–8)		II (1–8)
Carex echinata	II (1–4)	I (1–3)	I (1–3)	I (1–4)
Sphagnum auriculatum	II (1–4)	I (1–4)	I (1–3)	I (1–4)
Sphagnum palustre	II (1–5)	I (1–6)	I (1–4)	I (1–6)
Sphagnum compactum	II (1–5)	I (1–2)		I (1–5)
Drosera anglica	I (1–4)			I (1–4)
Schoenus nigricans	I (1–4)			I (1–4)
Racomitrium lanuginosum	III (1–6)	IV (1–10)	II (1–5)	III (1–10)
Cladonia uncialis	II (1–5)	IV (1–4)	I (1–3)	II (1–5)
Cladonia impexa	II (1–5)	IV (1–10)	I (1–3)	II (1–10)
Hypnum cupressiforme	I (1–4)	III (1–7)	II (1–4)	II (1–7)
Cladonia arbuscula	I (1–3)	II (1–9)	I (1–3)	I (1–9)
Erica cinerea	I (1–4)	II (1–6)	I (1–3)	I (1–6)
Mylia taylori	I (1–3)	II (1–4)	I (1)	I (1–4)
Diplophyllum albicans	I (1)	II (1–4)		I (1–4)
Hylocomium splendens	I (1–2)	II (1–4)		I (1–4)
Luzula multiflora		II (1–4)		I (1–4)
Juncus squarrosus	I (1–4)	II (1–4)	IV (1–4)	II (1–4)
Hypnum jutlandicum	I (1–3)	II (1–4)	III (1–4)	II (1–4)
Nardus stricta	I (1–2)	II (1–4)	III (1–4)	II (1–4)
Rhytidiadelphus loreus	I (1–4)	I (1–3)	III (1–4)	II (1–4)
Deschampsia flexuosa	I (1–3)	I (1)	III (1–4)	II (1–4)
Vaccinium myrtillus		I (1–3)	III (1–4)	I (1–4)
Pleurozium schreberi		I (1)	III (1–4)	I (1–4)
Dicranum scoparium		I (1–2)	III (1–3)	I (1–3)
Empetrum nigrum nigrum	I (1–3)	I (1–2)	II (1–4)	I (1–4)
Polytrichum commune	I (1–4)	I (1–4)	II (1–6)	I (1–6)
Carex nigra	I (1)	I (1)	II (1–7)	I (1–7)
Agrostis canina canina		I (1)	II (1–4)	I (1–4)
Plagiothecium undulatum		I (1)	II (1–4)	I (1–4)
Aulacomnium palustre			II (1–3)	I (1–3)
Polytrichum alpestre			II (1–4)	I (1–4)
Vaccinium vitis-idaea			I (1–3)	I (1–3)
Anthoxanthum odoratum			I (1–3)	I (1–3)
Galium saxatile			I (1–2)	I (1–2)
Rhytidiadelphus squarrosus			I (1–4)	I (1–4)

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Lophozia ventricosa			I (1–3)	I (1–3)
Pohlia nutans			I (1–2)	I (1–2)
Ptilidium ciliare			I (1–3)	I (1–3)
Polygala serpyllifolia	II (1–4)	II (1–3)	I (1–3)	II (1–4)
Sphagnum cuspidatum	I (1–4)	I (1–7)	I (1–4)	I (1–7)
Campylopus atrovirens	I (1–2)	I (1–5)	I (4)	I (1–5)
Huperzia selago	I (1–3)	I (1–4)	I (1)	I (1–4)
Cornicularia aculeata	I (1–2)	I (1–3)	I (1–3)	I (1–3)
Pedicularis sylvatica	I (1–2)	I (1–2)	I (1–2)	I (1–2)
Mylia anomala	I (1–2)	I (1–3)	I (1–3)	I (1–3)
Breutelia chrysocoma	I (1)	I (1–3)	I (1–3)	I (1–3)
Pinguicula vulgaris	I (1–4)	I (1–5)	I (1)	I (1–5)
Carex panicea	I (1–4)	I (1–3)	I (1–3)	I (1–4)
Festuca ovina	I (1–3)	I (1–3)	I (1–4)	I (1–4)
Campylopus paradoxus	I (1–2)	I (1–3)	I (1–3)	I (1–3)
Calypogeia fissa	I (1–4)	I (1–2)	I (1–2)	I (1–4)
Cladonia coccifera	I (1–2)	I (1–3)	I (1–3)	I (1–3)
Scapania gracilis	I (1–3)	I (1–3)	I (1–3)	I (1–3)
Juncus acutiflorus	I (1–4)	I (1–3)	I (1–3)	I (1–4)
Carex demissa	I (1–3)	I (1–3)	I (1–3)	I (1–3)
Sphagnum magellanicum	I (1–4)	I (1–4)		I (1–4)
Campylopus setifolius	I (1–4)	I (1)		I (1–4)
Campylopus shawii	I (1–3)	I (1–3)		I (1–3)
Sphagnum imbricatum	I (1–3)	I (1–3)		I (1–3)
Kurzia pauciflora	I (1–3)	I (1–3)		I (1–3)
Rhynchospora alba	I (1–2)	I (1–3)		I (1–3)
Sphagnum strictum	I (1–3)	I (1–3)		I (1–3)
Leucobryum glaucum	I (1–3)	I (1–3)		I (1–3)
Number of samples	97	53	44	194
Number of species/sample	21 (10–37)	17 (8–31)	20 (11–38)	20 (8–38)
Herb height (cm)	21 (12–33)	17 (4–25)	20 (6–30)	19 (4–33)
Herb cover (%)	96 (65–100)	92 (60–100)	94 (70–100)	95 (60–100)
Bryophyte height (mm)	42 (20–100)	35 (5–70)	33 (10–50)	37 (5–100)
Bryophyte cover (%)	56 (30–90)	46 (5–90)	41 (2–80)	49 (2–90)
Altitude (m)	216 (8–524)	328 (15–686)	470 (150–880)	304 (8–880)
Slope (°)	4 (0–25)	4 (0–18)	5 (0–24)	4 (0–25)
Soil pH	4.5 (3.6–6.0)	4.4 (3.5–6.4)	4.4 (3.2–6.7)	4.4 (3.2–6.7)

a *Drosera rotundifolia-Sphagnum* sub-community
b *Cladonia* sub-community
c *Juncus squarrosus-Rhytidiadelphus loreus* sub-community
17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire (total)

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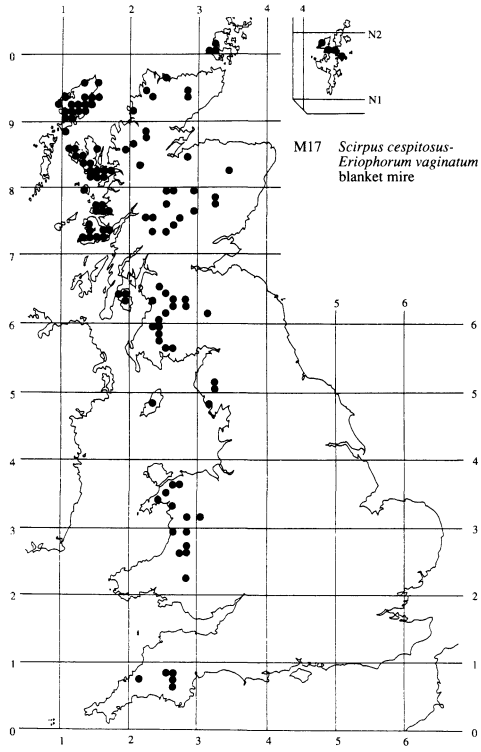

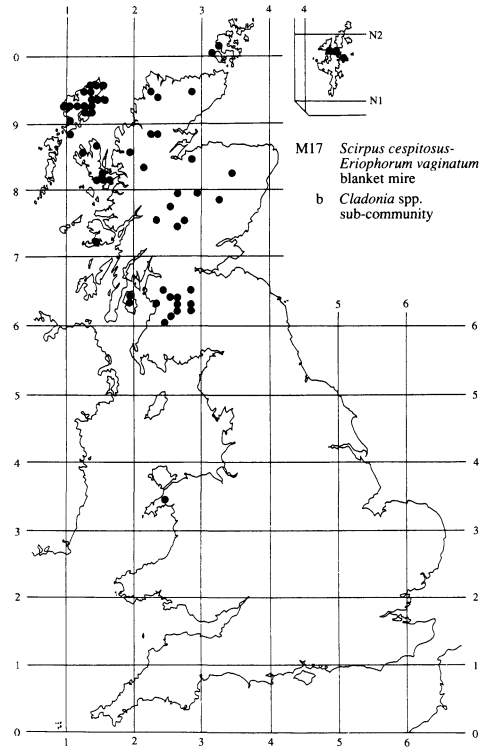

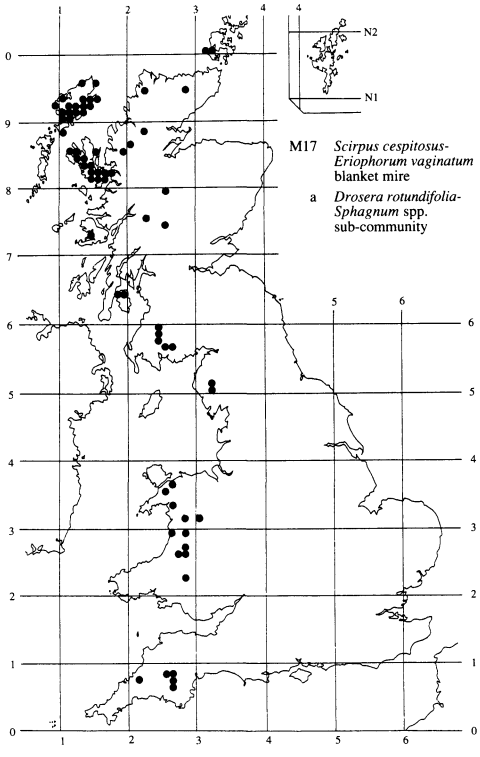

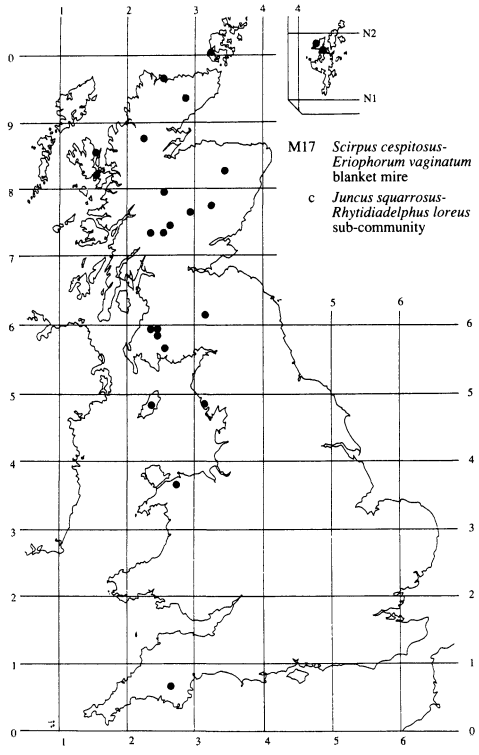

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