M20
Eriophorum vaginatum blanket and raised mire

Synonymy
Eriophoretum vaginati Smith & Moss 1903, Lewis 1904, Lewis & Moss 1911, Moss 1913, Adamson 1918, Watson 1932, Tansley 1939, all *p.p.*; *Eriophorum vaginatum* moss Pearsall 1941; *Eriophorum vaginatum* bog Conway 1949; Raised bog Sinker 1960 *p.p.*, Proctor 1974 *p.p.*; *Eriophoretum* Eddy *et al.* 1969, Fidler *et al.* 1970; *Eriophorum angustifolium-Eriophorum vaginatum* Gesellschaft Dierssen 1982; *Empetrum nigrum* Gesellschaft Dierssen 1982; *Calluna vulgaris* Gesellschaft Dierssen 1982.

Constant species
Eriophorum angustifolium, *E. vaginatum*.

Physiognomy
The *Eriophorum vaginatum* mire comprises species-poor ombrogenous bog vegetation dominated by *E. vaginatum*, the tussocks of which form an open or closed canopy, 1–3 dm high. Other frequent vascular associates are very few and typically of low cover: the only other constant plant is *E. angustifolium* and this is usually found as scattered shoots, sometimes a little more densely distributed in wetter runnels. Ericoid sub-shrubs in particular are noticeably patchy in their occurrence compared with the *Calluna-Eriophorum* mire. *Calluna vulgaris*, *Empetrum nigrum* ssp. *nigrum* and *Vaccinium myrtillus* can each be found quite frequently and the last two may occur with some measure of local abundance but they tend not to form a consistently vigorous and mixed component of the vegetation: one or more, quite often all, of them may be lacking or reduced to sparse and puny shoots, with *Calluna* and *V. myrtillus* frequently showing signs of having been nibbled. *Rubus chamaemorus*, another good preferential of the *Calluna-Eriophorum* mire, is likewise unevenly represented here, being only occasional overall and of low cover. *Deschampsia flexuosa* occurs fairly commonly and it can be locally abundant though, where closely-grazed, with its inflorescences eaten off, it can readily be overlooked. *Festuca ovina*, *Juncus squarrosus*, *Scirpus cespitosus* and *Carex bigelowii* all occur infrequently.

The ground cover is variable in its extent, though typically sparse and patchy and never showing the richness and luxuriance characteristic of virgin Erico-Sphagnion mires. Sphagna, in particular, are scarce with *Sphagnum capillifolium* and *S. papillosum* the most usual species but even these very infrequent and of small cover. Equally obvious is the poor representation of hypnaceous mosses with species such as *Pleurozium schreberi*, *Rhytidiadelphus loreus*, *Plagiothecium undulatum* and *Hypnum cupressiforme/jutlandicum* occurring only very uncommonly.

Positive features among the bryophytes are few but *Campylopus paradoxus* is fairly frequent throughout and it can be accompanied by *Dicranum scoparium* in stands with a richer sub-shrub cover. More usual associates are occasional scattered shoots of *Orthodontium lineare*, *Pohlia nutans*, *Drepanocladus fluitans* and a variety of leafy hepatics including *Ptilidium ciliare*, *Calypogeia trichomanis*, *C. muellerana*, *Barbilophozia floerkii*, *Lophozia ventricosa*, *Gymnocolea inflata*, *Cephalozia bicuspidata*, *Cephaloziella hampeana*, *Diplophyllum albicans* and *Mylia taylori*.

Lichens are typically few in number and of low total cover. Bulkier species, like *Cladonia arbuscula*, *C. uncialis* and *C. impexa*, can sometimes be found but often there is just a very patchy cover of peat-encrusters, such as *C. chlorophaea*, *C. floerkeana*, *C. squamosa* and *C. coccifera*, on the less shaded areas of bare ground.

Sub-communities

Species-poor sub-community. The more impoverished stands included here present one of the gloomiest spectacles among British vegetation. *E. vaginatum* forms the bulk of the vascular cover, with scattered *E. angustifolium*, but only very occasional sub-shrubs and sometimes a little *Deschampsia flexuosa*. The ground between the tussocks is sometimes extensive, often densely-

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press

shaded and predominantly bare apart from scattered tufts of *Campylopus paradoxus* and *Orthodontium lineare* (which can also grow on the tussock sides) and hepatics such as *Calypogeia* spp., *Gymnocolea inflata*, *Lophozia ventricosa*, *Cephalozia bicuspidata* and *Cephaloziella hampeana* on the bare peat or cotton-grass litter. *Drepanocladus fluitans* also occurs occasionally with local abundance. Lichens are typically very sparse.

***Calluna vulgaris-Cladonia* spp. sub-community.** The vegetation here is somewhat richer than above and transitional to the *Calluna-Eriophorum* mire in its composition. *E. vaginatum* is not quite so overwhelmingly dominant, though, with *E. angustifolium*, it still remains the most frequent element. But sub-shrubs occur a little more commonly, with scattered bushes of *Calluna*, *V. myrtillus* and, especially likely to show local dominance, *E. nigrum* ssp. *nigrum*. Among this more variegated and less densely-shaded cover, mosses and lichens are rather better represented. *Campylopus paradoxus* and *Dicranum scoparium* occur frequently, though generally in small amounts, and *Pohlia nutans* and *Pleurozium schreberi* are occasional. Larger Cladonias can be found among shrub stools and on moribund cotton-grass tussocks and, on bare ground, there can be a variety of peat-encrusting species. *Cornicularia aculeata* and *Cetraria islandica* also occur sparsely. Although *Mylia taylori*, *Kurzia pauciflora*, *Ptilidium ciliare* and *Calypogeia trichomanis* are occasionally recorded, the hepatics characteristic of damp or shaded runnels in the species-poor sub-community are uncommon here.

Habitat

The *Eriophorum* mire is characteristic of ombrogenous peats on bogs where certain kinds of treatment have become of overriding importance in determining the nature of the vegetation: long-continued and heavy grazing, together with burning, have been of especial significance in its development but draining and aerial pollution have also played a part. The community is commonest on blanket mires, where these factors have often contributed, not only to floristic impoverishment, but also to gross erosion of the underlying peats, but it can also be found more locally on run-down raised bogs.

By and large, the *Eriophorum* mire is a community of higher elevations where the climate is cold and wet. Most stands lie between 500 and 700 m and experience 1200–1600 mm annual precipitation (*Climatological Atlas* 1952), with 160–200 wet days yr^{-1} (Ratcliffe 1968) and mean annual maximum temperatures of 21–25°C (Conolly & Dahl 1970). On gentler slopes, usually from 0 to 10°, within such a zone, blanket peat is widespread and, under natural conditions, the deeper deposits generally support some kind of *Calluna-Eriophorum* mire, typically, at these more modest altitudes, of the *Empetrum* sub-community, with its mixed canopy of *E. vaginatum* and sub-shrubs, frequent records for the Arctic-Subarctic *Rubus chamaemorus*, and fairly rich ground cover of Sphagna and hypnaceous mosses. In most cases, the *Eriophorum* mire seems to be a biotically-derived replacement for this kind of blanket bog, showing varying degrees of floristic impoverishment according to the intensity and duration of the treatments to which particular tracts have been subjected. Such replacement can be seen throughout the range of the *Empetrum* sub-community of the *Calluna-Eriophorum* mire, but it is especially extensive in the southern Pennines, where the factors seem to have operated with concerted ferocity: in this region, the *Eriophorum* mire is the prevailing kind of blanket bog over many square kilometres of the Carboniferous grit and shale uplands. Less commonly, the community occurs on ombrogenous peat in raised bogs where, under natural conditions, one would expect to find the *Erica-Sphagnum* mire. The floristic gradation between these two richer Erico-Sphagnion communities and the *Eriophorum* mire is continuous: the *Calluna-Cladonia* sub-community of the latter includes transitional stands which preserve an element of their variety, the species-poor type represents the dismal peak of degradation.

Various treatments can contribute to this impoverishment. Of particular importance for the reduction in the cover of some of the major sub-shrubs are burning and, more significant in the long term, grazing. Burning can result in the total destruction of the above-ground parts and sometimes the stools and rhizomes of the ericoids (Gimingham 1960, Bell & Tallis 1973), stimulating an expansion in the abundance of *E. vaginatum* (Wein 1973, Rawes & Hobbs 1979) and, in the *Calluna-Eriophorum* mire, of *R. chamaemorus* (Taylor 1971, Taylor & Marks 1971). In the absence of grazing, however, the sub-shrubs show a gradual recovery, sometimes first the rhizomatous *V. myrtillus* or *E. nigrum* ssp. *nigrum*, but usually eventually the taller *Calluna* (Eddy *et al.* 1969, Rawes & Hobbs 1979), such that, over a decade or so, something like the original balance of structural components is restored. It is possible that some stretches of blanket bog, like the *Eriophorum* mire, represent temporary post-burn vegetation; and repeated fires may maintain such an impoverished cover by continually setting back sub-shrub regeneration. Judicious burning at regular intervals, however, such as is practised on blanket bogs that contribute to grouse-moors, can stabilise the cover to yield a constant supply of building-phase *Calluna* (e.g. Gimingham 1972).

The more persistent and uncompromising dominance of *E. vaginatum* seen here is more likely to develop where long and intensive grazing has been practised (either alone or with burning). Blanket mire can make up a major part of unenclosed upland and it has long been

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press

traditional to turn out sheep on to such ground for summer pasturing. At probably quite modest densities (perhaps about 1 sheep per 2 ha: e.g. Rawes & Hobbs 1979), such grazing can extinguish the palatable ericoids, *Calluna* and *V. myrtillus* and, in the *Calluna-Eriophorum* mire, reduce the cover of *R. chamaemorus* (Eddy *et al.* 1969, Taylor 1971, Rawes & Hobbs 1979) and shift the balance decisively towards *E. vaginatum* which, though it is eaten, has its growing points well protected in the tussocks (Wein 1973). Somewhat lighter or patchy grazing may allow sporadic persistence of sub-shrubs, particularly the less palatable sub-shrub *E. nigrum* ssp. *nigrum* (Bell & Tallis 1973): this is the woody plant which most frequently shows local dominance in the *Eriophorum* mire and, in some places, as on Ilkley Moor in West Yorkshire, it has become abundant over extensive areas (Dalby 1961, Fidler *et al.* 1970, Dalby *et al.* 1971).

Grazing stock can also impoverish ombrogenous mire vegetation by trampling which can disrupt the carpet of Sphagna and damage larger lichens (e.g. Rawes & Hobbs 1979). But, in many stands, dense shading by *E. vaginatum* may be of more importance in reducing the ground cover. In the species-poor sub-community, this is very sparse and patchy, being largely limited to diminutive acrocarps, which can get a hold on bare peat or decaying tussocks, and shade-tolerant hepatics in the runnels. And the modest enrichment seen in the *Calluna-Cladonia* sub-community may be largely due to the sporadic relief from *E. vaginatum*-dominance provided by the occasional sub-shrubs, among the shoots of which there is better light penetration. Even here, however, the rich carpets of hypnaceous mosses so characteristic of the *Calluna-Eriophorum* mire are not seen.

Two other factors may contribute to this general poverty in the ground layer of the *Eriophorum* mire. First, and of especial importance for the marked scarcity of Sphagna, is the dryness of the peats. In the *Erica-Sphagnum* mire, these are maintained in a state of fairly consistent waterlogging, with species such as *S. papillosum* and *S. magellanicum* abundant as active peat-builders. In the *Calluna-Eriophorum* mire, the peat is often surface-dry in summer, so these species are of patchy occurrence, though *S. capillifolium* remains frequent throughout. In the *Eriophorum* mire, they are drier still, often showing surface oxidation and marked acidity, with a pH frequently as low as 3 or so. Such dryness may be partly natural, with climatic change producing a general lowering of the water-table, or erosion resulting in enhanced local run-off, but drainage operations have probably been an important contributory factor, either on a local scale for agricultural improvement or afforestation, or more extensively, as in water-gathering schemes to supply urban or industrial developments. The second factor, resulting from these last activities, is aerial pollution, particularly with oxides of sulphur and nitrogen which have a very adverse effect on most bryophytes and lichens. The great reduction in Sphagna on some blanket mires over the past 200 years is probably largely due to this pollution (Conway 1949, Tallis 1965, Ferguson 1979, Lee 1981, Ferguson & Lee 1983) and it is very striking how the *Eriophorum* mire is concentrated in that part of Britain where blanket bogs are subject to the highest levels of SO_2 (see map in Page 1982). There, in the south Pennines, this community presents a depressing spectacle over the summits between the great industrial conurbations of Lancashire and Yorkshire: fringed by numerous reservoirs and cut through by arterial roads, vegetation and peat are often coated with grime and even the sheep look grey.

It is in this region, too, that the erosion of blanket peat is most severe and widespread in Britain, with up to 75% of the mantle being affected (Anderson & Tallis 1981). Evidence suggests that such erosion has a natural component, perhaps due to marginal instability in peats that have been accumulating longer than elsewhere in the country (Conway 1954, Tallis 1985*a*, *b*), but the various biotic factors outlined above have probably been of local significance in exacerbating the processes involved and have perhaps contributed in concert to a general spiral of degradation in the southern Pennines (e.g. Radley 1962, Tallis 1973*b*, Shimwell 1974, 1981, Tallis & Yalden 1984). Tracts of *Eriophorum* mire in this region, and in some other areas of blanket bog (as at Moor House: Eddy *et al.* 1969), show varying degrees of marginal fretting and sometimes the two sub-communities are disposed over this zone in a mosaic: the species-poor type can occupy the core of more extensive upstanding haggs in such situations, with the *Calluna-Cladonia* sub-community running around their margins, as a fringe to the drainage channels.

Zonation and succession

The *Eriophorum* mire is typically found as a replacement for the *Calluna-Eriophorum* mire (less often for the *Erica-Sphagnum* mire) in zonations and mosaics with heaths and grasslands over sequences of increasingly better-drained soils, with soligenous mires reflecting the occurrence of local flushing. The extent of replacement and the clarity of the boundaries between the community and remaining tracts of the original mire vegetation, depend largely on the intensity of the various factors mediating their interconversion. Such treatments can also affect transitions to neighbouring vegetation types and they have contributed widely to the degradation of entire landscapes in which the community is found.

Around the margins of blanket bogs, on which the

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press

Eriophorum mire most commonly occurs, the thinning of the peat cover is generally marked by a transition to Ericetalia wet heath over gleyed podzols, or Calluno-Ulicetalia heath or Nardetalia grasslands over more free-draining podzols or rankers. Typically, such zonations occur over progressively steepening slopes, usually running downhill from summit plateaus, or sometimes uphill, where flat, peat-covered ground gives way above to rougher terrain. In the south Pennines, these sequences are seen on a grand scale, forming a crude altitudinal pattern, with local reversals where resistant grits are exposed in lines of crags (e.g. Smith & Moss 1903, Moss 1913).

The kind of Ericetalia community most often found in association with the *Eriophorum* mire on blanket bog fringes seems to be the *Juncus-Dicranum* sub-community of the *Ericetum tetralicis* wet heath. This may be of considerable extent where the peat thins gradually or has been eroded into substantial amounts of downwash, but around abrupt mire margins this zone is often curtailed. Then, there may be a more or less direct switch to Calluno-Ulicetalia vegetation, usually some form of *Calluna-Vaccinium* or *Vaccinium-Deschampsia* heath. Very commonly, however, the grazing which plays a major part in the development of the *Eriophorum* mire itself, has converted some or all of this heath vegetation to grassland, leaving strips of sub-shrub vegetation confined to more inaccessible crags and tumbles of boulders below them: this is well seen in the southern Pennines (e.g. Lewis & Moss 1911, Moss 1913). In the poor-quality swards that develop on the grazed ground around the mire, *Juncus squarrosus* often becomes very prominent over the more ill-drained thin peats and peaty podzols, with *Nardus stricta* a leading species on the drier podzols and rankers: the map of Moor House in Eddy *et al.* (1969) shows this kind of pattern very clearly. In other cases, as on Ilkley Moor, the unpalatable *E. nigrum* ssp. *nigrum* has spread in abundance through most of the zonations around the grazed mire fringes, masking the pattern of communities (Fidler *et al.* 1970, Dalby *et al.* 1971).

Strips of *Juncus-Festuca* or *Nardus-Galium* grassland can also be found running through tracts of the *Eriophorum* mire where there is very slight flushing of thin peats or exposed mineral soils; and, if the waters show some amelioration of base-deficiency, small stands of *Festuca-Agrostis-Galium* grassland can occur. Stronger soligenous influence, which maintains the soils in a wetter state, is typically characterised by tracks of Caricion nigrae vegetation, often, at these modest altitudes, the *Carex echinata-Sphagnum* mire, dominated by small sedges or, very frequently, by *Juncus effusus*. These flushes may have Cardamino-Montion springs at their source, and they can unite as they flow through the mire and the grasslands around to form distinct streams. More stagnant wet areas within stands of the *Eriophorum* mire are generally scarce but occasional pools may have species-poor Rhynchosporion vegetation like that of the *Eriophorum angustifolium, Sphagnum cuspidatum/recurvum* or *Carex rostrata-Sphagnum recurvum* communities.

Two other kinds of surface patterning can be found where the *Eriophorum* mire occurs on blanket bogs. Quite commonly, the community is seen in mosaics with the *Calluna-Eriophorum* mire, the disposition of the two vegetation types and the sharpness of the boundaries between them reflecting the pattern of treatments. Sometimes, the separation of the two along a fence-line provides striking testimony to the importance of grazing in mediating change between them, but often the transitions are less well defined, reflecting gradual reductions in grazing intensity, for example, in moving away from adjacent stretches of more palatable grasslands (e.g. Pearsall 1941, Eddy *et al.* 1969, Rawes 1983). In certain cases, zonations between the two communities may be temporary, their boundaries shifting with variations in grazing or where there is recovery after burning. And, even where the existence of *Eriophorum* mire seems to be well established, it has been shown that the process of impoverishment can be reversed: at Moor House, enclosure and freedom from burning has allowed a convincing progression back to *Calluna-Eriophorum* mire within the space of 25 years (Rawes 1983). Enclosed *Juncus squarrosus* swards there, perhaps derived by very heavy grazing of blanket mire on thinner peats, have also begun to show the same development (Rawes 1981).

It is very doubtful whether the *Eriophorum* mire so common throughout the southern Pennines could show the same kind of recovery, for here, quite apart from the very thorough floristic impoverishment, there is particularly severe erosion of the underlying peats. This introduces a further element of patterning into the vegetation cover, fragmenting the *Eriophorum* mire itself and leading to the development of mosaics of the two sub-communities over the more intact haggs and their wasting margins. It can also precipitate a progression from the *Calluna-Cladonia* sub-community to dry heath along the freely-draining tops of the drainage channels and tumbling masses of dry peat over their sides and, where there is extensive marginal wasting, lead to a replacement of mire vegetation by *Juncus-Festuca* grassland over the redistributed materials. Sometimes, there is very patchy regeneration of the mire within more gently-sloping channels, or where their blockage has induced some stagnation, but usually, where these are not entirely bare, they contain fragments of Caricion nigrae vegetation like the *Carex echinata-Sphagnum*

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press

mire, extending back, as erosion progresses, into the heart of the bog.

Where the *Eriophorum* mire occurs more locally on raised bogs, it generally appears to replace the *Erica-Sphagnum* mire and may form a mosaic with surviving fragments of this where treatment has not been so thoroughgoing. Around the mire margins, there is typically a transition to Junco-Molinion vegetation on the rand, with overwhelming dominance of *E. vaginatum* passing to equally uncompromising dominance of *Molinia caerulea*. In much-disturbed situations, the lagg vegetation beyond this may become markedly eutrophicated but, in some sites, impoverished *Eriophorum* mire occurs in close contact with a rich assemblage of soligenous vegetation, as at Malham Tarn (Sinker 1960, Proctor 1974, Adam *et al.* 1975). Drying of the peats under the community in raised bogs, often accentuated by peat-cutting and draining, can favour a spread of Junco-Molinion vegetation which, with removal of grazing, can progress to *Betula-Molinia* woodland.

Distribution

The community can be found locally throughout northern Britain, mainly within tracts of upland blanket bog but more locally on raised bogs. It is especially extensive in the southern Pennines.

Affinities

Impoverishment of Erico-Sphagnion bogs to produce the kind of vegetation included here is a continuous phenomenon so that it is hard to draw the line between the *Eriophorum* mire and its richer progenitors: in early schemes, the community was generally included with the *Calluna-Eriophorum* mire (or, at least with its *Empetrum* sub-community), from which it most usually develops, in an *Eriophoretum* of one kind or another (Smith & Moss 1903, Lewis 1904*a*, *b*, Lewis & Moss 1911, Moss 1913, Adamson 1918, Watson 1932, Tansley 1939). But, in its extreme form, this kind of vegetation should not go unrecognised as a distinct unit and the most convenient criteria for separating the communities are the relative prominence of *E. vaginatum* and the palatable ericoids, the frequency of *R. chamaemorus* (within its general geographic range) and the prominence of Sphagna and hypnaceous mosses, as in the treatment of Eddy *et al.* (1969).

Floristic table M20

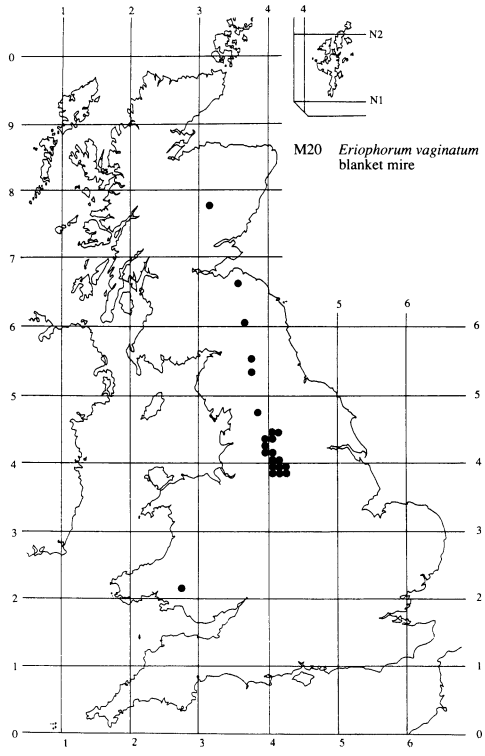
	a	b	20
Eriophorum vaginatum	V (4–9)	V (4–8)	V (4–9)
Eriophorum angustifolium	V (1–3)	V (1–4)	V (1–4)
Orthodontium lineare	II (1–3)	I (4)	I (1–4)
Calypogeia muellerana	II (1–3)	I (1)	I (1–3)
Lophozia ventricosa	II (1–3)	I (2)	I (1–3)
Cephalozia bicuspidata	II (1–3)	I (1)	I (1–3)
Gymnocolea inflata	II (1–4)		I (1–4)
Cephaloziella hampeana	II (1–3)		I (1–3)
Drepanocladus fluitans	II (1–4)		I (1–4)
Campylopus paradoxus	III (1–3)	IV (1–4)	III (1–4)
Calluna vulgaris	II (1–3)	IV (1–4)	III (1–4)
Empetrum nigrum nigrum	II (2–9)	IV (1–8)	III (1–9)
Vaccinium myrtillus	I (1–3)	III (1–5)	II (1–5)
Dicranum scoparium	I (1)	III (1–4)	II (1–4)
Cladonia arbuscula		III (1–6)	II (1–6)
Mylia taylori		III (1–4)	II (1–4)
Cladonia chlorophaea		III (1–3)	II (1–3)
Cladonia impexa	I (1)	II (1–3)	II (1–3)
Cornicularia aculeata	I (1)	II (1–5)	II (1–5)
Cladonia uncialis	I (1)	II (1–2)	I (1–2)
Cladonia floerkeana	I (1)	II (1–3)	I (1–3)
Rubus chamaemorus	I (1)	II (1–3)	I (1–3)

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press

Cladonia squamosa	I (1)	II (1–3)	I (1–3)
Pohlia nutans	I (1–3)	II (1–3)	I (1–3)
Diplophyllum albicans	I (1–4)	II (1–3)	I (1–4)
Cetraria islandica		II (1–2)	I (1–2)
Cladonia coccifera		II (1–3)	I (1–3)
Kurzia pauciflora		II (1–4)	I (1–4)
Cladonia impexa		II (1–3)	I (1–3)
Pleurozium schreberi		II (1–2)	I (1–2)
Carex bigelowii		I (1–5)	I (1–5)
Scirpus cespitosus		I (1–4)	I (1–4)
Sphagnum fuscum		I (5)	I (5)
Hypnum jutlandicum		I (1–4)	I (1–4)
Ptilidium ciliare	II (1–3)	II (1–4)	II (1–4)
Calypogeia trichomanis	II (1–3)	II (1–4)	II (1–4)
Deschampsia flexuosa	II (1–4)	II (1–8)	II (1–8)
Barbilophozia floerkei	I (1–3)	I (1–3)	I (1–3)
Festuca ovina	I (1–3)	I (1–5)	I (1–5)
Sphagnum capillifolium	I (1)	I (1–4)	I (1–4)
Juncus squarrosus	I (1–4)	I (1–3)	I (1–4)
Sphagnum papillosum	I (1–4)	I (1)	I (1–4)
Plagiothecium undulatum	I (1)	I (1–3)	I (1–3)
Polytrichum commune	I (1)	I (1–3)	I (1–3)
Number of samples	16	24	40
Number of species/sample	9 (5–13)	12 (9–20)	11 (5–20)
Herb height (cm)	24 (15–30)	16 (10–25)	21 (10–30)
Herb cover (%)	92 (60–100)	90 (55–100)	91 (55–100)
Bryophyte height (mm)	14 (10–30)	30 (10–50)	18 (10–50)
Bryophyte cover (%)	12 (0–40)	26 (1–50)	15 (0–50)
Altitude (m)	522 (370–660)	648 (485–942)	596 (370–942)
Slope (°)	3 (0–15)	3 (0–10)	3 (0–15)
Soil pH	3.1 (3.0–3.4)	3.5 (3.1–3.8)	3.2 (3.0–3.8)

a Species-poor sub-community
b *Calluna vulgaris-Cladonia* sub-community
20 *Eriophorum vaginatum* blanket mire (total)

https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press



https://doi.org/10.1017/9780521391658.024 Published online by Cambridge University Press