W4
Betula pubescens-Molina caerulea woodland

Synonymy
Betuletum pubescentis (Hueck 1929) R.Tx. 1955 *p.p.*; Alder woodland types 2a & 3a McVean 1956*b*; Woodwalton *Molinia* sere Poore 1956*b p.p.*; Woodwalton Birch wood Poore 1956*b*; Waveney/Ouse fens Community R Bellamy & Rose 1961; Clarepool Moss woodland Sinker 1962; Malham Tarn Birchwoods Proctor 1974, Adam *et al.* 1975; Woodland *Molinia* nodum Daniels 1978; *Betula-Sphagnum flexuosum* nodum Daniels 1978; *Betulo-Myricetum molinietosum* Wheeler 1980*c*; *Osmundo-Alnetum sphagnetosum* Wheeler 1980*c*; *Betula pubescens* woodland Meres Report 1980; *Sphagnum palustre-Betula pubescens* Community Birse 1982; *Sphagno-Salicetum atrocinereae* Birse 1984 *p.p.*

Constant species
Betula pubescens, *Molinia caerulea*, *Sphagnum recurvum/palustre*.

Rare species
Dryopteris cristata.

Physiognomy
The general floristic and physiognomic features of the *Betula pubescens-Molinia caerulea* woodland are very simple. *Betula pubescens* is the only constant woody species and it is almost invariably the dominant, though the canopy it forms is often rather open, with well-spaced individuals. Quite commonly, the trees have a moribund look: infestation with *Piptoporus betulinus* is frequent and its large fruiting bodies can often be seen on birches that have fallen over or are obviously dying upright. *B. pendula* is typically very scarce though it is sometimes to be found in local abundance invading drier stands (as at Woodwalton: Poore 1956*b*). Indeed, no other tree is even occasional throughout: *Alnus glutinosa* comes a poor second to *B. pubescens* (though it is a little more common in the *Juncus* sub-community and locally dominant there) and oaks are typically infrequent. In marked contrast to woodlands on more base-rich soils, *Fraxinus excelsior* is extremely uncommon here.

Smaller woody species are also few in number and the understorey is characteristically sparse. *Salix cinerea* is the most frequent shrub and sometimes it grows sufficiently tall to break the birch canopy making stratification indistinct. *S. caprea, S. pentandra* and *S. aurita* are also sometimes found and very occasionally *Corylus avellana, Crataegus monogyna* and *Ilex aquifolium* occur. *B. pubescens* saplings are quite common though they rarely form the dense thickets so typical of much birch invasion. Young *Alnus* and oaks occur infrequently.

The most distinctive feature of the field layer here is the consistent presence and often great abundance of *Molinia caerulea*, which often seems to form an even grassy sward but which, on close inspection, is found in its characteristic tussocky form with systems of litter-lined runnels in which the vascular associates and bryophytes are disposed in mosaics. The herbaceous element in this kind of woodland is, in fact, rather variable and no species apart from *Molinia* attains any great frequency overall, but, except in the driest stands, there are usually some Sphagna, most typically throughout *S. palustre* and/or *S. recurvum* with, much less commonly *S. subnitens*, forming a patchy cover, sometimes a continuous carpet, between the tussocks with occasional *Aulacomnium palustre*. *Eurhynchium praelongum* and *Pseudoscleropodium purum* can also sometimes be found among the *Molinia* shoots and eroding tussock tops occasionally have a prominent cover of *Polytrichum commune*.

Sub-communities

***Dryopteris dilatata-Rubus fruticosus* sub-community:** Woodwalton Birch wood Poore 1956*b*; Malham Tarn Birchwood Proctor 1974 *p.p.*; *Sphagnum palustre-Betula pubescens* Community Birse 1982 *p.p.* *B. pubescens* is almost always the dominant here in a canopy that is usually taller and denser than in the other sub-

communities. Also, there is a little more variety in the woody cover than is typically the case in this community: *B. pendula* occasionally augments (and rarely replaces) *B. pubescens* but, much more obviously, there is frequently some *Sorbus aucuparia*; oaks are somewhat more common here, too, and *Pinus sylvestris* is sometimes found. Among the smaller species, *Salix cinerea* is very frequent and, with young birch and more occasional oaks, it forms an understorey that can be quite dense in parts. Then, there are sparse records for *Corylus avellana*, *Crataegus monogyna* and *Ilex aquifolium*.

In the field layer, *Molinia* remains very frequent and is often abundant, though here its cover is often masked by an underscrub of *Rubus fruticosus* agg. and trailing *Lonicera periclymenum*. *Dryopteris dilatata* is a very good preferential, too, its large crowns emerging through the bramble cover. Occasionally, there can be some patchy invasion of *Pteridium aquilinum* or, especially where there has been disturbance of the substrate, clumps of *Epilobium angustifolium*. Another feature of note in some stands is the occurrence of patches of *Deschampsia flexuosa* with scattered *Galium saxatile*: these are often centred around the tree bases, forming a mosaic with the intervening *Molinia*-dominated areas, a pattern which is particularly prominent where the peat between the trees is shrinking downwards.

On the usually drier soils here, Sphagna are sparser than in the other sub-communities, being generally found as small tufts (mostly of *S. palustre*) among the *Molinia* litter. By contrast, there is an increase in species such as *Mnium hornum*, *Hypnum cupressiforme*, *Polytrichum commune*, *P. formosum*, *Plagiothecium denticulatum* and *Isopterygium elegans*.

***Juncus effusus* sub-community:** Alder woodland type 2a McVean 1956*b*; *Sphagnum palustre-Betula pubescens* Community Birse 1982 *p.p.*; *Sphagno-Salicetum atrocinereae* Birse 1984 *p.p.* Again, *B. pubescens* is the usual dominant here but it typically forms an open and rather low canopy. *Alnus glutinosa* is a little more frequent than elsewhere in the community and occasionally it exceeds *B. pubescens* in its abundance but the trees are usually poorly grown and often have irregular spreading crowns. Bushes of *Salix cinerea* are frequent and *B. pubescens* saplings occasional but they do not usually compose a distinct understorey, occurring rather in scattered patches among the more open areas of trees. Where this kind of woodland occurs in valley-side flushes, substrate instability can result in slumping and produce further irregularity in the woody cover.

The general appearance of the field layer here is of a grassy ground with scattered tussocks of rushes and sedges. *Molinia* remains very common and abundant but it is frequently accompanied by *Holcus mollis*, *H. lanatus*, *Deschampsia cespitosa* and, less commonly, by *Anthoxanthum odoratum* and *Agrostis stolonifera*. *Juncus effusus* is constant and often very prominent; *J. acutiflorus* is more occasional, but it can replace *J. effusus*, perhaps where there is more obvious water seepage. In other stands, *Carex laevigata* is abundant and sometimes *C. nigra* though, in contrast to similar field layers in the *Alnus-Fraxinus-Lysimachia* woodland, *C. remota* is typically absent here. *Myrica gale* occurs occasionally, in some cases forming a quite thick cover of leggy bushes. Where stands are grazed (a fairly common occurrence), this structural heterogeneity is accentuated by patchy break-up of the vegetation cover with trampling.

Scattered through the field layer is a variety of distinctive herbs. *Potentilla erecta*, *Hydrocotyle vulgaris*, *Viola palustris*, *Cirsium palustre* and *Lotus uliginosus* are the most common but also preferential at lower frequencies are *Galium uliginosum*, *Angelica sylvestris* and *Valeriana officinalis*.

Sphagnum recurvum and, less frequently, *S. palustre* form a sometimes extensive carpet between the tussocks of grasses, rushes and sedges, and *Calliergon cuspidatum* appears as a good preferential bryophyte.

***Sphagnum* spp. sub-community:** Alder woodland type 3a McVean 1956*b*; Waveney/Ouse fens Community R Bellamy & Rose 1961; Clarepool Moss woodland Sinker 1962; Malham Tarn Birchwoods Proctor 1974 *p.p.*, Adam *et al.* 1975; *Betula pubescens* woodland Meres Report 1980; *Betulo-Myricetum molinietosum* Wheeler 1980*c*; *Osmundo-Alnetum sphagnetosum* Wheeler 1980*c*. *B. pubescens* is always dominant here though, as in the *Juncus* sub-community, its cover is usually open and low. Other woody species are poorly represented: there is very occasionally some *Alnus glutinosa* and even *Salix cinerea* is rather sparse.

The field layer, too, is characteristically species-poor, though it can show considerable variety from stand to stand. The constant feature is again *Molinia* and this is usually dominant. *Juncus effusus* occurs occasionally, but the diversity and abundance of grasses typical of the *Juncus* sub-community is absent. More often, here, the vegetation preserves elements of the wet heath or mire from which the woodland has developed: in some cases, *Calluna vulgaris* and *Erica tetralix* occur in a patchy cover; in others, there are tussocks of *Eriophorum vaginatum* and lawns or pools with *E. angustifolium*, *Carex nigra* and *Vaccinium oxycoccus*; or there can be very wet areas with *Carex rostrata*, *Menyanthes trifoliata* and *Potentilla palustris*.

The other generally distinctive feature of the vegetation is the prominence of Sphagna which are more varied and abundant than in other kinds of *Betula-Molinia* woodland. The community species *S. recurvum*

and *S. palustre* are both very frequent but preferential here are *S. fimbriatum*, *S. squarrosum* and *S. papillosum*; *S. subnitens* and *S. cuspidatum* can also be found less commonly. Typically, these form extensive patches in the wet runnels between the *Molinia* tussocks with mosses like *Pohlia nutans* and *Polytrichum commune* picking out drier areas of exposed peat.

Habitat

The *Betula-Molinia* woodland is typically a community of moist, moderately acid, though not necessarily highly oligotrophic, peaty soils in a variety of mire types. It is especially characteristic of thin or drying ombrogenous peats around the margins of blanket mires and topogenous deposits that have become elevated above or isolated from the influence of more base-rich and eutrophic ground waters; but it also occurs on soligenous peats in valley mires and on flushed peaty gleys where there is irrigation by rather base- and nutrient-poor waters. Various human activities may play an important part in the development of the community, both in the spread of *Molinia* prior to woodland development and in subsequent birch invasion, and grazing by stock and deer is probably important in maintaining the distinctive character of some stands.

The different sub-communities show fairly clear relationships to particular conditions within this broad environmental definition. The *Sphagnum* sub-community is most typical of wetter and deeper peats where, as on degraded blanket bogs or in the centre of basin mires, the water-table is sufficiently low for birch to become well established but where there is enough surface moisture to sustain a fairly extensive *Sphagnum* cover, though with a clear shift away from the suites of hummock and pool species typical of the intact and active bog surface (e.g. Sinker 1962, Meres Report 1980). In such situations, the mire waters are generally base- and nutrient-poor but the *Sphagnum* sub-community is also occasionally found in more eutrophic and base-rich topogenous fen systems, in areas where the peat deposits have become isolated from the movement of the ground waters, as, for example, at the landward edge of some Broadland fens (e.g. Wheeler 1975, 1978, 1980*c*) and towards the back of Esthwaite North Fen (e.g. Pearsall 1918, Tansley 1939, Pigott & Wilson 1978). In many of these cases, human interference, such as the grazing, draining and burning of the mires, or peat-cutting and the abandonment of exposed and drying peat surface, may act as an encouragement for the spread of *Molinia* and *B. pubescens*.

The *Dryopteris-Rubus* sub-community often appears to be a longer-established and drier form of *Betula-Molinia* woodland than the above, occurring in similar situations but always where the peat is naturally thinner (as on the eroding fringes of blanket mires) or has become much better drained, either through natural growth above a ground water table or as a result of human activity. Here the prominence of the Sphagna is much less obvious and many stands show a clear similarity to oak-birch woodland of dry, acid soils. Disturbance and surface enrichment of the peat is quite common here, too, and sometimes the vegetation approaches that of the *Betula* sub-community of the *Alnus-Urtica* woodland. *Urtica dioica* itself, however, is rare here, *Epilobium angustifolium* being the more characteristic marker of eutrophication in this community.

The *Juncus* sub-community is rather more specialised in its environmental associations, being typically associated with areas of soligenous influence of fairly acid, though not always cation-poor, waters. It can occur over peats, as for example in the lagg of basin mires and down the central zone of some more base-poor valley mires but it is also found on peaty gleys, as where flushes emerge over slopes of impermeable argillaceous rocks or non-calcareous superficials. In such situations, it can be seen as the more base-poor equivalent of the *Alnus-Fraxinus-Lysimachia* woodland: in both these communities, *Carex laevigata* is a very characteristic indicator of such edaphic conditions.

Zonation and succession

Very often, the *Betula-Molinia* woodland occurs in zonations and mosaics with other vegetation types which reflect the progress of birch invasion on mire surfaces. On ombrogenous and topogenous mires, it is typically found in association with Erico-Sphagnion and Ericion tetralicis bogs and wet heaths and fragments of such vegetation types persisting within the field layer of the *Sphagnum* sub-community can give some clue as to its origin. On raised mires and in basin mires where the waters are not base-rich and calcareous, this kind of *Betula-Molinia* woodland may represent a fairly natural first development in the progression to woodland with increased elevation of the peats above the ground water level and, in some places, crudely concentric zonations can be seen which approximate to the classic hydroseral pattern as in some Shropshire meres (Sinker 1962) and at Malham Tarn (e.g. Proctor 1974). At certain sites, as at Malham again, the zonation continues to the drier *Dryopteris-Rubus* sub-community which may represent the continuation of a succession towards acid oak-birch woodlands. Very often, however, patterns are not so clear as this and fragments of these two sub-communities frequently occur intermixed with variously modified remnants of mire vegetation on peat surfaces that have been subject to complex histories of draining, burning and cutting (as at Woodwalton: Poore 1956*b*). Similar treatments may also have encouraged the development of the *Betula-Molinia* woodland where it occurs on the margins of run-down blanket mires.

Other kinds of complexities arise where there has been woodland development over mire surfaces with varying

water and nutrient regimes. In flood-plain mires, for example, the *Betula-Molinia* woodland can mark out ombrogenous nuclei which have formed within tall-herb or *Carex*-dominated fens. In the Ant valley, the *Sphagnum* sub-community forms a core to some of the striking islands of *Betula-Salix-Phragmites* woodland that have grown up among the *Peucedano-Phragmitetum* fen (Wheeler 1978, 1980*c*) and, at Esthwaite, it has developed behind a front of *Potentillo-Caricetum* fen which is progressing to the *Salix-Carex* woodland (Pearsall 1918, Tansley 1939, Pigott & Wilson 1978). Similar, though more complex, patterns occur around peat islands in the Malham fens (Proctor 1974, Adam *et al.* 1975).

The *Juncus* sub-community can also be found in association with mire communities. In the rands of basin mires, for example, it often occurs amongst rush- or sedge-dominated vegetation of the Caricion curto-nigrae or Junco-Molinion and these would seem to be the normal seral precursors to this kind of woodland in such situations. In valley mires, and in soligenous soakways on some ombrogenous mires, it can be found in mosaics with Ericion tetralicis vegetation and may develop from this by birch invasion. Where this kind of *Betula-Molinia* woodland marks out slope flushes with peaty mineral soils, rather different patterns are encountered. Usually here, the *Juncus* sub-community occurs as small stands within more extensive tracts of drier woodland, very often at junctions between acid oak-birch woodlands on permeable sandstones above the flush line, and less acidophilous Carpinion woodland on the shales or drift below.

Distribution

The community is widespread but local throughout the lowlands and on the upland fringes of Britain. The *Sphagnum* sub-community and, especially now with increased mire drainage, the *Dryopteris-Rubus* sub-community are the commoner types; the *Juncus* sub-community has been much less frequently encountered.

Affinities

This is a quite distinct woodland type though it has usually been recognised only on a local basis as part of particular complexes of mire vegetation rather than as a nationally-distributed component of the series of wetter woodlands in Britain. It figured in McVean's (1956*b*) scheme for British alderwoods though, as defined here, *Alnus* is a rare component; and it is also represented in Birse's accounts of Scottish woodlands (Birse 1982, 1984), though his samples are split into two separate communities. In phytosociological terms, the *Betula-Molinia* woodland is clearly very similar to part of the *Betuletum pubescentis* described from various parts of the Continent (e.g. Schwickerath 1944, LeBrun *et al.* 1949, Tüxen 1955, Matuszkiewicz 1963, Westhoff & den Held 1969), though that association has a good representation of heath dwarf-shrubs which are, at most, occasional here. The *Betuletum pubescentis* is located within the Vaccinio-Picetea: such vegetation is seen in Britain in the *Pinus-Hylocomium* and *Juniperus-Oxalis* woodlands but the most similar birch-dominated community is the *Quercus-Betula-Oxalis* woodland. The affinities of the *Betula-Molinia* woodland are perhaps more obviously with the Alnion glutinosae.

Floristic table W4

	a	b	c	4
Betula pubescens	V (6–10)	V (5–9)	V (5–10)	V (5–10)
Alnus glutinosa	I (1–8)	II (5–8)	I (6–8)	I (1–8)
Quercus robur	I (1–5)	I (2–5)	I (5)	I (1–5)
Betula pendula	I (1)	I (4)	I (1–4)	I (1–4)
Salix caprea	I (4)	I (3)	I (2)	I (2–4)
Pinus sylvestris	I (1–6)		I (1–5)	I (1–6)
Quercus petraea	I (2–4)	I (3–4)		I (2–4)
Salix pentandra	I (1–2)	I (1)		I (1–2)
Betula hybrids	I (3)	I (3)		I (3)
Fraxinus excelsior	I (7)	I (1)		I (1–7)
Salix cinerea	III (1–7)	III (1–7)	II (1–9)	III (1–9)
Betula pubescens sapling	III (2–7)	II (2–3)	I (4–5)	II (2–7)
Sorbus aucuparia	III (1–6)	I (1)	I (1)	II (1–6)
Quercus robur sapling	II (1–4)			I (1–4)
Alnus glutinosa sapling	I (1)	II (1–2)	I (4)	I (1–4)
Quercus petraea sapling	I (2–4)	I (1)	I (1)	I (1–4)
Quercus hybrids sapling	I (2)	I (4)	I (4)	I (2–4)

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Floristic table W4 *(cont.)*

	a	b	c	4
Crataegus monogyna	I (1–3)	I (1–2)		I (1–3)
Corylus avellana	I (3–5)	I (1)		I (1–5)
Ilex aquifolium	I (2–4)	I (1)		I (1–4)
Salix aurita		I (7)	I (3)	I (3–7)
Molinia caerulea	IV (1–10)	IV (3–8)	IV (1–9)	IV (1–10)
Dryopteris dilatata	IV (4–9)	I (1)	I (1–3)	II (1–9)
Rubus fruticosus agg.	IV (1–10)			II (1–10)
Lonicera periclymenum	III (1–4)			I (1–4)
Mnium hornum	III (1–4)		I (1–2)	I (1–4)
Deschampsia flexuosa	II (2–6)	I (2–4)	I (3–6)	I (2–6)
Epilobium angustifolium	II (2–5)	I (1)	I (3)	I (1–5)
Galium saxatile	II (1–2)	I (1–2)	I (1)	I (1–2)
Lophocolea bidentata s.l.	II (1–3)	I (2)	I (1–3)	I (1–3)
Pteridium aquilinum	II (1–5)	I (2–5)		I (1–5)
Hypnum cupressiforme	II (2–6)		I (1–4)	I (1–6)
Hedera helix	I (2–7)			I (2–7)
Plagiothecium denticulatum	I (1–2)			I (1–2)
Isopterygium elegans	I (1–2)			I (1–2)
Polytrichum formosum	I (2–3)			I (2–3)
Juncus effusus	I (1–4)	V (1–8)	II (1–5)	II (1–8)
Potentilla erecta	I (1)	IV (3)	I (1–3)	II (1–3)
Holcus mollis	I (1–8)	IV (1–5)		II (1–8)
Deschampsia cespitosa	I (1–8)	IV (1–5)		I (1–8)
Holcus lanatus	I (3–7)	III (1–4)		I (1–7)
Hydrocotyle vulgaris		III (2–4)	I (3–4)	I (2–4)
Viola palustris		III (1–3)	I (2–4)	I (1–4)
Cirsium palustre		III (1–4)		I (1–4)
Lotus uliginosus		III (1–3)		I (1–3)
Calliergon cuspidatum		III (1–4)		I (1–4)
Myrica gale	I (3–4)	II (4–6)	I (3–7)	I (3–7)
Juncus acutiflorus		II (2–6)	I (3)	I (2–6)
Succisa pratensis		II (2)	I (2)	I (2)
Galium uliginosum		II (3–4)		I (3–4)
Carex laevigata		II (4–6)		I (4–6)
Angelica sylvestris		II (2)		I (2)
Valeriana officinalis		II (1)		I (1)
Sphagnum fimbriatum	I (2–7)		III (1–8)	II (1–8)
Sphagnum squarrosum	I (3–5)	I (5)	II (1–8)	I (1–8)
Sphagnum papillosum	I (1–5)		II (2–4)	I (1–5)
Pohlia nutans		I (3)	II (1–3)	I (1–3)
Eriophorum angustifolium			II (1–6)	I (1–6)
Calluna vulgaris			II (1–7)	I (1–7)
Eriophorum vaginatum			II (1–5)	I (1–5)
Erica tetralix			II (1–5)	I (1–5)
Menyanthes trifoliata			I (5–6)	I (5–6)

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Potentilla palustris			I (5–7)	I (5–7)
Carex rostrata			I (1–4)	I (1–4)
Vaccinium oxycoccus			I (1–4)	I (1–4)
Drepanocladus fluitans			I (2–5)	I (2–5)
Equisetum fluviatile			I (4)	I (4)
Calliergon stramineum			I (3)	I (3)
Sphagnum cuspidatum			I (4)	I (4)
Sphagnum recurvum	I (5–8)	IV (1–7)	IV (1–8)	III (1–8)
Sphagnum palustre	II (1–9)	II (2–5)	III (2–9)	II (1–9)
Eurhynchium praelongum	II (2–6)	II (1–3)	I (2)	I (1–6)
Pseudoscleropodium purum	II (2–4)	II (1–2)	I (3–8)	I (1–8)
Aulacomnium palustre	I (1–3)	II (1–4)	II (1–4)	I (1–4)
Carex nigra	I (1)	II (1–5)	II (1–3)	I (1–5)
Polytrichum commune	II (1–7)	I (1)	II (1–7)	I (1–7)
Rhytidiadelphus squarrosus		II (2–3)	I (1)	I (1–3)
Agrostis canina canina	I (1–5)	I (2)	I (1–7)	I (1–7)
Dryopteris carthusiana	I (3–6)	I (2)	I (2)	I (2–6)
Rumex acetosa	I (1)	I (2–3)	I (1)	I (1–3)
Sphagnum subnitens	I (1–6)	I (2)	I (3–5)	I (1–6)
Pleurozium schreberi	I (2)	I (1)	I (1–4)	I (1–4)
Lophocolea cuspidata	I (1–2)	I (1)	I (3)	I (1–3)
Betula pubescens seedling	I (2)	I (2)	I (2–3)	I (2–3)
Anthoxanthum odoratum	I (1–2)	I (3–5)		I (1–5)
Lophocolea heterophylla	I (1–2)	I (1)		I (1–2)
Agrostis capillaris	I (1–7)	I (4)		I (1–7)
Agrostis stolonifera	I (2–3)	I (3–5)		I (2–5)
Oxalis acetosella	I (2–4)	I (4)		I (2–4)
Athyrium filix-femina	I (1–3)	I (1)		I (1–3)
Blechnum spicant	I (1)	I (1)		I (1)
Chiloscyphus polyanthos	I (2)	I (1)		I (1–2)
Filipendula ulmaria	I (1)	I (2)		I (1–2)
Brachythecium rutabulum	I (1)	I (3)		I (1–3)
Vaccinium myrtillus	I (1–5)		I (2–6)	I (1–6)
Quercus robur seedling	I (1–3)		I (2–3)	I (1–3)
Dicranum scoparium	I (1–4)		I (2–3)	I (1–4)
Hypnum jutlandicum	I (2–3)		I (2–4)	I (2–4)
Poa trivialis	I (1–2)		I (2)	I (1–2)
Calypogeia fissa	I (2)		I (1–2)	I (1–2)
Dryopteris cristata	I (4)		I (1–5)	I (1–5)
Equisetum palustre	I (2)		I (2)	I (2)
Campylopus paradoxus	I (1–2)		I (2)	I (1–2)
Dicranella heteromalla	I (1–3)		I (2)	I (1–3)
Leucobryum glaucum	I (2)		I (2)	I (2)
Orthodontium lineare	I (1)		I (1)	I (1)
Galium palustre		I (4)	I (2)	I (2–4)
Sphagnum capillifolium		I (5)	I (6)	I (5–6)
Epilobium palustre		I (3)	I (2)	I (2–3)
Number of samples	35	9	28	72
Number of species/sample	17 (7–30)	28 (15–52)	13 (2–23)	17 (2–52)

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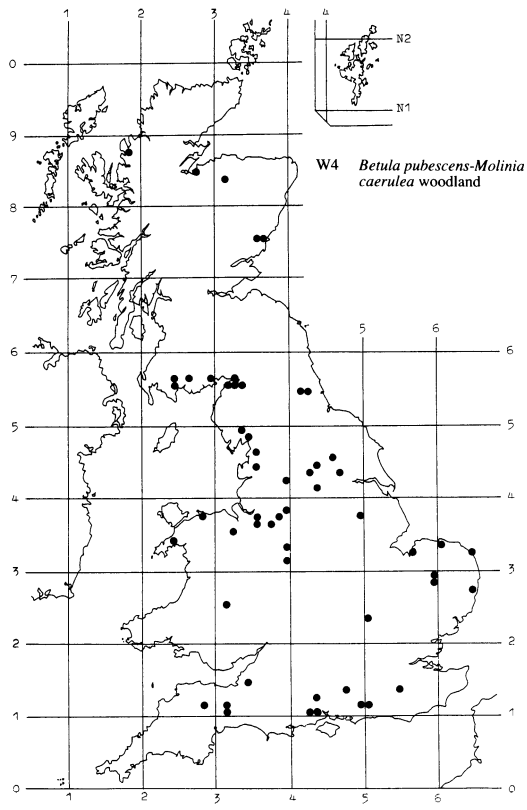
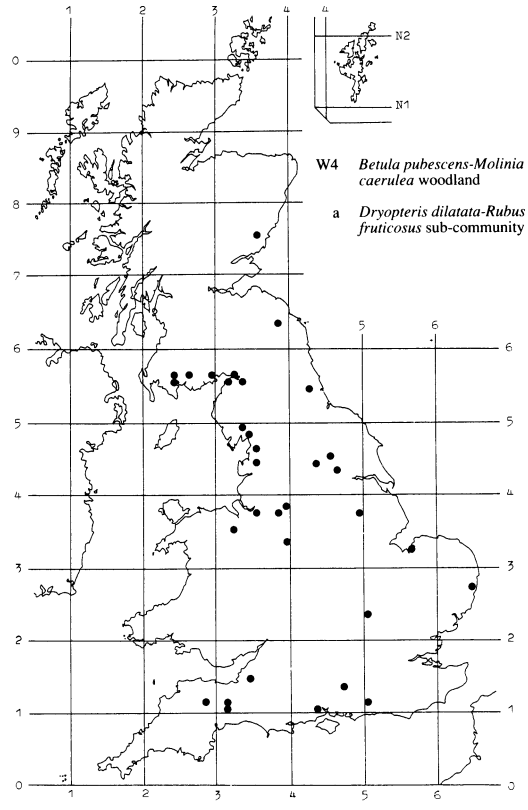
Floristic table W4 *(cont.)*

	a	b	c	4
Tree height (m)	13 (8–25)	8 (5–14)	7 (5–15)	10 (5–25)
Tree cover (%)	90 (20–100)	59 (10–85)	70 (20–100)	81 (10–100)
Shrub height (m)	3 (1–6)	5 (3–8)	3 (2–5)	3 (1–8)
Shrub cover (%)	17 (0–75)	10 (0–55)	5 (0–15)	10 (0–75)
Herb height (cm)	47 (15–120)	66 (30–140)	58 (30–150)	54 (15–150)
Herb cover (%)	81 (25–100)	86 (70–100)	69 (15–100)	77 (15–100)
Ground height (mm)	31 (10–110)	57 (10–100)	42 (10–110)	44 (10–110)
Ground cover (%)	28 (0–90)	29 (1–90)	66 (7–100)	42 (0–100)
Altitude (m)	78 (5–270)	100 (20–260)	100 (1–210)	90 (1–270)
Slope (°)	1 (0–15)	2 (0–5)	1 (0–2)	1 (0–15)

a *Dryopteris dilatata-Rubus fruticosus* sub-community
b *Juncus effusus* sub-community
c *Sphagnum* sub-community
4 *Betula pubescens-Molinia caerulea* woodland (total)





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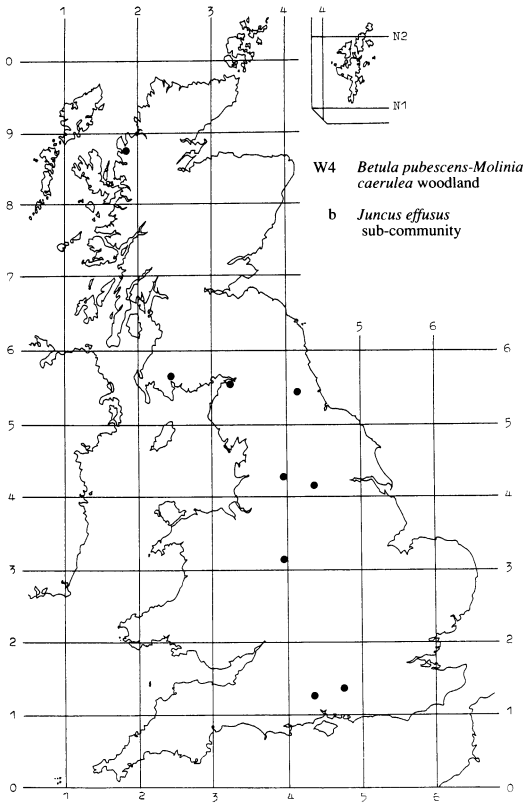

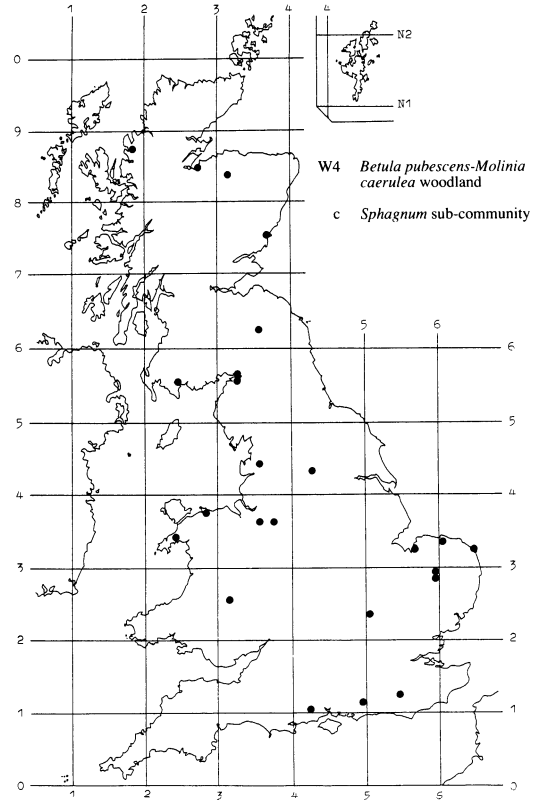

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