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GRASSLANDS AND MONTANE COMMUNITIES

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**KEY TO CALCICOLOUS GRASSLANDS**

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U2 Deschampsia flexuosa grassland

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U5 Nardus stricta-Galium saxatile grassland

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Deschampsia flexuosa grassland

Synonymy

Constant species
Calluna vulgaris, Deschampsia flexuosa.

Physiognomy
The Deschampsia flexuosa grassland comprises swards in which D. flexuosa is an obvious dominant, being particularly striking where the vegetation goes ungrazed in early summer, when an abundance of the tall silvery-purple inflorescences can colour whole stands. In fact, the cover of the grass is rarely complete, and the height of its herbage is usually only around 2 dm, but its strong tussocky habit and its ability to spread rhizomously mean that it characteristically exerts a controlling effect on the distribution of many of the other species. This is visible, first, in the generally impoverished nature of the vegetation, in which there is but one other constant, hardly any other associates occurring commonly throughout and rather sparse preferential floras in the two sub-communities. And, second, although even occasional of the community can sometimes show local prominence, there are no consistent patterns of co- or sub-dominance.

In particular, other grasses and sub-shrubs are typically subordinate. Calluna vulgaris is the only other plant that occurs commonly overall, but it is characteristically found as sparse shoots and is sometimes absent altogether. And, although Vaccinium myrtillus and Empetrum nigrum ssp. nigrum are recorded fairly frequently, they are very much confined to one type of Deschampsia grassland and even there are of low cover.

So, though the community is often seen in close association with a variety of heaths throughout its range and grades into them structurally, the balance of dominance in typical stands helps distinguish the vegetation types.

The separation from calcifuge scrub is usually clear, too, although Ulex europaeus and Rubus fruticosus agg. can both occur occasionally in small amounts.

As for grasses, the most frequent associates are those which form the basis of other fine calcifuge swards, with Festuca ovina and Agrostis capillaris both common, Anthoxanthum odoratum, Agrostis canina, A. stolonifera and Festuca rubra occurring more occasionally. But, again, these are rather unevenly distributed throughout the community and, although the first two in particular can be patchily abundant, they never rival the dominance of D. flexuosa except very locally. Likewise, Molinia caerulea is sometimes found but only as scattered tussocks and, although Nardus stricta is also seen in some stands, almost all the kinds of mixed swards which Adamson (1918) and later authors (Tansley 1939) put in Nardus-Deschampsia vegetation are best placed in the Nardus-Galium grassland.

Small dicotyledons are few in number and usually sparse. Galium saxatile is the commonest of the group and it can form quite large patches between the grass tussocks, but with Potentilla erecta it is more often seen as scattered individuals. Rumex acetosella can also find a place in more open areas but the rich ephemeral flora of the Festuca-Agrostis-Rumex grassland is not characteristic here. Other, more conspicuous, plants which can add diversity to the community are Eriophorum vaginatum, though its tussocks are never more than a subordinate or waning element in the flora, Juncus squarrosus and J. effusus, both only occasional but the latter sometimes locally prominent, and Pteridium aquilinum, found as sparse shoots or in small patches. Saplings of Betula pendula and oak, usually with at least some Quercus robur characters, are also sometimes seen where seedlings germinating on more open ground have been able to get away.

Bryophytes and lichens are not usually a conspicuous component of the vegetation, with only very occasional Hypnum cupressiforme s.l., Plagiothecium undulatum, Pothlia nutans and Rhytiadelphus squarrosus occurring.
through the community. But some stands have local enrichment from acrocarpous mosses and Cladonia spp. while in others bulky pleurocarps or even Sphagna can make a prominent contribution.

**Sub-communities**

*Festuca ovina-Agrostis capillaris sub-community*: Graminetum arenosum Tansley 1911 p.p.; Grass-heath Tansley 1939 p.p. Although this kind of Deschampsia grassland is commonly found among sub-shrub vegetation, it is the less heathy of the sub-communities with only small amounts of Calluna occurring through the sward. But the grass cover is a little more diverse than usual with *F. ovina* and *A. capillaris* both common and among these are the preferential herbs Galium saxatile, Potentilla erecta and Rumex acetosella. *R. acetosa* and Digitalis purpurea also occur very occasionally and there can be clumps of Epilobium angustifolium. Pteridium aquilinum is commoner here than in the other sub-community and some stands have birch or oak saplings or patches of *Ulex europaeus* and bramble.

Acrocarpous mosses are fairly frequent between the grass tussocks, though only exceptionally abundant, with Polytrichum piliferum, Dicranum scoparium and, less commonly, Campylopus pyriformis and Orthodonium lineare. In some stands, too, Cladonia gracilis, C. pyxidata, C. uncialis and C. implexa can be found on patches of bare ground.

*Vaccinium myrtillus sub-community*: Narthex-Deschampsia grassland Adamson 1918 p.p.; Grass-heath Pearson 1939 p.p.; Deschampsia flexuosa grassland Tansley 1939. *D. flexuosa* remains dominant here, though Calluna is typically accompanied by scattered sprigs of Vaccinium myrtillus and Euphratherum nigrum ssp. nigrum, which together can give the vegetation a distinctly heathy aspect. Some stands have scattered tussocks of Eriophorum vaginatum, while occasional plants of Molinia, J. squarrosa or *J. effusa* can also occur through the sward. In other situations, small amounts of Anthoxanthum, Agrostis canina, Festuca rubra and Carex nigra are recorded and here Gallium saxatile and Potentilla erecta can occur, though they are not generally characteristic of this vegetation.

Small acrocarps and lichens are uncommon here too, though Pleurozium schreberi is frequent and locally abundant and there can be small patches of Polytrichum commune and very occasional tufts of Sphagnum compactum, S. subnitens or *S. recurvum*.

**Habitat**

The Deschampsia grassland is characteristic of base-poor soils, free-draining though not parched and sometimes quite moist, through the upland fringes and moderately oceanic parts of the lowlands. Grazing is often important in maintaining the community and most stands have probably been derived secondarily from woodlands, heaths and even mires.

*D. flexuosa* is an important constituent of a number of widespread kinds of calcifuge grassland, but it is only rarely able to attain the kind of prominence that it shows here when certain rather particular conditions are fulfilled. In the first place, the climate needs to be at least moderately moist. *D. flexuosa* has become locally prominent on some of the Breckland grass-heaths with the demise of grazing (Watt 1971a, Ratcliffe 1977), but the *Deschampsia* grassland itself is not common in those parts of Britain where the annual rainfall drops below 500 mm (*Climatological Atlas 1952*) or where the number of rain days yr⁻¹ is less than 120 (Ratcliffe 1968), a zone which includes most of East Anglia, much of the East Midlands and the Vale of York. In these areas, spring and early summer in particular are dry and, with the rise in temperature thereafter to high levels, with mean annual maxima above 25 °C (Conolly & Dahl 1970), the potential for a soil water deficit is very marked, particularly on permeable profiles (Smith 1976, Chandler & Gregory 1976). Here, then, the community is usually replaced on such soils by the *Festuca-Agrostis-Rumex* grassland, where parching contributes to keeping the turf open and allowing a rich representation of ephemerals and lichens. With less droughty conditions, grass-dominance and consequent impoverishment of the swarms in these elements are more pronounced in the Deschampsia grassland, though the two vegetation types can come quite close in the Festuca-Agrostis sub-community. This is characteristic of the drier part of the range of the Deschampsia grassland, occurring across lowland England up to altitudes of around 200 m, where it grades continuously in locally-parched patches to the Gallium-Potentilla sub-community of the Festuca-Agrostis-Rumex grassland.

The opposite extreme is seen in the Vaccinium sub-community which replaces the other kind of Deschampsia grassland through the upland fringes of the west and north of the country, at altitudes between 300 and 500 m, where the annual rainfall approaches 1000 mm (*Climatological Atlas 1952*) with 140–160 wet days yr⁻¹ (Ratcliffe 1968), and where mean annual maxima are less than 27 °C (Conolly & Dahl 1970). Indicative of this shift to cooler, moister conditions are the appearance of the broadly montane *V. myrtillus* and *E. nigrum* ssp. *nigrum*, the greatly increased frequency of *Pleurozium schreberi* and the general change in the character of the vegetation from a Thero-Airion sward towards a Nardo-Galio grassland. Indeed, in these parts of Britain, the community can extend into habitats transitional to various kinds of mire, as over the drying surfaces of blanket bog or in the surrounds to grassy poor fens.