
MG4

Alopecurus pratensis-*Sanguisorba officinalis* grassland

Synonymy

Hay Meadows Baker 1937; *Fritillario-Alopecuretum pratensis* Westhoff & den Held 1969 *p.p.*; Flood-Meadows Duffey *et al.* 1974; Alluvial meadows Ratcliffe 1977; *Fritillario-Sanguisorbetum officinalis* Page 1980.

Constant species

Alopecurus pratensis, *Cerastium fontanum*, *Cynosurus cristatus*, *Festuca rubra*, *Filipendula ulmaria*, *Holcus lanatus*, *Lathyrus pratensis*, *Leontodon autumnalis*, *Lolium perenne*, *Plantago lanceolata*, *Ranunculus acris*, *Rumex acetosa*, *Sanguisorba officinalis*, *Taraxacum officinale* agg., *Trifolium pratense*, *T. repens*.

Rare species

Fritillaria meleagris, *Taraxacum fulgidum*, *T. haematium*, *T. melanithoides*, *T. sublaeticolor*, *T. subundulatum*, *T. tamesense*.

Physiognomy

The *Alopecurus pratensis*-*Sanguisorba officinalis* community has a species-rich and somewhat varied sward of grasses and herbaceous dicotyledons. Among the former, there is generally no single dominant and, by June, when most of the grasses are flowering, *Festuca rubra*, *Alopecurus pratensis*, *Cynosurus cristatus* and *Lolium perenne* may all be abundant with, less frequently and usually in smaller amounts, *Holcus lanatus*, *Anthoxanthum odoratum*, *Dactylis glomerata* and *Trisetum flavescens*. Many other grasses occur occasionally and some of these may attain local abundance (e.g. *Bromus hordeaceus* ssp. *hordeaceus* and *Agrostis stolonifera*) or be conspicuous by virtue of a dense tussock habit (e.g. *Arrhenatherum elatius*, *Deschampsia cespitosa* and *Festuca arundinacea*). *Carex acutiformis* is occasional and it may be abundant but other sedges (e.g. *C. panicea* and *C. hirta*) are less frequent and never prominent. *Juncus articulatus* and *J. inflexus* occur patchily at low frequency.

Herbaceous dicotyledons are always an important component of the herbage. When growth commences in April or May, rosette species such as *Leontodon autumnalis*, *L. hispidus*, *Plantago lanceolata* and *Bellis perennis* are often prominent in the short sward. *Taraxacum officinale* agg. is a constant and sometimes abundant member of the community and is often especially conspicuous at this time when flowering. Older stands have a rich and varied dandelion flora and a number of species seem to be confined to the community (Richards 1972). It is at this time, too, that the most renowned occasional of the vegetation, *Fritillaria meleagris*, makes a spectacular display with its flowers, occurring patchily in the sward or sometimes as extensive sheets.

By July, the grasses have generally been overtopped by *Sanguisorba officinalis* and *Filipendula ulmaria*, both of which, though especially the former, may be abundant. By this time, the vegetation forms a dense herbage up to 70 cm or more tall. Below, *Trifolium pratense*, *T. repens*, *Ranunculus acris*, *R. repens*, *Rumex acetosa* and *Rhinanthus minor* may all be plentiful with smaller amounts of *Cerastium fontanum*, *Lotus corniculatus*, *Primula veris* and *Luzula campestris*. *Lathyrus pratensis* is a constant and sometimes abundant sprawler and the inflorescences of tall hemicryptophytes such as *Centaurea nigra*, *Leontodon autumnalis*, *L. hispidus*, *Silaum silaus*, *Leucanthemum vulgare* and *Succisa pratensis* may make a colourful show.

There are almost always some bryophytes and both *Brachythecium rutabulum* and *Calliergon cuspidatum* can occur as extensive patches over soil and litter. *Eurhynchium praelongum* and *Plagiomnium elatum* are less frequent.

Habitat

The *Alopecurus-Sanguisorba* community is a lowland grassland especially characteristic of areas where traditional hay-meadow treatment has been applied to seasonally-flooded land with alluvial soils. With almost universal improvement of grasslands and river drainage,

it is now of restricted occurrence and some of the richest stands remain where common rights have kept treatment unchanged for many generations.

As with the *Anthoxanthum-Geranium* community, hay-meadow treatment has traditionally comprised the taking of an annual hay crop, light winter grazing and light application of organic manures. Typically, stands are shut up for hay in spring, sometimes as early as February, and mown in July. At some sites, the ancient practice of distributing hay lots or doles persists, the hay from the parcels of land within the common meadow being mown and carted individually. Wooden stakes or near stones sometimes remain as markers of the permanent lot boundaries within the open fields. The aftermath is generally grazed by cattle and, in some places, the turning out of stock takes place on or around Lammas Day, 1 August or, according to the older calendar, 12 August. North Meadow at Cricklade in Wiltshire and Pixey and Yarnton Meads in Oxford seem to have been managed in this way for centuries (Baker 1937, Hoskins & Stamp 1963, Ratcliffe 1977).

Under this regime, the meadows received no fertiliser apart from the manure of the grazing animals, but of great importance in the maintenance of fertility here has been winter flooding with its input of salts and deposition of alluvial silt and decaying organic matter. The flood-water which inundates some of the richer stands originates from watersheds with calcareous bedrocks and the calcium content and pH of the soils here are high (Baker 1937). Although pH tends to increase with depth, there is none of the leaching and development of superficial acidity that is characteristic of some stands of the *Anthoxanthum-Geranium* community.

Deep alluvial profiles have accumulated under the meadows with the repeated deposition of silt. Winter flooding leaves the land waterlogged, sometimes for many months, and the soils are frequently gleyed below. However, the profiles are generally free-draining and, as the water-table subsides, they gradually dry out above except in hollows and alongside ditches. Deep-rooted species probably always have access to soil water and, except in the driest summers, water availability is probably not limiting to plant growth.

Zonation and succession

Stands of the community frequently show considerable variation in the abundance of particular species. Some of this is related to the distinctive bushy (e.g. *S. officinalis* and *F. ulmaria*) or tussock (e.g. larger grasses) habit of certain components but local variations in treatment, such as differences in mowing-time, continued over long periods, may also have an effect (Ratcliffe 1977). Zonations to other communities are most frequently related to differences in soil moisture status. Damp hollows in meadows sometimes show gradations to the *Holcus*

lanatus-*Deschampsia cespitosa* community or to the *Holco-Juncetum*, especially the *Juncus inflexus* sub-community on more base-rich soils. These in turn may give way to *Carex acutiformis* swamp. Sharper zonations of this kind can sometimes be seen bordering the older drainage ditches which frequently traverse the meadows or in such places there may be an abrupt switch to the *Agrostis stolonifera*-*Alopecurus geniculatus* inundation grassland. Modern ditches around the meadows often have linear stands of *Salix* spp. or *Alnus* on their banks.

Changes in treatment practice can alter the composition of the *Alopecurus-Sanguisorba* community and may initiate successions to other grassland types. An extension of grazing into the spring reduces the abundance of some of the most distinctive species of the community such as *Sanguisorba officinalis*, *Silene silaus* and *Fritillaria meleagris*, all of which are highly palatable. This is the major community in Britain for *F. meleagris* and, if grazing is continued into its flowering period in late April to early May, it cannot set seed. At Marston Meadows in Staffordshire, a change from mowing to late spring grazing over the last 20 years has extensively reduced its cover (Ratcliffe 1977). It can, however, remain dormant in the soil for a number of years and seems able to recolonise fields from margins or ditch edges. If stands are ungrazed over the winter months, coarse grasses such as *Arrhenatherum elatius* (in drier places) and *Deschampsia cespitosa* (in wetter areas) may expand and eventually form stands of the *Arrhenatherum* or the *Holcus lanatus*-*Deschampsia cespitosa* community.

Drainage, ploughing, re-seeding or the addition of artificial fertilisers can all have a more drastic effect on the vegetation. Combined with an increase in grazing, such changes probably convert the community to the *Lolium perenne*-*Alopecurus pratensis*-*Festuca pratensis* flood-pasture or to the *Lolium-Cynosuretum*.

Distribution

The *Alopecurus-Sanguisorba* community is the lowland counterpart of the *Anthoxanthum-Geranium* community and it was probably once a common vegetation type of traditionally treated alluvial meadows. It now has a widespread but local distribution and the richer stands are very sparsely scattered in the Midlands and southern England. Continuing agricultural improvement, the neglect of common meadow rights and the extraction of river gravels present beneath alluvium at some sites could further reduce its extent.

Affinities

The richer stands of the community have long been the subject of admiration and study and descriptive accounts (e.g. Baker 1937, Tansley 1939, Ratcliffe 1977)

have clearly recognised some of the distinctive floristic features of the vegetation. Even where species of more restricted distribution are lacking, the community remains well defined in relation to other meadow types. It differs from the *Anthoxanthum-Geranium* community in the absence of northern species such as *Geranium sylvaticum*, *Conopodium majus*, *Alchemilla glabra* and *A. xanthochlora* and from the *Centaureo-Cynosuretum* in the presence of tall dicotyledons such as *Sanguisorba officinalis* and *Filipendula ulmaria*. Also, *Alopecurus pratensis* and *Lolium perenne* tend here to replace *Anthoxanthum odoratum*, *Agrostis capillaris*, *Poa trivialis* and *Dactylis glomerata* which are prominent in these other communities.

However, the affinities of the *Alopecurus-Sanguisorba*

community are somewhat mixed and it appears to straddle the *Cynosurion* pastures, the coarse ungrazed swards of the *Arrhenatherion* and the more grassy poor fens of the *Molinietalia*. This accurately reflects the rather particular combination of treatment factors which maintain meadows on more calcareous alluvium in Britain. Unimproved communities described from similar habitats in other parts of western Europe tend to be totally ungrazed (e.g. the *Molinietum caeruleae* of Braun-Blanquet 1948 and the *Arrhenatheretum elatioris colchicetosum* of LeBrun *et al.* 1949) or unmown (e.g. the *Fritillario-Alopecuretum* of Westhoff & den Held 1969) and these show much clearer affinities at the alliance level.

Floristic table MG4

<i>Festuca rubra</i>	V (2–6)	<i>Leucanthemum vulgare</i>	II (2–4)
<i>Cynosurus cristatus</i>	V (1–6)	<i>Deschampsia cespitosa</i>	II (2–4)
<i>Sanguisorba officinalis</i>	V (2–7)	<i>Succisa pratensis</i>	II (2–3)
<i>Plantago lanceolata</i>	V (1–5)	<i>Calliergon cuspidatum</i>	II (1–6)
<i>Ranunculus acris</i>	V (2–5)	<i>Cardamine pratensis</i>	II (1–2)
<i>Rumex acetosa</i>	V (1–4)	<i>Bromus hordeaceus hordeaceus</i>	II (1–5)
<i>Filipendula ulmaria</i>	V (1–6)	<i>Carex acutiformis</i>	II (2–5)
<i>Taraxacum officinale</i> agg.	V (1–5)	<i>Festuca arundinacea</i>	II (2–9)
<i>Trifolium pratense</i>	V (1–5)	<i>Juncus articulatus</i>	II (1–3)
<i>Alopecurus pratensis</i>	IV (1–6)	<i>Leontodon hispidus</i>	II (1–4)
<i>Cerastium fontanum</i>	IV (1–4)	<i>Luzula campestris</i>	II (2–3)
<i>Holcus lanatus</i>	IV (2–5)	<i>Primula veris</i>	II (2–4)
<i>Lathyrus pratensis</i>	IV (2–5)	<i>Prunella vulgaris</i>	II (1–2)
<i>Leontodon autumnalis</i>	IV (1–5)	<i>Trifolium dubium</i>	II (1–3)
<i>Trifolium repens</i>	IV (2–5)	<i>Eurhynchium praelongum</i>	II (2–3)
<i>Lolium perenne</i>	IV (2–7)	<i>Poa trivialis</i>	I (1–7)
<i>Rhinanthus minor</i>	III (1–5)	<i>Carex panicea</i>	I (1)
<i>Anthoxanthum odoratum</i>	III (2–6)	<i>Phleum pratense pratense</i>	I (2–4)
<i>Bellis perennis</i>	III (1–4)	<i>Carex hirta</i>	I (1–3)
<i>Silaum silaus</i>	III (1–4)	<i>Ranunculus bulbosus</i>	I (1–4)
<i>Centaurea nigra</i>	III (1–4)	<i>Veronica serpyllifolia</i>	I (1–2)
<i>Dactylis glomerata</i>	III (1–5)	<i>Juncus inflexus</i>	I (3)
<i>Lotus corniculatus</i>	III (1–3)	<i>Cirsium palustre</i>	I (2)
<i>Ranunculus repens</i>	III (1–5)	<i>Bromus erectus</i>	I (4–8)
<i>Fritillaria meleagris</i>	III (2–3)	<i>Plagiomnium elatum</i>	I (2–3)
<i>Trisetum flavescens</i>	III (2–4)	<i>Poa pratensis</i>	I (3)
<i>Brachythecium rutabulum</i>	III (2–6)	<i>Achillea millefolium</i>	I (3–5)
<i>Festuca pratensis</i>	II (2–5)	<i>Thalictrum flavum</i>	I (3–7)
<i>Vicia cracca</i>	II (2–3)	<i>Serratula tinctoria</i>	I (3)
<i>Agrostis stolonifera</i>	II (2–6)	<i>Stachys betonica</i>	I (3)
<i>Agrostis capillaris</i>	II (3–6)	<i>Potentilla anglica</i>	I (2–3)
<i>Arrhenatherum elatius</i>	II (2–4)	<i>Hypochoeris radicata</i>	I (2)
		<i>Briza media</i>	I (1–2)

<i>Heracleum sphondylium</i>	I (3–4)	<i>Equisetum arvense</i>	I (1)
<i>Galium verum</i>	I (3–5)	<i>Bromus hordeaceus thominii</i>	I (2)
<i>Cirsium arvense</i>	I (1)		
<i>Caltha palustris</i>	I (2–3)	Number of samples	22
<i>Vicia sepium</i>	I (1)	Number of species/sample	28 (17–38)

