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## MC5

### *Armeria maritima*-*Cerastium diffusum* ssp. *diffusum* maritime therophyte community

#### Synonymy

Includes *Trifolium occidentale*-*Herniaria ciliolata*-*Catapodium maritimum* and *Trifolium occidentale*-*Scilla autumnalis*-*Jasione montana* noda Coombe 1961; *Sagino-Catapodietum marinae* R.Tx. & Westhoff 1963; *Thero-Sedetum anglici* Malloch 1971; *Sedion anglici* communities Proctor 1975.

#### Constant species

*Armeria maritima*, *Plantago coronopus*, *Festuca rubra*, *Cerastium diffusum* ssp. *diffusum*, *Sedum* spp. (*S. anglicum* and *S. acre*).

#### Rare species

*Allium schoenoprasum*, *Astragalus danicus*, *Brassica oleracea*, *Centaureum capitatum*, *Genista pilosa*, *Herniaria ciliolata*, *Lotus hispidus*, *Mibora minima*, *Minuartia verna*, *Ononis reclinata*, *Ornithopus pinnatus*, *Poa bulbosa*, *P. infirma*, *Polycarpon tetraphyllum*, *Romulea columnae*, *Scilla autumnalis*, *S. verna*, *Senecio integrifolius* ssp. *maritimus*, *Trifolium occidentale*, *T. suffocatum*.

#### Physiognomy

The *Armeria*-*Cerastium* community has a very short open turf in which cushions of *A. maritima*, tussocks of rather poorly-growing *F. rubra*, *P. coronopus* or *Sedum* spp. may dominate. Sprawling plants of *C. diffusum* ssp. *diffusum* occur throughout and the annual grasses *Desmazeria marina* and *Bromus hordeaceus* ssp. *ferronii* are frequent. Numerous winter annuals flourish on the patches of bare ground and many of these are national rarities. *Trifolium* spp. of restricted distribution are also characteristic of some sub-communities. Bryophytes occur at low frequencies throughout but in some sub-communities they and lichens may attain up to 20% cover.

#### Sub-communities

***Desmazeria marina* sub-community:** *Sagino-Catapodietum marinae* R.Tx. & Westhoff 1963 p.p. In this, the

most species-poor of the sub-communities, *A. maritima* and either *F. rubra* or *D. marina* tend to co-dominate with scattered plants of *C. diffusum* ssp. *diffusum*, *B. hordeaceus* ssp. *ferronii* and *Spergularia rupicola*. Other species are relatively few but *Sagina maritima*, *Cochlearia officinalis* and slimy pads of *Collema* spp. are distinctive.

***Anthyllis vulneraria* sub-community:** *Trifolium occidentale*-*Herniaria ciliolata*-*Catapodium maritimum* nodum Coombe 1961; *Sagino-Catapodietum marinae* R.Tx. & Westhoff 1963 p.p.; *Sedion anglici* relevés 1–10 Proctor 1975. Although this sub-community shares with the last the constancy of *Desmazeria marina* and frequent occurrence of *Spergularia rupicola*, they are here joined by *Sedum anglicum* which may occasionally be abundant and sometimes intermixed with a little *S. acre*. This and the next sub-community share a large number of associates but the positive features here are the high frequency and occasional abundance of *A. vulneraria* and the slightly preferential occurrence of *Herniaria ciliolata*, *Trifolium arvense* and *T. occidentale*.

***Aira praecox* sub-community:** *Trifolium occidentale*-*Scilla autumnalis*-*Jasione montana* nodum Coombe 1961; *Sedion anglici* relevés 11–15 Proctor 1975. *S. anglicum* is here joined by *A. praecox* and *Festuca ovina* as constants and maritime therophyte and crevice species are much less prominent than in the two previous sub-communities. Of the species shared with *Anthyllis* sub-community, most are more frequent here, notably *Jasione montana*, *Aira caryophyllea*, *Hypnum cupressiforme* and the lichens *Cladonia foliacea*, *C. rangiformis* and *C. chlorophaea*.

***Arenaria serpyllifolia* sub-community.** Although *Sedum acre* occurs in the two previous sub-communities, it here totally replaces *S. anglicum* and is occasionally co-dominant with *F. rubra*. *A. serpyllifolia* is a differential constant and *B. hordeaceus* ssp. *ferronii*, *Thymus praecox*

and *Dactylis glomerata* (perhaps in the form ssp. *hispanica*) are also constant. Many low frequency differentials occur in this sub-community, notably *Desmazeria rigida*, *Echium vulgare*, *Hieracium pilosella*, *Salvia horminoides*, *Taraxacum* sp. and species characteristic of inland calcareous grasslands as well as the national rarities *Ononis reclinata* and *Poa bulbosa*.

### Habitat

The *Armeria-Cerastium* community is characteristic of excessively-draining, often very shallow soils at all levels of rocky cliffs, occurring most often in crevices and hollows which accumulate skeletal mixtures of mineral and organic matter or around rock outcrops where deeper soils thin out. It is generally ungrazed: even where there is no cliff-top enclosure, the vegetation is usually out of the reach of stock.

Floristic variation between the sub-communities can be related to differences in maritime influence and in bedrock and soil type. The *Desmazeria* sub-community occurs in the most maritime situations on all rock types and here the effects of salt-spray are probably responsible for the total exclusion of *Sedum* spp. The *Anthyllis* sub-community is the next most maritime and it is found on all rock types except chalk and the more friable limestones. On harder limestones, as on the south Wales coast, *S. acre* tends to replace *S. anglicum* in this sub-community. Both the *Aira* and *Arenaria* sub-communities are characteristic of the least maritime situations in which this community occurs. The *Aira* sub-community is more typical of rankers over non-calcareous rocks, the *Arenaria* sub-community of rendzini-form soils on chalk and the softer limestones.

### Zonation and succession

The community usually occurs in mosaics with other maritime vegetation types which vary according to the degree of maritime influence and the rock type. The *Desmazeria* sub-community is found at the level of the *Crithmo-Spergularietum* and typical *Festuca-Armeria*

grassland and the *Anthyllis* sub-community within the *Festuca-Armeria* and *Festuca-Holcus* grasslands. The *Aira* sub-community occurs in the zone of the *Festuca-Holcus* grassland and maritime heaths and the *Arenaria* sub-community in comparable positions within the *Brassica* and *Festuca-Daucus* communities. Gradations to each of the surrounding communities may be gentle or sharp according to the change in soil depth.

There is some evidence that the *Armeria-Cerastium* community may initiate colonisation of disturbed and eroding rock surfaces on cliffs, being succeeded by the vegetation characteristic of the particular more stable combination of exposure and lithology.

### Distribution

The *Armeria-Cerastium* community is predominantly southern since, in the cooler and damper climate of more northern cliffs, even the shallowest soils are able to carry more extensive crevice vegetation or maritime grassland. The *Anthyllis* sub-community is the most widespread with scattered occurrences up the west coast and also in north-west Scotland. The *Aira* sub-community has a similar distribution though it is much more common around the Mull of Galloway. The *Desmazeria* sub-community extends from Dorset to north Wales and the *Arenaria* sub-community is more frequent along the Channel coast.

### Affinities

The community has floristic affinities with a variety of maritime vegetation types among the developing or eroding cover of which its distinctive therophyte element is able to gain a temporary or recurrent hold. The occurrence of halophyte ephemerals among this component has led some to place such vegetation with the communities of disturbed places on salt-marshes in the *Saginetum maritimae* (e.g. Tüxen & Westhoff 1963) but it is more appropriate to set them alongside similar inland vegetation in the Thero-Airion of the *Sedo-Scleranthetum*.

## Floristic table MC5

	a	b	c	d	5
<i>Armeria maritima</i>	V (2–8)	V (2–8)	V (1–6)	II (2–5)	V (1–8)
<i>Plantago coronopus</i>	V (1–8)	V (1–8)	IV (2–8)	III (2–4)	V (1–8)
<i>Festuca rubra</i>	III (3–7)	V (2–8)	III (2–7)	V (3–8)	IV (2–8)
<i>Cerastium diffusum diffusum</i>	III (3–4)	V (1–4)	III (1–4)	IV (2–5)	IV (1–5)
<i>Desmazeria marina</i>	V (1–8)	IV (1–6)	I (3–4)	III (2–4)	III (1–8)
<i>Spergularia rupicola</i>	III (2–6)	III (1–5)	I (1–4)	I (2)	II (1–6)
<i>Sagina maritima</i>	II (2–3)	I (2–3)			I (2–3)
<i>Radiola linoides</i>	I (1–2)	I (2)			I (1–2)
<i>Matricaria maritima</i>	I (2)	I (1–3)			I (1–3)
<i>Collema</i> spp.	I (2)				I (2)
<i>Cochlearia officinalis</i>	I (1–2)				I (1–2)
<i>Sedum anglicum</i>		V (1–8)	V (2–9)		III (1–9)
<i>Anthyllis vulneraria</i>	I (3)	III (1–8)	I (1–4)		II (1–8)
<i>Herniaria ciliolata</i>		I (1–5)	I (1–2)		I (1–5)
<i>Trifolium arvense</i>		I (3–4)	I (1–4)		I (1–4)
<i>Trifolium occidentale</i>		I (2–4)	I (3)		I (2–4)
<i>Aira praecox</i>		II (2–5)	V (1–7)	I (4)	III (1–7)
<i>Festuca ovina</i>		I (4–9)	IV (3–9)	I (5–7)	II (3–9)
<i>Holcus lanatus</i>	I (2–3)	II (1–8)	II (1–6)		II (1–8)
<i>Cladonia foliacea</i>		II (2–5)	II (2–6)		II (2–6)
<i>Jasione montana</i>		I (2–4)	II (1–4)		I (1–4)
<i>Aira caryophyllea</i>		I (1–4)	II (1–4)		I (1–4)
<i>Cladonia rangiformis</i>		I (1–4)	II (2–6)		I (1–6)
<i>Hypnum cupressiforme</i>		I (3–5)	II (2–4)		I (2–5)
<i>Agrostis capillaris</i>		I (3)	I (1–4)		I (1–4)
<i>Scilla autumnalis</i>		I (2–5)	I (2–5)		I (2–5)
<i>Cladonia chlorophaea</i>		I (2)	I (2–4)		I (2–4)
<i>Sagina apetala</i>			I (1–4)		I (1–4)
<i>Arenaria serpyllifolia</i>				V (1–4)	I (1–4)
<i>Sedum acre</i>		I (2–5)	I (5)	V (2–7)	I (2–7)
<i>Bromus hordeaceus ferronii</i>	III (2–5)	III (1–6)	I (1–3)	V (2–5)	III (1–6)

**Floristic table MC5 (cont.)**

	a	b	c	d	5
<i>Dactylis glomerata</i>	I (2)	II (1–5)	II (1–5)	V (2–6)	II (1–6)
<i>Thymus praecox</i>		I (3–5)	II (1–8)	IV (2–5)	II (1–8)
<i>Desmazeria rigida</i>				II (2–4)	I (2–4)
<i>Echium vulgare</i>				II (1–2)	I (1–2)
<i>Hieracium pilosella</i>				II (2–4)	I (2–4)
<i>Salvia horminoides</i>				II (1–5)	I (1–5)
<i>Taraxacum</i> sp.				II (1–3)	I (1–3)
<i>Myosotis ramosissima</i>			I (3–4)	I (2–3)	I (2–4)
<i>Euphorbia portlandica</i>			I (2)	I (1–3)	I (1–3)
<i>Festuca arundinacea</i>				I (2–3)	I (2–3)
<i>Hippocrepis comosa</i>				I (2–4)	I (2–4)
<i>Diplotaxis muralis</i>				I (2–3)	I (2–3)
<i>Cirsium acaule</i>				I (1–2)	I (1–2)
<i>Filipendula vulgaris</i>				I (2–3)	I (2–3)
<i>Senecio jacobaea</i>				I (2–3)	I (2–3)
<i>Ranunculus acris</i>				I (2)	I (2)
<i>Vicia sativa</i>				I (1–2)	I (1–2)
<i>Brassica oleracea</i>				I (1–4)	I (1–4)
<i>Veronica arvensis</i>				I (2–4)	I (2–4)
<i>Achillea millefolium</i>				I (1–3)	I (1–3)
<i>Brachypodium pinnatum</i>				I (3–4)	I (3–4)
<i>Sanguisorba minor</i>				I (3–5)	I (3–5)
<i>Senecio vulgaris</i>				I (1–3)	I (1–3)
<i>Reseda lutea</i>				I (1–2)	I (1–2)
<i>Carex flacca</i>				I (2)	I (2)
<i>Atriplex littoralis</i>				I (2–4)	I (2–4)
<i>Daucus carota gummifer</i>	I (1–3)	II (1–4)	II (1–4)	III (2–4)	II (1–4)
<i>Koeleria macrantha</i>		I (2–6)	II (2–6)	III (2–6)	II (2–6)
<i>Plantago lanceolata</i>	I (1)	II (1–5)	II (1–4)	III (1–5)	II (1–5)
<i>Lotus corniculatus</i>		II (2–5)	II (1–4)	III (1–5)	II (1–5)
<i>Leontodon taraxacoides</i>		II (1–4)	II (1–4)	II (2–3)	II (1–4)
<i>Plantago maritima</i>	I (2–4)	I (1–5)	II (1–5)	I (3)	I (1–5)
<i>Scilla verna</i>	I (1)	I (1–4)	II (1–4)	I (2)	I (1–4)
<i>Silene vulgaris maritima</i>	II (3–7)	II (2–7)	I (3–4)	II (3–7)	II (2–7)

<i>Agrostis stolonifera</i>		II (3–5)	I (2–4)	I (1–4)	I (1–5)
<i>Bellis perennis</i>		I (2–3)	I (2–3)	II (2–3)	I (2–3)
<i>Galium verum</i>		I (1–5)	I (2–4)	II (1–5)	I (1–5)
<i>Beta vulgaris maritima</i>	I (4–5)	I (1–4)		I (4)	I (1–5)
<i>Cochlearia danica</i>	I (1–4)	I (1–5)	I (1–4)	I (4)	I (1–5)
<i>Tortella flavovirens</i>	I (2–3)	I (3–4)	I (3)		I (2–4)
<i>Trifolium repens</i>	I (2–3)	I (2)	I (3)		I (2–3)
<i>Lolium perenne</i>		I (2)	I (2)	I (2)	I (2)
<i>Centaureum erythraea</i>		I (1–3)	I (1–3)	I (2)	I (1–3)
<i>Cerastium fontanum</i>		I (2)	I (1–2)	I (2)	I (1–2)
<i>Sonchus oleraceus</i>		I (1–3)		I (1–2)	I (1–3)
<i>Trifolium scabrum</i>		I (2–4)		I (2–4)	I (2–4)
<i>Erodium cicutarium</i>		I (3–4)		I (2–3)	I (2–4)
Number of samples	19	78	75	21	193
Number of species/sample	8 (5–13)	14 (7–23)	14 (7–25)	17 (12–23)	14 (5–25)
Vegetation height (cm)	6 (2–30)	4 (1–20)	3 (1–10)	4 (1–15)	4 (1–30)
Total vegetation cover (%)	77 (10–100)	79 (10–100)	77 (20–100)	85 (70–100)	79 (10–100)
Altitude (m)	18 (3–60)	28 (3–70)	32 (3–215)	65 (35–150)	33 (3–215)
Slope (°)	10 (0–35)	14 (0–45)	14 (0–60)	9 (0–30)	13 (0–60)
Soil depth (cm)	14 (1–40)	5 (1–41)	4 (1–15)	10 (3–30)	6 (1–41)
Number of soil samples	5	19	20	4	48
Superficial pH	5.9 ± 0.8	6.2 ± 0.2	5.0 ± 0.1	7.5 ± 0.3	5.8 ± 0.2
Water content (% soil dry weight)	46 ± 13	51 ± 9	59 ± 9	35 ± 22	53 ± 6
Loss on ignition (% soil dry weight)	21 ± 5	21 ± 3	32 ± 4	21 ± 7	26 ± 2
Sodium (mole g <sup>-1</sup> )	49 ± 7	33 ± 5	48 ± 10	20 ± 4	40 ± 5
Potassium (mole g <sup>-1</sup> )	10 ± 1	12 ± 1	12 ± 1	12 ± 1	12 ± 1
Magnesium (mole g <sup>-1</sup> )	61 ± 18	43 ± 6	36 ± 5	33 ± 10	41 ± 4
Calcium (mole g <sup>-1</sup> )	82 ± 43	47 ± 10	32 ± 8	179 ± 7	55 ± 9
Phosphorus (mole g <sup>-1</sup> )	3.3 ± 0.8	7.1 ± 1.6	4.3 ± 1.3	0.9 ± 0.9	5.0 ± 0.9
Sodium/loss on ignition (mole g <sup>-1</sup> )	304 ± 69	169 ± 21	156 ± 20	103 ± 13	172 ± 15

a *Desmazeria marina* sub-community

b *Anthyllis vulneraria* sub-community

c *Aira praecox* sub-community

d *Arenaria serpyllifolia* sub-community

5 *Armeria maritima*-*Cerastium diffusum* ssp. *diffusum* maritime therophyte community (total)

