SD17
Potentilla anserina-Carex nigra dune-slack community

Constant species
Agrostis stolonifera, *Carex nigra*, *Potentilla anserina*, *Calliergon cuspidatum.*

Physiognomy
The *Potentilla anserina-Carex nigra* dune-slack community comprises generally closed swards up to a decimetre or so high dominated by mixtures of grasses, sedges and rosette or mat-forming herbs. Especially distinctive is the combination of *Agrostis stolonifera* and *Carex nigra* with *Potentilla anserina*, each of these sometimes present in abundance and the last particularly striking when dominating in a ground carpet. *Festuca rubra* and *Holcus lanatus* are also very frequent in certain of the sub-communities and there is occasionally some *Juncus articulatus. Salix repens* is typically of limited occurrence here, though it is frequent and locally abundant in one type of *Potentilla-Carex* slack.

The other most frequent vascular associates overall are *Ranunculus repens*, *Trifolium repens*, *Cardamine pratensis*, *Equisetum palustre* and *Euphrasia officinalis* agg. Tall herbs like *Iris pseudacorus*, *Angelica sylvestris* and *Filipendula ulmaria* can give a locally distinctive stamp to the vegetation while species such as *Elymus repens*, *Triglochin maritima* and *Carex disticha* may lend a hint of the upper salt-marsh.

The only bryophyte which is at all frequent in the community is *Calliergon cuspidatum* and it can be locally abundant. Other species like *Plagiomnium rostratum*, *Brachythecium rutabulum* and *Eurhynchium praelongum* occur very sparsely.

Sub-communities

***Festuca-rubra-Ranunculus repens* sub-community.** In this grassy kind of *Potentilla-Carex* vegetation, *Festuca rubra* is very frequent and of quite high cover with common records too for *Ranunculus repens*, *Bellis perennis* and *Trifolium repens*. More occasional are *Holcus lanatus*, *Carex panicea*, *Rumex crispus*, *Glaux maritima* and *Taraxacum officinale* agg. with *Sagina procumbens* sometimes finding a hold in more open patches.

***Carex flacca* sub-community.** *F. rubra*, *T. repens* and *Holcus lanatus* all remain frequent here and *Poa pratensis* is also weakly preferential, but most particularly diagnostic is the common occurrence of *Carex flacca* and *Prunella vulgaris* with occasional records for *Plantago maritima*, *Carex arenaria*, *Lathyrus pratensis* and *Lotus corniculatus*. There are also sometimes young *Salix caprea* and shoots of *Rubus caesius. Parnassia palustris* can be found here, too, at low frequency.

***Caltha palustris* sub-community.** Among the various grasses of the community, *Holcus lanatus* is the commonest here but *Cynosurus cristatus* also becomes frequent with *Poa trivialis* and *Anthoxanthum odoratum* occasional. More striking, however, is the high frequency of *Caltha palustris*, *Rhinanthus minor* and *Lychnis flos-cuculi* with *Epilobium palustre*, *Rumex acetosa*, *Pedicularis palustris*, *Leontodon autumnalis*, *Plantago lanceolata*, *Vicia cracca*, *Cerastium fontanum*, *Dactylorhiza fuchsii* and *Equisetum fluviatile* occasional.

***Hydrocotyle vulgaris-Ranunculus flammula* sub-community.** Almost all the preferentials of the other types of *Potentilla-Carex* vegetation are very scarce in this sub-community which is characterised by high frequencies of *Hydrocotyle vulgaris*, *Ranunculus flammula*, *Eleocharis palustris* and *Galium palustre*. It is here, too, that *Salix repens* has its best representation in the community as a sometimes patchily extensive cover of low bushes. *Mentha aquatica* and *Equisetum variegatum* are occasional.

Habitat
The *Potentilla-Carex* community is characteristic of damp or wet dune slacks kept moist by the fluctuation of less base-rich ground waters, particularly in the moister climate of northern Britain.

No qualitative data are available on the flooding regime associated with this kind of slack vegetation but it seems clear that the inundations can be substantial, perhaps up to 50 cm depth, lengthy and of considerable amplitude. However, exposure of the vegetation to water shortage when the ground water level falls is offset by the high rainfall experienced in northern Britain which keeps the swards damp and replenishes the underlying supplies.

Among the various sub-communities, the *Caltha* and *Hydrocotyle-Ranunculus* types seem to be associated with wetter ground, the former perhaps where the waters and sands are a little more enriched. The *Carex flacca* sub-community is from drier situations and the *Festuca-Ranunculus* type can have some lingering saline influence.

Very commonly, this kind of slack vegetation is accessible to grazing stock, forming part of the machair pastures in western Scotland. This contributes to the floristics of the community, particularly in drier situations, and helps set back any invasion of shrubs and trees.

Zonation and succession

Among complexes of dune slacks, the *Potentilla-Carex* community occupies wetter and less base-rich hollows, where there can be considerable fluctuations in ground water levels, generally among stable dune ridges with fixed grasslands. Repeated substantial inundation help maintain the community but where drying conditions combine with a reduction in grazing, this vegetation can be readily invaded by shrubs and trees.

Shifts from the *Potentilla-Carex* community to the *Festuca-Galium* grassland, which provides its usual context, can be quite sharp where there is a marked change in slope and ground water levels on the surrounding dune ridges. Often, however, particularly on the sand-plains of north-west Scotland where this kind of slack vegetation is especially common, the shifts are gradual. Then, the *Carex flacca* sub-community of the *Potentilla-Carex* vegetation can pass gently to the *Prunella* sub-community of the *Festuca-Galium* grassland over undulating machair whose whole patchwork of swards is used for extensive pasturing.

Very commonly, too, in Scotland, the *Potentilla-Carex* community forms part of a continuum with wetter grasslands to the vegetation of swamps and mires (Dargie 1993). Then it is particularly the *Caltha* and *Hydrocotyle-Ranunculus* sub-communities that play a prominent role, the latter often passing to the *Eleocharitetum* swamp in open waters with *Phragmitetum* more locally. The *Festuca-Agrostis-Potentilla* grassland and something like the *Caltha-Cynosurus* pasture can figure with the former, though data accumulated since the NVC suggests the existence of undescribed assemblages of this general type in which *Carex nigra* continues to play a prominent role (Dargie 1993).

Where stagnation of less base-rich waters occurs in the wetter hollows of dune systems in northern Britain, peat can accumulate and sustain wet heath of the *Scirpus-Erica* or *Erica-Sphagnum* types. With these vegetation types, the *Potentilla-Carex* community can form complex mosaics and transitions.

Distribution

The *Potentilla-Carex* community is widespread in dune systems around Britain but especially important to the north where it comprises the commonest and most extensive vegetation type in slacks and damp machair depressions.

Affinities

Among British dune slacks, this vegetation type is distinct from other communities in its poor representation of *Salix repens* and its overall similarity to inundation grasslands of the Elymo-Rumicion and, on balance, it is much better placed in the latter alliance than either the Caricion davallianae or Caricion nigrae. Further sampling and analysis are needed to clarify relationships among these swards and the Calthion grasslands.

Floristic table SD17

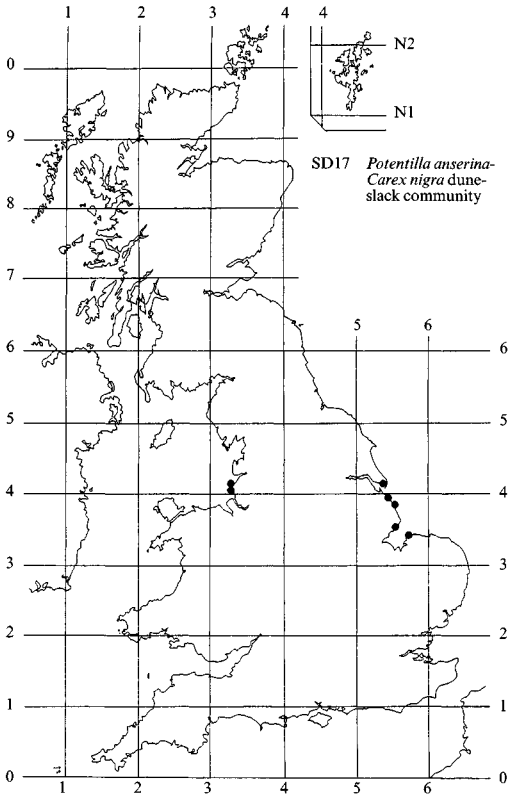
	a	b	c	d	17
Potentilla anserina	V (3–8)	IV (2–8)	IV (4–8)	IV (1–9)	IV (1–9)
Calliergon cuspidatum	IV (2–8)	V (2–9)	IV (2–8)	IV (3–10)	IV (2–10)
Carex nigra	III (4–8)	IV (2–9)	V (2–9)	V (1–10)	IV (1–10)
Agrostis stolonifera	V (4–8)	III (3–6)	III (3–6)	IV (1–9)	IV (1–9)
Festuca rubra	IV (3–8)	IV (2–8)	II (3–5)	I (1)	III (1–8)
Ranunculus repens	IV (2–9)	III (2–8)	III (2–7)	II (1–6)	III (1–9)
Bellis perennis	III (3–8)	II (1–3)	I (2–3)	I (1–3)	II (1–8)
Carex panicea	II (2–6)	I (1–5)	I (2–3)	I (2-6)	I (1–6)
Sagina procumbens	II (2–5)	I (1–3)	I (3–5)		I (1–5)
Rumex crispus	II (2–4)		I (2–3)	I (1–3)	I (1–4)
Glaux maritima	II (3–4)		I (2)		I (2–4)
Taraxacum officinale agg.	II (3–4)	I (1–5)		I (2)	I (1–5)
Trifolium repens	III (3–7)	IV (1–7)	III (2–7)	I (2)	III (1–7)
Carex flacca	I (3–8)	IV (1–8)	I (2–5)	I (2–4)	II (1–8)
Poa pratensis	II (2–5)	III (1–6)	I (2–5)	I (1)	II (1–6)
Prunella vulgaris	I (2)	III (1–9)	I (3–4)	I (1–3)	I (1–9)
Plantago martima	I (3)	II (1–7)	I (3)		I (1–7)
Lathyrus pratensis	I (4–5)	II (2–6)	I (2)		I (2–6)
Carex arenaria	I (3)	II (1–8)		I (1–5)	I (1–8)
Rubus caesius		II (4–8)		I (1–5)	I (1–8)
Epipactis palustris		II (1–4)		I (3–4)	I (1–4)
Lotus corniculatus		II (1–4)			I (1–4)
Salix caprea		II (1–5)			I (1–5)
Parnassia palustris	I (3)	I (1–5)			I (1–5)
Juncus inflexus		I (1–4)		I (3)	I (1–4)
Linum catharticum	I (3–5)	I (2–5)	I (3)		I (2–5)
Galium verum		I (2–5)			I (2–5)
Holcus lanatus	II (2–6)	III (2–7)	IV (2–5)	I (1–3)	III (1–7)
Caltha palustris	II (2–7)	I (1–3)	IV (2–6)	I (1–3)	II (1–7)
Cynosurus cristatus	I (3)	I (3–8)	III (2–7)	I (1)	II (1–8)
Rhinanthus minor	I (2–3)	II (2–5)	III (3–5)		II (2–5)

Lychnis flos-cuculi		I (2–3)	III (1–4)	I (3)	I (1–4)
Poa trivialis	I (3–4)	I (2)	II (2–6)	I (1)	I (1–6)
Epilobium palustre	I (3)	I (1–3)	II (2–4)	I (1–6)	I (1–6)
Leontodon autumnalis	I (1–2)	I (1–4)	II (2–3)	I (2)	I (1–4)
Plantago lanceolata	I (2–3)	I (2–3)	II (2–6)	I (3)	I (2–6)
Vicia cracca	I (2–8)	I (2–6)	II (2–8)		I (2–8)
Cerastium fontanum	I (2–3)	I (1)	II (2–3)		I (1–3)
Anthoxanthum odoratum	I (3)		II (2–9)	I (1)	I (1–9)
Rumex acetosa		I (1–3)	II (2–4)		I (1–4)
Dactylorhiza fuchsii			II (1–3)	I (3)	I (1–3)
Pedicularis palustris			II (2–5)	I (1–3)	I (1–5)
Equisetum fluviatile			II (2–7)	I (1–5)	I (1–7)
Hydrocotyle vulgaris	I (3)	III (3–5)	I (3–7)	V (2–10)	III (2–10)
Ranunculus flammula	I (4)	I (1–3)	I (2)	IV (1–4)	II (1–4)
Eleocharis palustris	I (3–8)	I (3)	II (2–7)	III (1–8)	II (1–8)
Galium palustre	I (3)	I (4)	I (3)	III (1–6)	II (1–6)
Salix repens		I (1–8)		III (1–9)	I (1–9)
Mentha aquatica	I (2–4)	I (3–5)		II (1–4)	I (1–5)
Equisetum variegatum		I (1–4)		II (3–9)	I (1–9)
Drepanocladus sendtneri				I (4–10)	I (4–10)
Campylium stellatum				I (3–9)	I (3–9)
Juncus articulatus	II (2–9)	II (1–6)	II (2–7)	II (1–4)	II (1–9)
Cardamine pratensis	II (2–6)	II (1–3)	II (2–4)	II (1–5)	II (1–6)
Equisetum palustre	I (3–8)	II (1–3)	II (2–7)	II (1–5)	II (1–8)
Euphrasia officinalis agg.	I (2–3)	II (1–5)	II (2–4)		I (1–5)
Angelica sylvestris	I (2)	I (2–3)	I (3–5)	I (1)	I (1–5)
Plagiomnium rostratum	I (3)	I (3)	I (3–5)	I (3)	I (3–5)
Myosotis laxa caespitosa	I (3)	I (2)	I (2–3)	I (1–4)	I (1–4)
Rhytidiadelphus squarrosus	I (3–5)	I (3–5)	I (2–3)		I (2–5)
Elymus repens	I (7)	I (3)	I (5)		I (3–7)
Equisetum arvense	I (2–4)	I (1–6)	I (4)		I (1–6)
Brachythecium rutabulum	I (2–4)	I (7)	I (3–5)		I (2–7)
Triglochin maritima	I (2)	I (4)	I (3–4)		I (2–4)
Lolium perenne	I (3)	I (4)	I (3–5)		I (3–5)
Poa annua	I (3)	I (3)	I (2)		I (2–3)

Floristic table SD17 (*cont.*)

	a	b	c	d	17
Centaurea nigra	I (3)	I (5)	I (3–4)		I (3–5)
Eurhynchium praelongum	I (4)	I (4)	I (3)		I (3–4)
Agrostis capillaris	I (2)	I (2–5)		I (5)	I (2–5)
Iris pseudacorus	I (3–8)		I (1–5)	I (1–7)	I (1–8)
Filipendula ulmaria	I (4)		I (3)	I (2–4)	I (2–4)
Cratoneuron filicinum	I (3–4)		I (3–4)	I (4)	I (3–4)
Dactylorhiza incarnata		I (1–2)	I (1–2)	I (1)	I (1–2)
Lophocolea bidentata s.l.		I (3)	I (2–5)	I (3)	I (2–5)
Dactylorhiza majalis purpurella		I (1–2)	I (2–3)	I (1)	I (1–3)
Polygonum persicaria	I (3)	I (2)	I (2–5)	I (3–4)	I (2–5)
Juncus effusus		I (3–4)	I (2–5)	I (3)	I (2–5)
Carex disticha		I (5–7)	I (3–4)	I (5)	I (3–7)
Homalothecium lutescens	I (2–3)	I (3–5)			I (2–5)
Odontites verna	I (2–3)	I (3–4)			I (2–4)
Juncus bufonius	I (4–6)	I (2–3)			I (2–6)
Eriophorum angustifolium	I (4)		I (2–3)		I (2–4)
Alopecurus geniculatus	I (3)		I (5–8)		I (3–8)
Juncus acutiflorus	I (3–5)			I (5)	I (3–5)
Drepanocladus aduncus	I (2–3)			I (3–5)	I (2–5)
Potentilla palustris			I (2)	I (1–6)	I (1–6)
Number of samples	24	32	40	46	142
Number of species/sample	12 (8–24)	19 (11–39)	17 (9–26)	12 (5–29)	15 (5–39)

a *Festuca rubra-Ranunculus repens* sub-community
b *Carex flacca* sub-community
c *Caltha palustris* sub-community
d *Hydrocotyle vulgaris-Ranunculus flammula* sub-community
17 *Potentilla anserina-Carex nigra* dune-slack (total)



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