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A North Atlantic race of Caricetum chordorrhizae

Paul et Lutz 1941, a rare community in North Scotland

by

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The rare sedge *Carex chordorrhiza* forms a distinctive community in shallow channels on floating mat basin peat at Altnaharra, Sutherland, Scotland. This is the only locality in the British Isles where the plant has hitherto been recorded (Jermy & Tutin, 1968).

The altitude of the stands sampled ranges between 75 m and 80 m along the River Mudale and the climate is euoceanic extremely humid hemiboreal (Birse, 1971). The soil (Table 1) is a very dark grey to black organic mud with a floating mat of interlocking rhizomes and decaying leaf bases. The colour varies with the mineral content, being greyer with increasing mineral material. As the pH values of the two samples collected are 3.7 and 4.1 and the base saturation is 7.0 per cent, the soils are rated dystric histosols or humo-dystric fluvisols (Dudal, 1968 em. 1969, 1971 and 1973), depending on the amount of organic matter in the material below the floating mat.

Table 1:
Soil Analysis

Relevé No.	Sample depth	Org. Matter %	pH	Base Satn. %	Exchangeable Cations me/100 gms Ca	Mg	Na	K	H	Σ	C/N ratio
2	5—12 cm	24·4	3·7	7·0	1·3	0·66	0·3	0·1	32·8	35·2	14·1
4	7·5—15 cm	25·5	4·1	7·0	1·6	0·98	0·4	0·2	41·2	44·4	14·8

The community occurs in shallow channels in which the level of the water fluctuates according to the level in the river and the run-off from higher ground. The surrounding vegetation is a Carex lasiocarpa community which has, along with *C. lasiocarpa*, varying amounts of *C. rostrata, C. panicea, C. limosa, Molinia caerulea, Eriophorum angustifolium, Drosera anglica* and *Myrica gale*. The sweet gale, *M. gale*, is of reduced vigour and there are also scattered plants of *Phragmites communis* and *Equisetum fluviatile*. Both these species are of diminished stature and neither was observed to be fruiting. At one side of the area this vegetation grades into a Rhynchosporion albae community with *Rhynchospora alba* and *Eleocharis multicaulis*.

Three forms of the Carex chordorrhiza community were noted (Table 2). The initial phase (relevé No. 1) occurs in deeper water with a less well developed floating mat. It is species poor, but the sedge is growing vigorously and there is abundant *Potamogeton polygonifolius*. The typical form (relevés No. 2—4) often has *Menyanthes trifoliata* present and also abundant *Carex rostrata*. The next stage in the

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TABLE 2

Caricetum chordorrhizae Paul et Lutz 1941

North Atlantic race (Birse 1975)

	Relevé No.	1	2	3	4	5	6	7	8	
	Size of sample (m²)	2	2	2	2	2	2	2	2	
	Field cover (%)	70	70	50	60	50	70	60	60	
	Ground cover (%)		2	<1	40	20	50	60	3	
	Open water (%)	30	30	50	20	40	5	10	40	
	Character species									
	Carex chordorrhiza	7	8	6	6	5	6	6	5	V
	Differential species of variant									
	Molinia caerulea	.	.	.	.	2	5	1	4	III
Δ	Myrica gale	.	.	.	.	1	.	x	2	II
	Alliance character species									
	Carex lasiocarpa	.	1	4	x	4	2	2	4	V
	Alliance differential species									
	Equisetum fluviatile	3	.	2	4	x	4	1	.	IV
	Order character species									
	Carex limosa	.	.	.	3	3	4	4	.	III
	Drosera anglica	.	.	x	.	3	.	.	.	II
	D. intermedia	.	.	.	.	x	.	(x)	.	II
	Class character species									
	Sphagnum subsecundum var. inundatum	.	2	1	7	5	6	8	3	V
	Eriophorum angustifolium	.	4	.	2	.	.	3	2	III
	Ranunculus flammula	.	1	.	.	.	.	.	.	I
	Carex nigra	.	2	.	.	.	.	.	.	I
	Schoenus nigricans	.	.	.	.	.	x	.	.	I
	Companion species									
Δ	Potamogeton polygonifolius	7	1	3	6	6	4	7	6	V
	Carex rostrata	3	4	2	5	3	.	3	.	IV
Δ	Juncus bulbosus	.	.	2	2	3	2	2	2	IV
	Menyanthes trifoliata	.	2	4	1	.	.	1	.	III
	Drosera rotundifolia	.	.	.	x	.	1	.	.	II
	Sphagnum recurvum	.	.	.	2	.	4	.	.	II
	Riccardia pinguis	.	.	.	.	x	1	.	.	II
	Eleocharis multicaulis	.	.	4	.	.	.	.	.	I
	Potentilla palustris	.	.	x	.	.	.	.	.	I
	Phragmites communis	.	.	.	.	3	.	.	.	I
	Sphagnum palustre	.	.	.	.	.	1	.	.	I
	Drepanocladus fluitans	.	.	.	.	.	.	x	.	I
	Carex panicea	.	.	.	.	.	.	.	1	I
	No. of species per relevé	4	9	11	12	14	13	14	9	

Δ = Geographical differential species

Note: Cover/abundance values in Domin scale

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gradient, the variant with *Molinia caerulea* (relevés No. 5—8), shows a decrease in the occurrence of these two species and a greater abundance of the bog-moss *Sphagnum subsecundum* var. *inundatum*. *Myrica gale* is present but of low cover and very much reduced in vitality.

This vegetation is differentiated from that of more continental regions by the Littorelletea species *Potamogeton polygonifolius*, *Juncus bulbosus* and *Eleocharis multicaulis* and by *Myrica gale*. There are no character species peculiar to the community in Scotland and it is thus, on the advice of Oberdorfer (pers. comm.), considered a North Atlantic race of the association Caricetum chordorrhizae Paul et Lutz 1941.

Oberdorfer (1974, MS.) places Caricetum chordorrhizae in the alliance Caricion lasiocarpae Vanden Bergh. 1949 of the order Scheuzerietalia palustris Nordh. 1936. *Carex lasiocarpa* is a highly constant member of the community and can even be abundant at Altnaharra, but many stands have frequent or abundant *C. limosa*, indicating affinities with Rhynchosporion albae W. Koch 1926.

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