

ALOPECURUS ALPINUS SM. IN BRITAIN

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Alopecurus alpinus Sm. has been known hitherto in Britain with certainty only from Scotland, where, according to Hubbard (1954), it occurs at heights of from 1,900 to 4,000 ft. in moist habitats in Perth, Angus, Aberdeen, Banff, Inverness and East Ross. The species has its headquarters in the eastern block of the Grampians between Drumochter and Clova, including the Cairngorms. Recently, it has also been found in Dumfriesshire (Ratcliffe, 1959) at about 2,500 ft., which is its normal lower limit in the Highlands. Morton (1954) reported it as having been discovered in a collection of grasses made by him in Teesdale in 1945, but though the identification of his plant was not in doubt, there was some uncertainty about its provenance, and in spite of repeated searching, it could not be found again. Hence its discovery in two new localities in the northern Pennines is of considerable interest.

In May 1959, it was found by D. A. Ratcliffe at about 2,500 ft. on the slopes of the Cross Fell range in Cumberland (v.c. 70) and in August 1959 by A. Eddy on the slopes of the Westmorland part of this range (v.c. 69), at about the same height. This second locality is on the Moor House National Nature Reserve. The two localities are within a few miles of each other; in each, the plant was infrequent.

Specimens of the Westmorland plants have been compared with Scottish specimens from Clova; there is a general resemblance, but the English plants have rather shorter inflorescences and the spikelets are quite awnless. Judging both from herbarium material and from notes in various floras, the Scottish populations seem to be polymorphic in this respect, containing plants both with and without awns; there also appears to be some variation in the length of the awn.

In Scotland *Alopecurus alpinus* grows most usually in high-level springs and flushes belonging to the complex termed *Philonoto-Saxifragetum stellaris* by McVean and Ratcliffe (in preparation). These habitats are mostly dominated by bryophytes such as *Philonotis fontana*, *Dicranella squarrosa*, *Drepanocladus exannulatus*, *Acrocladium sarmentosum*, *Sphagnum subsecundum* var. *auriculatum*, *Solenostoma cordifolium*, *Scapania undulata* and *S. uliginosa*. Montane plants such as *Saxifraga stellaris*, *Epilobium anagallidifolium*, *Veronica serpyllifolia* subsp. *humifusa*, *Bryum weigelii* and *Splachnum vasculosum* (rare) are characteristically present. This is an oligotrophic vegetation fed by base-poor water, though some examples receive drainage from

fairly basic rocks and are slightly richer. The grass occurs also in these slightly richer flushes and in types containing calcicolous species, so that it appears to be indifferent to base-status in the Highlands. Less usual habitats are in stands of *Caricetum saxatilis* and on wet rock ledges.

The Pennine habitats are essentially similar to those in the Highlands, but incline towards the more basic type of flush: one plant was growing on a wet soily bank at the edge of an acidic flush. The pH of a sample of water from the Westmorland flush was 7.5. Although the altitude is greater than that at which limestone is exposed in either locality, there may be an underlying band or the water may drain from a bed of calcareous shale.

Three species lists are given in Table 1. Numbers 1 and 2 are from two 40 sq. cm. quadrats taken some yards apart in one of the Westmorland flushes in which *A. alpinus* occurred. The flushes are zoned, being dominated by *Fissidens*, *Solenostoma*, etc., in the centre and having *Sphagnum* spp. on their outer borders. List 3 is of species with which *A. alpinus* is closely associated in the Cumberland station.

TABLE 1

	1	2	3
	Close cover of bryophytes (90%) with vascular plants. Gentle slope.	Cover 50-60%. Flush more steeply sloping and less stable.	Mainly closed cover of bryophytes but with vascular plants locally dominant.
SELAGINELLA SELAGINOIDES	-	-	+
EQUISETUM PALUSTRE	+	+	+
CALTHA PALUSTRIS	+	+	+
RANUNCULUS FLAMMULA	-	+	+
CARDAMINE PRATENSIS	+	+	+
STELLARIA ALSINE	-	-	+
MONTIA FONTANA subsp. FONTANA	-	-	+
SEDUM VILLOSUM	-	+	+
SAXIFRAGA STELLARIS	+	+	+
CHRYSOSPLENIUM OPPOSITIFOLIUM	-	-	+
EPILOBIUM PALUSTRE	+	-	-
E. ANAGALLIDIFOLIUM	+	-	+
E. ALSINIFOLIUM	-	-	+
GALIUM PALUSTRE	+	-	+
TRIGLOCHIN PALUSTRIS	+	-	-
JUNCUS ARTICULATUS	-	-	+
J. TRIGLUMIS	+	+	-
CAREX LEPIDOCARPA	-	+	-

	1	2	3
	Close cover of bryophytes (>90%) with vascular plants. Gentle slope.	Cover 50-60%. Flush more steeply sloping and less stable.	Mainly closed cover of bryophytes but with vascular plants locally dominant.
C. NIGRA	+	+	+
C. ECHINATA	+	-	+
FESTUCA RUBRA	+	+	+
POA TRIVIALIS	-	-	+
AGROSTIS STOLONIFERA	+	-	+
ALOPECURUS ALPINUS	+	+	+
ACROCLADIUM GIGANTEUM	+	-	-
A. CUSPIDATUM	-	+	+
BRYUM PSEUDOTRIQUETRUM	-	+	+
CAMPYLUM PROTENSUM	+	-	-
CHILOSCYPHUS POLYANTHUS	-	-	+
CRATONEURON COMMUTATUM	+	+	+
DICRANELLA SQUARROSA	-	+	+
DREPANOCLADUS EXANNULATUS	+	-	+
FISSIDENS ADIANTOIDES	-	+	+
MEESIA ULIGINOSA	-	+	-
MNIUM PUNCTATUM	-	-	+
PHILONOTIS CALCAREA	+	-	-
P. FONTANA	-	-	+
PLAGIOCHILA ASPLENIOIDES	-	-	+
RICCARDIA MULTIFIDA	-	+	+
R. PINGUIS	-	+	+
SCAPANIA UNDULATA	+	-	+
SCORPIDIUM SCORPIOIDES	+	+	-
SOLENOSTOMA CORDIFOLIUM	+	-	+

Cytotaxonomic comparisons of the English and Scottish material are planned, and it would be interesting also to compare British and arctic material. It is interesting to note that *Alopecurus alpinus* is probably the only circumpolar arctic vascular plant which is found in Britain but not in Scandinavia or Iceland.

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