

## Notes on *Avenula pratensis* (L.) Dumort. in Britain

J. M. DIXON

*School of Environmental Science, The University, Bradford, BD7 1DP*

### ABSTRACT

It is suggested in the literature that *Avenula pratensis* (L.) Dumort. from the mountains of Scotland and northern England might represent a taxon, described as *Avena alpina* Sm., distinct from that of lowland Britain. Morphological observations made on *A. pratensis* from sites throughout Britain do not support this suggestion, nor do specimens from Scotland and northern England agree with the published description of alpine *Avena alpina*.

### INTRODUCTION

A rider to the entry for *Avenula pratensis* (L.) Dumort. in *Flora Europaea* (Holub 1980) states that "Plants from the mountains of Scotland and N. England, with larger more strongly coloured spikelets, described as *Avena alpina* Sm., may represent a distinct taxon".

In Britain, *A. pratensis* is found to 366 m in Derbyshire, to 457 m in Yorkshire and to 838 m in Scotland (Wilson 1956). Smith (1811) described his specimens, collected from the summits (307 to 945 m) of the Clova mountains, Angus, as forming compact tufts with the roots "not inclined to creep" (cf. *Avenula pubescens*). The leaves resembled those of *A. pratensis*, being non-hairy and having serrated edges, but differed from the latter in their rough and greatly elongated sheaths. The flowers differed from *A. pratensis* "not only in their much greater size" (no figures given), "but in their partial stalk, or rachis (rachilla?), the hairiness of which I observe to be crowded up into a very dense tuft, towards the base of each floret, not dispersed over the whole rachis". Smith made no mention of the colour of the spikelets.

Hegi (1967) described *Avena alpina* as having sheaths not, or only slightly, rough and with the culm rough only in the panicle, whereas the culms of *A. pratensis* are upwardly rough. *A. alpina* usually has two basal branches to its panicle, as opposed to one, seldom two, in *A. pratensis*. Like Smith, he specified that the spikelets of *A. alpina* are larger than those of *A. pratensis* (but again no figures are given), with 6 to 8 florets. He states that the glumes are overlaid with violet, and that the lemmas bear an awn which is "up to a little over 1.5 cm long", compared with *A. pratensis*, whose awns are "up to almost 2.0 cm long".

### MORPHOLOGICAL OBSERVATIONS

Numerous specimens of *A. pratensis* from the British Isles have been examined (site details are given in Table 1) and the following observations made:—

1. Culms of specimens examined were mostly smooth in the lower part – occasionally small protuberances were noticed. When examined microscopically these were found to occur at right angles to the culm until the panicle was almost reached, when they resolved into minute upward pointing teeth. The rachis of all specimens had upwardly pointing teeth, variable in size and quantity; all pedicels were minutely toothed.

2. None of the specimens examined had noticeably rough or elongated sheaths.

3. Spikelet measurements from 55 different sites indicated that there is indeed a significant difference (at  $p < 0.05$ ) in mean spikelet length between Scotland plus the north of England (defined as Yorkshire and Lancashire northwards), and the Midlands, Wales and the south of England. Mean spikelet lengths are given in Fig. 1. However, all the British material examined

TABLE 1. SITES FROM WHICH *AVENULA PRATENSIS* WAS EXAMINED

Location	Grid Reference	Vice-County	Approximate altitude (m)
<b>Scotland</b>			
Aberfeldy, Perthshire	27/855.473	89	335
Beinn Laoigh, Argyllshire	27/262.274	98	838
Ben Lui, Perthshire	27/266.266	98	800
Braid, Edinburgh	36/255.698	83	152
Cockburnspath, Berwickshire	36/790.712	81	60
Craig Dorney, Aberdeenshire	38/403.352	93	380
Creag an Lochan, Perthshire	26/596.392	88	500
Forres, Morayshire	38/020.592	95	10
Glen Clova, Forfarshire	37/320.745	90	500
Glen Doll, Forfarshire	37/243.775	92	700
Glen Lyon, Perthshire	27/654.505	88	800
Golspie, Sutherland	28/823.957	107	8
Loch Lyon, Perthshire	27/450.424	88	533
Loch Pattack, Invernesshire	27/545.789	97	442
Relugas, Morayshire	38/995.487	93	183
Tomintoul, Banffshire	38/170.190	94	344
<b>North of England</b>			
Arnside Knott, Cumbria	34/453.777	69	91
Aysgarth Falls, N. Yorkshire	44/016.890	69	152
Giggleswick, N. Yorkshire	34/810.648	64	229
Gilsland, Northumberland	35/634.668	67	137
Gordale Scar, N. Yorkshire	34/915.638	64	335
Helmsley, N. Yorkshire	44/585.840	62	167
Malham Tarn, N. Yorkshire	34/885.694	64	411
Overdale, N. Yorkshire	44/840.715	61	427
Scout Scar, Cumbria	34/488.921	69	213
Shap, Cumbria	35/560.173	69	293
Skirethorn, N. Yorkshire	34/963.648	64	366
Sproxton, N. Yorkshire	44/601.819	62	137
Sutton Bank, N. Yorkshire	44/515.826	62	219
Teesdale, Durham	35/902.280	66	351
Wilson Scar, Cumbria	35/548.182	69	304
<b>Midlands, Wales and the South of England</b>			
Bakewell, Derbyshire	43/184.670	57	305
Ballard Down, Dorset	40/030.815	9	76
Boxhill, Surrey	51/178.516	17	172
Collyweston, Northamptonshire	53/010.002	32	76
Coombe Hill, Buckinghamshire	42/848.066	24	257
Corfe Castle, Dorset	30/964.823	9	76
Cosgrove, Northamptonshire	42/792.426	32	76
Devil's Ditch, Cambridgeshire	52/581.645	29	30
Dover, Kent	61/300.398	15	137
Epsom Downs, Surrey	51/217.584	17	137
Firle Beacon, Sussex	51/485.060	14	152
Kithurst Hill, Sussex	51/082.127	13	198
Little Ormes Head, Gwynedd	23/812.823	49	91
Litton, Derbyshire	43/156.748	57	244
Littonfields, Derbyshire	43/175.759	57	266
Llysfaen, Clwyd	23/888.774	50	208
Monksdale, Derbyshire	43/135.738	57	244
Monyash, Derbyshire	43/158.663	57	259
Newport, Gwent	31/354.906	35	76
Portland, Dorset	30/690.697	9	15
Risby Heath, Suffolk	52/790.683	26	40
Saffron Walden, Essex	52/570.405	19	115
Salisbury Plain, Wiltshire	41/055.451	8	107
Winter Hill, Berkshire	41/873.863	24	76

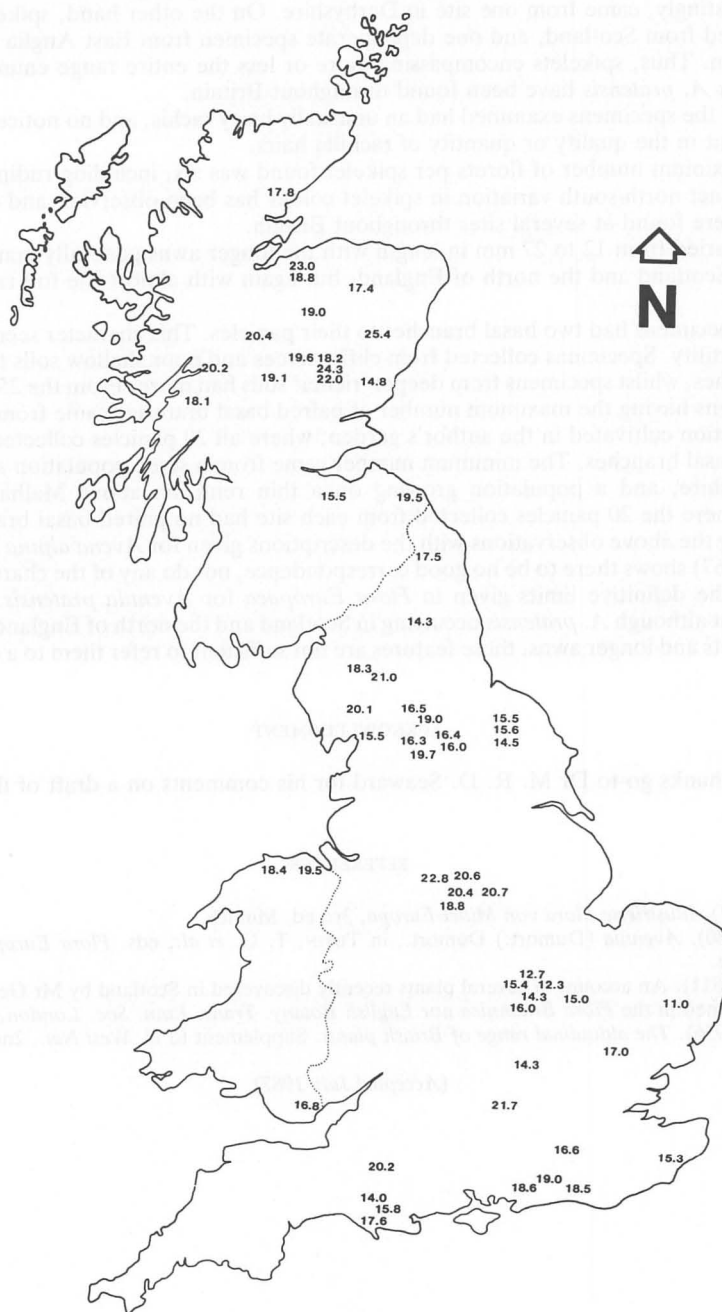


FIGURE 1. Variation in spikelet length of *Avenula pratensis* in the British Isles. Figures are mean values (mm) of spikelets taken from the middle of the panicle. Sample size varied between 5 and 30 inflorescences per population. Maximum standard error for any sample was  $\pm 1.1$  mm.

falls within the range given for *A. pratensis* in *Flora Europaea*, namely 12–23(–28) mm. In only nine out of 90 spikelets measured from Scottish sites were the lengths greater than 23 mm, and 23 out of 420 spikelets measured from England and Wales had lengths greater than 23 mm. Eleven of these, interestingly, came from one site in Derbyshire. On the other hand, spikelets of 14.0 mm were recorded from Scotland, and one depauperate specimen from East Anglia had spikelets of only 10.0 mm. Thus, spikelets encompassing more or less the entire range enumerated in *Flora Europaea* for *A. pratensis* have been found throughout Britain.

4. None of the specimens examined had an unusually hairy rachis, and no noticeable differences were apparent in the quality or quantity of rachilla hairs.

5. The maximum number of florets per spikelet found was six, including rudimentary florets.

6. No distinct north/south variation in spikelet colour has been observed, and deeply coloured specimens were found at several sites throughout Britain.

7. Awns varied from 12 to 27 mm in length with the longer awns generally matching the larger spikelets of Scotland and the north of England, but again with almost the full range throughout Britain.

8. Many specimens had two basal branches to their panicles. This character seems to depend on soil depth/fertility. Specimens collected from cliffs, screes and poor shallow soils tend to have few paired branches, whilst specimens from deeper 'richer' soils had more. From the 25 sites examined, the populations having the maximum number of paired basal branches came from Salisbury Plain and a population cultivated in the author's garden, where all 20 panicles collected from each site had paired basal branches. The minimum number came from a scree population at Gordale Scar, North Yorkshire, and a population growing on a thin rendzina above Malham Tarn, North Yorkshire where the 20 panicles collected from each site had no paired basal branches.

Comparing the above observations with the descriptions given for *Avena alpina* by Smith (1811) and Hegi (1967) shows there to be no good correspondence, nor do any of the characters examined fall outside the definitive limits given in *Flora Europaea* for *Avenula pratensis*. It is therefore suggested that although *A. pratensis* occurring in Scotland and the north of England has on average larger spikelets and longer awns, these features are not sufficient to refer them to a different taxon.

#### ACKNOWLEDGMENT

My grateful thanks go to Dr M. R. D. Seaward for his comments on a draft of the paper.

#### REFERENCES

- HEGI, G. (1967). *Illustrierte Flora von Mittel-Europa*, 3rd ed. Munich.  
HOLUB, J. (1980). *Avenula* (Dumort.) Dumort., in TUTIN, T. G. *et al.*, eds. *Flora Europaea*, 5: 210–216. Cambridge.  
SMITH, J. E. (1811). An account of several plants recently discovered in Scotland by Mr George Don A.L.S. not mentioned in the *Flora Britannica* nor *English Botany*. *Trans. Linn. Soc. London*, 10: 333–346.  
WILSON, A. (1956). *The altitudinal range of British plants*. Supplement to *N. West Nat.*, 2nd ed.

(Accepted July 1987)