'Lost and Found' – Alopecurus bulbosus Gouan in S. E. England

R. FITZGERALD

West House, East Quantoxhead, nr. Bridgewater, Somerset, TA5 1EL

ABSTRACT

Alopecurus bulbosus Gouan (Gramineae) is a local species of damp maritime grasslands in southern England and Wales. Comparison of historic and recent records for the species in the south-east of England suggested that it might be under-recorded. Searches made in 1987 confirmed this and suggested that the plant is very inconspicuous and easily overlooked. Field characters, habitat and associated species are discussed.

INTRODUCTION

Alopecurus bulbosus Gouan, the Bulbous Foxtail, is a halophilic grass of southern Britain, found in most coastal vice-counties from S. Wales to E. Norfolk. Historical sources in the south-east of England record this grass as widespread and locally abundant in saltings along river estuaries and at the rear of saltmarshes (Arnold 1887; Hanbury & Marshall 1899), but since about 1930 there have been very few records (Hall 1980; Philp 1982). Destruction of its habitat by sea-defence works, improvement of grassland, draining of land for cereal growing and construction of leisure facilities have been blamed, but during 1987 searches were made in Kent (v.cc. 15 and 16) and Sussex (v.cc. 13 and 14) to see if the apparent decline of this species might have a more straightforward basis, merely that it has been overlooked.

Grasses have not always been outstandingly popular amongst British botanists, and A. bulbosus is not a generally well-known species. The estuarine grazing marshes which are its most characteristic habitat are often bleak and featureless, with large expanses of rather uniform vegetation. Botanical interest is often confined to the ditches, and except for individuals irresistably drawn to batrachian buttercups, there is little reason to visit these places until well into the summer season, by which time the flower-spikes of A. bulbosus will have long since broken up, and the plant become extremely inconspicuous in well-grown vegetation. A survey in 1987, which was by no means an early season, indicated that the grass was in prime flowering condition in the south-eastern counties during the last two weeks in May and the first week in June. At this time the flowers are clearly visible among the later-flowering grasses. This paper summarizes the results of the 1987 survey, which was organized by the author with field assistance from local B.S.B.I. members.

1987 SURVEY

THE HABITAT OF A. BULBOSUS

The typical habitat for A. bulbosus is the damper areas of unimproved grazing marshes, and along the spaces between ditch and wall base, sometimes used as droves, known as the berms of sea and river walls. Some sites are brackish, but the plant is not found in actual saltmarsh. A common situation is at the interface of Juncus gerardi swards and slightly more open Festuca rubra – Carex divisa turf. Only one rather unusual site on the river side of the wall of the tidal Cuckmere at Litlington, E. Sussex (v.c. 14) had A. bulbosus with halophytic species like Althaea officinalis and Aster tripolium. Association with winter-standing water is strong, and suitable territory can often be picked out by looking for the white flowers of Ranunculus baudotii marking shallow channels and wet hollows. A. bulbosus does not grow in the very wettest spots (the muddy centre of a hollow is

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usually filled with A. geniculatus) but fringes damp areas, and typically the grass is perched on tussock 'islands' in wet places where cattle have trampled.

A. geniculatus grows in close proximity to A. bulbosus in the majority of sites examined, and although they keep quite a strict zonation, the closeness can give rise to the hybrid A. \times plettkei Mattfield. This is a vigorous plant, which is sometimes said to be out-competing A. bulbosus at certain sites, though P. J. O. Trist notes that $A \times plettkei$ "will not be in an area of soil where the saline content is at the peak of tolerance for A. bulbosus" (pers. comm. 1987). Confirmed specimens of the hybrid collected in 1987 were both from sites of probably low salinity. Associated species are all characteristic of good quality estuarine grassland in the south-east of England. Carex divisa is really the most typical plant, accompanied at more than half the sites by *Poa pratensis*, *Festuca* rubra, Juncus gerardi and Trifolium fragiferum and sometimes by Poa subcaerulea, or by Puccinellia distans in the most brackish areas. Ranunculus sardous is often present in drier areas. Interesting associates on the Thames estuary are the annual clovers T. micranthum and T. ornithopodioides, and in the Isle of Harty, Sheppey, where A. bulbosus is very local, these clovers are indicator plants for areas of turf which may contain the foxtail. Other closely associated species in at least three of the eleven sites examined were Agrostis stolonifera, Bellis perennis, Plantago major and Trifolium repens. Uncommon species are sometimes locally abundant on dry banks bordering A. bulbosus sites, including Ononis spinosa, Petroselinum segetum and Trifolium squamosum, while Eleocharis uniglumis occurs on ditch banks by the Cuckmere, E. Sussex (v.c. 14).

DISTRIBUTION AND CONSERVATION

Study of literature and herbarium records suggested localities where A. bulbosus had been recorded and these were searched accordingly. Limited time only allowed a 'present or absent' verification without establishing the full extent of the populations. It is hoped that more extended searches by local botanists may identify many more individual populations, as much suitable territory exists, for instance near Chichester, W. Sussex (v.c. 13), and on Cooling and Higham Marshes, W. Kent (v.c. 16). A. \times plettkei, the hybrid between A. bulbosus and A. geniculatus, was not looked for especially, except on one part of the Cuckmere, but may be found to be widespread, as both parents were usually present. Results from individual sites are listed in Table 1.

In some localities the similarity of the present distribution to historic records was striking. For instance at Lavant Sluice, Appledram, near Chichester, where Druce was shown *A. bulbosus* by Prebend Burdon in 1916 "in great quantity" it still forms an almost continuous sward, visible for some distance when in flower in May. Other records are less precise; only one specimen has been seen from Sheppey (herb. Sir Joseph Banks in **BM**) which must have been collected before 1840, and no more detailed records followed it. In a few cases *A. bulbosus* could not be refound; fields bordering the channel at Dell Quay, Chichester, are all arable now, and sadly Francis Rose's fairly recent site at Upnor, W. Kent (v.c. 16), cannot be precisely relocated after industrial development in this area. But at a time when so many British plants are under threat, it was extremely encouraging to find how closely the historical records could be matched.

The attention of conservation bodies has recently been focussed on the grazing marsh habitat with the 'biggest ever' management payment agreed between the Nature Conservancy Council and Philip Merricks, tenant of the extensive Elmley Marshes S.S.S.I. on Sheppey. Mr Merricks, with great enlightenment, is maintaining the marshes as a nature reserve, and here and on other estuarine S.S.S.I.s there is a rare opportunity for positive conservation. Some unusual species of grazing marsh habitats, such as *A. bulbosus, Chenopodium botryodes, Polypogon monspeliensis* and *Puccinellia rupestris* are still locally abundant (though *C. botryodes* is almost limited to the Thames estuary). Sympathetic management of areas like Elmley could give them protection *before* they become too rare.

FIELD RECOGNITION OF A. BULBOSUS

Diagnostic details of *A. bulbosus* are of course available from the usual sources (e.g. Hubbard 1968; Clark 1980; Tutin 1987) and are usefully illustrated in Holland *et al.* (1986). In the field, apart from the pointed glumes and the bulbs themselves (it is advisable to carry a small tool like a screwdriver for cautious examination of these), *A. bulbosus* has a very distinctive appearance. The flowers show up well in the short May swards, and the upright habit, small narrow, dark heads, and generally neat, delicate look separate it adequately from *A. geniculatus*, which as well as its 'kneeling' habit

TABLE 1. SITES SEARCHED FOR THE OCCURRENCE OF *ALOPECURUS BULBOSUS* IN 1987, IN GRID REFERENCE ORDER FROM WEST

Earlier records exist for many sites; localities with continuous records up to 1986 are not included

Year of last record	Location	Source of record	Results 1987
1916	Nr Lavant Sluice, Appledram, W. Sussex, v.c. 13	R. J. Burden (BM), Arnold (1887) Bay Arnold (BM)	GR 41/84.03. Very abundant in damp meadow by Lavant Sluice.
18//	Sussex v.c. 13	Rev. Alliold (BNI)	arable
1933	Clymping Golf Course, Littlehampton, W. Sussex,	J. E. Lousley (RNG)	GR 52/02.01. In small quantity in damp hollow off fairway. Formerly abundant in 'saltmarsh'
1905	Lancing, R. Adur, W. Sussex, v.c. 13	T. Hilton (BM)	GR 51/20.06. 'Several good patches', 1986, B. & G. Bishop. Found when field was not heavily
1807	Newhaven, E. Sussex, v.c. 14	W. Borrer (CGE), Wolley-Dod (1937)	GR 51/44.02. A few plants on muddy track by boating lake, Piddinghoe, N. of Newhayen,
1907	R. Cuckmere, E. Sussex, v.c. 14	T. Hilton (SLBI)	GR 50/51.99–51/51.01. Very abundant along berm of river wall and in damp grazing between Exceat Bridge and Alfriston, E. of R. Cuckmere.
1952	Litlington, E. Sussex, v.c. 14	P. E. Wrighton (BM)	51/52.01. Small population at edge of <i>Juncus gerardi</i> sward. River side of wall on E. bank.
1890	Below Gravesend, W. Kent, v.c. 16	C. P. Hurt (MNE)	Possibly Higham Marshes? Small populations found at GR 51/71.74 and GR 51/70.75 (Three sites)
1938	Oakleigh, Higham, W. Kent, v.c. 16	J. Braybrooke Marshall (BM)	GR 51/72.74. Heavily grazed but present in same paddock, inland.
1960	Upnor, Frindsbury, W. Kent, v.c. 16	F. Rose (MNE)	Not found. Saltings altered by industrial development but could still be found?
1892	Cooling Marshes, W. Kent, v.c. 16	E. S. Marshall (BM)	GR 51/75.77. Abundant in <i>Cynosurus cristatus</i> swards on grazing marshes. Site drier than
			usual for A. bulbosus. Probably
pre-1840	Sheppey, E. Kent, v.c. 15	Herb. Banks (BM)	GR 61/03.67. Approx. 100 plants in restricted area of turf (with annual <i>Trifolium</i> spp.). Isle of Harty, Swale N N R
1978	Seasalter, near Whitstable, E. Kent, v.c. 15	J. Badmin (MNE)	GR 61/07.64, 61/08.64, 61/05.64, 61/06.64. Widespread but heavily grazed in field recorded by J. Badmin. Also found in three other grazing marsh fields.
			<u> </u>
Sites not pre-	Fishbourne, W. Sussex, v.c. 13		GR 41/83.04 etc. Very abundant in
	Sidlesham, W. Sussex, v.c. 13		GR 41/85.96. Abundant with <i>Juncus gerardi</i> in brackish field bordering lagoon.

has a much coarser and more floppy appearance. The south-eastern populations examined seemed also to have distinct pollen colours; *A. geniculatus* often produced purple anthers maturing to a brick colour while *A. bulbosus* had cream anthers darkening to buff, but before study of many more

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populations this can only be recorded as a provisional observation rather than as a diagnostic character. Confusion with *A. pratensis* is not a problem. This is a grass of dry sites, and although sometimes present in adjoining grassland, it was never recorded in the immediate zone of *A. bulbosus*, and even stunted plants of *A. pratensis* have a thick 'tubby' head quite unlike the slender spikes of *A. bulbosus*.

CONCLUSION

It is hoped that these notes will stimulate further search for this attractive and uncommon grass. Too many of our species, once locally abundant, have become very rare, perhaps in part because they are taken for granted until too late. *Oenanthe silaifolia* is an example of such losses, being formerly a notable plant of the Medway hay meadows in W. Kent (v.c. 16), now probably restricted to one locality. The Bulbous Foxtail could still escape this fate if accurate recording now could identify its most important locations, as could another interesting species of brackish grazing marshes, the Saltmarsh Goosefoot, *Chenopodium botryodes*, which has its core populations in the Thames estuary. Entries in several Floras for vice-counties where *A. bulbosus* has been recorded have a doubtful tone: "Possibly elsewhere in the extensive saltmarshes" (Jermyn 1974), "Apparently very rare" (Petch & Swann 1968), while Simpson (1982) mentions several recent rediscoveries of old sites. I would like to suggest that the successful matching of historic records with extant populations found in the south-east of England in 1987 could be achieved in other areas of Britain by searching for *A. bulbosus* at the end of May.

A further encouragement to look for *A. bulbosus* in areas where it seems to have been lost, is the point that it seems to be a successful re-colonizer of disturbed areas where high salinity restricts competition. This characteristic revival of populations from dormant 'bulbs' was first identified by Trist (1981) after examining some E. Suffolk (v.c. 25) sites after severe sea-flooding. Similar results can be observed on the Avon near Bristol, N. Somerset (v.c. 6), where abundant *A. bulbosus* can be found on large areas of barely-vegetated saline earth, spread when a new deep-water dock was excavated from former grazing saltings.

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REFERENCES

ARNOLD, F. H. (1887). Flora of Sussex. London.

CLARKE, G. C. S. (1980). Alopecurus L., in TUTIN, T. G. et al., eds. Flora Europaea 5: 241-243. Cambridge.

HALL, P. C. ed., (1980). Sussex plant atlas. London.

HANBURY, F. J. & MARSHALL, E. S. (1899). Flora of Kent. London.

HOLLAND, S. C., CADDICK, H. M. & DUDLEY-SMITH, D. S. (1986). Supplement to the Flora of Gloucestershire. Bristol.

HUBBARD, G. C. (1968). Grasses, 2nd ed. Harmondworth.

JERMYN, S. T. (1974). Flora of Essex. Colchester.

PETCH, C. P. & SWANN, E. L. (1968). Flora of Norfolk. Norwich.

PHILP, E. G. (1982). Atlas of the Kent flora. Maidstone.

SIMPSON, F. W. (1982). Simpson's Flora of Suffolk. Ipswich.

TRIST, P. J. O. (1981). The survival of Alopecurus bulbosus Gouan in former sea-flooded marshes in East Suffolk Watsonia 13: 313–316.

TUTIN, T. G. (1987). Alopecurus L., in CLAPHAM, A. R., TUTIN, T. G. & MOORE, D. M. Flora of the British Isles, 3rd ed., p. 645–646. Cambridge.

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