

Sex Ratios and Related Characteristics in *Spinifex sericeus* (Poaceae)

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Abstract

Spinifex sericeus R.Br. is a dioecious, stoloniferous grass which occurs on sand dunes around much of the south-eastern coastline of Australia, New Zealand and New Caledonia.

Sex ratios of ramets of *S. sericeus* and some associated characteristics were studied on the mid-north coast of New South Wales. Generally there was a male bias in the observed ramet sex ratio, although the extent of this bias varied with the beach investigated, the position in the dunes and the time of sampling. Male inflorescences matured and died more rapidly than females, and hence the observed male bias was greatest at the beginning of the flowering period. Male ramets were found to have more sexual tillers per clump than female ramets.

The genet sex ratio was estimated from plants grown from seed and separated from each other throughout the experimental period. Males and females were found to be equal in number, although this equality may not be a true reflection of the genet sex ratio in the field.

Introduction

Spinifex sericeus R.Br. is a stoloniferous, dioecious, perennial grass which occupies coastal foredunes of eastern Australia, New Zealand and New Caledonia. On the mid-north coast of New South Wales it is often found in monospecific stands from the toe to the crest of the incipient foredune and in the first swale. On semi-established foredunes it may grow in association with *Acacia longifolia* var. *sophorae* (Labill.) F.Muell., but is usually absent from hind dunes with well established vegetation. Long stolons (commonly >6 m) produce both roots and clumps of tillers at the nodes. As the stolons are buried by sand accretion, the vertical tillers grow upwards so that the dune surface carries a series of isolated clumps of tillers, supported by a three-dimensional network of stems below the surface and with new stolons forming above the sand (Maze 1987). These characteristics make it a very valuable species for coastal sand dune stabilisation (Maze 1987) and it has been used extensively for these purposes on the central to north coast of New South Wales and into southern Queensland (Barr *et al.* 1983; McDonald *et al.* 1983). However, little information is available concerning its reproductive biology, vital information if foredune populations are to be properly managed.

Male and female inflorescences are distinctly different in appearance (Wheeler *et al.* 1982). Male inflorescences are composed of a cluster of racemes or spikes subtended by silky-hairy spathes, usually in a terminal umbel but occasionally with a cluster of racemes below. The female inflorescence is a globular head of racemes, each raceme with one or sometimes two sessile spikelets with the rachis extending up to 10 cm and ending in a point or bristle.

There was some indication that flowering individuals had greater stolon lengths than non-flowering individuals, suggesting that it was the more vigorous individuals that flowered, but this difference was not statistically significant. Males and females reacted similarly to flowering, casting doubt on whether males undergo a more rapid vegetative spread than females. However, the perennial growth habit of *S. sericeus* and the huge variability observed suggest that measurements would need to be taken on a large number of plants for several years before any differences between males and females could be identified.

The results of this study highlight the inappropriateness of determining sex ratios at one place and time and relying solely on field observations rather than populations grown from seed.

One of the prerequisites for using *S. sericeus* in dune stabilisation programs is the ability to obtain adequate supplies of seed. The results of this study indicate the low proportion of tillers that produce inflorescences each year and the way in which this varies across the dune system. They do not, however, provide an answer as to why a particular tiller becomes reproductive, and work on the factors which stimulate inflorescence initiation must be done if this species is to realise its full potential for coastal dune stabilisation.

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Isozyme Variation in Populations of

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Abstract

Isozyme variation in populations of *Emex australis* was observed in several populations, but most of the relative uniformity in many populations

Introduction

Emex australis occurs in several areas of southern Australia in the Sydney in 18 the pattern of a primary introduction to the eastern States. reproductive characteristics of populations sampled in small differences: populations (Weiss and were genetically undetectable.

The pattern of its value in elucidating uniformity have been found that possess morphological related *E. spinosus* (Hasan 1988). A related *E. spinosus* biological control, similar to the known Australian *antiquum* Gyller *E. australis*, owing to (1983). More recent pathogenic fungus because previous biotypes of a weed and Syd. against