POTENTIAL OF SPARTINA SPECIES AS WEEDS IN ESTUARINE SITUATIONS IN SOUTH-WESTERN AUSTRALIA

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Introduction

Spartina is a major environmental weed of estuarine wetlands in south-eastern Australia (Fraser-Quick & Philips 1992). In this general area and especially in Victoria it is potentially a major threat to the feeding grounds of migratory waders and to continuing geomorphological processes. In Tasmania the weed is still spreading and its ultimate effects are yet to be known.

Four species of Spartina have been recorded as naturalised in Australia and New Zealand. These are *Spartina alternifolia*, *Spartina anglica*, *Spartina maritima* and *Spartina* X *townsendii*. These are all northern cool temperate species.

Current Status of Spartina in Western Australia

Boston (1981) gives details of attempted introductions of *S.* X *townsendii* into Australia. There were 16 attempts to naturalise material of this species in Western Australia over two periods in 1930 and 1952. Of these 16 attempts: seven were made in the tropics (an area totally unsuitable for the species); one was made in a saline lake in the southern wheatbelt; six were made on the west coast in estuaries at Perth and Bunbury and two at Albany. Most of these attempts failed immediately or failed to establish. A single introduction at Oyster Harbour near Albany persisted for several years but ultimately failed to naturalise because of poor site selection and destruction by subsequent port developments.

Boston (1981) noted that only the area between Augusta and Albany is climatically suitable for *S.* X *townsendii* and even this area was considered marginal for the species. It appears that a series of factors were responsible for the failure of Spartina to naturalise in Western Australia. These factors were poor handling of propagating material, the low seed viability, unsuitable site selection and planting of the infertile hybrid (which could not sexually reproduce).

Estuarine Weeds of south-western Australia

In 1995 a survey was conducted of the accessible foreshores of estuaries between Bunbury and Albany to document the presence of weeds in general and remnant colonies of Spartina in particular. No colonies of Spartina were recorded, but 12 other weeds were recorded in the samphire, mangrove or fringing woodlands of these estuaries (Table 1). Only two of these weeds, *Cyperus laevigatus* and *Hibiscus diversifolius*, are found on the open mudflats; the majority occur on the disturbed areas of fringing vegetation. Hence this area is still available as open habitat for a weed like Spartina to invade.

Weed Potential of Spartina in south-western Australia

Western Australia has seven major estuarine systems along the south coast between Augusta and Albany. All of these are within the climatic tolerances of *S.* X *townsendii* and *S. anglica*. Most of these estuaries have large nutrient inputs, which were not present in 1930 (the time of the last introductions in this area). Anecdotal evidence in eastern Australia links the major expansion of the Spartina with such increases in nutrients. That is, an increased potential now exists for these species to naturalise in the region.

In addition, the genus Spartina contains 16 species distributed in Africa, America and Europe (Mobberley 1956). All are rhizomatous perennials usually growing in coastal dunes or saltmarshes. Of these, six species are recorded for Argentina (Nicora & de Agrasar 1987), two for California and Northern Mexico (Munz 1980) and three for the Mediterranean regions of Europe (Tutin *et al.* 1980). That is, there are at least 10 members of the genus which have climatic tolerances matching much of southern Western Australia.

Apparently, only four species have been introduced into Australasia, and since one has already become a major weed there is no doubt that all members of the genus should be prohibited for importation into Australia under Australian Quarantine Regulations.

Members of the genus should also be declared as P1 under the Agricultural Board regulations of Western Australia so that they are eliminated wherever they occur in Western Australia and cannot be legally brought into the state from elsewhere in Australia.

Both of these actions are urgently required to limit the spread of the current problem species to Western Australia and prevent future problems for Australia from other members of the genus.

Table 1 Estuarine weeds of south-western Australia

Monocotyledons	Dicotyledons
Grasses	*Atriplex prostrata*
Arundo donax	*Spergularia salina*
Hainardia cylindrica	*Hibiscus diversifolius*
Paralophis incurva	
**Paspalum vaginatum*	*This is a native species but has become a major weed of the Vasse–Wonnerup Wetlands, probably with nutrient enrichment.
Polypogon monspeliensis	
Puccinella ciliata	
Stenotraphum secundatum	
Sedges	
Carex divisa	
Cyperus laevigatus	

References

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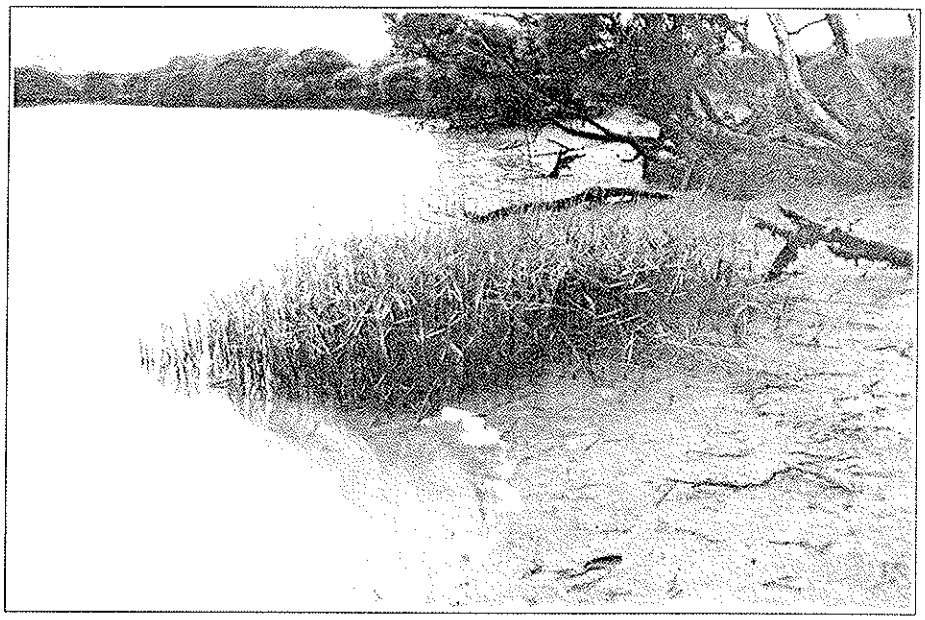
How green is your mudflat?

Proceedings of the Australasian Conference on Spartina Control



Spartina infestation on the Albert River, Port Albert, South Gippsland, Victoria.

Held 10th - 12th May 1995
Yarram, Victoria.

Australian Nature Conservation Agency

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