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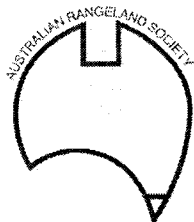
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# ROLE OF *SALSOLA KALI* IN TROPICAL ARID GRASSLANDS

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## ABSTRACT

The annual chenopod *Salsola kali* is a common species in degraded floodplain country of the Pilbara, WA. It is considered a weed. It is not native and has little value for grazing animals. In parts of the US it is accepted as a useful nurse species on rangeland sites undergoing rehabilitation after mining. There is some evidence that it is encouraged by mechanical ripping to induce regeneration on barren alluvial plains. It may be a useful species in stabilising soil and indicating rehabilitation progress.

## INTRODUCTION

Surface stabilisation is a primary concern in rehabilitation operations, whether of land disturbed by mining or of degraded pastoral areas. Colonising species that can fulfil this function are of value. Where such species are aliens there is concern that they may spread out into the broader landscape and out-compete other, perhaps more desirable but less resilient native species.

The prickly saltwort, *Salsola kali* L, also known as Russian thistle, soft roly poly or buckbush is an annual herb or sub-shrub to 60 cm. This species is of doubtful status: believed of Eurasian origin, possibly naturalised rather than native. It is widespread over much of Australia, particularly in more arid areas or on saline soils (Wilson 1984). It is mainly a summer growing species, an early coloniser after rain, growing rapidly and setting abundant fruit. It is an indicator of poor range condition when it dominates a pasture.

It establishes on rehabilitation sites quickly but may crowd out more desirable perennial species. It is a feature of a number of land reclamation sites currently being assessed at Ethel Creek (22°54'S, 120°10'E) in the Pilbara. Seed collectors have been advised not to supply it to mine sites. In the western USA *S. kali* is a summer annual of the salt deserts, and is considered a colonising weed of strip mines (MacMahon 1992).

## OBSERVATIONS

*S. kali* has been observed at a number of locations on the Fortescue River flood plain in the Pilbara as a part of the Ophthalmia study (Xin *et al.* 1996). Density and cover have fluctuated (Figure 1), largely in sympathy with the rainfall pattern. It was a major feature of the ground cover between 1992 and 1994 but suffered severely during the dry year of 1994. Its presence in 1995, a year of above average rainfall, was overshadowed by a number of other fast-growing herbage species.

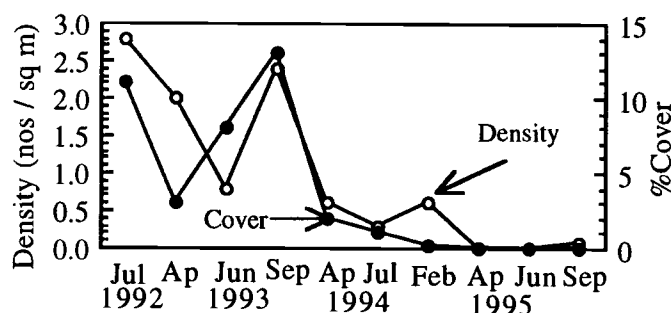


Figure 1. Mean values for density and cover of *Salsola kali* at Ethel Creek Station (n=8).

At a rehabilitation site on Ethel Creek, *S. kali* was absent in the first summer following mechanical treatment in late 1991 (Figure 2). It was present as an important species in the following year in

response to good rainfall. All species were poor in 1994. By the 1995 assessment it had recovered again on the rehabilitation site and also spread to an adjoining untreated control area.

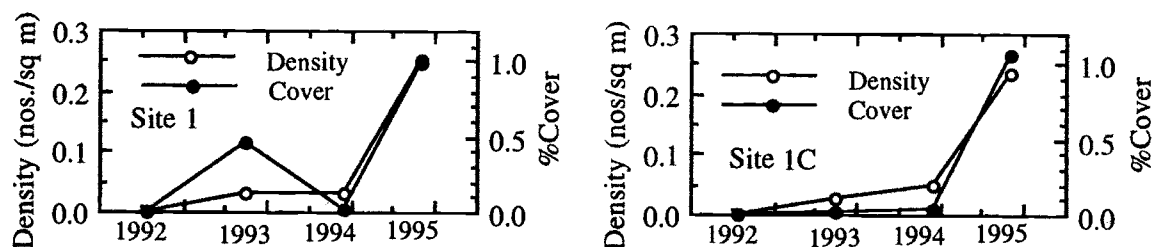


Figure 2. Mean values for density and cover of *S. kali* at a rehabilitation site (1) and a control site (1C).

## DISCUSSION

The weedy species *Salsola kali* has dominated the ground cover at some floodplain sites for several years. In the western USA *S. kali* can retard growth of planted species (MacMahon 1992). The Pilbara sites described are natural pastures believed to have lost much of the previously dominant perennial grass cover due to sustained over-stocking. This is a different pattern to that reported for western Queensland by Kleinschmidt and Johnson (1977). There the species is a weed of disturbed land, in pastures and cultivation. It apparently disappears from pastures after one or two seasons. In the study sites reported here, *S. kali* has the potential to produce considerable litter that may assist in soil improvement for the eventual return of more preferred species. These are believed mainly absent now due to a shortage of seed (Fox *et al.* 1995). Should the litter blow away then this feature is less valuable. Our observations to date suggest that *S. kali* is an opportunist species and is unlikely to hinder the establishment of perennial grasses, despite evidence of its competitive ability (Schmidt and Reeves 1989). Consequently we see no concern at present that it may be an undesirable species. This may change as the vegetation improves.

## ACKNOWLEDGEMENTS

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