Landnote

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MURRAY RIVER RECREATIONAL SITE PROTECTION AND REHABILITATION

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Introduction

A long history of recreational usage in parts of the Murray River Valley (Lane-Poole Reserve) has resulted in severe degradation at some recreation sites.

Soil compaction and erosion have contributed to a serious loss of vegetation.

The problem was tackled in the first instance by redesign and relocation of recreation facilities, and the creation of barriers and pathways to control access through degraded areas. Rehabilitation was then attempted after first fencing off and signposting the areas to be treated.

The access controls and fencing have been well accepted by the recreating public, and damage and vandalism have been minimal. We attribute this success to good signposting, distribution of conservation oriented information and the presence of departmental staff patrolling the area.

Rehabilitation measures were attempted at four sites along the river banks. Two of the sites are subject to periodic inundation during winter flooding of the river.

The species used in rehabilitation included both natives, and exotics that were either already present, or which had superior characteristics to natives for this particular rehabilitation task.

Rehabilitation Techniques

Revegetation was attempted by a combination of planting and direct seeding inside fenced-in plots.

Ground preparation at all sites consisted of breaking the surface with a rake prior to seeding.

Both planting and seeding were carried out in winter 1985.

A standard wetland seeding mix was used (Table 1) and seeding rates of 4, 5, 8 and 10 kilograms of the mixture were tried. In each case the seed was mixed with fertilizer at a rate of 0.5 kg per hectare before sowing.

The seed/fertilizer mixes were broadcast over the prepared sites.

Table 1

WETLAND SEED MIX

Species	Percentage of mix by weight
Acacia alata	20
A. extensa	21
Agonis linearis	0.3
Astartea fascicularis	0.4
Baeckia camphorosmae	1.2
Boronia mollayae	8
Clematis pubescens	0.6
Ghania decomposita	5
Juncus pallidus	8
Lepidosperma angustatum	0.9
L. tetragnetum	0.7
L. gladiatum	21
Melaleuca preissiana	8
M. rhaphiophylla	4
Mesomelaena tetragona	0.5
Phyllanthus calycinus	0.4

12 species were planted, however not all were represented at all sites. The planted species were: *Acacia pulchella, Astartea fascicularis, Calothamnus quadrifidus, Eucalyptus calophylla var. rosea, E. patens, E. rudis, Juncus pallidus, Kunzea baxteri, Leptospermum laevigatum, Melaleuca cuticularis, M. lanceolatus,* and *M. raphiophylla.*

The Results of Rehabilitation

The four sites were inspected in late October 1985 and the results of the direct seeding assessed in some detail (Table 2).

Table 2

Sowing Rate (kg/ha)	Germinants (no./ha)	Remarks
4	50 000	Subject to inundation
5	80 000	Hand watered
8	60 000	No watering; rabbits a problem
10	200 000	Screening effect desired to seclude camping areas

The 4 kg/ha sowing rate is just barely adequate to satisfy our need for an impermeable barrier holding its own against pressures by recreators after fencing has been removed.

Above 8 kg/ha is unnecessary and some seedlings do not survive from the competition. For small areas where a quick screening effect is required up to 8 kg/ha could be used. Weeds were found to be a problem resulting from ground preparation and fertilizing.

Acacia alata and *Acacia extensa* accounted for the majority of germinants. The percentage of mix by weight of each species is being reviewed and some species are being dropped out of the mix while others altered in their percentages.

Further direct seeding trials will be done with sowing rates of between 5 and 8 kg/ha. Some of these plots will be lightly fertilized and some not fertilized at all.

Of the twelve species hand-planted the following were the most promising: *Acacia pulchella, Astartea fascicularis, Eucalyptus patens, E. rudis,* and *Juncus pallidus. Astartea fascicularis* is very dominant along the Murray River bank and is responsible for holding the river bank together. *Juncus pallidus* grew very rapidly and put on an enormous matted root system in a very short period of time but declined during the summer except where it was planted right along the river bank. The success and suitability of the hand-planted *Lepidosperma* and *Melaleuca* species will be assessed at a future date when growth rates and reproductive rates will be looked at.

Discussion

The river bank remains to be a major rehabilitation problem. Canoe launching sites and steps down into the river have been successful in solving erosion problems in many areas. A combination of *Juncus pallidus* and *Astartea fascicularis* will help to bind the soil and build back up the river bank in areas neighbouring these facilities.

Native couch already present in these areas could be seeded or planted along the river bank, however it doesn't seem to survive very well in areas subject to inundation. Kikuyu covers areas better and is much more resilient but doesn't blend in with native vegetation as readily. If the native vegetation can be maintained and reinforced it would be preferable. But with increasing use, hardening up of some of these river bank sites by using grasses may eventually become necessary.

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