

ABORIGINAL COMMUNITY INVOLVEMENT IN THE MANAGEMENT OF MIMOSA (*MIMOSA PIGRA*) ON THE WETLANDS OF THE NORTHERN TERRITORY'S 'TOP END'

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Abstract The rampant weed mimosa (*Mimosa pigra* L.) is considered to be one of the greatest threats to northern Australian wetlands. Aboriginal people rely heavily on these wetlands for food, for cultural reasons and, increasingly, for economic independence through pastoralism, tourism and wildlife utilisation. This paper provides a background to the historical management of mimosa on Aboriginal land and outlines how Aboriginal communities are currently being involved in the fight against mimosa with the assistance of the ILC, the DPIF and the NLC.

INTRODUCTION

Mimosa (*Mimosa pigra* L.) has recently been listed as a weed of national significance. Of Central American origin, mimosa is a woody, prickly shrub that grows three to five m tall and forms thickets so dense that very little can live within them (Lonsdale *et al.* 1995). Mimosa invades open floodplains where it replaces grasslands and sedgeland and the understorey of riparian and swamp forests. Currently restricted to the Northern Territory (NT), it is estimated that over 80 000 ha of the wetlands in the area north of 16°S, known colloquially as the 'Top End', are covered by mimosa. The weed is found in most major Top End river systems from the Fitzmaurice in the west, to the Phelps in the east (Mimosa Strategy and Plan 1997).

In the Top End, Aboriginal people have control of a large area of land (over 170 000 km²) including approximately 87% of the NT coastline and thus many of the major sub-coastal wetlands infested or threatened by mimosa. It is thought that 34% of the current mimosa infestation is situated on Aboriginal land (I. Miller, pers. comm.). However mimosa is not just an issue for those Aboriginal landowners – it is the weed's capacity to spread across state borders that is a major concern. The CSIRO predict that mimosa could spread east to Queensland and as far south as Ballina in northern New South Wales while to the west it could spread as far south as Broome in Western Australia. The outer edges of the infestation, which should be targeted in strategic control, are mostly on Aboriginal land.

Unfortunately the capacity of Aboriginal people to manage rapidly emerging environmental problems such as mimosa is often low. Ecological knowledge and traditional land management skills do not adequately address weed problems and weed control is often given a low priority because the potential environmental impact of particular weeds is not fully recognised. In addition, Aboriginal landowners have limited personal resources and the resources of their community organisations are generally focussed on social issues such as health and housing. Notwithstanding this, awareness of some weeds amongst Aboriginal people is increasing. Mimosa, in particular, is seen as detrimental because its invasion reduces Aboriginal people's access to traditional wetland food resources and cultural sites and disrupts future management options in tourism, wildlife harvesting and primary production.

In late 1998 the Indigenous Land Corporation (ILC) signed a Mimosa Control Agreement to fund mimosa control operations on Aboriginal land with the NT Department of Primary Industry and Fisheries (DPIF), the Northern Land Council (NLC) and the White Eagle Aboriginal Corporation (WEAC) for their lands. The five year agreement has the potential to greatly enhance the management of mimosa on Aboriginal lands in the NLC region by encouraging communication and cooperation between key organisations and local Aboriginal communities.

THE HISTORY OF MIMOSA CONTROL AND FUNDING ON ABORIGINAL LAND

Control of mimosa on Aboriginal land in the Top End has been ad hoc ranging from limited surveillance to, at best, intermittent control. The reasons for this include: a lack of Aboriginal community awareness and resources; poor community involvement; a lack of a land management focus by Aboriginal representative organisations; poor coordination between government and non-government organisations; limited funding or inappropriate short-term funding; changes in Commonwealth Government funding priorities and a non-strategic approach to control.

For these reasons mimosa has been 'allowed' to invade. In 1976 a land assessment survey of the Wagait Aboriginal Land Trust (WALT) found no significant weeds, however by 1990 over 12 100 ha of wetlands were estimated to be covered in mimosa. Similarly on the Daly River/Port Keats Aboriginal Land Trust (DRPKALT) mimosa was unknown in the 1970s but by 1990, 2 760 ha of wetlands were found to be infested. Little or no control took place during this time.

In 1983 an incursion of around 200 ha was discovered on the Oenpelli floodplain in Western Arnhem Land. Limited resources were available to manage this infestation between 1983 and 1985 thus control was restricted to the release of biological control agents. By 1985 the infestation had grown to 1 200 ha. In 1986, 1988, 1989 and 1990 short-term intermittent chemical control projects were undertaken. Despite this, by 1990 it was estimated that the infestation had increased to about 8 200 ha (i.e. doubling in size every 1.4 yrs – Cook *et al.* 1996).

In May 1990, an inter-agency Mimosa Steering Committee was established to develop a program to control mimosa on all Aboriginal land in the NT. The proposal was to implement a five year action plan aimed at preventing the spread of mimosa in three key areas; the Oenpelli floodplain, the DRPKALT and the WALT. From 1991 to 1996 nearly \$7 M of Commonwealth funds (along with \$2.1 M of NT Government in-kind support) were committed to the Oenpelli infestation largely because of the infestation's proximity to the World Heritage listed Kakadu National Park. However no commitment was made to fund control of mimosa on the DRPKALT or the WALT.

The Oenpelli Mimosa Control Program (1991-1996) involved the largest aerial herbicide application to mimosa in the World (Schultz and Barrow 1995), with over 60 tonnes of chemical applied to the wetland over five years (G. Cooke, unpubl. data). On the face of it, the program was successful, destroying over 8 000 ha of mimosa. However due to the surviving seed bank (viability of up to 20 years), the success of the program was dependent on follow-up surveillance and ground control activities. Unfortunately not enough emphasis was placed on building the capacity of the local Aboriginal community to undertake the ongoing ground control necessary to prevent the weed from reestablishing.

In 1996 the Mimosa Steering Committee developed a new proposal. The first stage recommended undertaking strategic control of infestations in eastern Arnhem

Land, the DRPKALT and the remaining Oenpelli infestation in western Arnhem Land. While the second stage recommended the strategic control of dense infestations on the WALT. Overall the five year proposal was estimated to cost \$9.7 M. With the change in Commonwealth Government in early 1996 only an interim commitment of limited funds was made for the 1996/97 financial year for aerial and ground control at Oenpelli and some ground control on the DRPKALT, the WALT and eastern Arnhem Land. This short-term commitment was made pending the introduction of the Natural Heritage Trust (NHT). In late 1997 the Mimosa Steering Committee was disbanded due to a lack of funds.

In 1997 and 1998 a number of applications were submitted to the NHT by Aboriginal organisations and the DPIF to fund the management of mimosa on Aboriginal land. None were successful with the Commonwealth now arguing that weed control was a landowner and NT Government responsibility.

In early 1998 the DPIF funded some aerial application of herbicide at Oenpelli and limited ground control work in all areas during the 1998 dry season. At this time the WEAC, DPIF and NLC lobbied the ILC for funding to control mimosa on Aboriginal lands and in late 1998 the Mimosa Control Agreement was signed. In addition to the ILC's \$400 000 yr⁻¹ funding over the next five years, the DPIF would provide \$250 000 yr⁻¹ of in-kind support.

In late 1998 the Commonwealth Government committed \$2.1 M over three years for the joint CSIRO/DPIF research program into the biological control of mimosa. Unfortunately no funding assistance was provided for mechanical or chemical control programs. However recent lobbying has resulted in some NHT funds flowing to the DPIF to part-fund one position, a Land Management Coordinator for Aboriginal lands.

CURRENT TECHNIQUES USED FOR THE MANAGEMENT OF MIMOSA

A model for long-term successful mimosa management has been developed in Kakadu National Park (KNP). Due to an awareness of mimosa's potential threat and also a capacity to act, a 'search and destroy' control program was instituted in 1983. Since that time four people have been employed full-time to undertake surveillance operations and intervene rapidly when mimosa is discovered (Cook *et al.* 1996). Consequently, although there have been about 200 outbreaks of mimosa, there are no large stands of mimosa in KNP.

This program costs in the vicinity of \$2 ha⁻¹ yr⁻¹, i.e. \$400 000 yr⁻¹ (Storrs 1996). In contrast, the spray program to control the large mimosa infestation at Oenpelli cost \$220 ha⁻¹ yr⁻¹ for five years and, like KNP, will require approximately \$2 ha⁻¹ yr⁻¹ to carry out follow-up work in the broader region.

Where mimosa has been allowed to spread significantly, chemical control is still the best initial form of control. Application of herbicides by helicopter is followed by chaining and raking by bulldozers and then burning. Follow-up aerial spraying in subsequent years is often required together with a coordinated, long-term ground-control campaign.

A long-standing joint CSIRO/DPIF biological control program is yielding promising results but cannot yet be relied upon in isolation (G. Flanagan, pers. comm.). However, even if biological control is successful in suppressing the growth of mimosa, satellite infestations will still require chemical and mechanical control to stop the weed spreading. The DPIF and CSIRO are currently undertaking a major trial into integrated management (biocontrol, herbicides, fire etc.) of mimosa (G. Flanagan, pers. comm.).

In 1997 a range of government and non-government stakeholders completed a Mimosa Strategy and Mimosa Plan. In 1999 the NT Government convened the first meeting of a new Mimosa Management Committee which was set up to maximise cooperation and coordination of mimosa control programs under the Mimosa Strategy and Plan (1997) across the Top End.

Enhancement of Aboriginal Community participation

The large areas and small population base of the Aboriginal owned land of the Top End necessitates a strategic approach to weed management (Storrs *et al.* 1996). The Mimosa Control Agreement (ILC, DPIF, NLC, WEAC) is attempting to set a new paradigm for mimosa control on Aboriginal lands in the Top End. The central philosophy adopted by the parties to the Agreement is the concept that 'the land needs its people'. Rather than outsiders undertaking the land management work, the Agreement aims to build the capacity of Aboriginal landowners so they can manage their own land. The five year time-line gives an opportunity to swing the emphasis away from DPIF coordinating and undertaking strategic control work towards the community controlling and undertaking the work themselves. The NLC facilitates this process by assisting with the establishment of community-based land management structures such as community ranger/land

management programs utilising Community Development Employment Program (CDEP – Aboriginal work for unemployment benefits).

While awareness of weeds and their impact amongst Top End Aboriginal landowners is generally low (Smith 1999) there is however a wide recognition of the threat posed by mimosa. Mimosa is therefore being used as a concrete focus or 'hook' to initiate weed management works that can then be broadened into land management programs. Since the 1990s, the NLC has assisted several Aboriginal communities set up formal land management programs based, in part, on the successful KNP mimosa model. This involves developing the capacity of local Aboriginal communities to undertake weed control and other land management work through the provision of training and resources.

Emphasis under the Mimosa Control Agreement will be based on preventative management involving comprehensive ground and aerial surveys to identify isolated plants and smaller infestations particularly at the extremities of the known infestation to limit the spread of the total weed population according to the principles of Moody and Mack (1988). Aerially applied herbicide control will be followed by a coordinated and concerted ground control effort conducted by the local communities.

In several Aboriginal communities the existing capacity of community organisations is to be supplemented by employing a Land Management Coordinator with a suitable background (community development, participatory planning, parks and wildlife management) to facilitate development of formal land management programs. Funding is sought for salary and associated operational expenses for the position and where there is no one in the community with the requisite background, the recruitment process is facilitated. A team of Land Management Workers is chosen by the community to represent the different clan groups in the area. However no single framework for a formal land management program is used.

The Mimosa Control Agreement seeks to build upon a community's capacity to deal with land management problems through training. However it is crucial that this training is delivered in a manner appropriate to the context of each Aboriginal community, and that each participant receives a significant benefit. The key to meeting these aims is to choose a training provider with a flexible approach who has extensive experience in remote communities and is familiar with the differing learning styles of Aboriginal participants. The NT

University Faculty of Aboriginal and Torres Strait Islander Studies (FATSIS) has been engaged to deliver core basic units in weed control and occupational health and safety from an accredited land management course. This involves field-based education to supplement the DPIF basic mimosa control training. If desired by the community, further broad-based land management units can be delivered over time by FATSIS or some other suitable training provider.

CONCLUSION

The insecure nature of weed control funding in the past has contributed to the spread of weeds. Attention of funding organisations needs to be focussed on the current inability of Aboriginal communities to finance mimosa control in their own right. Mimosa that is poorly controlled on Aboriginal land has the potential to spread to other parts of the Territory and neighbouring states. In recent years the Commonwealth Government has largely backed away from funding weed management programs arguing that weed control is the responsibility of the landowners and state and territory governments.

The new Mimosa Control Agreement is essentially focussed on halting the spread of mimosa to the east and west (ie off Aboriginal land), work which should be, by rights, paid for by mainstream sources of funding and not just by prescribed Aboriginal monies. If the Commonwealth did recognise its responsibility to help fund this work the ILC funding could be used for further impact reduction in the sites of major infestation (work that is more in the interests of the Aboriginal people). In the longer term, Aboriginal communities can be encouraged to partially or fully fund land management programs through initiatives such as sustainable wildlife use programs (eg crocodile egg harvesting).

With stable, medium-term funding, inter-agency cooperation and the effective involvement of Aboriginal communities there is cause for guarded optimism regarding the management of mimosa on Aboriginal lands of the Top End. While significant areas of Aboriginal owned wetlands have already been degraded by mimosa infestation, the five-year Mimosa Control Agreement has the potential to greatly enhance the management of mimosa by facilitating Aboriginal community involvement.

The success of the 'search and destroy' mimosa program in KNP has set a precedent for the management of the weed. With assistance from organisations party

to the Mimosa Control Agreement, Aboriginal community agencies are utilising the limited resources of the federally-funded CDEP to set up community ranger or land management programs to control mimosa.

In areas where land management programs have been successfully implemented in the past, Aboriginal communities have demonstrated their capacity to recognise and control mimosa infestations before they become intractable, saving many millions of dollars in potential control.

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REFERENCES

- Cook, G.D., Setterfield, S.A. and Maddison, J. (1996). *Ecol. Appl.* 6(2), 531-537.
- Lonsdale, W.M., Miller, I.L. and Forno, I.W. (1995). *Mimosa pigra*, eds R.H. Groves, R.C.H. Shepherd and R.G. Richardson, *The Biology of Australian Weeds* Vol. 1. (R.G. and F.J. Richardson, Melbourne).
- Moody, M.E. and Mack, R.N. (1988). *J. Appl. Ecol.* 25, 1009-1021.
- Schultz, G.C. and Barrow, P.H. (1995). The control of *Mimosa pigra* on the Oenpelli floodplains. *Supervising Scientist Report 101*, Jabiru.
- Smith, N.M. (1999) (in prep). Unwanted exotic plants on NLC lands, NT, Australia. CINCRM, Darwin.
- Storrs, M.J. (1996). A weed management strategy for Kakadu National Park 1996-2001. Unpubl. report to ANCA, Jabiru.
- Storrs, M.J., Kenyon, A. and Lonsdale, W.M. (1996). Strategic weed management for the Aboriginal lands of the Top End. Proceedings 11th Australian Weeds Conference, Melbourne, pp. 402-407.