

Case studies— community and government initiatives



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Strategic prickly acacia control at a coastal infestation

Peter Spies with Gordon Smith and Steve Matheson

Introduction

Clarina station, owned by Gordon and Mavis Smith, is a 285 ha property on a highly fertile alluvial floodplain in the Don River delta near Bowen in north Queensland. 'It's said that the block was a saltpan that is now covered with at least a metre or two of silt. It's become more fertile ever since the Don started to break its banks during the big floods and flow over this way in the late '40s', Gordon said. The property is managed as a Brahman stud running about 400 head of cattle, 200 of which are bulls. The property is now established to guinea, green panic, para and Rhodes grasses, although 60 ha are cultivated for stockfeed and Callide Rhodes grass is baled for hay. As the land is on a floodplain, Gordon said 'Prickly acacia probably first got on to the property in a flood... It's been here since I've been here...60 years... but it's just got worse and worse.'

The infestation

According to Steve Matheson, Land Protection Officer with the Department of Natural Resources, Mines and Energy, 'Prickly acacia was planted here (in the Bowen area) way back in the early '30s... and as word has it, a lot of seed was taken from here and planted further west.' When the Don River floods it spreads prickly acacia seed from properties further up the catchment; and within properties like Clarina, most seed is spread by cattle. Before control efforts began in earnest, about 200 ha of the property was heavily infested with prickly acacia, and the rest had scattered trees. 'In 1946 the flood broke through and ever since, in any big flood, the Don River floods over the area, and that has made the acacias worse. Once you've got them and you let the trees seed there's no need for anything else to spread it, cattle will do it for you... [They] will just eat everything that falls off it...The seeds are very nutritious, though you are better off with the grass', Gordon said.

On the coast, infestations are far denser than those out west on the Mitchell Grass Downs, and densities in excess of 1500 stems per hectare (stems/ha) are commonplace. In the Bowen area, about 1200 stems/ha is considered a heavy infestation, while about 150 stems/ha is considered very light. The infestation on Gordon's property was 'similar to the infestations found on the bore drains



Steve Matheson

◀ Prickly acacia 'forest' at Clarina, Bowen



out west’, Steve said. ‘It was not uncommon to get bigger trees, to a metre in diameter.’

According to Gordon and Steve the prickly acacia trees are very salt tolerant and will grow right on the saltpans and almost into the mangroves, especially where the pans are slightly raised and there is some salt couch growing.

The Don River has a steep gradient and is fast-flowing—apparently the second-fastest flowing river in the southern hemisphere, and floodwater can be two metres deep over the property. During the 1980 floods, floodwater was two metres deep over the property. ‘We have lost 40–50 cattle through floods’, Gordon said. ‘We can get [them] out quicker now that prickly acacia is cleared.... If there’s heavy rainfall in the headwaters of the Don (halfway to Collinsville), you probably have about 12 hours before it reaches the property’, he added, ‘In 1970, following a cyclone we got 1250 mm in 36 hours at the head of the Don—the next day it was here—that was an exceptionally high flood.’

Due to their sheer size, trees on the coast can produce up to several hundred thousand seeds and, since 1996, Gordon has spent about \$200 000 on control of prickly acacia. Currently, he spends from \$2000–\$3000 annually.

Strategic Weed Eradication and Education Program (SWEEP)⁵

Gordon said ‘We’ve been trying to control prickly acacia for forty years. We’ve owned the place since 1956, but it wasn’t until SWEEP came along with mechanical pulling in 1996 that we were able to get on top of

it—until then we were fighting an uphill battle.’ SWEEP demonstrated to the local landholders that prickly acacia could be controlled.

Control was achieved by first pulling 160 ha of very heavily infested country with double-link chain, followed by stick raking. Under the SWEEP program, the state government paid for the pulling and about 15 per cent of the stick raking, and Gordon paid for the balance of the stick raking and the cost of chemical and diesel for follow-up control. The \$83 000 spent on initial mechanical control of this infestation—\$70 000 by the landholder and \$13 000 by the government—helped Gordon ‘kick-start’ his follow-up control program.

‘Prickly acacia trees are very salt tolerant and will grow right on the saltpans and almost into the mangroves.’



Steve Matheson



Steve Matheson

▶ Stickraking prickly acacia

⁵SWEEP—The Department of Natural Resources (now NRM&E) Strategic Weed Eradication and Education Program.



A further 120 ha was chemically treated. Steve said that 'We found that [landholders] wanted to see the tree dead, so we had to cut-stump...This used about a third of the amount [of chemical and diesel] that we used in basal bark operations.'

Steve says it was hard to get landholders to embrace something new at the start. 'They were just coming out of drought', he said. 'Mechanical pulling was the way to go because the results were visible and follow up control could be achieved.' There were, however, a few failures when some of the beneficiaries did not meet their obligations for follow up, 'People still need money and inclination to control weeds', Gordon said. 'You can't expect governments to keep coming to the party, but if they do come in with assistance, landholders should embrace it and take full advantage—but you need follow up control.'

Mechanical control

'The trees out west would pull a lot easier than the ones in Bowen, as the roots would not be as far down', Steve said. 'A lot of the big trees in the silty soil went at least 2 m or more down before you actually found the crown of the plant... that was a real drama when you were pulling because when you came across some big old trees you quickly lost traction with the dozer tracks in the softer silty soils.'

The machines used were undersized for the size of the trees and Steve said that 'If we were to do the job again we would use at least a pair of late-model D8s...We used a 30-year-old D6 and a D7. The machines needed to be in close to minimise the drag,

because of the size of the trees and the silt. Many of the trees were up to 1 m in diameter and there were plenty of them.'



▲ Pulling prickly acacia at Clarina

Steve Matheson



Steve Matheson

▶ Pulling prickly acacia at Clarina





Steve Matheson

▲ SWEEP team undertaking follow-up control at Clarina

For stick raking, a D7 with a very heavy 8 m blade fitted with a smaller cutter bar welded approximately 8 cm up between the teeth of the rake was used to help drag the smaller plants out properly with roots intact. 'When a lighter blade was used, the results were not as good. In most cases a couple of runs with the blade were needed over the same area to drag the roots out properly. A real big heavymongrel is needed (the heavier the better) to drag trees out of the silty flood country.' The smaller 'whip stick' acacia did not pull over that well, and probably increased the cost of the operation stick raking. To compensate for this, we added a

large ripper tyne to the drag of the chain to keep it from riding over the smaller trees.

It wasn't necessary to sow grass seed after clearing prickly acacia because 'There were still some good clumps of panicum grass left prior to pulling. The chaining may have helped spread some seed and prepare a seedbed, and the rain during pulling may have helped stimulate grass growth. Along with reduced stocking... it all came together to help pasture establishment' said Steve.



Chemical control

Together with the mechanical control, rain that fell during the pulling helped to stimulate some of the prickly acacia seed. 'It looked nasty...but that quick germination reduced the seed bank quickly', Steve said. Gordon had a team working for six months on follow-up control in the first 18 months after pulling, as this was a critical time, and 200 L of Starane (12 000 L of diesel mix solution) were used annually. After two years, he switched to using Access and diesel to control chinee apple and parkinsonia as well as the prickly acacia. 'It became a holistic management approach', Steve said.

In 1997–98 Gordon had five or six people doing control work for about six weeks. However, from 1999 onwards, he has had only one person working on it for two months a year, and follow-up control now takes only a couple of weeks annually. 'For the past four years we have controlled it with chemical—



Steve Matheson

spraying a bit in each paddock...It surprises me how little seed we get coming up now. Though we still get a fair bit around the boundary fence and after a flood. In the main, we're on top of it', he said.

A combination of basal bark and cut stump methods has been used. Basal bark spraying was considered the way to go when the infestation was very dense. 'You need to spray up to just above the first fork, on any tree... so you get coverage and not just brown out⁶. When basal bark spraying very large trees, Gordon and Steve found that it could take 7–12 L of herbicide mix to ensure sufficient coverage to waist height, so they changed to cut-stump method to reduce herbicide costs. With this technique, however, 'you had to be careful that the trees or the stems were not coming down on you', Steve said. 'The trees in some cases were up to a foot apart... you had to be right behind the operator on the chainsaw to apply chemical so that none of the stumps would be missed.' 'Its harder to find the smaller stems when they are covered with foliage.'

Steve explained that when cut-stumping it's important to avoid problems from the remaining stumps. 'We were cutting 5–8 cm from the ground—people cutting at 15–30 cm are using too much herbicide and it is not good for landholders with stock—or for vehicle tyres.'

◀ Using a brushcutter to cut-stump prickly acacia trees

⁶Steve Matheson explained that brown out is when insufficient coverage has occurred and there is an initial burn-off of foliage, but a few weeks later green shoots appear. The tree does not die—spraying has caused leaf damage only.



Follow-up control on Clarina is now carried out by basal bark spraying with Access® and diesel. Operators walk around with a 7 L hand-spray unit. 'That way you can keep going till the end of the day and are not struggling by ten o'clock with one of those big, heavy spray units on the shoulders', Steve said.

He has found the 7 L spray unit more economical, because, 'when you're paying a bloke to spray, he's keen to get that 20 L unit off his back, and tends to spray it out quicker', so chemical from a small hand-held spray unit may go almost as far. Landholders are mindful of the amount of diesel that might go out on the ground. 'You are worried about the drift of diesel burning all the grass around the stems and there is a lot less chemical used.'

Graslan® was also tried on Clarina in the late '80s, but 'it was a complete failure', Gordon said. 'The country is so fertile and the root systems are so big... Graslan just couldn't cope with it. We suspect that was the problem. The roots may have been too far down to get the chemical.'

Other weeds that were in the infestation, such as chinee apple and parkinsonia, are probably causing more of a problem now that the country has been opened up. 'When you take out one weed, you need to consider the other weeds as well', Steve said.

Gordon believes that, rather than trying to tackle too much at once, producers on larger properties should control prickly acacia 'paddock by paddock', and should quarantine cattle that have been in infested paddocks for at least five to seven days, to prevent the spread of seed from their dung. 'The main criteria to get rid of them (prickly acacia) is to get rid of every tree that seeds', Gordon said. 'Most of the seed input [on Clarina] now is from floods and overhanging trees from neighbouring blocks.' The stock eat seeds from acacia along the boundary fence and spread it.

'I reckon we have won the battle', said Gordon, 'its been long and costly one but now we can look out and not see the country covered with weeds. It's getting harder to find one on Clarina—I didn't think you would ever hear me saying that', said Gordon.

'Producers on larger properties should control prickly acacia "paddock by paddock", and should quarantine cattle.'



Strategic prickly acacia control on Molongle

Peter Spies with Trevor Davies and Steve Matheson

Introduction

Molongle station, owned by Trevor and Gloria Davies, is a 4033 ha property on Molongle Creek at Gumlu, between Bowen and Ayr in north Queensland. The Davies have been on the property since 1963. The country is a coastal plain, with a few kilometres of the coastline, and has some slight ridges and drainage lines. It is predominantly flood-free with only shallow sheet flow after periods of heavy rainfall. 'The immediate coastal country was probably a mangrove flat or saltpans once, and over the years Molongle Creek has probably silted it up', Trevor said. The Davies run about 1200 head of cattle, including 300 breeders, and turn off 200–250 head of steers or heifers for the domestic trade each year (dressing ~ 300 kg).

Molongle includes some fertile alluvial country along Molongle Creek, part of which used to be three or four vegetable farms. 'It grows good grass this fertile country...but it also grows good weeds... the country can grow anything, just look at the vegetable farmers', Trevor said. Prickly acacia favours the black soil country rather than the harder ridges.

The infestation

'Prickly acacia was here on the place before we came. My wife, who grew up just up the road used to talk about it when they were kids... it's been here a long, long time. It's possible that it was planted here originally', Trevor said. Before control efforts initiated by SWEEP and the Davies family, approximately

200 ha were densely infested with prickly acacia, and a further 2800 ha with either scattered or isolated plants. 'We did next to nothing for years and then we looked around and realised the problem. We did attempt to keep prickly acacia to an area. We weren't



Peter Spies

▲ Prickly acacia infestation at Molongle, Gumlu



Peter Spies

▲ Prickly acacia infestation at Molongle, Gumlu





making ground, but not losing ground to it either...We were getting areas that we were keeping clean. However, it took that real big concerted effort to break its back so that we could say we'll go from here', Trevor said. 'Prickly acacia just gradually increased, rather than exploded.'

As Molongle does not get the seed input from floods as areas near Bowen in the Don delta do, not much production was lost as a result of prickly acacia because, 'we hadn't reached that stage', Trevor said, 'it was just an inconvenience—we would have eventually had problems, but we were just on that verge.' Steve added, 'There were plenty of smaller trees about 1–1.5 m high coming through everywhere. A lot of hours were put in to cover the country.' The infestation was a lightly scattered infestation with some dense areas. 'What we call light infestations, fellas out in the west call medium to dense infestations', Steve said.

Strategic Weed Eradication and Education Program (SWEEP)

Trevor had controlled prickly acacia on several areas prior to SWEEP control efforts, 'but there are only so many hours in a day and you just can't get to all the areas', he said. 'Without SWEEP we would still be in the position we were in... with one sweep they broke the back of the problem and provided the incentive.'

After SWEEP's initial control program, there was a fair bit of seed germination and follow-up was required, fortunately, not nearly as labour intensive. Trevor can now control the prickly acacia around the property within a two-week period, with one person on a four-wheel bike. According to Trevor, '[SWEEP] puts the landholder in far better position where there's a better chance of controlling prickly acacia.'

'Prickly acacia just gradually increased, rather than exploded.'

'You haven't got to relax too long and you are back to where you were.'



Steve Matheson

▲ SWEEP team



Control efforts and seed germination

'There is no easy way of getting rid of prickly acacia in my opinion. It's no good clearing 4 ha in the corner of a 240 ha paddock... a 20 m buffer around large infestations does not help stop the spread of prickly acacia', Trevor said. Control efforts have been aimed at targeting prickly acacia over the whole property in one hit. 'You haven't got to relax too long and you are back to where you were. You could leave it a year, but give it five or six years and it would be back nearly as bad', Trevor said.

Though the Davies did not have the area to quarantine cattle, Trevor said 'Cattle may spread a lot of seed, but conditions have to be perfect for them to germinate, otherwise we'd have millions of them... You can sometimes see where a heap of cow manure has had 10–15 seeds come up in it.' However, not all cowpats are affected and Trevor suggested that germination might depend on 'whether it rained that day.' He said that 'If the cow manure is sitting on moist ground... away they go (the seedlings), but if the cow manure is on dry ground... well they just die out.' 'The seeds can last for five years', Steve added. 'Heat can crack them, and then when it rains you get germination.'

Chemical control

SWEEP used the cut-stump technique and Starane® at the ratio of 1:60 Starane/diesel to control prickly acacia at Molongle, which was only the second property it had targeted in the Bowen area. They (up to 15 men at a time) used a total of 25 000 L–30 000 L of diesel (1400 L–1600 L on a big day), and

learned the importance of good operators who are economical with chemicals and do not miss plants.

'The cut stump method, with an experienced operator on a decent chainsaw or brushcutter, is not that far behind basal bark spraying said Steve. This is because when basal bark spraying 'Getting in and around the trees takes time', he said, and 'It takes a long time to saturate a tree', Trevor added.

Given the price of herbicide and diesel, Steve believes the cost of initial control may have been about \$60 000, with about \$20 000 spent annually on follow-up in the first couple of years after SWEEP. Trevor now uses Access® and diesel for follow-up control as this takes care of the chinee apple and some parkinsonia plants at the same time.

Mechanical control

Trevor has carried out about \$40 000 on mechanical control using a small machine. Though he has valued neither his own time nor depreciation on machinery, which could add up to about \$70/hr. He also hired a large 400 Hp Komatsu dozer with a bull-blade to control a larger, dense infestation. 'It rattled along at 5–6 km/hr windrowing big trees as it went. It just smashed the trees and pulled the roots out', Trevor said. However, the Davies had to carry out chemical follow-up control on the patch. 'You never want to go small with machinery', Steve said. 'Larger machines can do five times the area as smaller units in the same timeframe and that makes the bigger machines cheaper per hour to hire.'





The Wokingham Landcare Group

David Ogg and Peter Klem

Introduction

The Wokingham Landcare Group Inc. comprising owners of nine neighbouring properties situated north-west of Winton was formed in 1991, principally to eradicate prickly acacia. Because of the rapid spread of the pest in this area, simply living with it was not an option.

According to the secretary, David Ogg, the small size of the group has contributed to its great success in combating the problem. 'Our group has flourished over the years because it

is limited to nine properties and, apart from the annual general meeting, discussions and decisions are made by phone. A meeting can cost approximately \$800 in travel and lost wages, so the telephone is the most cost-effective way of making decisions.' The larger the group, the harder it is to put together a meeting, he believes.

Because the group is incorporated it has been able to get direct funding which it can access as required, unlike neighbouring groups whose funds are held in trust by the Winton



Nathan March

▲ Prickly acacia control demonstration site



Shire Council. This self-sufficiency has enabled the shire to dedicate more time and resources to neighbouring groups. The group does its own recording and reporting, and keeps track of allocated funds. Though a number of applications have been rejected, the group has collated a great deal of information on preparing budgetary figures for particular funding rounds. It has kept the goal of controlling prickly acacia in its sights, and much has been achieved.

The group has spread its influence by supporting neighbouring groups, thereby protecting their own area from re-infestation and greatly adding to the total area treated. 'Rather than enlarging our group we have helped in forming two neighbouring groups with the same agenda. Any innovations pass between groups', David said. This, in turn, has furthered the goal of the Winton Shire Council Pest Management Plan, and has benefited the Diamantina catchment and, ultimately, the Lake Eyre Basin.

Control

Without committed follow-up spraying (for up to eight years), the results of initial control work on prickly acacia can be lost. Where large trees have been treated, the group spends the next two to three years controlling accelerated regrowth. It has been found that most trees in the 3–4 m range have a regrowth factor of nine seedling trees per adult tree cleared in the first year. The group has also controlled parkinsonia and mesquite.

David says, 'We have used various control methods, but have relied mainly on the use of chemicals.' Machinery, such as front-end loaders and dozers, has also been used around dams where the thick infestations

make mechanical control viable. Camels and low numbers of goats have been used on two of the properties, Weston and Amelia.

The following is a list of chemicals that have been used and a brief summary of their success:

- Starane® in diesel has been the main chemical used. The best kill has been achieved when the sap has been flowing, particularly after summer rainfall.
- Starane®, water and a wetting agent has been disappointing, resulting in too much regrowth.
- Access® has had limited use due to its cost, but was found to be particularly effective on mesquite.
- Diuron® has been used around turkey nest dams and watering points but, as it is not completely water soluble, has a wearing effect on spray equipment.
- Reclaim®⁷ applied by helicopter, was used on seven of the properties with success on only one. This product has been successful in open downs country, but it is believed it failed here mainly because of the clay type soils and the subsoil moisture in drainage lines and dam catchments.
- Graslan® has proved useful, particularly in thick areas and along roads in borrow pits where prickly acacia is a recurring problem.
- Velpar® has also been successful. It can be used in areas that cannot be accessed by four-wheelers. Like Graslan®, it must be applied at the base of each tree to affect the large taproot.⁸

Note: These statements are based on observations from Wokingham Landcare Group trials and other trials may produce different results.

⁷Reclaim is no longer available for use

⁸Always refer to the herbicide label for specific use restrictions. Particular care must be taken with soil-applied herbicides to restrict off-target damage.



The commitment of the Wokingham Group to the community has been to encourage all users of chemicals to handle them safely. Though the hot climate often deters users from using adequate personal protective equipment, members believe gloves, a gas-rated respirator and periodical renewal of respirator filters are essential.

Future directions—biological control?

A meeting at Farewell Station two years ago highlighted the problem of finding suitable biological agents to control prickly acacia. Dr Bill Palmer, a research scientist with the Department of Natural Resources, Mines and Energy in Queensland, brought a group of research scientists, including Arne Witt from

the department's South African Field Station near Pretoria in South Africa, out to meet landholders. They pointed out that as prickly acacia is related to more than 900 Australian native acacias, there would be few insects available that would not also attack native species. It would therefore be more likely that a biological agent that could increase management options might be found, rather than one that was capable of killing all the prickly acacia. In the meantime, the onus remains on landholders and governments to remain vigilant and continue controlling with the best methods currently available.

'The onus remains on landholders and governments to remain vigilant.'





Labour barter—Upper Landsborough Catchment Landcare Group

Peter Spies and Nathan March

The Upper Landsborough Catchment Landcare Group is undertaking an innovative labour barter scheme involving up to 36 landholders. The scheme works by sharing labour (and sometimes other resources), in a social setting, to treat prickly acacia infestations on properties within the group. Each barter day focuses on one or more properties, with other properties 'getting a turn' on subsequent barter days.

This is proving to be one of the most effective ways to control prickly acacia on a broad scale. Charles Reddie, owner of Zara and a member of the group believes that 7–9 people are ideal for labour barter days. 'Normally we get more than half a dozen. You don't want too many (more than 12) unless you have it well coordinated... you've got to know where you're going and where you've been and where you haven't been.

'Last one we had seven people and used dye with the Velpar to mark where we'd been, so we weren't doing trees other people had done. We started about seven, had smoko and dinner and knocked off about 4.30 pm. You can do more work with seven people in one day than you can do yourself over seven days. It's not nearly as monotonous... It's hard having to turn up for seven days. We did at least 4000 ha—two and a half paddocks—using bikes and Velpar in light, scattered infestations. They were fairly big paddocks.'

The following are some of their comments on the benefits of these days:

- 'The labour scheme helps get you started.'
- 'It facilitates an exchange of techniques and ideas.'
- 'It increases community concern for the problem.'
- 'Weed control is a less daunting task.'
- 'There is increased camaraderie ... having a beer at the end of the day.'
- 'It makes a boring job more enjoyable.'
- 'The standard of work is high—you do it as though you were working on your own place.'

'You can do more work with seven people in one day than you can do yourself over seven days.'





Controlling isolated prickly acacia in Dalrymple Shire

Marie Vitelli and Nathan March

Dalrymple Shire in north Queensland encompasses an area of 68 000 km² and has a strong pastoral industry based on about 550 000 cattle. Land types in the region include box country, silver-leafed ironbark woodlands, mixed eucalypt tablelands open basalt woodlands and acacia woodlands (e.g. brigalow and gidyea scrubs). Core prickly acacia infested properties are located about 250 km west of the shire; however, there are also some smaller established infestations in the Bowen area about 150 km to the east.

Dalrymple Shire's proximity to core prickly acacia areas, cross-ownership of properties in both areas, and transport of cattle for agistment or sale means that prickly acacia is an ever-present threat. The Flinders Highway, which traverses the central part of the shire, is the main conduit for road transport of cattle from western areas. Likewise, a major rail line, also used for stock transport, runs parallel to the highway.

Landholders, Dalrymple Shire Council and the Dalrymple Landcare Committee aim to eradicate the small infestations that are already present in the shire and prevent further establishment where possible. Some of the issues and tips to achieving this, as documented by the Dalrymple Landcare Committee, are:

- **'The trick is finding the isolated plant AND remembering where it is'**

Graziers generally stumble across an isolated prickly acacia or parkinsonia plant while doing other jobs around the property (mustering, checking fence lines, etc.) Unless they have a granular herbicide such as Graslan® with them to treat on the spot, it is often difficult to come back to the same place later. Neither does Graslan® work on all soil types and, if rain falls after plants have been treated, uptake of the herbicide may be affected.

- **'Isolated weeds are sometimes noted when helicopter mustering, but you are not down on the ground'**

Very few landholders have GPS units to mark weed sightings and/or assist with relocation of the weeds at a later date.

- **'If the weed turns up in a swamp, it is difficult to access for most parts of the year'**

While the logistics of control are difficult, not doing so will result in the establishment of infestations that are a source of seed for other areas.

- **'The main source of new outbreaks of prickly acacia is from dung kicked out of passing road trains, and from cattle on agistment'**

Graziers need to be vigilant and monitor areas of their properties adjacent to transport



corridors. Plants must be found and controlled before they seed—generally two to three years for prickly acacia.

'Graziers need to be vigilant and monitor areas of their properties adjacent to transport corridors.'

As there are potential issues of public liability and insurance if a landholder stops to treat isolated plants on the verge of a main road, such plants should be marked with flagging tape so shire council staff can follow up with treatment later. Landholders can more readily treat isolated plants alongside shire-controlled roads without issues of public liability.

Correct identification of prickly bushes is still an issue and it is often difficult to distinguish between mimosa (*Acacia farnesiana*), prickly acacia (*A. nilotica*) and other acacia species, or to know what parkinsonia looks like. (See identification guide on pages 5-7).

- **'Mapping of isolated plants is not straightforward'**

Landholders respond differently to requests by the Dalrymple Shire Council for property weed maps (as per Shire Pest Management Plan). As it is difficult to map 'pinpoints', most landholders don't provide details of isolated plants, though some pencil in an area with a comment that isolated plants occur within it. Accurate mapping has implications for both shire and regional planning, but the difficulty of reporting means that the position of known isolated plants is not generally mapped.

Incentive programs such as the Natural Heritage Trust and the Burdekin Rangelands Reef Initiative—Woody Weed Project, have stimulated landholders to focus attention on isolated outbreaks of woody weeds. Where there has been a genuine interest in controlling prickly acacia and preventing its spread into neighbouring properties, landcare groups have made a concerted effort at achieving management across subcatchments.





Prickly acacia in the Northern Territory

Alice Beilby

In the Northern Territory, outbreaks of prickly acacia are being managed, with the eventual aim of total eradication. There are four known infestations—two on pastoral properties on the Barkly Tableland (Avon Downs and Rockhampton Downs), another at Bulman, an Aboriginal community in southern Arnhem Land, and another on Cattle Creek station in the Katherine region. Compared with those in Queensland, the infestations are relatively small, with the most recent recording being 200 plants.

In 2003 the Western Australian Department of Agriculture also discovered a single prickly acacia plant 6 km off the Northern Territory border at a site adjoining the Victoria River region. In the Katherine region, isolated

prickly acacia seedlings have been discovered and destroyed on pastoral properties that had recently transported cattle from Queensland—seedlings had emerged from the manure after cattle had been unloaded into yards.

Prickly acacia was first recorded on Avon Downs in November 1981 when a single plant was destroyed at Shakespeare Creek, along the verge of the Barkly Highway. Seeds from the plant had spread 5 km downstream, and to areas adjacent to the creek. All outbreaks have been confined to one 322 km² paddock.

Regular control has been carried out since and at the last inspection over three hundred

'Only by vigilant control and inspection practices will eradication be guaranteed.'



Nathan March

▲ John McMahon, former DIPE officer, inspecting prickly acacia adjacent to the Barkly Highway



juvenile plants were treated. It is evident that major germination of dormant seed is accelerated after good wet seasons. The number of viable dormant seeds remaining in the creek is not known and only by vigilant control and inspection practices will eradication be guaranteed.

In 2002, the Commonwealth Government made funding available in the form of National Weeds Program monies, allocating \$57 000 to the Barkly region for eradication of prickly acacia. As a result, control programs in the region were accelerated, and the basal-bark technique was found to be the most effective. However, as there is a bank of viable seeds in the Shakespeare Creek catchment on Avon Downs, there is some uncertainty about when the pest will be eradicated.

At Rockhampton Downs the majority of trees (adult and juvenile) in a one-hectare outbreak were found to be affected by a stem-girdling

insect. In some cases, entire branches were dead or dying. However, the impact of these native insects was not significant. At the Bulman community, all trees have been treated to date and regular surveys will be conducted in conjunction with the Community Rangers to ensure that emerging seedlings are treated. Ongoing treatment and surveys are being carried out in the Victoria River region to control 200 plants found on Cattle Creek station.

Over the 2002–03 wet season, an education and awareness program was conducted. 'Weed packs' containing extension material supplied through the WONS National Prickle Bush Committee have been sent to all pastoral properties in the Northern Territory. The packs include a weed identification book entitled *Weeds of the Wet/Dry Tropics*, identification stickers, fridge magnets and brochures for parkinsonia, prickly acacia and mesquite.

Nathan March



▲ Inspecting a prickly acacia infestation on a Barkly Tablelands property





Prickly acacia in Western Australia

Noel Wilson

The first recorded prickly acacia plant was discovered in Western Australia in November 2002. It was spotted by Nathan March from the Queensland Department of Natural Resources and Mines (now Natural Resources, Mines and Energy) just west of the border with the Northern Territory at the edge of the table drain on the Buntine Road that comes into the state south of Kununurra and ends at Halls Creek.

The plant was estimated to be about three years old and just beginning to flower. Its late detection emphasizes the problem of differentiating this weed from *Acacia farnesiana* when small, and the fact that most Western Australian agency officers and landholders are not familiar with prickly acacia.

The place where it was found also highlights the potential for spread of prickly acacia via livestock transport. Livestock transporters and machinery coming into Western Australia through the Kununurra checkpoint are usually consigned under quarantine to our wash-down area. They are cleared from here only when they have been declared clean and this has helped prevent the introduction of declared weed seeds into the state. However, as there is no checkpoint on the Buntine road, trucks do not wash down until they reach Halls Creek, some 200 km into Western Australia.

About 12 months after the original find, another single plant was discovered on land near the quarantine cattle yards on the

outskirts of Kununurra. It was estimated to be about six years old. The surrounding area was inspected and no further plants were discovered. The specimen discovered was used to familiarise government agency officers with the appearance of prickly acacia and then destroyed.

'Highlights the potential for spread of prickly acacia via livestock transport.'



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▲ First prickly acacia plant found in Western Australia



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▲ Prickly acacia in the Quarantine Yards—Kununurra





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Shortly after this, staff from the Department of Agriculture discovered an outbreak of prickly acacia in an isolated area, while carrying out routine surveillance in the North Kimberley. The infestation was in the Durack River area and the plants were spread over more than 3000 ha and had obviously been there for quite some time—possibly about 20 years according to some of the traditional owners who live in the area. This is still an isolated infestation and no other plants have been found outside this main site. A long-term management plan will have to be put in place to control (and hopefully eventually eradicate) this infestation and prevent spread of the pest.

The good quarantine on the Western Australian – Northern Territory border has helped to prevent the introduction of many weeds into the state. Current and future extension activities on the identification and

reporting of prickly acacia and other priority weeds will help to complement these efforts.

As prickly acacia can look very similar to *Acacia farnesiana*, which occurs throughout the region, it may not be reported as a new problem. These latest finds in the Kimberley emphasize how important it is to get good identification material to all people in the rangelands.

There appears to be no link between the three areas where the plants have been observed, and they are all several hundred kilometres apart. This indicates that prickly acacia may be entering the state by a number of pathways and, from the age of the plants in the latest find, has been doing so for a number of years. This plant has the potential to take over large areas of the rangelands and is one that Western Australian authorities need to be extremely aware of.



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▲ A large, established infestation was found in the Kimberley Region in 2003