REVIEW OF PROGRESS TOWARDS THE IMPLEMENTATION OF THE PARKINSONIA STRATEGIC PLAN *(2006 – 2007)*

National Prickle Bush Management Group

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on behalf of the **National Prickle Bush Management Group**
and its partner agencies.

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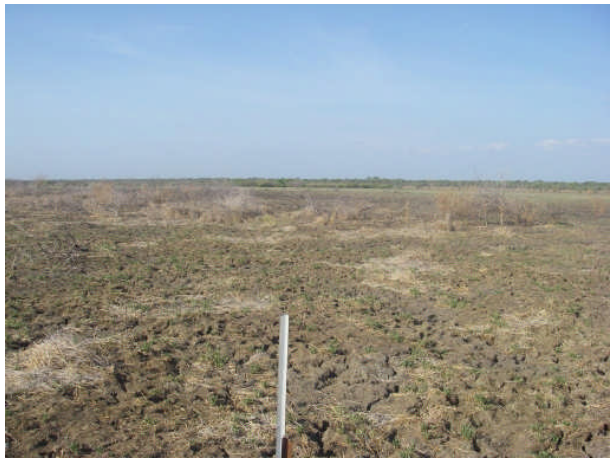
Below - Before control - Pormpuraaw marine floodplains, Qld, 2004 – After – 2007



National Prickle Bush Management Group Representatives and awareness banners

Pormpuraaw (Cape York) Ranger – strategic control 2007

PARKINSONIA STRATEGIC PLAN 2006 - 2007
EXECUTIVE SUMMARY

The Parkinsonia Strategic Plan has fostered the proactive development of national partnerships across the country at a range of management levels to coordinate the implementation of on ground action in reducing the impacts of this Weed of National Significance (WoNS). The plan has been supported by the National Prickle Bush Management Group, awareness programs, national and international research projects.

The National Prickle Bush Management Group (NPBMG) has been active in overseeing the implementation of the national strategies for parkinsonia and two other Weeds of National Significance (WoNS), prickly acacia and mesquite. Group meetings have occurred in strategic locations around the country including the National Strategy Workshop in 2006 and 14 teleconferences to facilitate the strategy implementation process.

The NPBMG acknowledges the funding support of the Australian Government - Defeating the Weeds Menace (DWM) and state government initiatives (eg Blue Print for the Bush – A Pest Offensive program).This funding support continues to act as a catalyst for projects that ultimately aim to generate significant community co-contributed outcomes for natural resource management (NRM).

Progress and achievements are being made in all aspects of the strategy. The major items of relevance have been collated into this report with contributions provided by NPBMG members, agency staff and key community stakeholders.

Over the past twelve months, the NPBMG with support from the national coordinator has focussed on building and supporting collaborative partnerships with and between regional NRM groups to facilitate greater progress against the identified goals of the national strategy. The challenge still exists for the NPBMG to facilitate true national coordination within the current regional NRM arrangements. Checks need to be maintained to ensure regional goal setting, planning and delivery of resources, for the management of parkinsonia, are aligned with the priorities of the national strategy.

Introduction

Parkinsonia is a thorny tree of lime green appearance that has zigzagged branches, yellow petalled flowers, produces brown seed pods (1-3 seeds/pod), slender leaf branches and oblong leaves that can grow to 10 metres, however, 2-8 metres is the average range.

Parkinsonia continues to threaten the invasion of 70% of Australia's mainland. Dense impenetrable thickets are still forming along our pristine river ways and wetlands completely changing ecosystems. This report aims to highlight and promote the successes of 2006/07 efforts to implement the Parkinsonia Strategic Plan that can work towards stopping the advance of this invasive weed.

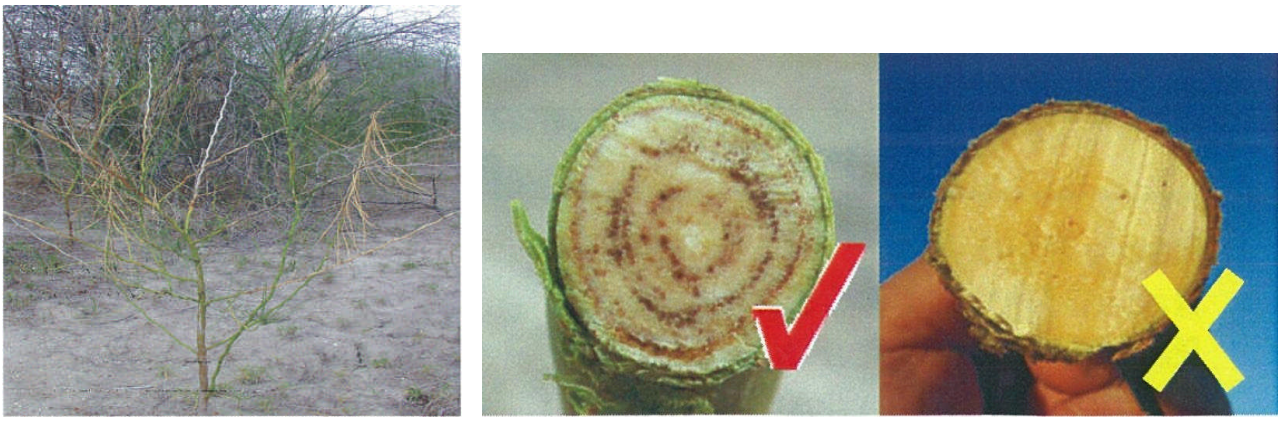
The vision of the strategy is that 'parkinsonia is confined and environmental, economic and social impacts are reduced to a minimum. This vision incorporates the following desired outcomes:-

- Parkinsonia management is coordinated and maintained at a national level
- Zone A – Containment of infestations
- Zone B – Active control
- Zone C – Eradication areas

The implementation of the National Parkinsonia Strategic Plan is occurring and gaining significant research, awareness, mapping, best practice promotion and on-ground control outcomes. There has been significant collaboration, cooperation and effort by a range of stakeholders to achieve the four desired outcomes of the strategy. This is directly benefiting communities being impacted by parkinsonia as well as those being threatened

It has been identified that livestock, feral pigs and birds cause minor spread of seed and the predominate risk of parkinsonia spread is by water movement with seed pods being very light and ideally suited to being spread far a field by flood waters. This presents weed practitioners additional challenges in effectively containing this weed in the long term and research therefore plays an important role with integrated control and identifying options to reduce seed production.

Extensive research gains continue to be identified in biology, ecology and biological control agents that has and can be further developed to assist effective best practice control options. (e.g. parkinsonia dieback potential cause is by native pathogens)



Parkinsonia dieback symptoms – vascular staining present and not present

STRATEGY 2.1 Coordinate Management

Desired Outcome: Parkinsonia management is coordinated and maintained at a national level

Through the direction of the WONS prickle bush coordinator, the NPBMG has maintained a proactive management focus on the invasiveness of parkinsonia by implementing actions of the Strategic Plan.

The NPBMG has representation from Queensland (Qld), Northern Territory (NT), Western Australia (WA) and New South Wales (NSW) and established project links with South Australia (SA) and Victoria. NPBMG coordination and network opportunities are strengthened with developing expertise at the catchment management level with seven NRM groups actively involved weed planning and management.

This group has continued to consult key national stakeholders and facilitated the resourcing of the national strategies through successful funding applications for three DWM, seven Queensland Blue Print for the Bush - Pest Offensive (QPO) and six National Landcare (NLP) projects. This includes direct parkinsonia funding of approximately $170K (DWM) and $500K (QPO) that is targeted for on-ground control projects in SA (i.e. eradication), Desert Channels Qld - Lake Eyre Basin (i.e. buffer zones), Victoria/ Roper River – NT with strategic control targeted for Qld Murray/ Darling Basin, Qld Central Highlands, Qld Southern Gulf Catchments and Cape York Peninsula.

Pest Offensive is an $11 million Queensland Government initiative over a three year period. The target species include the prickle bushes and other declared weeds. Projects commenced in 2007 and involve on-ground control, weed spread prevention - wash down facilities and research management components.

The project coordinator has complied and submitted Annual Reports to the Department Agriculture Fisheries and Forestry (DAFF) and Australian Weeds Committee (AWC) since 2002. These reports combined with ongoing project analysis by all stakeholders and the commitment of the NPBMG to evaluate progress, set a firm platform for a strategy review process. In addition to two teleconferences held during the year to maintain continuity, a national strategy workshop for prickle bush management has also been held to evaluate outcomes.

The National Strategy Workshop and the National Communication and Extension Plan identifies and has involved broad weed management stakeholders who continue to utilise and promote a range of extension products including a Case Study Manual, posters (eg. identification, stop the spread), pod mounts, fridge magnets and identification cards to raise awareness for parkinsonia management.

The Department of Agriculture and Food, Western Australia (DAFWA) is continuing an awareness campaign in the rangelands through pastoral newsletters, landholder meetings and personal contact.

Each state/territory has a parkinsonia fact sheet that continues to be distributed, stating the weeds' description, biology, ecology, ecology, impacts, spread potential, legislation and control techniques. Approximately 2000 posters and brochures have been distributed. In Queensland, parkinsonia pest fact website downloads have averaged 60/ month.

Department of Natural Resources, Environment and the Arts – Northern Territory (NRETA), University of Queensland and Barkly Region landholders have put together a kit to help monitor for dieback in parkinsonia. A Katherine Regional Weed Identification Deck has been developed to help minimise confusion with other pant species and these highlight prickle bushes as a high priority for control. In addition, DNRETA has developed standardised mapping guidelines for data collection for all stakeholders allowing for future reviews of zones in the NT.

Regional and catchment planning such as the NSW Prickle Bush Management Group, Queensland Southern Gulf Pest Taskforce Group allows for negotiation to occur to identify appropriate management processes.

The National Strategy approach to prickle bush management has been incorporated into radio interviews (Regional ABC – Townsville Qld and Kununurra WA) to promote project work, workshops and the importance of timely strategic control. Various articles have been produced by NPBMG members on behalf of their agencies eg. *Monitoring Parkinsonia on Elsey Station* in the 'Weed All About It', NT Newsletter.

The Coordinator has contributed to raising awareness towards the environmental threat of parkinsonia with a Nature Refuge News article: '*Parkinsonia - A threat to outback biodiversity'* distributed (3000 copies) to broad stakeholders by Qld Environmental Protection Agency. In addition, presentations on the prickle bush WONS threat to: Gulf Catchments Pest Task Force and the Rural Lands Officers Group of Western Qld provides opportunity for feedback from two key focus groups on strategic plan progress.

Best practice management consisting of a package of integrated options needs to have flexibility to apply variations based on location/land type. A component of best practice is the consideration for broader NRM issues to achieve balanced outcomes ensuring against further land degradation (i.e. vegetation, water quality, biodiversity management).

Stakeholders Australia wide continue to provide a range of expertise and professional management in weed management. A senior weed officer for Bourke Shire Council in NSW was awarded a state acknowledgment for excellence in weed management. Skills' training for NRM staff, contractors and landholders is a priority for all stakeholders however expertise retention is and will remain an ongoing challenge for all areas of NRM. Previous funding initiatives (i.e. NWP, NHT) have positioned the implementation of DWM and QPO well for delivering resources for parkinsonia projects, awareness and research.

Parkinsonia mapping project has commenced on the De Grey River in the Pilbara region, co-funded by NLP, DAFWA and landholders. Rangeland NRM funding has been identified for on-ground control for this project in 2007/2008.

National Landcare Groups similar to the Dalrymple group (Qld) are active in assisting ongoing regional planning with parkinsonia which is a high priority weed species. This group continues to be a driving force for on-ground projects. In relation to DWM funding and generally across all funding submissions, co-contributions from additional stakeholders far exceed grant allocation for in-kind support.

Parkinsonia research is being conducted by a range of stakeholders including Commonwealth Scientific and industrial Research Organisation (CSIRO), University of Queensland (UQ) and various state/territory agencies. This includes biological control,

integrated management, dieback pathogens, camel grazing and the monitoring of competition pasture trials. Media releases, published research papers, Australian Weeds conference and state/territory weeds conferences are promoting research work so as to identify information gaps and funding options. In addition, workshops and weed field days require a research component that can provide global opportunities for new techniques and development.

In Queensland, 41 Local Governments (LG) incorporate parkinsonia into pest management plans. The formation of pest management groups has provided a pivotal link to the NPBMG to assist in implementing strategic plan actions and improve local stakeholder ownership by developing regional weed management strategies. eg. Kimberley Weed Action Group, Katherine Weed Management Group.

The NSW Prickle Bush Working Group was established in 2004 to facilitate action plans for strategic occurrences of parkinsonia and mesquite. The momentum towards strategic control and ultimately eradication of these species in NSW is a credit to the partnerships formed by all stakeholders.

Other examples of regional plans occurring are the Pilbara Parkinsonia Management Plan and the Desert Channels Regional Plan. These provide critical direction for NRM sub-catchment planning while promoting property pest planning. In WA rangeland WoNS and other weed issues are rolled into one to aide communication and on-ground planning.

NSW field days, NT workshops, Southern Gulf Pest Taskforce meetings has compliment the Parkinsonia National Case Studies Manual and other awareness material such as Pestfacts (Qld), Agnotes (NT) and Weed Notes (WA) all promote integrated weed control.

Staff at the Tropical Weed Research Centre (TWRC – QDPI&F) have contributed technical information to the Case Study Manual. This manual identifies that a range of management styles are required due largely to changes in land types. Integrated management options have been trialled by TWRC (Duaringa, Central Qld) and these principles including information from other stakeholders outlined in this manual is assisting the development of parkinsonia best practice management. It has been identified that grazing and fire are critical management components that must be incorporated with the other control options into a holistic management approach.

Case studies are assisting to collate economic data on parkinsonia control and industry benefits. The economics of parkinsonia management need to be better evaluated. An economic evaluation of the Queensland Governments Strategic Weed Eradication and Education Program (SWEEP, 1996-2000) identified that every dollar invested in containment activities to prevent the spread of weeds resulted in between $1.70 and $3.10 worth of benefit. Therefore this equates to a benefit cost ratio of between 1.7:1 to 3.1:1.

Grazing land prices in Qld are at a premium with the perception that weed infested land generally is not affecting values paid. Control viability will vary between land types in relation to value however strategic control of up to $5/hectare identifies why prevention strategies are critical when compare to figures for mechanical control of $65+/ ha and up to $300/ha for basal bark chemical control in some circumstances.

Spelling paddocks to improve pasture has proven detrimental in allowing mass seedling germination of parkinsonia to become established following good rain periods. Therefore,

cattle grazing is impacting on parkinsonia establishment, with the camel and goat industry also now utilised by landholders as a total grazing package to prevent seed production and provide returns on investment.

Many landholders are effectively using camels as a control option for woody weeds such as parkinsonia. Preliminary trials completed found Camels reduced the amount of seeds produced by selectively eating the foliage of parkinsonia plants thereby preventing pod production (i.e. if in browse range)). Further research is warranted to quantify their non target impacts particularly on native trees and shrubs.

Brochures and other parkinsonia awareness products continue to update economic impacts. Collation of past initiatives/project information needs to be completed to calculate economic impacts. Similar to the other prickle bush species, parkinsonia has caught many landholders under estimating its potential to spread following favourable seasonal conditions.

While dense stands have been controlled in the Queensland Fitzroy River catchment, prevention and early detection is critical in all awareness material to allow for reduced economic, environmental and social impacts in a timely manner.

Nationally a range of incentives are provided by numerous stakeholders to encourage landholders to commence strategic weed control additional to funding schemes. Examples include – rates reduction, herbicide subsidies, barter days, workshops, equipment burrowing, weed survey information, planning/technical advice and project work. The Kimberley and Pilbara Zone Control Authorities provide a 100% herbicide subsidy (maximum $3000/lease) for parkinsonia control subject to inspection of implementing a three year weed plan.

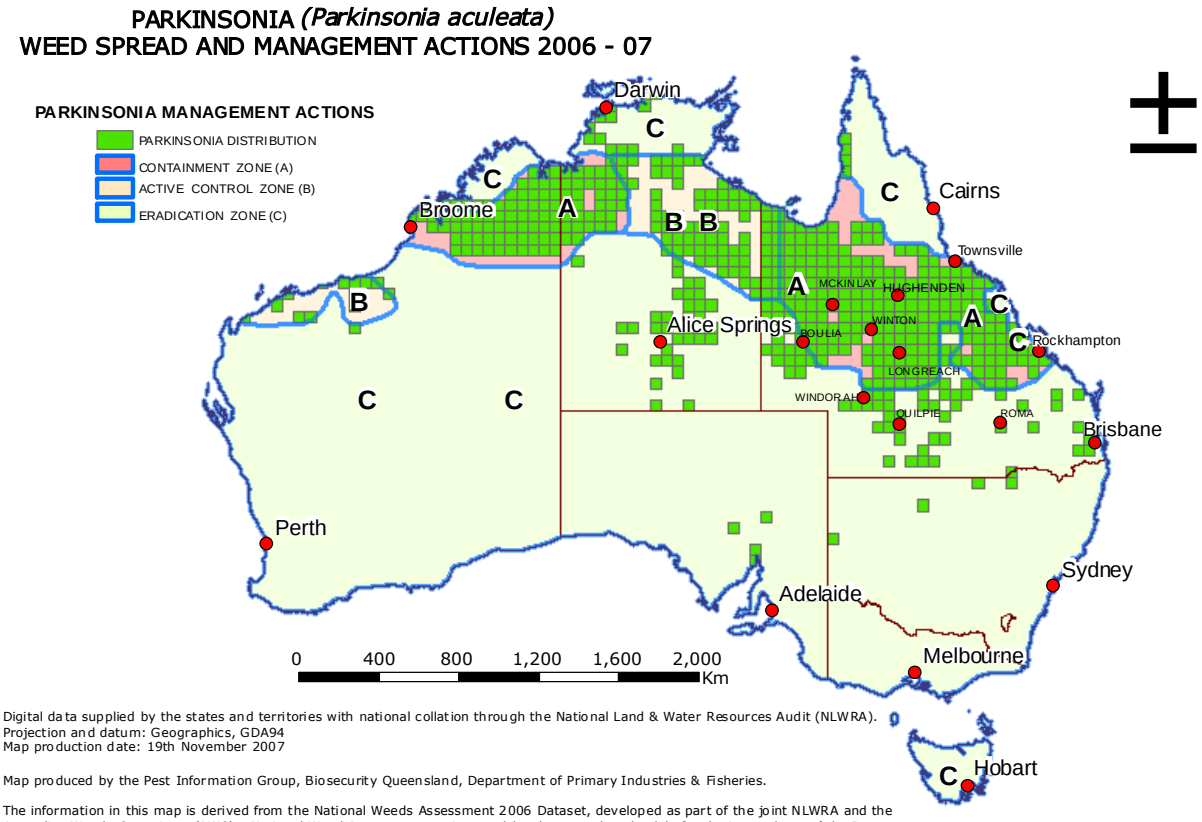
Enforcement of lease condition mechanisms exist under the Queensland *Land Act 1994* and *Land Protection (Pest and Stock Route) Act 2002.* However, these are rarely enforced with the building of collaborative partnerships the preferred approach. Policy for pest management on Queensland Government land is overseen by the State Land Pest Management Committee. Legislative non-compliance can be addressed at a regional planning level to implement relevant state/territory policy while promoting good leadership in weed management.

Parkinsonia is a nationally declared weed. State and territory legislation in Qld, NT, WA and NSW have varying specified management goals in place e.g. eradication in NT. The sale and trade of parkinsonia is prohibited in all other states/territories.

Declaration requirements are promoted in fact sheets for each state/territory with goal and responsibilities variations for each. While enforcement for parkinsonia is infrequently used, training for LG and agency officers in Queensland and WA has continued in 2006/07 to improve staff understanding of procedures involved.

National state/territory legislation is in place to allow for strategy development to meet zone management goals. Zone review has been conducted annually with a review conducted at the National Strategy workshop in 2006. The containment line between zones adjoining zones C – eradication areas were reviewed. Mapping has occurred at a catchment and project level to highlight control work conducted according to planned priorities.

Parkinsonia density standards have been endorsed and the national grid based map below incorporates national management zones has been distributed and updated annually.



In areas where the three prickle bush species exist the general stakeholder perspective is that parkinsonia is the least threat. This is based on its venerability to grazing pressure, perceived slow disposal rate, bio-control agents and outbreaks in some areas of parkinsonia dieback (i.e. pathogen attack). However, as outlined in this report and the Case Study Manual, there are many examples where landholders have identified complacency with this weed and that the threat of invasion is real.

Zone C is where resources must be targeted to achieve strategic gains, however as parkinsonia is spread prominently by water movement, entire catchments must have exposure to integrated control options to reduce ongoing recruitment control demands. Active management is occurring in most regions of Zone C with initial eradication targeted for NSW and SA.

The Tenant Creek and Barkly areas (NT) have achieved considerable control gains towards all prickle bush species. Ongoing regional mapping and coordination is required to cover early detection and control of all parkinsonia outbreaks. Barkly Landcare and Conservation Association (BLCA) have received $152,000 of NLP funding with a total project funds of $306,000 for the strategic management of parkinsonia in the Georgina catchment. This project covers some 35,000 km^2 of the NT section of the Georgina catchment and involves 12 pastoral properties. BLCA under the Regional Investment Strategy have received $90,000 to control Parkinsonia on the Frew River catchment, with

total project funds of $128,000. Of all known sites of Parkinsonia (i.e. in the Barkly region) in Zone C, 50% are under active control.

Parkinsonia has limited distribution in NSW, occurring along the Narran River near Mungindi and an isolated infestation on the Warrego River near Louth. Historical records have also identified occurrences in other areas such as Broken Hill. The potential spread of Parkinsonia is approximately 50% of NSW, involving all of the Darling River catchment. Collaborative stakeholder efforts in NSW have delivered significant strategic gains over recent years towards parkinsonia and mesquite management.

The Aboriginal communities of Kowanyama and Pormpuraaw, assisted by Cape York Weeds and Feral Animal Program (Qld Cape York Peninsula) have developed local resources and skills to complete highly strategic initial control and follow up of scattered to medium infestations located on the western marine floodplains of Cape York Peninsula. However, despite the development of a pest management plan and past funding support, pockets of dense parkinsonia has not been treated further to the north at the community of Aurukun.

DCQ has been successful with a funding application through Qld Pest Offensive. This project is putting in a “buffer zone” in the south of the region over three years to prevent further spread down the catchment. The project to date has been a great success in engaging landholders, local government and DCQ in a combined effort.

Parkinsonia threats across the DCQ region have been highlighted by all stakeholders in 2006. A number of Boulia Shire landholders that are active controllers of parkinsonia have motivated other landholders to implement regional control. One landholder has hosted a field day to show correct spraying techniques and other control options which has been supported by DCQ to encourage the good work and to achieve positive outcomes.

STRATEGY 2.2 Containment

Desired Outcome: Zone A infestations (Containment zone) are reduced

Three insects have been introduced in the past as biological control agents against parkinsonia. *Penthobruchus germaine* and *Minosetes ulkii* are seed beetles while *Rhinacloa callicrates* is a leaf bug. Each agent has varying degrees of establishment with *P. germaine* identified as having the largest impact by up to 95% of seed destroyed at some sites.

CSIRO is conducting ongoing research into the ecology and biological control of parkinsonia, through funding and in-kind support from DWM, Land and Water Australia, Meat and Livestock Association, Weed CRC, WA Department of Food and Agriculture, QDPI&F and NT NRETA Weeds Branch.

Annual survey work was conducted at ecological field sites across Australia; some sites since 2000. Plant vigour, seed production and population changes differ dramatically between sites, and also between years. Surprisingly, parkinsonia populations at most sites have been in decline (through high adult mortality and low recruitment rates) despite being vigorous when research commenced. Parkinsonia die-back has been implicated at several sites and the cause of die-back is being investigated by a PhD student at UQ (Naomi Diplock, supervised by Vic Galea and Rieks van Klinken) with several causative agents identified.

Ecological research sites are set up in the Pilbara, Kimberley, Victoria River District, Barkly Downs, Alice Springs and Central Qld. This research is now largely in an analysis, synthesise, publication and extension phase.

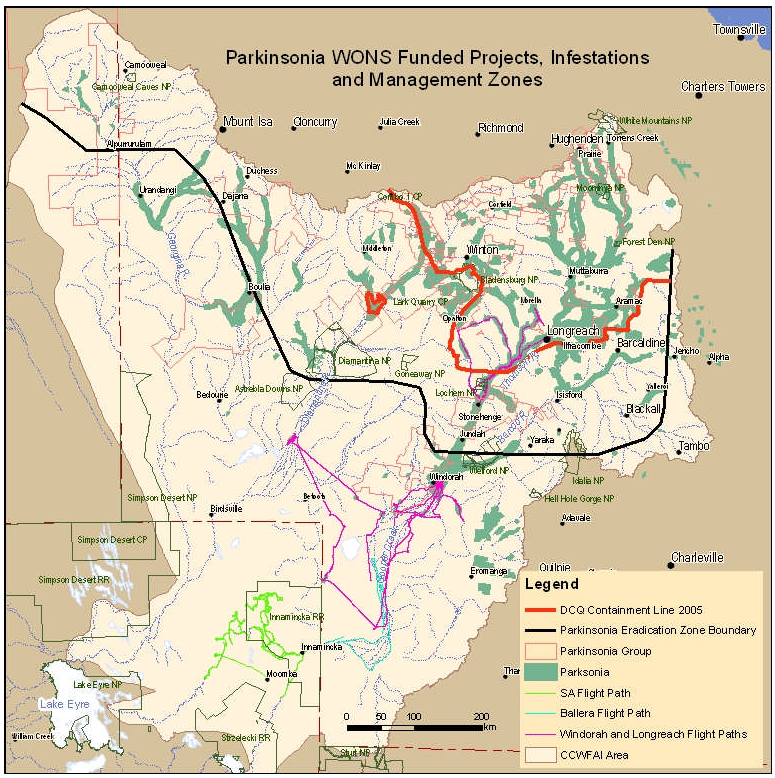
Several papers have been published including a paper definitively determining the native range of parkinsonia and a paper that describes seed bank longevity in the wet dry tropics. A collaborative project has also just been initiated with UQ and QDPI&F to develop landscape-scale predictions of potential parkinsonia distribution, density and impacts. This modelling will draw strongly on ecological research already conducted.

The parkinsonia biological control program is still in the exploratory phase. Native range exploration for potential biological control agents is ongoing in Central America and northern South America and preliminary surveys have been conducted in Peru and Brazil. A new appointment has been made at CSIRO to analyse parkinsonia survey results, identify insects, determine further survey efficiencies and to prioritise potential agents for host-specificity testing in Australia. Funding will be sought to commence host-specificity testing in mid-2008.

A competition trial conducted by TWRC is currently investigating the growth of parkinsonia under different plant densities and levels of grass competition. One interesting finding to date is that a number of plants have reached reproductive maturity within a year and a half; the fasted time recorded was 235 days. Plants were however subjected to well above average rainfall conditions.

A major fire trial has been completed at Charters Towers, central Queensland and field days have been conducted to demonstrate results. Fire as a control tool has been identified in all extension material to be effective on seedling plants however results can be variable depending on intensity and the season. The application of fire is generally an opportunistic control method that is limited in use due to a range of reasons including a lack of fuel load, social or cultural constraints, safety concerns, desire for pasture retention and adverse environmental impacts.

While surveys for parkinsonia continued in 2006/07, much was due to information gaps identified in project and regional planning. DCQ has been active in compiling accurate mapping for parkinsonia which is threatening to spread further in the Lake Eyre Basin. Stakeholders such as DCQ and Pormpuraaw Aboriginal Shire Council (Cape York Peninsula Queensland) are using survey information to make informed management decisions to implement strategic control.



This map produced by DCQ shows an example of the benefits gained from strategic planning. The information was gathering through surveys conducted to confirm parkinsonia distribution. It allows stakeholders to make sound decisions on management zones and goals within the Lake Eyre Basin project area.

Weed survey is therefore a critical component of management. The demand for such work is equal to the need for on-going follow up control work. Aerial surveys are in many cases the only efficient means of gathering this data with the limited resources available to cover large areas. Parkinsonia surveys have occurred nationally in 2006/07 including Balonne/ Paroo Shires (Qld), aerial surveys of the Narran River and ground surveys of the Broken Hill/ Bourke Districts (NSW).

STRATEGY 2.3 Active control

Desired Outcome: Zone B infestations (Active control zone) are minimised

Active control is being undertaken at a minimum of 50 sites in the Cape York, Barkly, NT Gulf, Roper River, Lake Eyre Basin and Southern Gulf (Qld) regions. In WA, some strategic control has commenced with projects in the Pilbara and Kununurra regions.

The NPBMG has promoted a package of extension items to increase the awareness of integrated control options for parkinsonia. Stakeholders at all levels of management have complimented these efforts with on-ground action toward the Strategic Plan. Weed management has been incorporated into the QDPI&F Grazing Land Management Manual and Rangeland Management Schools and Grazing Land Management Course (NT).

QDPI&F *Land Protection (Pest and Stock Route Management) Act 2002* is just one piece of NRM legislation that could be considered as a condition under the Integrated Planning Act in cases of community infrastructure development.

A weed planning framework is provided in the Parkinsonia National Case Studies Manual. At a Qld state level, QNRW has developed a NRM property planning module, some LG's encourage property planning as a component of LG Pest Management Planning and at a catchment level a plan template has been developed and has been used by landholders within the Lake Eyre Basin project area. Coordination is required to identify linkages for this planning process to establish efficiencies and to ensure adoption.

The promotion of parkinsonia best practice management continues to evolve with research in integrated options and funding support to nurture property management technology and innovation development from project work.

Herbicide subsidy is provided to landholders in the Kimberley region to control parkinsonia if a weed plan is implemented. Foliar spray units (based in Katherine, Timber Creek, and Borroloola) have been made available to loan in the Katherine region (NT) to assist with control with very high loan rates.

National field days, demonstrate sites and workshops are highlighting landholder case study scenarios that successes in parkinsonia management are being achieved and promoting awareness that 'planning to make a start' is the first step. Reducing land degradation is an important consideration in ensuring sustainable rural industries. Parkinsonia management is a high priority NRM issue with national catchment/NRM groups and it is essential that best practice techniques are adopted to reduce risk to our natural resources.

CSIRO has conducted national distribution of biological agents in the past with integration trials sites being monitored to access ecological effects.

Since the Strategic Plans inception in 2001, the NPBMG has identified the importance of reviewing strategic mapping goals. This review considered that weighing criteria were developed for community devolved grants and used in an assessment process. In addition, criteria were developed for delineation of national management goals with maps produced and distributed.

Infestations of parkinsonia that are identified for control and eradication are defined on the national map in WA, Qld and NT. While active management is occurring in a percentage of these areas, the above level of planning needs to be further encouraged at the catchment level, similar to DCQ with priorities flagged in the Cooper Creek and Georgina/ Diamantina catchments.

As the majority of parkinsonia is solely spread by flood water and the preferred habitat being riparian areas, containment plans will be difficult to achieve and control must be based on reducing seed production by using a proven integrated control package (i.e. biological, chemical, fire, mechanical). Core areas will continue to produce seeds and strategic catchment plans are essential tools for overall management.

STRATEGY 2.4 Eradicate and prevent spread

Desired Outcome: Zone C infestations (Eradication zone) are eradicated and new introductions of Parkinsonia are prevented

Eradication projects include –

- Lower and mid Lake Eyre Basin and in the Paroo catchment.
- The Narran and Moonie Rivers in NSW. All known parkinsonia infestations in NSW have now been treated but require follow-up.
- All known infestations in SA are under effective management but will require monitoring and follow-up.

Highly strategic aerial and ground surveys have occurred in the WA Pilbara and Ord catchment, Qld Channel Country, SW Qld, NT Gulf and Roper catchments and Barkly Tableland, and Bourke/ Broken Hill Districts of NSW.

Legislation and chemical registration are in place to reduce further threats to natural resources and set a framework for best practice management. Best practice will vary on a regional basis and general principles that are widely promoted can be adapted to suit local requirements. Soil residual herbicides are used effectively on Mitchell grass plains however these are not registered in riparian areas due to their non-selective nature and effects on non-target species. This places increased importance on continued surveillance of drainage areas for seedling regrowth and increased demands for resourcing best practice management in Zone C areas.

The availability of skilled weed control contractor has been improving over recent years to provide additional resources to complete timely strategic control. With scattered to dense infestations, minimum control costs of $500/ person /day (plus GST) can be incurred which includes labour (60%) and basal bark herbicide mixture of approximately 140 litres/day (40%). Depending on plant density contract teams can cover large areas each day using motorbikes where suitable.

While much of the distribution area of parkinsonia has been experiencing drought for many years this has optimised the potential for strategic control gains in limiting spread when seasons are more favourable. Landholders and NT NRETA staff have targeted the Victoria/Roper River catchments to conduct prickle bush surveys and control work funded by DWM. NT Weed Data Collection Guidelines have been developed by NRETA to align with the National Survey and Mapping Guidelines and this will aide this survey work.

Stakeholders across the country are conducting monitoring programs to assess control effectiveness and a key component of this is mapping. DCQ has been up dating map data to reflect on-ground action and to identify survey gaps. South Australia have systematically mapped and treated known sites.

Weed surveillance is part of WA pastoral inspection program. LG Weeds Officers undertake regular inspections in some Qld shires. New infestations reported in the Pilbara and in North West NSW. Increased awareness and priority of WoNS has led to greater survey activity and focus.

Land Protection Officers and LG Weeds Officers collate survey data into Pestinfo (Qld). DCQ has developed a Weed Alert program that will be available on the internet for reporting infestations.

Eradication capacity varies nationally with the priority identified as Zone C and resources increasing in all areas with funding support available. Eradication of a newly discovered infestation in NSW is occurring in a timely, well-resourced and planned manner.

Parkinsonia is declared nationally under State/Territory legislation. There is some variation in individual states/territory legislation; however, the overall goals remain: - increased prevention, early detection, awareness and control. This legislation combined with parkinsonia listed as a WoNS will assist to raise awareness of the impacts of this weed and prevent importation and restrict national trade.

Parkinsonia would provide limited dust abatement benefits and it is believed that deliberate planting have not occurred for many decades with many alternative shade trees available which are promoted by organisations like Greening Australia.

C. Conclusion

Parkinsonia active management is occurring in all zones identified in the national map with priority placed on Zone C – eradication. With a range of successful projects implemented gaps in control are still present in Zone C and regional planning across most state/ territory areas need to be reviewed.

National priorities for prickle bush WoNS management have been determined and many of these have been addressed with support from the Australian Governments Defeating the Weeds Menace program, The Queensland Governments Blueprint for the Bush – Pest Offensive and regional NLP funding programs. Queensland Pest Offensive funding for prickle bush management (e.g. strategic control, wash down facilities, weed awareness) during 2006/2007 is approximately $3 million with additional contributions of approximately $4.5 million provided by stakeholders including proponents. Australian and state government funding provides an incentive for stakeholders to contribute to effective on ground control, including predicted increased community ownership of prickly acacia management over the next two years.

The level of knowledge and understanding of the parkinsonia threat varies greatly between stakeholders and regions. Information relating to economic and environmental impacts needs to be compiled to assist with changing attitudes towards strategic, timely control.

Future awareness opportunities exist with best practice management developing through ongoing research trials and national case studies conducted allowing in the short term this knowledge to be compiled to produce a parkinsonia best practice manual.

Considerations and challenges into the future

- Success of prevention aspects of the national strategy have yet to be determined. Opportunities for implementation of coordinated prevention program between states now exist with development of the National Weed Seed Prevention Strategy.

- Awareness levels regarding prickle bush impacts, skills, attitudes and aspirations remain varied. This can be improved by the adoption of the Prickle Bush National Communication and Extension Plan.
- National strategy review – maintaining momentum. The greatest threat to ongoing coordinated action against the three WoNS prickle bushes species would be the loss of national coordination, the loss of the experience and knowledge contained in the national management group and the availability of strategic funding. Funding cycles should reflect the long term nature of prickle bush management.
- Build on the level of community capacity and Improve mapping/weed data recording at all levels
- Further increase the profile of prickle bushes to attract more dollars for long-term control
- Promote public benefit of public investment
- Research of economic benefit data for WoNS – i.e. cost, incentives to eradicate.
- Maintain the ability for innovative research and 'Left-field' ideas including opportunities to utilise parkinsonia as a resource while maintaining environmental and productive capacity of the land

C. Budget

Coordination figures need to be split between three prickle bush species

* Additional funds were granted for National Strategy Workshop (see below)

	2006/2007	**Planned budget**		**Actual Expenditure**	
	Employees & Positions Held	**Recipient's Contributions** (without GST)	**Funds paid by the Commonwealth** (without GST)	**Recipient's Contributions Expended** (without GST)	**Commonwealth Funds Expended** (without GST)
	Co-ordinator salary and on-costs		88 950		91 778
	Management, admin support, research officers	59 500		60 000	
	Travel Coordinator		16 500		13 972
	Management Group travel & meeting expenses	82 500	11 000	82 000	*3054
	NRM groups, state /territory community support inputs	43 200		43 000	
A	**Total Employment Costs**	**185 200**	**116 450**	**185 000**	**108 804**
	Operating Cost Items	**Recipient's Contributions** (without GST)	**Funds be paid by the Commonwealth** (without GST)	**Recipient's Contributions Expended** (without GST)	**Commonwealth Funds Expended** (without GST)
	Vehicle rental		11 000		8512
	General operating costs		7 000		4738
B	**Total Operating costs**		**18 000**		**13 250**
C	**Total Cost (without GST) (A+B)**	**185 200**	**134 450**	**185 000**	**122 054**
D	**GST (10%)**	**18 520**	**13 445**	**18 500**	**12 205**
E	**Total Cost (including GST)**	**203 720**	**147 895**	**203 500**	**134 259**

Budget continues: (2006-2007)

National Strategy Workshop – September 2006

	Employees & Positions Held	Proponent Funds (without GST)	Australian Government Funds Sought	Recipient's Contribution Expended without GST	Commonwealth Funds Expended (without GST)
	National strategy development workshop – NPBMG 12 participants x 5 days (agency & community reps Qld, NT, WA and NSW	$21,000		19 250	
	National workshop participation – additional key stakeholders 12 x 5 days	$21,000		21 000	
	National mapping – contributions to process by Qld, NT, WA, NSW, SA and Vic (includes data collection, surveys, data transfer)	$14,000			
	National map compilation and production QNR&M Project Manager PO4 @ 0.05 FTE		$4,450		
	Evaluation planning & process development 12 participants x 1 day	$4,200			
A	**Total Employment Costs**	**$60,200**	**$4,450**	**$40 250**	
	Operating Cost Items	**Proponent Funds** (without GST)	**Australian Government Funds Sought**	**Recipient's Contribution Expended without GST**	**Commonwealth Funds Expended (without GST)**
	Workshop facilitator & evaluation technical support		$7,000	7 000	
	National strategy revision workshop travel expenses		$30,000		29 878
	Audit/financial arrangements	$500			2 323
B	**Total Operating costs**	**$500**	**$37,500**	**$7 000**	**$32 201**
D	**Total Cost (without GST) (A+B+C)**	**$60,700**	**$41,950**	**$47 250**	**$32 201**
E	**GST (10%)**	**$6,070**	**$4,295**	**$4 725**	**$3 220**
F	**Total Cost (including GST)**	**$66,770**	**$46,145**	**$51 975**	**$35 421**

D. Appendices –
Appendix 1 – References

Agricultural & Resource management Council of Australia & New Zealand, Australian & New Zealand Environment & Conservation Council and Forestry Ministers,(2001) Weeds of National Significance Parkinsonia (*Parkinsonia aculeata)* Strategic Plan. Weeds strategy Executive committee, Launceston.

Parkinsonia National Case Studies Manual – Approaches to the management of parkinsonia (Parkinsonia aculeate) in Australia – September 2004. Natural Heritage Trust and numerous national agencies.

AECgroup (2002). Economic Impact of State and Local Government Expeniture on Weed and Pest Animal management in Queensland pg.43 Table 4.4. Local Government Association of Queensland, Fortitude Valley, Queensland.

Recent journal articles/scientific papers/conference presentations

1. Campbell, S., Vogler, W., van Klinken, R.D., McKenzie, J., Bebawi, F., and Grice, T. (2004). Management of invasive rangeland shrubs. Papers and Proceedings of the 14th Australian Weeds Conference, Sept 5-11, 2004. Wagga Wagga, N.S.W. pp. 172.

2. McKenzie, J.R., Pattison, M.J., Steele, K.E. Campbell, S.D., and Vitelli, J.S. 2004. Controlling dense infestations of parkinsonia (*Parkinsonia aculeata* L.). In, *Proceedings of the 14th Australian Weeds Conference*. (Eds Sindel, B.M. and Johnston, S.B.) Wagga Wagga 6th-9th Sept. (Weed Society of New South Wales, Sydney). pp.176-178.

3. March, N.A. (in press) Engaging Community & Government Support to Achieve National Outcomes. Proceedings of the Queensland Weeds Symposium, Townsville, June 2005.

4. Scott, K (2006). Effect of heat on the dormancy and viability of parkinsonia seeds: Implications for management. *Ecological management and restoration.* 7, 153-156.

5. van Klinken, R.D. (2005). Total annual seed loss on a perennial legume through predation by insects: the importance of within-season seed and seed-feeder dynamics. *Austral Ecology* 30, 414-425.

6. van Klinken, R.D. and Flack. L. (in press). The Relationship between wet heat and hard-seeded dormancy and germination. *Weed Science*

7. van Klinken, R.D. (in press). A cook's tour of the biggest weed threats to rangeland Australia. Proceedings of the Queensland Weeds Symposium, Townsville, June 2005.

8. van Klinken, R.D. (2004). How important is environment?: a national-scale evaluation of a seed-feeding beetle on parkinsonia, a widely distributed woody weed. *The Eleventh International Symposium on Biological Control of Weeds, Canberra, Australia*.

9. A.C. Grice, S.D. Campbell, J.R. McKenzie, L.V. Whiteman, M. Pattison, K.Headricks and M.H. Andrews. (2004). Problems of population structure exemplified by the invasive tropical shrub *Parkinsonia aculeata* 1. in Northern Australia. Rangeland Journal 26(2): 237-248.

10. van Klinken, R.D. (2006). Parkinsonia biocontrol: what are we trying to achieve? Australian Journal of Entomology 45, 268-271.

11. van Klinken, R.D. and Flack, L. (2006). Seed bank longevity of a tropical leguminous shrub is determined by wet heat. Annals of Botany 98, 875-883.

12. Hawkins JA, Boutaoui N, Cheung KY, van Klinken RD, Hughes CE (2007). Intercontinental dispersal prior to human translocations revealed in a cryptogenic invasive plant. New Phytologist

13. van Klinken, R.D. and Flack, L. (subm. Dec 2006). What limits predation rates by a specialist seed feeder? Journal of Applied Ecology

14. Grace, B., Paynter, J., van Klinken, R.D. and Wirf, L. (2006). Biocontrol of weeds in the Northern Territory: What has it achieved? In: Fifteenth Australian Weeds Conference, Papers and Proceedings (eds C. Presont, J.H. Watts and N.D. Crossman), 553-556, Weed Management Society of South Australia Inc. Adelaide.

15. Diplock, N., Galea, V., van Klinken, R.D. and Wearing, A. (2006). A Preliminary Investigation of Dieback on Parkinsonia aculeata. In: Fifteenth Australian Weeds Conference, Papers and Proceedings (eds C. Preston, J.H. Watts and N.D. Crossman), pp. 585-587, Weed Management Society of South Australia Inc. Adelaide.

16. van Klinken, R.D., Colasanti, R. and Buckley, Y.M. (2007). How sensitive is weed invasion to seed predation? International Symposium for Weed Biological Control.

17. A paper entitled 'The effect camels have on the ability of Parkinsonia *(Parkinsonia aculeata* L.) to set seed' was presented at the 15th Australian Weeds Conference (Adelaide September 2007).

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