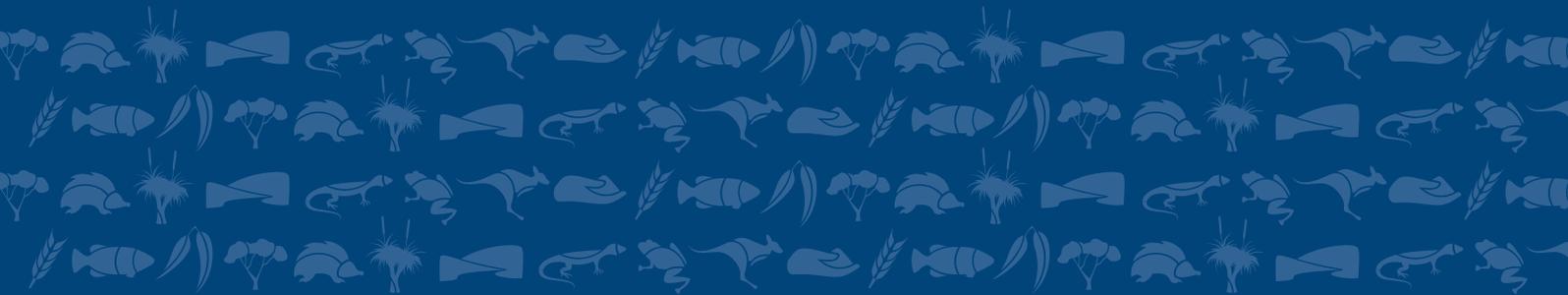




Government
of South Australia



TEN YEAR BONESEED MANAGEMENT PLAN

Northern and Yorke Natural Resources Management Board
Eyre Peninsula Natural Resources Management Board



An Australian Government Initiative

APRIL 2008

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PROJECT BRIEF

RMP Environmental was engaged to work with the NRM steering group to develop a ten year boneseed management plan for the Northern and Yorke and Eyre Peninsula Natural Resources Management Boards (NY NRMB and EP NRMB) through the Australian Government Defeating the Weeds Menace Program. The management plan forms a component of the implementation strategy for the National containment and strategic control of outlier boneseed populations in South Australia project which is operative from July 2007 to June 2008.

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- Deb Agnew, Northern and Yorke NRM Board, Yorke Peninsula Group Team Leader – steering group, providing oversight, direction, significant editorial and content input and detailed regional knowledge
- Peter Sheridan, Authorised Officer, NRM Southern Eyre – steering group, providing oversight, direction, content input and detailed regional knowledge
- Hillary Cherry, National Boneseed Coordinator – national perspective
- Dennis Gannaway, South Australian WoNS Weeds Management Coordinator, SA Department of Water, Land and Biodiversity Conservation – oversight and national perspective
- Ken Rudd, Rob Lincoln, Dave Jarmyn, Rob Coventry, Ian Quinn, Bob Napier, Authorised Officers, Northern and Yorke and Eyre Peninsula NRM – regional knowledge



D. Agnew

Peter Sheridan, Hillary Cherry, Melissa Horgan and John Charlton - mechanical removal



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FOREWORD

Boneseed is a Weed of National Significance that was introduced to Australia as a garden plant. It has since escaped to invade native bushland across all southern states, where it dominates native plant communities and significantly impacts biodiversity values. In South Australia, boneseed endangers threatened plant communities, including the *Eucalyptus microcarpa* and *E. porosa* grassy woodlands, and other areas of high conservation value. The majority of southern South Australia is susceptible to further invasion. Efforts are underway across the country to control boneseed and prevent further spread. This Ten-Year Boneseed Management Plan is an excellent example of local and regional communities working together towards national boneseed objectives.

The National Bitou Bush and Boneseed Management Group (NBBBMG) oversee the implementation of the National Bitou Bush and Boneseed Strategy. A key goal in this strategy is to prevent further spread of boneseed by establishing national containment lines. The successful implementation of this management plan will see the creation of a national western boneseed containment line in South Australia. This will protect vast areas of western South Australia from further boneseed invasion and will also greatly assist to the Western Australian boneseed eradication program by eliminating the threat of westward spread.

The goal of this plan, to remove boneseed from the Eyre and Yorke Regions so that by 2018 there are few or no known boneseed infestations, is highly commendable and will provide considerable future benefit. This plan also encourages coordinated action and support from landholders and the community, which will help to ensure its success and further educate the public about the threat of weeds. The NBBBMG strongly supports this Ten-Year Boneseed Management Plan and applauds the efforts of the Northern and Yorke and Eyre Peninsula Natural Resource Management Boards in developing and implementing the Plan.

Hillary Cherry
National Coordinator Boneseed and Bitou Bush
On behalf of the National Bitou Bush and Boneseed Management Group
March 2008



Hand pulling boneseed



Outlying boneseed population in the Flinders Ranges



INTRODUCTION

This ten year management plan for boneseed (*Chrysanthemoides monilifera* ssp. *monilifera*), is developed to provide basis for the coordinated engagement of landholders and community in the destruction (control and removal) of boneseed infestations across the Northern and Yorke (NY) and Eyre Peninsula (EP) Natural Resource Management (NRM) regions. Boneseed is a Weed of National Significance (WoNS) and a key goal of the national strategy is to contain the spread of boneseed in western regions of Australia by establishing a western containment line. This plan will greatly assist in achieving that goal. As such, this plan strongly supports the boneseed eradication program in Western Australia (Figure 1).

Currently, boneseed infestations on Yorke and Eyre Peninsula are relatively small, but there is a high threat of it spreading as infestations are scattered widely across both peninsulas. Boneseed has the potential to significantly expand its range, and also to become more abundant within its current range.

Eradication of Western Australian and Yorke and Eyre Peninsula infestations will contain boneseed in the south-east of Australia, and will allow the establishment of a western boneseed containment line. As such, this plan also strongly supports the boneseed eradication program in Western Australia (Figure 1).

Current management and control options for boneseed are described in the National Boneseed Management Manual (Brougham et al. 2006) and this plan uses and refers to the principles in that manual. Seed production is the key to boneseed invasiveness hence prevention of seed production is the key to control.

Statutory responsibilities for boneseed management are delegated to the Natural Resource Management Boards under the South Australian Natural Resources Management Act, 2004. The EP and NY Boards' strategic direction for managing these responsibilities is articulated in their respective regional comprehensive Natural Resource Management Plans (currently in draft). This management plan for boneseed is complimentary to these regional plans.

Coordinated control action by all landholders is critical and facilitating this is a principle role of the NRM Boards. Landholders have responsibility to ensure boneseed infestations on their property are controlled. Additionally, the Boards have a role in ensuring the community is aware of the objectives for boneseed management and, as such, supports implementation of this plan. The Boards are also responsible for monitoring progress of this plan.



Comprehensive follow up is the key to control



Part 1 Overview

1.1 MANAGEMENT OBJECTIVE

1.1.1 National strategy

National strategy containment zones to prevent the spread of boneseed across southern Australia are illustrated in Figure 1. Eradication of Western Australian and Yorke and Eyre Peninsula infestations will contain boneseed in the south-east regions of Australia, and will allow the establishment of a western boneseed containment line. A single known eradicable infestation occurs in the South Australian Arid Lands NRM region. The destruction and ongoing surveillance for eradication of all infestations in the NY and EP regions forms a critical component of this strategy.

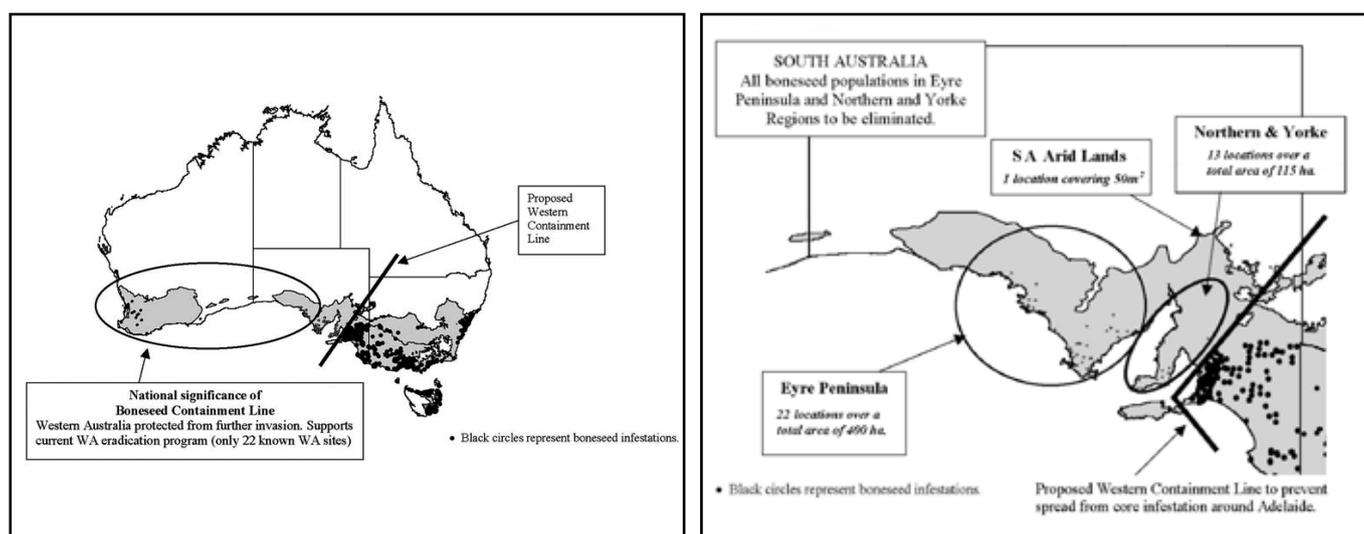


Figure 1 Containment zones for boneseed in south-western Australia

1.1.2 Regional strategy

Regional Pest Risk Management Systems (PRMS) assess the risk and feasibility of control of pest species present in the NY and EP regions. Using these systems, the regions have identified the management strategy of “Destroy infestations” for boneseed.

The aim of the strategy, “Destroy Infestations” (as outlined in the PRMS’) means to significantly reduce the extent of boneseed in the regions. This is achieved by;

- Detailed surveillance and mapping to locate all infestations
- Destruction of all infestations, aiming for local eradication at feasible sites
- Prevention of entry to region and movement and sale within
- Must not grow
- Monitor progress towards reduction

Through the implementation of this plan, the actions at each known infestation site will move from “Destroy Infestations” to a strategy of “Eradicate from the Region” so that by 2018 there will be very few or no known infestations in the NY and EP regions. “Eradication” aims to remove weed species from the regions by;

- Detailed surveillance and mapping to locate all infestations
- Destruction of all infestations including seedbanks
- Prevention of entry to region and movement and sale within
- Must not grow and all cultivated plants to be removed
- Monitor progress towards eradication



1.1.3 Plan objective

The overall objective of this ten year plan is to outline a strategy that will -

REMOVE BONESEED FROM THE EYRE AND YORKE REGIONS SO THAT BY 2018 MANAGEMENT IS REDUCED TO ONGOING MONITORING AND SURVEILLANCE.

1.2 BONESEED PROFILE

A brief outline of the boneseed plant is provided here. More detailed description and general management and best practice control techniques are outlined in the Boneseed Management Manual (Brougham et al. 2006), also available online at www.weeds.org.au/WoNS/bitoubush/.

1.2.1 Description

Boneseed is an erect perennial shrub in the Asteraceae (daisy family) that grows to 3 m high with branched upright woody stems, and a shallow but extensive root system. Old trunks can be up to 20 cm in diameter. Leaf shape tends to be distinctive, and during flowering bushes are easily visible due to their bright yellow, daisy flowers.



Boneseed flowers, fruit and leaves



Boneseed seedlings in litter

1.2.2 History

Boneseed is native to the South-West Cape region of South Africa, and was brought to Australia as a garden ornamental. It was cultivated as a garden plant in most states, and many current infestations can be attributed to garden escapes. Self-sustaining populations established quickly, and it was considered naturalised in Australia by 1910 (Parsons & Cuthbertson 1992).

1.2.3 Biology

Characteristics of boneseed that make it a successful invader of native bushland are:

- Its vigorous growth is aided by the absence of natural enemies in Australia.
- It is able to establish in areas of native vegetation, disturbed or not.
- Each plant produces large quantities of seed (up to 50,000 seeds per plant per year) that is readily dispersed long distances by animals such as foxes, emus and other birds, allowing new infestations to establish in undisturbed vegetation.
- It can grow in a range of habitats including dunes, mallee, open woodlands and sclerophyll forests.
- Once established, its rapid regeneration and ability to spread quickly after disturbance such as fire or clearing allows it to outcompete and displace native species.
- It reproduces by seed and some plants will resprout after fire.
- There is dense germination and rapid growth of seedlings after fire which out competes other species.
- Leaf litter and fruit leachates inhibit the germination and growth of some other species.
- It tolerates frost, drought and saline conditions.

These characteristics mean that boneseed is potentially able to infest most areas of the NY and EP regions.



Characteristics of boneseed that give it high persistence are:

- Seed retains a high viability for at least 4-5 years.
- Seeds germinate at any time of year, but mainly in autumn.
- Plants can live for over 30 years.

1.2.4 Reproduction and spread

SEED PRODUCTION IS THE KEY TO BONESEED'S INVASIVENESS

Boneseed does not reproduce vegetatively and so relies on its prolific seed production for reproduction and spread. Each flower head produces four to eight fruit. The fleshy tissue of the fruit dries and flakes off with age, revealing a single, bone-coloured seed. A single plant can produce up to 50,000 seeds each year, of which approximately 60% are viable (Lane 1976).

On Yorke and Eyre Peninsulas, flowering begins in July to August and fruiting and seed production continues from October through to January. Boneseed plants generally do not flower until they are at least 18 months old. However, some plants may flower in their first year in favourable conditions, and plants growing in poor conditions may not flower until they are three years old (Parsons & Cuthbertson 1992).

Whilst seeds disperse prolifically close to the parent plant, the fleshy fruits are also attractive to a variety of animals and birds which assist dispersal over a much wider range. Humans also spread boneseed by dumping garden waste and soil, and by transporting seeds on machinery.

Boneseed seeds can remain dormant in the soil if the seed coat remains intact. While the precise longevity of seeds is uncertain, around 13% remain viable after three years (Weiss 1984), and some seeds can still be viable after 10 years (Lane 1976). Soil seedbank densities have been recorded of up to 19,000 viable seeds/m² and in heavily infested areas average around 2,500 viable seeds/m² (Melland in prep).

Boneseed seeds can germinate at any time of the year if two requirements are met; the seed coat needs to have cracked, and there must be sufficient soil moisture (Lane 1976). Germination is not known to be limited by light or temperature. Seedlings grow rapidly and will establish in the absence of disturbance, even in shade or infertile soil (Lane 1981). Fire and physical soil disturbance, however, can trigger mass germination.

Mature plants from Tasmania and Western Australia have been estimated to be over 30 years old (pers. comm. Hillary Cherry).

1.3 ADMINISTRATIVE STATUS

1.3.1 WoNS Status

Because of its invasiveness, impact on biodiversity, and potential for spread, boneseed is regarded as one of Australia's worst weeds. Boneseed and the closely-related bitou bush (*C. monilifera* ssp. *rotundata*) are together recognised as one of the 20 Weeds of National Significance (WoNS) (Thorp & Lynch 2000). As a Weed of National Significance, boneseed has a national strategy that promotes coordinated management to restrict its spread or eradicate it (ARMCANZ 2000).

1.3.2 South Australian Declarations

Boneseed is declared for the whole of the State of South Australia under the following provisions of the Natural Resources Management Act, 2004 s175(2), s177 (1) (2) , s182(2) (3), s185(1). See Appendix 1 for details of this legislation.



Part 2 Managing Boneseed

2.1 MANAGEMENT APPROACHES

2.1.1 Prevention

It is important to keep uninfested areas clear of boneseed.

- Raise recognition of boneseed as well as general awareness of its threat to natural bushland.
- Encourage gardeners to use more appropriate garden plants and dispose of garden waste responsibly to reduce garden seed sources.

Once an infestation is established, spread into surrounding areas must be prevented.

- Remove isolated plants before they flower.
- Seed vectors such as vehicles, site visitors, soil and animal movement must be addressed.

2.1.2 Isolated plants or small infestations

If it is a small isolated infestation, removal to prevent spread from the site is essential. A combination of management usually works best.

- Isolated plants can be physically removed.
- Small infestations can be treated with herbicide applied by spot-spraying or cut-stump treatment.
- Annual follow-up to treat new germination is essential.

2.1.3 Larger infestations

As infestations become larger, a strategic, staged approach is advisable to ensure treated areas are not recolonised. Usually this means an approach which aims to control outer edges of the infestation first, working in towards the core. Any outlying plants around a generally infested area must be the first priority as these have the greatest potential for extending spread beyond the core area. Annual follow-up to treat new germination is essential.

- Herbicide application over successive seasons using a staged approach.

2.1.4 Integrated management

When treating boneseed in natural areas, it is essential to integrate control with other management to get the best results. Each infestation should be considered individually, and a specific site management plan developed. Weeds need to be treated as part of overall land and water management.

- Re-establishment of native vegetation may be the most critical aspect of a long term control program.

PREVENTION OF SEED PRODUCTION IS THE KEY TO BONESEED CONTROL

2.2 MANAGEMENT TOOLS

Available management tools include:

2.2.1 Herbicide

- Herbicide will kill mature plants and seedlings, however multiple applications will be needed over successive seasons to manage the substantial regeneration.
- A number of herbicides are registered for spot-spray control of boneseed (see www.apvma.gov.au). The degree to which desirable plant species will tolerate unintentional exposure to different herbicides is hard to predict, and advice should be sought if there is concern over valuable species. Herbicides registered for boneseed also vary in their soil activity and persistence. Directions on labels should be strictly adhered to.
- Every effort should be made to minimise damage to off-target plants. Choosing the most appropriate method of herbicide application minimises this risk. Further detail of methods of herbicide application is provided in the Boneseed Management Manual (Brougham et al. 2006).



2.2.2 Physical removal

- By machine, disturbing the soil as little as possible.
- Hand pulling if seedlings are small enough. Placing one foot on each side of the stem will allow the plant to be removed with minimal soil disturbance.

2.2.3 Fire

- In areas where it can be used safely, fire may be used as a control technique.
- Germination after a fire is prolific and follow-up is critical.
- Regenerating seedlings can be removed manually or with herbicide, but either treatment must be completed within six months of germination after fire, before seed set.



Community are involved in hand pulling small boneseed plants



Larger plants can be cut and swabbed



Part 3 Regional coordination

3.1 REGIONAL PLANNING

3.1.1 Planning context

The NY and EP regions' Comprehensive NRM Plans (in draft) outline guiding principles for managing the threat of pest plants and animals to natural resource assets in each region in accordance with the requirements of South Australian natural resource management legislation and the South Australian NRM Plan (DWLBC 2006). The regional plans are underpinned by pest risk management systems for each region. This Ten-Year Boneseed Management Plan is complimentary to these overarching documents.

The objectives of this plan contribute to the management action targets of the regional comprehensive plans and follow the strategic management objectives identified in the pest risk management systems (in draft).

3.1.2 Coordinated control

As boneseed infestations often occur across different properties, the most important aspect of a management program is coordinated action by all property owners involved.

There is a wide spectrum of management approaches that the Boards can employ to ensure coordinated action occurs across all properties. These include and are not restricted to; incentive payments, information sharing, negotiated planning, property registration, monitoring assistance, facilitation and regulatory action. The Boards' policies and programs articulate how each Board anticipates utilising the available options to assist and ensure individual landholder responsibilities are fulfilled. Pest plant policies and programs are developed by the Boards in consultation with representatives from the community. They are linked to the business planning processes of each Board in that resources are allocated to support their implementation.

COORDINATED CONTROL ACTION BY ALL LANDHOLDERS IS CRITICAL

3.2 AWARENESS- ENGAGEMENT

An informed and aware community willing to support and be involved in on-ground management action for boneseed will underpin the success of this plan. The role of the NRM Boards is to:

- Consult with the NRM Groups to ensure fair processes are employed in the implementation of this plan.
- Ensure key community representatives and affected landholders are informed of the boneseed management strategy and provided with opportunity to obtain additional information.
- Communicate the progress of implementation of this Ten-Year Boneseed Management Plan and its benefits in reducing the threat to regional biodiversity, and in establishing a national containment line.
- Seasonally target public awareness to increase recognition of boneseed plants that may still remain in gardens.
- Facilitate the involvement of interested groups or individuals in on-ground activities.
- Monitor and review information to assess the level of community awareness and understanding of the boneseed destruction for eradication strategy.



3.3 REGIONAL CONTROL

PREVENT ALL SEED PRODUCTION IN THE INFESTED AREA

This is achieved by ensuring the following actions every year:

- SEARCH FOR PLANTS (missed the previous year or newly germinated)
- DESTROY ALL PLANTS (including recently germinated seedlings)

3.3.1 Control season

The control season for boneseed is generally from July to October.

Boneseed is highly visible during its flowering period (August to September) and difficult to spot at other times, hence there is a relatively short window of opportunity for management action.

3.2.2 Landholder responsibility

PRIOR to the control season:

- Reassess management priorities in light of the previous season's control effort.

DURING the control season:

- On ground management including:
 - "Spot" new infestations.
 - Search known infested sites for regenerated plants.
 - Hand pull or spray seedlings with herbicide.
 - Apply herbicide to mature plants by spot spray or cut/paint techniques.
 - Record management action at all sites.

AFTER the control season:

- Monitor and review effectiveness of control activities and assess plans for follow up action in the following season.

3.2.3 NRM Board Responsibility

PRIOR to the control season:

- Assemble spatial distribution data and other boneseed site information needed to facilitate coordinated control.
- Identify knowledge gaps and take steps to obtain additional information.
- Ensure all affected landholders are aware and have records of the infestations on their property (see Appendix 2 for template).
- Assist these landholders to develop/review an appropriate management strategy using the various management techniques according to NRM policies regarding landholder engagement.

DURING the control season:

- Ensure all affected landholders are active in implementing the required management action on their properties.
- Update spatial data and site information to ensure it is kept current.

AFTER the control season:

- Monitor and review effectiveness of coordinated control and assess plans for follow up action in the following season.
- Assess Board resourcing provisions to facilitate the following season's coordination.



3.2.4 Monitoring, evaluation and reporting

This ten year plan is supported by baseline (2007 surveys) boneseed infestation information (Part 4). A spreadsheet model is developed that describes site and patch characteristics for each boneseed infestation and allows for treatment records to be entered each year. It also provides a forum for recording consultation and engagement activities that underpin on-ground action. The model will assist the records management process and provide a mechanism for reporting annually to each NRM Board.

Evaluation will be at the Board level, triggered by the annual reporting cycle. Adaptive management will occur in response to evaluation of progress towards the objective identified in Part 1, over the ten year period of this plan. Annual evaluation and review of regional resourcing will be required.



P. Sheridan

Boneseed must be removed from private gardens



R. Playfair

Dried mature boneseed fruit



R. Playfair

Small boneseed infestation in gully in Flinders Ranges



Part 4 Northern and Yorke and Eyre Peninsula boneseed sites

4.1 DEFINING A SITE

Sites have been described if they are likely to be managed as a single unit; i.e.

- They are a single isolated infestation (>500 m from any other occurrence)
- There are a number of infestations in close proximity (within 500 m) to each other
- There is a more-or-less continuous linear infestation (e.g. roadside)

Each site was assessed by NRM field staff during 2007, and descriptions recorded for:

- Location
- Vegetation type, soil and position in the landscape
- Total area (over which the infestation may occur)
- Density or coverage (over the infested area)

As a cross reference to assess descriptions of coverage, representative photographs are included below. Note however, that there is considerable variation in the description depending on the relative maturity of individual plants (i.e. whether the infestation is present as seedlings or bushes) at the time the site is assessed.

- Accessibility (for the purposes of control work)
- Land tenure (current)
- Adjacent or surrounding land use (at the time of assessment)

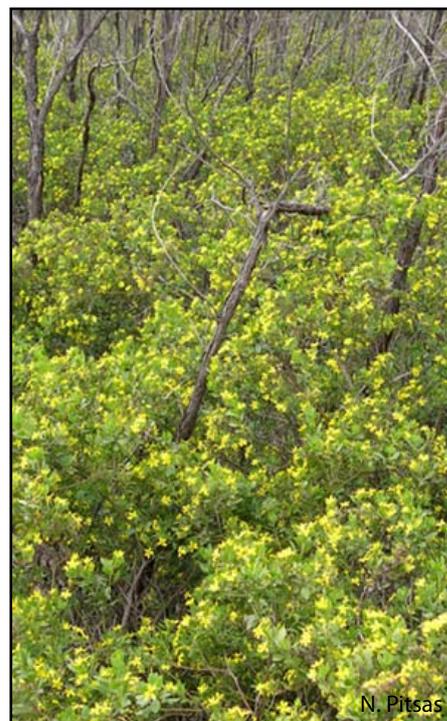
Control at sites prior to, and during the 2007 year was noted. This information provides supporting baseline data for the sites.



Scattered/sparse infestation



Medium/clumped infestation



Dense infestation

4.3 NORTHERN AND YORKE SITE DESCRIPTIONS

Site Characteristic	NY1: MOONTA Patch A	Patch B	NY 2: BALGOWAN Patch A	Patch B	NY3: CLINTON	NY4: MOUNT RAT
Location	Z53 739342E 6226970N (township)	Z53 739854E 6226256N (reserve)	Z53 729209E 6198502N (township)	Z53 730541E 6204925N (track)	Z53 778870E 6210972N (reserve)	Z53 742586E 6162549N (dispersed)
Vegetation type, soil, position in landscape	Flat, urban gardens	Shrubland on mine waste	Undulating, coastal shrubland	Undulating, coastal shrubland	Flat, low shrubland	Undulating, woodland on calcareous loam
Total search area	1 ha.	5 ha.	<10 plants over 1 ha.	<10 plants over 1 ha.	0.1 ha.	30 ha. - one dispersed patch over a large area of roadsides and adjacent properties.
Density / Coverage	Clumped (<20%)	Scattered (<10%)	Sparse (<10%)	Sparse (<10%)	No plants present	Dispersed (<20%)
Access	Accessible	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	State Government	Crown Land	Local Government	Road Reserve - Local Government / Private	State Government	Road Reserve – Local Government / Private
Adjacent or surrounding land use	Peri-urban - Recreation Reserve	Peri-urban - Recreation Reserve	Recreational Reserve	Native Vegetation / Cropping and grazing	Native Vegetation	Native Vegetation / Cropping and grazing
Treatment pre 2007	Nil	Area searched and sprayed in 2006	Treated for past 3 years - search and treatment of seedlings	Nil	Foliar spray and hand pulled previous years	Some plants sprayed 2004-2006. Area searched.
2007 treatment	Mature bushes treated with herbicide by cut/paint and hand pulled	Mature bushes and seedlings treated by foliar herbicide application	hand pull seedlings	Bushes removed (<10)	No plants found - site searched	Mature bushes and seedling regeneration treated by foliar herbicide application
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull if found	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years.

NORTHERN AND YORKE SITE DESCRIPTIONS continued

Site Characteristic	NY5: MINLATON				
	Patch A	Patch B	Patch C	Patch D	Patch E
Location	Z53 738888E 6150378N (roadside)	Z53 738464E 6149975N (private property)	Z53 738086E 6149313N (Eastern recreational)	Z53 737270E 6148756N (Southern recreational)	Z53 737047E 6148828N (North-east recreational)
Vegetation type, soil, position in landscape	Flat, open woodland on calcareous loam				
Total search area	3 ha.	4 ha.	14 ha.	5 ha.	1 ha.
Density / Coverage	Sparse (<10%)	Sparse (<10%)	Medium (~ 20%)	Medium (~ 20%)	Medium (~ 20%)
Access	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	Road Reserve - Local Government / Private	Private property	Local Government	Local Government	Local Government
Adjacent or surrounding land use	Peri-urban	Peri-urban	Peri-urban	Peri-urban	Peri-urban
Treatment pre 2007	Some areas sprayed 2006	Nil	Some plants sprayed 2006	nil	nil
2007 treatment	Mature bushes treated by foliar herbicide application				
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years

NORTHERN AND YORKE SITE DESCRIPTIONS continued

Site Characteristic	NY6: WEAVERS Patch A	Patch B	NY7: DALRYMPLE RESERVE	NY8: MINLATON – YORKETOWN	NY9: BRENTWOOD	NY10: MINLACOWIE
Location	Z53 745441E 6134592N (road reserve - north end)	Z53 742554E 6133117N (road reserve – south end)	Z53 739504E 6130755N (reserve)	Z53 735227E 6129412N (roadside)	Z53 728080E 6139340N (township)	Z53 725070E 6144634N (coastal)
Vegetation type, soil, position in landscape	Flat, open woodland	Flat, open woodland	Flat, open woodland	Flat, woodland	Flat, plantation	Coastal shrubland on sand dunes
Total search area	4 ha.	2 ha.	7 ha.	30 ha.	2 ha.	<10 plants over 1 ha.
Density / Coverage	Sparse (<10%)	Sparse (<10%)	Medium (~ 20%)	Dispersed (<20%) - treat as one dispersed patch over the large area of roadside	Medium (patchy overall <20%)	One cluster (<10%)
Access	Accessible	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	Road Reserve - Local Government / Private	Road Reserve - Local Government / Private	Crown Land	Road Reserve	Local Government	Private Property
Adjacent or surrounding land use	Road reserve and woodland on private property	Road reserve and woodland on private property	Native Vegetation	Woodland /Cropping and grazing	Urban recreational	Native Vegetation
Treatment pre 2007	Nil	Nil	Area searched and sprayed 2005, 2006	Area searched and sprayed 2005, 2006	Some plants sprayed - area searched	Nil
2007 treatment	Mature bushes treated by foliar herbicide application	Mature bushes treated by foliar herbicide application	Search for seedlings - treated with herbicide or hand pull	Search for seedlings - treated with herbicide or hand pull	Search for seedlings - treated with herbicide or hand pull	Landholder treated bushes with herbicide
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Single patch around salt lake - Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years.	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years

NORTHERN AND YORKE SITE DESCRIPTIONS continued

Site Characteristic	NY11: INNES NATIONAL PARK							
	Patch A	Patch B	Patch C	Patch D	Patch E	Patch F	Patch G	Patch H
Location	Inneston	Grassed area	Lookout	Houses and office area	Burnt site - east	Chinaman's Hill	Burnt site - west	Unburnt areas
Vegetation type, soil, position in landscape	Undulating shrubland	Undulating grassland	Undulating shrubland	Undulating shrubland	Undulating shrubland	Undulating shrubland	Undulating shrubland	Undulating shrubland
Total search area	30 ha.	28 ha.	21 ha.	7 ha.	7 ha.	35 ha.	10 ha.	17 ha.
Density / Coverage	Scattered	Scattered	Scattered	Scattered	Dense	Dense	Dense	Dense
Access	Accessible	Accessible	Accessible	Accessible	Poor access	Poor access	Poor access	Poor access
Land tenure	State Government	State Government	State Government					
Adjacent or surrounding land use	Native Vegetation	Native Vegetation	Native Vegetation					
Treatment pre 2007	Nil	Nil	Nil	Cut/paint & hand pull	Burnt in 2006	Nil	Burnt in 2006	Ni
2007 treatment	Cut/paint treatment of all bushes & hand pull seedlings	Cut/paint treatment of all bushes & hand pull seedlings	Cut/paint treatment of all bushes & hand pull seedlings	Cut/paint treatment of all bushes & hand pull seedlings	Cut/paint treatment of all bushes & hand pull seedlings	Nil	Nil	Nil
10 Year Management Strategy	Search for seedlings, hand pull – maintain for 10 years	Search for seedlings, hand pull – maintain for 10 years	Search for seedlings, hand pull – maintain for 10 years	Search for seedlings, hand pull – maintain for 10 years	Search for seedlings, hand pull – maintain for 10 years	Treat all bushes 2009 – follow up search and hand pull 2010+	Treat all bushes 2008 – follow up search and hand pull for 10 years	Survey and map site 2008 – Treat and follow up 2009+

NORTHERN AND YORKE SITE DESCRIPTIONS continued

Site Characteristic	NY12: MID NORTH Patch A	Patch B	NY13: CORNY POINT
Location	Z54 281099E 6248180N (recreational trail)	Z54 278297E 6253055N (township fringe)	Z53 688502E 6134283N (township)
Vegetation type, soil, position in landscape	Flat, open woodland	Flat, open woodland	Flat, plantation
Total search area	3 ha.	3 ha.	1 ha.
Density / Coverage	Scattered plants only	Sparse (<10%)	Medium, spread across property
Access	Accessible	Accessible	Accessible
Land tenure	State Government	Private property	Private property
Adjacent or surrounding land use	Recreation reserve	Peri-urban	Urban
Treatment pre 2007	Spraying mature bushes 5 years previous, monitoring and pulling since. hand pulling of seedlings over recent years	Spraying mature bushes 5 years previous, monitoring and pulling since. hand pulling of seedlings over recent years	Nil
2007 treatment	Search for seedlings - hand pull	Search for seedlings - hand pull	Mature bushes and seedling regeneration treated by foliar herbicide application
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment - maintained for 10 years



N. Zeoli

Removal of plants before fruiting is critical to break the life cycle

4.4 BONESEED DISTRIBUTION IN THE EYRE PENINSULA REGION

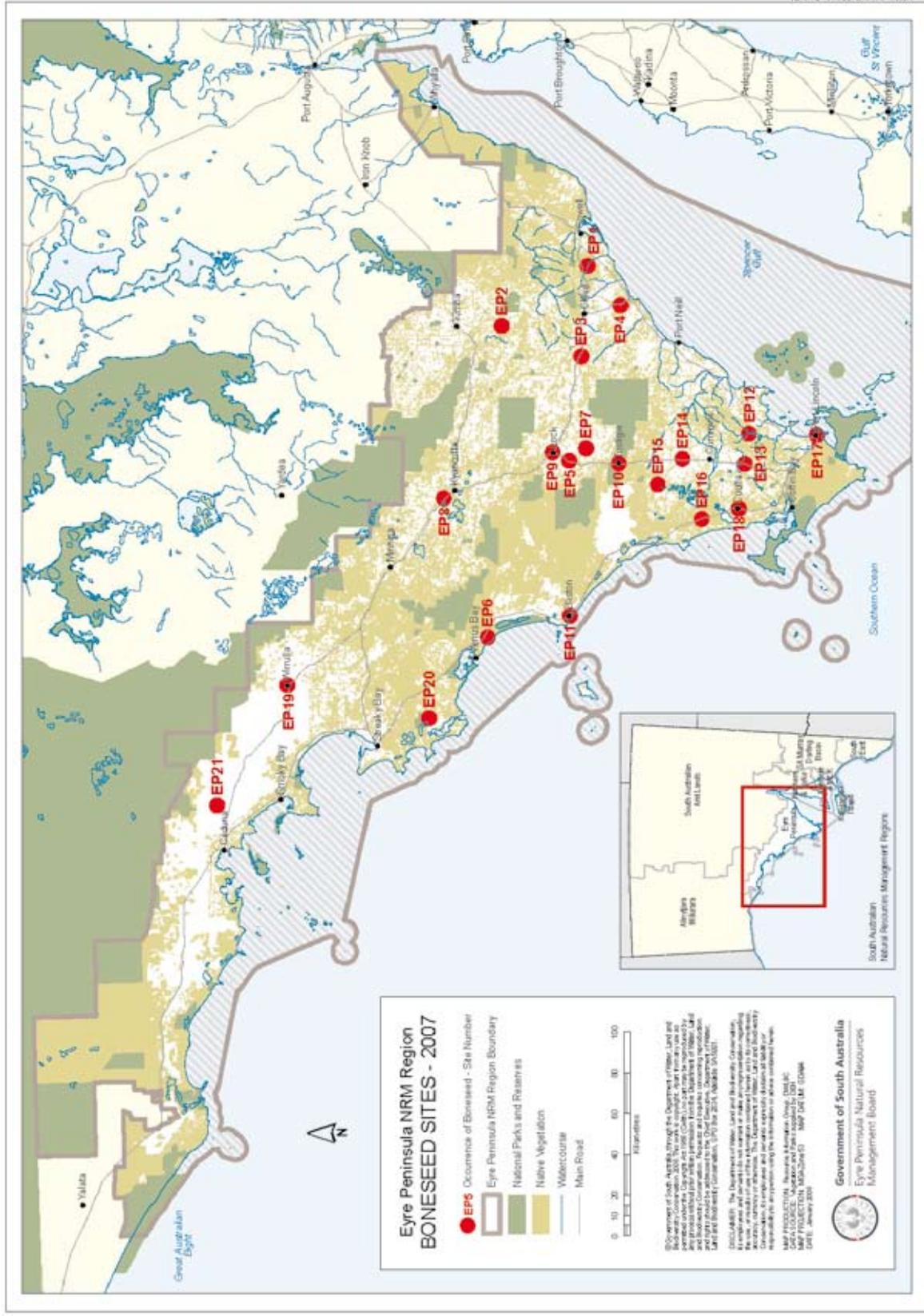


Figure 3 Distribution of known infestation sites in the Eyre Peninsula region based on 2007 field records of the EP NRM.

4.5 EYRE PENINSULA SITE DESCRIPTIONS

Site Characteristic	EP1: YABMANA	EP2: KIMBA ROAD	EP3: RUDALL	EP4: ARNO BAY ROAD	EP5: WARRACHIE
Location	Z53 662053E 6268299N (Yabmana Creek)	Z53 632676E 6310238N (Kimba Road roadside)	Z53 617695E 6271463N (Rudall Township)	Z53 642780E 6252355N (Arno Bay Road)	Z53 566496E 6277222N (adj rail siding)
Vegetation type, soil, position in landscape	Open mallee & shrubs adjacent to Yabmana Creek. Flat to undulating, on calcareous sandy soil.	Dense mallee. Undulating, on sand over clay soil.	Semi open mallee woodland on road reserve & private land. Flat with calcareous sandy soil.	Open mallee & shrubs on road reserve adjacent to Yeldulknie Creek. Undulating with calcareous sandy soil.	Open mallee and shrubs on sandy loam.
Total search area	8 ha.	15 ha.	1 ha.	4 ha.	<0.5 ha.
Density / Coverage	<10% cover – 14 scattered plants	<10% cover – 50 scattered plants.	<10% sparse – 10 plants	<10% cover – 15 scattered plants	8 mature plants and some seedlings
Access	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	Local Government / Private	Road Reserve - State Government / Private	Road Reserve - Local Government / Private	Road Reserve – Local Government / Private.	Local Government, State Government / Rail Reserve
Adjacent or surrounding land use	Cropping and grazing	Cropping and grazing. Native Vegetation.	Urban & Peri urban. Cropping and grazing.	Cropping and grazing	Broad acre farming – cereal & sheep.
Treatment pre 2007	Mature plants have been removed. Follow up hand pulling & spraying of seedlings.	Mature plants have been removed. Follow up hand pulling & spraying of seedlings.	Mature plants have been removed. Follow up hand pulling of seedlings.	Mature plants have been removed. Follow up hand pulling of seedlings.	Control over 10-15 years – close to eradication.
2007 treatment	Hand pulling seedlings.	Hand pulling seedlings.	Hand pulling seedlings.	Hand pulling seedlings.	Hand pulling seedlings.
10 Year Management Strategy	Check site every August for new seedlings & remove. Search downstream for new infestations along drainage line. Survey surrounding area for new infestations.	Check site every August for new seedlings & remove. Search downstream for new infestations along drainage line. Survey surrounding area for new infestations.	Check site every August for new seedlings & remove. Survey surrounding area for new infestations.	Check site every August for new seedlings & remove. Survey surrounding area for new infestations.	Monitor / search annually for any new seedlings and remove. Survey surrounding area for new infestations.

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP6: COODLIE PARK	EP7: MURLONG RD	EP8: WANNAMANA	EP9: LOCK	EP10: TOOLLIGIE
Location	Z53 479795E 6317040N (Coodlie Park)	Z53 572512E 6269046N (Murlong Road)	Z53 547882E 6285519N (Eyre Highway)	Z53 570447E 6269046N (Township)	Z53 565010E 6253148N (Township / Railyard)
Vegetation type, soil, position in landscape	Open mallee on shallow calcareous stony soil.	Open mallee on flat to undulating sandy loam soil.	mallee	Very open mallee and roadside plantations	Open mallee on shallow calcareous stony soil.
Total search area	5 ha.	<0.5 ha.	1-2 ha.	~1 ha.	1 ha.
Density / Coverage	Medium density. 60 mature plants and 4500 seedlings	No mature plants or seedlings.	No mature plants or seedlings.	<10 mature plants and no seedlings	Approx 10 seedlings
Access	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	Private	Road Reserve - Local Government / Private	Road Reserve – Local Government / Private	Local Government.	Local Government.
Adjacent or surrounding land use	Cropping and grazing	Cropping and grazing	Cropping and grazing	Urban	Rail yard / Urban
Treatment pre 2007	Herbicide spraying of mature plants and seedlings.	Mature plants removed and hand pulling of seedlings over 10 years.	Mature plants removed and hand pulling of seedlings over 10 years.	Mature plants removed and hand pulling of seedlings over 10-15 years.	Mature plants removed and hand pulling of seedlings over 10 years
2007 treatment	Herbicide spraying of mature plants and seedlings. Hand pulling seedlings.	Search for new seedlings – none found	Search for new seedlings – none found	Hand pulling small mature plants.	Search for new seedlings – none found
10 Year Management Strategy	Monitor / search annually for any new seedlings and remove. Survey surrounding area for new infestations.	Considered eradicated. Monitor / search annually for any new seedlings.	Considered eradicated. Monitor / search annually for any new seedlings.	Considered under control. Monitor / search annually for any new seedlings. Survey surrounding area for new infestations.	Considered under control. Monitor / search annually for any new seedlings. Survey surrounding area for new infestations.

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP11: ELLISTON	EP12: KOPPIO	Patch A	Patch B	Patch C
Location	Z53 490275E 6276920N (Elliston Links)	Z53 579698E 6189945N (Old school site)	Z53 579728E 6189803N (SA Water reserve)	Z53 580416E 6190315N (McDonalds)	
Vegetation type, soil, position in landscape	Dense mallee on sandy loam, undulating	Open forest, ironstone sandy loam, flat	Open forest, ironstone sandy loam, flat	Woodland, ironstone sandy loam, moderate slopes	
Total search area	15 ha.	5 ha.	17 ha.	15 ha.	
Density / Coverage	Sparse (<5%)	Sparse (<10%)	Sparse (<10%)	Sparse (<10%)	
Access	Accessible	Accessible	Accessible	Accessible	
Land tenure	Local Government/ Private/ Golf course	Local Government.	State Government.	Private.	
Adjacent or surrounding land use	Urban / recreation area	Cropping and grazing.	Cropping and grazing.	Cropping and grazing.	
Treatment pre 2007	Hand pulling for previous 4 years	Hand pull, bushfire in January 2005	Hand pull, bushfire in January 2005	Hand pull, bushfire in January 2005	
2007 treatment	Hand pulling of seedlings	Search for seedlings, hand pulled	Search for seedlings, hand pulled	Search for seedlings, hand pulled	
10 Year Management Strategy	Considered eradicated. Monitor / search annually for any new seedlings.	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	



P. Sheridan

Removing mature boneseed in suburban Port Lincoln

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	Patch A	Patch B	Patch C	Patch D
EP13: EDILLILLIE				
Location	Z53 564091E 6189065N (Ediillie south)	Z53 563045E 6186994N (Warunda reserve)	Z53 565199E 6192517N (Ediillie north)	Z53 564925E 6191865N (Ediillie township)
Vegetation type, soil, position in landscape	Open mallee, ironstone sandy loams, flat	Low woodland, ironstone sandy loams, flat	Open mallee, ironstone sandy loams, flat	Low open woodland, ironstone sandy loams, flat
Total search area	57 ha.	70 ha.	7 ha.	13 ha.
Density / Coverage	Sparse (<10%)	Sparse (<10%)	Sparse (<10%)	Sparse (<10%)
Access	Poor accessibility	Poor accessibility	Poor accessibility	Accessible
Land tenure	Road reserve - Local Government / Private	Local Government	Road reserve - Local Government / Private	Private
Adjacent or surrounding land use	Cropping and grazing.	Cropping and grazing.	Cropping and grazing.	Cropping and grazing.
Treatment pre 2007	Mature bushes and seedlings hand pulled. Site burnt in 2005 bushfires.	Mature bushes cut and swabbed, and seedlings hand pulled. Site burnt in 2005 bushfires.	Mature bushes cut and swabbed, and seedlings hand pulled.	Mature bushes cut and swabbed, and seedlings hand pulled.
2007 treatment	Mature bushes pulled along with seedlings			
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years



P. Sheridan

Using modified excavator to remove mature plants on Cleve to Kimba roadside

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP14: YEELANNA			EP15: MITSHAN		
	Patch A	Patch B	Patch C	Patch A	Patch B	Patch B
Location	Z53 567358E 6222175N (Yeelanna Recreation ground)	Z53 571805E 6228576N (Boundary road/Glover's)	Z53 567421E 6233701N (Karkoo rail reserve)	Z53 554705E 6234165N (Mitshan Road)	Z53 552394E 6239368N (Koolidie Road)	
Vegetation type, soil, position in landscape	Open mallee, sandy ironstone loam, flat	Open mallee, sandy loam, flat	Open mallee, sandy loam, flat	Open mallee, sandy plains over clay, flat	Open mallee, sandy plains over clay, flat	
Total search area	5 ha.	6 ha.	1.5 ha.	25 ha.	9 ha.	
Density / Coverage	Sparse (<10%)					
Access	Accessible	Accessible	Accessible	Accessible	Accessible	
Land tenure	Local Government	Road reserve - Local Government / Private				
Adjacent or surrounding land use	Cropping and grazing.					
Treatment pre 2007	Mature bushes pulled along with seedlings					
2007 treatment	Search for seedlings, hand pulled					
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP16: MOUNT DRUMMOND					
	Patch A	Patch B	Patch C	Patch D	Patch E	Patch F
Location	Z53 537846E 6212757N (Taylors scrub)	Z53 537834E 6213208N (Crossroad south)	Z53 537464E 6214229N (Crossroad north)	Z53 538849E 6213200N (Crossroad east)	Z53 536669E 6213576N (Crossroad west)	Z53 536802E 6215713N (Hill's)
Vegetation type, soil, position in landscape	Mallee, shallow stony soils, flat					
Total search area	8 ha.	6 ha.	12 ha.	11 ha.	2.6 ha.	20 ha.
Density / Coverage	Sparse-medium	Sparse (<10%)				
Access	Poor accessibility	Poor accessibility	Accessible	Accessible	Accessible	Accessible
Land tenure	Private	Road reserve - Local Government / Private	Road reserve - Local Government / Private	Road reserve - Local Government / Private	Road reserve - Local Government / Private	Private
Adjacent or surrounding land use	Cropping and grazing.					
Treatment pre 2007	Mature bushes pulled along with seedlings					
2007 treatment	Search for seedlings, hand pulled					
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP17: PORT LINCOLN						
	Patch A	Patch B	Patch C	Patch D	Patch E	Patch F	Patch G
Location	Z53 573998E 6161030N (Golf Club)	Z53 577357E 6157295N (Margaret Ave reserve)	Z53 578016E 6158920N (Puckridge Park / Para St)	Z53 580882E 6156995N (Kent Pl)	Z53 579000E 6156736N (Baltimore St)	Z53 580538E 6156187N (Hindmarsh St)	Z53 578016E 6159548N (Valley View Rd)
Vegetation type, soil, position in landscape	shallow stony soils, flat	shallow stony soils, low hills.	Open forest, undulating ironstone sandy loam over brown clay.	Residential garden, shallow stony soils, flat	Residential garden, shallow stony soils, flat	Residential garden, shallow stony soils, undulating.	Open forest, undulating ironstone sandy loam over brown clay.
Total search area	300 m ²	300 m ²	7.0 ha.	300 m ²	800 m ²	300 m ²	300 m ²
Density / Coverage	Sparse (<10%)	1 plant - Sparse (<10%)	Sparse (<10%)	1 plant - Sparse (<10%)	Sparse (<10%)	9 plants - Sparse (<10%)	1 plant - Sparse (<10%)v
Access	Accessible						
Land tenure	Road reserve	Private	Local Government	Private	Private	Private	Road reserve - Local Government / Private
Adjacent or surrounding land use	Golf course and peri-urban.	Urban	Urban	Urban	Urban	Urban	Peri-urban.
Treatment pre 2007	Mature bushes pulled along with seedlings	Mature bush pulled.	Mature bushes and seedlings pulled.	No plants found since 2001.	Nil, only found in 2007.	Nil, only found in 2007.	Nil, only found in 2007.
2007 treatment	Nil, no plants found	Nil, no plants found.	Mature bushes pulled along with seedlings	Mature bushes pulled along with seedlings	Mature bushes pulled along with seedlings	Mature bushes pulled along with seedlings.	Mature bush pulled.
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years

EYRE PENINSULA SITE DESCRIPTIONS continued

Site Characteristic	EP18: COULTA HALL	EP19: WIRRULLA	EP20: CALPATANA	EP21: MALTEE	EP22: COFFIN BAY
Location	Z53 542948E 6194698N (Coultas township)	Z53 456145E 64145465N (Township)	Z53 739993E 6345610N (Calpatana)	Z53 397065E 6448972N (Maltee homestead)	Z53 544092E 6168906N (Kellidie Bay CP firebreak) - not marked on Figure 3
Vegetation type, soil, position in landscape	Mallee, shallow stony soils, flat	Open mallee, grassland and plantation.	Mallee	Grassland on flat	Open mallee on shallow calcareous stony soil.
Total search area	2 ha.	<0.5 ha.	50 ha.	<0.5 ha.	0.5 ha.
Density / Coverage	Sparse (<10%)	2 seedlings found 2007	<10% cover - 70 seedlings scattered	No mature plants or seedlings found since 2004.	Sparse (<5%)
Access	Accessible	Accessible	Accessible	Accessible	Accessible
Land tenure	Local Government.	Local Government	State Government - NPWS	Private	State Government- NPWS
Adjacent or surrounding land use	Cropping and grazing.	Peri-urban – open space in township	Native Vegetation	Peri-urban – around farm homestead.	Urban
Treatment pre 2007	Mature bushes and seedlings hand pulled	Control over 10-15 years – close to eradication. Only seedlings found and hand pulled in recent years.	Herbicide spraying of mature plants and seedlings Sept 2005, Mar, July, Sept 2006.	Burnt summer 2004/2005	Nil
2007 treatment	Search for seedlings, hand pulled	Hand pulling seedlings.	Herbicide spraying of mature plants and seedlings July 2007. 10 mature plants and approx. 700 seedlings	Search for new seedlings – none found	Nil
10 Year Management Strategy	Annual search for seedlings, hand pull or herbicide treatment – maintained for 10 years	Monitor / search annually for any new seedlings and hand pull.	Monitor / search annually for any new seedlings and hand pull.	Considered controlled. Monitor / search annually for any new seedlings and hand pull.	Annual search for seedlings, hand pull – maintain for 7 years.



Summary

This management plan outlines a ten year strategy for destruction and eradication of boneseed from the Northern and Yorke and the Eyre Peninsula Natural Resources Management Regions. The strategy seeks to remove boneseed from the combined regions so that by 2018 management is reduced to surveillance and monitoring. This establishes a national containment line that limits the spread of boneseed across south-western Australia.

Seed production is the key to boneseed invasion and prevention of seed production is the key to boneseed control. The management approach recommended depends on infestation extent and ranges from prevention, to treatment of isolated plants and small infestations, to integrated management of larger infestations. Methods of control include herbicide application, physical removal and fire.

Distinct sites are defined that may be comprised of patches. Distribution maps and site descriptions outline vegetation, landscape, area, coverage, tenure, land use and treatment characteristics for each site.

Regional boneseed management to prevent seed production includes annual searching for plants and treatment to destroy any plants found. Coordination of individual landholder management actions is a key role of the NRM Boards, as is facilitation of community engagement and support. Together these roles may be the most critical aspect of a long term control program.



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Appendix 1

Extracts from Chapter 8 of the South Australian Natural Resources Management Act 2004

Available online from www.legislation.sa.gov.au

175—Movement of animals or plants

(2) Subject to this Act, a person must not transport or move, or cause or permit to be transported or moved, on a public road within a control area for a class of plants to which this subsection applies—

- (a) a plant of that class; or
- (b) any animal, plant, soil, vehicle, farming implement or other produce, goods, material or thing carrying a plant of that class.

Maximum penalty: \$10 000.

Expiation fee: \$500.

177—Sale of animals or plants, or produce or goods carrying plants

(1) Subject to this Act, a person must not sell an animal or plant of a class to which this subsection applies.

Maximum penalty:

- (a) if the offence relates to a Category 1 animal or plant—\$50 000 or imprisonment for 1 year;
- (b) if the offence relates to a Category 2 animal or plant—\$20 000 or imprisonment for 6 months;
- (c) if the offence relates to a Category 3 animal or plant—\$10 000.

Expiation fee: If the offence relates to a Category 3 animal or plant—\$500.

(2) Subject to this Act, a person must not sell any animal, plant, soil, vehicle, farming implement or other produce, goods, material or thing carrying a plant of a class to which this subsection applies.

Maximum penalty:

- (a) if the offence relates to a Category 1 animal or plant—\$50 000 or imprisonment for 1 year;
- (b) if the offence relates to a Category 2 animal or plant—\$20 000 or imprisonment for 6 months;
- (c) if the offence relates to a Category 3 animal or plant—\$10 000.

Expiation fee: If the offence relates to a Category 3 animal or plant—\$500.

182—Owner of land to take action to destroy or control animals or plants

(2) Subject to this section, an owner of land within a control area for a class of animals or plants to which this subsection applies must control and keep controlled all animals or plants of that class on that land.

(3) An owner of land within a control area for a class of animals or plants to which this subsection applies must—

- (a) take any measures prescribed by the regulations or specified by a relevant authority in the prescribed manner for the control of all animals or plants of that class that are, or may be, on that land;
- (b) take any measures prescribed by the regulations or specified by a relevant authority in the prescribed manner requiring that the land, or anything present on the land, be subjected to specified treatment.

185—NRM authorities may recover certain costs from owners of land adjoining road reserves

(1) If an NRM authority carries out on road reserve measures for the destruction or control of animals or plants of a class to which this section applies, the NRM authority may, within 3 months, give notice in writing to each owner of land adjoining the road reserve requiring the owner to pay to the NRM authority an amount specified in the notice within a period specified in the notice, being not less than 28 days from the date of the notice.



Appendix 2

Template for individual property - 10 year site specific management strategy

This template is provided to assist individual site managers develop site specific management strategies in conjunction with NRM Board officers and to compliment this regional plan.

SITE DETAILS	DESCRIPTION
Date:	
Agency assisting with plan preparation:	
Site Name:	
Site Owner:	
Site Location Description: (provide map)	
Extent of site (search area):	
Northing and Easting coordinates of extent:	
Area:	
Patches within site identified (attach map):	
Plant maturity (bushes/seedlings):	
Coverage (%):	
Vegetation cover description (native plant % cover):	
Previous management:	
Monitoring data:	

FIVE STEP STRATEGY (each year in Spring) modify specific to site

1. Search previously treated areas (refer to map) for seedling regeneration – hand pull or treat with herbicide.
2. Search to define the boundaries of any area of untreated plants
3. Establish a plan for new treatment areas so that over a five year period the whole of the untreated area is addressed.
4. Treat bushes with herbicide by foliar or cut/paint application – working from the outside extent of infested areas, towards the centre
5. Keep records of estimated number of plants treated to review effectiveness over time.

Long term strategy for site re-establishing vegetation:

