

New Incursion Plan - Boneseed & Bitou bush. 2011-2016



National Boneseed Strategic Plan. Goal 1: New infestations are prevented from establishing	
1.1 Develop and maintain early detection mechanisms to protect uninvaded areas.	Strategic Action 1.1.2 Develop and implement plans to address new infestations

NSW Invasive Species Plan. Goal 1: Exclude	
Prevent the establishment of new invasive species	1.2 Early detection capabilities are developed and implemented.

Regional Weed Strategy. Aim: Preventative Weed Management	
No new weeds naturalised over the life of the RWS	2.1.2 Develop and implement plans for priority weeds in consultation with stakeholders.

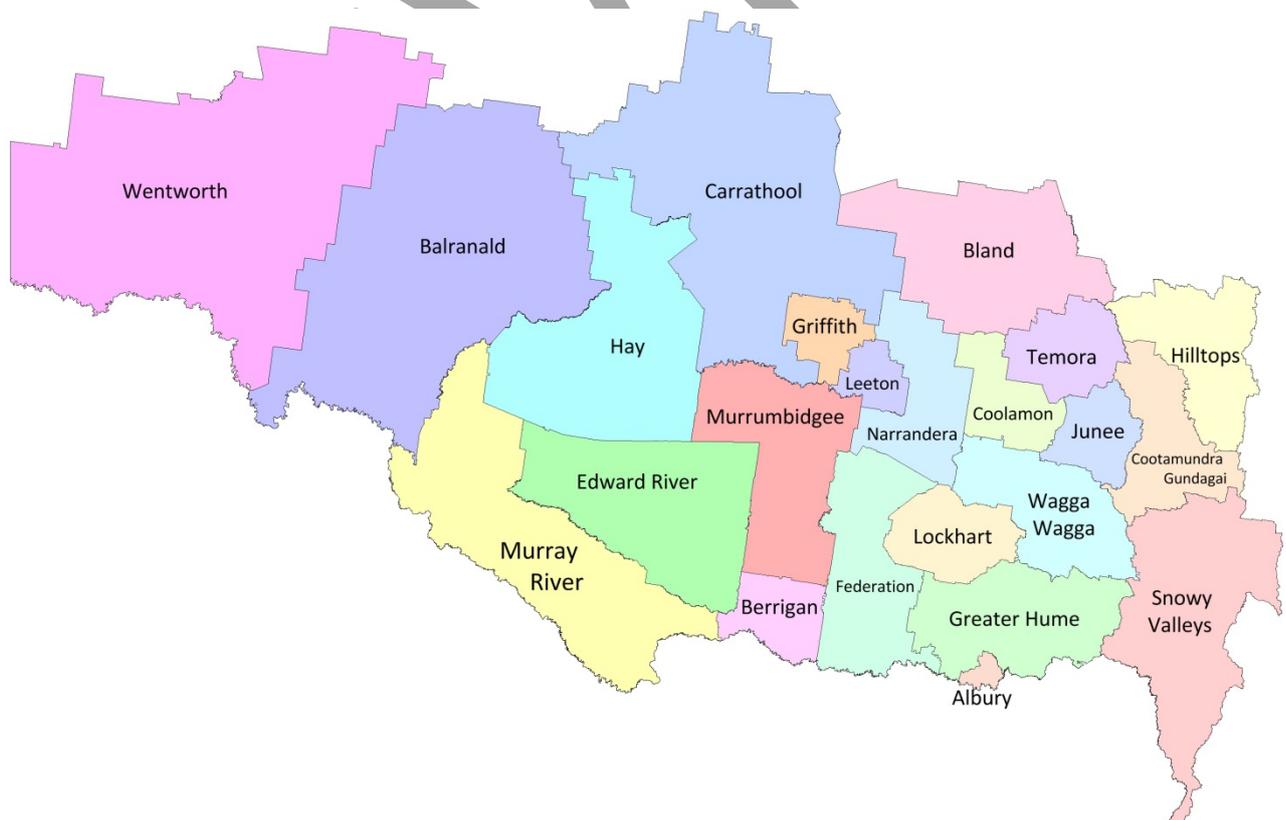
Aim: To protect biodiversity by restricting the spread & preventing the establishment of boneseed & bitou bush (*Chrysanthemoides monilifera*) within the Murray & Riverina, with the long-term aim of eradication.

Objectives:

1. Prevent the establishment of new infestations.
2. Prevent the seeding of known infestations through ongoing management of these infestations resulting in 100% eradication (*) of all infestations by 2021.

* We recognise the seed bank may remain viable for periods exceeding 10 years and follow-up work beyond the term of this plan will be required.

Area of operation: Murray & Riverina LCAs + Unincorporated Area (Western Division) + Broken Hill



Key Stakeholders:

The following Local Control Authority (**LCA**) and Livestock Health & Pest Authority (**LHPA**) members of the Eastern Riverina Noxious Weeds Advisory Group and Western Riverina Noxious Weeds Advisory Group (**ERNWAG & WRNWAG**): Albury City, Balranald Shire, Bland Shire, Carrathool Shire, Central Murray County, Coolamon Shire, Cootamundra Shire, Corowa Shire, Griffith City, Greater Hume Shire, Gundagai Shire, Hay Shire, Jerilderie Shire, Junee Shire, Leeton Shire, Lockhart Shire, Murrumbidgee Shire, Narrandera Shire, Riverina Eastern Noxious Weeds Authority (RENA), Temora Shire, Tumbarumba Shire, Tumut Shire, Urana Shire, Wagga Wagga City, Wakool Shire, Wentworth Shire, Hume LHPA, Riverina LHPA and Western LHPA. Broken Hill City Council, NSW Department of Primary Industries (**NSW DPI**), Murrumbidgee Irrigation (**MI**), Far West Region of National Parks and Wildlife Service of NSW - Office of Environment and Heritage (**OEH**) and the Lower Murray Darling Catchment Management Authority (**CMA**). Other stakeholders include: Lachlan, Murray and Murrumbidgee Catchment Management Authorities (**CMAs**), Roads and Traffic Authority (**RTA**), NSW Farmers, Coleambally Irrigation (**CI**), Murray Irrigation Limited (**MIL**), Victorian Department of Primary Industries (**VIC DPI**), Victorian Department of Sustainability and the Environment (**VIC DSE**) and neighbouring landholders.

Background:

Boneseed (*Chrysanthemoides monilifera* ssp *monilifera*) & bitou bush (*Chrysanthemoides monilifera* ssp *rotundata*), are native to South Africa. They are fast growing, aggressive plants that have no natural enemies in Australia. Boneseed was introduced to Australia as a garden plant in the late 1800s and, as recently as 5 years ago, was not generally recognised as a weed in the Riverina. Boneseed poses one of the greatest threats to plant communities in southern and western NSW. It is considered a weed of regional and national significance because of its environmental impacts, invasive ability, and serious potential to spread. It is a highly competitive weed that displaces native vegetation in most environments, having the capacity to become a monoculture in disturbed areas. Bitou bush is only known to occur at Menindee Lakes (Kinchega National Park) west of the Great divide, and for this reason we have incorporated this isolated infestation into our incursion plan. Apart from this isolated bitou bush infestation, this plan is primarily targeting boneseed.

National coordination of boneseed management in Australia occurs as part of the Weeds of National Significance (WoNS) program. A national coordinator and management group oversee the implementation of the National Boneseed Strategic Plan. Strategic Action 1.3.7 of the 2011-2016 Strategic Plan states “eradicate all boneseed plants in NSW”. This is supported in the Riverina through our application for Class 2 declaration across the region. Boneseed containment lines are also being discussed and are recommended by the national management group along the Victorian and South Australian border with NSW (Strategic Action 1.4.5 “Develop northern national boneseed containment zone around NSW/Victoria border to prevent spread to NSW”). ERNWAG & WRNWAG support this recommendation and hopefully, through our management and long term aim of eradication, we can establish and progress containment lines to the south and west of the Riverina.

The National Boneseed Coordinator (Hillary Cherry) made a presentation to the Western Riverina Noxious Weeds Advisory Group (WRNWAG) in October 2006 highlighting the impact of this aggressive weed, as well as seeking information on old herbarium records of past infestations. Upon investigating the isolated herbarium records, it was discovered that 6 infestations had been identified in the Riverina – some dating back to the 1940s. So far, two records were found to still

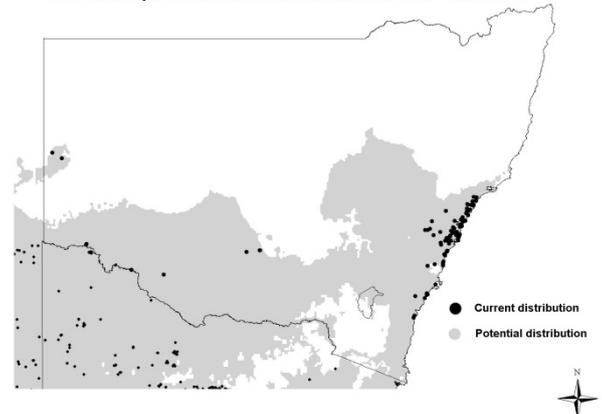
exist. A component of this plan will be to re-visit all recorded locations to check the status of infestations.

Boneseed has been assessed and prioritised by all Riverina LCAs. Of the 46 weeds put through the prioritisation process, boneseed ranked 2nd highest behind Gorse and is regarded as a High Risk species. Refer to High Risk species WAP 1.2.1 for further information.

The “Do Nothing” Option:

If control activities are not undertaken, Boneseed has the potential to significantly expand its range. The potential distribution of boneseed (predicted by BIOCLIM model) is the majority of the Riverina.

Current and potential boneseed distribution in NSW - June 2006



Distribution of Riverina Infestations:

Balranald Shire Council – On 28th November 2010, the weeds officer located a boneseed bush in the regional park in Euston (-34.58584966 142.7047373). There were four plants in total about 1m – 1.5m tall. No signs of any seedlings. They had flowered and had seeded. All plants have been removed. The site was not reinspected in 2011 due to flood waters.

Broken Hill City Council & Unincorporated area – One boneseed herbarium specimen was recorded, near the mine dump, at the herbarium 29th August 1946 by L Johnson. Another reported site was between the north mine and the Line of Lode. One specimen recorded at Umberumberka (Silverton), near reservoir in 1940. Status of all 3 sites is currently unknown.

Central Murray County Council – Infestation at Pretty Pine. A home gardener brought seeds home from the coast and planted them in her garden. Seeds from the cuttings were taken to the tip and spread further from there. This infestation has also moved to a nearby travelling stock reserve on the Moulamein rd (approximately 1 km from Pretty Pine). The stock reserve infestation was discovered in 2005. In January and April 2011, 15 seedlings were removed from a road reserve (S35 27'13.1" E144 55'57.4") on Cobb Hwy, 12km north of Deniliquin, no plants located during inspection around old tip area and surrounding properties at Pretty Pine.

Griffith City Council – After the October 2006 WRNWAG meeting, John Brickhill (NPWS) investigated 2 locations on the above map in the Griffith area. A herbarium specimen existed from Combe rd (and logged at the Herbarium) by D Mallinson in Sept 2004. The Combe Rd infestation (extends from S34 16'27.7" E146 00'59.1" parallel with Combe Rd to S34 16'21.0" E146 00'52.7") was found to be approximately 2000sqm in size in October 2006 (occurring on the northern outskirts of Griffith). Several thousand plants in a 30m wide strip between Combe Rd and the irrigation canal extended 200m in a westerly direction from Duchatel Rd intersection. Hundreds of plants were also found on the opposite side of the canal. This infestation has been reduced significantly to small areas of scattered plants that are treated annually. The irrigation channel infestation is treated by M.I., and has been reduced from approx 100 metres x 5 metres to scattered plants along the channel bank.

A new infestation, approximately 1ha in area, was found in Hanwood (village 5kms south of Griffith) on private property (S34 20'31.3" E146 02'41.4") in March 2007. This infestation is yielding a handful

of seedlings each season, with the landholder removing the plants as he finds them. John Brickhill also found 6 plants in Canal St, Griffith (S34 17'23.44" E146 02'24.19") in March 2008; that have since been eradicated.

Narrandera Shire Council – The second record near Griffith on the above map traced back to D Mallinson recording an infestations at Binya (this was logged at the herbarium in August 2002). In October 2006 approximately 50 plants were found at this same location on the western side of Binya. All plants were removed. Brief NPWS inspections in 2007-2010 at this site showed no signs of plants. Ross Gardiner, NPWS Pest tech officer, went to Binya site 4 May 2011 and destroyed approximately 110 boneseed plants which were in a patch on the southern side of the Burley Griffin Way next to the "30km to Griffith" sign. (S34 13'43.3" E146 20'29.6") There was a small patch, 20 of the 110 plants, to the west about 30m closer to the fence. Plants were pulled out by hand, and stacked on some fallen branches to dry. There were no flowers or seed, plants were from 10cm to 1m tall, appeared to be regeneration from rain last spring/summer, as no plants have been seen by NPWS during inspections in previous years. Ross is in the process of talking to Narrandera Shire's Weed Officer regarding the need for follow up site checks as the seed may be viable for up to 10 years.

Tumbarumba Shire Council – A roadside infestation (east of Rosewood) on broadleaf park road (35.671813 Latitude 147.956618 Longitude), a logging road, was first discovered in January 2000. It was thought to have been brought in on earth moving equipment. The site to date has been monitored and inspected regularly. There has not been any reinfestation since the initial treatment in 2000.

Tumut Shire Council – A small cluster of 6 Boneseed plants was discovered on a hilltop private property just north of Tumut township (S35 18'2.232" E148 10'30.792") in October 2010. These plants were dug out and disposed of and the owner was notified of the infestation and to watch for any new growth. The infestation site was re-inspected at 6 months and will be re-inspected annually. No new plants found and no re-growth evident. Tumut Shire Council will continue to re-inspect annually for 3 years then back on cyclical inspections.

Wakool Shire Council – Approximately 6 plants were discovered in Riverside Park (S35 37'56.2" E144 07'52.4") in Barham on the banks of the Murray River in July 1996 (approx). A member of the public brought it to the weeds officers' attention. The infestation is treated annually and has been reduced from big bushes to seedlings.

Wentworth Shire Council – This infestation, at the NSW Agriculture, Agricultural (S34.09 E142.014000) Research Station, was first identified in a herbarium specimen in 1986 and again in 1992. The herbarium notes stated: Shrub to 2 m tall; yellow flowers; seeds collected at base of plant; locally abundant; & used for sand dune stabilisation. NSW DPI has worked hard at eradicating it on site. The main infestation is now a vineyard and isolated bushes appear occasionally on the back Wentworth Rd and on the farm. Every effort is made by NSW DPI to get rid of it before it seeds.

Another infestation in the same vicinity was discovered in 2008 at the sewerage evaporating ponds (S34.1 E142.03). The infestation area was approximately 3-4 acres around the ponds. A further infestation was discovered 2/5/11, odd plants on crown land all along Tuckers creek (S34.1043 E142.000009) which is downstream from the previous infestations. Tuckers Creek is an anabranch out of the Murray River and into the Darling River at Wentworth and surrounds the settlement and island known as Curlwaa. A fourth infestation approx 20ha has recently been discovered in the North

Eastern corner of the Coomealla Irrigation Area. It has been effectively sprayed and anything missed hand pulled.

Kincheha National Park – Bitou bush was introduced to the area as a bank stabiliser plant in the late 1960s. It was confirmed as bitou bush as opposed to Boneseed in 1992, and has since been managed to varying degrees by the many landowners. In recent years, a taskforce has been established to determine landownership and management of the infestation. As reported in the LMD CMA 2009-2010 Annual report: in the Menindee area, north of the Catchment, bitou bush grew along the shore of the lakes and dunes from Sunset Strip, a community 22km north of Menindee township, to the Menindee Lakes Caravan Park, with plants ranging from tiny to very large, almost tree-size bushes. In 2009/10, an area of approximately 245 hectares of land was surveyed and treated by physically removing the plants, as the lakes are a source of drinking water. By removing the whole plant, potential spread of these weeds when the lakes refill, has been enormously reduced. As part of the monitoring process, GPS locations were recorded for all plants, ensuring the areas can be readily found during a follow up program. The bitou bush infestations in LMD CMA are an eradication target under a 3 year Caring for Our Country project, led by DSE VIC, to eradicate all bitou bush outside the national southern containment line. LMD CMA and NSW NPWS are partners in this project and will continue eradication efforts for at least 10 years.

Containment Lines:

In consultation with the National Bitou bush & Boneseed Management Group and due to the minimal infestations in the Riverina and in NSW, it was deemed critical on the national scale to establish containment lines and try to expand on the boneseed-free areas. Therefore as part of their eradication plan, the Riverina have established boneseed containment lines to the south and west being the Murray River and the South Australian Border respectively. It is hoped eradication and containment plans will be adopted by Victoria and South Australia and they will join NSW efforts to contain boneseed to the south and west. The National Murray-Coorong Boneseed Containment Zone was recently established to prevent spread along these river corridors. This will assist in reducing spread from South Australia in the future.

Method and Rate of Spread:

Seed production is the key to boneseed invasion: Prevention of seed production is the key to boneseed control. Individual boneseed plants can produce up to 48,000 seeds per year. Fruits and seeds are spread by birds and other animals, water, soil movement and other human activities. Seeds may persist up to 10 years for boneseed, however exact seed longevity is unknown. It is a successful invader due to its rapid growth, enormous seed production, efficient dispersal, lack of natural enemies and adaptability to different environments. Such characteristics have allowed it to invade and proliferate in a range of vegetation communities.

Species Management:

Boneseed can be effectively controlled using chemical and mechanical methods. The *Boneseed Management Manual - Current management and control options for boneseed in Australia* (Brougham et al. 2006), contains a range of best practice management advice and can be downloaded freely from: www.weeds.org.au/WoNS/bitoubush

Declaration Status:

Boneseed is currently not declared anywhere in the Riverina; although because it is listed as a notifiable weed (Class 2) on Lord Howe Island, it cannot be propagated or sold anywhere in NSW.

A major goal of this plan is to support the region-wide Class 2 declaration. Class 2, Regionally Prohibited Weeds, must be eradicated from the land and the land must be kept free of the plant.

Weed Biology: (source: Boneseed Manual, Brougham et al. 2006)

Distinguishing features of Boneseed and Bitou bush can be seen in the table below. Further information on biology can be found in the WoNS Strategic plan which can be downloaded from: www.weeds.org.au/WoNS/bitoubush

bitou bush (<i>ssp. rotundata</i>)			boneseed (<i>ssp. monillifera</i>)	
	spreading shrub, 1–2 m high	habit	erect shrub, up to 3 m high	
	3–7 cm long, broader oval shape, smooth or only slightly toothed edges	leaves	3–9 cm long, elongated oval shape, irregularly toothed edges	
	11–13 'petals' flowers year round with a peak from April to June	flowers	4–8 'petals' flowers from late winter to spring (mainland), to early summer (Tas)	
	egg-shaped fruit	fruit	round fruit	
	egg-shaped, rough, dark brown to black	seeds	round, smooth, bone-coloured	
	leaves with smooth edges	seedlings	leaves with toothed edges	

National Bitou bush and Boneseed Priority Management Actions by NRM Region:

Note: highest priorities are in bold text. High priority regions are highlighted in pink.

NRM Region	BITOU BUSH Priorities 2011-2016 (not including research)	BONESEED Priorities 2011-2016 (not including research)
Lower Murray Darling	Eradication of bitou bush: Raise awareness of threat to inland areas.	Eradication of boneseed; surveillance and mapping. Support Class 1 (or 2) listing (eradication) in NSW. Raise awareness of threat to inland areas.
Murray	Bitou bush does not occur in this region. Education and awareness.	Eradication of boneseed; surveillance and mapping. Support Class 1 (or 2) listing (eradication) in NSW. Raise awareness of threat to inland areas.
Murrumbidgee	Bitou bush does not occur in this region. Education and awareness.	Eradication of boneseed; surveillance and mapping. Support Class 1 (or 2) listing (eradication) in NSW. Raise awareness of threat to inland areas.
Western	Eradication of bitou bush. Education and awareness	Eradication of boneseed; Support Class 1 (or 2) listing (eradication) in NSW. Raise awareness of threat to inland areas.

Information extracted from National Bitou bush and boneseed Strategic Plan 2011 to 2016 (see www.weeds.org.au/wons/bitoubush)

Regional Action Plan:

OBJECTIVES	WoNS Action	ACTIONS	PERFORMANCE INDICATORS	WHO'S RESPONSIBLE
1. Prevent the establishment of new infestations	1.1.1	1. Distribute identification and awareness material where early detection is needed (i.e adjacent to eradication zones and containment lines)	Id and awareness material disseminated to key areas.	LCAs, RWCC
		2. Timely reminder to weed officers when Boneseed is flowering so they can be looking for new infestations during routine field work.	Reminder circulated annually to all weed officers when Boneseed first flowers.	LCAs, RWCC
		3. Timely dissemination of information to the general public when Boneseed is in flower (August – October)	Media release, Chinwag article at onset of flowering, number of brochures /flyers distributed.	RWCC, LCAs
	1.4.5	4. Establish and maintain containment line around NSW / Victorian border	Containment zones established and maintained	All LCAs bordering with Victoria
	1.1.3	5. Engage stakeholders in monitoring High Risk sites & pathways & encourage reporting	Number or extent of stakeholders reporting infestations	All LCAs
		6. Reinspect all known sites (including herbarium records) annually to check the status of the infestation. Update maps where necessary.	All recorded sites inspected annually till the site is free of Boneseed for 10 consecutive years.	All LCAs (who's responsible for inspecting Kinchega NP?)

	1.3.7	7. Destroy new infestations before they flower or set seed. Shallow roots make boneseed easy to hand pull or dig up when small.	All new infestations are controlled prior to seed set.	All land managers
	1.2.1	8. Map all new infestations. Provide details to RNWPO for regional and national distribution	Updated map available upon request	LCAs, RWCC
	1.3.7	9. Submit regional application for Class 2 declaration to DPI	Application collated & submitted	LCAs, RWCC
		10. Inform the community of Boneseed's declaration status once gazetted Class 2.	Media release distributed	RWCC, LCAs
		11. All new infestations must be reported to the LCA within 3 days of discovery.	LCAs kept informed	Land managers
		12. Complete notifiable weed reporting form & submit to NSW DPI within two weeks of discovery	Notifiable weed form received by NSW DPI	LCAs
2. Prevent the seeding of known infestations through ongoing management of these infestations resulting in 100% eradication (*) of all infestations by 2021.	1.3.8	1. Continue current control program on Kinchega NP and adjacent unincorporated land.	Inspections indicating a reduction in the degree of infestation, both in area & plant density	OEH (NPWS), far west region and LMD CMA
		2. Continue to seek cooperative support from neighbours to carry out control measures off park	Increase in cooperative response from neighbours	OEH, LMDCMA, Central darling, unincorporated
	1.3.7	3. Search for plants (missed the previous year or newly germinated) at all known sites. Remove all plants (including recently germinated seedlings) prior to seeding as per the Boneseed Manual (2006).	All found plants removed from known sites prior to seeding	LCAs, other land managers
		4. Support & submit funding submissions to relevant bodies to ensure maximum resources where needed	Letters of support. Funding applications	RWCC, RWCs, LCAs
		5. Coordinate, monitor and review implementation of this Plan; report to stakeholders.	Effectiveness & relevance of the plan reported to stakeholders.	RWCC, LCAs, other stakeholders

* We recognise the seed bank may remain viable for periods exceeding 10 years and follow-up work beyond the term of this plan will be required.

Desired outcome:

The Riverina's native biodiversity is protected from the negative impacts of Boneseed & Bitou bush, with the long-term aim of eradication.

Linkages and resources:

- Natural Resource Ministerial Council of Australia & New Zealand (2011) *Weeds of National Significance Bitou bush and Boneseed (Chrysanthemoides monilifera ssp rotundata and monilifera) Strategic Plan*. Australian Weeds Committee, Launceston.
- Agriculture & Resource Management Council of Australia & New Zealand, Australian & New Zealand Environment & Conservation Council and Forestry Ministers, (2000) *Weeds of National Significance Bitou Bush and Boneseed (Chrysanthemoides monilifera ssp. rotundata and monilifera) Strategic Plan*. National Weeds Strategy Executive Committee, Launceston.
- Brougham, KJ, Cherry, H and Downey, PO (eds) (2006). *Boneseed Management Manual: current management and control options for boneseed (Chrysanthemoides monilifera ssp. monilifera) in Australia*. Department of Environment and Conservation NSW, Sydney. Available on www.weeds.org.au/wons/bitoubush
- CRC for Australian Weed Management (2003). *Weed Management Guide: Boneseed – Chrysanthemoides monilifera ssp. monilifera*. CRC for Australian Weed Management, Australia.
- National Bitou Bush & Boneseed Management Group – NSW Boneseed Flyer – Not Wanted! Available on www.weeds.org.au/wons/bitoubush
- Department of Environment and Climate Change NSW (NPWS). *Far West Region Pest Management Strategy 2008-2011*. DECC, Sydney, NSW
- B.A. Auld and R.W. Medd (1997) *Weeds, An Illustrated botanical guide to the weeds of Australia*, Inkata Press.
- Boneseed (*Chrysanthemoides (L.) Norl. Monilifera ssp. monilifera*) Service Sheet (11/02), DPIW&E.
- F.J. Richardson, R.G. Richardson and R.C.H Shephard (2006) *Weeds of the south-east – An identification guide for Australia*, R.G. & F.J. Richardson.
- W.T. Parsons and E.G. Cuthbertson (2001) *Noxious Weeds of Australia 2nd Edition*, CSIRO Publishing.
- RMP Environmental Pty Ltd (April 2008), *TEN YEAR BONESEED MANAGEMENT PLAN*, Northern and Yorke Natural Resources Management Board & Eyre Peninsula Natural Resources Management Board.
- South Coast Bitou Bush & Boneseed Taskforce. (2007) *South Coast Bitou Bush and Boneseed Management Plan 2007-2012*. SCBBTF, Illawarra District Noxious Weeds Authority, Kiama, NSW. Available on www.southerncouncils.nsw.gov.au
- Riverina High Risk Species WAP 1.2.1
- Ash, P & Verbeek, B (2006) *Regional Weeds Strategy Lower Murray Darling Catchment* 2nd Edition.
- Ash, P & Verbeek, B (2007) *Regional Weed Strategy Murrumbidgee Catchment*
- Bosse, P & Verbeek, B (2008) *Regional Weed Strategy Murray Catchment*.
- Power, M, Higgins, A, Hasselman, L, Wythes, C and Hil, R (2009) *Lachlan Regional Weed Strategy*.

Review:

This plan is to be reviewed after 5 years to ensure we are on track with our 10 year aim of eradication.

Contacts:

Regional Coordination

Regional Weed Coordinator

Local Coordination / Management

Your local council Weeds Officer

Endorsed by:

ERNWAG

On

13th October 2011

WRNWAG

On

11th October 2011

REVIEWED