



# REGIONAL WEED MANAGEMENT PLAN

**1.1 Plan Title:** *Riverina Serrated Tussock Management Plan* as Revised 2006 **No.**

**1.2 Plan Proponents / Applicant Contact Details**

Regional Weeds Advisory Committee: Eastern and Western Riverina Noxious Weeds Advisory Groups

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Signature: Eastern Group Representative: . . . . . Date: . . . . .

Signature: Western Group Representative: . . . . . Date: . . . . .

**1.3 Name of Plant(s)** **WONS - Yes**

Scientific name: *Nassella trichotoma* Common name: Serrated tussock

**1.4 Plan Period**

Starting date: 01/07/2006 Completion date: 30/06/2011

**1.5 Area of Operation:**

**Region 5**, extending from Tumut in the east to Wentworth/ S.A border in the west and Carrathool in the north to the Murray River in the south. The Local Control Authorities and Rural Land Protection Boards this region encompasses are all representatives of the Eastern and Western Riverina Noxious Weeds Advisory Groups (**E/WRNWAG**). The Region extends across 4 Catchment Management Authority (CMA) areas, being Murray, Murrumbidgee, Lower Murray Darling and the Lachlan.

**1.6 Aim:**

To fully and continuously suppress & destroy Serrated tussock infestations to protect primary industries and the general environment.

**1.7 Objectives:**

- a. Prevent the spread of Serrated tussock by removing new infestations prior to seed set.
- b. Reduce existing Serrated tussock infestations by 30% by the end of the plan period.
- c. Minimise the entry of Serrated tussock into the Riverina, through increasing community awareness of this weeds impacts.

## **2.0 STAKEHOLDERS**

### **2.1 Signatories**

The following Local Control Authority (**LCA**) and Rural Lands Protection Board (**RLPB**) members of the Eastern and Western Riverina Noxious Weeds Advisory Groups (**E/WRNWAG**): Albury City, Balranald Shire, Bland Shire, Carrathool Shire, Central Murray County, Coolamon Shire, Cootamundra Shire, Corowa Shire, Greater Hume Shire, Griffith City, Gundagai Shire, Hay Shire, Jerilderie Shire, Junee Shire, Leeton Shire, Lockhart Shire, Murrumbidgee Shire, Narrandera Shire, Temora Shire, Tumbarumba Shire, Tumut Shire, Urana Shire, Wagga Wagga City, Wakool Shire, Wentworth Shire, Balranald RLPB, Gundagai RLPB, Hay RLPB, Hume RLPB, Murray RLPB, Narrandera RLPB, Riverina RLPB, Wagga Wagga RLPB and Wentworth RLPB.

### **2.2 Other Stakeholders**

The Noxious Weeds Advisory Committee (**NWAC**), NSW Department of Primary Industries (**NSW DPI**), Department of Lands (**DoL**), Murrumbidgee / Murray / Lower Murray Darling / & Lachlan Catchment Management Authorities (**CMAs**), Roads & Traffic Authority (**RTA**), Department of Environment and Conservation (**DEC**) and other relevant land managers.

## **3.0 BACKGROUND AND JUSTIFICATION**

### **3.1 Plan Justification and Description of the Problem**

Serrated tussock is considered a weed of regional and national significance primarily because of its invasiveness, destruction to pastures as well as the nature of spread - native grasses find it difficult to compete. It is of no nutritional value for grazing and animals forced to graze Serrated tussock may die.

Serrated tussock (*Nasella trichotoma*) was first reported in NSW in 1935 at Yass. Since this time it has spread and is a major weed on the Southern Tablelands and Central Slopes. The Riverina is largely uninfested with only a number of isolated infestations. The aim of this plan is to contain and reduce current infestations and continuously destroy all new infestations before seed set.

Serrated tussock within the Riverina is presently only found in three shires – Gundagai, Wagga Wagga and the former Hume (now split between Greater Hume Shire and Corowa Shire). It was thought to have first been introduced to Gundagai when Telecom built towers at Reno. Machinery possibly carried seed into the shire. Once established at Reno, wind currents were responsible for dispersing the tussocks across the valleys and hills within the shire. Serrated tussock was first noticed in the former Hume shire approximately 5 years ago growing on a roadside west of Albury. It covered approximately a 1km strip and consisted of scattered plants and heavily infested patches. Another 10 plants were also found on the Burrumbuttock/Howlong road north of Howlong. Two further infestations were found, one on a Thurgoona property and another on a property at Tabletop, both resulting from the landholders planting the tussocks. Both lots of tussock were purchased from nurseries in Victoria. Serrated tussock was noticed in Wagga Wagga City Council in 1998 on the Oura rd approximately 5km East of Wagga Wagga. It was thought to have been introduced either via travelling stock or machinery / transport passing through the shire. No further infestations have been found.

Seedling plants are difficult to find and can easily go undetected before seed set.

At present the level of Serrated tussock infestation across the Riverina is marginal to rare and isolated (see figure 1.), we aim to limit its spread while reducing existing infestations. The heaviest infestation within our region is in Gundagai Shire. Gundagai shire has reduced their original infestations by 70% with landholders regularly inspecting their infestations, spot spraying plants when located. Hume (the former) Shire treated their first site upon discovery/correct identification, and generally remove approximately a dozen plants each year when inspecting. It has been prevented from seeding since it was found. All 10 plants were removed from the second site and only one plant has since been found. The surrounding hills and potential areas for germination downwind of both these sites have been inspected and so far no plants have been found. All plants were removed from the two private properties where tussock was planted and there have not been any further germinations. Wagga Wagga City removed and treated all plants the year of discovery and the site has been prevented from seeding.

Extension and education activities are key components of this plan. If people are unable to identify Serrated tussock, are unaware of the potential problems it can cause, and lack an understanding of management options, then they are unlikely to act. The extension program will address these issues and will be delivered through field days / workshops, personal contact during inspections and through the provision of printed material to the general public.

Both Wagga Wagga and Gundagai Councils have held information field days to increase public awareness about this highly invasive weed.

Since council amalgamations – the former Hume Shire roadside infestation (now Greater Hume Shire), has been found infesting the adjoining paddock. In 2005 a fuel reduction burn was carried out on the roadside to expose all serrated tussock plants. All found plants were physically removed along with all plants found on the private property. Close monitoring will occur, along with another roadside burn and physical removal of any plants in 2006. The Olympic highway infestation appears to have been eradicated following two seasons of nil germinations.

### **3.2 The “Do Nothing” Option**

The Riverina is largely free of Serrated tussock, if current infestations are not controlled it has the potential to invade and dominate a large proportion of pasture systems and open woodlands in the region. This will cause reduced productivity of land, affecting the grazing industry and also the environment through a reduction in biodiversity.

### **3.3 Distribution of Infestations**

Refer to Figure 1. for regional distribution.

### **3.4 Weed Biology**

Serrated tussock tends to be generally found in hilly grazing country in various climatic regions in the 250 to 500mm annual rainfall zone, all soil types being vulnerable. Within these regions it is often found growing on undisturbed country. It germinates at any time of the year, but mostly autumn and winter. Light may suppress germination and seeds may establish from the surface. Continuous germination often makes it difficult to check with a solitary control operation.

Mature plants can produce more than 140,000 seeds per plant per year. These are about 2 mm long, enclosed in reddish brown or purple bracts, each seed with a tuft of white silky hairs at the base and a twisted awn (2 to 3 cm long) and minute projections at the summit. The seed head has two or three

branches at each junction and one seed at the end of each branch. When seeds are ripe, the heads droop over and touch the ground. Plants have a distinct purple appearance when flowering and a golden colour when seeds are ripening.

Roots are diffuse and fibrous, mostly in top 20cm of soil but some are deeper, and even seedlings are difficult to pull from the soil. Serrated tussock usually doesn't flower until the second year of growth. Panicles break off at maturity and can be carried large distances by wind.

### **3.5 Method and Rate of Spread**

Serrated tussock is a prolific seeder. The very light seed head can be blown by wind over long distances (up to 20km). The seeds, aided by the roughened seed coat and the tuft of hairs at the base, also cling to wool, bags, and clothing. They are also spread on machinery, in hay, water, mud and the droppings of animals. Another means of dispersal, as was found in the former Hume shire, has been through the sale of plants to the general public from nurseries. Lack of hygiene has been the main means of dispersal across our region, increasing awareness has prevented this from re-occurring.

### **3.6 Species Management**

Prevention is better than cure. With our region having limited infestations, removal is high priority. Control the few existing infestations and monitor the sites annually for 5-10 years removing any young tussocks that may germinate from the seed bank.

Herbicide treatment alone usually results in reinfestation of Serrated tussock from seed remaining in the soil. It is important to use other control methods, especially competition. Infestations on farmed land can be controlled through cultivation and establishing competitive pastures. Trees can be planted on land that isn't farmed, as well as native grasses to replace tussock, provided grasses were present before spraying. Over grazing needs to be limited to encourage the growth of natives and pastures.

Increasing public awareness of this species will increase control and prevent spread of Serrated tussock across the region.

### **3.7 Key Land Managers**

All land managers listed below are critical in the success or failure of this plan. If Serrated tussock were to be left untouched due to lack of awareness of its potential distribution, the Riverina could end up with severe infestations that would cost the community greatly.

Roads and Traffic Authority, Department of Lands, Rural Lands Protection Boards, Local Control Authority's, Landholders/ Land managers, Australian Rail Track Corporation, Department of Environment and Conservation.

## **4.0 LEGISLATIVE AND REGULATORY SITUATION**

### **4.1 Current Declaration**

Serrated tussock is currently declared a Class 3 noxious weed in all LCAs across the Riverina. "The plant must be fully and continuously suppressed and destroyed and the plant may not be sold, propagated or knowingly distributed".

## **5.0 CONSIDERATIONS AND OPPORTUNITIES**

### **5.1 Financial support to carry out the plan**

The main opportunity to be exploited under this plan is to adopt a coordinated approach to the management of Serrated tussock utilising the expertise and knowledge of stakeholders. With the region having limited infestations, one off treatments and single landholders controlling their infestations is not adequate, a coordinated approach is required involving the entire region. It is of no value controlling tussock on one property when the neighbours haven't any management in place and are continually reinfesting the controlled areas. Education and enforcement of the Noxious Weeds Act will ensure a coordinated approach is achieved across this region. Increased awareness will continue to prevent the spread and reduce current infestations.

With Serrated tussock being a WONS, opportunities may arise for additional funding that community groups can apply for, as well as applying for vegetation restoration works, on private lands, through cooperation with Landcare. The National Heritage Trust and the National Weed Strategy are also key funding opportunities. Extension activities, field days etc will continue to take place providing the general public with the opportunity to gain more knowledge and experience on Serrated tussock and its control.

Serrated tussock has recently been listed along with a number of other tussocky grasses, as a key threatening process under the Threatened Species Conservation Act 1995.

Note: A key threatening process is defined in the Threatened Species Conservation Act 1995 as a process that threatens, or could threaten the survival or evolutionary development of species, populations or ecological communities.

### **5.2 Links to other Strategies**

- The National Weeds Strategy (Australia)
- The New South Wales Weeds Strategy
- The NWAC Strategy – Noxious Weed Control Extension
- National Serrated Tussock Strategic Plan - Weeds Of National Significance
- Catchment Action Plans
- Regional Weed Strategy – Murray (Draft)
- Regional Weed Strategy – Lower Murray Darling
- Regional Weed Strategy – Murrumbidgee (Draft)

### **5.5 Barriers and Contingencies**

The following barriers will delay or obstruct the operation of this Serrated tussock regional plan.

- Primary producers and the general public not recognising Serrated tussock (Obj C; Act 1)
- Very difficult to distinguish ST from other grasses at juvenile growth stage (Obj C; Act 1)
- General lack of awareness of the impact of Serrated tussock. (Obj C; Act 1)

The following contingencies may delay or obstruct the operation of this Serrated tussock regional plan

- Wind – dispersal of seed. (Obj B; Act 1)
- Drought – Serrated tussock survives pro-longed periods of drought (Obj A; Act 4)

## 6.0 PERFORMANCE INDICATORS AND ACTIONS

Objective a: Prevent the spread of Serrated tussock by removing new infestations prior to seed set.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1 Inspect for Serrated tussock as part of routine property inspection programs.	Property inspection programs implemented.	LCA's
2 Ensure land managers (LM) control any new infestations of Serrated tussock, adopting appropriate practices.	Extension programs in place to increase awareness.	LCA's & LM.
3 Control all new infestations, adopting appropriate practices, on LCA/RLPB land.	All identified new infestations removed and the area treated prior to seed set.	LCA's & RLPBs
4 Undertake specific surveys for potential Serrated tussock sites – downwind of an existing site.	Property inspection programs implemented.	LCA's
5 Locate the source of the infestation, whether it is passing transport, planted or seed from a nearby infestation.	Source located, removed and site treated.	LCA's & Land Managers.
6 Update current infestation maps when new sites are discovered.	Infestation maps maintained.	LCA's.
Objective b: Reduce existing Serrated tussock infestations by 30% by the end of the plan period.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1 Undertake specific surveys for potential Serrated tussock sites – downwind of an existing site.	Property inspection programs implemented.	LCA's
2 Treat infestations annually prior to seeding; follow up by treating any new growth, adopting Integrated Weed Management practices.	Infestations treated and area is reducing.	LCA's & RLPBs.
3 Develop Property Weed Management Plans (PWMP) for heavily infested properties based on IWM principles.	Heavily infested properties have management plans for control works.	LCA's with LM.
4 Update current infestation maps as infestations are treated and reduced.	Maps are updated as infestations reduce.	LCA's
Objective c: Minimise the entry of Serrated tussock into the Riverina, through increasing the community awareness of this weeds impacts.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1 Run extension program targeted at relevant LM and industries based on; outlining the problems this weed can cause; its recognition and; identified IWM options (inclusive of hygiene practices to minimise movement of seed). Ref: National Serrated tussock Strategy Goal 2.3.3	<ul style="list-style-type: none"> <li>– One workshop/field day run within the region annually focusing on identifying the different stages of growth.</li> <li>– LCA &amp; RLPB staff attend at least 3 regional field days (eg Henty)/year.</li> <li>– Five media releases run over plan period.</li> <li>- Personal contact made with LM during inspections, where possible.</li> </ul>	LCA's, RLPBs & E/WRNWAG, All stakeholders

## **7.0 MONITOR AND REVIEW PROCESS**

Being a five year plan, participants meet each autumn (eg mid March) to review previous years activities, check are on track to meet this plans overall aim / objectives / performance indicators. All stakeholders' local plans / worksheets to be presented at this meeting to ensure they are achieving performance indicators outlined in these plans. Should they not be met, without an appropriate explanation, group pressure may be applied to encourage them to be met in future years. Go over planned activities for upcoming season, arrange resource sharing and familiarise each other as to what activities are to be conducted (especially adjoining LCA's). Where appropriate renew plan commitment and discuss Regional Group Project Funding Application for this weed so that it can be developed in time for the May deadline.

Regional coordinator to prepare, in accordance with set guidelines, annual Regional Group Project Report as at June 30<sup>th</sup> for the Noxious Weeds Advisory committee by September 30<sup>th</sup>. The preparation of this report will require all participating LCA's & RLPB's receiving funding for this weed to submit a signed financial statement, outlining funds expenditure, to the coordinator for audit purposes along with a written progress report.

## **8.0 BENEFITS**

This plan is aiming at reducing the potential impact of Serrated tussock across the Riverina. The benefits include:

- Cooperative approach to Serrated tussock control across the Riverina.
- Protection of threatened species and communities
- Protection of uninfested lands
- Increased biodiversity
- Prevention of potential control costs for future land managers
- Maintain/improve productivity of rural industries
- Improved stakeholder network.

Cost savings through preventing this weed from establishing, although difficult to quantify, will be significant. The recent publicity from the Cooma-Monaro region indicates the enormous cost Serrated tussock will have on the community if let go. For economic impacts of Serrated tussock on primary production see "The economics of Serrated tussock in NSW" (Jones and Vere).

## **9.0 RESOURCES**

Agfact: P7.6.29 and P7.6.30. Serrated tussock. Agnote: I75

Agriculture & Resource Management Council of Australia & New Zealand, Australia & New Zealand Environment & Conservation Council and Forestry Ministers, (2000) *Weeds of National Significance Serrated Tussock (*Nassella trichotoma*) Strategic Plan*. National Weeds Strategy Executive Committee, Launceston.

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Noxious Weeds Act 1993, Order No 19, March 2006.

Auld, B.A. & Medd, R.W. (1997). *Weeds: An illustrated botanical guide to the weeds of Australia*. Inkata: Melbourne.

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Ensby, R. (2001) Noxious and Environmental Weed Control Handbook 2001/2002 – A guide to weed control in non-crop, aquatic and bushland situations. Revised edn, Agdex 647, NSW Ag. Original by Hugh Milvain. (1999).

Jones, R.E. & Vere, D.T. (1995) *The economics of Serrated tussock in New South Wales*. Plant Protection Quarterly. Vol 13 (70-76).

Taylor, U. & Sindel, B. (2000) *The Pasture Weed Management Kit – A Guide to Managing Weeds in Southern Australian Perennial Pastures*. CRC for Weed Management Systems.

Michelmore, M. (2003) *The Serrated Tussock Managers' Factpack*, NSW Agriculture.

National Weeds Strategy (Australia)

NSW Weeds Strategy

Parsons, W.T. & Cuthbertson E.G. (2001). *Noxious weeds of Australia*. CSIRO Publishing.

The Western & Eastern Riverina Noxious Weeds Advisory Groups, Weeds Guide Brochures.

New South Wales Agriculture - *Identification of Serrated tussock*

Weeds of National Significance: Weed Management Guide *Serrated tussock – Nassella trichotoma*, Department of the Environment and Heritage and the CRC for Australian Weed Management, 2003

### **DISCLAIMER**

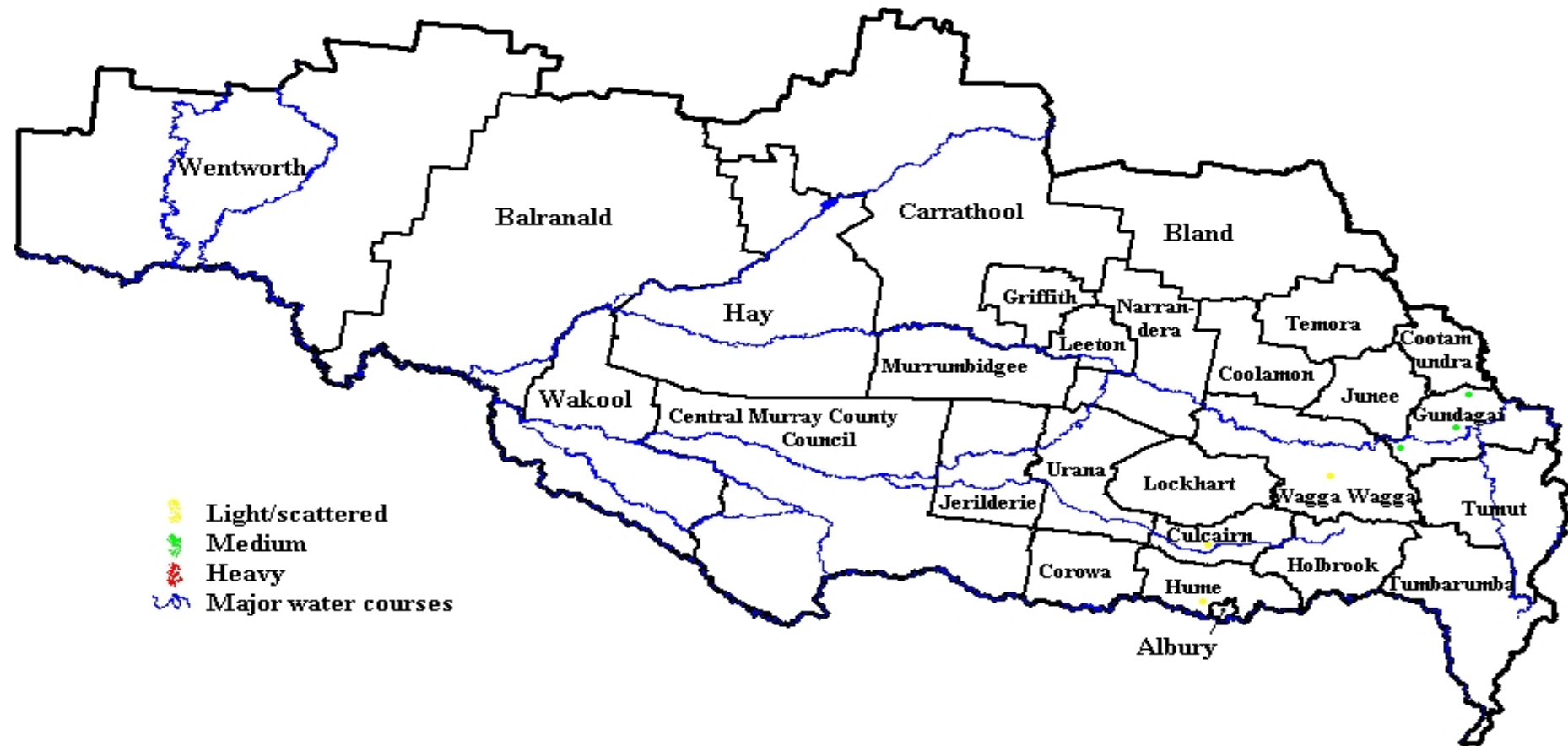
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### **ACKNOWLEDGEMENTS**

The authors wish to thank the stakeholders who assisted with the production of this document. Their contributions have enriched this regional weed management plan.



Appendix 1.



**Figure 1. Area of Greater Riverina Region known to be infested with Serrated Tussock. Level of infestation within this area shown as: light / rare and isolated (weed can be found but is not common), medium / marginal (weed is common but less widely distributed than core area) and heavy / core (weed is widely established).**

Note: Base map derived from data provided by and copyright of Land and Property Information New South Wales. Rivers data is copyright of the Australian Land Information Group (AUSLIG). This general image determined by the regions, LCA Weeds Officers (WO) and RLPB Rangers (R). Generally, weed distribution remains similar on LCA and RLPB managed lands.