

REGIONAL WEED MANAGEMENT PLAN

1.1	PLAN TITLE: SERRATED TUSSOCK CONTROL IN THE NEW ENGLAND AND NORTH WEST REGIONS OF NSW
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1.2 PLAN PROPONENTS	
Regional Weeds Advisory Committee:	Northern Inland Weeds Advisory Committee
Address:	c/- New England Weeds Authority, PO Box 881, ARMIDALE NSW 2350
Contact Person:	James Browning - District Weeds Officer
Telephone Number:	02 6771 1700
Facsimile Number:	02 6771 1893
E mail address:	netcc@northnet.com.au
Signature: Chairman	Date: Submitted 30th Oct, 2004

1.3 NAME OF PLANT(S)	WONS	YES
Botanical name(s): <i>Nassella neesiana</i>	Serrated Tussock	

1.4 PLAN PERIOD (not to exceed five years)			
Starting date:	1 st July 2005	Completion date:	30 th June 2010

1.5 AREA OF OPERATION

This plan covers the area of the Northern Inland Weeds Advisory Committee (NIWAC) and the adjoining Bellingen Shire as indicated on the map. Although NIWAC covers approximately 100000 km², this plan only applies to the tablelands and parts of the slopes where Serrated Tussock is a problem.

- 1.6 AIM**
- TO REDUCE THE RATE OF SPREAD OF SERRATED TUSSOCK AND PREVENT IT FROM SPREADING TO ITS POTENTIAL RANGE.**
- 1.7 OBJECTIVES**
1. Prevent the spread of Serrated Tussock to areas that are not currently infested.
(Desired outcome: No new infestations of Serrated Tussock identified in the five years from 2005 to 2010)
 2. Eradicate rare and isolated infestations of Serrated Tussock on private and public land by December 2010.
 3. Reduce existing infestations on private and public land by at least one infestation category per property by July 2010. *(Desired outcome: Infestations on private property reduced in both size and density which, in turn, reduces the number of seeds produced).*
 4. Landholders on the New England Tablelands to consider Serrated Tussock as the number one threat to production and the natural environment. *(Desired outcome: Increased awareness of the threat to agriculture and natural ecosystems.)*

2. STAKEHOLDERS

2.1 Signatories - organisations committed to the objectives/performance measures of this plan

- Armidale RLPB (ARLPB)
- Bellingen Shire Council (BSC)
- Glen Innes Severn Council (GISC)
- Gwydir Shire Council (GwSC);
- Inverell Shire Council (ISC);
- Narrabri Shire Council (NSC)
- New England Weeds Authority (NEWA)
- Tenterfield Shire Council (TSC)

All of these Local Control Authorities (LCAs), apart from Bellingen Shire Council, are in the NWIAC region. These stakeholders contributed to the plan via a regional planning workshop and were given various opportunities for input. Not all of these stakeholders necessarily have Serrated Tussock in their area. Those that do not currently have this weed are involved in the plan because they are committed to keeping their area free of Serrated Tussock.

2.2 Other stakeholders - interested parties consulted as part of this planning process.

- Northern New England RLPB

All LCAs and RLPBs in the NIWAV region were invited to participate in the planning process. Those who chose not to do so because they either do not have Serrated Tussock and/or do not consider it as a potential threat in their area.

3 BACKGROUND

3.1 Reason for this plan

Serrated Tussock is considered to be Australia's worst pasture weed. It dominates pastures and invades natural areas, forming dense swards that eventually eliminate other native and introduced species. Identification is extremely difficult and, once established, Serrated Tussock is difficult to eradicate.

Over the last five years awareness of the threat from Serrated Tussock has improved considerably. Much of this is credited to the efforts of LCAs on the tablelands and, in particular, to the employment of a Serrated Tussock Project Officer; a joint initiative of the New England Weeds Authority and the Southern New England Landcare Coordinating Committee (SNELCC). A continued, coordinated regional approach is required to maintain the momentum already established and to ensure that Serrated Tussock continues to be considered as the number one threat to agriculture and the environment on the tablelands.

3.1.1 Description of the problem

Serrated Tussock is originally from South America. It invades various land types, tolerates lower fertility soil, fire, drought and frost. Serrated Tussock is difficult to identify, has low feed value, seeds prolifically, seed is readily dispersed by wind and it is listed as a Weed of National Significance (WONS).

Current and potential impact of the problem

Before the late 1900s Serrated Tussock was not well known on the New England tablelands and was believed to be practically non-existent in the NIWAC region. However, the potential for spread is huge and the economic implications massive. Serrated Tussock is considered to be one of the few weeds on the northern tablelands that could force people off their property. The potential impact of the weed would be an overall increase in weed densities within the area resulting in the degradation of both farmland and conservation areas due to Serrated Tussock's ability to produce large quantities of wind-borne seed displace existing grass species.

3.2 The do nothing scenario

Doing nothing is not considered an option for Serrated Tussock in this region. There is huge potential for further spread, with serious impacts on both economic production and the environment. If not policed, smaller properties would provide a seed source that would infest/re-infest adjoining areas and increase pressure on existing control programs. Serrated Tussock is moving in an easterly/northerly direction, due to the influence of the prevailing winds. Control must be enforced to prevent this weed from infesting the eastern escarpment areas where it would be extremely difficult—if not impossible—to control. As most of the escarpment region is native areas, conservation values and biodiversity would be seriously threatened.

3.3 Distribution - where it occurs.

In our region Serrated Tussock is limited to the tablelands. LCAs generally have an excellent understanding of where it occurs in their region. The table below summarises the extent and impact for each LCA.

Organisation	Extent
Armidale RLPB	Light infestations found on some reserves in close proximity to Armidale with one medium level infestation on Saumarez Reserve, south-west of the City
Bellingen Shire	No infestations of Serrated Tussock at present.
New England Weeds Authority	Almost 20% of the LCA has Serrated Tussock. Core/heavy infestations occur to the south and south east of Armidale in the Kelly's Plains region, with marginal/moderate infestations between Armidale and Wollomombi to the east. There are also scattered and rare/isolated infestations between Guyra and Ebor, Guyra and Inverell and around Uralla and Walcha. Light infestations are also found on National Parks on the outskirts of Armidale.
Severn Shire Council	Less than 1% of Severn Shire has Serrated Tussock with no infestations on rural roads. There are a few small outbreaks on roads in and around Glen Innes and one on the local racetrack.
Tenterfield Shire	Infestations are limited to 3 or 4 properties.

The attached regional map shows the general location of infestations across the region.

3.4 Biology

Flowers - in a delicate, open branched panicle to 35 cm, major branches in pairs, becoming expanded only at maturity. Sometimes purple, September to December.

Seeds - 1.5 mm long enclosed in a pair of reddish-brown or purple bracts 6-10 mm long. Basal tufts of hair and terminal twisted awn about 25mm long. The awn is offset where it is attached to the seed. Seedheads droop and touch the ground when seeds are ripe, then break-off and are dispersed by wind, livestock, etc.

Leaves - in dense tussocks, dropping at maturity, tightly rolled, to 0.5mm x 0.5mm diameter. Leaves are finely serrated, with white bases.

3.5 Method and rate of spread

Method of spread

Serrated Tussock is spread by wind, water, animals (external and internal), humans (clothing), machinery, hay, dumped garden waste and contaminated soil. It is occasionally dug up and transplanted in gardens as an ornamental plant. Stock will excrete viable seeds 6 or more days after eating.

Current rate of spread

When the original Serrated Tussock plan was prepared in 2000 the levels of infestation varied considerably throughout the region. At the lower end of the scale, single plant infestations were the most common, followed by fewer infestations in the range of from 8-10 plants and a small number of properties with small patches. About 8 to 10 properties were reported as having heavy infestations, two of which covered up to 150 ha. The heaviest concentration of infestations was reported in the Armidale area.

Populations in Glen Innes Severn Council area and Tenterfield Shire are gradually decreasing. In the NEWA area Serrated Tussock is not necessarily spreading but more infestations have been found in the past two years. This is attributed to increased landholder awareness.

3.6 Species management

Reducing the amount of seed is an important part of reducing the spread of Serrated Tussock. The best time to control is from mid-July to the end of September when plants are easily spotted and before seedheads form.

Chemical - Herbicides used to control Serrated Tussock include: Fluproponate 745 g/L (various trade names PER 4638), Glyphosate 360g/L (various trade names, PER 6675) and Roundup Biactive. *For further information on application and rates refer to Noxious and Environmental Weed Control Handbook 2004-2005.*

3.7 Key land managers

Private landholders - most infestations are on private land so, ultimately, private landholders are responsible for managing existing infestations and minimising the further spread of Serrated Tussock.

Local Control Authorities - Councils and County Councils have an important role in locating and monitoring infestations, raising awareness of the threat posed by Serrated Tussock and providing advice on best management practice and control methods.

Landcare - the Landcare network on the tablelands, coordinated through the SNEELCC, has played a pivotal role in improving awareness of Serrated Tussock.

4. REGULATORY SITUATION

4.1 Current declaration

Serrated Tussock is declared as a W2 weed in the following LCAs: Central Northern County Council, New England Weeds Authority, North West Weeds, Glen Innes Severn and Tenterfield Shires.

4.2 Declaration changes

There are no declaration changes.

5 CONSIDERATIONS & OPPORTUNITIES.

5.1 Financial support to carry out the plan

All stakeholders listed in this plan will contribute a significant proportion of their own funds towards implementing this regional plan. Department of Primary Industries noxious grant funding will also be accessed. However, given the limited nature of these funds, it is expected that this will only account for a small percentage of total expenditure to implement this plan.

The Action Plan section of this plan indicates the funding source for specific actions.

5.2 Links to other strategies

This plan is consistent with the National Serrated Tussock strategy in that it aims to reduce the impact of Serrated Tussock and prevent its spread and establishment.

This Plan forms part of the NIWAC Regional Strategy which provides an overall framework for coordinating weed management in our region.

The strategies and actions in this plan also contribute to many of the desired outcomes in the State Weeds Strategy.

The inspection and extension activities associated with this Serrated Tussock plan will—in the main—be combined with the normal LCA inspection and coordination program.

5.3 Barriers and contingencies

Barriers restrict what can be done and how. Identifying these barriers is the first step to overcoming them. The main barriers to managing Serrated Tussock are:

- A. Difficulty in identification; and
- B. Poor appreciation of the potential impact of Serrated Tussock

ACTION PLAN

FURTHER EXPLANATION OF OBJECTIVES AND HOW THEY MEET THE SMART CRITERIA

OBJECTIVE 1: Prevent the spread of Serrated Tussock to areas that are not currently infested

(Desired outcome: No new infestations of Serrated Tussock identified in the five years from 2005 to 2010)

OBJECTIVE 2 Eradicate rare and isolated infestations of Serrated Tussock on private and public land by December 2010.

(Desired outcome: All small infestations totally removed by 2010)

Participating stakeholders believe that this is a realistic objective given the number of these infestations in the region. Eradicating these small infestations will significantly reduce the seed bank, hence, limiting the spread of Serrated Tussock.

OBJECTIVE 3. Reduce infestations on private and public land by at least one infestation category by July 2010.

(Desired outcome: Infestations on private property reduced in both size and density which, in turn, reduces the number of seeds produced).

This is seen as the best outcome for all infestations other than small, isolated ones as specified in objective 2. This is also considered to be a realistic and achievable aim given the difficulty in controlling Serrated Tussock once it has established. In these situations, any reduction in the size of the infestation and/or the density of plants should be seen as a positive outcome.

Objectives 1, 2 and 3 are all measurable. All LCAs in the NIWAC region have a standard approach for recording infestations on private property. This involves recording the number of hectares infested and the infestation category. The infestation category is based on the severity/degree of infestation, expressed as either 1 (scattered individual plants) 2 (scattered patches with isolated plants) or 3 (large, dense infestations) and the extent/% of property infested, expressed as either High (over 20% of the property infested) Medium (5 - 20% of the property infested), Low (1-5% of the property infested), Rare/Isolated (less than 1% of the property infested) or Not Found. The attached table explains these categories and shows the relevance of this approach for monitoring outcomes.

OBJECTIVE 4...Landholders on the New England Tablelands to consider Serrated Tussock as the number one threat to production and the natural environment.

(Desired outcome: Increased awareness of the threat of Serrated Tussock to agricultural and natural systems.)

Given the previous extensive awareness campaign, and the potential impacts, this objective is seen as both achievable and realistic within the life of the plan. However, this will require a significant degree of coordination and commitment from all stakeholders.

SURVEILLANCE & MONITORING STRATEGY & ACTIONS

RELATED OBJECTIVES: To prevent the spread of Serrated Tussock to areas that is not currently infested

Eradicate rare and isolated infestations of Serrated Tussock on private and public land by December 2010.

Reduce Serrated Tussock infestations on private and public land by at least one infestation category per property by July 2010.

Surveillance is important to gain a better understanding of the extent and impact of the problem, to monitor any changes in the situation, identify any new outbreaks and allow for early intervention. Without this feedback it is impossible to know if the situation is improving or getting worse and to decide how to best direct resources to meet the plan aims and objectives.

				While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by			
NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
1.	Determine risk areas and inspect private properties on a programmed basis.	All properties inspected at least triennially. At least one inspection of affected properties each year.	LCAs	All private land and all levels of infestation	Ongoing	ESSENTIAL	LCA/Grant funds.
2.	Conduct surveillance on all public land including roadsides and TSRs.	All roads inspected twice annually	LCAs, RLPBs State government agencies	All public land incl. roadsides and TSRs	Ongoing	ESSENTIAL	Individual LCA and RLPB funds.
3.	Prepare an annual infestation report to monitor changes in the number of infestations, their density and extent.	Regional infestation report produced annually, based on input from individual organisations.	Each LCA and RLPB Collated by Regional Plan Coordinator or Plan Author.	all areas	June annually	ESSENTIAL	

MANAGEMENT AND CONTROL STRATEGIES

RELATED OBJECTIVES: To prevent the spread of Serrated Tussock to areas that are not currently infested

Eradicate rare and isolated infestations of Serrated Tussock on private and public land by December 2010.

Reduce Serrated Tussock infestations on private and public land by at least one infestation category per property by July 2010.

Smaller isolated infestations of Serrated Tussock can be controlled but once established, Serrated Tussock is extremely difficult to eradicate. In these situations a different approach may be needed to reduce the size and density of larger infestations.

				While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by			
NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
4.	Treat all infestations on all public land including roadsides and TSRs.	Known areas of Serrated Tussock on all public land controlled twice annually. Rare/isolated infestations eradicated by July 2010 No new infestations on public land.	LCAs RLPBs State government agencies	All public land incl. roadsides and TSRs	Ongoing - twice annually	ESSENTIAL	Group Project grant funds
5.	Enforce control of all Rare & Isolated infestations.	A reduction in the number of these infestations.	LCAs to enforce compliance by landholders.	All private Property	July-October	ESSENTIAL	Landholders
6.	Enforce control measures of all infestations heavier than above. Use property management plans to assist in producing long-term outcomes.	An annual reduction in the extent and/or severity of these infestations.	LCAs to enforce compliance by landholders.	All private Property	Ongoing in line with individual management plans.	ESSENTIAL	Landholders.

EXTENSION & AWARENESS STRATEGY

Related objectives: Farmers on the New England Tablelands to consider Serrated Tussock as the number one threat to production and the natural environment.

Larger landholders in the Armidale area can now readily identify Serrated Tussock and, where applicable, have adopted management programs to maintain current low levels of infestation. Regular property inspections have shown that Serrated Tussock has not spread beyond known areas in the last five years; this is largely due to the high-level of extension activities aimed at early intervention. However, smaller landholders (hobby farmers) still find identification and control very difficult. The constantly revolving consumer base on these smaller properties also supports the need for ongoing awareness and extension activities.

NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by							
7.	Prepare and distribute up to date information on identification, control and management.	Information prepared and distributed.	Relevant LCAs	All areas and infestations levels	Ongoing	ESSENTIAL	LCA funds
8.	Use existing events and venues to promote Serrated Tussock management and identification.	At least 2 extension activities per year/per LCA.	LCAs in conjunction with Landcare and other relevant groups	All areas and infestations levels	Best time to control & identify	HIGHLY DESIRABLE	LCA and RLPB funds
9.	Target farm produce sellers / farmer groups to increase awareness of the risk of spreading Serrated Tussock from contaminated fodder.	At least 2 extension activities per year/per LCA.	Relevant LCAs and RLPBs	All areas and infestation levels	Ongoing	HIGHLY DESIRABLE	LCA and RLPB funds
10.	Secure funding to employ a part time Serrated Tussock Project Officer.	Funding secured and Project Officer employed by December 2005.	NEWA to coordinate in association with interested LCAs	To be based with NEWA in Armidale	By December 2005	HIGHLY DESIRABLE	CMA EnviroTrust

7 MONITORING & REVIEW PROCESSES

Each stakeholder will be required to report against performance indicators at least annually. Stakeholders will also be required to provide regular updates on the infestations in their area, using a format that is endorsed by NIWAC. These reports will include details of spraying activity and results from inspections including the number of properties inspected, number of infested, the hectares infested and the type of infestations.

Individual reports will be collated into an annual regional infestation report. This regional report will be used to monitor outcomes and to assess if the weed problem has improved or worsened. An example of the annual infestation report is included on page 18. These annual reports will be prepared by either the plan author/lead organisation or the Regional Plan Coordinator.

Stakeholders will also be encouraged to use NIWAC meetings to report on any regionally significant issues.

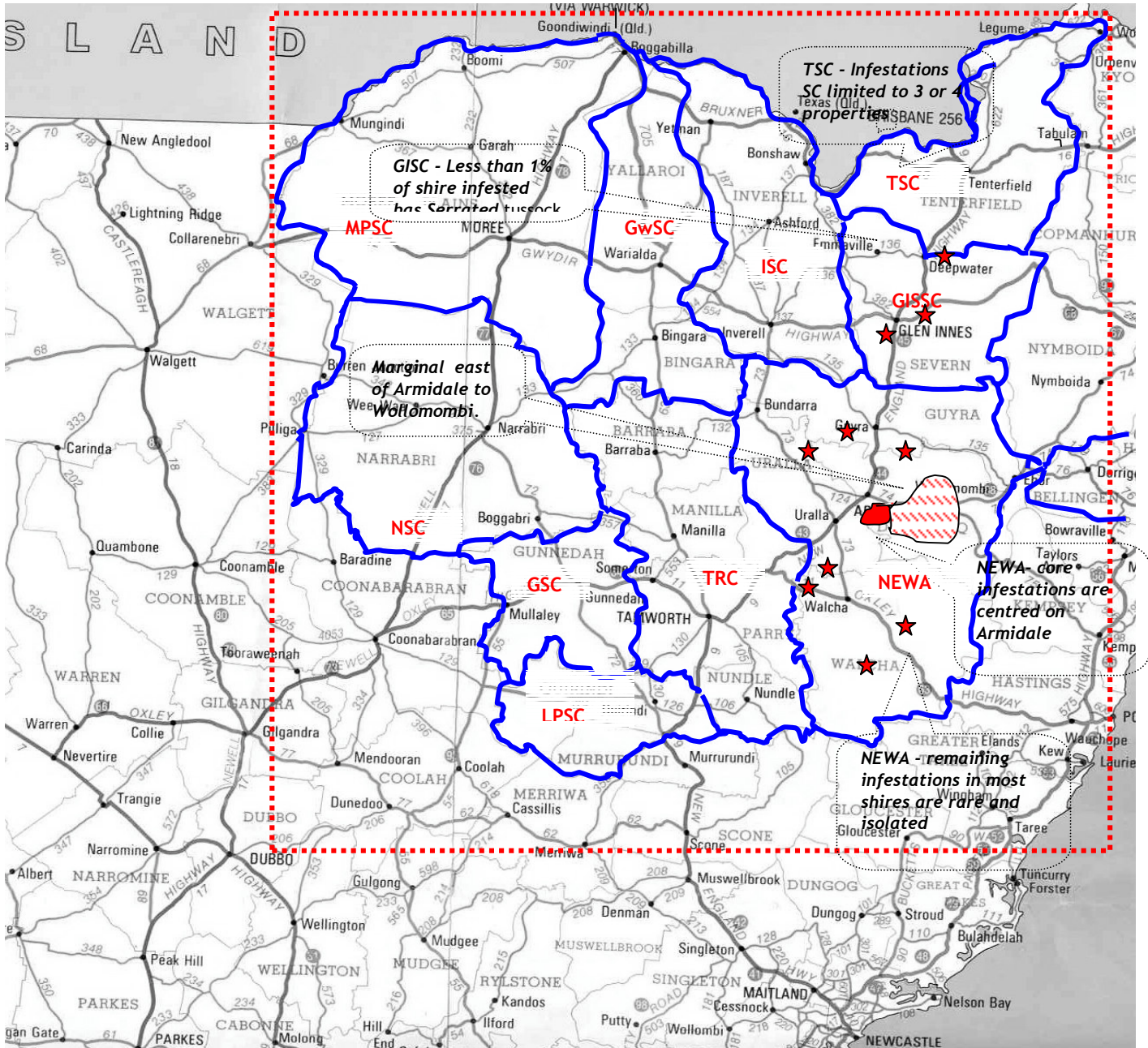
8. BENEFITS

- As most of the NIWAC region is currently free of Serrated Tussock, implementation of this plan will help to minimise any further spread and associated economic and environmental impacts
- This plan will provide a focus for a coordinated and cooperative regional approach between all land managers.
- By informing the public about the threat of Serrated Tussock, and motivating them to keep it off their properties, this plan represents one of the best bets for controlling Serrated Tussock in the region.
- The involvement of LCAs that do not currently have Serrated Tussock will effectively provide a buffer between clean and infested areas in our region and adjoining coastal catchments.
- As serrated tussock is such a mobile weed, controlling it benefits land managers and the broader community.

9. RESOURCES

- Namoi/Gwydir and New England Noxious Plants Advisory Committee (2000) Original Serrated Tussock Control Plan
- NSW Agriculture (2004) Noxious and Environmental Weed Control Handbook 2004-2005
- National Strategy for Serrated Tussock
- State Weeds Strategy (1998)

REGIONAL WEED MANAGEMENT PLAN - SERRATED TUSSOCK (UPDATED NOVEMBER 2004)
 GENERAL LOCATION/ACTON OF SERRATED TUSSOCK IN THE NIWAC AREA



Note: Infestations not to scale. This map provides an overview of the location and general extent of Serrated Tussock.

KEY

CODE

- | | | | |
|------|--------------------------------|------|-----------------------------|
| | LCA Boundaries | | NIWAC regional boundary |
| BSC | Bellingen Shire Council | MPSC | Moree Plains Shire Council |
| GIMC | Glen Innes Severn Council | NSC | Narrabri Shire Council |
| GSC | Gunnedah Shire Council | NEWA | New England Weeds Authority |
| GwSC | Gwydir Shire Council | TRC | Tamworth Regional Council |
| ISC | Inverell Shire Council | TSC | Tenterfield Shire Council |
| LPSC | Liverpool Plains Shire Council | | |
| | Rare/isolated infestations | | |

**ANNUAL INFESTATION REPORT
SERRATED TUSSOCK - JUL 2004**

	HIGH (H)						MEDIUM (M)						LOW (L)						Less than 1% of property infested	TOTALS H + M+ L + R/I		PUBLIC LAND				
	more than 20% of property infested						Between 5 and 20% of property infested						Between 1 and 5% of property infested													
	H1		H2		H3		M1		M2		M3		L1		L2		L3		L		R/I		No	ha	Km	Ha
	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	Ha	No	ha	Km	Ha
BSC																							0	0		
NEWA	7	1053	6	212	1	117	6	125	4	65			21	311	13	358					41	85	99	2326	11	25
GISSC																							0	0		
TSC																			2	5			2	5		
ALPB					42	5057																	42	5057		
TOTALS	7	1053	6	212	43	5174	6	125	4	65	0	0	21	311	13	358	0	0	2	5	41	85	143	7388	11	25

This table shows the number of infestations and their infestation category for each LCA and RLPB participating in this plan. The attached matrix explains the categories.

These figures are based on information provided by each organisation. LCA figures are gathered during property inspections. These figures can be used to monitor changes in:

- The number of properties infested (in total, by infestation category and by organisation/area) ;and
- The number of hectares infested (total, by infestation category and by organisation).

**NIWAC INFESTATION MATRIX
USED TO CLASSIFY WEED INFESTATIONS**

			EXTENT				
			Estimated % of total property area (hectares) infested.				
			HIGH	MEDIUM	LOW	RARE/ISOLATED	NOT FOUND
			Over 20 % of the property infested with either one or all of the degrees of infestation	Between 5% and 20% of the property infested with either one or all degrees of infestation	Between 1 and 5% of the property infested with either one or all degrees of infestation	Less than 1% of the area of the property infested with Class 1 or Class 2, or a mixture of the two.	Not found
SEVERITY OR DEGREE	Scattered individual plants	1	H1	M1	L1	R1	NF
	Scattered patches with isolated plants interspersed	2	H2	M2	L2	R2	
	Large, dense infestations	3	H3	M3	L3		