

REGIONAL WEED MANAGEMENT PLAN

1.1 PLAN TITLE: Groundsel Bush Regional Management Plan

1.2 PLAN PROPONENTS

Regional Weeds Advisory Committee: Southern Tablelands & South Coast Noxious Plants Committee

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Signature: Chairperson:

Date:

1.3 NAME OF PLANT(S)

WONS Y/N

No

Botanical name(s): *Baccharis halimifolia* Common name(s): Groundsel Bush

1.4 PLAN PERIOD

Starting date: 1st July 2002

Completion date: 30th June 2007

1.5 AREA OF OPERATION: Southern Tablelands & South Coast Region

1.6 AIM: To aggressively and progressively reduce the distribution and abundance of Groundsel bush so that it is totally removed from the region

1.7 OBJECTIVES:

1. To eradicate (*i.e.* above ground biomass) all rare & isolated infestations
2. To contain and reduce by 75% all marginal infestations
3. To prevent the establishment of core infestations
4. To improve awareness of the species' threat potential in the Region
5. To encourage community reporting of new infestations and limiting of weed spread
6. To develop strategic control across land tenure
7. To ensure adequate follow-up and rehabilitation occurs where the species has been controlled
8. To introduce regulation in LCAs where the species may establish and is not currently declared
9. To distribute ecological and control technique information on the species

2.0 STAKEHOLDERS

2.1 Signatories

The following organisations have signed an agreement to implement the Plan:

NSW Agriculture
Councils of the South Coast

2.2 Other Stakeholders

The following organisations have been involved in the planning process, either through notification or actual participation:

NSW National Parks and Wildlife Service
NSW State Forests
Department of Land and Water Conservation
Environment Australia (Booderee National Park)
Environment ACT
Aboriginal Land Councils
Catchment Management Boards
State Rail Authority
Roads and Traffic Authority
Nursery Industry Association
National Farmers Association
Landholders / Dairy Farmers / Cattle Producers
Landcare
Coastcare
Navy

3.0 BACKGROUND

3.1 Reason for Plan

Groundsel bush has not reached its potential range in the Region. It is frost tolerant, and occurs in winter snowfall areas in its native North America. Consequently it is likely that the species will spread inland and to colder climates in Australia, especially where the habitat is favourable (NSW Agriculture undated).

At present, Groundsel bush is found only in the Illawarra and Shoalhaven LCA areas of the Region. However, the species has a considerable capacity to spread: each plant can produce over 1.5 million seeds every year (NSW Agriculture undated) and seeds can be wind dispersed considerable distances. A lack of available identification skills and education programmes in the Region means the species has potential to go unnoticed and quickly spread to presently clean areas.

Null hypothesis: If control works are not undertaken for Groundsel bush in the next five years, the species is likely to extend its current distribution and disperse south both along the coast and inland at least to the hinterland. The species has potential to invade coastal swampland, grazing land and forestry areas in the Region thus degrading the environmental, agricultural, economic and community values in infested areas. If control works are not carried out as a priority, the opportunity to ultimately remove this weed from the Region will be lost. At present, costs associated with prevention and control are relatively small and a lack of immediate action will result in major control costs being incurred in the future.

3.2 Description of the problem

Groundsel bush is not widespread throughout the Region at present, however it is a major weed in areas of Queensland and Northern NSW. The following table details the potential impacts if Groundsel bush became an established weed species in the Region.

Sector affected	Impacts of Groundsel bush
Agricultural	<ul style="list-style-type: none"> • lacks value as stockfeed and may actually be poisonous to stock. Heavy infestations may greatly reduce the carrying capacity of agricultural land • adversely affects silviculture operations as invasion may occur after logging in forestry areas and throughout coastal pine plantations • Forms dense, impenetrable thickets restricting livestock movement
Environmental	<ul style="list-style-type: none"> • outcompetes native species, quickly forming a canopy and excluding native seedlings. It is shade tolerant and can grow and produce seed under heavy canopies • tolerates waterlogged, acid, saline conditions and may threaten remaining coastal swamp, salt marsh and wetland communities • dense thickets restrict native fauna movement and may remove habitat
Community	<ul style="list-style-type: none"> • compromises the aesthetic and intrinsic value of natural ecosystems • reduces the tourism value of infested areas • research indicates a link between Groundsel bush and allergic and asthmatic conditions
Economic	<ul style="list-style-type: none"> • costs are incurred both in terms of time spent on control of the species and materials and resources necessary for control programmes

Refer to section 5.5 (Barriers and contingencies) for identification of risks that exist which may limit the achievement of stated outcomes.

3.3 Distribution of infestations

Groundsel bush is distributed throughout the north and central coast of NSW and in south-eastern Qld (Auld & Medd 1992). The species currently is restricted to coastal areas in the Region and appears to be spreading southward.

The primary infestation is located around Lake Illawarra and North Wollongong (Puckeys Estate) with isolated infestations recently found on Comerong Island at the mouth of the Shoalhaven River (Bush & Land Care Services 2001) and at North Batemans Bay (Harding pers. comm. 2002) (refer to Map 1). The isolated infestation in the Eurobodalla Shire is not mapped as individuals have been removed, although the area must be reassessed to determine if further plants have established (Harding pers. comm. 2002).

3.4 Weed biology / ecology

Groundsel bush is a densely branched shrub to 3m high. Plants generally flower in their second year of growth. Seed is released in autumn and the white pappus on seeds of female plants gives them a characteristic fluffy appearance. Seeds generally germinate in autumn/winter. An individual may produce over 1.5 million seeds every year. Approximately half of the seed falls within about 100m of the parent bush and form dense, impenetrable stands.

Groundsel bush is a coloniser and invades areas such as poorly drained coastal swamps, waterlogged, acid and saline soils, newly cleared land, disturbed areas, overgrazed land and sometimes dense pasture (NSW Agriculture undated).

3.5 Method and rate of spread

Groundsel bush propagates via seed: seeds may be windborne or spread by water, vehicles or machinery. Seeds germinate readily following rainfall (NRM 2001), however, if buried, seed may survive for at least 2 years (Ensbey pers. comm. 2002).

Dispersal of seed by wind is difficult to control. Mature infestations as well as propagules should be the focus of control programme. Flowering and hence seed dispersal may be suppressed using slashing. However, as Groundsel bush is a perennial woody plant with subterranean basal buds, slashing (or burning) will rarely kill plants and may stimulate regrowth (NRM 2001).

3.6 Roles and responsibilities of land managers

All agencies must cooperate in the control of Groundsel bush as it is capable of invading all land tenure, however, involvement in the Regional Plan by the following land managers is considered critical to the success of the Plan:

NSW National Parks & Wildlife Service (Comerong Island Infestation and potential in other Reserves)

State Forests of NSW (various coastal forests)

Coastal Local Control Authorities (primary infestations in Illawarra and Shoalhaven, but all are vulnerable)

Private landowners (particularly in coastal areas, at present)

MAP TO BE INSERTED HERE

4.0 LEGISLATIVE SITUATION

4.1 Current declaration

Groundsel bush is currently declared a W2 noxious weed under the *NSW Noxious Weeds Act 1993* in the Illawarra District Weeds Authority area (Wollongong, Shellharbour and Kiama Councils) only, refer to Appendix 1.

4.2 Declaration changes

It is proposed that Bega Valley, Eurobodalla and Shoalhaven City Councils seek a W2 declaration for the species, refer to Appendix 1.

5.0 CONSIDERATIONS AND OPPORTUNITIES

5.1 Opportunities to be exploited

Funding sources to be investigated include:

- Noxious Weed Grant scheme for control on Council and RLPB land and education/extension programs (administered through NSW Agriculture)
- Grants to Landcare, Rivercare and Bushcare groups that meet objectives of Catchment strategies and Natural Heritage Trust
- CRC for Weed Management Systems
- NSW Government where weed occurs on crown land e.g. funding for NSW NPWS to control on Comerong Island and DLWC funding for vacant Crown Land
- Council mediated environmental levy to address environmental weeds such as Groundsel bush in LCAs where the species is problematic.

Joint ventures may be pursued through:

- Joint control / funding efforts between private landowners, Local Government and State Government e.g. NSW National Parks and Wildlife Service
- Involvement in industry development of biological controls (disease rather than insects) for Groundsel bush (CSIRO and CRC for Weed Management Systems) through provision of trial sites

No specific agreements have been reached on the above opportunities, however given the threat potential, the Plan recommends their investigation.

5.2 Species management

A combination of chemical, mechanical, biological, rehabilitation, grazing management, pasture improvement and biological control (NSW Agriculture undated) may be required to reduce the spread and impact of Groundsel bush in the Region. Refer to NSW Agriculture (undated) for information in the above control measures.

A number of insects have been introduced to Australia as biological control agents for the species. However, these insects have had little or no success in controlling Groundsel bush infestations. Plant diseases are now being studied and a rust fungus (*Puccinia evaders*) has been introduced in Queensland (NRM 2001). The presence of biocontrol agents does not relieve landholders of their obligations under the *Noxious Weeds Act 1993*.

5.3 Extension and education

An effective extension and education programme is essential to the success of Groundsel bush control as the potential of the weed is not well understood in the Region and is generally perceived as a weed of Queensland and northern NSW. Awareness and prevention is vital in stopping the weed becoming established in the Region.

The following extension and education programmes are proposed:

- Include Groundsel bush awareness sessions (and control where appropriate) in field days in coastal LCAs.
- Approach regional television programmes (e.g. Landline or community segments) to run a story about Groundsel bush including identification features, threat potential in southern regions, existing impacts in northern regions and control techniques;
- Alert Landcare, Coastcare, and Friends groups in the Region to the threat potential of Groundsel bush via a letter and accompanying pamphlet detailing identification features, ecology, threat potential, control techniques and contact details for notification;
- Publicise the threat potential of the weed in affected councils during Weedbusters Week (printed media and radio);
- Seek local coastal user groups support (e.g. Surf Riders, surf and sailing clubs) to report new infestations.

5.4 Links to other strategies

All direct funding proposals and priorities for the Groundsel bush Regional Plan will support the goals of the NSW Weeds Strategy and the Regional Weeds Strategy.

Land management agencies such as the NSW NPWS and State Forests of NSW may have weed control plans or weed management strategies as part of other management plans for specific areas. Representatives from the above agencies have provided input for this Plan.

In addition the Plan conforms with the following strategies:

- NSW Weeds Strategy
- NSW Agriculture Corporate Plan 2001/2004
- Catchment Management Board plans (e.g. Southern Catchment Management Board Blueprint 2001)

5.5 Barriers and contingencies

The following barriers may limit the success of Groundsel bush control programmes. These barriers have been addressed by specific actions in Section 6 below:

- Landholders may not have the skills, motivation, money or infrastructure to control Groundsel bush (Action 5 and Action 8)
- Perception by some landholders / managers that Groundsel bush is not problematic in the Region (Action 5 and Action 8)
- Removal of Groundsel bush infestations without land rehabilitation may promote reinvasion by Groundsel bush propagules and other highly invasive weed species (Action 4 and Action 9)
- The *Pesticides Act 1999* makes it an offence to harm off-target species. Consequently, appropriate practices are required to minimise risks of off-target effects. Practical application of the legislation is also unclear (Action 10)

The following contingency cannot be overcome in Groundsel bush control:

- Wind dispersal of seeds means that it is impractical to attempt to use quarantine and hygiene methods as a major form of control

6.0 ACTIONS AND PERFORMANCE INDICATORS

Current actions associated with the control of Groundsel bush include onground control works undertaken by Council and information brochures and field days on the threat potential and ecology of the species.

Proposed actions for control of Groundsel bush during the period 2002 - 2007 are given below. As a general principle, rare and isolated infestations should be given priority, followed by marginal infestations (no core infestations have been established). However, it is important to continue strategic control in areas mapped as marginal (refer to Appendix 2) as per actions listed below. Actions flagged with an asterisk (*) are considered essential components of the plan.

ACTION		Performance indicator	Who is to be responsible (add others involved)	Objective number
Mapping				
1	a) Update mapped information (preferably on GIS) at least every second year	a) Maps updated at least every second year	ST&SCNPC: all composite land management agencies	1-8
Strategic response				
2*	Rare and Isolated populations a) All known rare and isolated infestations eradicated ^{*1} b) All locations where rare and/or isolated populations have been eradicated ^{*1} are inspected annually for at least five years after removal and then every second year for the next six years c) Any new infestations are eradicated ^{*1} within 1 year of detection	a) Currently known rare and isolated infestations eradicated ^{*1} by July 2006. At least 20% of this work to occur each year and verified through annual reports b) Annual reports indicate inspections occurred annually for five years after removal then biennially for six years c) New infestations eradicated ^{*1} within 1 year of detection.	Affected LCAs (ST&SCNPC David Pomery)	1
3*	Marginal populations a) All known marginal infestations contained and reduced b) Where appropriate, rehabilitate areas within 1 year of control work	a) All known marginal infestations reduced by 75% by July 2006. At least 20% of this work to occur each year and verified through annual reports b) Rehabilitated occurred within 1 year	Affected LCAs (ST&SCNPC David Pomery)	2, 3
4	a) Where local action plans exist, they are reviewed based on actions detailed in this plan	a) Local action plans reviewed by December 2002	ST&SCNPC, (David Pomery)	2, 3 6 & 7
Prevention, regulation and rehabilitation				
5	a) Seek declaration as a W2 noxious weed in coastal LCAs (see Section 4.2 above)	a) Groundsel bush declaration approved	Coastal LCAs, DoA	8
6	a) Liaise with Coastcare groups where necessary to promote rehabilitation of native ecosystems following Groundsel bush control works in rare/isolated and marginal areas.	a) Letter sent to Coastcare groups in Groundsel bush affected areas by July 2003.	ST&SCNPC and NPWS (Landcare, Coastcare)	4 & 6

ACTION		Performance indicator	Who is to be responsible (add others involved)	Objective number
Training, education and extension				
7	a) Training for Weeds Officers and agronomists in species identification	a) 100% of Weeds Officers and DoA Agronomists in the Region distinguish Groundsel bush by March 2003 (tie in with Chilean needle grass ID session)	DoA, Council Weeds Officers	4
8*	a) In affected and potentially affected LCAs, information on identification, impacts and control of Groundsel bush to be disseminated at field days b) Joint field days between LCAs may be appropriate in some situations.	a) At least one field day per year in each coastal LCA (or combined LCAs) over next 5 years include Groundsel bush education and extension.	Coastal LCAs, DoA	4, 5
9	a) Promote methods of reducing off-target mortality at field days and in information brochures	a) Methods of reducing off-target mortality during weed control are specifically addressed at all field days during 2002-2007. Groundsel bush brochures include methods of reducing off-target mortality	LCAs, DoA	9
10	a) Seek support from coastal user groups (e.g. Surf Riders, Coastcare groups, surf clubs and sailing clubs) to report new infestations of this and other emerging weeds. Send appropriate leaflets annually.	a) Groups contacted by December 2002 and annual reports indicate that leaflet has been sent annually	ST&SCNPC David Pomery	5, 6, 8

*1 refer to Appendix 1 for definition of "eradicate"

It is anticipated that at a regional scale, the application of the above actions should significantly restrict the spread and reduce abundance of existing Groundsel bush infestations. Eradication and containment of existing infestations, development of identification skills, close liaison with community groups and provision of education / extension programmes are essential if the Plan is to succeed.

An opportunity currently exists to eradicate Groundsel bush from the Region over the next decade, however the eradication option will only remain viable for a short time and is dependent upon a strong commitment to this Plan. Appendix 3 provides a checklist to improve accountability and ensure the actions and performance indicators in Section 6 are met.

7.0 MONITOR AND REVIEW PROCESS

Stakeholders will provide an annual progress report which details their success in meeting given performance indicators. A brief regional report will be submitted to NWAC annually by the Southern Tablelands & South Coast Noxious Plant Committee. The regional report will address any modifications to actions and performance indicators which may improve the operation of the Plan.

The Plan is to be reviewed and updated after five years *i.e.* prior to July 2007.

In the event of a key stakeholder failing to meet an objective as given in the Plan, the Committee will assist the stakeholder to meet requirements: e.g. determine an appropriate action for the stakeholder and / or other members of the Committee. If the stakeholder is still unable to meet the objective, the Committee will review the mechanism and performance indicators related to the required action.

8.0 BENEFITS

Benefits to industry, the environment and the community following implementation of the Groundsel bush Plan include:

- in the long-term, substantial cost saving associated with controlling the weed
- promoting maintenance of native species diversity
- allowing native species access to watercourses
- maintaining the aesthetic and intrinsic value of natural ecosystems
- maintaining an appropriate carrying capacity in agricultural lands
- improving stock access to forage and water and access to silviculture operations;
- improved tourism potential and appeal;
- improved community involvement and ownership as objectives and performance indicators are met.

However, it should be noted that many of the ecological benefits of controlling Groundsel bush infestations will not be measurable during the life of the Plan - ecosystems require a substantial weed free period to allow full recovery.

9.0 RESOURCES

References

Auld, B.A. & Medd, R.W. 1992. *Weeds an illustrated botanical guide to the weeds of Australia*. Inkata Press, Melbourne.

Bush and Land Care Services, 2001, *Weed Management Strategy Comerong Island Nature Reserve*, NSW National Parks and Wildlife Service.

NRM, 2001. NRM facts Groundsel bush *Baccharis halimifolia*. Department of Natural Resources and Mines, Queensland.

NSW Agriculture, undated. *Agfacts Groundsel bush*. Department of Agriculture New South Wales (Agdex 647).

Personal communications

Ensbey, R. Regional Weed Control Coordinator Grafton. NSW Agriculture.

Harding, G. Senior Noxious Weeds Officer, Eurobodalla Shire Council.

Appendix 1: Current and proposed declarations for Groundsel bush in the Region

LCA	Current declaration	Proposed declaration
ACT	-	-
Bega Valley	-	W2
Bombala	-	-
Cooma-Monaro	-	-
Crookwell	-	-
Eurobodalla	-	W2
Goulburn	-	-
Gunning	-	-
IDWA	W2	W2
Mulwaree	-	-
Queanbeyan	-	-
Shoalhaven	-	W2
Snowy River	-	-
Southern Slopes	-	-
Tallaganda	-	-
Wingecarribee	-	-
Yarrowlumla	-	-

Appendix 2: Density classes used to map Groundsel bush

Density / distribution class	Comment
Core	<p>A 'core' area is where, using realistic resource levels and advances in technology*¹, it is NOT FEASIBLE in the long term*² to:</p> <ul style="list-style-type: none"> - significantly reduce*³ the density and distribution of the species, OR - maintain the current density and distribution of the species, with a decreasing amount of expenditure/effort*⁴ <p>Note: Although core areas are ultimately likely to be lower priority areas, they will continue to require at least site specific control measures. However for the ST&SCNPC to support grant funding for these sites they will need to meet the 'core area' priority criteria in the Regional Strategy Plan.</p>
Marginal	<p>A 'marginal' area is where, using realistic resource levels and advances in technology, it IS FEASIBLE in the long term to,:</p> <ul style="list-style-type: none"> - significantly reduce*³ the distribution and density of the species, or - maintain the density and distribution of the species, with a decreasing amount of expenditure/effort
Rare and/or isolated	<p>A 'rare and/or' isolated area is where, using realistic resource levels and advances in technology, it IS FEASIBLE in the long term to:</p> <ul style="list-style-type: none"> - eradicate*⁵ the species where it occurs as an isolated*⁶ population - where the population is rare*⁷ to: <ul style="list-style-type: none"> - eradicate the species, OR - maintain it at a level where it has an insignificant environmental and economic effect*⁸, with a minimum and preferably decreasing expenditure/effort
Absent	<ul style="list-style-type: none"> - requires a high level of certainty that weed is absent. Rare and/or isolated may be a better class to use if uncertain. - may represent all of the area not covered by the first 3 classes - where possible, indicate what environmental constraint or history is causing the absence

*¹ 'realistic resource levels and technology advances' should be based upon your experience over the last 5 years with some informed judgement on what is expected over the next five years. If in doubt assume a continuation of the same level of funding and effort. Resources include funding and labour. Technology includes new control techniques such as biological control and integrated management.

*² 'Long term' means greater than 5 years.

*³ Significantly reduce means reduce by approximately 75% from 2001 levels of distribution and abundance in 5 years

*⁴ 'Decreasing expenditure/effort' means that the amount of funding, resources and effort (including 'non-costed' labour from private land owners/managers) to control the weed over the past five years will decrease over the next five years.

*⁵ 'Eradicate' means: (a) remove or destroy all above ground biomass of the weed species population. This definition recognises the weed seed bank will remain viable and follow up work may be required beyond the term of this plan.
(b) remove populations of the weed from the local area to the extent that little or no follow up is required *i.e.* the weed seed bank is largely exhausted. It is recognised that this may not be achievable within the currency of the plan.

*⁶ 'Isolated' means the population is considerably separate from other local populations (*i.e.* seed source from other local populations can not re-establish the local population) and is small enough to be eradicated. If eradicated it is assumed re-invasion is unlikely to occur.

*⁷ 'Rare' means a species is very uncommon, but unlike isolated may be scattered over a wider area at a very low density.

*⁸ 'Insignificant environmental and economic effect' means that the level of expenditure and effort required to keep the species at a 'rare level' is insignificant, and the population does not 'adversely and significantly' affect natural (including biodiversity), cultural and social values.

Appendix 3: Checklist for completion of control actions

Year	Action (see Sect. 6)	Action	Responsibility	Sign and date when completed
2002	2a	At least 20% of known rare and isolated infestations eradicated and verified in annual reports	David Pomery	
	2b	All locations where rare and/or isolated populations have been eradicated are inspected annually - verified in annual reports	David Pomery	
	3a	At least 20% of eradication work completed for known rare and isolated infestations. Verification in annual reports	David Pomery	
	4a	Local action Plans reviewed by December	David Pomery	
	10a	Coastal user groups contacted by December 2002	David Pomery	
2003	2a	At least 40% of known rare and isolated infestations eradicated and verified in annual reports	David Pomery	
	2b	All locations where rare and/or isolated populations have been eradicated are inspected annually - verified in annual reports	David Pomery	
	3a	At least 40% of eradication work completed for known rare and isolated infestations. Verification in annual reports	David Pomery	
	5a1	Submission sent by July 2003	Ian Borrowdale	
	6a	Letter sent to Landcare groups in Groundsel bush affected areas	ST&SCNPC Chairperson	
	7a	100% of Weeds Officers and DoA Agronomists and the majority of chemical resellers in the Region attend training session prior to March	Mich Michelmore	
	10a	Leaflets to coastal user groups sent and recorded in annual reports	David Pomery	
2004	1a	Maps updated	ST&SCNPC Chairperson	
	2a	At least 60% of known rare and isolated infestations eradicated and verified in annual reports	David Pomery	
	2b	All locations where rare and/or isolated populations have been eradicated are inspected annually - verified in annual reports	David Pomery	

Year	Action (see Sect. 6)	Action	Responsibility	Sign and date when completed
	3a	At least 60% of eradication work completed for known rare and isolated infestations. Verification in annual reports	David Pomery	
	10a	Leaflets to coastal user groups sent and recorded in annual reports	David Pomery	
2005	2a	At least 80% of known rare and isolated infestations eradicated and verified in annual reports	David Pomery	
	2b	All locations where rare and/or isolated populations have been eradicated are inspected annually - verified in annual reports	David Pomery	
	3a	At least 80% of eradication work completed for known rare and isolated infestations. Verification in annual reports	David Pomery	
	10a	Leaflets to coastal user groups sent and recorded in annual reports	David Pomery	
2006	2a	100% of known rare and isolated infestations eradicated and verified in annual report	David Pomery	
	2b	All locations where rare and/or isolated populations have been eradicated are inspected annually - verified in annual reports	David Pomery	
	3a	100% of eradication work completed for known rare and isolated infestations. Verification in annual reports	David Pomery	
	10a	Leaflets to coastal user groups sent and recorded in annual reports	David Pomery	
		5 year review of Plan completed	ST&SCNPC Chairperson	
As required	2c	New infestations eradicated within 1 year of detection	David Pomery	
	3b	Majority of sites where control has occurred are rehabilitated within 1 year	David Pomery	
	8a	Groundsel bush brochures and/or discussion included in all field days for coastal Councils over next 5 years	ST&SCNPC Chairperson	
	9a	Methods of reducing off-target mortality are addressed at all field days and in brochures during 2002-2007	ST&SCNPC Chairperson	