

# REGIONAL WEED MANAGEMENT PLAN

**1.1 PLAN TITLE:** Sydney Regional Gorse, Scotch Broom and Cape Broom Management Plan

## 1.2 PLAN PROPONENTS

Regional Weeds Committee: **Sydney West ~ Blue Mountains Regional Weeds Committee  
Sydney North Regional Weeds Committee, South West Sydney Regional Weeds Committee, and the Sydney Central Regional Weeds Committee.**

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**1.3 NAME OF PLANT:** **WONS:** Gorse: YES

Botanical name: *Ulex europaeus*

Common name: **Gorse, Furze**

*Cytisus scoparius* var. *scoparius*

**Scotch, English Broom**

*Genista monspessulana*

**Cape, Montpellier Broom**

**1.4 PLAN PERIOD** (not to exceed five years)

Starting Date.....**1<sup>st</sup> July 2004**

Completion Date.....**30th June 2009**

**1.5 AREA OF OPERATION:** This plan extends over the geographical area covered by all four Sydney Regional Weeds Committees

**1.6 AIM:** To protect urban, rural and natural environments in the Sydney Basin through the control and containment of known Gorse, Scotch Broom and Cape Broom infestations.

To prevent the establishment of new infestations and its spread into National Parks and Water Catchment areas, and to reduce the threat to the natural biological diversity

## 1.7 OBJECTIVES:

1. Quantify and document the scale of Gorse, Scotch Broom and Cape Broom infestations annually throughout the Region. Plan participants systematically inspecting all public land over a 4 year rotation
2. Implement treatment of Gorse, Scotch Broom and Cape Broom infestations in all land-tenures pre-seed set
3. Support ongoing trials of establishment and monitoring of biological control agents for Scotch Broom and Cape Broom
4. Implement public education programs annually and support community involvement in Gorse, Scotch Broom and Cape Broom Control.
5. Implement regionally consistent and innovative law enforcement initiatives

## 2.0 Stakeholders

**Initial Plan participants:** Blue Mountains City Council, Camden Council, Ku-ring-gai Council, and Hornsby Council.

**Other Stakeholders:** LCAs in Sydney Region, Department of Environment and Conservation – Parks Service, Department of Lands, Department of Infrastructure, Planning and Natural Resources, Sydney Catchment Authority, NSW Agriculture, Sydney Water Corporation, Integral Energy, Rail Infrastructure Corporation, Roads and Traffic Authority, Community Landcare and Bushcare Groups, Blue Mountains Bushcare Network, Blue Mountains Conservation Society, and Mount Wilson Progress Association

## 3.0 Background

**Gorse:** Native to eastern Europe, including the British Isles, central Europe and North Africa, Gorse is now widespread around the globe, and is classed as a weed in North America, South America, South Africa, in the Indian subcontinent, Iran, Spain, Italy, Poland, New Zealand and Australia, as well as within its home range. Gorse is now present in all parts of Australia except the Northern Territory, and has been declared noxious in a number of southern States where it covers wide areas.

Gorse is a species that can transform natural ecosystems in the Blue Mountains and has the potential to spread throughout the Sydney Basin. The seed-bank is long-lived: 85% of the seed-bank has found to be viable after 26 years (Richardson R.G. and R.L. Hill (1998) *Ulex europaeus* L. in *Biology of Australian Weeds*, Volume 2, F.D. Panetta et al (eds) R.G. & F.J. Richardson publishers).

The pods expel their seed around mid September annually, after August flowering. There is some spot-flowering occurring in April–May. Control after the September reproductive milestone is less effective for a number of reasons. “Jump” dispersal is primarily caused by riparian processes and by slashing and excavation equipment. Lack of consideration of contaminated soil in Council’s development approval process is contributing to the jump dispersal and creation of new infestations.

Previous attempts to control the species using high volume spraying have been sub-optimal. The absence of bush regeneration staff in the past has contributed to the growth of infestations in native vegetated riparian zones.

In the City of Blue Mountains the species presently occurs from Mt Victoria to Linden, where it is widely distributed on roadsides and bushland areas in East Blackheath with minor infestations at Megalong Valley, Mt Victoria, West Blackheath, Medlow Bath, Katoomba, North Leura, Wentworth Falls south and Woodford Bends. Gorse is evenly distributed between public and private land ownership, primarily in natural areas, currently mapped as covering approximately 35ha on public land and 50ha on private land. In Blue Mountains NP, it currently covers approx 100ha. In Hawkesbury Shire, Gorse has been recorded at Navua Reserve (0.1ha infestation).

In Camden approx 750 sq m of Gorse occurs on private property on Camden Valley Way, Narellan. (UBD Sydney 2000 Map 305, grid reference P4, Lat 33 deg 59.77 min South, Long 150 deg 47.09 min East). This property is soon to be developed, however the Statement of Environmental Effects did not address the gorse infestation. A Section 18 Notice was issued in September 2003 when Gorse began flowering.

**Scotch Broom:** A native of the British Isles, central and southern Europe, it is naturalised in North America, South Africa, parts of Asia and Australia. In Australia it covers at least 200,000 hectares in NSW, Victoria, Tasmania and South Australia.

Scotch Broom is a weed with the capacity to transform natural ecosystems in the Sydney Basin above an apparent altitude of 600 metres. The current distribution of Scotch Broom within the Sydney Basin includes Blue Mountains, Hornsby, Hunters Hill, Ku-ring-gai, Lane Cove, North Sydney, Parramatta, Ryde, Warringah, Willoughby and Wingecarribee. The species is regarded as having the potential to

produce warm-climate hybrids (JMB Smith, UNE, pers.com.1998).

In the Blue Mountains Scotch Broom has been mapped over 354.3ha on public land managed by Council, 500ha managed by NPWS, and approx. 700ha on private land. The species is widely distributed from Mount Victoria to Woodford with a synchronous flowering time that does not allow the implementation of an altitudinal, chronological control program. The pods expel their seed around Christmas, annually. Control after this reproductive milestone is much less effective than prior to seeding.

Scotch Broom flowers in its third year. Seed production overseas is estimated at 9,650 seed per square metre. Seedbank decay has been measured in Australia at 36% decay p.a. This implies “significant” seedbank survivorship lasts for 11 years. However, isolated seed experiments have identified a seed longevity of 81 years.

The “core infestations” occur on roadsides and disturbed public and private bushland areas. Vacant residential blocks (private land) and frequently slashed public lands are the main areas of source infestations. Scotch Broom infestations on urban interfaces can increase the threat of more frequent and more intense bushfires.

Riparian areas below long-developed sub-catchments also contain large infestations of Scotch Broom. These latter infestations are seen as the most critical as they threaten downstream areas. Scotch Broom is particularly invasive in riparian zones, hanging swamps, shrub swamps, woodland and open forest communities. “Jump” dispersal is primarily caused by riparian processes and by slashing and excavation equipment.

**Cape Broom:** A native of the the Mediterranean, Portugal and the Azores, it is prohibited entry into Australia and banned in New Zealand. It has naturalised in all states and territories in Australia (except Northern Territory).

Like Scotch Broom, seeds are produced in large numbers and spread by water, vehicles, in contaminated soil and dumped garden waste. They are long-lived and highly poisonous. Common along forest margins and disturbed sites, Cape Broom also spreads rapidly, and grows almost anywhere in any soil. Fire stimulates seed germination. Once established, it forms dense thickets, reducing biodiversity and changes soil chemistry by increasing the plant nutrient nitrogen in the soil.

It is found throughout the Blue Mountains, from Mt Wilson to Glenbrook. Heavy bushland infestations occur in South Lawson, Jamison Creek, and in the Valley of the Waters in Wentworth Falls. It is also especially prevalent in the Springwood area, along unmade roads and on neglected sites.

In Hornsby Shire Council Cape Broom as a very widespread weed. Some very dense patches occur in areas that are difficult to control conventionally or inaccessible. Hornsby Council is looking into implementing in a biological control program as part of an integrated control program.

Ku-ring-gai Council is undertaking detailed catchment-based mapping on public and private land for environmental weeds, and has identified a high occurrence of Broom species, in particular Genista, throughout the LGA. Council has commenced a scheduled control program to progressively control the spread and eradicate known infestations. The need for an educational program has been identified for staff and the general public and for closer liaison with horticultural outlets to ensure sale of suitable plants only.

**Null hypothesis:** In particular, Gorse and Scotch Broom are the most threatening weeds in the natural ecosystems of the Upper Mountains. If this Weed Control Plan was not to be implemented, both plateau and riparian infestations would greatly undermine the natural values of the World Heritage Nominated Blue Mountains. Infestations of Gorse, Scotch Broom and Cape Broom would continue to spread and be managed on an ad-hoc basis, further threatening the region’s biodiversity, recreational and aesthetic values.

This plan coordinates control and maintenance of Gorse, Scotch Broom and Cape Broom infestations for 5 years from July 1<sup>st</sup> 2004 to June 30<sup>th</sup> 2009. Building on the current three year plans for Gorse and Scotch Broom which expire in June 2004, this plan involves all four Sydney regional weeds committees in a Sydney-wide Regional Gorse, Scotch Broom and Cape Broom Management Plan for these high priority noxious weeds.

#### **4.0 Regulatory situation**

**Gorse:** The current declaration of W2 is considered satisfactory. In the Western and Northern Sydney region Gorse has not yet been declared. This need not change and will not affect the actions and outcome of the plan. Gorse has been classified as a Weed of National Significance, and a State Weed Plan is in preparation.

**Scotch Broom and Cape Broom:** The current declaration of W2 for Scotch Broom and W4b for Cape Broom is considered satisfactory. Scotch Broom and Cape Broom is declared in the Blue Mountains and throughout Sydney North. However at present it is not a declared noxious weed throughout the remainder of the Sydney region: this may need to change but will not affect the actions and outcome of this plan. A State Weed Plan is being prepared for Scotch Broom.

#### **5.0 Considerations and opportunities**

##### 5.1 Bio-control

*Scotch Broom:* The Cooperative Research Centre for Weed Management Systems, including CSIRO and NSW Agriculture, has been researching biological controls for Scotch Broom, including the twig mining moth *Leucoptera spartifoliella*, released in February 1993, a psyllid *Arytainilla spartiophila*, and the seed beetle *Bruchidius villosus*. The latter was released in December 1995 and mass rearing and redistribution commenced in 1997. The above three insects have been released in an experimental study in the Bonnie Doon Falls Catchment of the upper Blue Mountains. CSIRO Entomology is also conducting research into the effect of the accidentally introduced scale *Parthenolecium rufulum* on Broom growth and reproduction.

The Bonnie Doon Fauna Study Landcare group was previously involved in the experiment and was responsible for bi-annual monitoring of seed banks and plant health. This volunteer work has now ceased, however the population is being maintained as a potential source for biological control agents to be distributed to other infestations.

*Gorse:* Biological Control has been assessed and is considered to have limited applicability due to the low density of current Gorse populations.

*Cape Broom:* Biological Control programmes and their implementation are currently being assessed.

##### 5.2 Control on Private Lands

*Scotch Broom:* If support grants were not provided then the significant control boosts proposed for the private land would not be matched by control on public land. Also, the proposed extension programs would not be complete. There is currently a high load on private property inspections.

##### 5.3 State Government Urban Run-off Control Program

Blue Mountains City Council has been able to utilise State Government funding, through the Urban Run-off Control Program (URCP), for bush regeneration in *Gorse* and *Scotch Broom*-infested sites.

###### 5.3.1 Bush Regeneration Funding

*Gorse:* The URCP has assisted in the funding of Bush Regeneration activities at Popes Glen, Blackheath contributing to a total of approx 3,500 hours of Gorse on the site as at 23/4/03.

*Scotch Broom*: The URCP program has assisted in the funding of Bush Regeneration activities at Blackheath, Medlow Bath, Katoomba, Wentworth Falls and Lawson contributing to a total of 14,000 hours of Scotch Broom removal as at April 2003

### 5.3.2 Weed Mapping

*Gorse*: Blue Mountains City Council is mapping all Gorse occurrences. Council is conducting an extensive on-going Weed Mapping project, funded through Urban Run-off Control Program grants.

*Scotch Broom*: Blue Mountains City Council has completed weed mapping Scotch Broom occurrences. Council will be conducting on-going Weed Mapping project, funded by BMCC.

## 5.4 Sensitive Vegetation Threat

*Gorse*, *Scotch Broom* and *Cape Broom* have the potential to invade the regionally significant vegetation communities such as Hanging Swamps and Shrub Swamps.

## 5.5 Remote Invasive Potential

*Gorse*, *Scotch Broom* and *Cape Broom* have the potential to invade remote and “wilderness” type vegetation areas.

## 5.6 Erosion Hazards associated with Target Weeding Programs

Experience of weeding large infestations in riparian areas has shown that there can be a significant erosion potential and redistribution of soil-stored seed bank downstream. *Gorse*, *Scotch Broom* and *Cape Broom* control may have to be supplemented by erosion and sediment control works to alleviate this hazard.

## 5.7 Environmental Planning and Assessment

*Gorse*, *Scotch Broom* and *Cape Broom*: The highest potential for “Jump” dispersal is the excavation and transportation and dumping of seed-contaminated fill. Development Consent processes can be greatly improved to reduce this potential. Blue Mountains City Council now has requirement for control of Gorse and Scotch Broom (along with other listed and environmental weeds) prior to development consent.

## 5.8 Illegal Sale of Scotch Broom

Currently there is no evidence that Scotch Broom is being sold illegally. However, highly preferred Broom cultivars within the retail industry are:

*Cystisus racemosus* cvs. (yellow flowered)

*Cystisus* “Crimson King” (red-flowered)

*Cystisus multiflorus* (white-flowered)

## 5.9 Seedbank Longevity and the Role of Fire

*Scotch Broom*: Current research in Victoria and the Barrington Tops reveals the protracted length of time to control Scotch Broom seedbanks of around 20 to 30 years can be reduced significantly through the considered use of fire to rapidly deplete the soil-seedbank in the intermediate term. Burn sites require planning and the implementation of intensive follow-up weeding.

## 5.10 Extension and Education

The main focus of the education and extension activities will be to increase awareness in the identification and control of *Gorse*, *Scotch Broom* and *Cape Broom*, and of its regional importance. This will build on and expand upon existing awareness raising initiatives developed under the previous regional plans for Gorse and Scotch Broom and will include:

- The Great Gorse Walk organised by the NSW National Parks and Wildlife Service through the Local Weeds Committee and in association with the Blue Mountains City Council, the

Blue Mountains Conservation Society and the Bushcare Network. This very successful activity involves community participation on a twice annual basis.

- Training for field staff, bushcare volunteers and residents.
- Promote co-operative approaches to Gorse, Scotch Broom and in particular Cape Broom control between Councils, private landowners and other government authorities.
- Media articles in local newspapers and community newsletters;
- Production of Gorse, Scotch Broom and Cape Broom alert brochures to be sent to private landholders; and

Installation of signs, for example, “ XXX Council is now targetting XXX” and eventually, for example, “ XXX is a XXX Free Suburb”.

### 5.11 Environmental Weeds Program

Blue Mountains City Council has, over the past 3 years, recruited a team of 4 bush regenerators. Part of their program is to control remote infestations in sensitive vegetation.

### 5.12 Links to other Strategies

This plan conforms to the Mission Statement for the **National Weeds Strategy** ".to reduce the detrimental impact of weeds on the sustainability of Australia's productive capacity and natural ecosystems", and to Objective 3.2: 'encourage the development of strategic plans for weed management at all levels'.

The plan also meets several 'Desired Outcomes' of the **NSW Weeds Strategy**:

- The development and implementation of programs to reduce environmental degradation and the loss of biodiversity through weed invasions.
- The implementation and monitoring of weed control programs on public and State-owned and Crown Land to ensure that objectives are achieved in an efficient and cost effective manner;
- An effective and efficient system for delivery of noxious weeds control and the enforcement of weeds legislation.

This plan falls within the Sydney and Hawkesbury Lower Nepean Catchment Management Authority (CMA) regions and assists in the implementation of the following Catchment Blueprints:

- The **Hawkesbury Lower Nepean Catchment Blueprint**, in particular:

Management Target 12: Weeds and pests:

*By 2006 implement adequately funded and closely linked strategies and effective actions plans for all major and potential terrestrial and aquatic weed/pest species; and*

Prioritised Management Actions for Biodiversity 6:

*Resource and implement closely linked strategies and effective action plans developed on a catchment basis for all major aquatic and terrestrial weeds and pests using environmentally appropriate management practices, and develop contingency plans for potential invasive weeds and pests.*

- The **Southern Sydney Catchment Blueprint**, in particular:

Management Target 14:

*By 2012 the threats posed to aquatic and terrestrial ecosystems by pest species are measurably reduced; and,*

Management Action 4:

*Implement closely linked strategies and effective action plans, supported by government for all major aquatic and terrestrial weeds, pests and pathogens using environmentally appropriate management practices, and develop contingency plans for potential invasive weeds and pests.*

- The **Sydney Harbour Catchment Blueprint**, in particular:  
Management Action 33:

*Develop and implement integrated pest/weed/pathogen management plans for the Board area (aquatic and terrestrial).*

### 5.13 Barriers to overcome

*Council land – site management plans*

1. No site management protocols developed to date

*Private land – enforcement*

2. There are a number of large (1 hectare) infestations on private lands associated with sensitive riparian vegetation.
3. Legislation does not cover controls for transportation/quarantining of contaminated soil.
4. Development assessments do not currently take into account contaminated soil issues.

*Council/Private land – education processes*

5. There is a wide diversity of target audiences

*Regional – declaration*

6. *Gorse, Scotch Broom* and *Cape Broom* is not declared consistently across the Sydney region.

## **6.0 Performance indicators and actions**

<b>Objective</b>	<b>Performance indicator</b>	<b>Action</b>	<b>Who</b>
<b>1. Survey / Inspection</b>	All infestations One quarter surveyed by October annually	1.1 Survey one quarter of all known infestations on Council Land by October annually	Participating LCAs
<b>1. Survey / Inspection</b>	One quarter of private land infestations inspected and enforced annually	1.2 Inspect all infestations on Private Land by December annually over 4 years	Participating LCAs
<b>1. Survey / Inspection</b>	New infestations Weeds detected and reported	1.3 Opportunistic inspecting for Gorse, Scotch Broom, and Cape Broom when inspecting for other “programmed inspection” weeds	Participating LCAs
<b>2. Control Infestations</b>	All infestations treated by December annually	2.1 High Volume spray all roadside infestations annually pre-seed set	Participating LCAs NPWS SCA
<b>2. Control Infestations</b>	Half of all infestations treated by December annually	2.2 Physical removal of all bushland infestations annually pre-seed set over two years	Participating LCAs NPWS SCA Bushcare
<b>2. Control Infestations</b>	Markers installed on all core-bushland infestations	2.3 Install permanent markers for “historical” infestations for annual monitoring purposes	Participating LCAs NPWS SCA
<b>2. Control Infestations</b>	Implementation of integrated control program.	2.4 implement integrated program of hazard reduction clearing and Gorse, Scotch Broom and Cape Broom control in order to rapidly deplete	Participating LCAs NPWS RFS SCA

<b>Objective</b>	<b>Performance indicator</b>	<b>Action</b>	<b>Who</b>
		seedbank to reduce long term control programs	
<b>3. Community Involvement</b>	270 hours volunteer coordination in the field annually 30 groups x 3hrs x 3 times a year	3.1 Assist with coordination of volunteer field activities associated with Gorse, Scotch Broom and Cape Broom control Weed busters Week annually in October and monthly Bushcare/ Landcare workdays	Participating LCAs
<b>3. Community education</b>	Development and delivery of School Weed education Project.	3.3 Prevention of new infestations through: the development of education processes targeting secondary schools	Participating LCAs NPWS Sydney Catchment Authority Blue Mountains Conservation Society
<b>4. Law Enforcement Initiatives</b>	Gorse, Scotch Broom and Cape Broom declared consistently across the region	4.1 Regional Councils to consistently declare Gorse, Scotch Broom and Cape Broom across the region	Participating LCAs Sydney metropolitan LCAs
<b>4. Law Enforcement Initiatives</b>	Regional strategy developed by October 2003	4.2 Develop regional strategies with Blue Mountains / Sydney West Sydney North, Sydney South West and Syd, Central Regional Weed Committee's	Sydney West / Blue Mountains, Sydney North, Sydney South West and Syd, Central Regional Weed Committee's
<b>4. Law Enforcement Initiatives</b>	Implementation of Ratepayer database notification.	4.3 Implement notification on the Council Ratepayer database that a property contains Gorse, Scotch Broom and Cape Broom to assist integrated DA, BA, Rezoning and Fire Notice decisions	Participating LCAs
<b>4. Law Enforcement Initiatives</b>	Implementation of development consideration protocol	4.4 Encourage Council's Health and Development Group to take into consideration soil sanitation measures on Gorse, Scotch Broom and Cape Broom infested properties	Participating LCAs

## 7.0 Monitor and review process

Participating councils and other organisations will provide the details required for Noxious Weeds Grant reports to the respective Sydney Regional Weeds Committees and NSW Agriculture, highlighting progress towards the performance indicators.

If the Regional Weeds Committee considers that a participating organisation has not made reasonable attempts to meet performance indicators, then grants may either be withheld or redirected to other LCAs.

For funded programs for 2004-2009, the Sydney Regional Weed committees will collate annual reports on progress, plan reviews and funding applications.

## 8.0 Benefits

### Benefits:

1. Reduced threat to natural biological diversity
2. Increased visual amenity of natural landscape
3. Reduced threat of increasing fire frequencies and intensities on urban interfaces
4. Net loss in seed production per year on public land
5. Reduced threat of jump dispersal to form new infestations
6. Systematic and equitable approach to private property enforcement

### Costs:

1. Opportunity costs of not controlling blackberry and privet on public land at the same seasonal window
2. Private property program fails to systematically achieve net loss in seed production on all private lands within its known distribution in less than 7 year intervals.
3. Increased herbicide exposure to the environment
4. Increased threat of post treatment weed succession

## 9.0 Resources *(as per the Group Funding Application)*

### Publications

Council annual State of Environment reports  
Council community newsletter and local newspaper articles  
October *Weed of the Month* Brochure published by Blue Mountains City Council  
Regional group project annual report

### Officers

Soren Mortensen	Bushland Officer, Blue Mountains City Council
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### Contacts

Cooperative Research Centre for Weed Management Systems