

# Ecological Fire Management Strategy

Department of Environment and Natural Resources

## Broom and Gorse (*Genista monspessula*, *Cytisus scoparius* & *Ulex europeaus*)

### Purpose

This strategy focuses on fire risk management for broom and gorse, identifying a number of issues that should be considered before, during and after fire.

### Species Information - Broom

<b>Names</b>	<i>Genista monspessulana</i> - Montpellier broom, French broom and Cape broom. <i>Cytisus scoparius</i> - English broom, Scotch broom, Spanish broom and Common broom.
<b>Rating</b>	CATEGORY THREE under the <i>Natural Resource Management Act 2004</i> .
<b>Identification</b>	Erect, woody, densely branched shrub commonly 1.2 to 2 metres high, however can reach up to 3 to 4 metres in height. Creates a dense shrub layer.
<b>Flowers</b>	Bright yellow petals, pea like shape.
<b>Fruit</b>	Brown or black flattened pod, ranging from 2.5 to 5cm long.
<b>Distribution</b>	Predominantly throughout the Mt Lofty Ranges, Fleurieu Peninsula, Clare Valley, Eyre Peninsula, Kangaroo Island and the South East on public and private land.
<b>Habitat</b>	Cool, temperate climate with annual rainfall over 500mm. Found in disturbed bushland, heaths, roadsides and wastelands areas, often on steep slopes.
<b>Soil Type</b>	Tolerates a wide range of soil types including acidic soils and soils that lack phosphorous often that have been disturbed. Not usually occurring on sandy soils.
<b>Plant Ecology</b>	Broom plants germinate from seed, and often proliferate after fire or soil disturbance. Individual plants reach productive maturity after three years. Flowering generally occurs in spring, between October and December. Seed dispersion generally occurs late summer between January and March. Plants live up to 25 years, and viable seed may be stored in soil for many years.



<b>Flowers</b>	Solitary yellow, pea like flowers.
<b>Fruit</b>	Grey hairy pods 10-20mm long, with each pod holding three to four seeds.
<b>Distribution</b>	Predominantly throughout the Mt Lofty Ranges, Fleurieu Peninsula, Clare Valley, Eyre Peninsula, Kangaroo Island and the South East on public and private land.
<b>Habitat</b>	Cool, temperate climate with annual rainfall of 650-900mm. Found in disturbed bushland, plantation forests and agricultural areas.
<b>Soil Type</b>	Grows well on fertile soils, light sands and heavy clays however, it is most competitive on poor, alkaline soils that have been disturbed.
<b>Plant Ecology</b>	Gorse plants germinate from seed in autumn and spring and often proliferate after fire or soil disturbance. Individual plants reach reproductive maturity after two years. Flowering generally occurs twice a year in autumn and spring. Seed dispersion generally occurs in hot or dry conditions. Plants live for up to 30 years and viable seed may stay stored for up to 30 years.

### Fire and Weeds

#### Integrated weed management

The introduction of these exotic species provides new challenges for the management of fire, which is a natural component of the South Australian environment.

Infestations of weedy shrubs such as broom and gorse increase the risk of bushfire by providing an abundant source of elevated fuel. This fuel can influence the behaviour of a fire by increasing flame height and depth.

Fire can directly kill broom and gorse stands due to heat and flame. Prescribed burning of bush infested with broom and gorse can reduce fuel, which can cause subsequent bushfires in the same area to burn with less intensity. Unfortunately, broom and gorse respond well to fire with a proliferation of seedlings. Therefore there is potential for an increased bank of elevated fuel unless follow up control is undertaken.

Fire may result in loss of vegetation cover, creating an opportunity for these new seedlings to grow with reduced competition for resources.

### Species Information - Gorse

<b>Names</b>	<i>Ulex europeaus</i> - Gorse, Furze.
<b>Rating</b>	Weed of National Significance, CATEGORY TWO under the <i>Natural Resource Management Act 2004</i> .
<b>Identification</b>	Prickly, perennial woody shrub commonly reaching 2.5 metres high, however can reach up to 4 metres in height and 3 metres across. Forms thick, dense stands that limit access to areas.



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PREPARE. ACT. SURVIVE.



If planning to use prescribed fire for the management of broom and gorse, ensure weed management follows. Weed control should be carried out within 2 years following fire, before these seedlings mature and begin to contribute to the seed bank. Burning alone is not an adequate weed management approach.

## Fire management objectives for broom and gorse

- To manage increased fuel hazard due to the expansion of elevated fuel levels caused by broom and gorse.
- To reduce the dominating regenerative recovery capacity of broom and gorse stands to after the occurrence of fire.

## Fire management strategies for broom and gorse

### Bushfire

- Map areas of infestations pre-fire so sites can be identified after a fire event.
- Ensure the control of broom and gorse occurs after burning.

### Prescribed burn

- Integrate weed management plans to work in conjunction with fire management planning.
- Plan controllable burns for maximum intensity in dry soils for the destruction of seed stored in the seed bank.
- Burn the entire infestation to contain the perimeter of stands spreading further into the bushland.
- Ensure resources are available for weed management.
- Depending on the situation, generally allow ten years before re-treating an area with fire to allow for natural development of the native under story vegetation community.

## Actions for Risk Management

### Before fire

#### Prepare weed control management plans

- Prepare plans to manage follow up weed control in the event of bushfire occurring in an area infected with broom and gorse.
- If prescribed burning is to be used to control weed species then the plan must accommodate consideration for a later unexpected bushfire event.
- Map and document the extent of weed species infestations within parks or reserves, identifying well established, as well as new outbreaks, accessibility, and local topography.
- Records of infestations need to be kept to provide for monitoring over time as a program to control a broom or gorse infestation may last up to 25 years, and may pass through the hands of multiple land managers. The motivation to see a project completed may come from the preparation made at the beginning.
- Terrain and accessibility need to be established in the preparation stage of the program as follow up treatment should be carried out in a down slope direction, and with minimal disturbance.

#### Determine if biological agents are active in the infestations

- Several biological control agents have been released in Australia for the control of broom including: a twig mining moth; a sap sucking psyllid and a seed-feeding beetle. The biological control of gorse in Australia is the spider mite. Biological agent technical advisors should be consulted to determine where biocontrol sites exist and where possible prescribed burns should be avoided.

## Implementing prescribed burning

### Prepare control lines away from broom and gorse infestations

- Plan the burn with control lines away from the infestation to ensure fire fighting activities do not result in soil disturbance near, or at an existing stand.
- Ensure stands are burnt at the peak of the fire's intensity so the highest possible temperatures are reached to destroy the greatest amount of seed stored in the soil.

### Set timing of burn

- Young broom and gorse seedlings will find it most difficult to establish in the heat of summer therefore, burns should be conducted in Spring. Timing needs to balance between the risks of maintaining fire control, maximum soil dryness, and prior to dispersal of current seasons seed, which for broom is December, and gorse September.
- Pre burn herbicide spraying can be used to broaden the burning opportunity by increasing the weeds flammability.

### Prepare hygiene procedures for fire persons and equipment

- Fire crews need to be vigilant that they do not disperse the seeds by clothing or equipment. Give briefings on hygiene procedures to crew's working in infected or at risk areas and ensure facilities for decontamination are provided and procedures followed.

### Ensure resources are made available for follow up weed management and monitoring

- Follow up weed control must occur after a prescribed burn. The operational program for the prescribed burn must allow for resources to carry out weed management.

### Prepare for fire behaviour

- Broom and gorse contribute to the elevated fuel hazard of a vegetation community, and increase the chance of flames reaching the crown. This behaviour needs to be considered when planning a prescribed burn for a given vegetation type.

### After fire

#### Focus on smallest infestations first

- It is preferable to manage weeds in the least weedy areas of the bushland and stop small infestations from developing into large infestations than it is to eradicate and rehabilitate large infested areas. Managers should apply resources effectively to ensure long term regional weed management objectives are achieved.

#### Spray

- Before broom and gorse reach reproductive maturity.
- End of spring when for the most part active growing has been completed.
- Ensure native plant species are not affected by off target damage and spray drift of a targeted area.
- Broom and gorse plants should be 400 – 500mm high.
- Don't spray when broom and gorse are in full flower or when invertebrates are active around the plants.
- Ensure weed operators maintain hygiene procedures.

#### Monitor

- Complete recovery of the native understorey could take a minimum of ten years. Monitoring and recording the recovery of the vegetation will confirm the success of management practice and improve understanding of management requirements. Once the understorey has recovered the option of stimulating the dormant broom and gorse seed by weed management prescribed burning can be explored by land managers.



#### Further Information

