

# Action Statement

Flora and Fauna Guarantee Action Statement

No. 204

## Anglesea Grevillea *Grevillea infecunda*

*This Action Statement is based on the draft national Recovery Plan prepared for this species by DSE under contract to the Australian Government Department of the Environment, Water, Heritage and the Arts.*

### Description

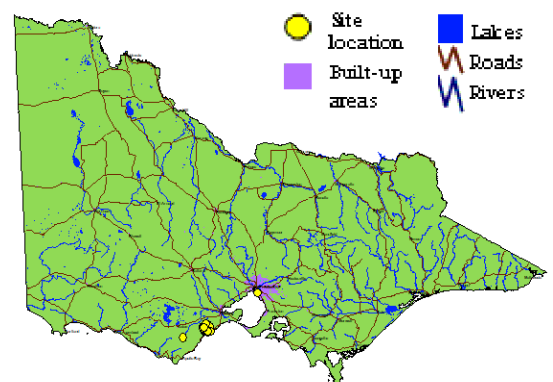
Anglesea Grevillea (*Grevillea infecunda*) is an open, root-suckering shrub, 0.3 - 1.2 m high (Walsh & Entwisle 1996). The leaves are 3 - 7 cm long and variable in shape: the outline may be ovate, rhombic or oblong, with shallow, sharp-pointed lobes (DNRE 2001). The upper leaf surface is dark green and hairless; the lower surface is paler green and sparsely hairy (DNRE 2001). The flowers are yellow-green and brown, with curved tubes about 8 mm long, hairy outside, hairless inside, which split into four narrow lobes to release a pale yellow-green red style to 25 mm long (DNRE 2001). Flowering occurs from October to December. The fruit comprises a leathery, hairy capsule, which splits to release winged seeds (DNRE 2001). Pollen viability and fertility are extremely low: although a number of genotypes are known to exist, this taxon has apparently lost the ability to reproduce sexually (Kimpton *et al.* 2002).

### Distribution

Anglesea Grevillea is a narrow endemic that occurs in hilly country near Anglesea and Airey's Inlet (Walsh & Entwisle 1996; Kimpton 2002). A mid-nineteenth century record from near Brighton, 100 km east of Anglesea, suggests a formerly disjunct population. At least eleven populations occur 0.5 - 10 km apart at elevations ranging from 110 m to 260 m above sea level (Angair & Kimpton 2002). The species' former distribution is presumed to have been relatively continuous, but a number of factors such as fire, climate, disturbance and Cinnamon Fungus (*Phytophthora cinnamomi*), which has been observed within and near extant populations, may have contributed to local extinctions.



Anglesea Grevillea (Photo: DSE/Pritchard)



Distribution in Victoria  
(Flora Information System, DSE 2007)

## Abundance

It is estimated that more than 1600 plants exist although, because of its root-suckering habit, it is difficult to be certain that all of these are separate individuals. These plants occur in 11 populations. Two additional unconfirmed sites occur, one along the Colac-Forest Road, and another west of the Alcoa lease site on proving ground on private land. As a narrow endemic, it is thought unlikely that there were more than a few thousand plants of this species prior to European occupation.

## Habitat

Anglesea Grevillea occurs in dry sclerophyll forest or woodland, usually in sandy or gravelly soils. It is absent from areas where gravel has been extracted, and does not occur in vegetation with a dense upper stratum (Angair & Kimpton 2002). Species commonly found amongst populations of Anglesea Grevillea include Shining Peppermint (*Eucalyptus willisii*), Narrow-leaved Peppermint (*Eucalyptus radiata*), Brown Stringybark (*Eucalyptus baxteri*), Thatch Saw-sedge (*Gahnia radula*), Common Flat-pea (*Platylobium obtusangulum*), Golden Bush-pea (*Pultenaea gunnii*) and Austral Grass-tree (*Xanthorrhoea australis*). Black Sheoak

(*Allocasuarina littoralis*) often occurs in vegetation near to Anglesea Grevillea, but the two species do not appear to occur together (O. Carter pers. obs. 2002). Even where Anglesea Grevillea occurs below eucalypts, tree crowns tend to be widely spaced.

## Life history and ecology

Anglesea Grevillea has no known method for producing viable seed (Kimpton *et al.* 2002). As a result, all existing populations are geographically restricted; root-suckering is the only means of vegetative spread. Root-suckering may be stimulated by fire (Marriott 1986) or slashing (O. Carter pers. obs.), but appropriate burning and/or slashing regimes for this species have not been identified.

Dieback disease caused by Cinnamon Fungus (*Phytophthora cinnamomi*) has been observed within at least five sites where Anglesea Grevillea is also present. This taxon does not appear to be as susceptible to this disease as Austral Grass-tree (*Xanthorrhoea australis*), which is usually one of the first species to show the physical effects of infection. Many dead Austral Grass-tree individuals lie next to apparently healthy Anglesea Grevillea plants.

## Important populations

The key populations for Anglesea Grevillea are as follows:

<i>Tenure/Reservation</i>	<i>Site and estimated population size</i>
Angahook-Lorne State Park	Bald Hills Rd near Salt Creek Track (18 plants)
	Salt Creek Track (22 plants)
	Bambra Road / north of Loves Track (141 plants)
	Grevillea Track off Bambra Road (62 plants)
	Link Track between Loves Track and 'Grevillea Track' (120 plants)
	Gum Flat Road #1 (500 plants)
Anglesea Heath	Breakfast Creek Road (>300 plants)
	Haggarts / Allardyce Tracks (92 plants)
	Tanners Road (152 plants)
Otway State Forest	Tanners Road / Dangers Lane (174 plants)
	Gum Flat Road #2 (number unknown)
	Hammonds Road (approximately 12 km NW of Airey's Inlet) (33 plants)

## Conservation status

### National conservation status

Anglesea Grevillea is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

### Victorian conservation status

Anglesea Grevillea has been listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*.

It is considered vulnerable in Victoria according to DSE's *Advisory List of Rare or Threatened Plants in Victoria - 2005* (DSE 2005).

### Current threats/perceived risk

#### Reservation status

Low: Adequately reserved – Anglesea Heath sites are managed with a cooperative agreement between Alcoa and Parks Victoria. The current Alcoa Lease expires in 2011 with a 50-year right of renewal. Upon Alcoa’s completion of operations at Anglesea, the lease area (unreserved Crown Land) will return to the Crown and will likely form part of a wider conservation reserve system.

#### Track works

High: Slashing / clearing of roadside verge vegetation damages individuals of Anglesea Grevillea. The population at Hammonds Road last count was reduced from 54 to 33 following track works. Trucks have also driven over some plants.

#### 4WDs, trail bikes or horses and recreational use

High: Physical disturbance or the spread of Cinnamon Fungus from recreational vehicles, horse-riders, walkers and trail bikes may damage plants. New tracks established by these recreational users pass through Anglesea Grevillea populations. Illegal campsite construction and firewood collection also threatens populations.

### Potential threats/perceived risk

#### Weed invasion

Low: Weeds such as Giant Honey-myrtle (*Melaleuca armillaris* subsp. *armillaris*) and Green Honey-myrtle (*M. diosmifolia*) (locally naturalised and expanding over the last 10 years near Anglesea Heath), may invade Anglesea Grevillea habitat but the threat is not immediate.

### Inappropriate biomass reduction / fire regimes

Low: Anglesea Grevillea may re-sprout after fire – at most sites the last fire was in 1983. The appropriate fire regime for this taxon, however, is not known.

### Cinnamon Fungus (*Phytophthora cinnamomi*)

Moderate: Cinnamon Fungus is present in at least 5 sites containing Anglesea Grevillea. Some plants with brown and defoliated leaves may be showing the effect of Cinnamon Fungus infection. However, defoliation may also be a result of poor rainfall or Cup Moth (Fam. Limacodidae) infestation.

### Previous management action

- Survey of public land in the Anglesea area and Alcoa Lease area for new populations and sub populations.
- Survey of private land for new populations and sub populations. (Gumflats Road, Wensley Dale area)
- Monitoring of known site to identify population trends.
- Survey of known sites to assess impact of Cinnamon Fungus.
- Review of threats to known populations by horses, motorbikes and 4 x4 vehicles.
- Liaison with Parks Victoria and Alcoa about management of known site to reduce impacts of threats (as above)
- Strong link maintained with Anglesea and Aireys Inlet Society for the Protection of Flora and Fauna (ANGAIR) to undertake on-ground survey and monitoring.

### Long term objective

To ensure that the Anglesea Grevillea can survive, flourish and retain its potential for evolutionary development in the wild.

### Specific objectives, actions and targets

*The intended management actions listed below are further elaborated in DSE’s Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.*

### Objective I To increase knowledge of biology, ecology and management requirements

Action	Targets	Responsible
1. Clarify/review taxonomy. Clarify taxonomy to enable a more accurate conservation status assessment	<ul style="list-style-type: none"> <li>▪ Determination and updating of conservation status for inclusion on state and national threatened species lists.</li> <li>▪ Identity of population along the Colac-Forest Road, between Boundary Road and Road Night Creek Road clarified. The population may be Variable Prickly Grevillea (<i>Grevillea aquifolium</i>)</li> </ul>	Royal Botanic Gardens, DSE

	but has not flowered yet for taxonomy to be confirmed.	
2. Acquire baseline population data, including: identification of the area and extent of the population; estimates of the number, size and structure of the population; and inference or estimation of population change.	<ul style="list-style-type: none"> <li>▪ Updated records on all state databases (Flora Information System, VROTPop and Herbarium).</li> <li>▪ Extent of populations at Bald Hills Road, Grevillea Track off Bambra Road, and Breakfast Creek Road sites determined.</li> </ul>	DSE
3. Assess habitat characteristics and/or condition. Accurately survey known habitat in spring, and collect and analyse floristic and environmental information relevant to community ecology and condition	<ul style="list-style-type: none"> <li>▪ Core habitat mapped.</li> <li>▪ Ecological requirements identified for the completion of essential life history stages, recruitment and dispersal.</li> </ul>	DSE
4. Conduct survey to locate suitable habitat. Identify and survey potential / historical habitat, using ecological and bioclimatic information that may indicate habitat preference	<ul style="list-style-type: none"> <li>▪ Predictive model for potential habitat developed and tested.</li> </ul>	DSE
5. Undertake research to identify key biological functions. Determine stimuli for vegetative regeneration.	<ul style="list-style-type: none"> <li>▪ Increased shoot numbers for populations with few or moribund ramets.</li> <li>▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival.</li> </ul>	DSE
6. Analyse population trends. Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Collate, analyse and report on census data and compare with management histories.	<ul style="list-style-type: none"> <li>▪ Techniques for monitoring developed and implemented.</li> <li>▪ Growth rates determined.</li> <li>▪ Population Viability Analysis completed for targeted populations.</li> </ul>	DSE Parks Victoria

**Objective II To secure populations or habitat from potentially incompatible land use or catastrophic loss.**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
7. Negotiate management agreement with public land manager(s).	<ul style="list-style-type: none"> <li>▪ Develop roadside management plans for the Surf Coast Shire, and include the Hammonds Road site as high priority for conservation.</li> <li>▪ Re-assessment of permits to horse-riders who are currently allowed to ride close to the Gum Flats Road site, and from Gum Flats Road to Breakfast Creek Road.</li> </ul>	DSE Parks Victoria
8. Erect/maintain structures to restrict or control access. Control site disturbance from high visitor numbers and recreational vehicles using methods such as preventing access, brush-matting, tree-planting, fencing, signage and revegetation.	<ul style="list-style-type: none"> <li>▪ Measurable vegetative regeneration (recruitment of non-clonal individuals is unlikely) and a measurable reduction in plant mortality at Bald Hills Road near Salt Creek Track, Salt Creek Track, Bambra Road / north of Loves Track, Grevillea Track off</li> </ul>	DSE Parks Victoria

	Bambra Road, Link Track between Loves Track and Grevillea Track, Breakfast Creek Road, Haggarts / Allardyce Tracks, Gum Flat Road, Tanners Road and Tanners Road / Dangers Lane sites.	
	<ul style="list-style-type: none"> <li>Fencing to exclude recreational access (including vehicles and horse riders) completed for Gum Flats Road, and Breakfast Creek Road sites.</li> </ul>	

9.	Liase with private landholders. Ensure that information and advice about the recovery of Anglesea Grevillea has been provided to private land managers and landholders.	<ul style="list-style-type: none"> <li>All relevant private land managers are aware of the species and its management needs.</li> </ul>	DSE
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10.	Liase with government agencies. Ensure that information and advice about the recovery of Anglesea Grevillea has been provided to public land managers, local government authorities and Catchment Management Authorities.	<ul style="list-style-type: none"> <li>All relevant authorities and public land managers are aware of the species and its management needs.</li> </ul>	DSE
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**Objective III To improve the condition of habitat**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
11. Manage environmental weeds. Control pest plants using herbicide application and / or hand removal and revegetation.	<ul style="list-style-type: none"> <li>Measurable vegetative regeneration (recruitment of non-clonal individuals is unlikely).</li> </ul>	DSE, Parks Victoria
12. Realign tracks and roads. Control site disturbance from recreational vehicles by re-routing or ripping tracks.	<ul style="list-style-type: none"> <li>Measurable vegetative regeneration and a measurable reduction in plant mortality.</li> </ul>	DSE, Parks Victoria
13. Manage plant pathogens. Control the potential introduction and / or spread of Cinnamon Fungus.	<ul style="list-style-type: none"> <li>Area infested with Cinnamon Fungus not significantly increased.</li> </ul>	DSE, Parks Victoria
14. Undertake disturbance activities to maintain habitat and/or manage biomass	<ul style="list-style-type: none"> <li>Preparation of management prescriptions for ecological burning at the Breakfast Creek Rd site and other sites as appropriate.</li> <li>Preparation of management prescriptions for slashing at Bald Hills Rd, Salt Creek Track, Breakfast Creek Road, Gum Flat Road, Tanners Rd and Tanners Rd/Dangers Lane.</li> </ul>	DSE, Parks Victoria

**Objective IV To increase community awareness and support**

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
15. Involve community groups and volunteers in recovery activities.	<ul style="list-style-type: none"> <li>Opportunities for involvement identified, promoted and supported.</li> </ul>	DSE

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This Action Statement has been prepared under section 19 of the Flora and Fauna Guarantee Act 1988 under delegation from Mr Peter Harris, Secretary, Department of Sustainability and Environment, July 2008.

Published by the Victorian Government Department of Sustainability and Environment

Melbourne, July 2009

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ISSN 1448-9902

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