



## FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE

### FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

#### **Loss of biodiversity as a result of the spread of Coast Wattle (*Acacia longifolia* subsp. *sophorae*) and Sallow Wattle (*Acacia longifolia* subsp. *longifolia*) into areas outside its natural range (Potentially Threatening Process)**

FLORA & FAUNA  
GUARANTEE

**Date of receipt of the nomination:** 10 March 2016  
**Date of preliminary recommendation:** 6 June 2016  
**Date of final recommendation:** 16 September 2016

**File No.:** FF/54/3732

**Validity:** The nomination is for a valid item

**Prescribed Information:** The prescribed information was provided.

**Name of the Nominator** is adequately provided.

**Name of the item** is adequately provided. In the opinion of the Scientific Advisory Committee (SAC) the process is adequately defined and described. The nominated process is defined as the 'Loss of biodiversity as a result of the spread of Coast Wattle and Sallow Wattle into areas outside its natural range'.

**The range of flora and fauna affected or potentially affected** was adequately stated in the nomination.

**Significance of the threat which the potentially threatening process poses or has the potential to pose** was adequately stated in the nomination.

#### **Description of the process**

Coast Wattle (*Acacia longifolia* subsp. *sophorae*) and Sallow Wattle (*Acacia longifolia* subsp. *longifolia*) are described as 'woody legume seeders' (Zimmer et al. 2012). Both plants are erect shrubs or small trees, are very similar but *A. longifolia* subsp. *longifolia* has longer narrower phyllodes, and straight pods whereas *A. longifolia* subsp. *sophorae* has shorter broader phyllodes and contorted pods (Maslin 2001). The two subspecies hybridize making identification difficult in some cases.

'Loss of biodiversity as a result of the spread of Coast Wattle and Sallow Wattle into areas outside its natural range' is eligible for listing as a Potentially Threatening Process (PTP) because both Coast Wattle (*Acacia longifolia* subsp. *sophorae*) and Sallow Wattle (*Acacia longifolia* subsp. *longifolia*)

- Have aggressive and rapid invasive properties that alter native habitats
- Reduce habitat biodiversity
- Change landscape habitat composition and transform native ecosystems via the alteration of soil chemistry and hydrology.

Current evidence shows vegetation communities have been affected by the invasion and spread of Coast Wattle and Sallow Wattle, including heathland, forest, woodland, wetland peripheries, grasslands and riparian habitats.

Coast Wattle and Sallow Wattle invasion is mentioned as a threatening process in the management plan for the Glenelg Estuary and Discovery Bay Wetlands nominated Ramsar site (Cottingham et al. 2015). The Ngootyoong Gunditj Ngootyoong Mara South West Management Plan (Parks Victoria 2015) identifies control of Coast Wattle invasion as a key management strategy goal.

#### **Distribution**

Due to the widespread cultivation of Coast Wattle, the precise original distribution of the species remains uncertain (Maslin 2001). The natural distribution is generally accepted as being from southern Eyre Peninsula as far north as south-eastern Queensland, where it occurs in coastal tracts (Entwisle et al. 1996, Maslin 2001). In contrast, the natural range of Sallow Wattle is much more restricted, occurring in eastern New South Wales and eastern Victoria.

Although Sallow Wattle is a native to Victoria ('naturalised in parts of the state') and is currently widespread in southern Victoria, it is not considered indigenous west of East Gippsland. The original habitat of Sallow Wattle appears to be in eastern NSW and eastern Victoria. It is spreading rapidly in southern Australia (possibly as a garden escape) and is now common (Entwisle et al. 1996).

### Invasiveness

According to the Nature Conservation Society of South Australia (2002), Coast Wattle and Sallow Wattle have the following features that make them very efficient invaders of new habitats:

- Highly fecund (producing up to 11,500 seeds per plant when mature)
- Generate ariliferous seed that is highly attractive to a range of seed dispersal vectors
- Possess seed that is able to persist in the soil profile for decades
- Nitrogen fixing capabilities that cause significant environmental change
- Able to significantly change natural vegetation communities as a result of the creation of wattle monocultures following fire and other disturbances.

Sallow Wattle has been widely planted outside its natural range and readily invades remnant vegetation in Victoria (Ecology Partners 2008). In addition disturbance since settlement has resulted in Coast Wattle spreading aggressively from dunes into adjacent heathlands, scrublands and woodlands (Ecology Partners 2008), and extending inland for up to 10 km (Emeny 2009).

The cessation of frequent roadside burning plus fire suppression activities has provided the opportunity for the species to colonise previously undisturbed areas. Changes to land management practices, including changes to grazing and fire regimes, are attributed as the main reasons for invasion in non-coastal areas in the south west of Victoria (Emeny 2009).

### Significance of the threat

**Table 1:** The conservation status of species impacted by the spread of Coast Wattle and Sallow Wattle.

Species	Common name	Conservation status	Impact	Reference
<b>Flora</b>				
<i>Caladenia calcicola</i>	Limestone Spider-orchid	VU, L, E	Competition	Dickson et al. (2012)
<i>Caladenia hastate</i>	Mellblom's Spider-orchid	EN, L, e	Competition	Todd (2000)
<i>Caladenia orientalis</i>	Eastern Spider-orchid	EN, L, e	Competition	Todd (2000)
<i>Caladenia robinsonii</i>	Frankston Spider-orchid	EN, L, e	Competition	Todd (2000)
<i>Euphrasia collina</i> subsp. <i>muelleri</i>	Purple Eyebright	EN, L, v	Competition, Habitat degradation	Murphy and Downe (2006)
<i>Prasophyllum frenchii</i>	Maroon Leek-orchid	EN, L, e	Competition, Habitat degradation	Duncan (2010a)
<i>Prasophyllum spicatum</i>	Dense Leek-orchid	VU, e	Competition, Habitat degradation	Duncan (2010b)
<i>Pterostylis tenuissima</i>	Swamp Greenhood	VU, v	Competition	Dickson et al. (2012)
<i>Taraxacum cygnorum</i>	Coast Dandelion	VU, L, e	Competition	Carter (2010)
<i>Thelymitra epipactoides</i>	Metallic Sun-orchid	EN, L, e	Competition	Statewide Integrated Flora and Fauna Teams (2016)
<b>Fauna</b>				
<i>Pseudomys shortridgei</i>	Heath Mouse	VU, L	Habitat degradation	Watson et al. (2003), Mitchell and Wilson (2005)
<i>Stipiturus malachurus</i>	Southern Emu-wren	-	Habitat degradation	Maguire (2005), BirdLife Australia (2013)

#### Conservation status:

e = endangered on Victoria's advisory list (DEPI 2014)

r = rare on Victoria's advisory (DEPI 2014)

v = vulnerable on Victoria's advisory list (DEPI 2014)

EN = listed as 'endangered' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

VU = listed as 'vulnerable' under the EPBC Act

L = on the Threatened List of the *Flora and Fauna Guarantee Act 1988*

### Areas impacted

The process operates in the following geographic areas:

Glenelg Plains Bio-region: Coastal and immediate hinterland environs along Discovery Bay Coast of Victoria and cross-border into South Australia (limestone karst geomorphology); High Environmental Value Aquatic Ecosystems (HEVAE) wetland complexes; hinterland (Bulley Ranges and Lower Glenelg National Park, Grampians) (Huebner 1994); coastal

heathlands, grasslands and sedgeland. The species also overwhelms vegetation in woodlands (Specht and Specht 1999, Emeny 2009, Lunt et al. 2010).

**Gippsland:** Many coastal areas along Gippsland coastline. Coast Wattle and Sallow Wattle have invaded heathlands and grasslands within different geographic areas, soils and climate conditions (Costello et al. 2000).

In Western Victoria, Parks Victoria staff report that Coast Wattle is having negative impacts in the following conservation reserves and parks

- Port Campbell National Park
- Bay of Islands Coastal Park
- Discovery Bay Coastal Park,
- Mount Richmond National Park
- Cape Nelson State Park
- Narrawong Flora Reserve
- Tarragul Education Area
- Great Otway National Park

Near Melbourne, Sallow Wattle is having a small impact in the Watsons Creek catchment of Kinglake NP. In 2015-16, around 5380 hectares of Coast/Sallow wattle infestation was treated by Parks Victoria in 10 parks or reserves.

#### **Eligibility for listing as a potentially threatening process under the Flora and Fauna Guarantee**

The nominated item satisfies at least one criterion of the set of criteria prepared and maintained under Section 11 of the *Flora and Fauna Guarantee Act 1988*, and stated in Schedule 1 of the *Flora and Fauna Guarantee Regulations 2011*.

#### **Evidence that criteria are satisfied:**

**Sub-criterion 5.1.1** *the potentially threatening process poses or has the potential to pose a significant threat to the survival of two or more taxa.*

##### *Evidence:*

The species range has significantly increased since European settlement (Head 1988, Freeman 2010), with the taxon having now invaded a wide range of community types, altering native vegetation structure and floristic composition (Beauglehole 1984). The dense, closed, canopy formed by the taxa shades out light-demanding species and prevents regeneration of such species. Plant species and communities that are potentially most at risk from *Acacia longifolia* invasion include those that are restricted in distribution, and occur within the potential range of this wattle. The spread of Coast and Sallow Wattle is considered to be a serious threat to 10 plant species, one bird species and one mammal (Table 1). Nine of these taxa are listed under the *Flora and Fauna Guarantee Act 1988*.

**Sub-criterion 5.1.2** *the potentially threatening process poses or has the potential to pose a threat to the survival of a community of flora or fauna.*

##### *Evidence:*

The spread of *Acacia longifolia* threatens coastal heathlands, grasslands, and orchid communities especially those heathland types and orchids restricted to the Portland and Cape Bridgewater areas of south west Victoria. Anglesea and coastal habitats in Gippsland also are affected, making revegetation projects difficult to establish (McMahon et al. 1994). The taxon has also invaded communities away from the coast (e.g. Grampians, Victoria, Coonalpyn, South Australia)(Cohen 1981). The coastal heathland communities of south west Victoria are particularly threatened by invasion and spread of Coast Wattle.

The process alters soil chemistry, which leads to the transformation of vegetation communities making them unsuitable for certain heathland and other coastal flora and their interdependent fauna. In the long term the establishment of *Acacia longifolia* leads to the development of a monoculture. In addition soil seed-bank germination of *Acacia* following fires has led to mass germination of the species, which further alters soil hydrology and chemistry. This leads to soil changes that adversely affect soil mycorrhizal relationships, especially for rare or threatened orchids (Warcup 1981). Possibly as a result of this, native orchid pollinators have also declined e.g. *Caladenia* subgenus *Calonema* (Bower 2007).

The process disrupts a broad range of vegetation communities including coastal vegetation, wetland peripheries, heathlands, woodlands and lowland-foothills forests (McMahon et al. 1994, Costello et al. 2000, Emeny et al. 2006) and generates dense leaf-litter, which suppresses annual species (e.g. Orchidaceae, Liliaceae). This leaf-litter also alters fire regimes which allows fast-germinating *Acacia longifolia* seedlings to out-compete slower emerging natives after fire events (Carvalho et al. 2010).

**Sub-criterion 5.2.2** *the potentially threatening process poses or has the potential to pose a significant threat to the evolutionary development of a community of flora or fauna.*

**Evidence:**

Several of the actions of Coast Wattle and Sallow Wattle pose a significant threat to the evolutionary development communities including alteration of ecosystem function via significant, long-term decline in indigenous flora and faunal biodiversity (McMahon et al. 1994, Entwisle et al. 1996, Clay and Schneider 2000, Costello et al. 2000, Marchante 2008a, Emeny 2009).

**Criterion 6.1** *A specifically defined item, the subject of which is a subset or example of the subject matter of a more generally defined item which is listed is eligible to be listed if it is of such significance that it warrants it being listed in its own right so that an action statement should be prepared specifically for the item.*

**Evidence:**

The invasion of native vegetation by environmental weeds is listed as a potentially threatening process (SAC 1996). However, Coast Wattle and Sallow Wattle infestation of native vegetation is such a widespread, ongoing and significant problem ecologically in Victoria that this process warrants being listed in its own right.

*Acacia longifolia* and its subspecies are in continued invasion expansion (Lunt et al. 2010). The Lower Glenelg National Park (LGNP), Grampians in Victoria, and undisturbed forests are increasingly being further invaded and this phenomenon is expected to continue unless effective pathogens or biological control mechanisms can control its advances (Cohen 1981, Costello et al. 2000, Adair 2008). This taxon has been quoted as one of the most serious landscape plant invasions across much of temperate and southern Australia and in every country into which it has been introduced (Rascher et al. 2009). Long-term establishment alters soil properties with increased levels of organic carbon and total nitrogen altering soil microbiological processes (Bachmann 2009).

Climate changes may exacerbate stresses that could further increase the invasion of *Acacia longifolia* (Marchante 2008b), especially with its propensity to invade both disturbed and undisturbed habitats (Emeny 2009). Native fauna (Mitchell and Wilson 2005), including pollinator insects (Rayment 1953, Nooten et al. 2014) are at risk of extinction once their habitats are invaded by Coast Wattle. The endemic gene pool risks decline because there is no suitable habitat available to continue evolution processes.

**Additional information**

*Acacia longifolia* has also been invasive overseas. It has invaded habitats in New Zealand, Portugal, California, Columbia, Uruguay, Argentina, Indonesia, Israel, Spain and Mauritius (Weber 2003, Rascher et al. 2009, Marchante 2011).

**Documentation**

The published information and research data provided to the Scientific Advisory Committee have been assessed. Based on the available information, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

**Advertisement for public comment**

In accordance with the requirements of Section 14 of the *Flora and Fauna Guarantee Act 1988*, the preliminary recommendation was advertised for a period of at least 30 days.

The preliminary recommendation was advertised in:

- 'The Herald Sun' - on 10 August 2016
- 'The Weekly Times' - on 17 August 2016
- Government Gazette* - on 11 August 2016
- 'Geelong Independent' - on 10 August 2016
- 'Bairnsdale Advertiser' - on 10 August 2016
- 'Warrnambool Standard' - on 12 August 2016

Submissions closed on 9 September 2016.

**Further evidence provided:**

Five submissions were received on this item but no evidence was provided to warrant a review of the Scientific Advisory Committee's preliminary recommendation that the potentially threatening process is eligible for listing.

**Final Recommendation of the Scientific Advisory Committee**

The SAC concludes that on the evidence available the nominated item is eligible for listing in accordance with Section 11 of the Act because sub-criteria 5.1.1, 5.1.2, 5.2.2 and primary criterion 6.1 have been satisfied.

The Scientific Advisory Committee makes a final recommendation that the nominated item be supported for listing on Schedule 3 of the *Flora and Fauna Guarantee Act 1988*.

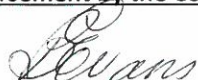
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**Endorsement by the Convenor of the Scientific Advisory Committee**

**Date**



*A/10/2016*

**Prof Barbara Evans**  
Convenor