

Eyre Peninsula NRM Board

PEST SPECIES REGIONAL MANAGEMENT PLAN

Asparagus declinatus Bridal veil



Natural Resources
Eyre Peninsula



Government of South Australia
Eyre Peninsula Natural Resources
Management Board

INTRODUCTION

Synonyms

Asparagus crispus Lam. *Myrsiphyllum declinatum* (L.) Oberm.

Bridal veil, bridal veil creeper, pale berry asparagus fern, asparagus fern, South African creeper.

Biology

The fern-like bridal veil *Asparagus declinatus* (L.) (Asparagaceae) is a long-lived, summer-dormant geophyte. The plant has extensive, perennial, belowground branching rhizomes, with bulb-like fleshy tubers that make more than 85% of the total plant biomass. Above-ground weakly climbing cladodes up to 2-3 m in length emerge with rains in early autumn and die back with higher temperatures in November-December [1]. Bisexual flowers form in July-August, set berries in August-September, with fruit production reaching up to 800 fruit / m². With 5-8 seeds per fruit, seed loads can reach approximately 4800 seeds / m² [1]. Seed viability is unknown. Tubers enable vegetative reproduction [1].

In South Australia, bridal veil grows well in dry areas (mean rainfall 495 mm/year) to wetter regions (630 mm/year) [1].

Origin

Bridal veil is a native to the western Cape region of South Africa. It was brought to Australia for ornamental purposes and was first recorded as a garden plant in 1870 [1].

Distribution

Bridal veil has a scattered distribution in Victoria, SA and WA. It presently has a relatively limited distribution in SA on the Eyre, York and Fleurieu peninsulas, the southern Mt Lofty Ranges and Kangaroo Island (Figure 1). On Kangaroo Island, it was first observed spreading during the 1920s and was recorded as naturalized in 1954. It was recorded as naturalized on the southern Fleurieu Peninsula in 1966 [2]. These regions now contain the most significant and advanced populations in Australia, infesting numerous roadsides, conservation parks and private properties. On Yorke Peninsula, populations are smaller, though there are significant scattered infestations including in some conservation parks and roadsides. It is sparsely present in the Barossa region [2]. Eyre Peninsula has several populations in Port Lincoln, Coffin Bay, and along roadsides in the Tootenilla area, where it has been spread by graders [2].

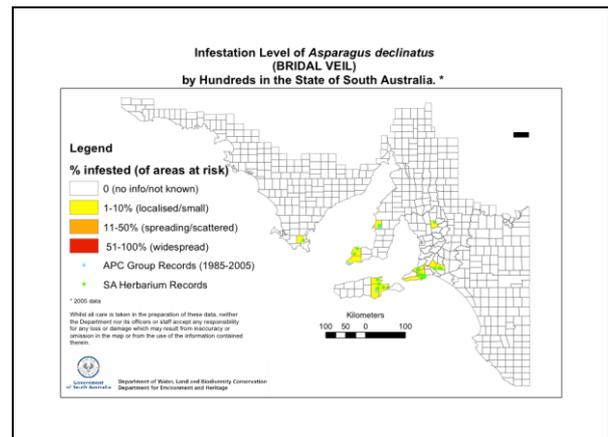


Figure 1: Distribution by hundreds in South Australia 2005 data of *Asparagus declinatus*. Source: http://www.pir.sa.gov.au/media/pdf/pirsa_internet/biosecurity/nrm_biosecurity/weed_distribution_maps/

Modelling indicates that bridal veil has the potential to spread along extensive areas of the southern coast line of Australia (Figure 2).

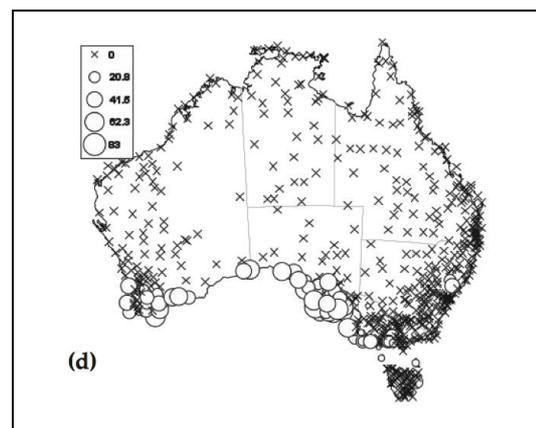


Figure 2: Potential distributions: Bridal veil. CLIMEX prediction of Ecoclimatic Index (EI) showing circles for suitable locations and crosses where species is predicted to not survive in Australia [3]

Projected climate suitability for bridal veil in South Australia to 2080, based on the A1B SRES emissions scenario, suggests the risk profile is likely to change under future climates [4]. Under climate change scenarios, suitability of climate for bridal veil increases around Adelaide and in the lower south east is predicted (Figure 3).

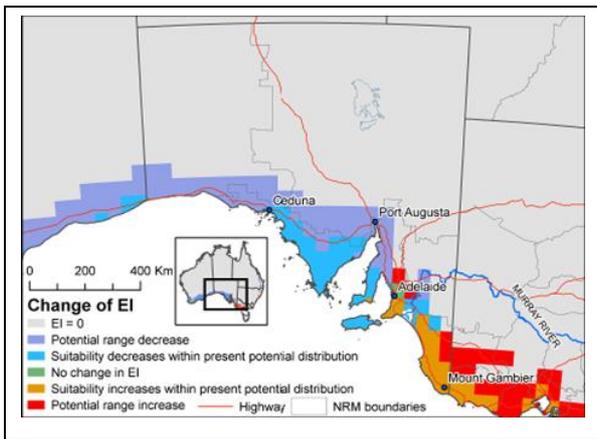
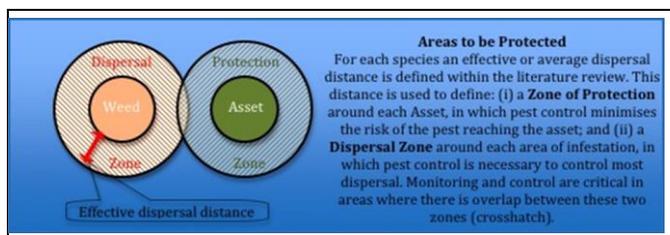


Figure 3: Change in climate suitability for *Bridal veil* in South Australia as indicated by the CLIMEX Ecoclimatic Index (EI) using CSIRO Mk3 projections for 2080 based on the A1B SRES emissions scenario. Source: [4].

RISK ASSESSMENT



Pest Risk

When established, bridal veil's scrambling habit and dense under-ground tuberous root mass inhibits germination and recruitment of native plants [5]. In South Australia, bridal veil is often located under tree species that are used by the main avian seed vectors: *Exocarpos cupressiformis* on the Fleurieu Peninsula and *Eucalyptus diversifolia* on Kangaroo Island [1]. The establishment of bridal veil in native habitat can cause a decline in bare ground and other ground cover, a reduction of species diversity and a fall in the recruitment of native woody species [5]. The recruitment and regeneration of native species is hindered through the additional competition for nutrients, moisture, light and space [1].

A range of vectors, including birds, herbivorous mammals and lizards facilitate seed dispersal, with dispersal distance likely to be greater than for the bridal creeper; currawongs have been shown to fly up to 10 km before regurgitating viable seeds [1]. Based on these data an effective dispersal distance of up to five kilometres from an infestation boundary can be anticipated for bridal veil.

Based on impact on native plants, ability to disperse, the likely future distribution and potential impact on vegetation

communities (including threatened species), bridal veil is considered a significant weed species of serious impact [6].

Feasibility of Control

The leaves (cladodes) of bridal veil plants are fine and 'feathery' which makes herbicide application difficult and the suggested compartmentalization of the rhizomatous and tuberous root system means that regrowth from root system sections of treated plants requires ongoing treatment [6]. Herbicides need to be applied before bridal veil flowers [2]. In terms of herbicide application, unlike *A. asparagoides* metsulfuron-methyl is mostly ineffective, with application of glyphosate more effective [2]. Glyphosate + Pulse Penetrant® application has been shown to significantly reduce foliage cover and result in fewer, stunted, non-flowering/ fruiting shoots two years after treatment [7, 8].

Manual removal can also be suitable for small plants and outliers. Plants can be grubbed, ensuring all tubers and rhizomes are removed from the soil, whilst minimizing the amount of soil disturbance that occurs [8].

Livestock grazing by sheep as an alternative method for control can significantly reduce shoot biomass [8, 9]. However, the use of grazing as a control method is limited by the inability of one-off grazing events to reduce the long-term health and viability of bridal veil infestations, plus the potential impact of livestock grazing on non-target, native plant species. Slashing may prevent the plant from fruiting, but it might take up to 10 years of repeated slashing to exhaust the tubers [7].

Status

Within the EP NRM Board region a risk management assessment [10] shows bridal veil merits a protect sites management category in native vegetation, and a contain spread management action in Coastal habitat.

Table 1: Regional Assessment Table

| Land Use | Pest Risk | Feasibility of Control | Management Action |
|-------------------|-------------------|------------------------|---------------------|
| Native vegetation | AMLR* 93 (Medium) | AMLR* 21 (High) | AMLR* Protect Sites |
| Coastal | 54 (Medium) | 5 (Very High) | Contain spread |

*Data for EP unavailable for native vegetation land use. Adelaide and Mount Lofty NRM Board assessment data used here.

REGIONAL RESPONSE

Special Considerations/Board Position

The potential for further garden escapes of bridal veil into uninfested areas needs to remain a consideration.

Action on individual properties will significantly reduce the level of risk to a defined asset.

Outcome

Contain spread of bridal veil.

Objectives

To:

1. define a dispersal zone for control around each infestation;
2. locate and destroy small bridal veil infestations;
3. contain and reduce the impact of existing bridal veil infestations; and
4. educate community on identification, control and threat of this species using targeted approach.

Area/s to be protected

Habitat associated with existing bridal veil.

Actions

To:

1. maintain bridal veil monitoring program to define extent;
2. establish buffer zones to contain existing bridal veil populations;
3. facilitate, encourage or compel control of existing bridal veil infestations and within buffer zones to eradicate small infestations and reduce area and intensity of impact for large infestations;
4. destroy new infestations;
5. monitor control areas to ensure control action is effective and enduring;
6. establish protocols for systematic data collection and storage in a central spatial database;
7. participate in biological control programs if they become available; and
8. raise community awareness to promote landholder control of bridal veil in the southern region.

Evaluation

Evaluation of success will be based on:

- analysis of monitoring data to evaluate the outcome of control actions in key assets, protection zones and dispersal areas; and

- annual assessment and reporting of surveillance programs at the district level, and review of the monitoring program every five years.

Declarations

In South Australia bridal veil *Asparagus declinatus* is a declared weed under Schedule 2 (CLASS 19 – Provisions: 175(2), 177(1)(2), 182(2)(3), 185(1) for the whole state) of the *Natural Resources Management Act 2004* (Table 2). Meaning that the movement or transport of the plant on a public road, by itself or as a contaminant, or the sale by itself or as a contaminant is prohibited. NRM authorities may require land owners to control bridal veil plants growing on their land. NRM authorities are required to control plants on road reserves, and may recover costs from the adjoining land owners.

Table 2: Bridal veil – Relevant sections of the *Natural Resources Management Act 2004* Declared Weed Status.

| Section | Description of how the section applies |
|---------|--|
| 175 (2) | Cannot transport the plant or any substance carrying the plant in it within the state |
| 177 (1) | Cannot sell any produce / goods carrying the plant |
| (2) | Cannot sell any produce / goods carrying the plant |
| 182 (2) | Land owner must keep plants controlled on their land |
| 185 | NRM authority may recover costs for control of plants or animals on roadsides from adjoining land owners |

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