

Action Statement

Flora and Fauna Guarantee Act 1988 No. 97 (Revised in 2009)

Southern Pipewort *Eriocaulon australasicum*

This Action Statement is based on the Recovery Plan prepared for this species by DSE under contract to the Australian Department for the Environment, Water, Heritage and the Arts. The first Action Statement for this species was prepared in 1999. It has been reviewed in light of subsequent monitoring results.

Description

Southern Pipewort (*Eriocaulon australasicum* F. Mueller Koern.) is a small, semi-aquatic annual herb of the Eriocaulaceae family. It has a basal tuft of linear leaves, 20 - 50 mm long and 1 - 1.5 mm wide. The flower heads are egg-shaped to almost globular, 3 - 4 mm wide, and are enclosed by lance-shaped outer bracts and linear inner bracts. Flowering occurs in summer. The fruits are smooth and have three-celled capsules, each containing a single seed (Cunningham *et al.* 1992).

Distribution

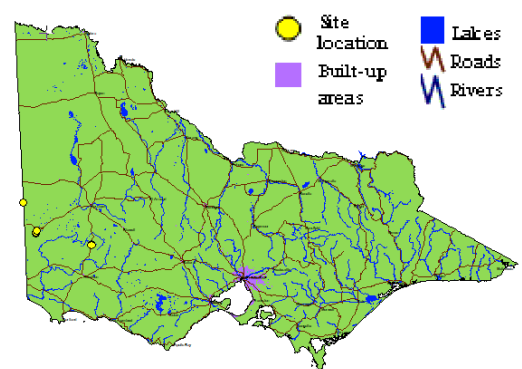
Southern Pipewort occurs in western Victoria, with a portion of one known population extending into South Australia on private land. Victorian populations occur in the Grampians National Park, Little Desert National Park and in the Meereek Flora Reserve. Land clearing and swamp drainage for agriculture are likely to have significantly reduced the abundance of Southern Pipewort. The largest known population occurs in the Little Desert National Park.

Abundance

There are fewer than 2000 plants remaining in five wild populations.

Important populations

Important populations necessary to the long term survival and recovery of the Southern Pipewort occur in the following locations:



Distribution in Victoria
(Flora Information System DSE 2007)

National Parks

Little Desert National Park:

- 750 plants estimated in 1987 (*sensu* Border Track A in VROTPop).
- 500 - 700 plants estimated in 1990 (*sensu* Border Track A in VROTPop).

Grampians National Park:

- One record (unknown number of plants) in 1987.

Other Reserves

Meereek Flora Reserve:

- More than 1000 plants estimated in 1987 (total for three populations in Reserve).

Private Land

- Unknown number of plants recorded in 1987 adjacent to the 'Border Track A' population in the Little Desert National Park.

Habitat

Populations of the Southern Pipewort occur in shallow, seasonally-inundated depressions and swamp margins on clay plains. Plants commonly begin growing in shallow water (up to 20 cm deep), particularly where the water is clear and the substrate high in organic matter. Southern Pipewort is less commonly found in turbid water (Scarlett 1999). Commonly associated species include Black Bristle-sedge (*Chorizandra enodis*), Running Marsh-flower (*Villarsia reniformis*), Dwarf Brooklime (*Gratiola pumilo*), Wiry Centrolepis (*Centrolepis polygyna*), Water-milfoil (*Myriophyllum* spp.) and Purple Bladderwort (*Utricularia dichotoma*).

Life history and ecology

Little is known about the biology and ecology of Southern Pipewort. It is an annual species and possibly requires a period of inundation to enable germination from soil-stored seed. Plants start to grow in shallow water (up to 20 cm deep) (Scarlett 1999). Flowering and seed-set follow rapidly as the water level drops and depressions dry out.

Watson *et al.*'s (1994) studies of the North American species Dwarf Pipewort (*Eriocaulon kornickianum*) identified many factors which have contributed to the decline of that taxon, including annual or weak perennial life history, no vegetative reproduction, low seed set, small soil seed bank, high genetic homogeneity, restricted habitat and poor competitive ability.

There are many similarities between Dwarf Pipewort and Southern Pipewort. Like Dwarf Pipewort, Southern Pipewort has an annual life history, does not reproduce vegetatively and is of

restricted habitat. Seed set, seed bank accumulation, persistence and competitive abilities for Southern Pipewort are unknown, but need investigating. The viability of soil-stored seed is also unknown. However, the absence of Southern Pipewort from surveyed sites in certain years may indicate that the species can survive unfavourable seasons as soil-stored seed (Scarlett 1999). The limited availability of suitable habitat makes Southern Pipewort particularly susceptible to extinction.

Conservation status

Southern Pipewort is listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Southern Pipewort is listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*.

It is considered endangered in Victoria according to the Department of Sustainability and Environment's *Advisory List of Rare or Threatened Vascular Plants in Victoria - 2005* (DSE 2005).

Decline and threats

Fire

Low: Fire protection works and fuel reduction burning programs have been modified to avoid disturbance at known sites. This is largely precautionary: Southern Pipewort is unlikely to be subjected to fire during the growing season as flowering and seed set occur soon after the habitat dries out (Scarlett 1987).

Weed invasion

Low (public land): Weed invasion has not been highlighted as a significant threat to sites within reserves.

High (private land): Weeds are likely to be a threat at the private land site in South Australia.

Grazing

Low (public land): At the Little Desert site, grazing by introduced stock was identified as a threat prior to 1990. Stock have since been removed, however, and relevant fences repaired on the Victorian-South Australian border. Grazing by rabbits was considered to be of a low impact in 1987 but current threat is unknown. The threat level of grazing native macropods is unknown.

High (Private land): Scarlett (1987) states that an area of grazed private land in South Australia where there has been much grazing by sheep was in very poor condition with very few Southern Pipewort plants seen.

Site Disturbance

Moderate (Public Land): The population in the Little Desert National Park had a vehicle track passing

directly through it prior to 1990. The track has been realigned to eliminate the threat of recreational vehicle disturbance. Damage from recreational vehicles was again described as a threat to the population in 2008. A fence is planned to protect the site.

High (Private land): Trampling by sheep was assessed as threatening the survival of the population.

Climate change

High: Climate change is a potentially large threat to the species' survival. Projected annual rainfall changes for western Victoria are - 15 to + 3 % by 2030 and - 38 to + 12 % by 2070. Mean annual temperatures are predicted to increase by 1.5 °C by 2030 and by 4.5°C by 2070. Increases in temperature are associated with an increase in evaporation. In most locations, this is not predicted to be offset by increases in rainfall, implying that future conditions will be drier. The frequency of inundation events may therefore decrease, further restricting the availability of suitable habitat for Southern Pipewort. Moisture stress to vegetation may also be increased (CSIRO 2001).

Alternation of drainage to wetland habitats

Construction of vehicular tracks and dams along drainage lines which feed into wetlands containing Southern Pipewort may adversely affect the long term viability of populations.

Salinisation

The apparent disappearance of Southern Pipewort from the region along the Murray and lower Murrumbidgee Rivers may have been caused by widespread salinisation. Neither the Meereek, Woohlpooer or Little Desert populations are currently affected by salinity, but salinity poses a long term threat in northern and western Victoria and the south-east of South Australia (Scarlett 1999).

Previous management actions

- The first Action Statement for Southern Pipewort was prepared in 1999.
- Monitoring and surveys have been carried out by DSE and Parks Victoria staff and volunteers without success. The conclusion is that the sites have been too dry in the recent years for soil-stored seed to germinate. Surveys were conducted in the Little Desert National Park after heavy rains in 2009, and samples have been sent to the Herbarium for identification.
- A national recovery team for the species has been established, and interested community members have been invited to be involved.
- There has been ongoing liaison between Parks Victoria, DSE and Wimmera Catchment Management Authority about Southern Pipewort.

Objectives and intended management actions

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.

Long term objective

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

Specific Objectives, Actions and Targets

Objective I To improve knowledge of biology, ecology and management requirements

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
1. Acquire baseline population data by conducting detailed field surveys including (a) identification of the area and extent of populations; (b) estimates of the number, size and structure of populations, and (c) inference or estimation of population change.	<ul style="list-style-type: none"> ▪ Baseline data collected. ▪ Conservation status reassessed. ▪ Populations accurately mapped. 	DSE, Parks Victoria

2. Assess habitat characteristics and/or condition by accurately surveying known habitat and collecting floristic and environmental information describing community ecology and condition.	<ul style="list-style-type: none"> ▪ Habitat data collected and analysed. ▪ Important habitat mapped. 	DSE, Parks Victoria
3. Conduct surveys to identify and search suitable habitat. Identify and survey potential habitat, using ecological and bioclimatic information indicating habitat preference.	<ul style="list-style-type: none"> ▪ Predictive model for potential habitat developed and tested. ▪ Suitable habitat areas in Little Desert National Park, Grampians National Park and private land adjacent to Meereek Flora Reserve surveyed. 	DSE, Parks Victoria
4. Undertake research to identify key biological functions.	<ul style="list-style-type: none"> ▪ Critical life history stages identified. ▪ Recruitment and dispersal identified at known sites. ▪ Seed bank/regenerative potential quantified for each/target population. ▪ Stimuli for recruitment/regeneration identified. 	DSE, Parks Victoria
5. Undertake detailed population monitoring and collect demographic information. Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data.	<ul style="list-style-type: none"> ▪ Techniques for monitoring developed and established. ▪ Census data for target populations collected. 	DSE, Parks Victoria
6. Analyse population trends. Collate, analyse and report on census data and compare with management histories.	<ul style="list-style-type: none"> ▪ Population growth rates determined and Population Viability Analysis completed for target populations 	DSE

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 a voluntary management agreement with a private landholders.	<ul style="list-style-type: none"> ▪ Negotiations undertaken with all landholders ▪ All known private land sites protected through planning processes and/or agreements 	DSE
8. Incorporate actions in relevant park or reserve management plan.	<ul style="list-style-type: none"> ▪ Park management plans identify Southern Pipewort and provide for its protection and active management. 	Parks Victoria
9. Provide information and advice to local government authorities for inclusion in planning processes.	<ul style="list-style-type: none"> ▪ All known sites are identified and protected through planning processes. 	DSE
10. Collect and store reproductive material as a safeguard against catastrophic loss.	<ul style="list-style-type: none"> ▪ Reproductive material securely stored. 	Royal Botanic Gardens
11. Establish cultivated plants <i>ex situ</i> to safeguard from the unforeseen destruction of the wild population	<ul style="list-style-type: none"> ▪ Effective propagation and cultivation techniques developed. ▪ At least 50 mature plants in cultivation, representing all extant populations. 	Royal Botanic Gardens

Objective III To improve the extent and/or condition of habitat

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
12. Identify disturbance regimes to maintain habitat.	<ul style="list-style-type: none">Management strategies identified to maintain, enhance or restore habitat.Preparation of management prescriptions for Little Desert National Park, Meereek Flora Reserve and Grampians National Park sites.	Parks Victoria, DSE
13. Manage environmental weeds.	<ul style="list-style-type: none">Threat posed by environmental weeds monitored annually.Management initiated where necessary.	Parks Victoria, DSE
14. Manage browsing damage.	<ul style="list-style-type: none">Stock excluded from Southern Pipewort sites.Fence at Little Desert NP site is maintained in good condition.Rabbit control programs undertaken where necessary.	Parks Victoria, DSE
15. Manage human-related disturbance.	<ul style="list-style-type: none">Fence erected at Border Track, Little Desert National Park to protect the sites.No further damage to populations from recreational driving.	Parks Victoria, DSE

Objective IV To increase community awareness and support

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

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