Department of Sustainability and Environment

Action Statement

Flora and Fauna Guarantee Act 1988 No. 209

Bog Willow-herb

Epilobium brunnescens subsp. *beaugleholei*

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

Bog Willow-herb (*Epilobium brunnescens* subsp. *beaugleholei*) is a prostrate, mat-forming, perennial herb. Its stems root at the nodes and grow beyond the flowering regions. Leaves are elliptic or ovate, opposite, up to 14 x 7 mm, sparsely hairy, with some glandular hairs. Margins are smooth or with a few shallow teeth. Flowers appear in summer and are white, ≤8 mm wide on stalks ≤7 cm long. The four petals are obovate, ≤4 mm long, and each is indented at the apex. The fruit is a narrow, cylindrical capsule, ≤24 mm long, containing small dark, granular seeds attached to long, silky hairs (DNRE 2001, Walsh & Entwisle 1996).

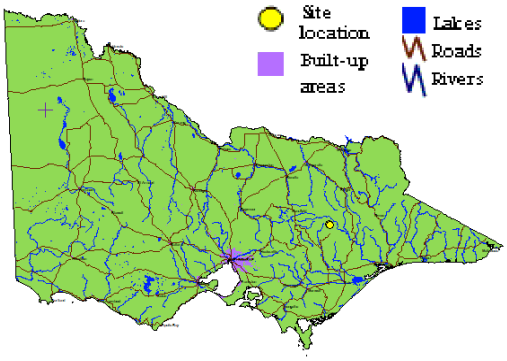
Variable Willow-herb (*Epilobium billardierianumi*) and Gunn's Willow-herb (*E. gunnianum*) occur near to Bog Willow-herb. Those species may be distinguished by their erect habit and variously toothed leaves, as compared to the mat-forming habit and mostly entire leaves of Bog Willow-herb (Walsh & Entwisle 1996).

Distribution

Bog Willow-herb is a Victorian endemic confined to moist, moss-covered rocks in the splash-zone of a sub-alpine waterfall on the Snowy Range, north of Licola (Walsh & Entwisle 1996).

Two other sub-species of *Epilobium brunnescens* (subsp. *brunnescens* and subsp. *minutiflorum*) are native to New Zealand and widespread in similarly moist habitat (Webb *et al.* 1988). The Australian *Epilobium brunnescens* subsp. *beaugleholei* represents a distinct sub-species that has probably evolved in isolation since Gondwanan break-up (West & Raven 1977).

Bog Willow-herb (Photo: Eichler)



Distribution in Victoria
(Flora Information System DSE 2007)

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Abundance

Bog Willow-herb occurs in a single population at Conglomerate Creek Falls occupying approximately 1 m^2 cover within 12 m^2 habitat. In 1983 at the Conglomerate Creek Falls base site, N. Scarlett recorded 50 plants over 900 m^2 of habitat (VROTPOP database). In 2001, J. Eichler recorded 3 patches totalling 1 m^2 cover over an area 12 m^2.

Habitat

The population of Bog Willow-herb occurs on moist, moss-covered rocks receiving splash from a perennial sub-alpine waterfall on the Snowy Range, north of Licola (Walsh & Entwisle 1996). It occurs with various bryophyte mats and receives little direct sunlight. It is essential that water flow and associated herbage are maintained. Plants permeate the mossy substrate with their long rhizomes; there is little to no soil on the wet rock where plants reside (West and Raven 1977). The altitude is ~1320 above sea level.

Life history and ecology

Little is known of the reproductive biology of Bog Willow-herb.

Conservation status

National conservation status

Bog Willow-herb is listed as 'vulnerable' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*

Victorian conservation status

Bog Willow-herb has been listed as 'threatened' under the Victorian *Flora and Fauna Guarantee Act 1988.*

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

Potentially threatening processes

Collection

Plants may be targeted by collectors, but are rather inaccessible.

Extreme rarity

This species is known from a small population in the wild. Anecdotal information (from J. Eichler) suggests that the population has contracted over the past decade or so.

Climate Change

Climate change impacts, including extended drought, may alter the habitat, rendering it unsuitable for the continued existence of the plants.

Rock Fall

Rock fall may damage the population at the base of Conglomerate Creek Falls.

Previous management action

- Post-fire assessment and monitoring of priority populations of threatened flora was conducted after the 2003 wildfire in the Victorian Alps. This included including mapping of populations in conjunction with the fire boundary using existing information, site visits and data collection describing habitat condition, threats, population demography and vital attributes.

Conservation objectives, actions and targets

Long term objective

To ensure that the Bog Willow-herb 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 1 To increase knowledge of biology, ecology and management requirements

Action	*Targets*	*Responsible*
1. 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.	▪ Updated records on all state databases (FIS, VROTPop and Herbarium). ▪ Accurate information and maps of all population locations.	DSE

2.	Assess habitat characteristics and/or condition. Accurately survey known habitat, and collect and analyse floristic and environmental information relevant to community ecology and condition.	▪ Ecological requirements identified for the completion of essential life history stages, recruitment and dispersal. ▪ Core habitat mapped.	DSE
3.	Conduct survey to locate suitable habitat. Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference. There are a number of waterfalls at similar altitude in the vicinity. These should be primarily targeted.	▪ Predictive model for potential habitat developed and tested.	DSE
4.	Assess threats. Undertake detailed threat assessment to determine need for action to prevent visitor access.	▪ Detailed threat assessment completed. ▪ Action implemented if required.	Parks Victoria
5.	Undertake research to identify key biological functions. Evaluate current reproductive / regenerative status, longevity, fecundity and recruitment levels by conducting field based experimental trials. Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli and determine stimuli for vegetative regeneration.	▪ Regenerative potential quantified for the population. ▪ Stimuli for recruitment/regeneration identified. ▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival.	DSE, Royal Botanic Gardens
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.	▪ Techniques for monitoring developed and implemented. ▪ Census data collected. ▪ Population dynamics determined.	DSE, Parks Victoria

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

Action		*Targets*	*Responsible*
7.	Establish cultivated plants *ex situ* to safeguard from the unforeseen destruction of the wild populations. Successful plant division and growth in glasshouse conditions are described in West and Raven (1977).	▪ Development of effective propagation and cultivation techniques. ▪ At least 30 mature plants in cultivation.	Royal Botanic Gardens
8.	Develop, provide input to or implement park, reserve or land management plan. Ensure that information and advice about the recovery of Bog Willow-herb has been provided to Parks Victoria.	▪ The Bog Willow-herb and its management needs are addressed in the management plan for the Alpine National Park.	DSE

Objective III To increase the number of populations or individuals

Action		*Targets*	*Responsible*
9.	Store reproductive material. Establish a seed bank.	▪ Long-term storage facility identified. ▪ Seed from target populations in storage.	DSE, Royal Botanic Gardens
10.	Determine seed viability.	▪ Seed viability determined.	Royal Botanic Gardens

References

DNRE (2001) *DNRE Flora Information System 2001*, Department of Natural Resources and Environment.

DSE (2005) *Advisory List of Rare or Threatened Plants in Victoria – 2005*. Department of Sustainability and Environment, East Melbourne, Victoria.

Walsh, N.G. & Entwisle, T.J. (1996) *Flora of Victoria Volume 3: Winteraceae to Myrtaceae*, Inkata Press, Melbourne.

Webb, C. J., Sykes, W.R., & Garnock-Jones, P.J. (1988) *Flora of New Zealand Volume IV: Naturalised Pteridophytes, Gymnosperms*, Dicotyledons, Botany Division, Department of Scientific and Industrial Research, Christchurch, New Zealand.

West, K.R. & Raven, P.H. (1977) Novelties in Australian *Epilobium* (Onagraceae), *New Zealand Journal of Botany*, **15**: 503-509.

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