

Action Statement

Flora and Fauna Guarantee Act 1988

No. 234

Harsh Nematolepis

Nematolepis squamea subsp. *coriacea*

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

Description

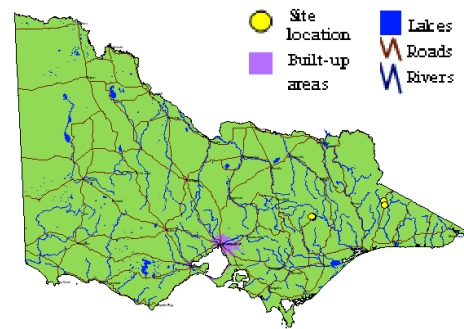
Harsh Nematolepis (*Nematolepis squamea* subsp. *coriacea*, formerly *Phebalium squameum* subsp. *coriaceum*) is a shrub to approximately 1 m in height (rarely to ~ 4 m), with smooth or glandular branches (Wilson 1998; Walsh & Entwisle 1999). The leaves are ovate to elliptic, stiff, leathery, 18–30 mm long and ~6–10 mm wide, with a rounded apex (Walsh & Entwisle 1999). The upper leaf surface is dark green, smooth and hairless, while the lower surface is covered with small silvery, membranous scales. The inflorescence is axillary, with 1–20 white or cream flowers, each bearing five elliptic petals. The ten stamens have yellow anthers, and are barely longer than the petals (DNRE 2001). The calyx is cup-like, to 3 mm long, hairless, with triangular lobes which are prominently dotted with glands (DNRE 2001). The ovary is hairless. The up to five fruiting follicles are slightly spreading, to ~3 mm in length (Walsh & Entwisle 1999).

Distribution

Harsh Nematolepis occurs in scrub on cliffs and bluffs in the upper Wonnangatta River Catchment, and at lower altitude in similar habitat near the gorge tract of the Snowy River near Wulgulmerang (Walsh & Entwisle 1999).

Abundance

Approximately 1100 – 1600 plants are known from two wild populations. A site at St Helena Spur in the Snowy River Catchment narrowly avoided the fires of January 2003. The other population at Neilson Crag in the Wonnangatta River Catchment was unaffected by the 2003 fires, but was affected by the 2006 “Great Divide” fires. Post-fire assessments undertaken in 2008 indicate that this



Distribution in Victoria
(Flora Information System DSE 2007)

species is regenerating both vegetatively and from seed (Kohout *et. al.* 2008).

A population represented by a 1969 collection at the National Herbarium of Victoria from Wulgulmerang Creek, upstream of its entry into Little River Gorge, has not been relocated but probably persists. The size of this population is unknown.

Important populations

Important populations necessary to the long term survival and recovery of *Harsh Nematolepis* occur in the following locations:

<i>Population</i>	<i>Estimated size</i>
St Helena Spur, Snowy River National Park	~600, mostly mature plants
Neilson Crag (The Watchtower), Alpine National Park	500 - 1000 plants (predates 2006 fires)

Habitat

Populations of *Harsh Nematolepis* occur in rocky outcrop shrubland at approximately 870 m (St Helena Spur) and 1350 m (Neilson Crag) above sea level. At the St Helena Spur site, the soil is skeletal Snowy River volcanics / Boundary Creek conglomerate. Associated species include Tall Ground-berry (*Acrotriche leuocarpa*), a Star-hair (*Astrotricha* sp. 4), a Flax-lily (*Dianella* sp. aff. *tasmanica*), River Peppermint (*Eucalyptus elata*), Silvertop (*E. sieberi*), Pepper Everlasting (*Ozothamnus conditus*), Grey Everlasting (*O. obcordatus*) and Alpine Podolobium (*Podolobium alpestre*). At the Neilson Crag, soils are skeletal and derived from metamorphosed sandstone. Associated species at this site include Daphne Heath (*Brachyloma daphnoides*), Small Crowea (*Crowea exalata*), Common Heath (*Epacris impressa*), Snow Gum (*Eucalyptus pauciflora*), Tingaringy Gum (*E. glaucescens*) and Oval-leaf Grevillea (*Grevillea miqueliana* subsp. *moroka*). Topography at the St Helena Spur site falls steeply north-north-easterly; the plants are highly exposed, but are protected from fire to some extent by the largely unvegetated cliffs on either side of the population. Topography at the Neilson Crag site varies from flat to steep north-and westerly-facing slopes.

Life history and ecology

There have been no targeted studies of the ecology or biology of *Nematolepis squamea* subsp. *coriacea*. Both populations currently appear to be even-aged, suggesting that members of each population germinated following a disturbance event, probably fire. Both populations are in areas where fires are likely to be infrequent, with an estimated interval between fires of more than ten

Long term objective

To ensure that *Nematolepis squamea* subsp. *coriacea* can survive, flourish and retain its potential for evolutionary development in the wild.

years. The age at reproductive maturity is unknown but is likely to be in the order of 4-10 years. The likelihood of extinction through fire is therefore remote but, nonetheless, inappropriate fire regimes represent the most likely cause of loss of either population. Both populations contain large numbers of individuals, occur in remote areas in national parks and appear secure. An assessment of post-fire regeneration at Neilson Crag indicates vegetative and seedling regeneration.

Conservation status

National conservation status

Nematolepis squamea subsp. *coriacea* is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Victorian conservation status

Nematolepis squamea subsp. *coriacea* is 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 Vascular Plants in Victoria - 2005* (DSE 2005).

Decline and threats

Inappropriate biomass reduction / fire regimes

Fire intervals of less than eight years (or less than the time to reproductive maturity) would threaten populations. The probability of such a fire interval, however, is low.

Previous management action

- St Helena Spur location was visited in 2002. The area, extent and population size were assessed.
- Neilson Crag site was surveyed to determine the impact of fire suppression activities (helipad construction) associated with 2003 Alpine National Park fires. Little or no damage is likely to have occurred.
- Regional threatened flora network was established in 2006.
- Neilson Crag site was surveyed in 2008 to determine the impact of 2006 Great Divide fire: regeneration is evident.

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. Acquire baseline population data. Conduct detailed field and desk top surveys including identification of the area and extent of the population. Estimate the number, size and structure of the population, and infer or estimate population trend.	<ul style="list-style-type: none"> ▪ Updated records on all state databases (Flora Information System, VROTPop and Herbarium). ▪ Populations accurately mapped. 	DSE Parks Victoria
2. Assess habitat characteristics and/or condition. Accurately survey known habitat (including searches of Wulgulmerang Creek area), and collect and analyse floristic and environmental information relevant to community ecology and condition.	<ul style="list-style-type: none"> ▪ Ecological requirements identified for the completion of essential life history stages, recruitment and dispersal. ▪ Core habitat mapped. 	DSE Parks Victoria
3. Conduct survey to locate suitable habitat. Identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference	<ul style="list-style-type: none"> ▪ Predictive model for potential habitat developed and tested. 	DSE Parks Victoria
4. Undertake research to identify key biological functions. Evaluate current reproductive / regenerative status, seed bank status and 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	<ul style="list-style-type: none"> ▪ Seed bank/regenerative potential quantified for target populations. ▪ Stimuli for recruitment/regeneration identified. ▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival. 	DSE
5. 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"> ▪ Techniques for monitoring developed and implemented. ▪ Census data collected for target populations. ▪ Population growth rates determined. ▪ Population Viability Analysis completed for targeted populations. 	DSE

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

Action	Targets	Responsible
6. Assess threats. Assess threat posed by trampling by visitors to Neilson Crag.	<ul style="list-style-type: none"> ▪ Assessment completed and action planned if required. 	Parks Victoria
7. Establish cultivated plants <i>ex situ</i> to safeguard from the unforeseen destruction of the wild population.	<ul style="list-style-type: none"> ▪ Development of effective propagation and cultivation techniques. ▪ At least 25 mature plants in cultivation. 	Royal Botanic Gardens
8. Liaise with government agencies. Ensure that information and advice about the recovery Harsh Nematoplepis has been provided to Parks Victoria.	<ul style="list-style-type: none"> ▪ Relevant Parks Victoria staff are aware of the species and its management needs. 	DSE

Objective III To increase the number of populations or individuals

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
9. Store reproductive material. Establish a seed bank.	<ul style="list-style-type: none"> ▪ Long-term storage facility identified. ▪ Seed from target populations in storage. 	Royal Botanic Gardens
10. Determine seed viability.	<ul style="list-style-type: none"> ▪ Seed viability determined. 	Royal Botanic Gardens

Objective IV To increase community awareness and support

<i>Action</i>	<i>Targets</i>	<i>Responsible</i>
11. Encourage public to report sightings to regional DSE and Parks Victoria personnel. Promote threatened flora conservation.	<ul style="list-style-type: none"> ▪ Opportunities for involvement identified, promoted and supported. 	DSE Parks Victoria

References

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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.

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