

THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

The Minister's delegate approved this Conservation Advice on 16/12/2016.

Conservation Advice

Nematolepis squamea subsp. *coriacea*

harsh nematolepis

Conservation Status

Nematolepis squamea subsp. *coriacea* (harsh nematolepis) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) effective from the 16 July 2000. The species was eligible for listing under the EPBC Act as it was listed as Vulnerable under Schedule 1 of the preceding Act, the *Endangered Species Protection Act 1992* (Cwlth).

Species can also be listed as threatened under state and territory legislation. For information on the current listing status of this species under relevant state or territory legislation, see <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

The main factors causing the species to be eligible for listing in the Vulnerable category are restricted area of occupancy and limited distribution (known from only two sites).

Description

The harsh nematolepis is a small shrub growing to 4 m tall (more usually to 1 m tall), with smooth or glandular branches. Leaves are ovate to elliptic, 18 – 30 mm long and 6 – 10 mm wide, stiff and leathery with a rounded apex, the upper surface dark glossy green, smooth and hairless, the lower surface scaly covered with small, silvery, membranous scales. Inflorescences arise from the leaf axils, with 1 – 20 small, starry white flowers with yellow anthers. The calyx is cup-like, to 3 mm long with triangular lobes, hairless and with glandular dots, and the ovary is hairless. Fruiting follicles (up to 5) are slightly spreading and about 3 mm high (description from Walsh & Entwisle 1999; Wilson 1998).

Distribution

The harsh nematolepis is endemic to Victoria, where it is known from two widely-separated locations in the eastern highlands, one in the upper Wonnangatta River catchment and the second in the Snowy River valley near Wulgulmerang, from 870 – 1350 m altitude (Walsh & Entwisle 1999), in the Australian Alps and South East Corner IBRA Bioregions (DEH 2000).

The harsh nematolepis is recorded from the following locations (Carter & Walsh 2006).

1. St Helena Spur in the Snowy River National Park, at about 870 m altitude, which was estimated to contain about 600 mostly mature plants in 2006.
2. Neilson Crag (The Watchtower) in the Alpine National Park, at about 1,350 m altitude, which was estimated to contain 500 – 1,000 plants in 2006.

A third population may exist, as there is a 1969 record from Wulgulmerang Creek 'upstream from the falls'. Although this site has not been relocated since, it is likely to still contain plants (N. Walsh pers. obs, cited in Carter & Walsh 2006).

Relevant Biology/Ecology

There have been no targeted studies of the ecology or biology of the harsh nematolepis. 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 years. The age at reproductive maturity is unknown but is likely to be in the order of 4–10 years (DSE 2008).

Of the two known populations, both occur in rocky outcrops on sparse shrubland. The St Helena Spur population grows on skeletal Snowy River volcanics / Boundary Creek conglomerate soils. Topography falls away steeply north to north-easterly and the plants are highly exposed, although protected from most wildfires by flanking cliffs. Associated species include *Acrotriche leucocarpa* (a shrub), *Astrotricha sp. 4* (a shrub), *Dianella sp. aff. tasmanica* (Tasmanian flax-lily), *Eucalyptus elata* (river peppermint), *Eucalyptus sieberi* (silvertop ash), *Ozothamnus conditus* (sprawling everlasting), *Ozothamnus obcordatus* (grey everlasting) and *Podolobium alpestre* (alpine shaggy-pea).

The Neilson Crag population grows on skeletal soils derived from metamorphosed sandstone. Topography varies from flat to steep north and westerly facing slopes. Associated species there include *Brachyloma daphnoides* (daphne heath), *Crowea exalata* (small crowea), *Epacris impressa* (common heath), *Eucalyptus pauciflora* (snow gum), *Eucalyptus glaucescens* (Tingiringi gum) and *Grevillea miqueliana* subsp. *moroka* (oval-leaf grevillia). Topography at the lower (St Helena Spur) site tends to fall steeply north-north-easterly and the plants are highly exposed, but would be rarely burnt due to the protection offered by flanking cliffs.

Threats

The harsh nematolepis is known only from two very small areas in eastern Victoria. As there is no information on past distribution and no evidence of any declines in existing populations, it is not possible to determine if the taxon has suffered any decline in range and/or abundance. Threats are generally rated as low. Both populations contain reasonably high numbers of plants, occur in remote areas in national parks, and appear reasonably secure, even from inadvertent damage.

Increased fire frequency may pose the greatest threat to the subspecies, as too frequent fire intervals may compromise the plants ability to reach reproductive maturity between fire events. However, site topography and population separation mean that it is highly unlikely that all plants would be burnt in a single wildfire event.

Table 1 – Threats impacting the harsh nematolepis in approximate order of severity of risk, based on available evidence.

Threat factor	Threat type and status	Evidence base
Fire		
Too frequent fires	potential	If burning occurred too frequently then plants may not reach reproductive maturity (Carter & Walsh 2006).

Conservation Actions

Conservation and Management priorities

Fire

- Fires must be managed to ensure that prevailing fire regimes do not disrupt the life cycle of the harsh nematolepis, that they support rather than degrade the habitat necessary to the harsh nematolepis, that they do not promote invasion of exotic species, and that they do not increase impacts of grazing.

- Physical damage to the habitat and individuals of the harsh nematolepis must be avoided during and after fire operations.
- Fire management authorities and land management agencies should use suitable maps and install field markers to avoid damage to the threatened species.

Seed collection, propagation and other ex-situ recovery action

- Establish plants in cultivation in appropriate institutions such as the Royal Botanic Gardens Victoria.
- To manage the risk of losing genetic diversity, undertake appropriate seed and storage in appropriate institutions, such as the Victorian Conservation Seedbank at the Royal Botanic Gardens Victoria, and determine viability of stored seed. Best practice seed storage guidelines and procedures should be adhered to, to maximise seed viability and germination ability. Seeds from all natural populations to be collected and stored.
- Develop effective propagation and cultivation techniques for an ex situ cultivation program.

Survey and Monitoring priorities

- Design and implement a monitoring program to more precisely assess population size, distribution, recruitment and the relative impacts of weed species, livestock grazing and vehicle movement.
- Undertake surveys in suitable habitat to locate any additional occurrences.

Information and research priorities

- 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.
- Better determine the impacts of fire regimes and the minimum fire free threshold.

References cited in the advice

- Carter, O. and Walsh, N. 2006. National Recovery Plan for the Harsh Nematolepis *Nematolepis squamea* subspecies *coriacea*. Department of Sustainability and Environment, Melbourne
- DEH 2000. Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the Development of Version 5.1. - Summary Report. Department of the Environment and Heritage, Canberra.
- DSE. 2008. Action Statement No. 234 Harsh Nematolepis. Victorian Government Department of Sustainability and Environment. Melbourne.
- Walsh, N.G. and Entwisle, T.J. 1999. Flora of Victoria, Vol 4: Dicotyledons: Cornaceae to Asteraceae. Inkata Press, Melbourne.
- Wilson, P.G. 1998. New species and nomenclatural changes in *Phebalium* and related genera (Rutaceae). *Nuytsia* 12(2): 267–288.