Threatened Species Assessment

Nematolepis wilsonii
Shiny Nematolepis

Taxonomy

Nematolepis wilsonii (N.G. Walsh & Albr.) Paul G. Wilson

Current conservation status

Listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Phebalium wilsonii* (SAC 1993).

Categorised as Vulnerable in the 2014 Advisory list of rare or threatened flora (DEPI 2014).

Proposed conservation status

Critically Endangered in Australia

Criteria A3ce; B1ab(ii,iii,v)+2ab(ii,iii,v)

Species Information

Description and Life History

The taxon is a shrub or small tree to 10 m high; branchlets terete, warty, densely silvery- to ferruginous-lepidote. Leaves chartaceous, narrowly elliptic to lanceolate, 30-80 mm long, 5-15 mm wide, apex narrowly obtuse, upper surface smooth, glossy, glabrous except for scattered scales along impressed midrib, lower surface densely silvery-lepidote; petiole 1-7 mm long. Inflorescence an axillary, 2-9-flowered cyme, up to c. half as long as leaves; peduncle mostly 5-12 mm long; pedicels 2-8 mm long, densely lepidote. Sepals virtually free, deltoid, c. 1 mm long, lepidote; petals imbricate, elliptic, 3.5-5 mm long, white, lepidote outside; stamens subequal to petals, anthers yellow; disc prominent; ovary silvery-lepidote. Follicles pointed at apex, becoming glabrous or with few scales at maturity, c. 4 mm long. Flowers spring (VicFlora 2016).

Generation Length

The generation length of *Nematolepis wilsonii* is estimated to be 100 to 250 years. It is known only from extremely restricted occurrences around the interface between Wet Forest and Cool Temperate Rainforest. Regeneration appears dependent on disturbance. It is recorded as growing to around ten metres in height and is suspected to be able to have a rootstock from which it is capable of re-sprouting. Given these characteristics, it is presumed that the adult trees in the single population known prior to the 2009 fires dated back to regeneration from 1939. Given these plants were not senescent, it is suggested that they are potentially extremely long-lived, and that generation time should be based around the frequency of fire in this habitat, which is inferred as 100-250 years as for *Eucalyptus denticulata*.

Distribution

The taxon is endemic to Victoria and is known from only two populations between Cambarville (near Lake Mountain) and Warburton.

Habitat

The taxon occurs in ecotones between *Eucalyptus regnans* forest and *Nothofagus cunninghamii* cool-temperate rainforest.

Threats

The primary threat to this taxon is damage by deer using these trees to remove the velvet on their antlers (DEE 2019), with other identified threats including road maintenance, and potential structural changes to the associated vegetation including direct clearing, the introduction of myrtle wilt disease, and weed invasion that can potentially impact regeneration.

IUCN Criteria

Criterion A. Population size reduction.
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [*(a) cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Eligible under Criterion A3 as Critically Endangered

The population reduction over the next 100 years is suspected to be 50 to 80%, based on (c) and (e) above.

Future reduction is based on the identified threats, notably repeat fires and damage by deer. The taxon is at a particularly vulnerable stage given the loss of the great majority of the established adult population.

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Eligible under Criterion B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented considering its limited dispersal ability, the barriers to dispersal, the lack of habitat separating the subpopulations, and because it is only known from two very localised occurrences.

It is estimated to have one location, as it is known from a narrowly defined habitat with a very restricted geographic area where it is subject to a similar range of threats.

It has a continuing decline in (ii), (iii) and (v) above, based on the impacts of the identified threats.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is severely fragmented, has one location, and has a continuing decline in (ii), (iii) and (v) above.

Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals				

Evidence:

Ineligible under Criterion C as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

Criterion D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	<·50	<·250	<·1,000
D2 Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.	-	-	D2. Typically: AoO <·20 km2 or number of locations ≤·5

Evidence:

Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

DEE (2019). Species Profile and Threats (SPRAT) database: *Nematoplepis wilsonii*. Department of the Environment and Energy, Canberra. Retrieved from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64938

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SAC (1993). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 248 *Phebalium wilsonii*

VicFlora (2016) Flora of Victoria, Royal Botanic Gardens Victoria: *Nematolepis wilsonii.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/f62423fe-fd6c-49ce-8594-4cdaab57ab72