Threatened Species Assessment

Parsonsia eucalyptophylla
Gargaloo

Taxonomy

Parsonsia eucalyptophylla F. Muell.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion D

Species Information

Description and Life History

The taxon is a tall climber with stems usually closely appressed to substrate; branches glabrous or minutely pubescent. Leaves linear to lanceolate, 8-24 cm long, 5-30 mm wide (ovate-cordate and shorter in juvenile plants), apex acute to acuminate, base cuneate or attenuate, margins recurved, upper surface dark green and usually glabrous, lower surface paler and minutely pubescent; petiole 5-30 mm long, pubescent. Inflorescences of many-flowered terminal and axillary panicles. Flowers cream to yellowish, scented; pedicels 3-7 mm long; sepals 2-3 mm long, pubescent, joined in basal half; corolla-tube 1-1.5 mm long, corolla-lobes linear, 7-9 mm long, acute, revolute, bearded inside in lower half; anther cone c. 3 mm long, long-exserted, filaments 4-5 mm long, spirally twisted. Capsule narrow-ovoid, to c. 8 cm long, pubescent. The taxon flowers mainly in summer (VicFlora 2017).

Generation Length

The generation length of *Parsonsia eucalyptophylla* is estimated to be 50 to 80 years. It grows to become a woody vine, and such a plant may be expected to take 20 years to grow to size. It may eventually be killed by a severe fire which, at the time of European settlement, is likely to have occurred at an interval of 80 years or more in the dry woodland habitat of the taxon (Cheal 2010).

Distribution

The taxon is currently known in Victoria from only two small colonies along the Snowy River near Suggan Buggan (VicFlora 2017) south of Willis near the New south Wales border in far East Gippsland. In 1980 David Cameron recorded several sterile juvenile plants near Gentry's Hut on Gattamurh Creek, 6 km north-east of the occurrence discovered by James Turner in 1989 south of the Sandy Creek confluence with the Snowy River. The Victorian occurrences are highly disjunct from the closest occurrences near Narranderra in New South Wales.

It is also found in Queensland and New South Wales.

Habitat

The taxon grows in *Callitris* woodland on rocky outcrops (VicFlora 2017). It is confined to Rainshadow Woodland dominated by *Callitris endlicheri* (Black Cypress-pine) and *Eucalyptus albens* (White Box) in association with *Acacia deanei* (Deane's Wattle), *Brachychiton populneus* (Kurrajong), *Dichondra repens* (Kidney-weed), *Indigofera australis* (Austral Indigo), and *Lissanthe strigosa* (Peach Heath) on outcropping rhyodacite (Snowy River Volcanic geology) or meta-sediments.

Threats

No threats were identified when the occurrence near the west bank of the Snowy River was observed from 1989 to 1997. No evidence of browsing by mammals was noted which is to be expected given that *Parsonsia* taxa produce toxins including pyrrolizidine alkaloids to deter herbivory (Orr et al. 1996). However, the juvenile plants observed by Cameron at Gattamurh Creek in 1980 had been browsed, and John Eichler also suspects that goats, which are recorded in the Upper Snowy Rainshadow district, may browse the taxon. Other herbivores in the area include wallabies, rabbits, feral horses, and Sambar Deer (*Rusa unicolor*). Sambar and feral horses have increased in density in the district in recent years, with documented consequences for the persistence of Kurrajong.

P. eucalyptophylla is widespread throughout more arid and fire prone areas of New South Wales suggesting that likely future declines in rainfall and increased fire frequency will be within the ecological tolerance for the taxon, and the habitat that it occupies occurs in is relatively intact, remote, and protected within the Alpine National Park. In the longer term, however, the taxon is likely to be threatened with adult mortality and recruitment failure in response to extreme and protracted drought which has already been observed to cause widespread mortality of a wide range of woody plants in the district, including many of the most drought-tolerant taxa such as White Box.

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:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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:

Ineligible under Criterion B

The Extent of Occurrence and the Area of Occupancy across the taxon's range are both estimated to be 8 to 12 km², but other thresholds under this criterion have not been met.

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

It is estimated that there are 25 to 100 (midpoint 50) mature individuals, but other thresholds under this criterion have not been met.

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 D as Endangered

The taxon is estimated to have 25 to 100 (midpoint 50) mature individuals. The number of mature individuals recorded at the sites of occurrence were 4 to 5 for one subpopulation in 1989 with numerous small seedlings also present, and around 20 mature plants with around 30 immature plants between 1992 and 1997. The lower estimate is based on the assumption that the immature plants have not survived due to competition or inhospitable condition, and the upper estimate assumes that the number of mature individuals now includes most of those immature plants from over 20 years ago.

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

References

Cheal, D (2010). *Growth stages and tolerable fire intervals for Victoria's native vegetation data sets.* Fire and Adaptive Management Report No. 84. Department of Sustainability and Environment, East Melbourne, Victoria, Australia.

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Orr, A.G., Trigo, J.R, Witte, L. & Hartmann, T. (1996). Sequestration of pyrrolizidine alkaloids by larvae of *Tellervo zoilus* (Lepidoptera: Ithomiinae) and their role in the chemical protection of adults against the spider *Nephila maculata* (Araneidae). *Chemoecology* 7: 68-73.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Parsonsia eucalyptophylla*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/6c015eae-6683-4ec8-afc1-b8e637abb33f