Threatened Species Assessment

Grevillea steiglitziana
Brisbane Range Grevillea

Taxonomy

Grevillea steiglitziana N.A. Wakef.

Current conservation status

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

Proposed conservation status

Endangered in Australia

Criteria A3c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a spreading shrub 0.7–2.0 m high. Branchlet indumentum sericeous. Leaves 5–7-fid to -partite, ovate in outline, 2.5–7 cm long, 2–5.5 cm wide, the spreading primary lobes usually 2–5-fid or -toothed; ultimate lobes sub-triangular, 0.3–2.2 cm long, to 1.3 cm wide; lower surface with an open indumentum of straight to wavy appressed hairs, the surface visible between the hairs; margin shortly recurved to almost flat. Conflorescences terminal, erect to decurved, simple, secund, 2.5–5 cm long; peduncles 7–15 mm long, 0.8–1 mm wide; rachises usually subsericeous; perianth greenish-brown, outer surface subsericeous, inner surface glabrous; pistil (15–)22–27 mm long, ovary stipitate, subsericeous to subvillous, style red, glabrous except at base, pollen presenter oblique. Fruits subsericeous with emergent ascending hairs and reddish dorsal striping. Flowers September–November (VicFlora 2018).

The taxon is fire sensitive and an obligate seed regenerator, reproducing only by seed from a soil-stored soil bank of unknown longevity. Recruitment is continuous with a pulse after fire, and is probably self-sterile as is common in *Grevillea* taxa. It is pollinated by honeyeaters, thus gene-flow is limited to a few hundred metres. Seeds are passively dispersed, and secondary dispersal is by ants of only a few tens of metres at maximum, which eat the elaisomes and then bury the seed.

Generation Length

The generation length of *Grevillea steiglitziana* is suspected to be 30 to 50 years. This is based on typical longevity of *Grevillea* taxa (N. Marriott), the opinion of W. Molyneaux (pers. comm. to D. Cameron), and the fire sensitivity of the taxon.

Distribution

The taxon is endemic in the Brisbane Ranges, and the northern end of the Werribee Gorge area in Victoria.

Habitat

The taxon occurs in dry sclerophyll woodland on lateritic gravelly loam or yellow sand, and sometimes in rocky sites.

VICTORIA State Government | Environment, Land, Water and Planning

Threats

Threats to the taxon include the effects of climate change such as decreased rainfall, increased evaporation, and extreme temperatures, as well as altered fire regimes such as increased frequency of fire, inappropriate timing of fire, and impacts of fire-control activities. Other threats include roadworks, off-road vehicles, weed invasion, *Grevillea* Leaf Skeletonisers, nectar-robbing by introduced honeybees that are not effective pollinators, grazing or browsing by wallabies, rabbits, hares, goats, and perhaps deer, Cinnamon Root-rot Fungus, decreased bird pollination success as the honeyeater guild declines because of reduced flowering, and fragmentation of co-occurring flora resources.

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 A2 as Vulnerable

The population reduction over the last 90 to 150 years is suspected to be 30%, based on (c) above.

Past decline is based on the suite of threats operating, and historic anthropogenic habitat loss.

The causes of reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is suspected to be 30 to 50%, based on (c) above.

Future decline is based on the suite of threats operating, particularly climate change and weed invasion.

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 294 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented, as it is scattered over a wide area at least 25 km north to south, with most subpopulations reproductively isolated by distances that preclude gene-flow via pollinators.

It is estimated to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the impacts of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 100 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 1 location, and has a continuing decline in (i), (ii), (iii), (iv) 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

No reliable estimate of the total population size for the taxon is available.

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:

Ineligible under Criterion D

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

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

References

Dawson, P., and Weste, G. (1985). Changes in the distribution of *Phytopthera cinnamomi* in the Brisbane Ranges National Park between 1970 and 1980-81. *Australian Journal of Botany 33*(3):309-315.

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014.* Department of Environment and Primary Industries, Melbourne. Retrieved from:

https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

Makinson, R.O. (2000). *Grevillea, Flora of Australia* 17A:1-460.

Olde, P., and Marriott, N. (1994) *The Grevillea Book: Volume 3.* Kangaroo Press: Kenthurst.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Grevillea steiglitziana.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/73f7433a-1154-4708-aa10-6599a75ea558

Weste, G. (2003). The dieback cycle in Victorian forests: a 30-year study of changes caused by *Phytophthora cinnamomi* in Victorian open forests, woodlands and heaths. *Australian Plant Pathology 32:* 247-256.