Threatened Species Assessment

Grevillea celata
Colquhoun Grevillea

Taxonomy

Grevillea celata Molyneux

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* (SAC 2004).

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

Proposed conservation status

Critically Endangered in Australia

Criterion A3bce; B1ab(ii,iii,v)

Species Information

Description and Life History

Grevillea celata suckering, long-lived shrub to 1.8 m high. The plants show strong root suckering in disturbed areas e.g. road verges, powerline easements, possibly in logging areas, that can result in denser stands but not in increased population density. Flowers are obligatorily pollinated by honeyeaters. Fruits ripen 2-3 months after flowering and seeds are passively dispersed. Secondary dispersal of seeds by ants (over several tens of metres only) and after eating the elaisome the ants bury the seeds, thus forming a soil-stored seedbank of unknown longevity. Fire stimulates germination (and resprouting). Gene flow is mediated by the honeyeater pollinators and is expected to be not more than several hundred metres.

Generation Length

The generation length of *Grevillea celata* is inferred to be 100 years. The plants sucker readily, e.g. from exposed roots on road cutting along Bruthen - Nowa Nowa Rd, so are likely to be of indefinite longevity.

Distribution

Grevillea celata is endemic to Victoria, where it occurs in the Colquhoun State Forest in central eastern Gippsland, east and south of Bruthen.

Habitat

The taxon inhabits open sclerophyll, eucalypt-dominated forest on siliceous sandy, gravelly or clay-loam soils derived from Tertiary sediments or granitic geology.

Threats

The taxon is threatened by climatic, physical and chemical environmental variables. These include decreased rainfall, increased evaporation, extreme temperatures, drought, increased frequency and intensity of bushfires, and unseasonal timing of prescribed fire (especially in winter). Biotic threats include weed invasion, Cinnamon Root-rot Fungus (*Phytophthora cinnamomi),* nectar robbing by honeybees (ineffective pollinators), and decreased pollination success, as the honeyeater pollinating guild declines because of reduced flowering and fragmented co-

occurring floral resources (e.g. *Correa reflexa* var. *speciosa, Epacris impressa, Banksia marginata*.). Floral resources are seriously affected by increased frequency, intensity and timing of fires. The taxon does not require fire for regeneration and plants are likely to be killed by fire.

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 projected to be 50 to 100%, based on (b), (c) and (e) above.

The taxon is subject to a range of physical and biotic threats. The most important of these is likely to be climate-induced increases in fire frequency and intensity, which may seriously threaten the taxon, to the point that it may become extinct. The taxon is believed to have 73% of its 59 Victorian sites occurring within the footprints of the 2019/20 bushfires, with 39% of its modelled habitat burnt at high severity (DELWP (2020). It is considered to be relatively fire tolerant but may have been affected by suppression activities and post-fire impacts.

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) is estimated to be 84 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA). The EoO is smaller than the Area of Occupancy (AoO), so the EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within EoO.

It is estimated to have one location, as all occurrences are subject to the identified threats, notable increased and repeat fires, which have the potential to affect all individuals. It has a continuing decline in (ii), (iii) and (v) above, in response to the identified threats and to increased risk of fire.

Eligible under Criterion B2 as Endangered.

The AoO is estimated to be 84 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has one location and a continuing decline in (ii), (iii) and (v0

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 D as Data Deficient

It is suspected that there are 200 to 990 mature individuals, but this qualifier is too weak to meet the threshold. The largest stand monitored, along Watershed Road, (2 x 0.5 km) had 800 plants of which 750 were mature. The total population count in VROTPop was 2528 which may have been counting ramets not genets, so the true population size is difficult to infer.

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

It is suspected that there are 200 to 990 mature individuals.

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

References

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