Threatened Species Assessment

Grevillea polybractea
Crimson Grevillea

Taxonomy

Grevillea polybractea H.B. Will.

The floral bracts are conspicuous in late bud stage and diagnostic; they are usually ovate, 2.5-7 mm long and 2-5.5 mm wide, usually present at anthesis and more persistent towards the base of the inflorescence. The persistence of the perianth is also unusual and somewhat diagnostic.

The taxon forms hybrid swarms with *Grevillea lanigera* in the Mt Granya area (VicFlora 2019).

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C1

Species Information

Description and Life History

The taxon is a spreading much-branched shrub 0.3-1.8 m high. Leaves entire, linear to narrowly oblong-elliptic, 3-7.5 cm long, 1-6 mm wide; margin revolute, sometimes obscuring the subvillous lower surface. Conflorescences terminal, decurved, simple, subglobose, conspicuously bracteose especially when young, 1.5-2 cm long, 3-3.5 cm across; rachis 3-10 mm long, villous; perianth yellow or red (often deepening in colour with age), persistent to fruiting stage, bulbous below the curve, outer surface villous, inner surface bearded; pistil 9.5-14 mm long, ovary sessile, villous, style pink to red or orange, villous at base, glabrescent towards apex and almost glabrous ventrally, pollen presenter lateral. Fruits villous and subvelutinous. Flowers Oct.-Dec (VicFlora 2017).

Plants are apparently killed by moderately intense fires. Recruitment is by seed only, from a soil-stored seedbank of unknown longevity. The breeding system is probably predominantly outcrossing. Plants are pollinated by honeyeaters, thus gene flow (via pollen) in the order of several hundred metres only. Seeds are passively shed and secondarily dispersed by ants which bury the seed after eating the elaisome.

Generation Length

The generation length of *Grevillea polybractea* is estimated to be 30 to 50 years. This is based on the observation that some plants resprout post-fire, are highly drought-tolerant and there is likely continuous recruitment at a low rate. Any episodic recruitment is likely to be promoted by rainfall rather than fire, since the understorey is rather open and quite grassy, dominated by sparse tussocks of *Rytidosperma pallidum* (Silvertop Wallaby-grass) with a high cover of litter between tussocks.

Distribution

The taxon is endemic in north-eastern Victoria, and in New South Wales south from Dubbo. In Victoria the taxon extends from Mt Granya and Mt Lawson east to the Corryong district (VicFlora 2017).

Habitat

The taxon occurs in shrubby dry forest and grassy dry forest in elevated sites on very well-drained coarse-grained soils derived from granite (VicFlora 2017).

Threats

Some historic habitat loss and habitat degradation is likely to have occurred in response to agricultural settlement of sites of marginal productive value. Habitat loss to softwood plantation establishment has also occurred in some districts. The taxon is believed to have 25% of its 16 Victorian sites occurring within the footprint of the 2019-20 bushfires. It is believed to be fire-sensitive in the context of these fires and is considered to have been at some risk of post-fire impacts.

Key ongoing threats include decreased rainfall, increased evaporation and extreme temperatures caused by climate change; increased fire frequency and intensity; inappropriate timing of prescribed fire (winter-spring); impacts of fire-control activities; roadworks; damage to plants by road vehicles; and quarrying for granite.

Biotic threats include weed invasion, particularly *Pinus radiata* (Radiata Pine) and *Hypericum perforatum* (St John's Wort); *Grevillea* Leaf Skeletoniser; nectar-robbing by introduced honeybees that are not effective pollinators; browsing/grazing by goats and rabbits; targeted browsing and antler rubbing by Sambar; and decreased bird pollination as the honeyeater guild declines because of reduced flowering and fragmentation of co-occurring floral 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 past 90 to 150 years is estimated to be 25 to 35%, based on (c) and (e) above. This is based on the extent of habitat loss regionally on granitic terrain, i.e. by agricultural development and softwood forestry, and based on the impact of bushfires.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 90 to100 years is projected to be 25 to 35%, based on (c) and (e) above. This is based on the suite of threatening processes, particularly climate change and weed invasion.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 90 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 45%, based on (c) and (e) above.

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 893 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented at a landscape scale, with most subpopulations genetically isolated, coupled with a suspected 25% historic habitat reduction because of agriculture and plantation forestry.

The taxon is considered to occur in a single location since the key identified threats apply consistently across the limited ecological and geographic range of the taxon in Victoria.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, due to the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 76 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it 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:

Eligible under Criterion C1 as Endangered

It is estimated that there are 1,000 to 2,000 mature individuals, based on field observations by Bill Molyneux.

There is estimated to be a continuing decline of 15 to 35% with two generations.

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

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

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Grevillea polybractea.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/b83c5a18-440c-475d-b3ef-514c35b94c55