

Threatened Species Assessment

Grevillea ramosissima subsp. *hypargyrea* Fan Grevillea

Taxonomy

Grevillea ramosissima subsp. *hypargyrea* (F. Muell.) Olde & Marriott

G. ramosissima subsp. *ramosissima* occurs in New South Wales adjacent to north-east Victoria where *G. ramosissima* subsp. *hypargyrea* occurs. Subsp. *ramosissima* can be distinguished from subsp. *hypargyrea* by the hairs on the lower leaf surface which are twisted, whereas the hairs on the lower leaf surface of the latter are straight (VicFlora 2017).

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 B1ab(iii)+2ab(iii); C1

Species Information

Description and Life History

The taxon is a straggling to spreading, sometimes root-suckering, prickly shrub 0.3-1.5(-3) m high. Branchlet indumentum tomentose. Leaves 5-9-partite or -fid, 3-8 cm long, 5-8.5 cm wide, primary lobes spreading, the lower ones usually with 3-7 secondary lobes, these again sometimes trifid, ultimate lobes subtriangular, 3-28 mm long, 2-10 mm wide; lower surface sericeous; margin shortly recurved to almost flat. Conflorescences terminal, erect, usually simple, cylindric, 4.5-10 cm long; rachis tomentose to subsericeous; perianth cream, tomentose (sometimes loosely) outside, glabrous inside; pistil (3.5-)4.0-5.3 mm long, ovary shortly stipitate, tomentose, style cream, sharply bent forward just below apex, with a loose indumentum of ascending hairs, pollen presenter straight to slightly oblique, erect-conical. Fruits subtomentose with heavy red-brown markings. The taxon flowers mainly from October to November (VicFlora 2017).

Generation Length

The generation length of *Grevillea ramosissima* subsp. *hypargyrea* is estimated to be 25 to 40 years. This is based on an estimated longevity of 40-50 years and field observations suggesting that soil-stored seedbanks are neither significant nor long-lived. The taxon reportedly regenerates from seed and rhizomes (Makinson 2000) suggesting generation time is not directly determined by pre-settlement fire interval.

Distribution

The taxon is endemic to far north-east Victoria where it is known only from the Walwa-Pine Mountain-Cudgewa Bluff area, and Mt Mittamatite on the upper Murray (VicFlora 2017). In 2002, the taxon was recorded in the Bungil Reference Area within Mount Lawson State Park, 23 km west of the closest record at Mount Burrowa, and 34 km west of the stronghold of the taxon at Pine Mountain.

Habitat

The taxon grows in dry sclerophyll woodland on granitic loamy soils among granite outcrops (Makinson 2000; VicFlora 2017).

Grevillea ramosissima subsp. hypargyrea

Fan Grevillea

Threats

The taxon tends to occupy sites naturally protected from the full onslaught of intense fire, mitigating the direct impact of imposed fire regimes and climatic drying and warming. However, the taxon is at greater risk from the indirect impact of planned burning, exacerbated by climatic drying and warming.

The taxon is potentially threatened by modified unfavourable fire regimes with potential impacts on invertebrate fauna. Such regimes could easily influence pollination by insects, as well as birds, and increase the risk of unbalanced predator-prey relations, resulting in increased seed predation. In areas subject to repeat planned burning, for example at Mt Elliot immediately south of Towong, *G. polybractea* and *G. lanigera*, are subject to very heavy seed predation. Whereas roadside stands of *G. lanigera* that are not subject to planned burning exhibit high levels of successful seed production.

The taxon is further threatened by very low stand density and inferred limited seedbank size and seed longevity. It is also threatened by the increasing risk of adult mortality, recruitment failure, and seedbank depletion and exhaustion, in response to repeat fire and extreme drought events.

The taxon may also be threatened by targeted or casual browsing pressure from native and exotic herbivores, particularly during early stages of vegetative regeneration or seed recruitment.

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%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>			
<p>based on any of the following:</p> <ul style="list-style-type: none"> (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 75 to 120 years is estimated to be 20 to 45%, based on (c) and (e) above.

Grevillea ramosissima subsp. *hypargyrea* Fan Grevillea

The taxon is believed to have 93% of its 14 Victorian sites occurring within the footprints of the 2019/20 bushfires. The taxon is believed to be generally fire tolerant even in the context of these fires, but it is considered to have been at some risk of post-fire impacts.

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

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 75 to 100 years is projected to be 10 to 30%, based on (c) and (e) above.

Future decline is based on the projected impact of the identified threats.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 75 to 120 year period, including both past and future (up to 100 years in the future), is estimated to be 25 to 45%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 308 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale, with all geographically isolated stands occurring at separations exceeding the dispersal range of the taxon which has limited seed production and very limited seed dispersal with no specialised mechanism for long-distance dispersal.

It is estimated to have one location, and has a continuing decline in (iii) above, in response to the impact of planned burning, bushfires, climatic warming and drying, predation, repeat fire and extreme drought stress, and browsing from native and exotic herbivores.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 36 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 (iii) above.

Grevillea ramosissima subsp. hypargyrea

Fan Grevillea

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 5,000 mature individuals. This is based on field observations, suggesting most stands are of very low density and sporadic occurrence.

There is estimated to be a continuing decline of 10 to 30% within two generations.

Criterion D. Very small or restricted populations		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 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D 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:



Grevillea ramosissima subsp. *hypargyrea*
Fan Grevillea

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

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VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Grevillea ramosissima* subsp. *hypargyrea*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/814b4f01-0ac6-43bd-bd9f-623f1e2651dc>