

Hibbertia cistiflora subsp. *rostrata* Rock Rose Guinea-flower

Taxonomy

Hibbertia cistiflora subsp. *rostrata* Toelken

The typical subspecies is restricted to the central tablelands of New South Wales. Hybrids between *Hibbertia cistiflora* subsp. *rostrata* and *Hibbertia sericea* have been collected in the Grampians (VicFlora 2018).

Current conservation status

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

Proposed conservation status

Vulnerable in Australia

Criterion D2

Species Information

Description and Life History

The taxon is a shrub to 1.5 m high, with spreading, glabrous branches. Vestiture of tubercle-based simple hairs with acicular apex confined to beak of young leaves and the margins of bracts. Leaves linear-lanceolate, 3-18 mm long, 0.5-1.1 mm wide, beaked by protruding central ridge; petiole 0.3-0.9 mm long; upper surface papillose; margins narrow, revolute usually raised above smooth broad central ridge below. Flowers sessile, terminal on mainly short shoots with up to 8 sheathing bracts 0.6-1.3 mm long; sepals 4.9-6.6 mm long, subequal, glabrous; petals obovate, 3.8-7.5 mm long, bright yellow; stamens usually 6 in one cluster; filaments free; carpels 2, glabrous. The taxon flowers from September to November (VicFlora 2018).

Generation Length

The generation length of *Hibbertia cistiflora* subsp. *rostrata* is estimated to be 40 to 50 years. This is based on an estimated longevity of 25-35 years, and an estimated pre-settlement fire interval of 40-50 years. Although poorly known, the taxon is likely to be a fire-sensitive obligate seed regenerator (OSR) which recruits episodically post-fire from a soil-stored seedbank, with some non-fire recruitment in good seasons and in response to localised site disturbance. The taxon is unlikely to resprout, and is likely to be killed by most fire events. Seedbank viability is unknown but it is likely to be at least several decades, potentially declining close to zero after 30 years.

Distribution

The taxon is endemic to the Grampians in western Victoria, where it is apparently confined to elevated sites such as Mounts William, Rosea and Difficult, and Wallaby Rocks (VicFlora 2018).

The taxon was recorded in 46 quadrats that were surveyed in late 1976 and early 1977. The survey was conducted by Paul Gullan and Peter Matthews on a grid overlying the Victoria Valley and centred on the Moora Moora Reservoir, extending west to the lower slopes of the Victoria Range and east to the lower slopes of the Serra Range near Mounts Lang and Lubra, and north to the lower slopes of Mounts Victory and Rosea. In this survey, the taxon was recorded consistently across the study area, making it the most frequently encountered of six species of *Hibbertia*; followed by *H. riparia* (44 quadrats), *H. fasciculata* (42 quadrats), *H. virgata* (13 quadrats), *H. sericea* (12 quadrats) and *H. stricta* (3 quadrats).

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If the 46 quadrat records across the Victoria Valley study area are accepted as reliable, then the taxon appears to be a common and consistent element of heathland and heathy woodland vegetation. Further, the taxon might be expected to occur widely across the range of these communities within the Grampians.

One explanation for the disparity between the quadrat-based range and the very restricted range, implied by the seven specimen records in the Australian Virtual Herbarium (AVH) and the distribution suggested by VicFlora (2018), is that the majority of herbarium specimens are on loan to the State Herbarium of South Australia in Adelaide (AD). If this is the case, then the seven AVH specimens on which the VicFlora (2018) distribution is based is likely to underestimate the true geographic range and abundance of the taxon.

Habitat

The taxon occurs in heath or shrubby vegetation, on and near mountain summits and ridgetops (VicFlora 2018). If the 46 quadrat records across the Victoria Valley study area are accepted as reliable, then the taxon appears to be a common and consistent element of heathland and heathy woodland vegetation. Further, the taxon might be expected to occur widely across the range of these communities within the Grampians.

Threats

The taxon is likely to be threatened in the long-term by anthropogenic fire regimes, which increase the risk of recruitment failure and local extinction by increasing the frequency of post-fire recruitment events. Each such event exposes the taxon to the hazards of seed-based recruitment. This includes the stochastic impact of extreme drought events, which are projected to increase in frequency and intensity in response to climatic warming and drying. Such events will result in recruitment failure, seedbank depletion and exhaustion.

If the 46 quadrat records taken across the Victoria Valley study area in 1976 and 1977 are accepted as reliable, then the seven AVH specimens on which the VicFlora (2018) distribution is based is likely to underestimate the true ecological range and abundance of the taxon. In that case, the taxon is less likely to be at risk of local extinction in response to repeat fire events.

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 style="text-align: center;">} based on any of the following:</p> <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>			

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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 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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 370 or 565 km² and the Area of Occupancy (AoO) is estimated to be 60 or 188 km², but other thresholds under this criterion have not been met.

The lower bounds are based on reliable site and specimen records in the Victorian Biodiversity Atlas (VBA) and the AVH. The upper bounds are based on the inclusion of 46 quadrat records taken across the Victoria Valley study area in 1976 and 1977, which are not supported by specimen records currently available in the AVH or by more recent site records in the VBA.

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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

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

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 D2 as Vulnerable

The taxon is estimated to be very restricted. It has a restricted distribution, with one location, such that this makes the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations, in response to the identified threats, notably inappropriate fire regimes.

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:



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

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Hibbertia cistiflora* subsp. *rostrata*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9c41948c-44d2-4a21-9320-e4ccccb4aab0>