



Hibbertia dentata Trailing Guinea-flower

Taxonomy

Hibbertia dentata R. Br. ex DC.

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 A2ce+3ce+4ce; B2ab(iii,iv,v)

Species Information

Description and Life History

The taxon has climbers with wiry, glabrous to pubescent branches to c. 2.5 m long. Vestiture of long simple tubercle-based hairs. Leaves oblong-lanceolate to elliptic, 2.2-5.6 cm long, 0.9-2.8 cm wide, acute to acuminate, rarely obtuse; petiole 3-14 mm long; margins dentate-serrate to entire, flat or scarcely recurved. Flowers on peduncle 0.3-19 mm long, terminal on short shoots with a basal triangular bract 3-7 mm long; sepals 4-8 mm long, subequal, ovate, usually acuminate, pubescent mainly toward apex; petals obovate, 8-21 mm long, mid yellow; stamens numerous in a ring around the ovary; filaments connate basally; carpels 3, glabrous. The taxon flowers from October to November (VicFlora 2018).

Generation Length

The generation length of *Hibbertia dentata* is estimated to be 30 to 60 years. Plants are perennial and recorded in cultivation as growing for many years. Plants often grow in moist forest ecotonal to Warm Temperate Rainforest, often colonising gaps in the forest canopy. Longevity is likely to be 30-50 years or more. The taxon is inferred to be fire sensitive, recruiting episodically following intense bushfire from a soil-stored seedbank. Pre-settlement fire intervals are estimated to have been in the 45-to-90-year range. Some sporadic recruitment is likely to occur in response to localised disturbance events, such as storm, flood, or tree fall, which create localised canopy gaps.

Distribution

The taxon is confined to lowlands east from Orbost, with a single collection purportedly from the Avon Wilderness Area further west (VicFlora, 2018).

Habitat

The taxon occurs in moist open-forest, often at the margins of rainforest, and sometimes rocky outcrop areas (e.g. Genoa Peak) (VicFlora, 2018).

Threats

The bushfires of 2019/2020 are believed to have affected around 76% of the taxon's modelled habitat, with a further 99% of modelled habitat projected to be damaged (as of early January 2020). The overall impacts of the fire are yet to be determined. The taxon is likely to have been threatened by feral herbivores, notably Sambar Deer, and soil and vegetation disturbance as a result of fire recovery.

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The taxon is potentially threatened by imposed anthropogenic fire regimes and climatic warming and drying which, synergistically, increase the risk of recruitment failure in response to repeat fire events and extreme drought stress. The greatest threat to the taxon is a current and projected contraction in the extent of suitable habitat in response to climatic drying and warming and the increasing fire risk throughout the range of the taxon. Based on the dramatic impact of Sambar Deer on lowland, vine-rich stands of Warm Temperate Rainforest, the taxon is likely to be threatened by targeted browsing by Sambar. In moist forests, this includes the use of antlers to drag elevated festoons of vines within reach for complete consumption.

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>	<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:

Eligible under Criterion A2 as Endangered

The population reduction over the past 90 to 180 years is estimated to be 30 to 50%, based on (c) and (e) above.

Past decline is based on a reduction in the habitat due to land clearing, the effects of logging and increasing fire intensity and frequency.

The causes of the 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 projected to be 50 to 80 percent (midpoint 65%), based on (c) and (e) above.

Future decline is based on the identified threats.

Eligible under Criterion A4 as Endangered

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The population reduction over any 90-to-180-year period, including both past and future (up to 100 years in the future), is estimated to be 50 to 80 percent (midpoint 65%), 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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 494 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to have one location. The main threats to the taxon (i.e., fire, climatic drying and warming, habitat loss and fragmentation, weed invasion, and extreme drought stress) have a non-reversible impact on the individuals of the taxon and occur in a stochastic manner, and have the potential over time to threaten the majority of individuals in the geographic area. There is considered to be one such area, therefore, the taxon is considered to occur in a single location.

It has a continuing decline in (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

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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

No reliable estimate of the total population size for the taxon is available. Most records indicate that plants occur in relatively large (but probably localised) populations. Given the number of records, it is likely that there are significantly more than 10,000 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.

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: 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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