



Hibbertia diffusa Wedge Guinea-flower

Taxonomy

Hibbertia diffusa R. Br. ex DC.

This is a taxonomically difficult group. At least some Victorian Biodiversity Atlas (VBA) records are likely to be misidentified records of *H. obtusifolia* or *H. procumbens*. Plants in the west of this taxon's distribution are morphologically distinct from those in the east and it is likely that future work in this group will resolve these as distinct taxa.

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(i,ii,iii,iv,v); C1

Species Information

Description and Life History

The taxon is a prostrate to decumbent shrub with pubescent to tomentose branches to 0.5 m long. Vestiture of forward-directed simple hairs more or less curved to coiled. Leaves linear-oblong to broadly spatulate, 4-28 mm long, 3-14 mm wide, usually unequally toothed or lobed, puberulous to glabrous; apex acute to obtuse; base cuneate; margin scarcely recurved. Flowers sessile, terminal mainly on short shoots with usually 1 triangular sheathing bract 1.3-2.6 mm long; sepals 3.8-5.4 mm long, unequal, glabrous; petals obovate, 5.2-10.4 mm long, bright yellow; stamens 20-25 in groups around the ovary; filaments free; carpels 2 or 3, glabrous. The taxon flowers from September to November (VicFlora 2019).

Generation Length

The generation length of *Hibbertia diffusa* is estimated to be 35 to 70 years. The taxon is inferred to be fire sensitive, recruiting episodically following intense bushfire from a soil-stored seedbank at plausible, pre-settlement intervals of 35 to 70 years.

Distribution

In Victoria, the taxon is scattered and uncommon, occurring eastward from near Maffra (e.g., upper Avon River, Genoa River, Howe Range). The taxon also occurs in Queensland and New South Wales (VicFlora 2019)

Habitat

The taxon usually occurs on shallow, rocky soils in dryish open-forest and woodland (VicFlora 2019).

Threats

The bushfires of 2019/2020 are believed to have affected around 43% of the taxon's modelled habitat (as of early January 2020). The overall effects 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 activities.

Hibbertia diffusa

Wedge Guinea-flower

The taxon's recovery depends on the effective control of herbivores and preventing soil disturbance during fire recovery activities.

The taxon is potentially threatened by 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. In some populations, the number of individuals is very low (i.e., less than five plants). Small population size may also be a threat, or make these plants more vulnerable to other threats. The taxon may also be threatened by targeted browsing of adults and recruiting stands by Sambar Deer (*Rusa unicolor*) or wallabies.

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> |
|--|---------------------------------------|---|

Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the last 105 to 210 years is suspected to be 30 to 50%, based on (c) and (e) above.

The bushfires of 2019/2020 are believed to have affected around 43% of the taxon's modelled habitat (as of early January 2020). The overall effects of the fire are yet to be determined

Eligible under Criterion A3 as Endangered

The population reduction over the next 100 years is projected to be 30 to 50%, based on (c) and (e) above.

Future decline is based on the projected impact of prolonged drought, increased fire frequency and intensity and the potential effects of targeted browsing of recruiting stands.

Eligible under Criterion A4 as Endangered

Hibbertia diffusa

Wedge Guinea-flower

The population reduction over any 105 to 210-year period, including both past and future (up to 100 years in the future), is projected to be 40 to 60%, 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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 13,547 km², based on accepted, post-1970 records in the VBA.

The taxon is projected to be severely fragmented, based on the limited dispersal ability of the taxon, the barriers to dispersal, and the lack of habitat separating them.

It is estimated to have two locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats.

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, it is severely fragmented, has two locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

Hibbertia diffusa

Wedge Guinea-flower

| 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 C as Endangered

It is estimated that there are 200 to 600 (midpoint 400) mature individuals. The current population estimate is based on notes recorded on herbarium specimens. At some sites the taxon is recorded as rare with approximately 5-50 plants, while at a site immediately south of the Genoa River - Yambulla Creek confluence plants were described as 'localised but common'.

There is estimated to be a continuing decline of 30 to 60% within two generations, based on the projected impact of prolonged drought, increased fire frequency and intensity, and the potential impact of targeted browsing of recruiting stands.

| 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

It is estimated that there are 200 to 600 (midpoint 400) mature individuals, and 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.



Hibbertia diffusa Wedge Guinea-flower

References

DEPI (2014). *Advisory list of rare or threaten*ed 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

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Hibbertia diffusa*. Retrieved from:

<https://vicflora.rbg.vic.gov.au/flora/taxon/efa950d9-4ced-46ac-91ca-7def83d71816>