# Threatened Species Assessment

## *Hibbertia samaria*
## Mt Samaria Guinea-flower

### Taxonomy

*Hibbertia samaria* Toelken

The taxon is a member of the *H. pedunculata* species complex. Synonym: *Hibbertia* sp. 1 (eastern Highlands). It closely resembles *H. porcata* but is readily distinguished from it by the presence of stellate hairs on the lower leaf surface, calyx, and ovary (VicFlora 2015).

### Current conservation status

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

### Proposed conservation status

Endangered in Australia

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

### Species Information

#### Description and Life History

The taxon is a decumbent or mat-forming shrub; branches to 30 cm long, hirsute. Vestiture of forward-directed, long, simple or forked hairs over shorter stellate and/or simple hairs, longer hairs sometimes tubercle-based. Leaves linear, rarely linear-elliptic, (2.8-)4-7(-13.6) mm long, (0.8-)1-2(-2.3) mm wide, sparsely pubescent to pilose; petiole 0.2-0.6(-1) mm long; apex acute or obtuse with a tuft of hairs on the projecting central ridge; margins narrow, revolute, usually remote from the central ridge. Flowers on peduncles (3-)5-12(-20.4) mm long, terminal, with 1-3 linear-lanceolate to linear-elliptic bracts 1.5-2(-3.8) mm long, bracts distant from flower; sepals (5.2-)5.8-6.5(-7.7) mm long, unequal, pubescent; petals obovate, 6-15.8 mm long, yellow; stamens 10-15, filaments free but dilated and connate basally; carpels 3, hirsute. The taxon flowers from October to November (-May) (VicFlora 2018).

#### Generation Length

The generation length of *Hibbertia samaria* is estimated to be 15 to 40 years. This is based on the taxon's life form of a low shrub, and a moderate disturbance regime (i.e., fire).

#### Distribution

The taxon is endemic to Victoria at Mt Samaria and along tributaries of the Macalister River (VicFlora 2018).

#### Habitat

The taxon occurs in dry sclerophyll forest with sparse, grassy understorey on rocky soils (VicFlora 2018).

#### Threats

The taxon is potentially threatened by inappropriate fire regimes and climatic warming and drying which, synergistically, may increase the risk of recruitment failure after repeat fire events and in the event of extreme drought stress.

## 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:

**Ineligible under Criterion A**

The past population reduction does not meet the threshold for eligibility under Criterion A2, and the future population reduction does not meet the threshold for eligibility under Criterion A3.

| 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 332 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, considering its limited dispersal, the barriers to dispersal, and the lack of habitat separating them.

It is estimated to have one location, and has a continuing decline in (i), (ii), (iv) and (v) above, based on the identified threats.

**Eligible under Criterion B2 as Endangered**

The Area of Occupancy (AoO) across the taxon's range is estimated to be 16 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 one location, and has a continuing decline in (i), (ii), (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 Vulnerable**

It is estimated that there are 800 to 1,600 mature individuals.

The current population is based on population estimates from Mt Samaria (i.e. MEL 2338184 and 2325677). There are no recent records of this taxon from MacAlister River. It is unclear if this taxon is common or rare here, or if it still occurs in this area.

There is estimated to be a continuing decline of 10% within three 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<br>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:<br>AoO < 20 km2 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: 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 samaria.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/a3606a4c-b108-4c70-baab-5a34db1d5b26