# Threatened Species Assessment

## *Pomaderris costata*
## Veined Pomaderris

### Taxonomy

*Pomaderris costata* N.A. Wakef.

### 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 A3ce+4ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

The taxon is a shrub to 4 m high; branchlets shortly and densely villous, with rusty simple and stellate hairs. Leaves ovate or elliptic, 25-50 mm long, 15-35 mm wide, obtuse, margin plane or weakly undulate, upper surface glabrous, lower surface densely pubescent with curved pale to golden simple hairs often c. obscuring the underlying stellate hairs, simple hairs on veins often rusty and subappressed; stipules 3-4 mm long, deciduous. Panicles c. pyramidal, 3-5 cm long; bracts deciduous. Flowers cream, externally villous with pale mid-dense simple hairs; pedicels 1.5-3 mm long; hypanthium 0.5-0.7 mm long; sepals 1.2-1.8 mm long, deciduous; petals absent; disc absent; ovary inferior, summit villous, style branched below midway. Operculum membranous, c. half mericarp length. The taxon flowers October to November (VicFlora 2014).

#### Generation Length

The generation length of *Pomaderris costata* is estimated to be 10 to 30 years. This is based on a plausible pre-settlement fire interval of 25-50 years or more, with exposed rocky sites burnt less frequently, and the inference that the taxon is an obligate seed regenerator (OSR) with negligible capacity to resprout and recruitment probably fairly steady at a low rate in response to optimal seasonal conditions and localised site disturbance events with major episodic pulses in response to intense fire events. The taxon is long-lived in cultivation, as observed at the Royal Botanic Gardens Melbourne, growing to a tall shrub over many years. Mortality may be more likely due to fire than old age.

#### Distribution

The taxon is restricted in Victoria to a few scattered locations in East Gippsland between Orbost and the New South Wales border, for example Mt Coopracambra, Snowy River Gorge, Howe Hill and near Orbost. Site records near Seaton and Licola in Central Gippsland are not supported by specimens.

#### Habitat

The taxon occurs in dry forest and shrubland, often in exposed rocky sites (e.g. Mt Coopracambra, Snowy River Gorge, Howe Hill), less commonly beside watercourses (e.g. near Orbost) (VicFlora 2014).

**Threats**

The taxon is threatened by increasing fire frequency and drying of forests resulting in adult mortality and recruitment failure. It is also under increasing threat of targeted browsing by Sambar Deer *Rusa unicolor* (Mulvaney et al. 2017). The taxon is also likely to be browsed by Black or Swamp Wallaby *Wallabia bicolor*. Since all known occurrences are in State Forest or National Park, there is no evidence that the taxon has suffered significant historic habitat loss to agriculture, although some occurrences are likely to have declined in population density in response to forestry operations or unfavourable fire regimes. The taxon is likely to be threatened by repeat fires at intervals approaching the tolerable fire interval for the taxon. Some occurrences are threatened by roadworks as illustrated by the substantial elimination of an estimated 15 plants noted on the Bonang Road near Sardine Creek (D. Cameron pers. obs.).

## 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

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## Evidence:

**Eligible under Criterion A3 as Endangered**

The population reduction over the next 75 to 100 years is projected to be 30 to 50%, based on (c) and (e) above.

This is based on the projected impact of the identified threats.

**Eligible under Criterion A4 as Endangered**

The population reduction over any 75 to 210 year period, including both past and future (up to 100 years in the future), is projected to be 30 to 70%, based on (c) and (e) above.

The estimate of past decline is based on the cumulative impact of forest management activities, with apparently negligible habitat loss to agriculture, and future decline is based on the projected impact of the identified threats.

| 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) is estimated to be 3,210 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale, with most occurrences at separations greatly exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal. The only plausible dispersal agents are ants (myrmecochory) which operate at the metre scale.

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

**Eligible under Criterion B2 as Endangered**

The Area of Occupancy (AoO) is estimated to be 44 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it has one location, is severely fragmented and has a continuing decline in (i), (ii), (iii), (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:

**Ineligible under Criterion C**

There is no available estimate of current population size. Only two specimen collectors have noted a population size, namely 15 specimens at Sardine Creek in 1991 and six plants south of Yambulla Creek at its confluence with the Genoa River in 1988. The Sardine Creek stand was subsequently substantially eliminated by extensive roadworks on the Bonang Road (David Cameron pers. obs.).

| 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)

Mulvaney, J., Seddon, J. & Orgill, O (2017). Monitoring impacts of Sambar deer (*Rusa unicolor*) on forests in the Cotter catchment, ACT. ACT Government Conservation Research Technical Report.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pomaderris costata.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/adc65b71-bb38-4f8d-a402Po-8697e5c04afe