



Pomaderris helianthemifolia subsp. *helianthemifolia* Blunt-leaf Pomaderris

Taxonomy

Pomaderris helianthemifolia subsp. *helianthemifolia* (Reissek) N.A. Wakef.

This is a very distinct, geographically restricted taxon, possibly better recognised at species rank.

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(iii,v)+2ab(iii,v); C2a(i)

Species Information

Description and Life History

The taxon has shrubs 1-2 m high; branchlets greyish to rusty, stellate-pubescent, rarely with scattered simple hairs. Leaves narrow-obovate or oblong, 15-40 mm long, 4-7(-10) mm wide, upper surface glabrous, smooth, apex obtuse, margins recurved, lower surface greyish and densely stellate-pubescent, midrib with sparse simple hairs, secondary veins obscure or apparent; stipules 1-2.5 mm long, deciduous. Inflorescence of small pyramidal panicles, terminal and/or upper-axillary, usually c. 20-50-flowered; bracts deciduous. Pedicels 2.5-3.5 mm long. Flowers cream or yellow, externally stellate-pubescent, with scattered simple hairs; hypanthium 0.5-1 mm long; sepals 1.5-2 mm long, deciduous; petals absent; disc glabrous; ovary superior, glabrous; style branched in upper third. Capsule indented at apex; operculum membranous, sub-equal to mericarp, or indistinct. The taxon flowers from October to November (VicFlora, 2019).

The taxon is a perennial shrub, flowering in spring and recruiting by seed alone. Plants are believed to be long-lived (plausibly to 30 years) and likely to substantially contribute to the soil seed bank at around 4 years old.

Generation Length

The generation length of *Pomaderris helianthemifolia* subsp. *helianthemifolia* is estimated to be 10 to 30 years, inferred from likely post-fire episodic recruitment at pre-settlement frequencies of 20--50 years with some continuous recruitment in response to small-scale localised disturbances. The longevity is plausibly 20-50 years.

Distribution

The taxon is confined to the Avon River and its tributaries in the Briagolong area and on the Genoa river. It is a Victorian endemic (VicFlora, 2019).

Habitat

The taxon typically occurs in riparian situations on rocky creekbanks, probably inundated during flood, but may extend upslope of riparian zone into dryish open forest (Neville Walsh, pers. obs.; MEL herbarium specimen data). Associated species include *Acacia melanoxylon*, *A. floribunda*, *A. verniciflua*, *Calytrix tetragona*, *Dodonaea viscosa*, *Kunzea ericoides* s.l., *Melaleuca parvistaminea*, *Micrantheum hexandrum*, *Pomaderris aspera*, *P. angustifolia*, *P. prunifolia* and *Prostanthera rotundifolia*.

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Threats

Major threats may include stream instability and flood damage and some weed invasion, but instability may also enhance recruitment. There is also the likelihood of it being browsed (possibly severely) by Sambar Deer (*Rusa unicolor*), as has been observed to occur with subsp. *minor* in King Valley catchment (Neville Walsh, pers. obs.). This has the potential of dramatically reducing seed production as most of the plant is likely to be within browse-reach of the animals.

It is considered possible that sites adjacent to private land could be lost through neglect/weed invasion/cattle access, but it is not clear that upstream populations are likely to be reduced. Plants are commonly associated with creek-lines, but don't appear to be highly dependent on a mesic environment, and not all subpopulations are closely associated with creek-lines. Should these (fairly major) creeks become intermittent with climate change, suitable habitat is considered likely to persist.

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 Vulnerable

The population reduction over the past 30 to 90 years is suspected to be 10 to 35%, based on (c) and (e) above, primarily through loss of habitat through clearing and increased weediness of riparian vegetation adjacent to farmland.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 30 to 90 years is projected to be 10 to 35%, based on (c) and (e) above, in response to the identified threats.

Eligible under Criterion A4 as Vulnerable

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The population reduction over any 30 to 90 year period, including both past and future, is projected to be 10 to 35%, based on (c) and (e) above.

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 280 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is suspected to be severely fragmented, and is estimated to have 1 location. It has a continuing decline in (iii) and (v) above, in response to the identified threats.

The taxon is severely fragmented naturally at the subregional scale and anthropogenically at the landscape scale at separations that are likely to exceed the dispersal range of the taxon. Some dispersal by seed along watercourses is likely but to an unknown extent. Subpopulations are mainly within the one river (Avon) catchment, and pollination is likely to be possible between subpopulations.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 40 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is suspected to be severely fragmented, is estimated to have 1 location, and has a continuing decline in (iii) and (v) above.

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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:

Eligible under Criterion C2 as Endangered

It is estimated that there are 500 to 5,000 mature individuals, based on observations at several sites where population size varies between 10 and 100 plants. Up to 50 populations are estimated to exist, but currently only 10 populations are represented by herbarium collections and sight records.

The number of mature individuals is estimated to continue to decline, and the number of mature individuals in each subpopulation is between 51 and 250.

The taxon is considered to be subject to continuing decline in population size in response to the identified threats.

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:

Ineligible under criterion D

It is estimated that there are 500 to 5,000 individuals



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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 (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pomaderris helianthemifolia* subsp. *helianthemifolia*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/6bada20f-7b74-4243-95b7-a0f84006f720>