

Pomaderris buchanensis Buchan Pomaderris

Taxonomy

Pomaderris buchanensis N.G. Walsh.

This is a poorly known taxon. The taxon was previously suspected of being a hybrid between *P. aspera* and *P. oblongifolia* (Vicflora 2014). Given the intermediacy of characters between those two species, it seems likely that it is of hybrid origin, but the consistency of form and the largely allopatric (with respect to *P. oblongifolia*) distribution strongly suggest that it has evolved to be a true-breeding species (Walsh 2008).

Current conservation status

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

Proposed conservation status

Critically Endangered in Australia

Criteria C2a(i)b

Species Information

Description and Life History

The taxon is a shrub to c. 4 m high; young stems densely covered with fine, rusty stellate hairs. Leaves narrowly ovate or lanceolate, rarely narrow-elliptic, (35-)50-80 mm long, 10-23 mm wide; apex obtuse or rarely acute; margins irregularly serrate, or shallowly sinuate, or entire; upper surface with scattered stellate hairs, rarely quite glabrous or moderately densely hispid, lateral veins usually strongly impressed; lower surface covered with dense stellate hairs, rusty at first, but whitening with age, midrib and lateral veins prominent; stipules linear, 2-3.5 mm long, caducous. Inflorescences of loose, slender, terminal and upper-axillary panicles to c. 10 cm long, comprising numerous nearly umbellate cymes; bracts linear, 1-2.4 mm long, caducous; pedicels 1.5-3 mm long. Flowers pale greenish or yellowish, often mottled crimson; externally densely covered with fine rusty stellate hairs; hypanthium c. 1.5 mm long at anthesis; sepals 1.2-1.5 mm long, persistent; petals absent; ovary inferior, summit covered with fine stellate hairs; style 0.7-1.3 mm long, 3-branched from near midway. Capsule 3-partite, c. 2.5 mm long; operculum ± half to two-thirds length of fruitlet. Based on 2 records, the taxon flowers in November (VicFlora 2014).

Generation Length

The generation length of *Pomaderris buchanensis* is estimated to be 25 to 35 years. Pre-settlement flood intervals are plausibly estimated to be around 30 years. It is likely that flood-induced recruitment greatly exceeds the proportion of recruitment occurring continuously in response to small-scale soil disturbances or optimal seasons. The taxon is likely to resprout following minor flood events, but like most of its closest relatives, is likely to be killed by intense fire events, behaving as an obligate seed regenerator recruiting from a soil-stored seed bank. Although distinctly riparian with all individuals close to the riverbank, most are still generally above flood level and potentially subject to fire at pre-settlement intervals of 35-70 years or more.

Distribution

As far as is known, the taxon is endemic to East Gippsland where it is restricted to the banks of the Snowy River between Tulloch Ard Gorge and Long Point, in the general vicinity of its confluence with the Buchan River, a linear extent of approximately 38 km and 50 km of riverbank (VicFlora 2014).

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Habitat

The taxon occurs in rocky riparian shrubland (VicFlora 2014) in areas probably prone to occasional flood events. Soils are sandy, sometimes in pockets between outcropping Snowy River volcanics. Associated species include *Eucalyptus melliodora*, *E. bridgesiana*, *E. globoidea*, *Acacia mearnsii*, *A. boormanii*, *Tristaniopsis laurina*, *Pomaderris aspera*, *Bursaria spinosa*, *Calytrix tetragona*, *Dodonaea viscosa*, *Kunzea ericoides* s.l., *Leptospermum brevipes* and *Lomandra longifolia*.

Threats

The taxon is believed to be subject to losses during floods. Individuals nearest to the average water level of the river are at highest risk. Although distinctly riparian with all individuals close to the river bank, most are still generally above flood level. However, the risk of flood is not considered to be greater since European settlement since diversion of headwaters into the Murray River for the production of hydroelectricity and for irrigation have greatly reduced the frequency and intensity of flood events. This is further exacerbated by climatic drying but may be mitigated by environmental water allocations. There is likely some loss of currently unoccupied habitat due to weed encroachment, notably by *Rubus polyanthemus* (Forest Blackberry) and *R. anglocandicans* (Common Blackberry) and Willow (*Salix* species). Fire may pose a threat but is a rarity in the riparian landscape and is unlikely to occur at intervals approaching the tolerable fire interval (TFI) for the taxon. Perhaps the greatest emerging threat is targeted browsing by Sambar deer (*Rusa unicolor*) which are currently undergoing a large increase in population density throughout the region, and have been observed to browse an increasing range of *Pomaderris* taxa across a wide range of habitats, most notably in riparian or other sheltered forest habitats. The taxon is also at risk of recruitment failure in response to the increasing frequency and intensity of extreme drought stress associated with climatic drying and warming.

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 next 75 to 105 years is projected to be 40 to 50%, based on (c) and (e) above. The population of the taxon is considered likely to have declined in response to the impact of the identified threats.

Eligible under Criterion A3 as Endangered

The population reduction over the next 75 to 100 years is projected to be 25 to 50%, based on (c) and (e) above. The population of the taxon is projected to decline in response to the impact of the identified threats.

Eligible under Criterion A4 as Endangered

The population reduction over any 75 to 105 year period, including both past and future (up to 100 years in the future), is projected to be 25 to 50%, 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) is estimated to be 80 to 150 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA) and on other mapped occurrences. There must be some uncertainty due to likelihood of further (or lost populations) upstream or downstream of bounding occurrences.

The taxon is estimated to have one location and has a continuing decline in (i), (ii), (iii), (iv) and (v). It is likely that the combined risk of drying of current sites, lower river levels potentially being less capable of moving seed and reduced habitat quality due to weed invasion, result in a continuing decline in population size and density.

It is estimated to have extreme fluctuation ins (iv) above, as it is regarded as an obligate seed regenerator which recruits episodically post-flood from long-persistent soil-stored seedbanks. Successive cohorts are likely to vary in population size at an order of magnitude in response to flood intensity and recruitment failure.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) is estimated to be 12 to 32 km², based on 2 x 2 km² grids derived from accepted, post-1970 records in the VBA. As above, it has one location, a continuing decline in (i), (ii), (iii), (iv) and (v) and extreme fluctuations in (iv).

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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 Critically Endangered

It is estimated that there are 20 to 200 (midpoint 100) mature individuals, based on observations of two subpopulations and evidence of a third subpopulation of unspecified size from a herbarium specimen (MEL 0595330). The largest observed subpopulation was of approximately 30 individuals, but this subpopulation appears to have been lost based on subsequent visits (Neville Walsh, pers. obs).

The taxon is estimated to have a continuing decline, and the number of mature individuals in each subpopulation is 50 or fewer.

It estimated to have extreme fluctuations in population size.

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 Endangered

It is estimated that there are 20 to 200 mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.



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References

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VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Pomaderris buchanensis* Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/7be9327a-5624-4c7a-8dd2-7a4ac0b098f9>

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