

## *Adriana tomentosa* var. *tomentosa* Eastern Bitter-bush

### Taxonomy

*Adriana tomentosa* var. *tomentosa* Gaudich.

### 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 A2bce+3ce+4bce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

The taxon is a spreading shrub 0.5-2 m high, glabrous or tomentose; stems green to reddish. Leaves alternate, occasionally some opposite, ovate to lanceolate, 3-17 cm long, 3.5-13 cm wide, unlobed or up to 5- (usually 3-) lobed, apex acute to acuminate, rarely obtuse, base cuneate to cordate, margins acutely or obtusely serrate, sometimes more or less crenate, rarely entire, upper surface dark green, tomentose or glabrous, lower surface paler, glabrous to tomentose; petiole 0.3-7.5 cm long. Male spikes 5-34 cm long; female spikes 2-7 cm long. Male flowers with 4 sepals 3-6 mm long. Female flowers with 3-8 sepals 2.5-12 mm long. The taxon flowers from Jul.-Feb (VicFlora 2017).

#### Generation Length

The generation length of *Adriana tomentosa* var. *tomentosa* is estimated to be 10 to 30 years. This is based on the life form (i.e. small shrub), hard seeds, and riparian habitat, with recruitment likely to follow fairly regular flooding events or following fires which historically occur less frequently. These disturbances are likely to be needed to overcome seed dormancy.

#### Distribution

The taxon is apparently confined in Victoria to East Gippsland along streams east of Bairnsdale. It also occurs in WA, NT, Qld and NSW (VicFlora 2017).

#### Habitat

The taxon occurs on rocky river banks and upper slopes, often in rain shadow areas in dry sclerophyll woodland or riparian woodland (VicFlora 2017).

#### Threats

This taxon occurs in relatively small isolated stands, which makes fragmentation and low genetic diversity an issue. This is made worse by plants being dioecious, meaning that some small populations lack genetic diversity for non-related plants to breed. Much of the riparian habitats of this taxon have been disturbed or cleared, and sites are at risk of further clearing, road construction, erosion and weed invasion. The taxon is potentially threatened by imposed 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. The dispersal of this taxon is likely

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to be due to flood waters. Therefore, reduction of rainfall and the removal of suitable habitat adjacent to fragmented populations means that it is unlikely that the plants will be able to recolonise new sites.

### 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>(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> <p><i>based on any of the following:</i></p>			

### Evidence:

#### Eligible under Criterion A2 as Endangered

The population reduction over the past 30 to 90 years is estimated to be 50 to 70%, based on (b), (c) and (e) above.

Past decline is based on the loss of much of the habitat of this taxon. It is estimated that more than 50% of the habitat is now cleared or that it is of a very poor quality.

The causes of the reduction may not have ceased, be understood or be reversible.

#### Eligible under Criterion A3 as Endangered

The population reduction over the next 30 to 90 years is projected to be 30 to 50%, based on (c) and (e) above.

Future decline is based on the projected loss of many of the small populations due to genetic issues, reduction in habitat quality due to weeds and climatic drying and the risk of more frequent fires that may lead to recruitment failure if the populations burn twice before plants set seed.

#### Eligible under Criterion A4 as Endangered

The population reduction over any 30 to 90 year period, including both past and future (up to 100 years in the future), is estimated to be 50 to 70%, based on (b), (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 4,300 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. There are multiple, small isolated subpopulations that are all at risk from land clearing, weed invasion, climatic drying, increased fire frequency and insufficient genetic diversity, such that there is increased extinction risk and little or no probability of recolonisation should subpopulations become extinct.

The taxon is considered to occur in one location as all key identified threats apply across its range and can rapidly affect all individuals of the taxon present.

It 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 142 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is estimated to be severely fragmented has 1 location and has a continuing decline in (i), (ii), (iii), (iv) 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:

#### Ineligible under Criterion C

It is inferred that there are 1,800 to 3,600 mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met.

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 <sup>2</sup> or number of locations ≤ 5

### Evidence:

#### Eligible under criterion D2 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](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)



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VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Adriana tomentosa* var. *tomentosa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/eeaf2e81-fd45-4237-afac-cda05754a86a>