



## *Adriana quadripartita* Coast Bitter-bush

### Taxonomy

*Adriana quadripartita* (Labill.) Muell. Arg.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criteria A2bce+4bce; B2ab(ii,iii,v)c(iv)

### Species Information

#### Description and Life History

The taxon is a spreading shrub 1-3 m high, glabrous or tomentose; stems reddish. Leaves sessile to subsessile usually opposite, ovate to lanceolate, mostly 2-12.5 cm long, 5-60 mm wide, acute to obtuse, margins distantly toothed and slightly revolute, rarely entire, rarely shortly trilobed, upper surface dark green, glossy, sparsely tomentose or glabrous, veins obscure, lower surface paler, glabrous to tomentose, veins distinct. Male spikes 3.5-25 cm long; female spikes 1-5 cm long. Male flowers with sepals 5-6 mm long. Female flowers with sepals 3-6, 3-12 mm long. The taxon flowers from July to February (VicFlora 2017).

According to the Flora of Victoria, glabrous specimens sometimes appear amongst the more usual hairy plants (with the latter formerly regarded as a distinct entity, *Adriana klotzschii*), but the two forms are otherwise considered identical and not worthy of taxonomic separation.

#### Generation Length

The generation length of *Adriana quadripartita* is inferred to be 25 to 50 years. The longevity is considered to be plausibly in the 15-30 year range. This may be generous for a semi-shrub, however accurate data is lacking. It is agreed that small scale disturbances can promote episodic recruitment from seed (e.g. based on the presence of young plants in disturbed areas). While fire may promote landscape scale recruitment pulses at longer intervals, fire is regarded as a rare and damaging event in the known habitat range of the taxon. Integrating these interpretations, they proposed a generation time notionally in be in the range of 40-50 years. However, given the uncertainty, this range is expanded here.

#### Distribution

Apart from disjunct inland occurrences at Mt Arapiles and (reputedly) near Ouyen, the taxon is apparently confined to coastal and near-coastal areas west from Wilsons Promontory (VicFlora 2017).

#### Habitat

The taxon mostly occurs in near-coastal sites, especially on calcareous sands, in relatively open habitat to the rear of the frontal dunes (VicFlora 2017).

### Threats

Threats to this taxon include off-target damage from herbicide application, deliberate 'control' or removal due to the plants being mistaken for weeds, weed invasion (exotic and native species), and vegetation canopy closure. It is uncertain to what extent climate change (i.e. decreased rainfall) and failed recruitment/reproduction due to drought conditions represent potential threats to the taxon.

### 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> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>			

### Evidence:

#### Eligible under Criterion A2 as Endangered

The population reduction over the past 75 to 150 years is suspected to be 50 to 70%, based on (b), (c) and (e) above.

Past decline (for the glabrous form) is based on habitat loss over the relevant time period. Any declines in the pubescent form will be proportionally much less due to the more secure populations at Wilsons Promontory.

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

#### Eligible under Criterion A4 as Endangered

The population reduction over any 75 to 150 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.

Past decline (for the glabrous form) is based on habitat loss over the relevant time period. Any declines in the pubescent form will be proportionally much less due to the more secure populations at Wilsons Promontory. The

magnitude of future decline over a period of up to 100 years is very difficult to sensibly predict. It is not possible to be confident of a future decline (for the glabrous form) that exceeds or even approaches 50% threshold.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 140 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

It is suspected to have a continuing decline in (ii), (iii) and (v) above, based (at least for the glabrous form of the taxon), on the current and projected impacts of the identified threats.

and extreme fluctuations in (iv) above. Field observations suggest that there was a substantial decline in populations after initial post-disturbance responses. The taxon is inferred to be a disturbance responder with a long-lived seedbank.

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 as Data Deficient

Relevant population data are inadequate, and the taxon is subject to extreme fluctuations in population size. Population counts (of the glabrous form) have mostly comprised very few individuals, however one count was of 750 plants. This much larger count is presumed to reflect regeneration stimulated by repeated disturbances.

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:

#### Ineligible under Criterion D as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

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 quadripartita*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/84cc5b9e-eb2e-4a58-8ec0-9266d3322584>