



## *Roepera compressa* Rabbit-ears Twin-leaf

### Taxonomy

*Roepera compressa* J.M. Black

All Australian *Zygophyllum* spp. are now included in the genus *Roepera* (Beier *et al.* 2003).

### 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 B1ab(iii)+2ab(iii)

### Species Information

#### Description and Life History

The taxon is an erect or ascending annual herb to c. 25 cm high. Leaves mostly 15-45 mm long, glaucous; leaflets continuous with petiole, ovate to suborbicular, uppermost oblong, mostly 8-25 mm long, 2-15 mm wide, appressed to each other by their upper surfaces, apex acute to rounded. Sepals 4, ovate-lanceolate, 1.5-3 mm long, deflexed in fruit; petals 4, obovate, 3-6 mm long, apex rounded, yellow; stamens 8, filaments winged in lower part. Fruiting pedicels 4-8 mm long; fruit a 4-angled loculicidal capsule, obovoid, 7-10 mm long, drooping, rounded at apex with a short point; seeds 2-4 per cell. Flowers mostly April-November (VicFlora 2019).

#### Generation Length

The generation length of *Roepera compressa* is estimated to be 1 to 10 years. Although the taxon is an annual herb, its recruitment is not annual but is triggered by irregular events, such as rainfall, floods, or other episodic events of highly variable intensity or frequency. Good rainfall events occur on average every 8-10 years in the mallee. Recruitment is from long-persistent soil-stored seed.

#### Distribution

In Victoria, the taxon is confined to the far north-west where it is known from the Copi and Raak Plains south of Mildura, as well as a site near Piangil (VicFlora 2019).

The site near Piangil is significantly disjunct from the other Victorian sites and may not be indigenous. There is some potential for anthropogenic dispersal to this highly disturbed and disjunct location, for example by 4WD at Raak Plain then to this highway stop. However, the site has precisely the right habitat and is therefore presumed indigenous.

The taxon also occurs in Western Australia, Northern Territory, and South Australia (VicFlora 2019).

#### Habitat

The taxon occurs on gypseous rises and claypans in herbfield (VicFlora 2019). On the Raak Plain it usually grows on the gypseous rises, and is associated with *Atriplex lindleyi*, *Brachyscome ciliata*, *Disphyma crassifolium* subsp. *clavellatum*, *Eucalyptus dumosa* (blue-leaved form), *Maireana pyramidata*, and *Mesembryanthemum nodiflorum*. At

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other sites on the Raak Plain it is associated with *Tecticornia halocnemoides* and *T. pergranulata* or with *Kippistia suaedifolia*, *Swainsona purpurea*, and *Lawrenzia glomerata*.

At the site near Piangil, which is significantly disjunct from the Raak Plain, the plants were found on a gypseous saline area, and are associated with *Disphyma* sp., *Tecticornia* sp., *Mesembryanthemum nodiflorum*, *Haegiela tatei*, and *Hydrocotyle medicaginoides*.

### Threats

The taxon is threatened by climatic drying and a decline in rainfall, as it will result in less frequent favourable rainfall events needed to trigger recruitment.

The collecting notes for the site near Piangil indicate that "The area is much abused, but plants are widely scattered in the area, including on private land south of the road reserve." The site has apparently become wetter in recent decades with a rising water table due to vegetation clearance. The site, 50 years ago, was likely to have been more like a Copi Plain site i.e. overtly gypseous. The site is now less suitable than in past and plausibly at risk of local extinction (IUCN assessment by DELWP 2016).

The disturbance from gypsum mining on Raak Plain habitats was a threat in the past but not a major ongoing threat. The low population size of some of the subpopulations is possibly another threat.

### 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:

#### Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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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 1,642 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented based on its limited dispersal ability, the barriers to dispersal, and/or the lack of habitat separating the subpopulations. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

It is inferred to have 2 locations, as each subpopulation may be variably affected by stochastic events.

It has a continuing decline in (iii) above, based on the current and projected impact of the identified threats, such as climatic drying and a decline in rainfall.

### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 32 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 2 locations, and has a continuing decline in (iii) 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 estimated that there are 300 to 1,000 (midpoint 500) individuals, but 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 D as Vulnerable

It is estimated that there are 300 to 1,000 (midpoint 500) individuals, and the taxon is inferred to be very restricted.

It is unlikely that the total number of mature plants exceeds 1,000 even in a good season as, the notes on the herbarium specimens indicate that there are rarely more than 100 plants.

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:



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[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)

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Roepera compressa*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/f1b4968c-434d-4022-8f48-268b904a232a>