

## *Pimelea flava* subsp. *dichotoma* Diosma Rice-flower

### Taxonomy

*Pimelea flava* subsp. *dichotoma* (Schtdl.) Threlfall

Further taxonomic research is needed to fully resolve the taxonomy of this group; the differences between the subspecies may warrant recognition as a separate species.

### 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 A2c+3c; B2ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

The taxon is a long-lived, erect shrub 0.3–0.5(–1) m high. Leaves leathery. Involucral bracts usually elliptic, 3–11 mm long, 2–8 mm wide, usually not much larger than leaves, leaf-like in colour. Flowers white; floral tube circumscissile above ovary in fruit. Flowers June–February (VicFlora 2018).

It is fire sensitive, regenerating from a long-lived soil-stored seedbank. Recruitment is only by seed and is continuous, with pulsed germination after fire. Flowers are either male or female in separate heads. Pollination is by insects, most likely Lepidoptera for a nectar reward. Dispersal of seed is passive or by wind.

#### Generation Length

The generation length of *Pimelea flava* subsp. *dichotoma* is suspected to be 30 to 50 years. This is based on the longevity of the plant and the turnover in relation to its fire sensitivity, as well as its continuous recruitment.

#### Distribution

The taxon occurs mostly in north-west Victoria, north of the Grampians and west of Inglewood, as well as at Marble Gully east of Omeo. It is also found in South Australia and New South Wales.

#### Habitat

The taxon occurs in the mallee communities in sand or heavier soil, including red-brown sands. It also occurs on siliceous sandy soils derived from sandstone in heathy woodland or scrub in the Grampians, and in limestone-derived soils at Marble Gully in open shrubland. It occurs in lowlands to high altitudes in the Grampians.

#### Threats

Threats to the taxon include the effects of climate change such as decreased rainfall, increased evaporation, and extreme temperatures, browsing by feral mammals, increased frequency and intensity of fire, impacts of fire-control activities, soil loss on bare post-fire substrates, and weed invasion.

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## 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 style="text-align: center;"><i>based on any of the following:</i></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 90 to 150 years is suspected to be 70%, based on (c) above.

Past reduction is based on the identified threats, especially historic habitat loss to agriculture.

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 90 to 100 years is suspected to be 50%, based on (c) above.

Future decline is based on current and projected threats, particularly climate change, altered fire regimes, and weed invasion.

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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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 84 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented as subpopulations are scattered over a large part of Victoria and most are considered reproductively isolated.

It is inferred to have 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above due to the identified threats, such as the effects of climate change, altered fire regimes, and weed invasion.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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				

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## Evidence:

### Ineligible under Criterion C as Data Deficient

No reliable estimate of the total population size for the taxon is available.

Criterion D - Very small or restricted population <sup>Ⓜ</sup>			
<sup>Ⓜ</sup>	Critically Endangered <sup>Ⓜ</sup>	Endangered <sup>Ⓜ</sup>	Vulnerable <sup>Ⓜ</sup>
Number of mature individuals (observed or estimated) <sup>Ⓜ</sup>	<50 <sup>Ⓜ</sup>	<250 <sup>Ⓜ</sup>	<1,000 <sup>Ⓜ</sup>
D2 - Only applies to the VU category <sup>Ⓜ</sup> 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. <sup>Ⓜ</sup>	- <sup>Ⓜ</sup>	- <sup>Ⓜ</sup>	D2 - Typically: <sup>Ⓜ</sup> AoO < 20 km <sup>2</sup> or number of locations ≤ 5 <sup>Ⓜ</sup>

## Evidence:

### Ineligible under Criterion D

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

Cunningham, G.M., Mulham, W.E., Milthorpe, P.L., and Leigh, J.H. (1992). *Plants of Western New South Wales*. Collingwood: CSIRO publishing.

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