

## *Eucalyptus pauciflora* subsp. *hedraia* Bogong Sally

### Taxonomy

*Eucalyptus pauciflora* subsp. *hedraia* Rule

A small number of individuals intermediate with *E. pauciflora* ssp. *niphophila* have been observed. This suggests some previous yet limited interbreeding.

### 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

Criterion B1ab(ii,iii,v)

### Species Information

#### Description and Life History

The taxon is a mallee or small tree to 10 m tall, often branching near base. Branchlets often glaucous. Juvenile leaves more or less orbicular to broadly ovate, to 12 cm long, 6 cm wide, glaucous; adult leaves to 16 cm long, 3 cm wide; buds sessile, ovoid to oblong, slightly angular, glaucous, to 0.8 cm long, 0.7 cm diam. Fruit to 1.3 cm long, 1.5 cm diam. Flowers mainly from December to February (VicFlora 2016).

#### Generation Length

The generation length of *Eucalyptus pauciflora* subsp. *hedraia* is inferred to be 150 to 250 years. This is based on indefinite longevity of the taxon which, like all Snow Gums, resprouts from the lignotuber following very low frequency bushfire. This extends the life of the individual well beyond the pre-settlement fire interval which is likely to have been in the range 150-400 years.

#### Distribution

The taxon is endemic to Victoria. The known concentration of populations of *E. pauciflora* subsp. *hedraia* occupies several square kilometres around the site of the Falls Creek Ski Village, which is located in the Victorian Alps. The altitude of the village is approximately 1700m and its aspect is a mountainside facing northwards. Other collections have been made in the vicinity, on Mt Bogong and Mt Arthur (Rule 1994; VicFlora 2016).

#### Habitat

The taxon's habitat is the Victorian alps. The taxon is altitude dependent as it is restricted to Falls creek, the Bogong High Plains, and peaks near to and including Mt Bogong. It is known to grow in pure stands except along its boundaries where it mixes with *E. pauciflora* ssp. *niphophila*. At its lower limits of altitude, it abuts *E. aff. dalrympleana* (Rule 1994).

#### Threats

The taxon is currently threatened by the ongoing impact of the ski industry, including ongoing attempts to suppress and kill resprouting rootstock of all individuals on groomed slopes and trails. This threat is limited to the footprint of

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ski industry infrastructure. Key emerging threats to all subpopulations of the taxon include the increasing frequency, intensity, and landscape scale of fire, in response to climatic warming and drying and fire management activity. These threats act in synergy to increase the risk of adult mortality and both vegetative and seed-based recruitment failure, particularly following repeat fire events and extreme drought stress.

## 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> <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:

### Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 73 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale, and anthropogenically within the footprint the ski industry infrastructure. Severe fragmentation clearly applies to small outlier subpopulations at Mt Arthur, Mt Bogong, and at Cope Creek, but does not necessarily apply to the core concentration of the taxon around Falls Creek. Like most eucalypts, the taxon has no specialised mechanism for long-distance dispersal.

It is estimated to have a continuing decline in (ii), (iii) and (v) above due to the ongoing impact of the ski industry, as well as the increasing frequency, intensity, and landscape scale of fire.

### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AOO) across the taxon's range is estimated to be 36 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 severely fragmented, and has a continuing decline in (ii), (iii) 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 suspected that there are 200 to 2,000 mature 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 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

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