



## *Senecio gregorii* Fleshy Groundsel

### Taxonomy

*Senecio gregorii* F. Muell.

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv,v)c(iv)

### Species Information

#### Description and Life History

The taxon is an erect, fleshy, simple or few-branched, glabrous, usually glaucous annual, 15–40 cm high. Leaves sessile, without auricles, linear or very narrowly lanceolate, 3–10 cm long, 2–6 mm wide, entire. Inflorescence of 1–few terminal, long-pedunculate capitula; peduncles hollow, expanded somewhat just below capitula; capitula radiate; involucre cylindric, 5–15 mm long, bracteoles absent; bracts 10–13, but fused for most of their length, splitting to the base only as the fruiting head matures; bracteoles absent. Ray florets 7–11(–14), bright yellow, ligules c. 8–20 mm long; disc florets 25–55, yellow. Cypselas fusiform, 4.5–8.5 mm long, those of ray florets usually smaller than those of disc florets, or sometimes sterile, all white-villous; pappus of rather coarse white hairs 12–18 mm long, persistent. Flowers August–October (VicFlora 2019).

The taxon is a cool season annual, germinating in Autumn and dying in late spring/early summer. It reproduces by seed only and accumulates a long-lived (presumably given climatic variation) soil-stored seedbank. Its breeding system is unknown but likely to be self-fertile, if not self-pollinating. Pollination is by insects, but this is undocumented. Fruits are armed with a pappus with dispersal by wind, potentially to considerable distances. Recruitment occurs in autumn with favourable rains and is greatly enhanced by fire (post-burn substrates).

#### Generation Length

The generation length of *Senecio gregorii* is estimated to be 1 years. This is based on the taxon being an annual.

#### Distribution

The taxon is confined in Victoria to the subarid far north-west Mallee.

#### Habitat

The taxon occurs on deep sandy loams of mallee/eucalypt woodland, and *Callitris* woodland.

#### Threats

Threats to the taxon include climate change (decreased rainfall, increased evaporation, and extreme temperatures); increased intensity of fires; impacts of fire-control activities; weed invasion; and grazing by rabbits and goats, and perhaps kangaroos under severe food shortage.

### 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:

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 10 years is suspected to be 30%, based on (c) above.

Future reduction is based on the projected impacts of threats, especially climate change induced decline in rainfall.

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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 7444.8 km<sup>2</sup>, based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to have 1 location as the main threats to the taxon have a non-reversible impact on individuals, occur in a stochastic manner, and have the potential over time to threaten the majority of individuals in the geographic area.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above based on the identified threats, especially declines in rainfall due to climate change.

It is projected to have extreme fluctuations in (iv) above because of the taxon's reliance on autumn rainfall for germination, with population numbers possibly varying by orders of magnitude in their annual responses, with very little recruitment in drought compared to wet years (Cunningham et. al. 1992).

#### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 96 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon has 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) and extreme fluctuations in (iv) above.

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

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

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

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

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne.



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