



Swainsona adenophylla Violet Swainson-pea

Taxonomy

Swainsona adenophylla J.M. Black

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2003).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria: A2bce; C2b; D

Species Information

Description and Life History

Erect or spreading perennial herb, to c. 30 cm tall; stems densely pubescent with appressed medifixed hairs. Leaves mostly 3-5 cm long; leaflets 3-9, linear to narrow-ovate, lateral leaflets 15-25 mm long, mostly 0.5-2 mm wide, apices obtuse with a yellowish, orbicular terminal gland, both surfaces densely pubescent; stipules to c. 4 mm long. Racemes mostly 10-20-flowered; flowers 6-9 mm long; calyx pubescent, teeth shorter than tube; petals pink or purplish; standard 7-9 mm long, 6-8 mm wide, suborbicular, clawed; keel c. 7 mm long, obtuse or acute, slightly twisted in older flowers; style tapering, tip straight or minutely inflexed. Pod narrow-obloid, mostly 10-20 mm long, 3-4 mm wide, pubescent; stipe to c. 0.5 mm long; seeds to c. 8, cuboid-cordate, 2-2.5 mm long, olive-green to light brown. Flowers June-September (or in summer after good rains) (VicFlora, 2019).

Generation Length

The generation length of *Swainsona adenophylla* is estimated to be 5 to 10 years. This perennial herb is believed to be relatively short-lived, perhaps up to 5-10 years or less, and probably flowers in the first year of growth. It germinates following heavy rain or shallow flooding. The seeds of *Swainsona* spp. are typically extremely persistent in the seedbank. At Barmah, the plant has been recorded from the higher levels of the floodplain. While very rarely flooded now, these areas probably were on average flooded at around once in five to ten years.

Distribution

The only known record in Victoria is unconfirmed, and the single monitoring event found no plants. In Victoria, the taxon was known only from the Barmah Forest near Echuca where it may exist solely as a soil seedbank. It is also in SA and NSW.

Habitat

Swainsona species are confined to specific grassland and woodland habitats found in southwest Victoria, the Mallee, native grasslands of the northern plains, and riverine habitats along the Murray River. The records for this taxon in Victoria were on higher River Red Gum (*Eucalyptus camaldulensis*) terraces, well away from the main river channel (OEH, 2019).

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Threats

Threats to this taxon include the impacts of introduced animals (rabbits, horses and pigs, previously cattle), weed invasions, impacts related to climate change (decreased rainfall and extreme temperatures) and genetic issues relating to very small population sizes.

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:

Eligible under Criterion A2 as Critically Endangered

The population reduction over the past 15 to 30 years is inferred to be 80 to 100% (midpoint 90%, based on (c) above.

Numbers have declined to the point that no mature individuals have been seen for more than twenty years. In 2001 Gill Earl indicated an estimated population size of between 0 and 20 plants, with a best estimate of 12. It is unclear whether or not soil stored seed of the taxon persists.

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

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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 ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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:

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km² and the Area of Occupancy (AoO) is estimated to be 4 km², but other thresholds under this criterion have not been met.

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			

Evidence:

Eligible under Criterion C2 as Critically Endangered

There is estimated to be one or no mature individuals There do not appear to be any records of this taxon in Victoria for nearly 20 years at least. In 2001 Gill Earl indicated an estimated population size of between 0 and 20 plants, with a best estimate of 12.

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It is estimated to have extreme fluctuations in the number of mature individuals. The taxon appears to be relatively short-lived, germinating following suitable conditions such as shallow flooding or summer rains.

Criterion D - Very small or restricted population [Ⓜ]			
[Ⓜ]	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 ² or number of locations ≤ 5 [Ⓜ]

Evidence:

Eligible under Criterion D as Critically Endangered

There is estimated to be one or no 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.

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