



Swainsona reticulata Kneed Swainson-pea

Taxonomy

Swainsona reticulata J.M. Black

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2002).

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

Prostrate or ascending perennial herb, to c. 15 cm tall; stems pubescent with antrorsely divergent or spreading hairs; hairs basifixed or laterally attached at base. Leaves mostly 1-7 cm long; leaflets 5-17, obovate, elliptic or narrowly linear-lanceolate, 3-15 mm long, usually 1-3 mm wide, irregular, apices acute, obtuse or retuse, both surfaces appressed-pubescent, or upper surface glabrous; stipules 2-7 mm long. Racemes subumbellate, mostly 3-7-flowered; flowers 5-10 mm long; calyx pubescent, hairs dark, light or mixed, teeth equal to or longer than tube; petals purplish; standard 8-10 mm long, 7-11 mm wide, broad-ovate, clawed; keel 6-8 mm long, apices obtuse to acute, barely twisted; style tip broad, wing-like, geniculate. Pod cylindrical to narrow-obovoid, mostly 15-22 mm long, 4-8 mm wide, pubescent, stipe to c. 4 mm long; seeds c. 20, cordate, c. 1.7 mm long, olive-green to brown. The taxon flowers between August and October (VicFlora 2019).

Swainsona species are largely renascent perennials, resprouting in suitable conditions from a persistent rootstock. This gives individual plants the capacity to persist between years given suitable conditions (DSE (2001).

Generation Length

The generation length of *Swainsona reticulata* is estimated to be 5 to 15 years. This is based on its perennial, herbaceous life-form and ability to reshoot from rootstock. Recruitment is mostly in response to good rainfall events. Such events occur in its habitat on average every 5-15 years. The taxon has a long persistent, soil-stored, seed-bank. Longevity of plants is potentially much longer than this estimate.

Distribution

The taxon is very rare in Victoria. It is found mainly in the north-west but there is a 1947 collection from Cobram, and a doubtful eastern record from near Wodonga.

Habitat

The taxon occupies sandy rises perched on *Eucalyptus largiflorens* (Black Box) floodplains or perched on chenopod heavy soil plains habitat.

Threats

The most likely threats to the taxon are increased drying and warming, reduced frequency of favourable rainfall events and increased drought stress. Most recruitment is presumably from long-persistent, soil-stored seed. Recruitment is probably triggered by favourable rainfall events which, in the area where the taxon grows, occur on average every 8-10 years.

Cunningham *et al.* (1981) note that the taxon is regarded as good fodder, but possibly poisonous to stock as are some other species of the genus *Swainsona*. The notes on some of the specimens held at the National Herbarium of Victoria, Royal Botanic Gardens Victoria (MEL) indicate that plants were badly affected by 'rabbit grazing'. It is also likely that kangaroos graze the plants.

The population of the taxon at Lake Ranfurly near Mildura is potentially threatened by salinisation. At least some of the sites are subject to the threat of weed invasion. The notes on the MEL collection from Lake Ranfurly mention that the taxon was associated with *Bromus rubens* (Red Brome) and *Medicago mimina* (Little Medic). The Karadoc site also has several weeds including *Bromus rubens*, *Euphorbia peplus* (Petty Spurge) and *Hypochaeris radicata* (Flatweed). Some of the occurrences at Ned's Corner are also associated with various weeds including *Echium plantagineum* Paterson's Curse, *Reichardia tingitana* (False Sow-thistle) and *Salsola tragus* subsp. *tragus* (Prickly Saltwort) (V. Stajsic pers. observ. 2011).

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> <ul style="list-style-type: none"> (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites 			

Evidence:

Ineligible under Criterion A2

Although the taxon has almost certainly experienced significant historic decline, the proportion of this decline which has occurred in the last three generations is difficult to estimate in the absence of longitudinal observations or monitoring data.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 15 to 30 years is suspected to be 30%, based on (c) and (e) above.

Future reduction of the taxon's population is based the identified threats, specifically increased drying and drought stress through global warming, and grazing by rabbits and possibly kangaroos.

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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 1,713 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is severely fragmented naturally at the landscape scale. It has a patchy distribution with most occurrences isolated from other occurrences at separations exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal.

The taxon can be considered to occur in one location because it occurs in a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present, specifically, through climatic drying, a decrease in favourable rainfall events, increased drought stress, and grazing by rabbits and possibly kangaroos.

It has a continuing decline in (iii) above.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 40 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As stated above, the taxon is severely fragmented, has one location 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 5,000 to 6,000 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 ² or number of locations ≤ 5

Evidence:

Eligible under criterion D as Vulnerable

The taxon is inferred 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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