Threatened Species Assessment

Swainsona sericea
Silky Swainson-pea

Taxonomy

Swainsona sericea (A.T. Lee) J.M. Black ex H. Eichler

Current conservation status

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

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

Proposed conservation status

Endangered in Victoria

Criterion A2bce+3ce; B2ab(i,ii,iii,v)

Species Information

Description and Life History

Prostrate or ascending perennial herb, to c. 20 cm tall; stems pubescent with appressed or spreading asymmetrically medifixed hairs; hairs 0.5-1 mm long. Leaves mostly 2-7 cm long; leaflets 5-13, narrow-oblanceolate to narrow-elliptic, lateral leaflets 5-15 mm long, usually 1-3 mm wide, terminal leaflet usually 2-5 mm longer, apices acute, rarely obtuse or retuse, both surfaces pubescent; stipules 3-7 mm long. Racemes mostly 2-8-flowered; flowers 7-11 mm long; calyx pubescent, teeth about equal to tube; petals purplish; standard 8-14 mm long, 8-14 mm wide, broad-ovate, long-clawed; keel 7-10 mm long, apices obtuse with swellings behind tip; style tip geniculate. Pod cylindric to obovoid, mostly 10-17 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).

Generation Length

The generation length of *Swainsona sericea* is inferred to be 15 to 40 years. This is based on the likely post-fire episodic recruitment at frequencies of 3 -7 years with some additional continuous recruitment in response to small-scale localised disturbances. The taxon's longevity is plausibly 5 - 20 years. However, persistence in the seed bank may be for greater than 50 years. Recruitment has historically been cued by fires at mean pre-European settlement frequency ranging from 2 - 7 years depending on rainfall and landscape context. Integrating these estimates, generation time is estimated conservatively to be 14 - 25 years under current conditions, and under pre-European settlement conditions, in the range of 25-75 years.

Distribution

The taxon is rare in Victoria and of disjunct occurrence. It occurs in the north of the state, in the Mallee and in Hattah-Kulkyne National Park (NP), and in the Northern Plains and Wimmera Plains.

Habitat

DSE (2001) noted that the taxon occurs in two distinctly different habitats. Mallee populations are found in Semi-arid Sand Dune Hummock Pine Woodland, commonly in the dune blow-outs found in Hattah-Kulkyne National Park. Slender Cypress-pine *Callitris gracilis* is the dominant tree, but vegetation is largely herbaceous, and dominated by pioneer species able to recolonise the unstable dunes. Populations also occur within grassy

ecosystems of the Northern Plains Grassland and Wimmera Plains, where they occur on heavy, cracking clays on gilgai puffs.

Threats

There is likely to have been a historic decline due to loss of habitat in developing agricultural landscapes, compounded by subsequent management regimes, including intensive stock grazing, cropping, irrigation, pugging in wet weather, pasture improvement, road improvement and weed management (DSE 2001). As of 2001, the taxon persisted on freehold land, but is likely to have bene further impacted by an increase in sustained cropping across the Wimmera and Northern Plains.

Ongoing threats are conversion of its habitat for agriculture and grazing by domestic stock. Given that the taxon is able to regenerate following above average rainfall events, it is likely that it will persist under climate change, although the period between events is likely to influence local persistence of the taxon.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(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:

Eligible under Criterion A2 as Endangered

The population reduction over the past 42 to 75 years is inferred to be 50 to 70%, based on (b), (c) and (e) above.

Over 50% of the habitat of the species has been lost since 1990, so an estimate of 50-70% is seen as conservative.

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 45 to 100 years is projected to be 30 to 70% (midpoint 50%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

The continued decline will be linked to a number of factors. These include the loss of fitness under current management regimes, which are largely driven by the use of grazing by domestic stock and or overgrazing by rabbit and or macropods. This is likely to the density of the population through the gradual loss of individuals from populations and reduced recruitment rates. Likewise, the absence of fire as a driver of species recruitment and persistence is also likely to influence the taxon's persistence.

These factors, combined with a continued decline in the habitat quality of grassy ecosystems, is likely to see the continued reduction in populations in the short and medium term.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, is estimated to be 205 km².

The taxon is inferred to be severely fragmented. Many subpopulations are separated by areas of unsuitable habitat (i.e. agricultural land) at distances that do not allow for exchange of reproductive material. Many are very small and their survival is precarious. The taxon also has no means for long distance dispersal, and little opportunity to recolonise if a subpopulation becomes extinct.

It has a continuing decline in (i)), (ii), (iii), (iv) and (v) above, due to the current and projected impacts of the identified threats.

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 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 km2 or number of locations ≤·5

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

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

DSE (2001) Flora and Fauna Guarantee Action Statement no. 126. Twelve threatened Swainson-peas and Darling-peas (*Swainsona* species). Department of Sustainability and Environment.

SAC (2003). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 609 *Swainsona sericea.*

VicFlora (2019) Flora of Victoria, Royal Botanic Gardens Victoria: *Swainsona sericea.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/1a35e46a-7e55-4afd-bfb9-20b769b94d6f