Threatened Species Assessment

Swainsona galegifolia
Smooth Darling-pea

Taxonomy

Swainsona galegifolia (Andrews) R. Br. ex W.T. Aiton

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2014).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2ce+4ce; B1ab(i,ii,iii,iv,v)

Species Information

Description and Life History

Erect perennial shrub to c. 1 m tall; stems glabrous. Leaves mostly 5 to 10 cm long; leaflets 11 to 29, narrow-obovate to elliptic, lateral leaflets 8-20 mm long, 3-10 mm wide, apices obtuse to emarginate, both surfaces glabrous; stipules 2 to 5 mm long. Racemes mostly 15-20-flowered; flowers 12-15 mm long; calyx glabrous, teeth usually much shorter than tube; petals dark red or organge; standard to 15 mm long, 15-20 mm wide, suborbicular, clawed; keel 10-15 mm long, apex obtuse, obscurely lipped; style tip straight or incurved, sometimes with a few-haired tuft. Pod ellipsoid, mostly 20-40 mm long, 8-12 mm wide, inflated, glabrous, stipe to 10 mm or more long; seeds to c. 20, cordate, 2-3 mm long, brown. The taxon flowers between November and December (VicFlora 2019).

Generation Length

The generation length of *Swainsona galegifolia* is inferred to be 15 to 50 years. There is insufficient field observation to support an estimate, but generation length is inferred based on observations of the reproduction patterns.

Distribution

In Victoria, the taxon is known only from two sub populations, one in each of the Indigo Creek and Felltimber Creek catchments, 12 and 8 km respectively west of Wodonga.

Although the taxon was first recorded in Victoria in 1980, it seems to have once been widespread in the upper watershed of the Indigo Creek and throughout Felltimber Creek catchment. According to locals it was common before World War 2, especially on tailing heaps left after mining (Scarlett 1987). In the 1980s, only one small population of 100 plants was known on 0.5 ha adjoining Felltimber Creek (CNR 1985, Scarlett, 1987). However, surveys in 1993 found that this population comprises four stands (about 10,000 plants over 20 ha) within a 2 km long, 65 ha area of forested habitat on land managed then by the Albury Wodonga Development Corporation (AWDC). Currently Parklands Albury Wodonga acts as the Committee of Management for the Swainsona Reserve, supported by the Friends of Felltimber Creek. Less than 5% of this population overlaps into an adjoining road reserve managed by the Wodonga Rural City Council (WRCC). The Indigo Creek population (10,000 plants, 30 ha) was discovered in late 1993 in a 72 ha Bushland Reserve.

A population of about 100 plants that was seen as recently as 1985 on a roadside in the Indigo Creek catchment, about 6 km to the south-west, is now apparently extinct.

The taxon also occurs in Queensland and New South Wales.

Habitat

It is currently known from open-forest habitat.

Threats

The initial decline of the taxon in Victoria is attributed to clearing and subsequent cultivation and grazing after European settlement of north-eastern Victoria in the mid-1800s. The use of aerial application of superphosphate on steep hill country, the last stronghold of the species after World War 2, has been linked to the subsequent decline of Smooth Darling Pea in the Indigo Creek and Felltimber Creek catchments (Coyle pers. comm.). Competition from introduced pasture species, the associated increase in domestic and feral grazing pressure, and added competition from weeds, has significantly reduced the distribution and abundance of the species in Victoria.

Current threats to the species include competition from weeds, grazing, soil erosion and compaction, and trail formation by domestic livestock and other animals.

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 Critically Endangered

The population reduction over the past 45 to 150 years is suspected to be 80 to 95%, based on (c) and (e) above.

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 suspected to be 30 to 95% (midpoint 60%), based on (c) and (e) above.

Future reduction of the taxon's population is based on the projected impacts of competition from weeds, grazing, soil erosion, and compaction and associated trail formation by domestic stock and other animals.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 45 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 80 to 99%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 24 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas. The EoO has been made equal to the AoO to ensure consistency with the definition of AoO as an area within the EoO.

Considering the limited dispersal ability of the taxon, the barriers to dispersal, or lack of habitat separating them, the individuals can be considered to be severely fragmented.

It estimated to have one location. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, as a result of competition from weeds, grazing, soil erosion, and compaction and associated trail formation by domestic stock and other animals.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 12 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has 1 location, and has a continuing decline in (i), (ii), (iii), (iv) and (v) 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

It is inferred that there are 10,000 mature individuals, which exceeds the thresholds for Criterion C.

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:

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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