

## *Schoenus ericetorum* Heathy Bog-sedge

### Taxonomy

*Schoenus ericetorum* R. Br.

### Current conservation status

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

### Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(iii)+2ab(iii)

### Species Information

#### Description and Life History

The taxon is a tufted perennial. Culms erect, rigid, terete, grooved, smooth or scabrous, nodeless, 10-40 cm high, 0.4-0.8 mm diam. Leaves with blade to 1.5 cm long; sheath red-brown, slightly scabrous or papillose,  $\pm$  dull; mouth long-ciliate or woolly; ligule present. Inflorescence obconical, with 1-14 spikelets in 1 or 2 clusters, 0.5-1.5 cm long; lowest involucral bract to 2 cm long. Spikelets narrow-ovate to linear, acute, 1-2-flowered, 4-7 mm long; glumes 5-9, lowest 4-7 empty, acute, very dark red-brown to blackish above, straw-coloured near base, dull, with margins woolly at least near apex, uppermost glumes may be glabrous; fertile glumes 4-5 mm long; hypogynous bristles absent. Nut trigonous, obovoid to ellipsoid, scarcely 3-ribbed, minutely wrinkled and papillose, glabrous, dull, red-brown with darker patches, 1.4-1.8 mm long, 0.8-1.1 mm diam. The taxon flowers spring to summer (VicFlora 2019).

#### Generation Length

The generation length of *Schoenus ericetorum* is estimated to be 25 to 50 years. The taxon is a perennial with a longevity that is plausibly in the 25-50 year range. This is based on the assumption that it is strictly tufted, that its short erect rhizome is capable of resprouting following fire and that seed recruitment is likely to include both pulse germination post-fire and also some continuous recruitment in response to animal digging by echidnas, bandicoots, potoroos, potentially wombats in the past, and wallabies.

#### Distribution

In Victoria, the taxon is confined to coastal districts of far East Gippsland, eastward from about Wingan Inlet to the Howe Range near the New South Wales border. Although currently known with confidence only by two Beaglehole specimens collected in 1969 near the Benedore River mouth and the east slopes of the Howe Range, this is likely to underestimate the true range of the taxon in Victoria. A 1928 collection taken by Fred Barton from Sperm Whale Head in the Gippsland Lakes suggests the taxon may be more widespread than current records suggest, possibly through confusion with the similar *S. imberbis*, which reliably extends west to the Gippsland Lakes, as suggested by a duplicate of the Barton collection which has been determined as *S. imberbis*. It also occurs in Queensland and New South Wales (VicFlora 2019).

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### Habitat

In Victoria, the taxon is confined to near-coastal heaths and forest clearings (VicFlora 2019). In NSW the taxon grows in heath and dry sclerophyll forest, on sandy soils. Unlike in Victoria, in NSW the taxon is found well inland, for example near Dubbo (PlantNET 1993).

### Threats

The taxon is possibly threatened in the long-term by climatic drying and warming resulting in changes in vegetation structure, such as increasing tree and shrub density and potential changes in soil microflora, particularly of mycorrhizal fungi. These impacts are likely to be exacerbated by imposed fire regimes, increasing the risk of repeat fire and recruitment failure. Some sites are possibly also threatened by occasional large storms resulting in significant salt spray degradation of vegetation. Occurrences in damper peaty heaths are potentially threatened by excavation of the substrate by feral pigs.

### 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:

#### Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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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 <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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 or 1,726 km<sup>2</sup> based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA). The lower bound estimate is made equal to the Area of Occupancy (AoO) to comply with the definition of AoO as an area enclosed within the EoO. The upper bound includes the 1928 Barton collection from Sperm Whale Head, which may result from misidentification of *S. imberbis* or, if reliably determined, may now be locally extinct.

The taxon is severely fragmented naturally at the landscape scale and, if the Sperm Whale Head collection is reliably determined, also at the subregional scale. The only plausible vectors are ants (myrmecochory) which operate at the metre scale.

It is inferred to have a continuing decline in (iii) above, based on the current and projected impact of the identified threats.

#### Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 or 12 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

As above, the taxon is estimated to be severely fragmented, 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

There is estimated to be 500 to 5,000 mature individuals, but other thresholds under this criterion have not been met. The two Victorian collections do not provide any indication of population size, however there are plausibly at least 500 plants between the two known sites, and the population size is unlikely to exceed 5,000. It is possible that *S. ericetorum* has been overlooked due to confusion with the very similar-looking *S. imberbis*.

Criterion D. Very small or restricted population				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 50	< 250	D1 < 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 D as Vulnerable

It is estimated that there are 500 to 5,000 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. Retrieved from: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)



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PlantNET (1993). New South Wales Flora Online, Royal Botanic Garden Sydney: *Schoenus ericetorum*. Retrieved from: <http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Schoenus~ericetorum>

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Schoenus ericetorum*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/924427e8-2fe7-4453-bfb4-a3f22c94244c>