

Schoenoplectiella dissachantha Blunt Club-sedge

Taxonomy

Schoenoplectiella dissachantha (S.T. Blake) Lye

Current conservation status

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

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

Proposed conservation status

Critically Endangered in Victoria

Criterion B1ab(i,ii,iii,iv,v)c(iv)+2ab(i,ii,iii,iv,v)c(iv)

Species Information

Description and Life History

The taxon is an annual tufted herb. Culms terete to trigonous, 3-35 cm high, to 1 mm diam. Leaves usually reduced, rarely blade to 6 cm long. Inflorescence a cluster of 1-5(-10) sessile spikelets; involucre bract often as long as culm, to 9(-20) cm long. Spikelets oblong, obtuse, 5-14(-28) mm long, c. 3 mm diam.; glumes acute to obtuse, glabrous, hyaline or tinged golden yellow, with green midrib, 2.0-3.5 mm long; style 2-fid; hypogynous bristles 6, minutely scabrous or smooth, as long as or shorter than the nut. Nut suborbicular or obovoid, unequally biconvex, closely and prominently transversely rugose, with narrowly acute ridges, yellow-brown to black, shining, often more than half as long as the glume, 1.0-1.3 mm long, c. 1 mm diam. The taxon flowers spring-summer (VicFlora 2020).

Generation Length

The generation length of *Schoenoplectiella dissachantha* is estimated to be 7 to 25 (midpoint 15) years. The taxon is an annual with a longevity unlikely to exceed 1(-2) years, dependent on seasonal rainfall and flooding events to promote episodic recruitment. The frequency of such events at the time of European settlement is likely to have been in the 7-25 year range based on the mean frequency of La Niña events and major flood events. For example, freshwater swamps in the Kaniva and Quambatook districts were dry throughout the Millennium drought which extended from 1996 to 2010.

Distribution

The taxon is apparently very rare in Victoria where recorded only from Merwyn Swamp near Kaniva in the Western Wimmera and between Lalbert and Quambatook on the Northern Plains in the Murray Valley. Also WA, NT, SA, Qld and NSW (VicFlora 2020).

Although last collected at Merwyn Swamp in 1952, 1954 and 1958 by A.J. Hicks, the taxon cannot be assumed to have become locally extinct at this site since a soil-stored seedbank may survive at the site. Similarly, the taxon may also survive in the seedbank at the Wandella Forest site on the Quambatook to Lalbert Road where last collected in 1974 by Andrew Corrick. The taxon was also recorded in a quadrat taken by Damien Cook in 1991 in a



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seasonally inundated wetland west of Jilpanger Springs in the Jilpanger Nature Conservation Reserve at Jilpanger in the Western Wimmera.

Habitat

Of the three herbarium specimens held at MEL, only one of the collections (0516655A) provides habitat notes: Andrew Corrick records the taxon in mud near water in association with *Eucalyptus largiflorens* (Black Box) beside Wandella Forest on the Quambatook to Lalbert Road. Merwyn Swamp is around 400-500 m wide within a wetland reserve 800 m long, suggesting a maximum area of occupancy of 30-40 ha. Merwyn Swamp is dominated by *E. camaldulensis* (River Red-gum) with a marginal band of *Duma florulenta* (Tangled Lignum). The seasonally inundated wetland west of Jilpanger Springs in the Jilpanger Nature Conservation Reserve is dominated by River Red-gum, *Allocasuarina luehmannii* (Buloke) and *Chorizandra enodis* (Black Bristle-sedge). Freshwater swamps in the Kaniva and Quambatook districts were dry throughout the Millennium drought.

Threats

Historic decline is likely to have been very significant given the long history of intensive agriculture across the Victorian range of the taxon, with key historic threats including habitat loss, draining and cropping of wetlands, trampling by stock and the early impacts of climate change with circumstantial evidence that the impacts of climate change have been operating for many decades. Some of the historic threats of habitat loss and degradation are ongoing since only one of the three known occurrences is protected within a conservation reserve.

The taxon is currently highly threatened by climatic warming and drying with all habitats subject to increasing drought stress to which ephemeral plants are generally at great risk. Freshwater swamps in the Kaniva and Quambatook districts were dry throughout the Millennium Drought which extended from 1996 to 2010. Reducing reliability of rainfall and flood events increases the risk of recruitment failure, reduces the likelihood of satisfactory seedset, increases the risk of seedbank depletion and exhaustion and local extinction.

Additional threats to Merwyn Swamp include the observation of current exceptionally dense River Red-gum which recruited in the mid 1990's, observed at the 4 m tall sapling stage in 2007, compromising successful seed recruitment and the ability to reach reproductive maturity to replenish the seedbank. The density of River Red-gum leads to high evapotranspiration drying out the site prematurely. An earlier cohort of potentially 1983 recruits suggests overstocking is a threat in train since 1983. Further evidence of unnatural River Red-gum density near the narrow band of Tangled Lignum around the edge of Merwyn Swamp is the inability of the Lignum to penetrate the Eucalyptus stand which is as dark as a mature pine plantation. Furthermore, proximity to the Western Highway artificially boosts the local catchment area, with artificial embankments upslope channelling additional runoff to the swamp. The effect of earthworks at Merwyn Swamp is to concentrate water at one end, at the north-east corner, which was quite dry in March 2014, with the remainder of the swamp now effectively starved of inflow. It is unlikely that the Merwyn Swamp subpopulation has any long-term future and may already have become locally extinct.

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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 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 Critically Endangered

The Extent of Occurrence (EoO) is estimated to be 4, 8 or 7,810 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

An estimate of EoO is based on the likelihood that the taxon survives in the Jilpanger Nature Conservation Reserve where it was last recorded in 1991, with a lower probability that the taxon survives also in the Wandella district where it was last collected in 1974, and a much lower probability that it survives also at Merwyn Swamp where it was last collected in 1958.

The taxon is estimated to be severely fragmented as it is only known from several very localised small populations within extensively modified landscapes.

A single location is identified, since the key threats of climatic warming and drying operate consistently across the highly restricted ecological range of the taxon in Victoria. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above in response to the current and projected impact of the identified threats.

It is estimated to have extreme fluctuations in (iv) above, as it is an ephemeral annual dependent on seasonal rainfall and flooding events. Population size and density are expected to fluctuate significantly between successive recruitment events in response to cyclic and stochastic weather events.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 4, 8 or 12 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA, and based on the likelihood that the taxon survives in the Jilpanger Nature Conservation Reserve, the Wandella district and at Merwyn Swamp. As above, it is severely fragmented, has one location, has a continuing decline in (i), (ii) and (iii) and extreme fluctuations in (iv) 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 no information to support an estimate of population size which is likely to fluctuate significantly in response to seasonal conditions. Any estimate of subpopulation size is likely to be an artefact of recent climatic events.

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 ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D 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

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

SAC (2002). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 602 *Schoenoplectus dissachanthus*

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Schoenoplectiella dissachantha*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/1235c312-e5eb-4c14-9c0e-20221932b3d4>