Threatened Species Assessment

Carex tasmanica
Curly Sedge

Taxonomy

Carex tasmanica Kuk.

The leaf tips are usually curled as in *Carex bichenoviana,* but *C. tasmanica* differs in having the ligule and the thin portion of the leaf-sheath red-dotted, with mostly fewer spikes in the inflorescence, the utricle is red-dotted and thinner in texture and not as inflated, and the glumes are usually shorter and not strongly red-brown in colour (VicFlora, 2018).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1994).

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(ii,iii,iv,v)

Species Information

Description and Life History

Rhizome short or long; shoots densely tufted. Culms erect, ± terete, smooth except just beneath inflorescence, (15-)20-70cm long but may greatly elongate in fruiting stage to 170 cm long, c.0.8 mm diam. Leaves exceeding culms but sometimes much shorter when culms fruiting, typically curled at apex, 1.5-1.7(-2.3) mm wide; sheath pale red-brown, minutely red-dotted; ligule obtuse, red-dotted. Inflorescence narrow, erect, 5-25 cm long, with 2-4 spikes solitary at nodes, the lowest spike often very distant from the rest; lowest involucral bracts exceeding inflorescence. Spikes sessile or shortly pedunculate, distant, erect at maturity, (1.5-)2-3(-4) cm long; upper 1 or 2 spikes male; lower 2 or 3 spikes female; glumes obtuse to retuse, often shortly mucronate, red-brown with paler midrib, sprinkled with brown or red brown striae; female glumes 2.2-3.5 mm long; utricles 3-3.7 mm long, 1.5-1.8 mm diam., ellipsoid, faintly numerous-nerved, glabrous, occasionally somewhat thickened, pale green to brown, red-dotted; beak 0.5-0.8 mm long, with apex bifid; style 3-fid. Nut ellipsoid to obovoid, trigonous, dark yellow-brown. Flowers spring (VicFlora, 2018).

Generation Length

The generation length of *Carex tasmanica* is suspected to be 50 to 100 years. The taxon would reach reproductive maturity within a few seasons. The plant is a long-lived perennial, apparently with the capacity to expand out rhizomatously. Consequently, a long effective generation length is suspected.

Distribution

The taxon is uncommon, confined to immediately north of Melbourne (Craigieburn) and farther west (to Heywood near Portland) (VicFlora, 2018).

Habitat

The taxon occurs on seasonally wet, heavy clayey soils, that are weakly salinized, at least at Craigieburn.

Threats

Threats to this taxon include the impacts of climate change (decreased rainfall, reduced groundwater levels, drying of springs and soaks) and other factors leading to altered hydrology, potential eutrophication from disposal of treated water, off-target damage from herbicide application, land clearing for urban use and modified agricultural practices, weed invasion (notably *Juncus acutus* at Craigieburn), grazing and pugging of wetlands by cattle and other stock.

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:

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.

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 Vulnerable

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 13,170 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented as it is restricted to small, widely dispersed patches of remnant habitat.

It is inferred to have 2 locations. It has a continuing decline in (ii), (iii), (iv) and (v) above based on the current and projected impact of the identified threats.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 92 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented has 2 locations and has a continuing decline in (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 suspected that there are 37,000 to 700,000 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 inferred to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Carter, O. (2010). *National Recovery Plan for the Curly Sedge Carex tasmanica*. Department of Sustainability and Environment, Victoria. Available from: https://www.environment.gov.au/system/files/resources/1ecf95e8-a25e-44fa-bf08-5ffc8e4db42d/files/carex-tasmanica.pdf

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VicFlora (2018). Flora of Victoria, Royal Botanic Gardens: *Carex tasmanica*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/075c0001-311e-468e-a52a-44bcc6dac413