Threatened Species Assessment

Isolepis congrua
Slender Club-sedge

Taxonomy

Isolepis congrua Nees

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996).

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(iii)c(iv)

Species Information

Description and Life History

The taxon is a small tufted annual. Culms filiform, to 20 cm high. Leaf-blades to 9 cm long. Spikelets 1-5 per inflorescence, 3-5 mm long; involucral bract erect to spreading, exceeding inflorescence, to 15 mm long; glumes acute, with straight or excurved mucro, sides nerveless or 1-nerved at edge of keel, hyaline, often tinged yellow to red-brown, mostly 1.5-2.0 mm long; stamen 1; style 3-fid. Nut equally triquetrous, broad-ellipsoid to broad-obovoid, minutely punctate (often whitish), glistening, dark red-brown to dark grey, from one-third to one-half as long as glume, 0.4-0.7 mm long, c. 0.4 mm diam. The taxon flowers in spring (VicFlora 2017).

Generation Length

The generation length of *Isolepis congrua* is suspected to be 5 to 20 (midpoint 10) years. The generation time is difficult to estimate since the taxon occurs across a wide range of habitat types and is subject to recruitment opportunities occurring at widely varying frequencies. Such recruitment opportunities potentially range from close to annual in areas of reliable winter rains to low frequency events (i.e.,10-15 years) in areas along the Murray River reliant upon flood waters at pre-settlement frequencies. A nominal generation time, integrated with the frequency of recruitment opportunities across the range of the taxon, is plausibly 5-10 years.

Distribution

The taxon is apparently rare in Victoria although possibly overlooked. It has been recorded from cracking grey clay along the Murray River near Colignan and other seasonally wet areas at Mt Arapiles, near Donald, St Arnaud, Dadswells Bridge, Puckapunyal, and Mt Pilot (SAC 1996).

The taxon is known from 14 recent (post 1980) collections. It has been recorded from the following localities: Jilpanger Flora and Fauna Reserve, Hard Hills Flora and Fauna Reserve (6 km north of St. Arnaud), Mount Jeffcott Flora and Fauna Reserve (17 km east-north-east of Donald), Murray-Kulkyne National Park, Deep Lead Flora and Fauna Reserve, Cherrypool (road reserve), Saint Arnaud (State Forest) and Warby Range State Park. No data are available on population sizes for these sites.

Habitat

The taxon occurs in wet habitats including River Red Gum Swamps, grassy wetlands and Yellow Gum woodlands (SAC 1996).

Threats

Threats to the taxon include the long-term impacts of climatic drying and warming, modifications to flood regimes along the Murray River and its tributaries and the impact across the Northern Plains and Wimmera of agricultural intensification and the impact of trampling by stock. A few sites in more southerly districts may also be at risk of habitat destruction by deer and feral pigs.

The taxon is known only from isolated populations. Very little is known about the ecology of this taxon and therefore whether it is susceptible to threats such as grazing by introduced herbivores and weed invasion. As it relies on wetland habitats, it is susceptible to alteration of its environment caused by changes to hydrology or trampling by introduced stock (SAC 1996). The taxon is known from so few sites that a series of localised catastrophic events, such as soil disturbance from mining or intense fire or grazing, could cause its extinction. Populations of this taxon in areas of Yellow Gum Woodland may be threatened by soil disturbance caused by mining or mining exploration.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 120 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is inferred to be severely fragmented naturally at the regional scale and anthropogenically at the landscape scale, with no specialised mechanism for long-distance dispersal.

It is estimated to have 4 locations, based on the distinct suite of threats applying to the Murray Valley, Northern Plains and Wimmera, heathier sites in the south-west and rockpools in hilly terrain (e.g., Mt. Arapiles, the Grampians and the North-east)

It has a continuing decline in (iii), based on the current and projected impact of the identified threats, and is suspected to have extreme fluctuations in (iv) above, particularly for populations in the north of the Victoria. The populations located on rockier ephemeral habitats or heathier habitats further to the south are subject to less extreme population size fluctuations.

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

The total population size at any point in time is impossible to estimate, since the population size and density is dependent on the reliability of rain or other watering events, such as flooding in the last season.

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

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

SAC (1996). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 408 *Isolepsis congrua*. Department of Environment and Primary Industries, Victoria.

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Isolepsis congrua.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/9d4d3981-3fc9-447c-8bf9-b3e61ffb0eea