Threatened Species Assessment

Xyris juncea
Dwarf Yellow-eye

Taxonomy

Xyris juncea R. Br.

Current conservation status

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

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(ii,iii)+2ab(ii,iii)

The taxon may be presumed extinct as it has not been seen for nearly fifty years despite targeted searches.

Species Information

Description and Life History

Tufted perennial herbs with short stems. Leaves 2.5-4 cm long; sheaths often with red tinge. Inflorescences 1-3, each 4-5 mm long and borne on an axis (9-)13-24 cm long; bracts c. 6, arranged in 2 or 3 whorls; upper fertile bracts slightly irregularly torn but margin never appearing fringed; lower sterile bracts ± the same size as fertile bracts. Anthers c. 0.6 mm long. Style lobes c. 1.2 mm long. Fruit opening along entire length. Flowers Dec.-Feb. (Vic Flora 2019).

Generation Length

The generation length of *Xyris juncea* is inferred to be 20 to 50 years. Flowering appears to be stimulated by fire (Doust and Conn 1994). First flowering occurs possibly in the first year or two. Its longevity is possibly longer than its generation length and is unlikely to exceed 15 years. The interval of fire events in wetland areas in the Maramingo Creek area before European settlement probably exceeds 50 years. Recruitment is therefore from long-persistent soil-stored seed.

Although the plants are small and roots fibrous, a study of the fire responses of plants in northern Sydney found that most mature plants resprouted after fire (Kubiak 2009). Wetland fires are also probably less intense than in dry sites.

Distribution

In Victoria, the taxon is only known from 3 collections (1948,1949, 1969) from the Marimingo Creek area in East Gippsland. The taxon has not been collected in Victoria since 1969. It also occurs in Queensland (Qld) and New South Wales (NSW).

Habitat

In Victoria, the only habitat information provided on the herbarium collections is "In bogs." In Qld and NSW the taxon occurs in heath and swamp communities dominated by *Banksia, Callistemon, Leptospermum* and *Melaleuca* spp., with the understorey consisting of sedges, grasses and other herbs. It is often found in moist depressions and in drainage lines, or beside small streams, usually on sites with overlying sandstone parent rock (Doust and Conn 1994).

Threats

The taxon is threatened in the long-term by climatic drying and warming resulting in decreased rainfall events and hence drying of the wetland, changes in vegetation structure such as increasing tree and shrub density.

Prolonged absence of fire may result in lack of recruitment and increase risk of invasion by woody species such as *Kunzea* or *Leptospermum.* The site evidently has not had a fire for many years. A fire is likely to regenerate the taxon at the site. But a fire during a drought period and when the wetland has been dry for many years, or a fire not followed by rains is unlikely to regenerate the taxon at the site. An inspection of the Maramingo Creek site in 2011 noted that the site was densely overgrown with shrubs and with *Gymnoschoenus sphaerocephalu*s (Button Grass), , with little ground cover visible (V. Stajsic pers. observ.). The site requires a burn to reduce the shrub and Button Grass density and for regenerating the taxon at the site.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas.

It is estimated to have 1 location, as it is known from a single site and all the plausible threats of drying and warring would impact all individuals.

It has a continuing decline in (ii) and (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 4 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to have 1 location, and a continuing decline in (ii) and (iii) 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 3,000 to 10,000 mature individuals, but this qualifier is too weak and other thresholds under this criterion have not been met.

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

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

Kubiak, P.J. (2009). Fire responses of bushland plants after the January 1994 wildfires in northern Sydney. *Cunninghamia* 11(1): 131-165

VicFlora (2017). Flora of Victoria, Royal Botanic Gardens Victoria: *Xyris juncea* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/8d2a9e8d-70e0-472e-a672-98aa18da2d46