

Amphibromus sinuatus Wavy Swamp Wallaby-grass

Taxonomy

Amphibromus sinuatus S.W.L. Jacobs & Lapinuro

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2bce+3ce+4bce

Species Information

Description and Life History

The taxon is a stoloniferous aquatic perennial; culms decumbent, often only the inflorescence emergent, to 120 cm high overall. Leaves glabrous, scabrous; blade flat, to 17 cm long and 1–4 mm wide; ligule acute, 5–11 mm long. Inflorescence a slender, rather sparse panicle, to 25 cm long. Spikelets 4–6-flowered, 12–19 mm long (excluding awns), green or faintly tinged purple; glumes obtuse to acute, the lower 1–3-nerved, 3–4.5 mm long, the upper 3–5-nerved, 4–6 mm long; lemma 6–8.2 mm long, scabrous along nerves in upper part, otherwise mostly smooth, apical teeth 2 or 4, the outer pair smaller and lower when present, the inner pair 0.3–1 mm long; awn 14–26 mm long, inserted 35–50% of the lemma length from the apex, column and bristle not distinguished; palea slightly shorter than lemma (VicFlora 2015).

The taxon is a rhizomatous aquatic in water to c. 1 metre deep or semi-aquatic grass that typically floats on the surface of water. Under a grazing regime where the water is not ponded, the plants can form a fairly dense sward. Culms emergent and erect or decumbent. The taxon flowers from October to March and flowers are cleistogamous (hence self-pollinating) or chasogamous and wind pollinated (but they are similarly capable of self-fertilisation). The seeds ripen 4–6 weeks after flowering and the awned dispersal unit can float (i.e. water dispersed) or adhere to animals (i.e. birds and mammals).

Generation Length

The generation length of *Amphibromus sinuatus* is estimated to be 30 years. The taxon is a relatively short-lived to long-persistent perennial herb. The longevity may extend to indefinite persistence in wetter sites but also in sedge wetland, which dry out seasonally where the soil at depth is still moist, with plants not necessarily desiccating. Continuous recruitment is by seed but the taxon routinely recruits vegetatively by rhizomes/stolons.

Distribution

The taxon has a disjunct distribution (e.g. near Casterton, Warrnambool, Phillip Island, Wonthaggi, Bairnsdale, Suggan Buggan and Bendoc) (VicFlora 2015). It occurs across a wide geographic range across southern Victoria.

Habitat

The taxon occurs in permanent, semi-permanent, or seasonal lentic or lotic wetlands with water to c. 1 m deep, with summer draw-down. The substrates are fertile, occurring on diverse geologies on coastal plains to montane tablelands. The taxon occurs in a wide range of wetland types.

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Threats

Threats to the taxon include the loss of wetlands by draining, cropping, and development etc, stock grazing and physical damage to wetland habitats, and climate change, including rainfall and wetland recharge, higher temperatures and therefore, evaporation rates. The taxon may also be threatened by changes to wetland hydrology linked to plantation forestry and woody weed invasion (especially *Acacia longifolia* ssp. *sophorae*), habitat damage by feral pigs, weed invasion by herbaceous and woody weeds (e.g. *Paspalum distichum*, *Phalaris aquatica*, *P. arundinacea*, and *Salix cinerea*), and waterfowl grazing of wetlands, notably by Australasian Swamphen and Dusky Moorhen.

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 style="text-align: center;">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> | | | |

Evidence:

Eligible under Criterion A2 as Endangered

The population reduction over the past 90 years is estimated to be 50 to 80% (65%), based on (b), (c) and (e) above.

Historic decline since settlement is plausibly 90% or more, a substantial proportion of which occurred since 1900.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 years is projected to be 60 to 85% (midpoint 70%), based on (c) and (e) above.

The taxon is projected to decline at least a further 80%, based on the effects of the identified threats.

Eligible under Criterion A4 as Critically Endangered

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The population reduction over any 90 year period, including both past and future, is estimated to be 60 to 85% (midpoint 70%), based on (b), (c) and (e) above.

| 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 B as Vulnerable

The Area of Occupancy (AoO) is estimated to be 188 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon has seven locations, and has a continuing decline in (i), (ii), (iii), (iv) and (v) above. The ongoing decline is due to direct and indirect loss of wetlands across the distribution of the species and the shrinking of existing wetlands resulting from climate change and other factors.

| 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 | | | | |

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Evidence:

Ineligible under Criterion C

It is estimated that there are 500,000 to 5,000,000 mature individuals, which exceeds the thresholds for criterion C.

| Criterion D - Very small or restricted populations | | | |
|---|-----------------------|------------|---|
| | 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. | 1 | 1 | D2 - Typically: 1 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. 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

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VicFlora (2015). Flora of Victoria, Royal Botanic Gardens Victoria: *Amphibromus sinuatus*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9c0d8af9-dc62-48b9-beb3-cc16bee2f80c>