

Orthrosanthus multiflorus Morning Flag

Taxonomy

Orthrosanthus multiflorus Sweet

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A3c; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a tufted perennial, 30–60 cm high. Leaves 16–50 cm long, 2–6 mm wide, glabrous, tough; margins scarious and brown basally. Inflorescence with 2–4 primary bracts on flowering part; primary bracts 2–10 cm long, each subtending 1 initially sessile and 1–4 pedunculate clusters of flowers (all becoming pedunculate in fruit); each cluster with 3–8 flowers. Flower-clusters enclosed by ovate to oblong secondary bracts which are 12–20 mm long. Flowers separated by hyaline tertiary bracts which are 10–15 mm long. Perianth lobes \pm obovate, 12–20 mm long, 6–10 mm wide; apex obtuse. Staminal filaments c 5 mm long, the lower 1–2 mm united; anthers 2.5–3 mm long. Style branches 4–5 mm long; stigmas divided. Capsule 12–20 mm long; pedicel up to 2 mm long; seeds globose to angular, c. 2 mm diam (VicFlora 2019).

O. multiflorus is a robust long-lived, evergreen, tussock-forming perennial herb with very short horizontal rhizomes; resprouting after fire. Reproduction is by seed only and recruitment is continuous, but in the dense heathy vegetation in which it occurs, recruitment is probably confined to the immediate post-fire period. Fire stimulates germination. Pollination is by insects, mostly solitary bees for a pollen reward. It is self-fertile but is probably enhanced by outcrossing. Seed dispersal is passive from the erect capsules, but probably a short-distance by wind (censor-like mechanism). Seed accumulates in a soil-stored seedbank and is probably of moderate longevity.

Generation Length

The generation length of *Orthrosanthus multiflorus* is suspected to be 30 to 50 years based on its longevity, continuous recruitment, and low turnover of plants, as well as periodicity of recurrent fire.

Distribution

The taxon occurs in coastal headlands at Cape Nelson and Port Campbell.

Habitat

The taxon occurs in dense coastal heath and heathy woodland on relatively low-nutrient Quaternary, and perhaps Tertiary, sandy loams. The environment is on high-energy coasts, near clifftops.

Orthrosanthus multiflorus

Morning Flag

Threats

Threats to the taxon include climate change (decreased rainfall, increased evaporation, extreme temperatures); increased frequency and intensity of fire; elevated fuel loads of invasive woody alien or ecologically-out-of balance plants (especially *Acacia longifolia* subsp. *sophorae*) causing the sterilisation of the soil and destruction of the standing crop of plants and the destruction of the soil-stored seedbanks; weed invasion (especially *Acacia longifolia* subsp. *sophorae* and *Leptospermum laevigatum*); smothering by co-occurring indigenous taxa; and predation of inflorescences by native and exotic mammals (the leaves are immune to grazing and presumably toxic).

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>(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> <p>based on any of the following:</p>			

Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the last 90 to 150 years is suspected to be 40%, based on (c) above. The causes of reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 90 to 100 years is projected to be 50%, based on (c) above.

Future reduction of the taxon's population is based on the projected impacts of the suite of threats identified, particularly weed invasion.

Orthrosanthus multiflorus

Morning Flag

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 Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 685 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is projected to be severely fragmented based on the taxon's limited dispersal ability, the barriers to dispersal, and/or the lack of habitat separating the individuals. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

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

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 28 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is projected to be severely fragmented, is inferred to have 2 locations and has a continuing decline in (i), (ii), (iii), (iv) and (v) above.

Orthrosanthus multiflorus

Morning Flag

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

There is insufficient evidence to determine the number of mature individuals.

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.		-	-	D2. Typically: AaO < 20 km ² 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

Carr, G.W. (unpublished data)

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



Orthrosanthus multiflorus Morning Flag

https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria. *Orthrosanthus multiflorus* retrieved from <https://vicflora.rbg.vic.gov.au/flora/taxon/501138ad-65bc-4713-8cc7-37bafd7825e4>