



Xanthosia tasmanica Southern Xanthosia

Taxonomy

Xanthosia tasmanica Domin

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 A4ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a weak erect or ascending herb to c. 15-20 cm high, covered by sparse spreading hairs; rootstock short, woody. Leaves alternate, lamina 4-15 mm long, 15-30 mm wide, usually glabrescent, ternately dissected to 5-segmented, segments elliptic, entire; petiole 2-30 mm long. Inflorescence simple or compound, leaf-opposed, sessile or shortly pedunculate; peduncle to 5 mm long; bracts linear, 3-4 mm long, hairy, umbels 1-3-flowered. Sepals c. 2 mm long; petals to 1.5 mm long, white; nectary pubescent. Fruit c. 2 mm long; mericarp prominently 5-7 ribbed. The taxon flowers spring and summer (VicFlora 2021).

Generation Length

The generation length of *Xanthosia tasmanica* is estimated to be 25 to 50 years. The Victorian Vital Attributes dataset records the taxon as capable of resprouting post-fire, becoming reproductively mature 2 years after germination, and with a life span (including seedbank) of 25-50 years (DELWP 2015).

The taxon is likely to be a relatively short-lived perennial recruiting episodically from a persistent soil-borne seedbank following fire at pre-settlement intervals of 25-50 years or more, supplemented by opportunistic recruitment in response to localised disturbance events such as animal digging. Resprouting from the delicate rootstock following most fire events is unlikely to extend life spans significantly since most fire events in coastal and lowland heathlands and other recorded habitats are sufficiently intense to incinerate the topsoil to which the shallow root system is restricted.

Distribution

The taxon is restricted in Victoria to coastal and near-coastal lowland districts from Mount Richmond near the South Australian border to the Mallacoota district near the NSW border, extending inland to the Grampians, with an apparent disjunction between Wilsons Promontory and the Orbost district in East Gippsland.

Habitat

The taxon occurs mainly in coastal areas in heath on sand (VicFlora 2021), and extends to damp or wet peaty heathlands and a range of woodland and Lowland Forest communities dominated by various taxa of *Eucalyptus*, *Banksia*, *Acacia* and *Allocasuarina*.

It also occurs in Western Australia, South Australia, Tasmania, and New South Wales (VicFlora 2021).

Xanthosia tasmanica

Southern Xanthosia

Threats

The taxon is threatened in some districts by continuing habitat loss to agricultural intensification and urban and coastal development. Occurrences in fragmented urban, peri-urban, and coastal districts are also threatened by a range of invasive exotic weeds.

Many occurrences in coastal heathland are threatened by invasion by native plants, typically from nearby communities, which have the capacity to transform the heathland habitat by altering ecological processes, vegetation structure, and reduce species richness. Key transformer invasive taxa include *Leptospermum laevigatum* (Coast Tea-tree), *Acacia longifolia* - both subspecies *longifolia* (Sallow Wattle) and subspecies *sophorae* (Coast Wattle) and, in East Gippsland, *Eucalyptus botryoides* (Southern Mahogany) (Sciicluna *et al.* 2018). Some occurrences in production forests in East Gippsland are threatened by habitat contraction resulting from the increased water consumption of regrowth forests.

The taxon is palatable to grazing animals and may also be threatened by native and exotic herbivores. Many occurrences in damp or wet peaty habitats are at increasing risk of habitat degradation by exotic herbivores including Sambar Deer (*Rusa unicolor*), Hog Deer (*Axis porcinus*), and feral pigs. In the longer term, the taxon is likely to be threatened by climatic drying and increased fire frequency and intensity, resulting in a contraction in the extent of available habitat, particularly the local extent of wet peaty heath.

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 Vulnerable

The population reduction over the last 75 to 150 years is estimated to be 30 to 50% (midpoint 40%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

Xanthosia tasmanica

Southern Xanthosia

Past reduction is based on significant habitat loss to agriculture, coastal, urban and peri-urban development at a significant proportion of recorded sites including Gorae West and Mt Clay in the Portland district, the Victoria Valley in the Grampians, Port Campbell and Chapple Vale in the Western Otways, Sandringham in metropolitan Melbourne, Tootgarook on the Mornington Peninsula, Belgrave South and Beaconsfield Upper on the eastern outskirts of Melbourne, and on the Marlo Plains near Orbost in East Gippsland.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 75 to 100 years is projected to be 30 to 50% (midpoint 40%), based on (c) and (e) above.

An estimate of future decline is based on the projected impact of the identified threats.

Eligible under Criterion A4 as Endangered

The population reduction over any 75 to 150 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 60% (midpoint 45%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 160 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented naturally at the regional and landscape scales and anthropogenically at the landscape scale in many districts. The taxon is likely to be dispersed by ants (myrmecochory) at the metre scale only.

It is estimated to have 4 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, such as habitat loss, invasion by native plants and weeds, grazing and habitat degradation by herbivores, climatic drying, and increased fire frequency and intensity.

Xanthosia tasmanica

Southern Xanthosia

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 no available estimate of total population size for the taxon in Victoria, although it is likely to be in the thousands.

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: AoO < 20 km ² 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

DELWP (2015). *Victorian Flora Vital Attributes dataset*. Department of Environment, Land, Water and Planning, Victoria.



Xanthosia tasmanica Southern Xanthosia

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

Scicluna, E.L., Makkissi R., Gribble, M.J., Loukes, B.T., Hernandez, O.F. and Morgan, J.W. (2018) Recent encroachment on a Wet Heathland by eucalypts at Cape Conran, Victoria. *The Victorian Naturalist* 135, 4-9.

VicFlora (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Xanthosia tasmanica*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/cdb97df0-186b-417d-b210-0f8299cf56b>