# Threatened Species Assessment

## *Xanthosia leiophylla*
## Parsley Xanthosia

### Taxonomy

*Xanthosia leiophylla* F. Muell. ex Klatt.

The taxon apparently prefers drier habitats than the very similar *X. dissecta*, but the two taxa occasionally occur in close proximity and maintain their distinctness (VicFlora 2021).

### Current conservation status

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

### Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv,v)

### Species Information

#### Description and Life History

The taxon is a tufted herb or weak subshrub to 15 cm high; rootstock, short, woody; branches procumbent or ascending. Leaves mostly basal; lamina 10-50 mm long and wide, usually glabresent, bi- or tri-ternately dissected, ultimate segments c. ovate, 1.5-3 mm wide; petiole 2-12 cm long. Inflorescence leaf-opposed, compound; peduncle 10-40 mm long; bracts linear-ovate, 3-4 mm long; rays 2-4, often with 1-3 sessile flowers at their base; umbellules 3-6-flowered; flowers male or bisexual; bracteoles ovate, 3-4.5 mm long, often partly to largely fused. Sepals and petals to c. 1 mm long, petals usually reddish; nectary pubescent. Fruit c. 2 mm long; mericarps finely ribbed. The taxon flowers spring and summer (VicFlora 2021).

#### Generation Length

The generation length of *Xanthosia leiophylla* is estimated to be 20 to 35 years. 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. Longevity is likely to be in the 10-25 year range with an upper bound of 35 years. Resprouting from the delicate rootstock following most fire events is unlikely to extend life spans significantly since most fire events in lowland sandy heathlands and heathy woodlands are sufficiently intense to incinerate the topsoil to which the shallow root system is restricted.

#### Distribution

The taxon is uncommon in Victoria and occurs mostly in the south-west (VicFlora 2021). It extends from the Little Desert in the North West to the coast at Cape Nelson and Wilsons Promontory, and from the South Australian border east to Ewing Marsh near Orbost in East Gippsland.

It also occurs in South Australia and Tasmania (VicFlora 2021).

### Habitat

The known habitat in Victoria extends from lowland sandy heathland and heathy woodland (VicFlora 2021) 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*.

### Threats

The taxon is likely to have suffered significant historic decline in many districts through habitat loss to agriculture and continues to be threatened in some districts by incremental habitat loss, fragmentation, and degradation in response to agricultural intensification. Some occurrences in fragmented landscapes are also threatened by a range of invasive exotic weeds. Some 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 reducing species richness. Key transformer taxa include *Leptospermum laevigatum* (Coast Tea-tree) and both subspecies of *Acacia longifolia* - subspecies *longifolia* (Sallow Wattle) and subspecies *sophorae* (Coast Wattle). The taxon is palatable to grazing animals and may also be threatened by native and exotic herbivores. Some occurrences in damper habitats are at increasing risk of habitat degradation by exotic herbivores including Sambar Deer (*Rusa unicolor*), Fallow Deer (*Dama dama*), Hog Deer (*Axis porcinus*) and feral pigs. In the longer term, the greatest threat is likely to be drought stress associated with climatic drying, resulting in adult mortality, recruitment failure, seedbank depletion and exhaustion, and ultimately, local extinction.

## 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:

**Eligible under Criterion A2 as Vulnerable**

The population reduction over the past 60 to 105 years is estimated to be 15 to 35% (midpoint 25%), based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

**Eligible under Criterion A3 as Vulnerable**

The population reduction over the next 60 to 100 years is projected to be 15 to 35% (midpoint 25%), based on (c) and (e) above.

**Eligible under Criterion A4 as Vulnerable**

The population reduction over any 60 to 105 year period, including both past and future (up to 100 years in the future), is estimated to be 15 to 35% (midpoint 25%), 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 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 168 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 3 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 weed invasion, grazing and habitat degradation by exotic herbivores, and drought stress associated with climatic drying.

| 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 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. 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

VicFlora (2021). Flora of Victoria, Royal Botanic Gardens Victoria: *Xanthosia leiophylla*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ab81fe77-f25e-4833-b189-18182f80f92b