# Threatened Species Assessment

## *Androcalva rossii*
## Native Hemp

### Taxonomy

*Androcalva rossii* (Guymer) C.F. Wilkins & Whitlock

The taxon was previously known as *Commersonia rossii* Guymer.

### 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

Criterion C2a(i)

### Species Information

#### Description and Life History

The taxon is a spindly shrub or small tree to c. 8 m high. Leaves ovate or cordate, 5-31 cm long, 2-26 cm wide, irregularly toothed, sometimes somewhat 3-lobed, upper surface green, sparsely stellate-hairy, undersurface stellate-tomentose and grey or greenish-white; petioles 5-15 mm long. Inflorescence usually 10(or more)-flowered. Calyx segments 3-4.5 mm long, 2-2.5 mm wide, stellate-hairy on both surfaces, white internally, tinged pink externally; petals subequal to or longer than the calyx segments; staminodes 5, 3-lobed, glabrous, the inner lobe spathulate, about the length of the petals, the lateral lobes shorter than the inner. Capsule 15-25 mm diam., stellate-tomentose, bearing numerous bristles. The taxon flowers from Sep.-Oct. (VicFlora 2019).

#### Generation Length

The generation length of *Androcalva rossii* is estimated to be 30 to 60 years. This is based on the life form and habitat, which is likely to have had a very infrequent disturbance cycle.

#### Distribution

The taxon is rare in the far east of Victoria. Historically, the taxon is thought to have occurred on the lower Snowy River, which supported the habitat for this taxon. However, some or all of the current population has been introduced to this site. It should be noted that plants around Bete Belong have apparently been planted. The taxon also occurs in northern New South Wales and Queensland.

#### Habitat

The taxon grows on rocky hillsides or along creek and riverbanks. It also grows in low open heathland, open eucalypt forest or littoral rainforest, in skeletal soil, sandy loam over trachyte or rhyolite, or deep soil on sandstone (PlantNet 2019).

#### Threats

Land clearing and forestry operations may have contributed to the past decline. Currently, the taxon is threatened by a combination of clearing for agriculture, proximity to roads, public access, browsing by Sambar Deer *Rusa unicolor* (particularly at recruitment stages), imposed anthropogenic fire regimes, and climatic warming and drying,

which synergistically increase the risk of recruitment failure in response to repeat fire events and extreme drought stress.

Spatial analysis of likely habitat for the taxon on all land tenures indicates that 48% occurs within the CAR reserve system, including parks and reserves, special protection zones and areas excluded from harvesting by prescription under the Victorian Code of Practice for Timber Production 2014 (the Code). Species-specific protections for this species (as *Commersonia rossii*) are included in the Code. Other more general prescriptions such as protection and buffering of old growth and waterways also provides protection from timber harvesting.

In recent years, modified harvesting and forest regeneration practices have been implemented in native forest that are designed to further mitigate the potential threat from forestry operations to threatened species and their habitats.

## 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 Endangered**

The population reduction over the past 90 to 180 years is estimated to be 30 to 60% (midpoint 40%), based on (b), (c) and (e) above.

The taxon is probably naturally quite restricted in Victoria, but it is likely to have occurred along lower reaches of the Snowy and Bemm Rivers. However, much of this area is now cleared. Likewise, the taxon was possibly once more widespread around Club Terrace and Errinundra, where past forestry operations are suspected to have caused declines. In addition, over 60% of the taxon's modelled habitat was impacted by high severity fires in 2019-2020, but the impacts of this have not yet been determined.

**Eligible under Criterion A3 as Endangered**

The population reduction over the next 90 to 100 years is projected to be 40 to 70%, based on (c) and (e) above. Populations that are exposed to higher levels of frequent disturbance may become extinct, leading to a substantial reduction in the taxon. Over 60% of the taxon's modelled habitat was impacted by high severity fires in 2020. Although reconnaissance work completed to date suggests the species is recovering well post-fire and has been observed at known sites resprouting readily, it is highly susceptible to the risk of repeat fires.

**Eligible under Criterion A4 as Endangered**

The population reduction over any 90 to 180 year period, including both past and future (up to 100 years in the future), is projected to be 40 to 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 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 B as Endangered**

The Extent of Occurrence (EoO) is estimated to be 2,000 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) is estimated to be 48 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The taxon is estimated to be severely fragmented. There are multiple, small isolated subpopulations that are all at risk from agricultural and forestry expansion, weed invasion and repeat fires, such that there is increased extinction risk and little or no probability of recolonisation should subpopulations become extinct.

It is estimated to have three locations. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on the current and projected impact of the identified threats, in particular, in response to the increased risk of increased risk of climatic drying and warming, leading to increased drought and fire.

| 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:

**Eligible under Criterion C2 as Critically Endangered**

It is estimated that there are (lower bound) 70 to (upper bound) 350 mature individuals, with the most likely number being 175. The plants are recorded as occurring in very small stands of fewer than 10-50. It is estimated that there are 7 stands (from VBA records), with an average of 25 plants in each.

The number of mature individuals is projected to continue to decline in response to the identified threats, and the number of mature individuals in each subpopulation is 50 or fewer.

| 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<br>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:<br>AoO < 20 km2 or number of locations ≤ 5 |

## Evidence:

**Eligible under Criterion D as Endangered**

It is estimated that there are 70 to 350 (midpoint 175) mature individuals.

**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

PlantNet (2019). New South Wales Flora Online, National Herbarium of NSW: *Androcalva rossi*. Retrieved from: http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Commersonia~rossii

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Androcalva rossii*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/0c9d0676-acf8-4625-9584-f95700fdd30b