



## *Kunzea phyllicoides* Slender Burgan

### Taxonomy

*Kunzea phyllicoides* (A. Cunn. ex Schauer) A.P. Druce

The taxon is distinguished from other members of the *Kunzea ericoides* complex by its more graceful habit, more fibrous or corky bark, leafy, racemose inflorescences and flowers with about twice as many stamens. The taxon apparently hybridises with *Kunzea peduncularis* along the Snowy River and its tributaries. Application of the names *K. phyllicoides* and *Kunzea* sp. 1 sensu Fl. Victoria 3:1022 (1996) has apparently been confused due to the presence of these hybrids (VicFlora 2018).

### 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 B1ab(iii,v)+2ab(iii,v)

### Species Information

#### Description and Life History

The taxon is an erect shrub to 3 m high; branch tips drooping; bark fibrous to corky; young stems pubescent. Leaves alternate, linear to linear-oblongate, 7-25 mm long, 1-2 mm wide, bright green, finely pubescent to glabrous, more or less flat; apex acute to acuminate; margins entire; petiole 0.5-1 mm long. Flowers white, 1, 2 or 3 in upper axils forming, leafy racemes; pedicels 3-6 mm long, with appressed hair; floral bracts absent; hypanthium with appressed hair or glabrescent, rugulose; sepals green, reddish at base, triangular, 1-1.5 mm long; petals orbicular, c. 1.5-2.5 mm diam.; stamens white, usually 25-35 sometimes many more, 1-4 mm long, some shorter than petals; style 1.5-2.5 mm long; ovary usually 3-celled. Fruit 2.5-4 mm long, 3-5 mm diam., not woody, dehiscent by terminal valves. The taxon flowers from November to February (VicFlora 2018).

#### Generation Length

The generation length of *Kunzea phyllicoides* is estimated to be 45 to 90 years. The taxon is a multi-stemmed shrub inferred to resprout readily from a long-persistent, woody rootstock. It is likely to resprout following fire and flood events and, potentially, following intense and targeted browsing by native or exotic herbivores. The largest populations observed in the catchment of the Deddick River are distinctly dryland, beyond the reach of floodwaters. Estimates of generation length based on the frequency of flood events in riparian sites are therefore likely to underestimate the mean generation time across the ecological range of the taxon.

#### Distribution

The taxon is apparently confined to the upper reaches of the Snowy River (e.g., McKillops Bridge area) and its major tributaries, from the New South Wales border downstream to near Buchan. The taxon also occurs in New South Wales (VicFlora 2018). It is a highly restricted, but very abundant, taxon.

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### Habitat

The taxon occurs in riparian scrub on sandy or rocky alluvial soils in the ecotone between river and surrounding woodland on dry slopes (VicFlora 2018). The most extensive occurrences are situated in dryland, upslope sites, notably in the Deddick River valley.

### Threats

There are very few apparent threats to this taxon. Most populations are quite large and recruiting. There is no evidence for herbivore grazing or reduced river flows posing a threat. Presumably plants will move closer to the current waterline. Given its riparian habitat, it is likely that weed invasion poses a threat to this taxon, particularly *Rubus fruticosus* (Blackberry).

In the longer term, the taxon is likely to be threatened by extreme drought stress resulting in adult mortality and recruitment failure. It is unclear whether the taxon is susceptible to targeted browsing by Sambar Deer (*Rusa unicolor*), which are undergoing a large increase in population density throughout the Victorian range of the taxon.

### 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 past 135 to 270 years is estimated to be 30 to 45%, based on (c) and (e) above.

Past decline is based on habitat loss to agriculture, particularly in the Deddick River valley. Notably, the River Valley vegetation is largely uncleared, except for Tubbut, Yalmy, Buchan, etc.

#### Eligible under Criterion A3 as Vulnerable

The population reduction over the next 100 years is projected to be 30 to 45%, based on (c) and (e) above.

Future decline is based on the effects of the identified threats.

## Eligible under Criterion A4 as Vulnerable

The population reduction over any 135 to 270 year period, including both past and future (up to 100 years in the future), is estimated to be 30 to 45%, based on (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 <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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 across the taxon's range is estimated to be 680 km<sup>2</sup>, based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented naturally at the landscape scale since the majority of occurrences are on dryland sites beyond the reach of floodwaters, which have the potential to disperse seed downstream

It is estimated to have two locations. It has a continuing decline in (iii) and (v) above.

### Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 24 km<sup>2</sup>, based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has two locations and has a continuing decline in (iii) and (v) above.

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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

It is estimated that there are 20,000 to 40,000 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.		-	-	D2. Typically: AoO < 20 km <sup>2</sup> or number of locations ≤ 5

## Evidence:

### Eligible under criterion D as Vulnerable

It is estimated that there are 20,000 to 40,000 individuals, and 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.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Kunzea phyllicoides*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/f3fc2bda-3e9d-4b0b-b95d-8aeb13bc3f13>