# Threatened Species Assessment

## *Banksia croajingolensis*
## Gippsland Banksia

### Taxonomy

*Banksia croajingolensis* Molyneux & Forrester

The taxon is possibly a hybrid involving *B. integrifolia* and *B. marginata*. It is known to hybridise with *B. integrifolia* (Molyneux & Forrester 2007).

### Current conservation status

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

### Proposed conservation status

Critically Endangered in Australia

Criterion D

### Species Information

#### Description and Life History

The taxon is a mostly small, rarely larger, spreading lignotuberous shrub propagating by sexual means and extending asexually by the production of ramets (Molyneux and Forrester 2007). Suckering shrub to 1.2 m high; lignotuber present; bark thin; branchlets glabrous, sometimes sparsely white or rusty pubescent when young. Leaves often whorled, narrowly obovate, 1.6-6 cm long, 5-17 mm wide, discolorous, upper surface dark green, glossy, lower surface white-tomentose, midrib and secondary venation usually glabrous or only lightly pubescent; margins entire or with a few short teeth, flat or slightly curved; apex apiculate or emarginate; petiole 2-4 mm long. Inflorescence 7-14 cm long, 4-5.5 cm wide at anthesis. Tepals 15-18 mm long, yellow, pubescent, persistent. Follicles few-many, 13-19 mm long, becoming glabrous, usually opening when mature. Body of seed more or less cuneate, 8-10 mm long, wing to c. 20 mm long. The taxon flowers from June to August (VicFlora 2019).

The taxon is similar in appearance to *Banksia paludosa* (Swamp Banksia), and to a lesser extent *B. integrifolia* (Coast Banksia) and *B. marginata* (Silver Banksia). However, it differs from each of these species in a variety of ways, and differs from all of them in having inflorescences that flower from* the top down, rather than from the bottom up (Molyneux & Forrester 2007).

#### Generation Length

The generation length of *Banksia croajingolensis* is inferred to be 300 years. This is based on indefinite longevity, since the plant is a spreading lignotuberous shrub propagating by sexual means and extending asexually by the production of ramets (Molyneux & Forrester 2007).

#### Distribution

The taxon is apparently endemic to East Gippsland, Victoria. It is confined to a single short drainage line draining north from a coastal heathland elevated above the south bank of Shipwreck Creek, Croajingolong National Park, c. 12 km south-west of Mallacoota (Molyneux & Forrester 2007).

### Habitat

The taxon is emergent from mixed coastal heathland vegetation in moist sandy soils associated with *Acacia suaveolens, Allocasuarina paludosa, Babingtonia pluriflora, Epacris impressa, Hakea teretifolia, Patersonia occidentalis, Persoonia laevis, Xanthorrhoea resinosa* and various sedges and rushes.

Both *Banksia integrifolia* and *B. marginata* are sympatric on the margins of the *B. croajingolensis* stand. *B. marginata* tends to be a sub-shrub within or just emerging from the dense heathland canopy on the eastern margins of the stand whereas *B. croajingolensis* is always emergent. It is strongly sympatric with *B. integrifolia* on its western margins and on the edges of woodland containing *Banksia serrata*, *Eucalyptus sieberi* and an undescribed eucalypt with affinity to *E. globoidea* (Molyneux & Forrester 2007).

On its northern boundary, the taxon is sympatric with apparent hybrid swarms including *B. integrifolia* and an unknown second parent. The underlying geology is strongly banded and distorted mudstone and slates of Ordovician origin (Molyneux & Forrester 2007).

### Threats

Threats to the taxon include the potential impact of *Phytophthora cinnamomi* infection, which is rampant in the general vicinity and to which many other species of *Banksia* are highly susceptible. The susceptibility of this taxon to *Phytophthora* has not been tested or demonstrated. It is also based on the potential long-term impact of climate change on vegetative reproductive success particularly following intense fire.

## 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:

**Ineligible under Criterion A**

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

| 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:

**Ineligible under Criterion B**

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km² and the Area of Occupancy (AoO) is estimated to be 4 km², but other thresholds under this criterion have not been met.

| 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**

The taxon is estimated to have 1 to 10 mature individuals, but other thresholds under this criterion have not been met.

| 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 Critically Endangered**

The taxon is estimated to have 1 to 10 mature individuals. The number of mature individuals is based on the likelihood that the subpopulation comprises of one or very few genets and an estimated population of about 480 stems or ramets (Molyneux & Forrester 2007).

**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

Molyneux, W. M., & Forrester, S. G. (2007). *Banksia croajingolensis* (Proteaceae) a new species from East Gippsland, Victoria. *Telopea, 11*(4), 419-426.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens Victoria: *Banksia croajingolensis.* Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/eebd43c6-fed5-4eb5-bc6b-7557307f9daa