Threatened Species Assessment

Bulbine crassa
Coast Lily

Taxonomy

Bulbine crassa D.I. Morris & Duretto

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)+2ab(iii)

Species Information

Description and Life History

Robust, tufted perennials to 60 cm high, perennating by off-sets around the flowering stem. Roots fleshy. Leaves erect, channelled or plano-convex, grey green, to 50 cm long and 30 mm wide at base. Inflorescence erect, 1 or 2 per plant; scape 7-10 mm diam. at base; flowers yellow; perianth segments 12-13 mm long; stamens shorter than perianth segments, subequal, anthers greenish, filaments of inner stamens longer, densely bearded below the anther, filaments of outer stamens glabrous or with sparse simple hairs below the anther. Capsule globose, 5-7 mm long; seeds wrinkled, narrowly winged, 3.0-3.5 mm long. The taxon fllowers from September to February (VicFlora 2019).

Generation Length

The generation length of *Bulbine crassa* is estimated to be 10 to 20 years. The longevity/generation time is assumed to be similar to *Bulbine glaucum.* The taxon is potentially very long-lived and capable of surviving both fire and drought. However, fire is not considered to be much of a threat in the habitats where it occurs. It is likely that plants would resprout after a low intensity fire. Recruitment is from long-persistent soil-stored seed, in response to favourable rainfall events.

Distribution

The taxon is known from Wilsons Promontory (e.g. Millers Landing, N.G.Walsh pers. comm. 2019) and surrounding islands. The taxon also occurs in Tasmania.

Habitat

The taxon occurs near sea-level in rocky areas and in crevices of granite boulders subject to salt-spray as well as more elevated sites. Plants often grow on skeletal soils in rocky sites. Morris and Duretto (2005) note that the taxon is primarily found in *Poa poiformis* tussock grass or occasionally in coastal shrubland or among mats of *Disphyma crassifolium.*

Threats

In Victoria all currently known populations are in either Wilsons Promontory National Park or the Seal Island Wildlife Reserve. None of the herbarium specimens held at MEL provide any information about population size, or any notes about habitat or threats. Many subpopulations occur on sites well elevated above the sea, but some of the

subpopulations occur just above the current high-tide mark, such as at Millers Landing (N.G. Walsh pers. comm. 2019). These low-lying subpopulations are threatened by rising sea-levels. Although adult plants are succulent, future climatic drying and decreased rainfall events might result in recruitment failure and drought stress for seedling plants.

It appears that rabbits have been eradicated from at least some of the islands on which they were present, e.g. Rabbit Island.

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:

Eligible under Criterion B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 133 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented naturally at the landscape scale. It has a patchy distribution with most occurrences isolated from other occurrences at separations exceeding the dispersal range of the taxon which has no specialised mechanism for long-distance dispersal

It is inferred to have 2 locations. It has a continuing decline in (iii) above, based on likelihood of future sea-level rises which threaten at least some of the low-lying subpopulations such as that at Millers Landing, and possibly others.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 44 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is severely fragmented, has 2 locations and has a continuing decline in (iii).

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 inferred that there are 1,000 to 10,000 mature individuals, but this qualifier is too weak and 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 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:

Ineligible under Criterion D

It is inferred that there are 1,000 to 10,000 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.

Morris, D.I. and Duretto, M.F. (2005). A new species of Bulbine (*Asphodelaceae*) from Wilsons Promontory and islands of eastern Bass Strait. *Muelleria* 22:93-96.

VicFlora (2019). Flora of Victoria, Royal Botanic Gardens: *Bulbine crassa*. Retrieved from: https://vicflora.rbg.vic.gov.au/flora/taxon/ce16bb44-31b2-4840-99fd-682e3c724bab