Threatened Species Assessment

Malva preissiana
Coast Hollyhock

Taxonomy

Malva preissiana Miq.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criteria A2ce+3ce+4ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

Erect, usually short-lived perennial to c. 2 m high. Leaves subentire to palmately 5–9-lobed, the mid-lobe usually longer than others, 2–9 cm long, 2.5–11 cm wide, broadly cordate at base, crenate to dentate, grey-green to dark green, usually paler beneath, sparsely to densely stellate tomentose, both surfaces equally tomentose. Epicalyx lobes ovate, 4–8 mm long at anthesis, not or barely enlarging in fruit; calyx exceeding epicalyx by 3–8 mm at anthesis, enlarging to 9–15 mm long in fruit, the lobes erect or spreading and not or barely concealing mericarps; epicalyx and calyx stellate-pubescent; petals 15–30 mm long, white, greenish basally, often with mauve veins. Fruit 8–11(–14) mm diam., mericarps usually 12–15, usually dorsally reticulate, glabrous, adjacent margins acute to narrowly winged, usually somewhat toothed. Flowers Aug.–Jan(–Mar.) (VicFlora 2015).

The taxon is an ornithocoprophilous subshrub with sympodial architecture. A response to fire is not observed, but vegetation would very rarely burn. Distribution indicates that long distance dispersal by birds is probable (e.g. Silver Gull). Seed longevity is unknown, but a soil-stored seed bank accumulates.

Generation Length

The generation length of *Malva preissiana* is estimated to be 5 to 15 years. This is based on its longevity which is potentially 10 - 20 years. Plants potentially live 10-20 years, and are monoecious outcrossing or presumably selfing (as in other *Malva* taxa). Pollination is by insects who gain pollen and nectar rewards. Gene flow is via seed dispersal, not pollen, and is potentially distant. Recruitment is continuous with an autumn pulse, or after destruction of the population by tidal inundation, pulsed with a fairly even-aged cohort.

Distribution

The taxon is rare and found mainly along the coast from Corner Inlet to Portland.

Habitat

The taxon occurs in coastal and island seabird rookeries, including those of the Short-tailed Shearwater, Australian Gannet, Australian White Ibis, Silver Gull, and Storm Petrel. It also occurs on upper beaches on low-energy coasts that are enriched by decaying sea-grass and algal detritus cast up by the tide. The substrate is variable, typically shelly and sandy, on inland lakes (Lake Corangamite), and the substrate is abundant with *Coxiella* shells. It also occurs on loam derived from recent volcanics.

Threats

Threats to the taxon include the effects of climate change, such as decreased rainfall and higher temperatures, resulting in a reduction in performance or growth of plants, as well as recruitment and flowering/fruiting. Sea-level rise is predicted to be a minimum of 80 cm by end of century, which will destroy the Mud Islands habitat due to erosion and storm surge, and the largest population of the taxon. In the shorter term, threats include storm surges which will at least partially destroy the habitat at Mud Islands, exotic hemipteran insects that are *Malva* specialists, weed invasion in the highly nutrient-enriched habitats, including the invasion of exotic *Malva* spp. notably *M. arborea*, and rabbit grazing which is believed to have driven former populations to extinction. It is assumed to be fire sensitive.

Plants withstand trampling by sea-birds such as Silver Gulls and Australian White Ibis.

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 15 to 45 years is suspected to be 40 to 90% (midpoint 65%), based on (c) and (e) above.

Almost all formerly known subpopulations are extinct or virtually extinct.

The causes of the reduction may not have ceased, be understood or be reversible.

Eligible under Criterion A3 as Endangered

The population reduction over the next 15 to 45 years is projected to be 20 to 80% (midpoint 50%), based on (c) and (e) above.

Future decline is based on the projected decline of the main subpopulation on Mud islands where plants may be lost due to erosion and tidal inundation.

Eligible under Criterion A4 as Endangered

The population reduction over any 15 to 45 year period, including both past and future, is projected to be 40 to 90% (midpoint 65%), 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) is estimated to be 60 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is severely fragmented, as the plants occur in mostly small isolated populations that are trending downwards, with negligible chance or recolonisation.,

The taxon is inferred to have four locations – Mud Islands, Western Treatment Plant, Griffith island Port Fairy, and Lake Corangamite. At each of these different threats are expected to operate, or similar threats at varying timing and intensity

It has a continuing decline in (i), (i), (iii), (iv) and (v) above.

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 51,280 to 66,600 mature individuals, which exceeds the thresholds for criterion C.

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 estimated that there are 51,280 to 66,600 mature individuals, which exceeds the thresholds for criterion D.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

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