



Glossodia minor Small Wax-lip Orchid

Taxonomy

Glossodia minor R. Br.

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(ii,iii)

Species Information

Description and Life History

Spring-flowering terrestrial deciduous orchid growing to 15 cm tall, with a single (rarely 2) small widely opening flower to 35 mm across, lavender to purplish with black and yellow labellum calli, sepals and petals to 15 mm long, ovate and widely spreading, labellum triangular with a rounded base and downturned apex, with 2 slender tubular calli.

Grows in heath and heathy woodland and open forest, often on seasonally damp sites, on acid sandy soils. The single leaf emerges in late autumn/early winter, with flowering in September and October (VicFlora 2018). Plants then senesce, shed seed if fertilised, and remain underground as a dormant tuber over summer and early autumn. Pollinator vector unknown but presumed to be small insects attracted to flowers through food deception, as flowers have no nectar or pollen reward for visiting insects. Summer fires enhance flowering, with the largest numbers of flowering plants seen in the first year or two after a summer fire. The effect is most likely through removal of surrounding vegetation, possibly with higher soil nutrient levels, with numbers of flowering plants declining as the habitat regenerates. Fire is not a required stimulant however, as plants regularly flower in open areas such as along tracks and in very low sparse heath in the absence of fire.

Generation Length

The generation length of *Glossodia minor* is estimated to be 20 to 40 (midpoint 30) years. This is based on generation time for non-colonial terrestrial orchids that are estimated to be a nominal 30 years based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, individuals are susceptible to endogenous exhaustion or environmental causes of mortality at rates likely to result in replacement at intervals of several decades only. Such orchids are classed as obligate seed regenerators (OSRs) reliant on seed-based recruitment for population maintenance.

Distribution

The species is known from East Gippsland, east of Bairnsdale at an altitude of 10-180 metres ASL. The taxon is widespread in eastern Australia, extending through eastern New South Wales into Queensland.

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Habitat

The taxon grows in heathy woodland on yellow to grey sandy loam and light clay loam, sometimes gravelly, soils (Backhouse et al. 2016). VicFlora (2018) noted that grows in heath and heathy woodland and open forest, often on seasonally damp sites, on acid sandy soils

Threats

Virtually all of the orchid's habitat was burnt during 2006, and it is likely it will regenerate as an even aged community. Progressively fewer flowering plants are likely in coming years as the heathy woodland regenerates and thickens up.

There is likely to be some future decline due to habitat damage from feral deer and declining habitat conditions due to increased drying from reducing rainfall. Very small subpopulations are highly susceptible to stochastic events causing major decline or local extinction within a very short time frame.

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;"><i>based on any of the following:</i></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:

Ineligible under Criterion A

The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

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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 ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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) across the taxon's range is estimated to be 112 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is estimated to be severely fragmented and is estimated to have 1 location. It has a continuing decline in (ii) and (iii) above.

The taxon is known only from 2 subpopulations isolated by loss of habitat and is considered severely fragmented, based on its limited dispersal ability and lack of habitat between subpopulations, with a reduced probability of recolonisation should subpopulations become extinct, resulting in an increased extinction risk to the taxon. The largest subpopulation occurs between Marlo and Mallacoota, which has extensive areas of potentially suitable but poorly accessible habitat, and additional groups of plants could be expected to occur within this range.

East Gippsland, where all subpopulations occur, is deemed as a single location, especially as all subpopulations occur in a similar habitat. All key identified threats apply across the range of the species and can rapidly affect all individuals of the taxon present.

It has a continuing decline in (ii) and (iii) 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 2,500 to 5,600 mature individuals, based on monitoring and field observations, but other thresholds under this criterion have not been met.

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 ² or number of locations ≤ 5

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is estimated to be very restricted. has five or fewer locations and there are plausible future threats that could drive it to become critically endangered or extinct within a very short time.

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

References

Backhouse, G., Kosky, B., Rouse, D., and Turner, J. (2016). *Bush Gems: A Guide to the Wild Orchids of Victoria*, Australia. Melbourne, Victoria: EBook.

DEPI (2014). *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from:



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Jeanes, J., and Backhouse, G. (2006). *Wild Orchids of Victoria Australia*. Melbourne: Aquatic Photographics.

VicFlora (2018). Flora of Victoria, Royal Botanic Gardens Victoria: *Glossodia minor*. Retrieved from: <https://vicflora.rbg.vic.gov.au/flora/taxon/9a614299-a486-416e-a811-fe969934fdd>