



Dipodium variegatum Blotched Hyacinth-orchid

Taxonomy

Dipodium variegatum M.A. Clem. & D.L. Jones

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(i,ii,iii)+2ab(i,ii,iii)

Species Information

Description and Life History

Leafless myco-heterotrophic seasonal terrestrial orchid growing to 80 cm tall, with up to 50 small widely opening flowers to 35 mm across, white with heavy magenta spots and blotches extending to ovary and pedicel, and a pink hair tuft on labellum, sepals and petals to 20 mm long, narrowly ovate, widely spreading, labellum tri-lobed, with tiny lateral lobes and ovate flattened to slightly folded mid-lobe with a large hair tuft at apex. Plants grow in close association with Eucalyptus species in heathy woodland and open forest, emerge in early spring and commence flowering in mid-December and flower over summer to early autumn. Flowers open sequentially up stem, with upper flowers still in bud as lowest flowers collapse. 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 (VicFlora 2014).

Generation Length

The generation length of *Dipodium variegatum* is estimated to be 50 to 100. Generation time for non-colonial terrestrial orchids is estimated to be a nominal 30 years based on the annual replacement of the mother tuber by daughter tubers. Whilst somatically immortal, each individual is 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 taxon is known from East Gippsland, east of Bairnsdale at an altitude of 5-250 metres ASL. The taxon is widespread in eastern Australia, extending through eastern New South Wales to the Atherton Tableland in north Queensland.

Habitat

The taxon grows in heathy woodland on yellow to grey sandy loam and light clay loam, sometimes gravelly, soils (Backhouse et al. 2016).

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Threats

There may have been some historic decline in distribution, especially at the western end of the range, based on a small loss and decline in habitat. 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.

It is likely to be adversely affected by bushfires, as it flowers over summer when bushfires most likely to occur. Progressively fewer flowering plants are likely in coming years as the heathy woodland regenerates and thickens.

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>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>
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Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 150 to 300 years is estimated to be 20 to 30%, based on (a) and (c) above.

This is based on the observed loss of plants through habitat loss for road clearing in one subpopulation, and some historic loss of and decline in habitat.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 150 to 300 year period, including both past and future (up to 100 years in the future), is estimated to be 20 to 40%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on some loss of individuals (although not subpopulations), and probable ongoing declines in habitat conditions.

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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 B as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 2,273 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) across the taxon's range is estimated to be 60 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

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 (i), (ii) and (iii) above as a result of declining habitat conditions due to increased drying from declining rainfall and subsequent increase in frequency and intensity of bushfires.

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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 560 to 1,160 mature individuals, 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 D as Vulnerable

It is estimated that there are 560 to 1,160 individuals, based on monitoring and field observations.

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

Backhouse G. and Cameron D. (2005). Application of IUCN 2001 Red List Categories and Criteria in Determining the Conservation Status of Native Orchids of Victoria Australia *Selbyana* 26(1,2): 58-74



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