



Pseudemoia cryodroma Alpine Bog Skink

Taxonomy

Pseudemoia cryodroma Hutchinson & Donnellan, 1992

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996).

Categorised as Endangered in the 2013 Advisory list of threatened vertebrate fauna in Victoria (DSE 2013).

Proposed conservation status

Endangered in Australia

Criterion B2ab(ii,iii,iv,v)

Species Information

Description and Life History

The Alpine Bog Skink is a moderate-sized lizard with pentadactyle limbs, a relatively blunt snout, head and body deep and squarish in cross-section, and colour pattern consisting solely of longitudinal dark and light stripes. The regular colour is metallic brown, varying from light greenish brown to very dark, and a black vertebral stripe is almost always discernible. Dorsal scales are usually very glossy. The taxon exhibits some sexual dimorphism. Females (mean snout-vent length 50.5 mm) are larger than males (48.8 mm) and have shorter limbs, and breeding males display a conspicuous mid-lateral rose-pink to scarlet stripe from the axilla to the proximal quarter of the tail (Hutchinson and Donnellan 1992).

From Robertson and Coventry (2019): The Alpine Bog Skink is diurnal and terrestrial, although it occasionally climbs onto low rocks or vegetation to bask. Occurring sympatrically with its close relatives the Tussock Skink and Southern Grass Skink, it is usually found in wetter microhabitats than these two species. Mating occurs in late summer or autumn, with ovulation and fertilization of the eggs in following spring, each female producing up to six live young in late summer.

Generation Length

The generation length of Alpine Bog Skink is suspected to be 2 to 4 years. Longevity and age at first reproduction are unknown for this taxon. Sexual maturity is assumed to be attained at around one year, and individuals live for around 5 years.

Distribution

This taxon is found in the higher mountain ranges of northeastern Victoria on mountain plateaux at elevations greater than 1,000 m, in areas such as Mt Baw Baw, Bennison, Dargo and Bogong High Plains.

Habitat

The taxon is found in relatively specialised habitats (i.e. subalpine to alpine heathlands), where, during cool yet sunny weather, it utilises low emergent rocks, low shrubs and grass tussocks as basking and foraging sites. During warmer periods, it stays within the shelter of ground cover.

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Threats

The limited distribution of the taxon probably reflects the limited occurrence and integrity of alpine bog vegetation. The taxon is presumed to have experienced major degradation during the twentieth century, predominantly because of cattle grazing. Current threats include grazing and trampling by feral herbivores, (particularly on the margins of bogs and along the tracks that cross bogs). Damage by feral horses (and, increasingly, deer and pigs) to the habitat is occurring in the eastern alps (e.g., extreme damage on Forlorn Hope Plain and Davies Plain). Bogong High Plains, and likely other areas. Other threats include erosion, weed invasion, tourism and recreation (particularly trampling by humans, ski-slope grooming, lift construction), and roading and walking track construction (impacts arising directly, through habitat destruction, and indirectly, through the diversion of water and the introduction of pathogens and non-bog plant species). Losses of habitat are known from the 2017/18 ski season at Mt Hotham.

Fires such as those that occurred in 1939, 2003, 2006/7 and 2019/20 demonstrate that a single 'megafire' could readily burn the majority of this taxon's range.

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> <ul style="list-style-type: none"> (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 Vulnerable

The population reduction over the past 6 to 12 years is suspected to be 15 to 35%, based on (b), (c) and (e) above.

The taxon has undergone a past decline as a result of the identified threats. The fires of 2019/20 impacted the eastern part of its range on Davies Plain and Forlorn Hope Plain, perhaps 25-30% of its distribution.

Eligible under Criterion A3 as Vulnerable

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The population reduction over the next 6 to 12 years is suspected to be 20 to 50% (midpoint 35%), based on (b), (c) and (e) above.

Future decline is expected as a result of the identified threats, notably return fires and the effects of feral herbivores and predators.

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 192 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. As a subalpine / alpine endemic, this taxon naturally occurs in disjunct localities. Loss and degradation of habitat due to clearing and the impacts of feral herbivores likely exacerbates fragmentation. Due to ongoing pressures on these highly disjunct subpopulations, these isolates may be unviable in the long term.

It is estimated to have 2 locations. This is based on the scale of bushfires in the last 80 years. Fires such as those that occurred in 1939, 2003 and 2006/7 demonstrate that a single 'megafire' could readily burn the majority of this species' range, and two fires could readily burn the entire range.

It has a continuing decline in (ii), (iii), (iv) and (v) above. Losses of habitat are known from skiing-related activities, and damage by feral herbivores. In the long term, threats from feral herbivores, and habitat damage from a range of identified threats, are highly likely to cause an ongoing decline.

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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 as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

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:

Ineligible under Criterion D


There is insufficient evidence to determine the number of mature individuals.

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

References

DSE (2013). *Advisory List of Threatened Vertebrate Fauna in Victoria - 2013*. Department of Sustainability and Environment, Melbourne

Hutchinson, M.N. and Donnellan, S.C. (1992) Taxonomy of genetic variation in the Australian lizards of the genus *Pseudemoia* (Scincidae: Lygosominae). *J. Nat Hist.* 26: 215-264.



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Robertson, P. and Coventry, A. J. (2019). *Reptiles of Victoria: a Guide to Identification and Ecology*. CSIRO Publishing. Clayton South.

SAC (1996). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 390 *Pseudemoia cryodroma*