



Liopholis multiscutata Heath Skink

Taxonomy

Liopholis multiscutata (Mitchell & Behrndt, 1949)

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1994).

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

Proposed conservation status

Critically Endangered in Victoria

Criterion C2a(i)

Species Information

Description and Life History

The Heath Skink is a medium-sized terrestrial lizard. It is relatively slow to mature and its reproductive output is relatively low (1-3 young/female/year), it has low dispersal abilities, and its longevity is unknown (DSE 2000; Robertson and Coventry 2019). It is an obligate burrower that in Victoria is only found on the tops and upper north-facing slopes of large sand-dunes in the Big Desert (DSE 2000; Robertson and Coventry 2019). It is a habitat specialist that in Victoria, south-eastern Australia, is extremely rare and is known from only four scattered localities where it occurs in small numbers.

Generation Length

The generation length of the Heath Skink is estimated to be 3 to 10 years. This is based on life history data for ecologically similar congeners.

Distribution

The heath skink has a broad distribution across southern Australia, comprising several disjunct populations from western Victoria to coastal regions of southern Western Australia (Cogger 2018). Only four Victorian populations are now considered viable on the basis of population size and the apparent availability of suitable habitat. They are restricted to the Big Desert, western Victoria, and widely separated.

Habitat

The vegetation of heath skink locations is categorised as Mallee Heath Ecological Vegetation Class, characterised by low mallee shrubland to low open mallee shrubland with a dense to moderately dense understorey of heathy shrubs, often dominated by Desert Banksia *Banksia ornata*, Heath Tea-tree *Leptospermum myrsinoides* and Scrub Cypress-pine *Callitris verrucosa* (DSE 2004; Bellamy 2006).

Threats

Introduced predators (foxes, dogs and possibly cats) are key threats to the taxon, although the Sand Goanna probably has a sizeable impact, based on signs and excavations. Other native predators likely include elapid snakes and raptors.

Wildfire in 2014 eliminated one population of the Heath Skink, at Red Bluff SW, and substantially reduced another, at Red Bluff NE (a monitoring site). Wildfires could impact or even destroy all populations.

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 Endangered

The population reduction over the past 9 to 30 years is estimated to be 25 to 75% (midpoint 50%), based on (a), (b), (c) and (e) above.

Numbers diminished by at least half in the last three decades, based on surveys in 2002 and 2007 by Peter Robertson, that yielded more active warrens than were recorded in 2014-18.

Eligible under Criterion A2 as Endangered

The population reduction over the next 9 to 30 years is estimated to be 25 to 75% (midpoint 50%), based on (b), (c) and (e) above.

This is based on recent (modelled) decline in the number of active warrens (a proxy index for this cryptic lizard) across the four monitored populations (Brown & Fanson 2018; Brown et al. on-line early).

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) is estimated to be 343 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) is estimated to be 20 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

Any two of (a), (b) or (c) above are also satisfied.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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:

Eligible under Criterion C2 as Critically Endangered

It is estimated that there are 100 to 200 mature individuals. This is based on the number of active warrens (a proxy index for this cryptic lizard) recorded in March 2018, and assuming a minimum of 1 mature individual per active warren.

The number of mature individuals is projected to continue to decline and the number of mature individuals in each subpopulation is 50 or fewer.

Continuing decline is based on available survey data and a recent (modelled) decline in the number of active warrens across the four monitored populations, and the assumption that feral predators will continue to impact the taxon.

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 km ² or number of locations ≤ 5 [□]

Evidence:

Eligible under Criterion D as Endangered

It is estimated that there are 100 to 200 mature individuals.

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

References

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