Threatened Species Assessment

Hemiergis millewae
Millewa Skink

Taxonomy

Hemiergis millewae Coventry, 1976

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1995).

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

From Robertson and Coventry (2019): The Millewa Skink is mid-brown above, this colour extending along the tail where it is sometimes spotted with black. Usually, there is a broad, dull orange dorso-lateral band along each side of the back, above the pale grey sides. The undersides are pale cream, each scale darker edged, often with a dull yellowish wash on the belly. The head is similar in colour to the body, but there are pale grey scales with black edges on the sides of the face; the eye is black, with a large palpebral disc and pale edging to the eyelids. This species has small limbs, each with five digits. It normally has 22 rows of scales at mid-body, and grows to a snout vent length of about 50 mm.

It is predominantly diurnal, but may be active on warm nights. It is rarely seen outside hummocks of Triodia, where it maintains its body temperature thigmothermically, and preys upon small invertebrates at the soil/litter/hummock interface. Females give birth to one or two live young in late summer or early autumn (Robertson and Coventry 2019).

Generation Length

The generation length of the Millewa Skink is inferred to be 2 to 5 years. This is based on similarly sized scincid lizards.

Distribution

Within Victoria this taxon is known only from 2 small patches of the Mallee ecosystem, one near the south-western edge of the Sunset Country, and another in the central Sunset Country (Robertson et al. 2011, Robertson and Coventry 2019).

Habitat

The taxon occurs only in old growth vegetation, apparently being dependent upon the more moderate micro-environment present within large hummocks of Porcupine Grass (*Triodia scariosa*) (Robertson and Coventry 2019).

Threats

The taxon's dependence on large mature Triodia hummocks makes it particularly vulnerable to inappropriate fire management, since its capacity to disperse is limited and it has a very restricted distribution. Grazing and trampling of the its habitat by goats are potential threats. The taxon's rarity makes it susceptible to catastrophic events (SAC 1995).

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 Vulnerable

The population reduction over the past 6 to 15 years is inferred to be 15 to 35%, based on (a) and (c) above.

This is based on probable declines in numbers of lizards, and area of mature Triodia, due to the extent and frequency of fires over this time period.

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

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 6 to 15 years is projected to be 20 to 50% (midpoint 35%), based on (c) above.

This is based on a decline of mature Triodia due to projected extent and frequency of fires over the next 15 years. A large, catastrophic fire could remove the majority of the remaining habitat that is critical for the persistence of this taxon in Victoria

Eligible under Criterion A4 as Vulnerable

The population reduction over any 6 to 15 year period, including both past and future, is suspected to be 20 to 50% (midpoint 35%), based on (c) 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 B1 as Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 920 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to be severely fragmented. Targeted surveys have recorded the taxon in two areas in the Sunset Country; these areas are widely separated. If one were to be lost there is very little likelihood that the taxon could recolonise.

It is estimated to have one location, as given the nature of 'mega' fires and climate change, a single fire could affect all subpopulations of this species in Victoria.

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

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 64 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is inferred to be severely fragmented, is estimated to have 1 location and has a continuing decline in (i), (ii), (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 as Data Deficient

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

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:

Eligible under criterion D2 as Vulnerable

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

Coventry A.J. (1976). A new species of Hemiergis (Sincidae: Lygosominae) from Victoria. *Memoirs of the National Museum of Victoria* 37 (1976): 23-26

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

Robertson, P., Coventry, A. and Sluiter, I. (2011). Survey for the threatened Millewa Skink (*Hemiergis millewae)* in Murray-Sunset National Park, April 2011. Unpublished report to the Mallee Catchment Management Authority. Wildlife Profiles Pty. Ltd., Melbourne

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

SAC (1995). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 351 *Hemiergis millewae*