Threatened Species Assessment

Aprasia aurita
Mallee Worm-Lizard

Taxonomy

Aprasia aurita Kluge, 1974

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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

Proposed conservation status

Endangered in Victoria

Criteria B1ab(iii,iv)+2ab(iii,iv)

Species Information

Description and Life History

The Mallee Worm-Lizard is a small, very slender species, with a snout-vent length of about 110 mm, and a total length of about 180 mm. It is brown on the upper surface fading to grey on the sides. The under surface is off-white. The centre of each dorsal and lateral scale has a dark mark, the marks forming a series of faint to prominent longitudinal lines. There is a dark streak extending from the eye to the tip of the snout (DSE 1992).

From Robertson and Coventry (2019): This species is diurnal and largely fossorial, sheltering within the substrate and within the subterranean galleries of small ants. A recent study of the diet of the Mallee Worm-Lizard has revealed considerable dietary specialization; only the brood of 11 species of small (1.5-3.0 mm) ants were consumed, with adult ants apparently avoided. Furthermore, the lizards consumed only relatively innocuous ant species - that is, those without elaborate defence mechanisms. This species may vocalize with high-pitched squeaks when molested. Mating occurs in spring, with females becoming noticeably gravid in November and early December, then laying two elongate, soft, parchment-shelled eggs in early summer.

Generation Length

The generation length of the Mallee Worm-Lizard is estimated to be 5 to 10 years. There is scant data on age at sexual maturity and longevity in this cryptic taxon. The congener *A. parapulchella* is thought to mature at 3 - 4 years of age and be long-lived (Wong et al. 2011), although these parameters are not certain, and require further research.

Distribution

From Robertson and Coventry (2019): Museum specimens of the Mallee Worm-Lizard were collected from north-western Victoria (labelled 'Ouyen' and 'Woomelang') in the early 1900s, presumably during land-clearing activities. The species was not seen again until its rediscovery in 1985 at Wathe Nature Reserve, close to the original localities. Since that time, extensive survey has revealed that this species appears to be restricted to the eastern and north-western Big Desert It was originally thought to be restricted to Victoria, but has recently been recorded from near Millicent in South Australia.

Habitat

In the Mallee ecosystem it is usually found in Swale-Mallee Heath and Loamy Sand Mallee plant communities, on both sandy soils and harder clay-loams. Like others of the genus, it is largely fossorial, but does also move above ground (Robertson and Coventry (2019).

Threats

The Mallee Worm-lizard persists in only a small number of areas in the Mallee, and those areas are subject to fire regimes that may be detrimental to this taxon. A warming climate and factors associated with that (e.g. increased frequency and severity of fire) could affect this taxon. Clearing of vegetation within this taxon's range will be detrimental, as occurred in the northern Big Desert around 2007, when fire protection works removed a large swathe of habitat.

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:

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.

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 3,337 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. There are several small isolated subpopulations that are all at risk from the identified threats, such that there is increased extinction risk and little or no probability of recolonisation should subpopulations become extinct.

It is estimated to have 3 locations. It has a continuing decline in (iii) and (iv) above.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 76 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, the taxon is estimated to be severely fragmented, to have 3 locations, and has a continuing decline in (iii) and (iv) 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

It is inferred that there are 2,000 to 10,000 mature individuals, but other thresholds under this criterion have not been met.

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. It has five or fewer locations and there are plausible future threats that could drive it to become critically endangered or extinct within a timeframe of one or two generations.

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

References

DSE (1992). Action Statement - Mallee Worm-lizard *Aprasia aurita* (No. 20). Department of Sustainability and Environment, East Melbourne. Retrieved from: https://www.environment.vic.gov.au/__data/assets/pdf_file/0026/32399/Mallee_Worm-lizard_Aprasia_aurita.pdf

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

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SAC (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 87 *Aprasia aurita*

Wong, D., Jones, S., Osborne, W., Brown, G., Robertson, P., Michael, D., and Kay, G. (2011). The life history and ecology of the Pink-tailed Worm-lizard *Aprasia parapulchella* Kluge - a review. *Australian Zoologist,* 35(4), 927-940.