Threatened Species Assessment

Uperoleia rugosa
Rugose Toadlet

Taxonomy

Uperoleia rugosa (Andersson, 1916)

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2002).

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

Proposed conservation status

Endangered in Victoria

Criteria B1ac(iv)+2ac(iv)

Species Information

Description and Life History

The Rugose Toadlet is a small (30mm), dark-brown frog with short hind legs and a warty appearance. *Uperoleia* frogs are often called toadlets. Distinctive features of the genus are the swollen parotid glands on the shoulders and yellow or orange-red patches in the groin and posterior of the thigh (Barker and Grigg 1977). The toes are free from webbing.

The life history of this taxon is almost entirely unknown. Males grow to 32mm, females to 30 mm (Anstis 2017). The average clutch size is 225 eggs (81-352; Anstis 2017), with reproduction across the spring, summer and autumn period in response to rain. Tadpoles grow to 36 mm TL, with metamorphosis after around 50 days. Growth rates, age and size at sexual maturity are largely unknown.

Generation Length

The generation length of the Rugose Toadlet is inferred to be 2 to 5 years. Humphries (1979) provided information on population turnover in a population of *U. rugosa,* which suggests a high proportion of individuals entering his study site each year were new recruits (67% on average). As such, relatively low survival rates for this taxon may be inferred, and short longevity. Humphries did not provide actual survival rates for this taxon.

Distribution

The taxon is known only from three sites in north-eastern Victoria, two in the Warby-Ovens National Park (Killawarra block, plus Mt Killawarra section) and in Chesney Vale Hills. The Killawarra block records are associated with Ironbark forests on sedimentary soils, whereas the other two are affiliated with granitic woodland. The taxon is on the limit of its range in north-eastern Victoria, and is widely distributed through central and western NSW and south-central and south-eastern Queensland.

Habitat

This taxon occupies a wide range of temperature and semi-arid ecosystems including open forest, rocky outcrops, semi-arid shrublands and grasslands (Anstis 2017). It is a burrowing taxon. and emerges after heavy spring rains to breed in flooded grassland or in billabongs and slow flowing streams (Cogger 1996).

Threats

There are no overarching threats driving population declines in this taxon, although local population declines may occur due to factors that destroy, degrade or fragment habitat, particularly seasonal wetlands.

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. There is insufficient evidence to determine whether will be a future reduction in population size (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 12 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is inferred to have two locations. Given the likelihood of stochastic or climate-driven events that may destroy, degrade or fragment habitat, particularly seasonal wetlands, and the discrete nature of the two sub-populations, they may be inferred to comprise two separate locations.

It is inferred to have extreme fluctuations in (iv) above. This taxon appears to be reliant on seasonal and ephemeral sites for reproduction in Victoria, and as such, recruitment is closely linked to rainfall variability. According to the work of Humphries, adult survival rates appear relatively low. As such, extreme fluctuation in numbers is possible for this taxon.

Eligible under Criterion B2 as Endangered

The Area of Occupancy AoO) across the taxon's range is estimated to be 12 km², based on 2 x 2 km^2 grids derived from accepted, post-1970 records from the VBA. As above, it has two locations and has extreme fluctuations in (iv).

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 suspected that there are 50 to 1,000 mature individuals, but this qualifier is too weak and 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:

Ineligible under Criterion D

It is suspected that there are 50 to 1,000 mature individuals.

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

References

Anstis, M. 2017. *Tadpoles and Frogs of Australia.* New Holland Press, Sydney.

Cogger, H. G. (1996) *Reptiles and Amphibians of Australia.* p. 114. Reed: Sydney.

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

Humphries, R. (1979). Dynamics of a breeding frog community. PhD thesis, Australian National University.

SAC (2002). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 577 *Uperoleia rugosa*.