Threatened Species Assessment

Furina diadema
Red-naped Snake

Taxonomy

Furina diadema (Schlegel, 1837)

Current conservation status

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

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

Proposed conservation status

Endangered in Victoria

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

Species Information

Description and Life History

The Red-naped Snake is a small snake measuring about 40cm in length. It is reddish-brown dorsally and the dark edging of each smooth scale produces a reticulated appearance. It has a white or cream belly, while the head and nape are shiny black, with the exception of a white streak along the lower half of the supralabials and a red-orange patch on the back of the head (Cogger 1993).

Red-naped Snakes are nocturnal and hide in ground litter and earth crevices during the day. The species is often found in association with ant or termite colonies and feeds on small lizards, particularly skinks (Cogger 1993). When disturbed, the snake raises its coloured head as a threat display. It is oviparous, producing 2-5 eggs.

Generation Length

The generation length of the Red-naped Snake is estimated to be 2 to 4 years. Shine (1981) noted that this taxon attains sexual maturity at 12 months of age, and Greer (1997) noted one longevity record of less than 3 years.

Distribution

The taxon has been recorded in north west Victoria at the southern end of its Australian range, in riverine environments, in the Murray-Sunset National Park, near Lake Walla Walla and at two locations on Wallpolla Island.

Habitat

In Victoria, Red-naped Snakes have been found in Red Gum and Black Box communities on grey cracking clay.

Threats

The Red-naped Snake requires ground litter and earth crevices for cover and food resources. Threats to its habitat include firewood collection, camping, cattle grazing, increasing aridity due to climate change, and infrequent but catastrophic fire within this taxon's range. The impacts of feral predators on this taxon are not known, but are likely to be severe.

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 A3 as Vulnerable

The population reduction over the next 10 to 12 years is suspected to be 10 to 50% (midpoint 35%), based on (c) above.

This reduction is based on continuing degradation of the taxon's habitat due to activities such as firewood collection, camping, cattle grazing, increasing aridity due to climate change, and infrequent but catastrophic fire within the taxon's range. The impacts of feral predators on this taxon are not known, but are likely to be severe. These threats are not abating and are likely to continue to worsen in the near future.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 10 to 12 year period, including both past and future, is inferred to be 5 to 50% (midpoint 30%, based on (c) above.

Past and future reduction are based on the identified threats.

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

It is estimated to have three locations. There are three main occurrences, Lindsay Island/Mulcra, Wallpolla Island and Merbein/Mildura. Each of these is subject to threats i.e. habitat damage, increasing aridity and catastrophic fire, that impact on individuals of the taxon sequentially or randomly over time.

It has a continuing decline in (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 39 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is estimated to have 3 locations and a continuing decline in (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

It is suspected that there are 50 to 200 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:

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

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

Greer, A. (1997). *The Biology and Evolution of Australian Snakes.* Surrey Beatty and Sons, Chipping Norton.

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SAC (1994) Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Flora and Fauna Guarantee, Nomination No. 337 *Furina diadema*

Shine, R. (1981). Ecology of the Australian elapid snakes of the genera Furina and Glyphodon. *Journal of Herpetology* 15:219-224.