Threatened Species Assessment

Denisonia devisi
De Vis' Banded Snake

Taxonomy

Denisonia devisi Waite & Longman, 1920

Current conservation status

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 B1ab(i,ii,iii,v)

Species Information

Description and Life History

The dorsal surface of the body is yellowish-brown to olive-green in colour, broken by irregular, ragged-edged, narrow, dark bands running across the body. De Vis's Banded Snake is sometimes confused with Death Adders, as both have thick, banded bodies. The main difference is that the De Vis's Banded Snake's tail does not taper abruptly and its head is not broad and triangular. Shine (1998) reports a mean litter size of 5, and a diet comprising mainly frogs, with reptiles making up about 10% of the diet.

Generation Length

The generation length of De Vis's Banded Snake is inferred to be 5 to 8 years. This is based on data in Greer (1997) for age at first reproduction for other elapid species (in other genera).

Distribution

The Victorian population of the taxon is likely to be isolated from those further north in inland Queensland and north-central NSW, but is likely to extend into adjacent NSW areas.

Habitat

The taxon inhabits low-lying areas, with deep cracks in clay soils, particularly near sites subjected to seasonal flooding. During the day, it stays in the soil cracks or deep cavities and emerges at night to feed on frogs. It is found in open and riverside woodlands, and brigalow.

Threats

Cattle grazing degrades habitat for the snake and the frogs they eat. Habitat degradation is caused by human recreational activities, notably camping and firewood collection. Ongoing disturbance and threats and effects of both climate (e.g., drought) and human-driven hydrological changes will likely affect Victorian 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%

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 15 to 24 years is suspected to be 10 to 30 , based on (c) and (e) above.

Habitat damage, caused by cattle grazing, human recreational activities and hydrological changes, has led to a recent inferred decline..

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 15 to 24 years is suspected to be 10 to 30%%, based on (c) and (e) above.

Ongoing vegetation changes and probable competition and hybridisation will drive future decline.

Eligible under Criterion A4 as Vulnerable

The population reduction over the any 15 to 24 year period, including both past and future, is suspected to be 10 to 30%, based on (c) and (e) above.

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 Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 36 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented, as the two known subpopulations in Victoria are separated at a range beyond the taxon's dispersal capacity.

It is inferred to have one location, as the known occurrences are in two clusters, and both are subject to similar threats of hydrological changes and human-induced impacts.

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

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 17 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As above, it is severely fragmented, has one 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

It is suspected that there are 50 to 300 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.

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

References

Clemann, N., Robertson, P., Gibbons, D., Heard, G., Steane, D., Coventry, A., and Chick, R. (2007). An Addition to the Snake Fauna of Victoria: De Vis' Banded Snake *Denisonia devisi* (Serpentes: Elapidae) Waite and Longman. *The Victorian Naturalist* 124(1), 33.

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

Shine, R. (1998) *Australian Snakes: a Natural History.* Chatswood, NSW: Reed New Holland.