Threatened Species Assessment

Vermicella annulata
Bandy Bandy

Taxonomy

Vermicella annulata (Gray, 1841)

Current conservation status

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

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(i,ii,iii,iv)

Species Information

Description and Life History

The Bandy Bandy is a small burrowing, nocturnal snake. It can grow to 80cm in length, yet is usually much smaller. It has a specialised diet, taking almost exclusively blind snakes (*Anilios* spp.) as prey. It is oviparous with clutches of 2-15 (mean = ~8) eggs, the number highly correlated with maternal body length. Eggs are laid in late summer. Sexual maturity is attained at 24 months in males and 36 months in females.

Generation Length

The generation length of the Bandy Bandy is inferred to be 4 to 8 years. Females reach sexual maturity at about 3 years, so a generation length of 4-8 years seems reasonable so as to allow for variation in approximate age of sexual maturity and restricted opportunities for mating in what is assumed to be a sparsely distributed (and probably localised) taxon.

Distribution

In Victoria, the Bandy Bandy is restricted to the warmer northern regions of the state. It has a broad distribution in Victoria, yet records, especially recent ones, are exceedingly few. On a continental scale, the taxon occurs in a broad arc through eastern Australia, extending from the northcentral part of the Northern Territory to the southeastern part of South Australia.

The taxon is cryptic and rarely encountered. Consequently, there are few records, sparsely distributed, that were collected incidentally. The taxon is cryptic and rarely encountered. Consequently, there are few records, sparsely distributed, that were collected incidentally. Although there have been no targeted, systematic surveys through much of the taxon's range, there have been general surveys using pitfall trapping in parts of the Mallee, such as Hattah and Annuello. Those surveys returned more Bandy Bandys than anywhere else in the state, but importantly, still very few of them.

Habitat

The Bandy Bandy occurs in warmer northern regions of the state, in woodland or mallee ecosystems.

Threats

The primary threats to the Bandy Bandy include habitat loss from land clearing; habitat degradation by introduced species (such as cattle and rabbits) and inappropriate fire regimes; habitat modification caused by global climate change; death on roads; and feral predators such as dogs, cats, pigs and foxes. Threats to blind snakes, the almost exclusive prey of the Bandy Bandy, will consequently affect the taxon.

It is probably comparatively secure in the Sunset area relative to the other threatened small venomous snakes (Masters', Port Lincoln Snake and Bardick). There has been massive loss of habitat throughout most of the taxon's range east of Sunset.

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

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 235 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

The taxon is inferred to be severely fragmented. There are multiple, small isolated subpopulations that are all at risk from primary threats (habitat loss from land clearing; habitat degradation by introduced species; inappropriate fire regimes; habitat modification caused by global climate change; feral predators; as well as threats to prey (blind snakes), such that there is an increased extinction risk and little or no probability of recolonisation should subpopulations become extinct.

It is inferred to have a continuing decline in (i), (ii), (iii) and (iv) above, due to the identified threats.

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 support an estimate of total population size. The snake is cryptic and rarely encountered. Consequently, there are few records, sparsely distributed, that were collected incidentally.

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

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

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

References

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