



Pernagera gatliffi Land Snail

Taxonomy

Pernagera gatliffi (Gabriel, 1930)

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2003).

Categorised as Endangered in the 2009 Advisory list of threatened invertebrate fauna in Victoria (DSE 2009).

Proposed conservation status

Endangered in Australia

Criteria B1ab(iii)+2ab(iii)

Species Information

Description and Life History

Pernagera gatliffi is a species of small air-breathing land snails, terrestrial pulmonated gastropod molluscs in the family Charopidae. The Australian land snails exhibit high levels of endemism due to their limited dispersal capability and confinement to discontinuous habitats (Ponder 1997; Harvey 2002; Slatyer et al. 2007).

Generation Length

The generation length of *Pernagera gatliffi* is estimated to be 2 to 3 years. The age of mature snails can be estimated from growth interruption markings on the shell. Estimation across a broad selection of charopids is that they do not live longer than 3 years.

Distribution

Pernagera gatliffi has been recorded in the Otway Ranges west of Lorne.

Habitat

The taxon occurs in Cool Temperate Rainforest and Wet Forest.

Threats

Whilst only a few species of land snails have been formally recognised as being of conservation concern under legislation, a wide variety of threats has been identified for terrestrial molluscs. These include predation by introduced species (rats, birds and invasive ants), grazing pressure, weed infestation, herbicide/pesticide use and climate change, with habitat loss and fire considered to be amongst the most serious (Stanisic and Ponder 2004).

It has been estimated that only 5% of Australia is suitable for many native land snails and that the conservation of remaining habitat is critical to protect suitably moist fragments (Clarke and Spier-Ashcroft 2003). Whilst the consequences of complete habitat loss for land snail conservation are obvious, there are other subtle factors at play in modified landscapes that will influence the species assemblage present.

While bushfire is an important potential impact, this impact is relatively short term. The greater part of the taxon's habitat within Otways is protected in conservation reserves, and only small scale community forestry continues in

some areas. The biggest threat to the wet forest malacofauna of the Otways is climate change and the associated droughts and altered fire regimes, with preliminary predictions being for a notable reduction of the preferred habitat types by 2080 (Miles 2010).

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%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>			
<p>based on any of the following:</p> <ul style="list-style-type: none"> (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 population reduction 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 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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 71 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

Considering the taxon's low vagility, recovery is typically slow and can take decades, depending on distance from source and demographics. Therefore, the individuals can be considered to be severely fragmented.

It is suspected to have two locations. It has a continuing decline in (iii) above, as a result of climate-change induced droughts and increased fire frequency and intensity.

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 grids derived from accepted, post-1970 records in the VBA. As above, the taxon is severely fragmented, has two locations and has a continuing decline in (iii) 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 estimated that there are 15,000 to 25,000 mature individuals, which exceeds the thresholds for criterion C.

Criterion D. Very small or restricted populations		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 km ² or number of locations ≤ 5

Evidence:

Ineligible under Criterion D

It is estimated that there are 15,000 to 25,000 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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