

Threatened Species Assessment

Nannoperca variegata Variegated Pygmy Perch

Taxonomy

Nannoperca variegata Kuitert & Allen, 1985

Current conservation status

Listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

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,v)

Species Information

Description and Life History

The Variegated Pygmy Perch is 38-62 mm long and resembles the Southern Pygmy Perch (*Nannoperca australis* Gunther). Australian pygmy perches have a single, deeply-notched dorsal fin and an irregular lateral line that is generally not continuous along the body (Cadwallader and Backhouse 1983, Saddlier et al. 2013). It is a demersal taxon which completes its life in freshwater, short lived (1-5 years), and is thought to lay demersal, non-adhesive eggs over aquatic vegetation and the substrate from spring to early summer (Saddlier et al. 2013).

Generation Length

The generation length of the Variegated Pygmy Perch is projected to be 1 year. This is based on the generation length for the closely related Southern Pygmy Perch.

Distribution

The Variegated Pygmy Perch has a very limited distribution within south-eastern Australia, being restricted in Victoria to the Glenelg River system in the far south-west, and in South Australia to the Ewens and Piccaninnie Ponds systems and the Eight-Mile Creek system in the far south-east of the State (Saddlier and Hammer, 2010, Saddlier et al. 2013).

Habitat

The preferred habitat of the Variegated Pygmy Perch includes relatively shallow freshwater streams with slow, moderate to high water flow. The Variegated Pygmy Perch is also strongly associated with high levels of submerged and emergent aquatic vegetation (Saddlier, pers. obs, Hammer, 1992) and has a preference for clear water (Allen 1989). It can be found in fresh and slightly brackish waters, mostly over substrates of gravel, cobble or boulder in the absence of silt, although at Ewens Ponds in South Australia it is associated with large amounts of detritus (Kuitert et al. 1996). In the wild it can tolerate a temperature range of 14-26 degrees C and a pH range of 6.8-7.5, with captive specimens surviving best in water temperatures of 18-27 degrees C, a pH of 7.2 and well oxygenated water (Kuitert and Allen 1986).

Nannoperca variegata

Variegated Pygmy Perch

Variegated Pygmy Perch are usually found in small groups, often mixed with Southern Pygmy Perch and Yarra Pygmy Perch *Nannoperca obscura*, although the Variegated Pygmy Perch prefers faster water velocities than the other two species (as was observed in the Ewen's Ponds system where *N. variegata* was most abundant in the faster flowing channels linking the ponds, whereas *N. australis* was most abundant in the pool habitat (Kuitert and Allen 1986).

Threats

The taxon is prone to extinction due to its small and disjunct distribution, habitat disturbance, and lack of habitat which can be considered secure from disturbance (Fisher 2003). Major threats are due to habitat loss due to removal of riparian vegetation, sedimentation and pugging by stock, predation by alien fish species (Redfin *Perca fluviatilis*, Brown Trout *Salmo trutta* and Rainbow Trout *Oncorhynchus mykiss*, Fisher 2003; and Eastern Gambusia *Gambusia holbrooki*), and impacts from climate change (reduction or loss of water, degradation of instream habitat) (Saddler et al. 2013).

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 reduction in population sufficient to meet any threshold for Criterion A.

Nannoperca variegata

Variegated Pygmy Perch

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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 160 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas. Records are also derived from extensive field surveys from 1990 to the present.

It is estimated to have one location, as Victorian populations are restricted to the Glenelg River system and threats could impact the entire range.. It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, as a result of the ongoing impacts of 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				

Nannoperca variegata Variegated Pygmy Perch

Evidence:

Ineligible under Criterion C

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

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 km ² 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

- Allen, G.R. (1989). *Freshwater Fishes of Australia* TFH Publications, Sydney.
- Cadwallader, P., and Backhouse, G.N. (1983). *A guide to the freshwater fish of Victoria*. Melbourne: Government Printer.
- DSE (2013) *Advisory List of Threatened Vertebrate Fauna in Victoria 2013*. Department of Sustainability and Environment, Melbourne. Retrieved from: https://www.environment.vic.gov.au/__data/assets/pdf_file/0014/50450/Advisory-List-of-Threatened-Vertebrate-Fauna_FINAL-2013.pdf
- Fisher, J.T. (2003). Variegated Pygmy Perch *Nannoperca variegata*. Flora and Fauna Guarantee Action Statement 42. Department of Sustainability and Environment, Melbourne.
- Kuiter, R.H. and Allen, G.R. (1986) A synopsis of the Australian pygmy perches (Percichthidae), with the description of a new species. *Revue fr. Aquariol.* 12: 109-16.
- Kuiter, R.H, Humphries, P.A., Arthington, A.H., (1996). Family Nannopercidae - Pygmy Perches. Pp 168-175. In McDowall, R. (ed.) *Freshwater Fishes of South-Eastern Australia* (Revised edition). Reed Books, Sydney, 1996
- Saddler, S.R. and Hammer, M. (2010). *National Recovery Plan for the Variegated Pygmy Perch Nannoperca variegata*. Department of Sustainability and Environment, Melbourne.
- Saddler, S.R., Koehn, J.D. and Hammer, M.P. (2013). Let's not forget the small fishes - Conservation of two threatened species of pygmy perch in south-eastern Australia. *Marine and Freshwater Research* 64, 874-886.
- SAC (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 110 *Nannoperca variegata*