Threatened Species Assessment

Nannoperca sp. 1
Flinders Pygmy Perch

Taxonomy

Nannoperca sp. 1

Nannoperca sp. 1 was previously included under Southern Pygmy Perch (*Nannoperca australis*). It was recently identified as a very divergent genetic lineage representing a previously unrecognised taxon This taxon was previously described (from Flinders Island) as a subspecies of *Nannoperca australis*, (Scott 1971) and work is currently underway to revise the taxonomic description and formally elevate it to full species status.

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criteria A3ce+4ce; B2ab(i,ii,iii,iv,v)

Species Information

Description and Life History

The taxon is a small freshwater fish with a deeply notched long-based dorsal fin, a small mouth, and a squarish to slightly rounded tail. Breeding males develop brilliant red fins. The taxon is not known to undertake migrations, completing its entire life cycle in fresh waters. Populations are patchy and fragmented, and characterised by moderate levels of genetic differentiation between sites, implying poor dispersal ability (Hammer 2001, 2008; Unmack et al. 2011, 2013).

Its diet consists primarily of insects, insect larvae and planktonic crustaceans (Llewellyn 1974; Allen 1989). They spawn during spring to summer (September to January) at water temperatures of above 16 degrees C (Kuiter et al. 1996). Very little is known of the breeding biology of this species, although it is assumed that breeding behaviour is similar to the closely related Southern Pygmy Perch, which lays demersal, non-adhesive eggs over aquatic vegetation and the substrate (Kuiter et al. 1996). The taxon may also have tolerance of low water dissolved oxygen levels and high tannins, similar to Southern Pygmy Perch (McMaster and Bond 2008), though high levels of tannin may affect reproduction (Morrongiello et al. 2010).

Generation Length

The generation length of the Flinders Pygmy Perch is projected to be 2 years, based on that for the closely related Southern Pygmy Perch. Little is known about the maximum age of individuals in a population, however, individuals of the taxon are assumed to be short lived (i.e. <5 years).

Distribution

Nannoperca sp. 1 is distributed in Victoria in coastal Gippsland catchments from near the NSW/Victorian border in the east (Genoa/Wallagaraugh rivers), westward to the La Trobe River catchment, and extending into the South Gippsland catchment as far west as Merrimans Creek; a small population, possibly translocated, is also present further west in Pebble Creek, a tributary of the Franklin River system in Corner Inlet. It is also found on the east side of Flinders Island and the very north east of Tasmania (Anson River).

Habitat

This taxon typically occurs in slow-flowing or still waters that possess large amounts of aquatic vegetation (particularly emergent vegetation) such as lakes, ponds and slow-flowing rivers and creeks (Kuiter et al. 1996, Woodward and Malone 2002). It is also found in areas of moderate flow in larger streams, and can persist in isolated pools as streams dry (Raadik unpublished data).

Threats

Key threats to this species are assumed to be similar to those for the Southern Pygmy Perch, and for the conspecific Yarra Pygmy Perch (see Saddlier and Hammer 2010, Saddlier et al. 2013, Stoessel 2015). These are habitat damage or loss (through water level/flow changes due to agriculture, urban or industrial development, climate change impacts, unrestricted stock access causing disturbance, infilling, siltation, increased turbidity, etc. or destruction/removal of instream habitat; reduction of loss of surface water quantity and quality (through climate change impacts, and through extraction for stock and agriculture; and competition with and/or predation by alien fish species such as Eastern Gambusia (*Gambusia holbrooki*), Redfin (*Perca fluviatilis*), Brown Trout (*Salmo trutta*) and Rainbow Trout (*Oncorhynchus mykiss*).

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 years is projected to be 10 to 30%, based on (c) and (e) above.

This is based on loss of some populations and subpopulations, evident from general surveys, and the continuing impacts from climate change and urban/agricultural development.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 10 year period, including both past and future (up to 100 years in the future), is estimated to be 10 to 30%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on previous threats and recent and ongoing loss of some populations and subpopulations, and the continuing impacts from climate change and urban/agricultural development.

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 Vulnerable

The Area of Occupancy (AoO) across the taxon's range is estimated to be 652 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas, and on survey data from 1996 onwards.

It is projected to have one location (coastal Gippsland catchments), based on the major threats being able to impact the entire region.

It has a continuing decline in (i), (ii), (iii), (iv) and (v) above, based on loss of some populations and subpopulations, evident from general surveys, and the continuing impacts from climate change and urban/agricultural development. Climate change projections for warmer and drier climate are likely to reduce extent and quality of habitat.

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 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 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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