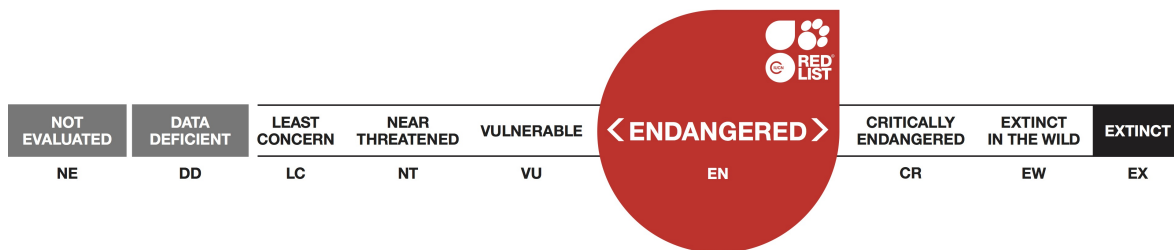


Galaxiella nigrostriata, Black-stripe Minnow

Assessment by: Morgan, D.L. & Beatty, S.



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Taxonomy

| Kingdom | Phylum | Class | Order | Family |
|----------|----------|----------------|--------------|------------|
| Animalia | Chordata | Actinopterygii | Osmeriformes | Galaxiidae |

Taxon Name: *Galaxiella nigrostriata* (Shipway, 1953)

Synonym(s):

- *Galaxias pusillus* ssp. *nigrostriatus* Shipway, 1953

Common Name(s):

- English: Black-stripe Minnow, Black-striped Dwarf Galaxias

Taxonomic Source(s):

Allen, G. R., Midgley, S. H. and Allen, M. 2002. *Field guide to the freshwater fishes of Australia*. Western Australia Museum, Perth, Western Australia.

Identification Information:

One of the smallest galaxiids, attaining a maximum size of only 5 cm, the species is recognised by their distinctive coloration during the breeding period, which consists of two lateral black strips that border a vivid yellow to orange lateral stripe (Morgan et al. 1998, Allen et al. 2002). The caudal fin is rounded with 7-9 dorsal rays; 10-15 anal rays; 11-14 pectoral rays; and 5 pelvic rays. Dorsal fin origin is behind the level of anal fin origin. Sexes are indistinguishable for most part.

Assessment Information

Red List Category & Criteria: Endangered B2ab(i,ii,iii,iv,v) [ver 3.1](#)

Year Published: 2019

Date Assessed: January 9, 2019

Justification:

This species was previously listed as Near Threatened by Wager (1996); data was lacking at that time. Ogston *et al.* (2016) demonstrated a recent (since 2000) climate change driven decline in EOO of 57% and a decline in AOO of 58% compared to historical records identified in Morgan *et al.* (1998). This species is now assessed as Endangered as a result of its restricted AOO, the fact that it is found at only one location, and is undergoing continuing decline in distribution, habitat, and population size.

Previously Published Red List Assessments

1996 – Lower Risk/near threatened (LR/nt)

<http://dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T8819A12934342.en>

1994 – Rare (R)

Geographic Range

Range Description:

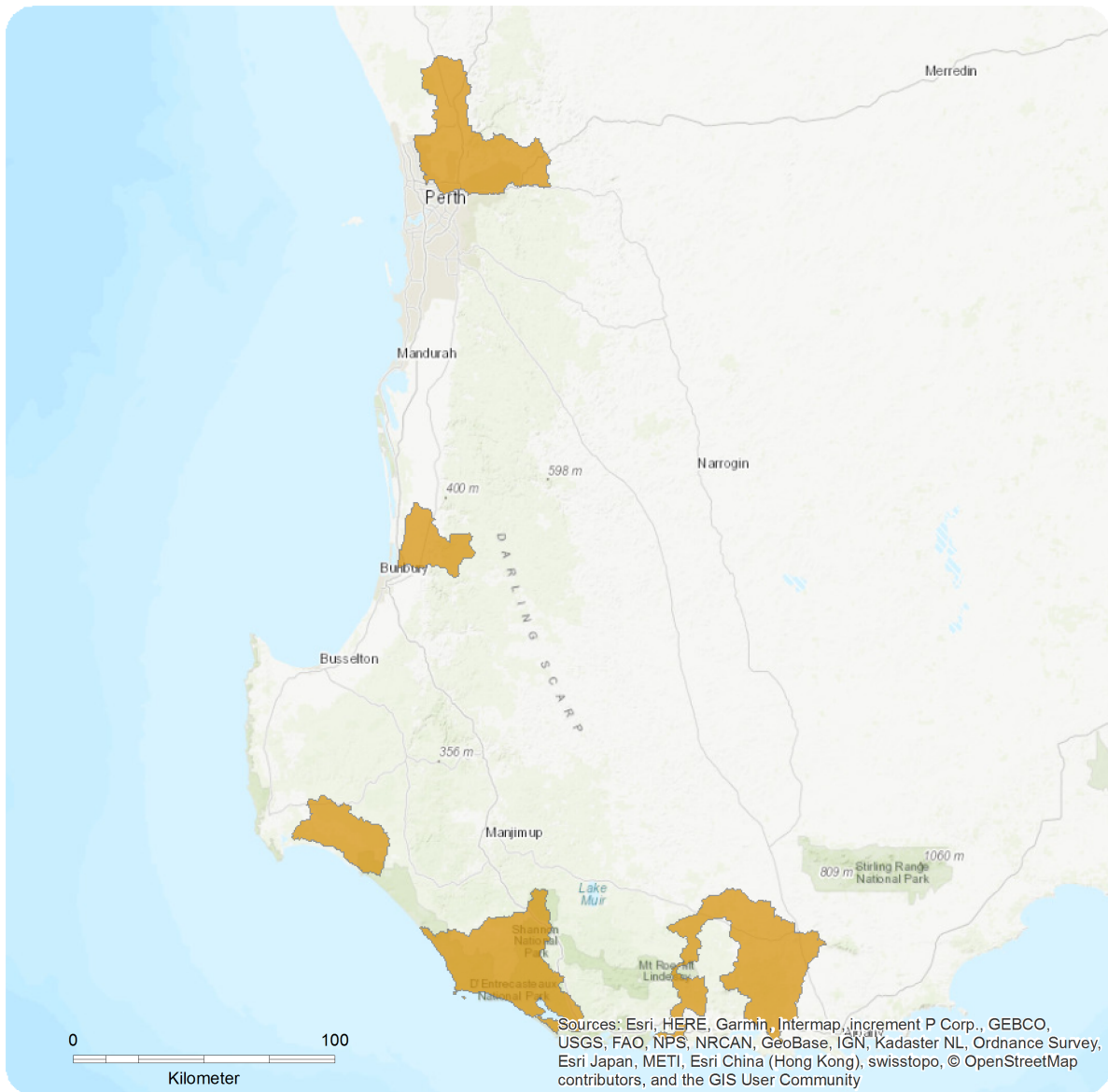
This small, freshwater fish is endemic to seasonal wetlands in south-west Western Australia, between Augusta and Albany and in three remnant populations on the Swan Coastal Plain (SCP) (Morgan *et al.* 1998, Galeotti *et al.* 2010). The three populations on the SCP are believed to be naturally occurring remnants of a greater distribution on the SCP prior to widespread habitat destruction that followed European colonisation over the last 180 years (Galeotti *et al.* 2010). This species had an historical EOO calculated as 47,578 km² and current EOO (2015) was estimated as 20,276 km², which is an approximate reduction of 57% (Morgan *et al.* 1998, Ogston *et al.* 2016). The historical AOO has been calculated as 55 km² and a current AOO of 23 km², which is an approximate reduction of 58% (Morgan *et al.* 1998, Ogston *et al.* 2016). The reduction occurred in the past and may not have ceased or be reversible (Department of the Environment 2018).

Country Occurrence:

Native: Australia (Western Australia)

Distribution Map

Galaxiella nigrostriata



Range

Extant (resident)

Compiled by:

Lintermans, M. and colleagues 2019 IUCN Red List assessment for Australian freshwater fish.



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

There is a suspected population decline of >50% over 10 years based on a calculated decline in extent of occupancy and area of occurrence. Some populations of this species are severely fragmented (Galeotti *et al.* 2010). All populations have a one year life-cycle, making them vulnerable to changes at any time-scale. There have been no population estimates for any population, but within the pools where the species is found, individuals may be found in the hundreds. Nothing is known with regard to the mechanisms behind their aestivation, although all individuals aestivate at least once, before spawning and dying in the ensuing months.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species typically inhabits highly tannin stained water with a pH and temperature range of 3.0-6.5 and 11-30 °C, respectively (Morgan *et al.* 1998). It is rarely found in permanent habitats. Wetlands within the southern population's main area of distribution generally dry completely around December and remain dry until autumn/winter rains inundate the ephemeral pools (Morgan *et al.* 1998, Galeotti *et al.* 2010). Mean fecundity is 62 with spawning protracted over a period of several weeks (Pen *et al.* 1993). Spawning of the southern populations of this species occurs between June and September, from mid-winter to mid-spring (Pen *et al.* 1993). The species has a one year life-cycle with the mean length at sexual maturity being 37 mm for females and the species is a serial spawner (Pen *et al.* 1993). Larvae hatch at about 4 mm (Gill and Neira 1998). The species aestivates when their habitats dry during summer, and re-emerge during late spring or early winter, depending on the timing of rainfall events. On emergence, their gonads undergo rapid development. The diet is carnivorous, with notable ontogenetic changes occurring (Gill and Morgan 2003). The species often co-occurs with the aestivating *Lepidogalaxias salamandroides* (Morgan *et al.* 1998, Ogston *et al.* 2016).

Systems: Freshwater

Use and Trade

There is no information available relating to the use or trade of this species.

Threats (see Appendix for additional information)

The main threats summarised by Galeotti *et al.* (2010) that are likely to affect continued population survival of this species can be grouped into two types: climate change and habitat modification and destruction. It has been estimated that rainfall in southwest Western Australia will continue to decline, over 40% by 2070 and evapotranspiration will increase, which will affect wetland hydroperiod through decreased run-off and reduced groundwater recharge (Ogston *et al.* 2016). Excessive anthropogenic groundwater extraction can cause unseasonal or extended dry periods in wetlands and decreasing groundwater levels could induce acidification through acid sulphate soils. Wetlands will also be affected by a predicted rise in mean temperatures which will lead to an increase in evapotranspiration in southwest Western Australia. A number of land use practices have directly or indirectly caused the loss of up to 80% of wetlands on the SCP, such as filling or draining for agriculture, urbanisation and roads, forestry, dams and other such infrastructure, mineral and quartzite sand mining under wetlands. Some seasonal wetland habitats have been excavated when dry with the soil used for fill, or the dry pools

filled in during road maintenance, or protected reserves undergo a change in land tenure and are no longer protected from agriculture, mining or other habitat altering activities. Furthermore, altered wildfire seasons and prescribed burning practices can cause organic-rich sediments in seasonal wetlands to burn for long periods, killing fish that may be aestivating within the substrate. In some areas, an increase of salinity degrading water quality in rivers and wetlands has been caused by massive historical land clearing. Introduced exotic fish species may impact upon native species through competition for food, aggressive predatory behaviour that causes displacement, injury or death and by introducing disease. For example, introduced *Gambusia holbrooki* mosquitofish similarly prefer the shallow still water of wetlands and may show aggressive behaviour (fin-nipping) toward cohabiting species, particularly when water temperature is over 20°C.

Conservation Actions (see Appendix for additional information)

This species is currently listed as Endangered federally under the Environmental Protection and Biodiversity Conservation Act 1988 (Department of the Environment 2018), and as Endangered in Western Australia under the Wildlife Conservation Act 1950 (Wildlife Conservation Specially Protected Fauna Notice 2017). There are currently no action recovery plans in place for this species.

This species is present in numerous wetlands that fall within or are directly adjacent to Department-managed lands, and therefore benefits from any habitat protection and management undertaken in these areas (Department of the Environment 2018).

The Department of the Environment (2018) outlines the current management or research initiatives as follows:

- Fire programs within Department-managed lands consider riparian vegetation prior to conducted burns
- Riparian vegetation and stream reserves are protected from timber harvesting under the Forest Management Plan 2014-2023
- Main Roads Western Australia, local government and consultants conduct environmental assessments of proposed infrastructure (including maintenance and upgrades of roads)
- The Freshwater Fish Group at Murdoch University regularly monitors wetlands in the south-west, many of which contain this species
- The Freshwater Fish Group at Murdoch University and the South East Regional Centre for Urban Landcare have produced informational products, including a field guide.
- The Western Australian Native Fish Strategy, funded by the State NRM and undertaken by the Western Australian Department of Fisheries and Department of Water, compiled survey data on native and feral fish into a database, reviewed management actions and developed a public website as an information source for the general public. The Western Australian Department of Fisheries has also produced other educational products, including the Aquatic Invaders Identification Guide: Freshwater
- A Freshwater Ecosystems Working Group has been established to act as a liaison point for the management of threatened freshwater species

Credits

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External Resources

For [Images and External Links to Additional Information](#), please see the [Red List website](#).

Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Habitat | Season | Suitability | Major Importance? |
|---|----------|-------------|-------------------|
| 5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls) | - | Suitable | - |
| 5. Wetlands (inland) -> 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks | - | Suitable | - |
| 5. Wetlands (inland) -> 5.8. Wetlands (inland) - Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha) | Resident | Suitable | Yes |

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Threat | Timing | Scope | Severity | Impact Score |
|---|---------|-------|----------|--------------|
| 1. Residential & commercial development -> 1.1. Housing & urban areas | Ongoing | - | - | - |
| 1. Residential & commercial development -> 1.2. Commercial & industrial areas | Ongoing | - | - | - |
| 11. Climate change & severe weather -> 11.2. Droughts | Ongoing | - | - | - |
| 3. Energy production & mining -> 3.2. Mining & quarrying | Ongoing | - | - | - |
| 7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown) | Ongoing | - | - | - |
| 7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.7. Abstraction of ground water (agricultural use) | Ongoing | - | - | - |
| 8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Gambusia holbrooki) | Ongoing | - | - | - |

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

| Conservation Actions in Place |
|---|
| In-Place Land/Water Protection and Management |
| Occur in at least one PA: Yes |

Additional Data Fields

| |
|---|
| Distribution |
| Estimated area of occupancy (AOO) (km ²): 88 |
| Continuing decline in area of occupancy (AOO): Yes |
| Extreme fluctuations in area of occupancy (AOO): No |
| Estimated extent of occurrence (EOO) (km ²): 37869 |
| Continuing decline in extent of occurrence (EOO): Yes |
| Extreme fluctuations in extent of occurrence (EOO): No |
| Number of Locations: 1 |
| Continuing decline in number of locations: No |
| Extreme fluctuations in the number of locations: No |
| Population |
| Continuing decline of mature individuals: Yes |
| Population severely fragmented: Yes |
| No. of subpopulations: 10 |
| Continuing decline in subpopulations: Yes |
| Extreme fluctuations in subpopulations: No |
| All individuals in one subpopulation: No |
| Habitats and Ecology |
| Continuing decline in area, extent and/or quality of habitat: Yes |
| Generation Length (years): 1 |
| Movement patterns: Not a Migrant |
| Congregatory: Congregatory (year-round) |

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