

***Melanotaenia nigrans* (a fish, no common name)**

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2011
Revised, May 2019
Web Version, 5/1/2020

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



Photo: U.S. Geological Survey. Public domain. Available:
<https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=776>. (May 2019).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

“Oceania: occurs only in Australia.”

Status in the United States

From Nico (2019):

“**Status:** Reported from Illinois. Likely failed introduction, as no specimens have been reported since O'Donnell (1935)”

Means of Introductions in the United States

From Nico (2019):

“**Means of Introduction:** It was supposed that these fish [in Illinois] were escapes from a tropical fish establishment (store?) in the St. Louis area, about 40 miles upstream (O'Donnell 1935; Smith 1965). However, an aquarium release cannot be ruled out.”

Remarks

From Froese and Pauly (2019):

“Type species (first species to be described) of the family Melanotaeniidae [Allen et al 2002].”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al (2019):

“**Current status:** Valid as *Melanotaenia nigrans* (Richardson 1843).”

From ITIS (2019):

Kingdom Animalia

Subkingdom Bilateria

Infrakingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Actinopterygii

Class Teleostei

Superorder Acanthopterygii

Order Atheriniformes

Suborder Atherinoidei

Family Melanotaeniidae

Genus *Melanotaenia*

Species *Melanotaenia nigrans* (Richardson, 1843)

Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 10.0 cm TL male/unsexed; [Mills and Vevers 1989]; common length : 6.0 cm SL male/unsexed; [Allen et al 2002]”

Environment

From Froese and Pauly (2019):

“Freshwater; brackish; benthopelagic; pH range: 5.2 - 5.6; dH range: 10 - ?. [...]; 18°C - 24°C [Baensch and Riehl 1985; assumed to be recommended aquarium temperature]”

Climate

From Froese and Pauly (2019):

“Tropical;”

Distribution Outside the United States

Native

From Froese and Pauly (2019):

“Oceania: occurs only in Australia.”

Introduced

Froese and Pauly (2019) list *Melanotaenia nigrans* as introduced to the Philippines, where the status of this species is unknown.

Means of Introduction Outside the United States

No information on the means of introduction have been reported.

Short Description

No information on a short description of *Melanotaenia nigrans* was found.

Biology

From Froese and Pauly (2019):

“Inhabits rainforest streams, lily lagoons and small streams. Also occurs in larger streams, usually in backwaters or along the shoreline where there is minimal flow and grassy vegetation. Often found in brackish coastal waters [Mills and Vevers 1989, Allen et al 2002]. [...] Feeds mainly on aquatic and terrestrial insects and their larvae, and also filamentous green algae. Usually co-occurs with other species of rainbows and blue-blue [sic] eyes.”

“Deposits thread-bearing eggs on plants. Distinct pairing [Breder and Rosen 1966].”

Human Uses

From Froese and Pauly (2019):

“Aquarium: commercial”

“A popular aquarium species which thrives in captivity.”

Diseases

No OIE-reportable diseases (OIE 2020) were found to be associated with *Melanotaenia nigrans*.

From Froese and Pauly (2019):

“Bacterial Infections (general), Bacterial diseases”

According to Poelen et al (2014), *Melanotaenia nigrans* can carry the parasite *Chilodonella hexasticha*.

Threat to Humans

From Froese and Pauly (2019):

“Harmless”

3 Impacts of Introductions

From Nico (2019):

“**Impact of Introduction:** The impacts of this species are currently unknown, as no studies have been done to determine how it has affected ecosystems in the invaded range. The absence of data does not equate to lack of effects. It does, however, mean that research is required to evaluate effects before conclusions can be made.”

4 History of Invasiveness

The history of invasiveness for *Melanotaenia nigrans* is No Known Nonnative Population. It has been introduced to two locations, Illinois and Philippines, outside its native range but these introductions have not resulted in known established populations. Impacts of introduction are unknown. *M. nigrans* is a popular aquarium species, but numerical data on trade are lacking.

5 Global Distribution

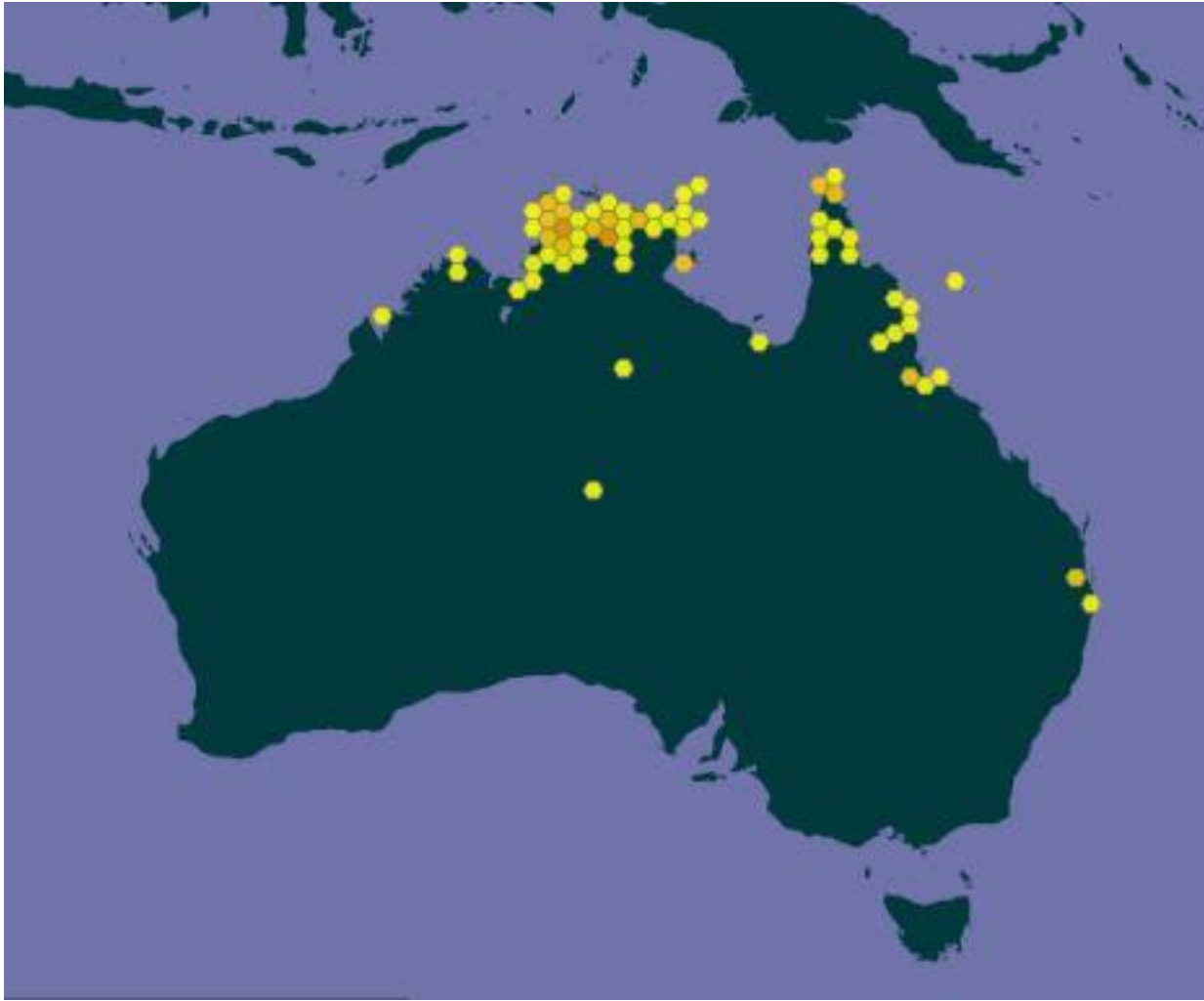


Figure 1. Known global distribution of *Melanotaenia nigrans*. Observations are reported from Australia. Map from GBIF Secretariat (2019). Location off the northeast coast of Australia represents a marine habitat and therefore will not be used as a source location in the climate match.

6 Distribution Within the United States

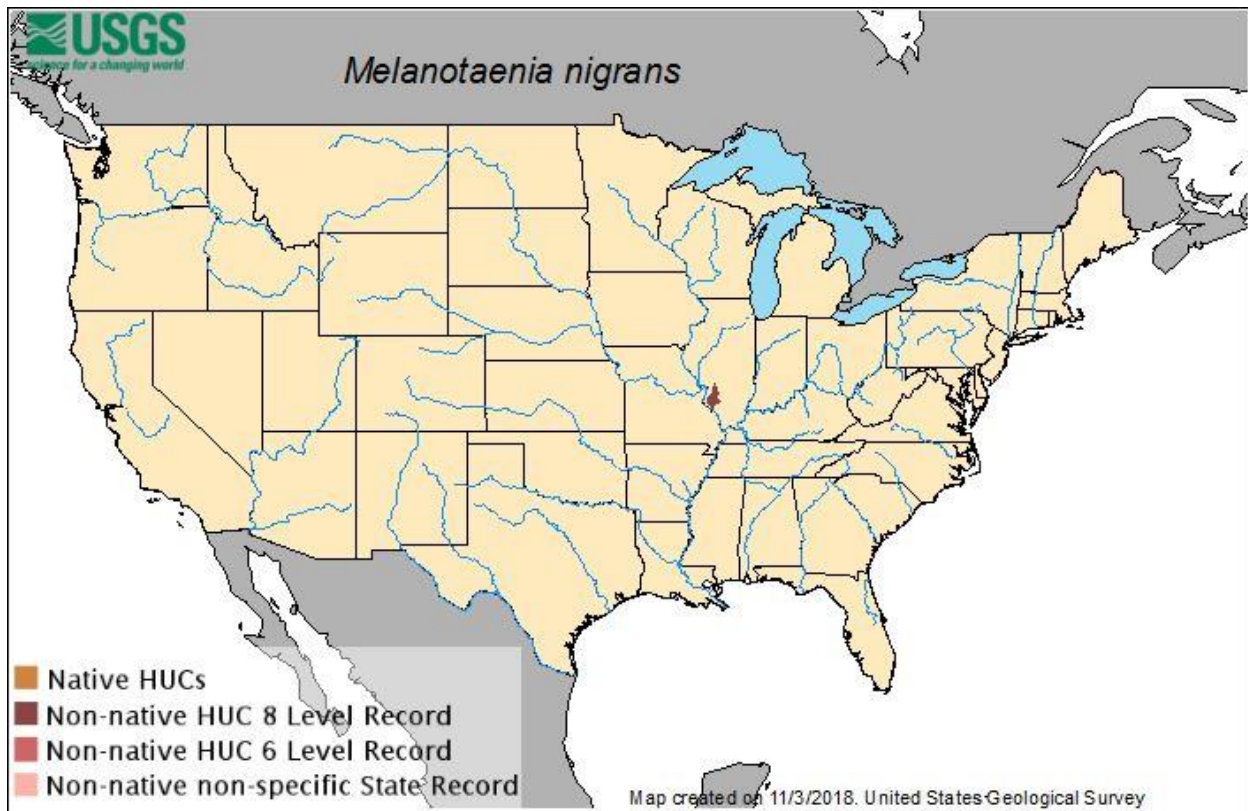


Figure 2. Known distribution of *Melanotaenia nigrans* in the United States. Map from Nico (2019). Location in Illinois does not represent an established population and will not be used in the climate match.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for the contiguous United States was low in the northern half of the States. Areas of medium and high climate match were found throughout the southern States with the highest match along the border of Mexico. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.072, a medium climate score. (Scores between 0.005 and 0.103, exclusive, are classified as medium.) Arizona, Florida, New Mexico, and Texas had high individual climate scores. California and Georgia had medium climate scores while all remaining States had low individual scores.

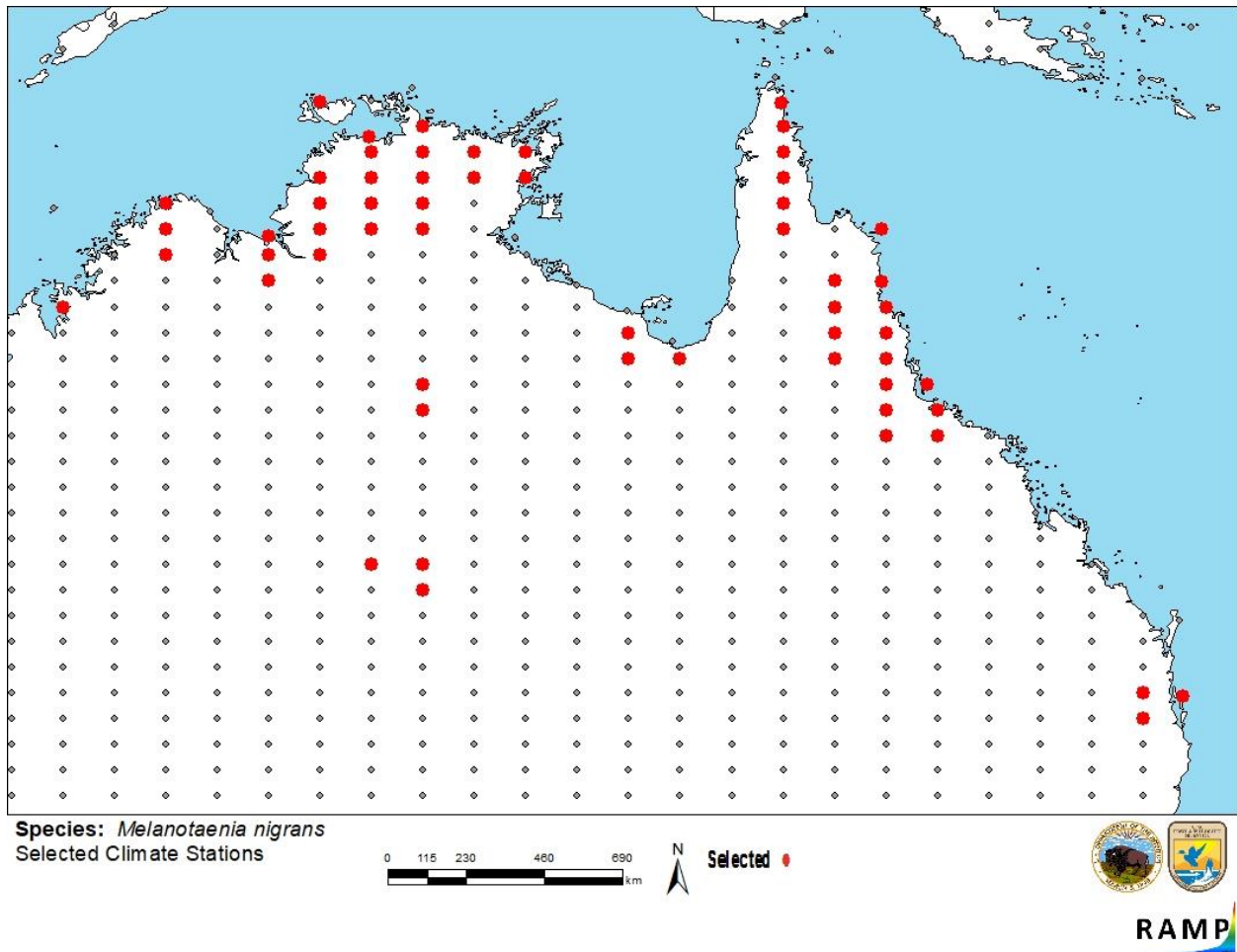


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in Australia selected as source locations (red) and non-source locations (gray) for *Melanotaenia nigrans* climate matching. Source locations from GBIF Secretariat (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

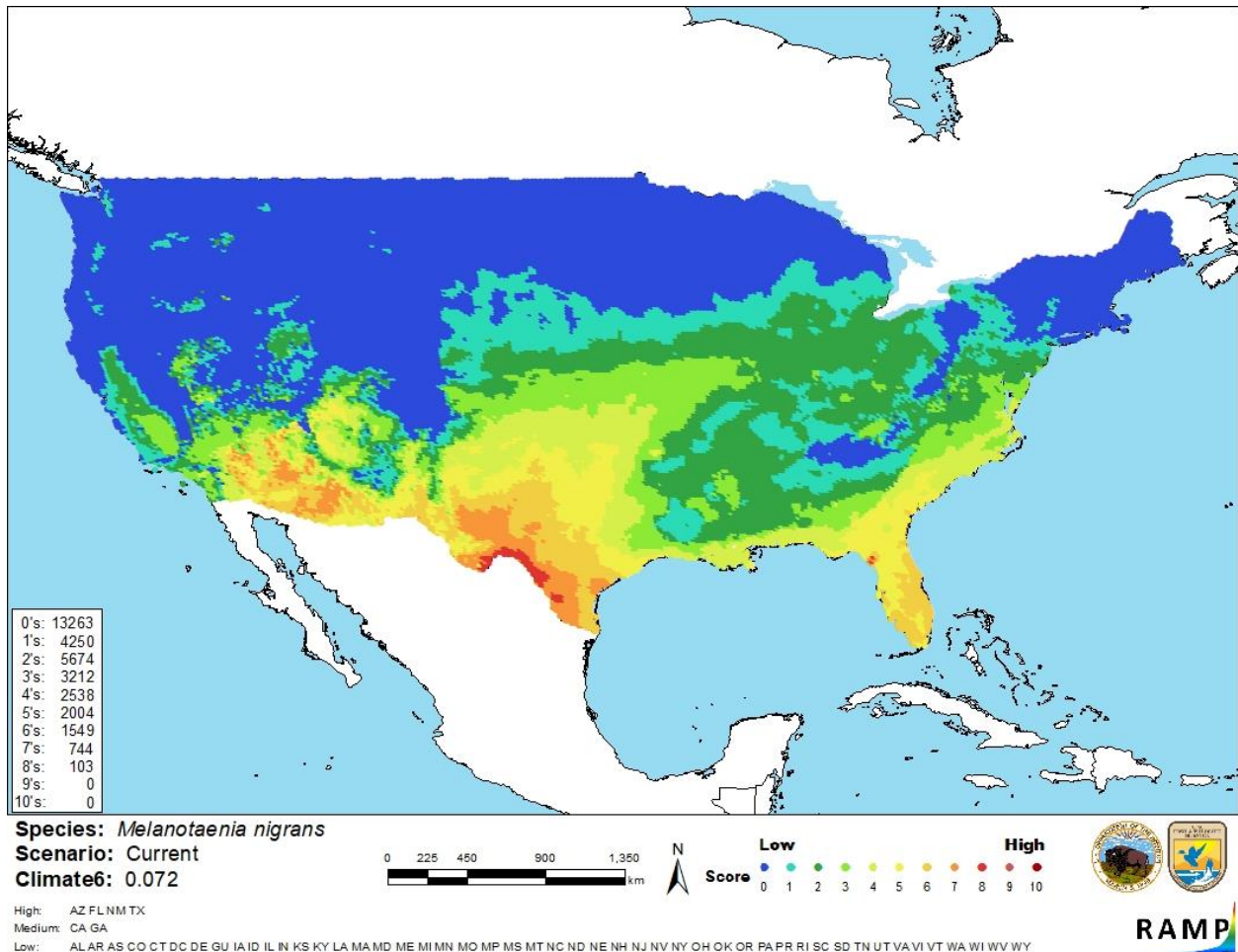


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Melanotaenia nigrans* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

8 Certainty of Assessment

Certainty of assessment is low for *Melanotaenia nigrans*. Limited information is available on this species. Some biological and ecological information was available. It was reported as introduced in Illinois in the early 1900s but no individuals have been seen since, and there was

no information found regarding impacts of introduction. No specific trade information was found.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Melanotaenia nigrans is a tetra (fish) endemic to tropical Australia. The history of invasiveness is No Known Nonnative Population. *M. nigrans* has been reported in Illinois and Philippines. The population in Illinois did not become established and no information on impacts of introduction have been reported. The status of the introduction in the Philippines is unknown. This fish is found in the aquarium trade but it is unclear as to what extent. The climate match for the contiguous United States is medium. Arizona, Florida, New Mexico, and Texas had individually high climate scores while California and Georgia had medium climate scores. The certainty of assessment is low. The overall risk assessment category for *Melanotaenia nigrans* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Medium**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information:** No additional remarks.
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

Fricke R, Eschmeyer WN, Van der Laan R, editors. 2019. Eschmeyer's catalog of fishes: genera, species, references. Available:
<http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (May 2019).

Froese R, Pauly D, editors. 2019. *Melanotaenia nigrans* (Richardson, 1843). FishBase. Available: <https://www.fishbase.de/summary/Melanotaenia-nigrans.html> (May 2019).

GBIF Secretariat. 2019. GBIF backbone taxonomy: *Melanotaenia nigrans* (Richardson, 1843). Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2411677> (May 2019).

[ITIS] Integrated Taxonomic Information System. 2019. *Melanotaenia nigrans* (Richardson, 1843). Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=165981#null (May 2019).

Nico L. 2019. *Melanotaenia nigrans* (Richardson, 1843). Gainesville, Florida: U. S. Geological Survey, Nonindigenous Aquatic Species Database. Available: <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=776> (May 2019).

[OIE] World Organisation for Animal Health. 2019. OIE-listed diseases, infections and infestations in force in 2019. Available: <http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/> (June 2019).

Poelen JH, Simons JD, Mungall CJ. 2014. Global Biotic Interactions: an open infrastructure to share and analyze species-interaction datasets. *Ecological Informatics* 24:148–159.

Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.

11 Literature Cited in Quoted Material

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

Allen GR, Midgley SH, Allen M. 2002. Field guide to the freshwater fishes of Australia. Perth, Western Australia: Western Australian Museum.

Baensch HA, Riehl R. 1985. Aquarien atlas. Volume 2. Melle, Germany: Mergus, Verlag für Natur-und Heimtierkunde GmbH.

Breder CM, Rosen DE. 1966. Modes of reproduction in fishes. Neptune City, New Jersey: T.F.H. Publications.

Mills D, Vevers G. 1989. The tetra encyclopedia of freshwater tropical aquarium fishes. New Jersey: Tetra Press.

O'Donnell DJ. 1935. Annotated list of the fishes of Illinois. Illinois Natural History Survey Bulletin 20(5):473–500.

Smith PW. 1965. A preliminary annotated list of the lampreys and fishes of Illinois. Illinois Natural History Survey. Biological Notes 54.