

# Broadstripe Topminnow (*Fundulus euryzonus*)

## Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2017

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Photo: *Fundulus euryzonus* by Richard L. Mayden. Photo has been cropped. Licensed under Creative Commons BY-NC-SA. Available: <http://eol.org/pages/218380/overview>. (December 2017).

## 1 Native Range and Status in the United States

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### Native Range

From Froese and Pauly (2017):

“North America: occurs only in Tangipahoa and upper Amite River systems (Lake Pontchartrain drainage) in Mississippi and Louisiana, USA.”

### Status in the United States

From Schaefer et al. (2009):

“*Fundulus euryzonus* has a much more restricted range, being endemic to the Lake Pontchartrain drainage of Louisiana and Mississippi (Suttkus & Cashner 1981).”

From Ross (2001):

“Conservation Status: Mississippi: special concern. The limited distribution and ongoing habitat alteration place populations of the broadstripe topminnow at risk.”

From NatureServe (2013):

“This species is listed as Vulnerable because its extent of occurrence is less than 5000 sq km, area of occupancy probably is less than 2000 sq km, number of locations may not exceed 10, and habitat is subject to ongoing alteration. Population size is unknown.”

## Means of Introductions in the United States

No known introductions. Species is native to Louisiana and Mississippi (Froese and Pauly 2017).

## Remarks

From Louisiana Department of Wildlife and Fisheries (2017):

“Very similar in appearance to the blackspotted topminnow and the blackstripe topminnow.”

From Schaefer et al. (2009):

“Two ecologically similar topminnow species (*Fundulus olivaceus* and *F. euryzonus*) were studied in a contact zone in the West Fork of the Amite River of the Lake Pontchartrain drainage. [...] Hybridisation [sic] was generally rare with only nine of 244 genotyped topminnows exhibiting evidence of hybrid ancestry.”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia  
Subkingdom Bilateria  
Infrakingdom Deuterostomia  
Phylum Chordata  
Subphylum Vertebrata  
Infraphylum Gnathostomata  
Superclass Osteichthyes  
Class Actinopterygii  
Subclass Neopterygii  
Infraclass Teleostei  
Superorder Ostariophysi  
Order Cyprinodontiformes  
Suborder Cyprinodontoidae  
Family Fundulidae

Genus *Fundulus*

Species *Fundulus euryzonus* Suttkus and Cashner, 1981 –  
broadstripe topminnow”

“Taxonomic Status: Valid.”

## **Size, Weight, and Age Range**

From Froese and Pauly (2017):

“Maturity: Lm ? range ? - ? cm. Max length : 9.0 cm TL male/unsexed; [Huber 1996]; common length : 5.9 cm TL male/unsexed; [Hugg 1996]”

## **Environment**

From Froese and Pauly (2017):

“Freshwater; benthopelagic; non-migratory.”

From NatureServe (2013):

“Habitat includes quiet pools and backwaters of creeks and small rivers; major river tributaries, not in small headwater tributaries most frequently this species occurs at the surface along overhanging banks, overhanging partially submerged shrubs or trees, or around stumps, snags, and living trees standing in water close to the bank (Lee et al. 1980, Ross 2001, Page and Burr 2011).”

## **Climate/Range**

From Froese and Pauly (2017):

“Temperate; 33°N - 31°N”

From NatureServe (2013):

“Range includes the Tangipahoa and upper Amite river systems (Lake Pontchartrain drainage), Louisiana and Mississippi (Page and Burr 2011).”

## **Distribution Outside the United States**

Not reported outside of the United States.

## **Means of Introduction Outside the United States**

No known introductions.

## Short Description

From Ross (2001):

“This is a slender topminnow with a broad, purplish brown lateral stripe; a pointed snout; and a terminal mouth. The caudal fin is rounded. The wide lateral stripe covers at least 50% of the pectoral fin base; stripe width varies from 33 to 50% of body depth. The dorsal and ventral outlines of the head are the same, with the head wedge shaped in lateral profile. HL goes into SL 3.3- 4.3 times. The dorsal fin is set well back on the body. The dorsal fin origin is posterior to the origin of the anal fan, and the dorsal and anal fins are more elongate in males than females. There are 32-36 SC, 7-8 (6-9) GR, 6-9 dorsal rays, 10-13 anal rays, 13-14 (11-16) pectoral rays, and 6 pelvic rays (modified in part from Suttikus and Cashner 1981).”

“The back and sides are yellowish to olive, with scattered black spots. The underside of the body is unpigmented, except around the anal fin and caudal peduncle. In addition, there are concentrations of dark pigment on the underside of the head posterior to the jaw joint. The dorsal fin has numerous distinct spots; spotting on the sides varies from sparse to moderately dense. Males lack the vertical extensions on the lateral stripe and seen in other fundulids; the upper and lower margins of the lateral stripe vary from smooth [*sic*] to rough, with the lower margin usually smooth in females. The pectoral and pelvic fins are generally clear, with scattered melanophores (modified from Suttikus and Cashner 1981).”

## Biology

From Ross (2001):

“The broadstripe topminnow is a surface-oriented species found almost always in close proximity to the shoreline of streams, over an average depth of 46.5 cm and at a current speed of about 7.5 cm/s. It is particularly common around snags, trunks of living trees, and near undercut banks that offer abundant cover in the form of tree roots (Suttikus and Cashner 1981; Petitfils 1986; Blanchard 1993, 1996).”

“The broadstripe topminnow obtains most of its food from the water surface, with adult dipterans (e.g., flies, mosquitoes), ants, spiders, and aphids being the most common items. Water column prey are also eaten, especially dipteran larvae and caddisflies. Other major components of the diet includes [*sic*] beetles and caterpillars, which are also likely taken at the surface (Petitfils 1986).”

“Spawning takes place from mid-March through early September, with peak spawning activity in May. Ripe, unfertilized eggs average 2.44 mm in diameter. Both the average size of the mature eggs and fecundity increase in large fish, with fecundity averaging 4.0-8.8 eggs in fish 42-63 mm SL. Fish reach sexual maturity at a length of 38-40 mm SL (Blanchard 1993).”

## Human Uses

From Froese and Pauly (2017):

“Aquarium: commercial”

## **Diseases**

No information available.

## **Threat to Humans**

From Froese and Pauly (2017):

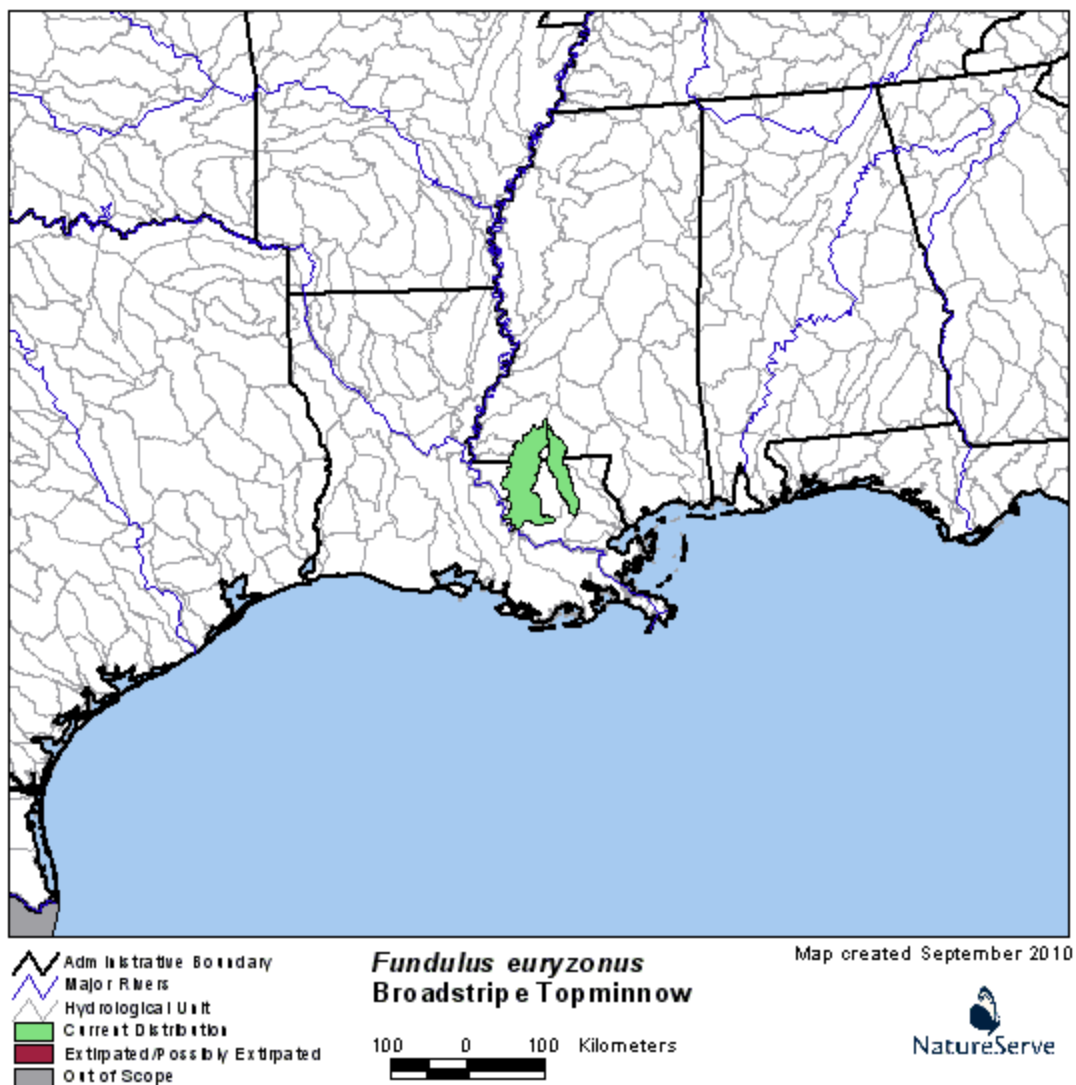
“Harmless”

## **3 Impacts of Introductions**

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There are no known introductions of *F. euryzonus*.

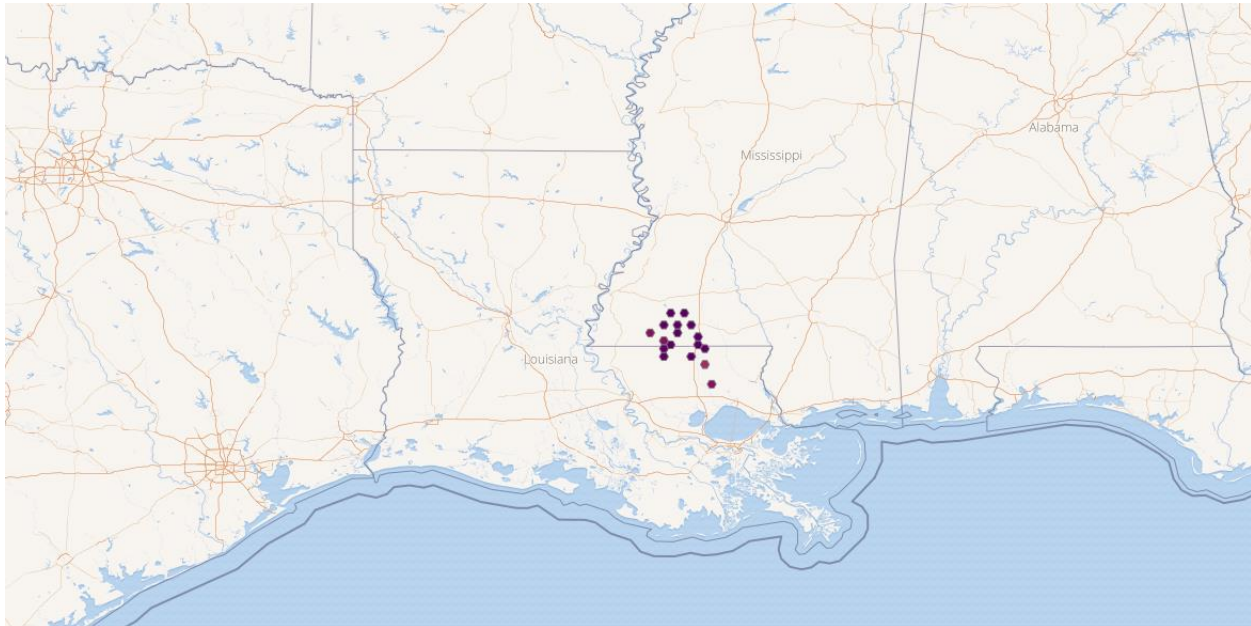
## 4 Global Distribution



**Figure 1.** Known global distribution of *Fundulus euryzonus* with current distribution (in southeastern Louisiana and southwestern Mississippi) by watershed in green. Map from NatureServe (2017).

## 5 Distribution within the United States

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**Figure 2.** Known distribution of *F. euryzonus* in the United States, reported from southeastern Louisiana and southwestern Mississippi. Points in the center of Louisiana and Mississippi were removed because the locality description did not match the position of the points. Map from GBIF (2017).

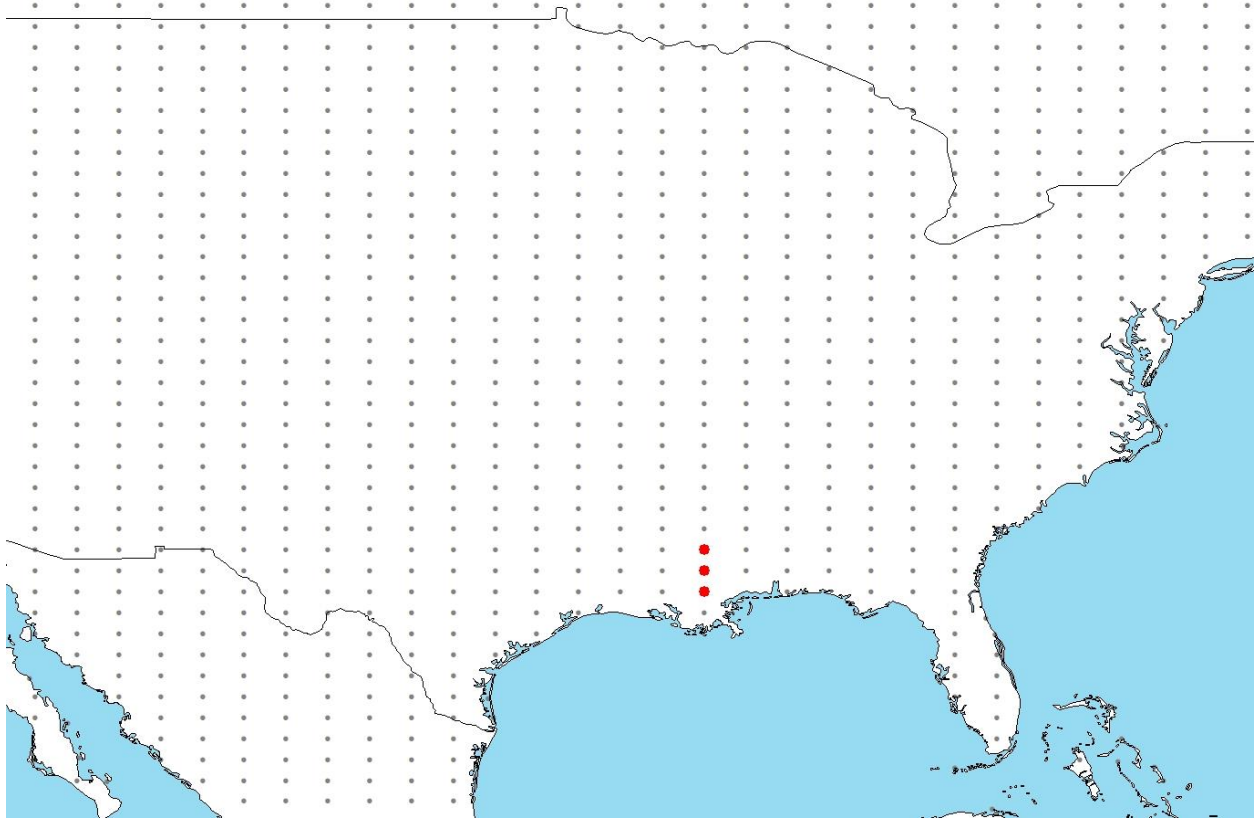
## 6 Climate Matching

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### Summary of Climate Matching Analysis

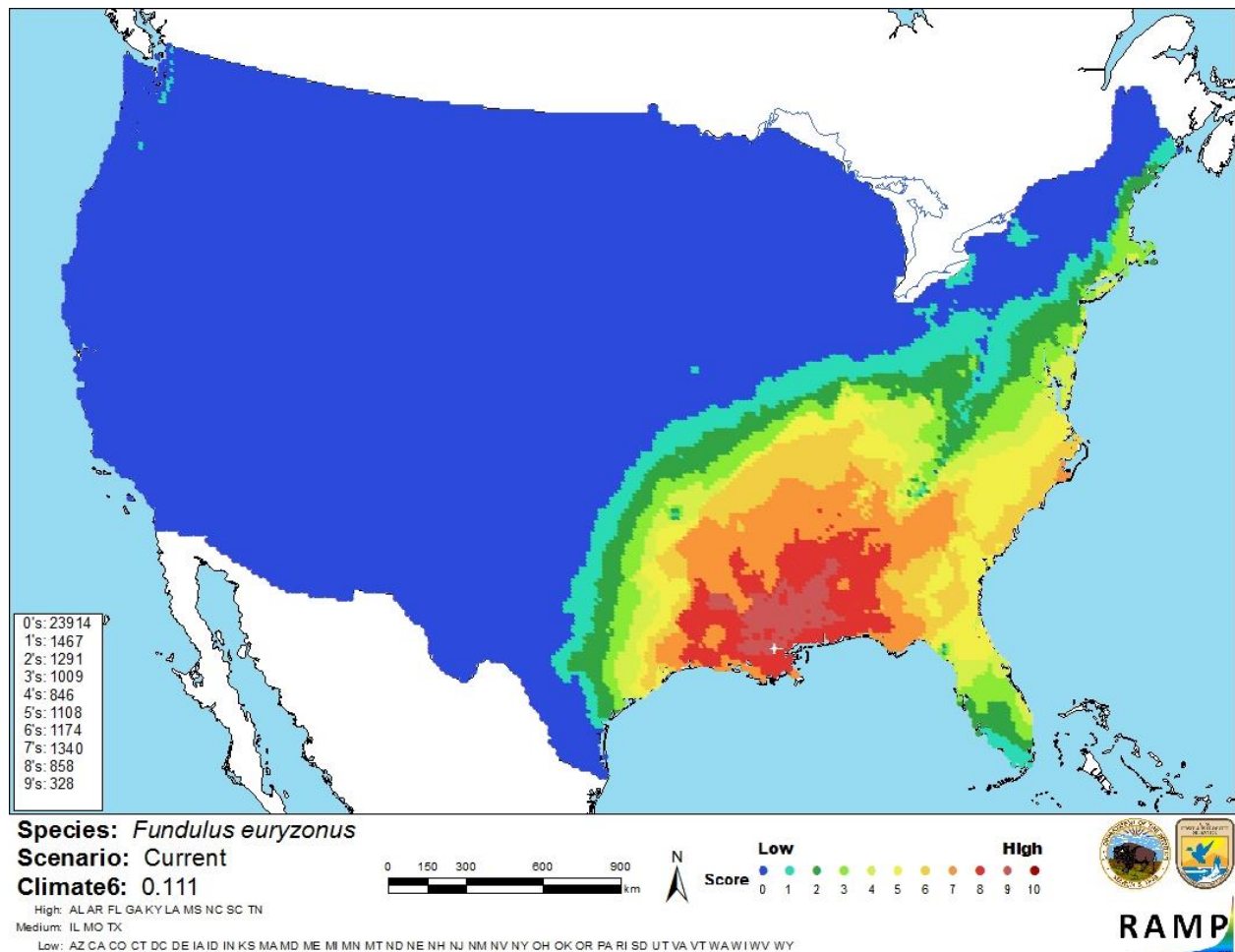
*F. euryzonus* is native to Louisiana and Mississippi. The highest climate matches are located in the species' native range, and decrease with increasing distance.

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous U.S. was 0.111 which is high.



**Figure 3.** RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; south-central United States) and non-source locations (gray) for *Fundulus euryzonus* climate matching. Source locations from GBIF (2017).





**Figure 4.** Map of RAMP (Sanders et al. 2014) climate matches for *Fundulus euryzonus* in the contiguous United States based on source locations reported by GBIF (2017). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

The High, Medium, and Low climate match categories are based on the following table:

| Climate 6: Proportion of<br>(Sum of Climate Scores 6-10) / (Sum of total Climate Scores) | Climate Match<br>Category |
|------------------------------------------------------------------------------------------|---------------------------|
| $0.000 \leq X \leq 0.005$                                                                | Low                       |
| $0.005 < X < 0.103$                                                                      | Medium                    |
| $\geq 0.103$                                                                             | High                      |

## 7 Certainty of Assessment

Information on the biology and distribution of this species is readily available. There are no documented introductions of *F. euryzonus* outside of its native range, so its history of invasiveness is uncertain. However, given this species is listed as Vulnerable (NatureServe 2013), spread is unlikely. Certainty of assessment for this species is medium.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Fundulus euryzonus* is native to Tangipahoa and upper Amite River system (Lake Pontchartrain drainage) in Mississippi and Louisiana. *F. euryzonus* is a small topminnow that can be found in quiet backwaters of small streams (NatureServe 2013). Climate match for this species is high, with highest matches in its native range. *F. euryzonus* is a species of special concern in Mississippi due to its limited habitat distribution and ongoing habitat alterations (Ross 2001). It is also listed as “Vulnerable” by IUCN (NatureServe 2013). Since it has not been introduced outside of its native range, its history of invasiveness is uncertain. However, its imperiled status suggests that it is unlikely to spread and establish. The overall risk categorization for this species is uncertain.

### Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec.6): High**
- **Certainty of Assessment (Sec. 7): Medium**
- **Overall Risk Assessment Category: Uncertain**

## 9 References

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**Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.**

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## 10 References Quoted But Not Accessed

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**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.**

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Petitfils 1986. [*Source did not provide complete citation for this reference.*]

Suttkus, R.D., and R.C. Cashner. 1981. A new species of cyprinodontid fish, genus *Fundulus* (*Zygonectes*), from Lake Pontchartrain tributaries in Louisiana and Mississippi. *Bulletin of the Alabama Museum of Natural History* 6:1-17.