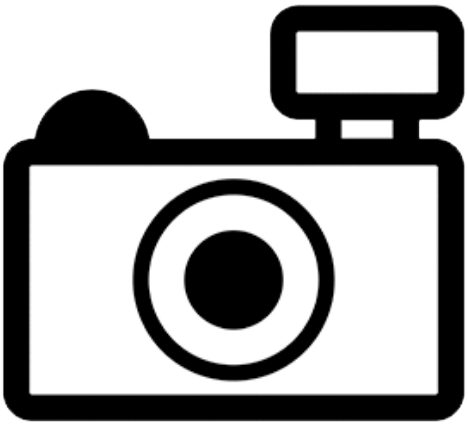
Niger Tetra (*Arnoldichthys spilopterus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2014
Revised, December 2015, November 2016, October 2017
Web Version, 7/13/2018



1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2014):

"Africa: lower Niger and Ogun rivers in Nigeria [Paugy 1990, 2003]."

From Olaosebikan and Lalèyè (2010):

"This species is found fewer than 10 locations in Nigeria mainly in a region affected by oil exploration and the other by deforestation. The extent of occurrence and area of occupancy thresholds are estimated at less than 20,000 km² and less than 2,000 km², respectively."

Status in the United States

No records of *Arnoldichthys spilopterus* introductions to the wild in the United States were found.

Chapman et al. (1994) list *Arnoldichthys spilopterus* as imported into the United States in October 1992 for the aquarium trade.

Means of Introductions in the United States

No records of *Arnoldichthys spilopterus* introductions to the wild in the United States were found.

Chapman et al. (1994) list *Arnoldichthys spilopterus* as imported into the United States in October 1992 for the aquarium trade.

Remarks

From Olaosebikan and Lalèyè (2010):

"Red List Category & Criteria: Vulnerable B1ab(ii,iii,v)+2ab(ii,iii,v) ver 3.1"

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2014):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Characiformes
Family Alestiidae
Genus *Arnoldichthys* Myers, 1926
Species *Arnoldichthys spilopterus* (Boulenger, 1909)"

According to Eschmeyer et al. (2017), *Arnoldichthys spilopterus* (Boulenger 1909) is the valid name for this species. *Arnoldichthys spilopterus* was originaly described as *Petersius spilopterus* Boulenger 1909.

Size, Weight, and Age Range

From Froese and Pauly (2014):

"Max length: 9.6 cm SL male/unsexed; [Paugy 1990]"

Environment
From Froese and Pauly (2014):

"Freshwater; pelagic; pH range: 6.0 - 8.0; dH range: 5 - 19. […]; 23°C - 28°C [assumed to be recommended aquarium temperature range] [Riehl and Baensch 1991]."

Climate/Range
From Froese and Pauly (2014):

"Tropical; […]."

Distribution Outside the United States
Native
From Froese and Pauly (2014):

"Africa: lower Niger and Ogun rivers in Nigeria [Paugy 1990, 2003]."

From Olaosebikan and Lalèyè (2010):

"This species is found fewer than 10 locations in Nigeria mainly in a region affected by oil exploration and the other by deforestation. The extent of occurrence and area of occupancy thresholds are estimated at less than 20,000 km² and less than 2,000 km², respectively."

Introduced
No reliable records of *Arnoldichthys spilopterus* introductions into the wild were found.

Tan and Tong (1989) list *Arnoldichthys spilopterus* as introduced in aquaculture in China for ornamental trade.

Liao and Liu (1989) list *Arnoldichthys spilopterus* as introduced to Taiwan but are not clear on if the species was introduced in the wild or in captive culture.

Means of Introduction Outside the United States
No reliable records of *Arnoldichthys spilopterus* introductions into the wild were found.

Short Description
From Froese and Pauly (2014):

"Anal spines: 0; Anal soft rays: 14 [Paugy 1990, 2003]."

"Diagnosis: scales distinctly larger above than below lateral-line; 8 teeth in outer tooth row of upper jaw; parietal fontanel absent [Paugy 1990, 2003].

Description: upper jaw prominent; two tooth rows on premaxilla, the outer row with 8, the inner with 12 or 13 teeth; mandible with single row of rather numerous (16-20) outer teeth; none of fins filamentous; anal fin with 3 unbranched and 11 branched rays; sexual dimorphism on anal fin: females - hyaline with black spot on rays beneath adipose fin, males - lemon yellow (sometimes yellow-ochre) with 5 dark or black bands and colored margin [Paugy 1990, 2003].

Coloration: live specimens have two lateral bands, the upper bad [sic] is red-orange, the lower blue-green; upper part of eye red; dorsal fin with white-edged black spot lined with a clear zone which occupies 2/3 of the anterior portion of the dorsal; preserved specimens have light dorsal region with black dots on scale centres; sides with light longitudinal band and dark lower half of body. Back, snout and median rays of caudal fin (apart from blotches on dorsal and anal fins) dark [Paugy 1990, 2003]."

"Sexual dimorphism affecting the colour of the anal fin [Paugy 1990, 2003]."

Biology

From Froese and Pauly (2014):

"Feeds on worms, insects and crustaceans. In aquaria, female lays up to 1000 eggs, after vigorous driving by the male, which hatch in 30 to 34 hours [Mills and Vevers 1989]."

Human Uses

From Froese and Pauly (2014):

"Aquarium: commercial"

"Aquarium keeping: in groups of 5 or more individuals; minimum aquarium size 100 cm."

From Olaosebikan and Lalèyè (2010):

"This species is an important commercial aquarium species. It is possibly being bred in captivity, but it is definitely still harvested from the wild."

"Since there is an extensive aquaria trade in this fish, mainly by wild capture, it can be inferred that the stock may be on a downward trend."

Ukaonu et al. (2011) state that *Arnoldichthys spilopterus* are packaged 300 to a box and sold for $0.50 a piece when exported from Nigeria for the aquarium trade.

Diseases

No records of OIE reportable diseases were found.

From Froese and Pauly (2014):

"Hidden Viral Infection, Viral diseases

Viral Diseases (general), Viral diseases”

Threat to Humans

From Froese and Pauly (2014):

“Harmless”

3 Impacts of Introductions

No reliable records of *Arnoldichthys spilopterus* introductions into the wild were found.

4 Global Distribution

Figure 1. Known global distribution of *Arnoldichthys spilopterus*. Locations are in Nigeria. Map from GBIF Secretariat (2014).

5 Distribution Within the United States

No records of *Arnoldichthys spilopterus* introductions to the wild in the United States were found.

Chapman et al. (1994) list *Arnoldichthys spilopterus* as imported into the United States in October 1992 for the aquarium trade.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Arnoldichthys spilopterus* was low throughout the contiguous United States. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low, and no state had an individually high climate match.

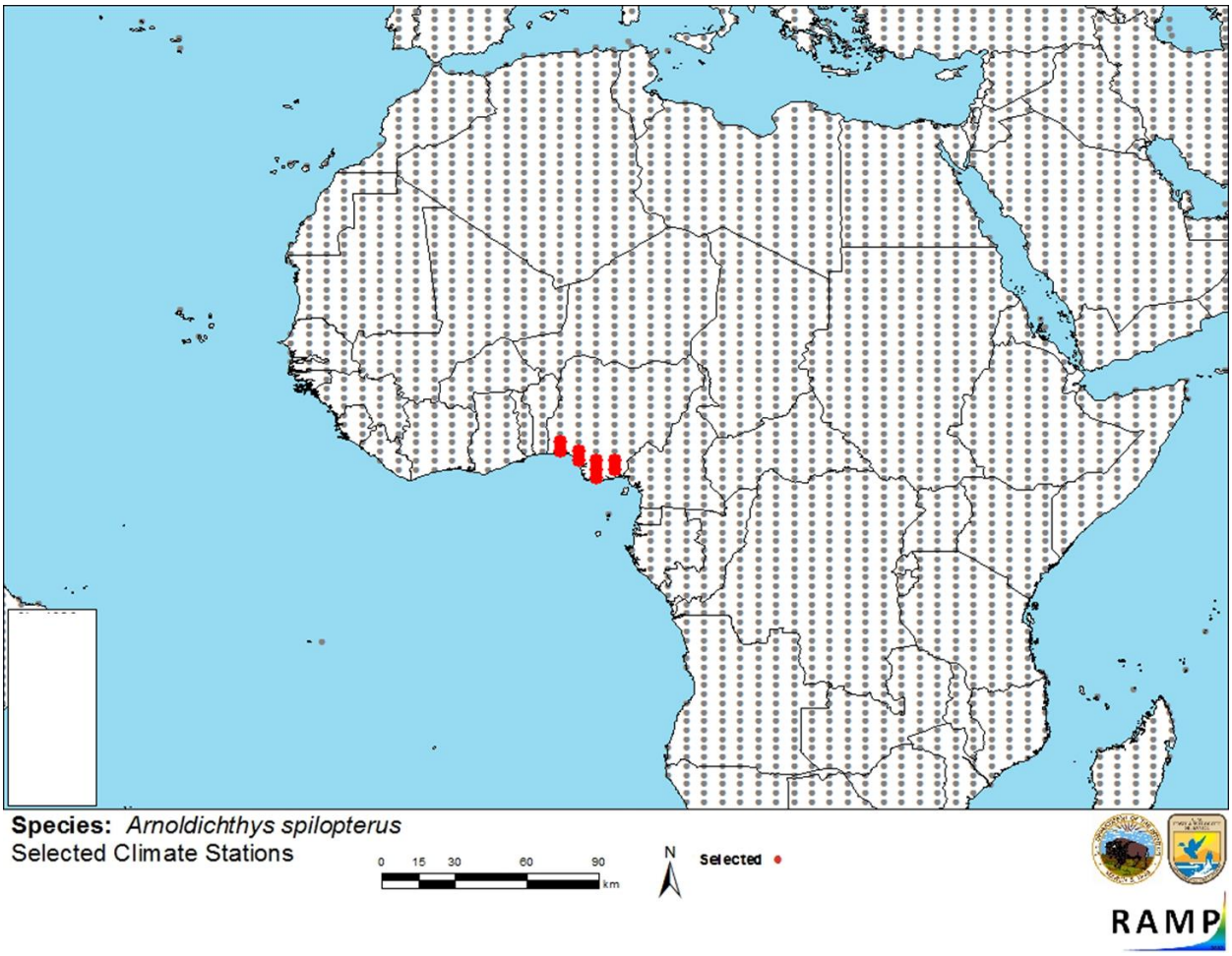


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Nigeria) and non-source locations (grey) for *Arnoldichthys spilopterus* climate matching. Source locations from GBIF Secretariat (2014).

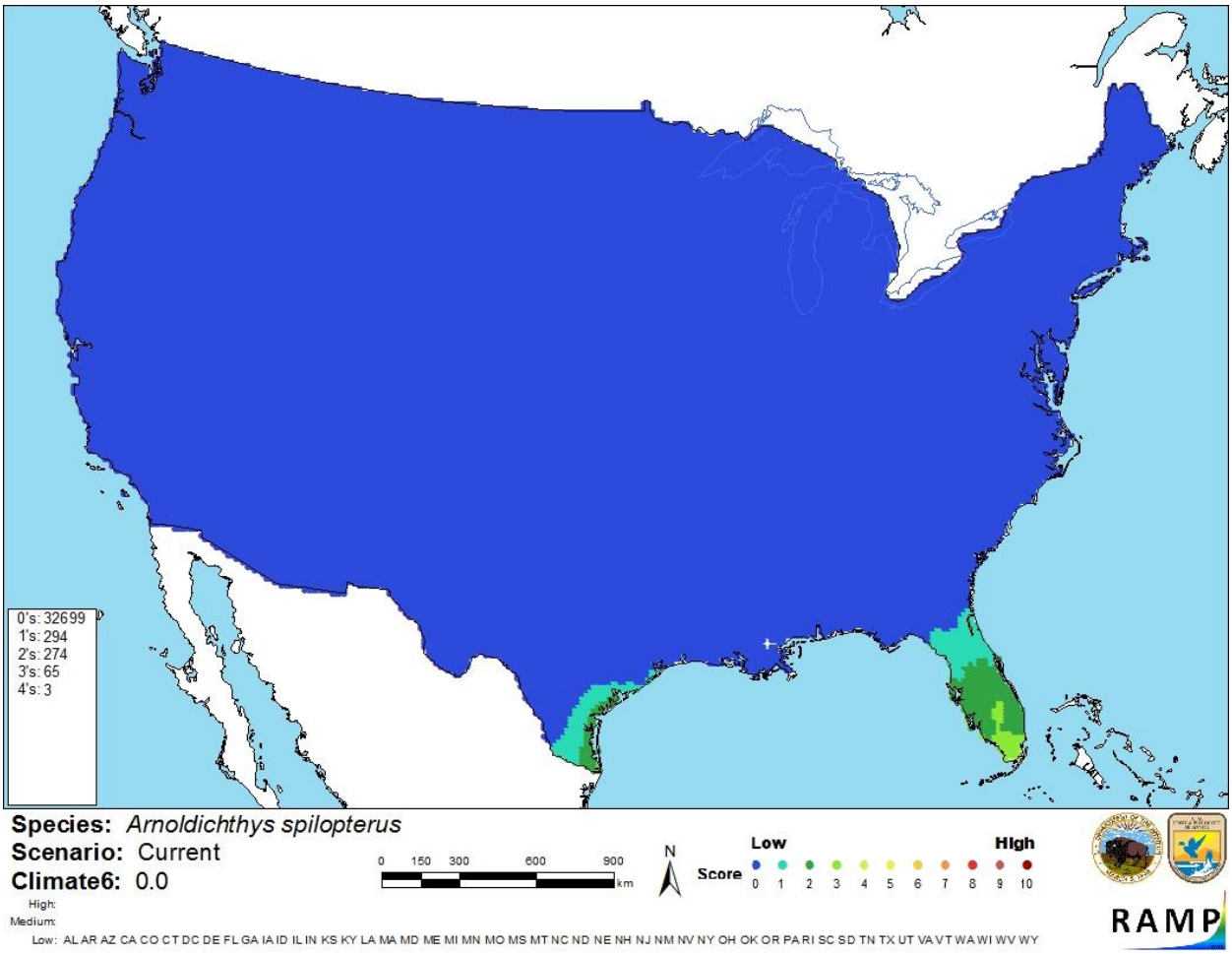


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Arnoldichthys spilopterus* in the contiguous United States based on source locations reported by GBIF Secretariat (2014). 0 = Lowest match, 10 = Highest match.

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

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

The certainty of assessment is low. There was good information available for *Arnoldichthys spilopterus*, including its global distribution. No confirmed records of introductions in the wild were found, therefore impacts of introductions are unknown. There is a record of introduction in Taiwan, but no information on whether this is in captivity for aquaculture.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Niger Tetra (*Arnoldichthys spilopterus*) is a fish native to Nigeria. The history of invasiveness is uncertain. There are no confirmed introductions of *A. spilopterus* in the wild. It was introduced to China for aquaculture. There is a record of its introduction to Taiwan, but no information on whether this introduction is within captivity for aquaculture or in the wild. *A. spilopterus* has been in commercial trade for aquariums for some time (Chapman et al. 1994) but no information on the volume of trade was found. The Climate 6 score was 0.000, low. The climate match does not indicate that there would be suitable habitat for this species within the United States. The certainty of assessment is low. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information** Chapman et al. (1994) list *Arnoldichthys spilopterus* as imported into the United States in October 1992 for the aquarium trade.
- **Overall Risk Assessment Category: Uncertain**

9 References

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

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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