

Barred Bichir (*Polypterus delhezi*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2011

Revised, November 2018

Web Version, 1/2/2020



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Africa: middle Congo River basin [Gosse 1984] in Democratic Republic of the Congo and Republic of Congo. Reports from the Shari (Chad basin) [Pellegrin 1904, 1907; Boulenger 1909] unconfirmed in [Gosse and Daget 2003].”

“[In Democratic Republic of the Congo:] Known from Pool Malebo [Poll 1939, 1959], middle Congo River [Schäfer 2004], Kasai [Pellegrin 1928], Lake Mai-Ndombe [Boulenger 1899], Lake Tumba [Poll 1942; Matthes 1964], Ngiri River (lower Ubangi tributary) [Luyeyi 1971], Yenge River (Tshuapa tributary, Ruki drainage) [Monsembula Iyaba and Stiassny 2013] and the Itimbiri [Decru 2015].”

“[In Republic of the Congo:] Known from the Likouala (middle Congo River basin) [Daget and Stauch 1963].”

“[In Central African Republic:] Report from the Chad basin (Fort Archambault) [Pellegrin 1904] unconfirmed in [Gosse and Daget 2003].”

Blessing (2013) reports *Polypterus delhezi* as an ornamental species endemic to Nigerian waters.

Status in the United States

From Shafland et al. (2008):

“Six Barred Bichir (all ca. 100 mm TL) were dipnetted and another observed by an avid aquarium hobbyist in February 2001 from the Cypress Creek Canal (C-14) in Broward County. This canal is regularly sampled by FWC biologists and none have been collected since by either us or the hobbyist (Miller, 2006 [aquarium hobbyist, Deerfield Beach, Florida, personal communication]). Although this is a relatively valuable and uncommon species in the aquarium trade, the fact that these fish were all approximately the same size, collected in close proximity to each other within three days, and none have been observed or collected since suggests they were the result of a single illegal release, none of which appear to have survived.”

From Neilson and Fuller (2018):

“Failed introduction: no additional specimens reported since 2001.”

According to Chapman et al. (1994), *Polypterus delhezi* were imported to the United States for the ornamental trade in October 1992.

Means of Introductions in the United States

From Neilson and Fuller (2018):

“Probable aquarium release. Bichirs are popular aquarium fishes.”

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2018), *Polypterus delhezi* is the valid name for this species; it is also the original name for the species.

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata

Infraphylum Gnathostomata
Superclass Actinopterygii
Class Cladistei
Order Polypteriformes
Family Polypteridae
Genus *Polypterus*
Species *Polypterus delhezi* Boulenger, 1899”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 44.0 cm TL male/unsexed; [Poll 1941]”

Environment

From Froese and Pauly (2018):

“Freshwater; demersal. [...]; 26°C - 28°C [assumed to be recommended aquarium temperature] [Baensch and Riehl 1985]”

Climate/Range

From Froese and Pauly (2018):

“Tropical; [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: middle Congo River basin [Gosse 1984] in Democratic Republic of the Congo and Republic of Congo. Reports from the Shari (Chad basin) [Pellegrin 1904, 1907; Boulenger 1909] unconfirmed in [Gosse and Daget 2003].”

“[In Democratic Republic of the Congo:] Known from Pool Malebo [Poll 1939, 1959], middle Congo River [Schäfer 2004], Kasai [Pellegrin 1928], Lake Mai-Ndombe [Boulenger 1899], Lake Tumba [Poll 1942; Matthes 1964], Ngiri River (lower Ubangi tributary) [Luyeyi 1971], Yenge River (Tshuapa tributary, Ruki drainage) [Monsembula Iyaba and Stiassny 2013] and the Itimbiri [Decru 2015].”

“[In Republic of the Congo:] Known from the Likouala (middle Congo River basin) [Daget and Stauch 1963].”

“[In Central African Republic:] Report from the Chad basin (Fort Archambault) [Pellegrin 1904] unconfirmed in [Gosse and Daget 2003].”

Introduced

No records of *Polypterus delhezi* introductions outside the United States were found.

Means of Introduction Outside the United States

No records of *Polypterus delhezi* introductions outside the United States were found.

Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 10 - 13; Anal spines: 0; Anal soft rays: 11 - 14. Subcylindrical body [Poll 1941]. Upper and lower jaws reaching to the same level, or the lower jaw is a little shorter [Poll 1941; Sterba 1959, 1963]. Number of dorsal finlets: 10-13 [Poll 1941; Britz 2004]. Pectoral fin not reaching dorsal fin origin [Boeseman 1957]. Ganoid scales [Poll 1941]: 52-58 lateral line scales, 36-40 scales around body, 12-17 predorsal scales [Poll 1941; Boeseman 1957; Cihar 1972; Britz 2004]. Dorsal side gray-olive colored, with 7 to 8 black transversal bars; ventral side yellowish, lighter on ventral side of head [Lambert 1960; Matthes 1964]. Spots are forming a black line between the lips and suboperculum [Matthes 1964]. Fins yellow with brown or black spots [Matthes 1964].”

Biology

From Froese and Pauly (2018):

“This carnivorous fish lives in streams, lakes and zones of flood [Matthes 1964]. Reproduction and spawning occurs during the rainy season [Matthes 1964].”

From Neilson and Fuller (2018):

“*Polypterus delhezi* is a demersal, air breathing species (Matthes 1964 in Froese and Pauly, 2012).”

Human Uses

From Froese and Pauly (2018):

“Fisheries: subsistence fisheries; aquarium: public aquariums”

According to Areola (no date), *Polypterus delhezi* has been exported from Nigeria for the ornamental trade.

Xiong et al. (2015) list *P. delhezi* as imported to China for the aquarium trade.

Youguang (2014) lists *P. delhezi* as present in the ornamental trade in Singapore.

Diseases

No information on diseases of *Polypterus delhezi* was found. **No records of OIE-reportable diseases (OIE 2020) were found for *P. delhezi*.**

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

From Neilson and Fuller (2018):

“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 Global Distribution

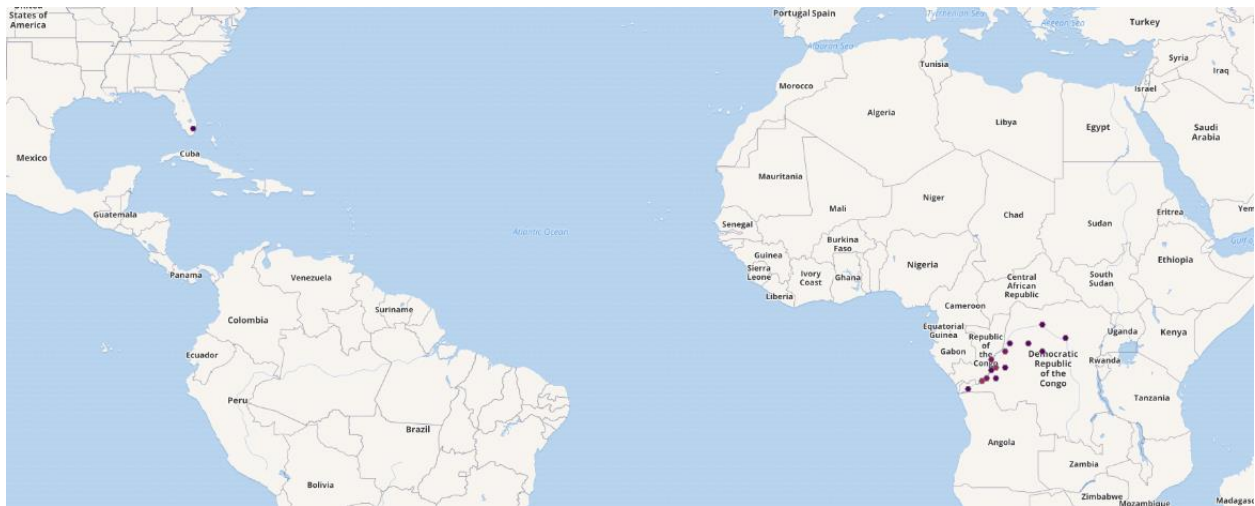


Figure 1. Known global distribution of *Polypterus delhezi*. Locations are in the Republic of the Congo, Democratic Republic of the Congo, and Florida. Map from GBIF Secretariat (2018). The location in Florida was not used to select source points for the climate match. The introduction failed to establish a wild population (Neilson and Fuller 2018).

Polypterus delhezi is reported as present in Nigeria (Blessing 2013) and the Central African Republic (Froese and Pauly 2018) but no occurrence records from those countries were found.

5 Distribution Within the United States

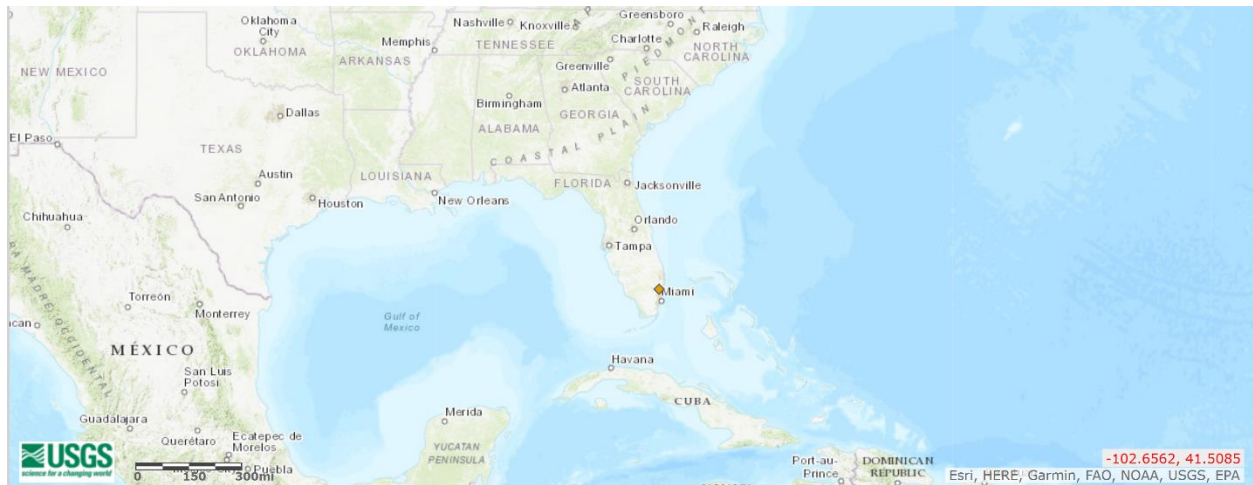


Figure 2. Known distribution of *Polypterus delhezi* in the United States. Location is on the southern Atlantic coast of Florida. Map from Neilson and Fuller (2018). The location Florida was not used to select source points for the climate match. The introduction failed to establish a wild population.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Polypterus delhezi* was medium for most of Florida and part of southern Louisiana with a very small area of high match at the southern tip of Florida. Everywhere else in the contiguous United States had a low climate match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.002, low. (Scores between 0.000 and 0.005, inclusive, are classified as low.) All States had low individual climate scores, except for Florida which had a medium individual climate score.

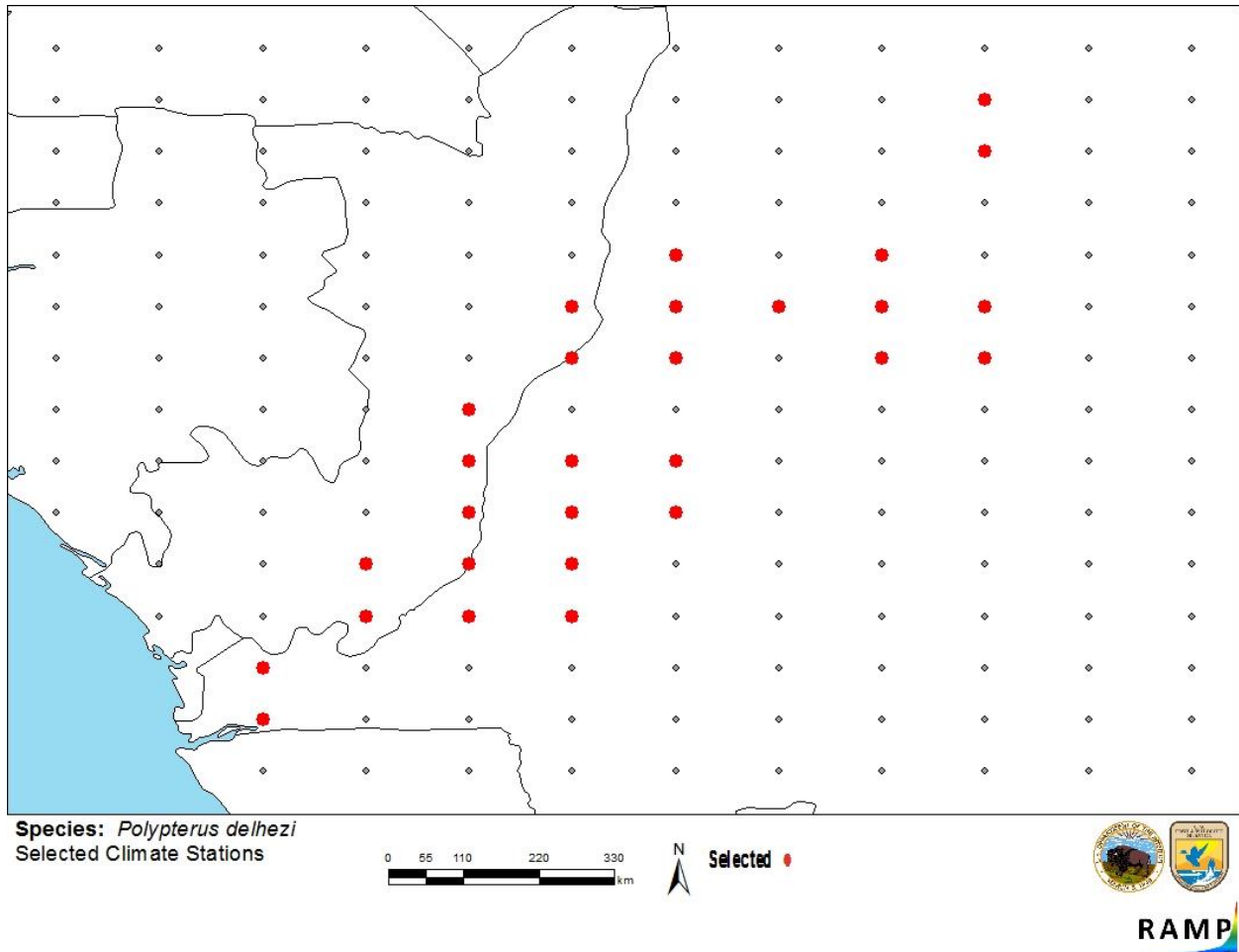


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in the Republic of the Congo and the Democratic Republic of the Congo selected as source locations (red) and non-source locations (gray) for *Polypterus delhezi* climate matching. Source locations from GBIF Secretariat (2018). Selected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

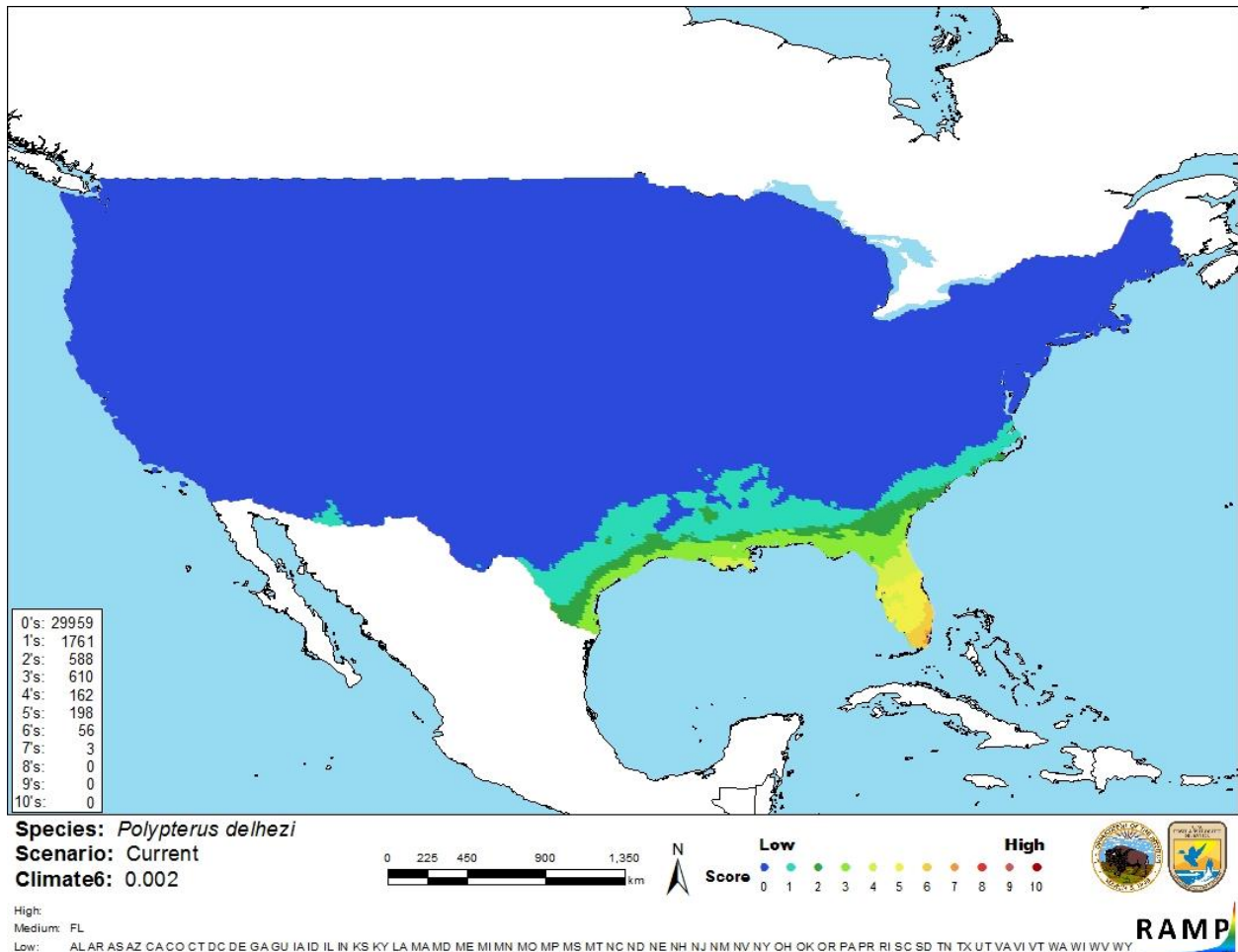


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Polypterus delhezi* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

The certainty of assessment for *Polypterus delhezi* is low. Some quality biological information is available for this species, including from peer-reviewed sources. One record of introduction was found but there is no information on impacts of introduction. *P. delhezi* is reported as native to Nigeria and Central African Republic but no detailed information was available and no georeferenced observations were available to use to select source points in the climate match.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Barred Bichir (*Polypterus delhezi*) is a species of freshwater fish native to the Congo River basin in Africa. This species is predatory and an air breather. It is widely used in the ornamental trade. However, no information on the volume or duration of time in trade was found. The history of invasiveness is uncertain. A single record of introduction was found. The introduction occurred in Florida and did not result in an established population. The climate match for the contiguous United States is low. There were areas of medium match in Louisiana and medium to high match in Florida. The certainty of assessment is low due to lack of information on impacts. 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:** No additional information.
- **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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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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