

Lobetoothed Piranha (*Pygopristis denticulata*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, May 2012
Revised, February 2019
Web Version, 3/22/2021

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



Photo: Clinton and Charles Robertson. Licensed under CC BY-SA 2.0 Generic. Available: https://commons.wikimedia.org/wiki/File:Pygopristis_denticulata.jpg. (February 2019).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2021):

“South America: Orinoco River basin, north and eastern Guiana Shield rivers; tributaries of the lower Amazon River [Brazil, French Guiana, Guyana, Suriname and Venezuela].”

“[In Brazil:] Known from the Amazon River basin [Jégu 2003]. Recorded from the Rio Tocantin [Planquette et al. 1996].”

“[In Guyana:] Occurs in the Essequibo and the Rupununi rivers.”

“Occurs in the Suriname River [Suriname].”

Status in the United States

No records of *Pygopristis denticulata* were found in the wild or in trade in the United States.

Piranhas are prohibited species in Arkansas (Arkansas GFC 2019). *Pygopristis denticulata* is a species of piranha.

From Arizona Office of the Secretary of State (2013):

“I. Fish listed below are considered restricted live wildlife: [...]

33. All species of the genera *Pygocentrus*, *Pygopristis*, and *serrasalmus*. Common name: piranha.”

From California Department of Fish and Wildlife (2019):

“It is unlawful to import, transport, possess, or release alive into this state, except under a revocable, nontransferable permit as provided in this chapter and the regulations pertaining thereto, any wild animal of the following species: [...]

Family Characidae (characins): Banded tetra, *Astyanax fasciatus*, All species of piranhas”

From Connecticut Secretary of State (2016):

“The importation or possession of piranha of the subfamily: Serrasalminae, genera *Serrasalmus*, *Serrasalmo*, *Pygocentrus*, *Teddyella*, *Rooseveltiella* and *Pygopristus*, and walking catfish of the family Clariidae, genera *Clarias*, *Heteropneustes*, *Dinotoplerus* and *Heterobranchus* is prohibited except that the Commissioner may at his discretion issue permits for the importation and possession, when it is in the public interest, for public display purposes, of specimens of piranha and walking catfish.”

The Florida Fish and Wildlife Conservation Commission has listed the piranha *P. denticulata* as a prohibited species. Prohibited nonnative species (FFWCC 2020), “are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities.”

Species of piranha (including *Pygopristis denticulata*) are prohibited as pets in Georgia (Georgia DNR 2020).

All species in the genus *Pygopristis* (as part of the subfamily Serrasalminae) are on Hawaii’s Prohibited Animal List (Hawaii Department of Agriculture 2019).

From Kentucky General Assembly (2019):

“The live aquatic organisms established in subsections (1) through (7) of this section shall not be imported, bought, sold, or possessed in aquaria:

(1) Subfamily Serrasalminae [which includes the genus *Pygopristis*] -piranha, piraya, pirae, or tiger characins;”

Possession of species of piranha (including *Pygopristis denticulata*) is prohibited in Louisiana (Louisiana State Legislature 2019).

From Mississippi Secretary of State (2019):

“All species of the following animals and plants have been determined to be detrimental to the State's native resources and further sales or distribution are prohibited in Mississippi. No person shall import, sell, possess, transport, release or cause to be released into the waters of the state any of the following aquatic species or hybrids thereof. [...]

Piranha and pirambebas Subfamily Serrasalminae [includes genus *Pygopristis*] **[includes all the piranhas] ****[all species]”

Pygopristis denticulata falls within Group IV of New Mexico’s Department of Game and Fish Director’s Species Importation List (New Mexico Department of Game and Fish 2010). Group IV species “are prohibited for the general public but may be allowed for, scientific study, department approved restoration and recovery plans, zoological display, temporary events/entertainment, use as service animal or by a qualified expert.”

From State of Nevada (2018):

“Except as otherwise provided in this section and NAC 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited: [...] All species in the genera *Serrasalmus*, *Serrasalmo*, *Pygocentrus*, *Teddyella*, *Rooseveltiella* and *Pygopristis*”

From Texas Parks and Wildlife (2020):

“The organisms listed here are legally classified as exotic, harmful, or potentially harmful. No person may possess or place them into water of this state except as authorized by the department. Permits are required for any individual to possess, sell, import, export, transport or propagate listed species for zoological or research purposes; for aquaculture (allowed only for Blue, Nile, or Mozambique tilapia, Triploid Grass Carp, or Pacific White Shrimp); or for aquatic weed control (for example, Triploid Grass Carp in private ponds). [...]

Piranhas, Family Characidae

All species of genera *Catoprion*, *Pristobrycon*, *Pygocentrus*, *Pygopristis*, and *Serrasalmus*”

From Virginia DWR (2020):

“A special permit is required, and may be issued by the Department, if consistent with the Department’s fish and wildlife management program, to import, possess, or sell the following non-native (exotic) amphibians, fish, mollusks, aquatic invertebrates, and reptiles: [...] piranhas,”

Means of Introductions in the United States

No introductions of *Pygopristis denticulata* were found in the United States.

Remarks

According to Froese and Pauly (2021), this species is rare in the wild.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2019), *Pygopristis denticulata* (Cuvier 1819) is the current valid name for this species.

From Froese and Pauly (2019):

“Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > [...] Actinopterygii (Class) > Characiformes (Order) > Serrasalminidae (Family) > *Pygopristis* (Genus) > *Pygopristis denticulata* (Species)”

Size, Weight, and Age Range

From Froese and Pauly (2021):

“Max length : 21.5 cm TL male/unsexed; [Freitas et al. 2014]”

Environment

From Froese and Pauly (2021):

“Freshwater, benthopelagic”

Climate

From Froese and Pauly (2021):

“Tropical”

Distribution Outside the United States

Native

From Froese and Pauly (2021):

“South America: Orinoco River basin, north and eastern Guiana Shield rivers; tributaries of the lower Amazon River [Brazil, French Guiana, Guyana, Suriname and Venezuela].”

“[In Brazil:] Known from the Amazon River basin [Jégu 2003]. Recorded from the Rio Tocantin [Planquette et al. 1996].”

“[In Guyana:] Occurs in the Essequibo and the Rupununi rivers.”

“Occurs in the Suriname River [Suriname].”

Introduced

No records of introduction outside of its native range were found.

Means of Introduction Outside the United States

No records of introduction outside of its native range were found.

Short Description

From Froese and Pauly (2021):

“Possesses powerful dentition that can cause serious bites.”

Biology

No information for biology of *Pygopristis denticulata* was found.

Human Uses

From Froese and Pauly (2021):

“Fisheries: commercial”

Diseases

According to Poelen et al. (2014) *Pygopristis denticulata* is host to *Calpidothecioides pygopristi*, *Calpidothecium*, and *Pithanothecium*.

No OIE-reportable diseases (OIE 2021) were found to be associated with *Pygopristis denticulata*.

Threat to Humans

From Froese and Pauly (2021):

“Traumatogenic”

“Possesses powerful dentition that can cause serious bites.”

3 Impacts of Introductions

No introductions of *Pygopristis denticulata* have been reported. Therefore there is no information on impacts of introductions.

P. denticulata is regulated in multiple States, see section 1.

4 History of Invasiveness

The History of invasiveness of *Pygopristis denticulata* is classified as No Known Nonnative Population. No records of introductions of *P. denticulata* were found.

5 Global Distribution



Figure 1. Known global distribution of *Pygopristis denticulata*. Locations in Brazil, Bolivia, Colombia, French Guiana, Guyana, Suriname, and Venezuela. Map from GBIF Secretariat (2019).

6 Distribution Within the United States

No records of *Pygopristis denticulata* were found in the wild in the United States.

7 Climate Matching

Summary of Climate Matching Analysis

Pygopristis denticulata had a generally low climate match throughout the contiguous United States. Areas of medium match were found in southern Texas along the Gulf coast and much of peninsular Florida. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, a low climate score (scores between 0.000 and 0.005, inclusive, are classified as low). All States had low individual climate 6 scores with the exception of Florida, which had a medium climate score.

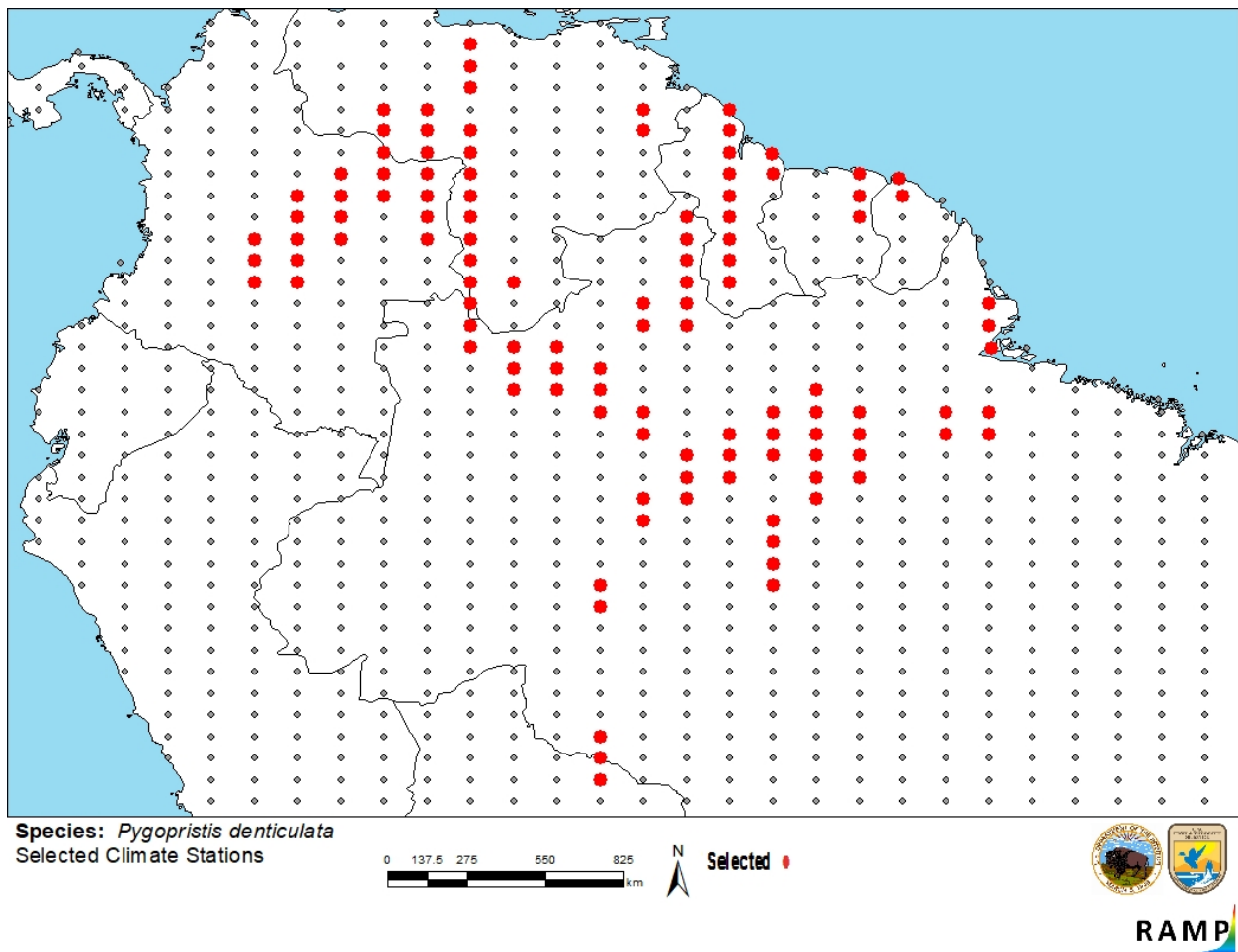


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in northern South America selected as source locations (red; Bolivia, Brazil, Colombia, French Guiana, Guyana, Suriname, Venezuela) and non-source locations (gray) for *Pygopristis denticulata* climate matching. Source locations 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.

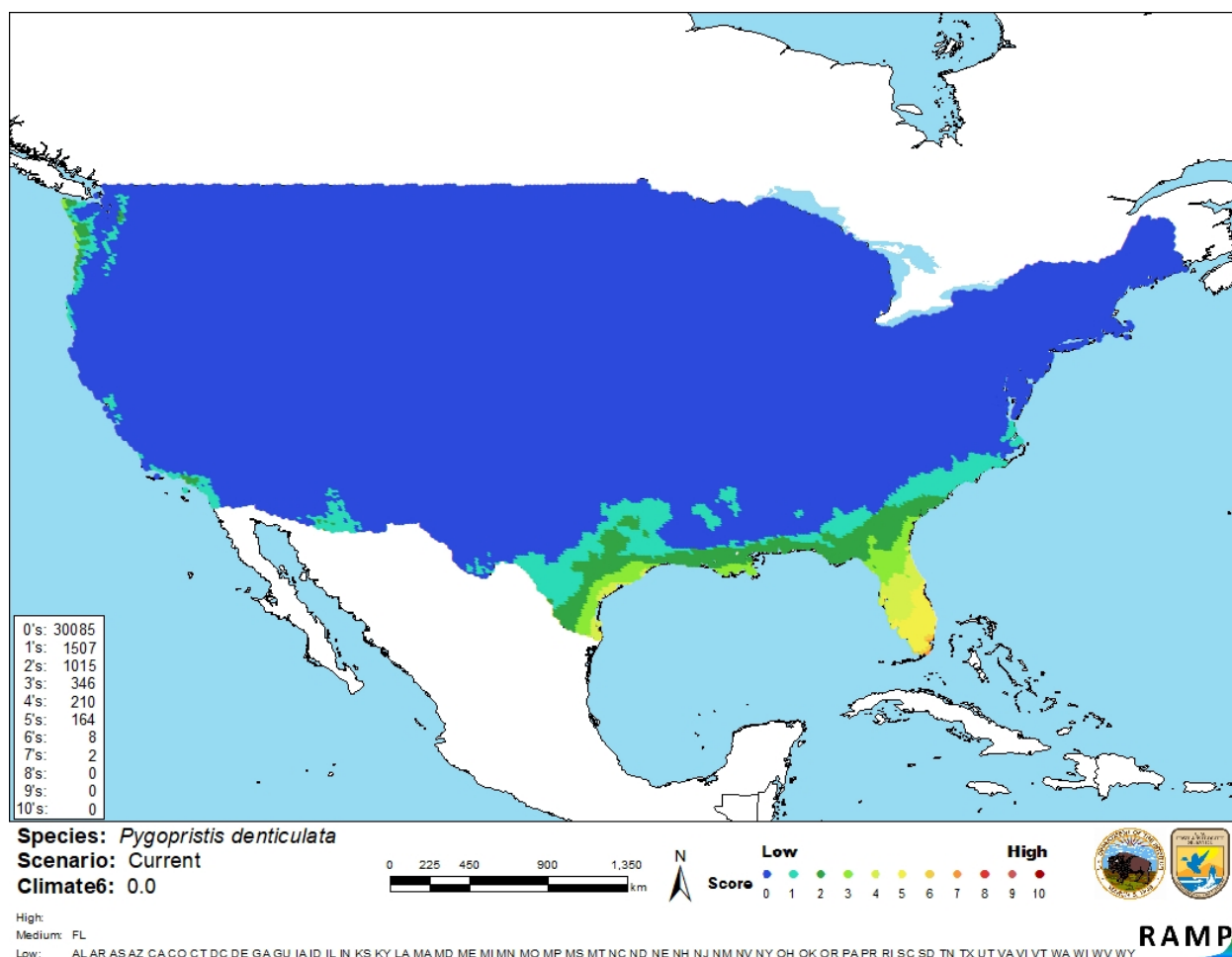


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Pygopristis denticulata* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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

The certainty of assessment for *Pygopristis denticulata* is low. Limited biological and ecological information is available on this species. The range of the species was well represented with georeferenced observations. No introductions have been reported anywhere outside of its native range.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Lobetoothed piranha (*Pygopristis denticulata*), is a tropical, freshwater ray-finned fish native to river drainages in northern South America from the Orinoco River to the Amazon River. Limited information is available about this species. This species possesses powerful dentition that are capable of harming humans. *P. denticulata* is regulated in multiple States. No introductions of *Pygopristis denticulata* have been recorded anywhere outside of the native range. History of invasiveness is classified as No Known Nonnative Population. The climate match for the contiguous United States is low. There were areas of medium match in peninsular Florida and along the coast of Texas. The certainty of assessment is low due to lack of information. The overall risk assessment for *Pygopristis denticulata* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Low**
- **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.

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- Froese R, Pauly D, editors. 2021. *Pygopristis denticulata* (Cuvier, 1819). FishBase. Available: <https://www.fishbase.de/summary/Pygopristis-denticulata.html> (March 2021).
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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.

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