

Serrasalmus medinai (a piranha, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2012
Revised, July 2018
Web Version, 7/24/2020

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



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1 Native Range and Status in the United States

Native Range

From Eschmeyer et al. (2018):

“Amazon and Orinoco River basins: Colombia and Venezuela.”

Status in the United States

This species has not been reported as introduced or established in the United States.

This species is in trade in the United States. For example:

From AquaScapeOnline (2018):

“Medinai Piranha (true) 2” (*Serrasalmus Medinai* [sic]) [...] Very Rare Piranha,
Our Price: \$250.00”

Possession or importation of fish of the genus *Serrasalmus*, or fish known as “piranha” in general, is banned or regulated in many States. Every effort has been made to list all applicable State laws and regulations pertaining to this species, but this list may not be comprehensive.

From Alabama Department of Conservation and Natural Resources (2019):

“No person, firm, corporation, partnership, or association shall possess, sell, offer for sale, import, bring, release or cause to be brought or imported into the State of Alabama any of the following live fish or animals: [...] Any Piranha or any fish of the genera *Serrasalmus*, *Pristobrycon*, *Pygocentrus*, *Catorprion*, or *Pygopristis*; [...]”

From Alaska State Legislature (2019):

“Except as provided in (b) - (d) of this section, no person may import any live fish into the state for purposes of stocking or rearing in the waters of the state.

(b) Live oysters native to and originating from the Pacific Coast of North America may be imported [...]

(c) Ornamental fish not raised for human consumption or sport fishing purposes may be imported into the state, but may not be reared in or released into the waters of the state. Fish wastes and waste water from ornamental fish may not be released directly into the waters of the state.

(d) Weathervane scallops originating from wild stocks or cultured stocks in the Southeastern Alaska and Yakutat Areas may be imported for aquaculture purposes and may be released only into the waters of the Southeastern Alaska and Yakutat Areas under a stock transport permit required by this chapter [...]

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

““Restricted live wildlife” means wildlife that cannot be imported, exported, or possessed without a special license or lawful exemption.”

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

Piranha, all species of the genera *Serrasalmus*, *Serrasalmo*, *Phygocestrus*, *Teddyella*, *Rooseveltiella*, and *Pygopristis* [...]

From Arkansas Game and Fish Commission (2019):

“It is unlawful to import, transport, or possess any species commonly known as [...] piranha [...].”

“EXCEPTION: These species may be possessed for display and educational purposes by written permit approved by the Commission.”

From California Department of Fish and Wildlife (2019):

“All species of piranha are on California’s list of restricted animals and cannot be imported, transported, or possessed without a permit.”

From Colorado Secretary of State (2019):

“For the following aquatic species or viable gametes thereof, because of the potential for a detrimental affect [sic] on existing fish and their habitat in Colorado, and except as enumerated in these regulations, or as authorized in writing by the Division of Wildlife for management purposes only; the release or the importation, transportation, stocking, sale, acquisition or possession for release is prohibited. Persons who have proof of possession issued prior to January 1,1978 or who obtain prior approval from the Division of Wildlife may possess the following species:

a. Piranha: including members of the genera *Serrasalmus*, *Roosevelthiella*, and *Pygocentrus*.”

From Connecticut Secretary of State (2016):

“The importation or possession of piranha of the subfamily: Serrasalminae, genera *Serrasalmus*, *Serrasalmo*, *Pygocentrus*, *Teddyella*, *Rooseveltiella* and *Pygopristus*, [...] 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 [...].”

FFWCC (2019) lists *S. medinai* as a prohibited nonnative species in Florida.

From Georgia Department of Natural Resources (2019):

“The animals listed below are examples of the exotic species regulated under Georgia Law. [...] The exotic species listed below, except where otherwise noted, may not be held as pets in Georgia. [...] Piranha; all species”

From Hawaii Department of Agriculture (2019):

“For example, the following are prohibited from entry or possession by private individuals in the State. [...] *Piranhas*”

From Idaho Office of the Administrative Rules Coordinator (2019):

“No person may possess, cultivate, import, ship, or transport any invasive species [...] into or through the state of Idaho following the effective date of this rule, unless the person possessing, importing, shipping or transporting has obtained a permit under Section 103, or unless otherwise exempt by this rule, as set forth in Section 104.”

“INVASIVE SPECIES – FISH. [...]

05. Piranhas, *Serrasalmus* spp., *Rosseveltiella* spp., *Pygocentrus* spp. [...]

From Illinois Department of Natural Resources (2015):

“For the purposes of Section 20-90 of the Fish and Aquatic Life Code [515 ILCS 5/20-90], the Aquatic Life Approved Species List is established. The following aquatic life categories will be considered approved for aquaculture, transportation, stocking, importation and/or possession in the State of Illinois.”

Serrasalmus medinai does not appear on the Aquatic Life Approved Species List for Illinois.

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 - piranha, piraya, pirae, or tiger characins; [...]

From Louisiana State Legislature (2019):

“No person shall have in possession or sell in this state [Louisiana] a piranha or Rio Grande Cichlid; except that, piranha may be possessed and displayed at the Aquarium of the Americas, Audubon Institute, New Orleans, as authorized by a special permit issued by the department, under conditions the department deems necessary to prevent their introduction into waters of the state.”

From Maine Department of Inland Fisheries and Wildlife (2019):

“Unrestricted List [...] (no permit needed): Maine law allows the Department to maintain a list of species of fish and wildlife, including tropical fish and invertebrates, which do not require an importation, exhibition, or possession permit, and may be traded by commercial pet shops.”

Serrasalmus medinai does not appear on the Maine Department of Inland Fisheries and Wildlife’s Unrestricted List.

From Massachusetts Division of Fisheries and Wildlife (2014):

“All aquarium trade fish may be kept without a permit except species categorically non-exempt pursuant to 321 CMR 9.01(3), and except that the following species are prohibited without a permit: [...]

(b) Piranha (*Pygocentrus* spp. and *Serrasalmus* spp.)”

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. However, species listed as prohibited may be allowed under a permitting process where environmental impact has been assessed.”

“[The list includes all piranhas and all species of] Subfamily Serrasalminae”

From State of Nevada (2018):

“Except as otherwise provided in this section and NAC [Nevada Administrative Code] 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited: [...]

Piranhas..... All species in the genera *Serrasalmus*, *Serrasalmo*, *Pygocentrus*, *Teddyella*, *Rooseveltiella* and *Pygopristis*”

From New Mexico Department of Game and Fish (2010):

“Species importation list group IV may be for live non-domesticated animals that are considered dangerous, invasive, undesirable, state or federal listed threatened, endangered, a furbearer or any other species of concern as identified by the director. The importation of these 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.”

All piranha and pacu (Family Characidae) are listed in Group IV of the Director’s Species Importation List for New Mexico.

From New York State Senate (2019):

“No person shall import, export, own, possess, acquire or dispose of live piranha fish (*Serrasalmus*, *Rooseveltiella* or *Pyrocentrus* [sic]), grass carp (*Ctenopharyngodon idella*) or hybrid grass carp within the state without a license or permit issued at the discretion of the department for scientific, biological or exhibition purposes.”

From North Carolina Office of Administrative Hearings (2019):

“It shall be unlawful to transport, purchase, possess, sell, or stock in the public or private waters of North Carolina any live individuals of [...] piranha; [...]”

From Oklahoma Secretary of State (2019):

“Until such time as is necessary for the Department of Wildlife Conservation to obtain adequate information for the determination of other harmful or potentially harmful exotic species, the importation into the State and/or the possession of the following exotic fish or their eggs is prohibited: [...]

“Piranha group: *Serrasalmus* spp., *Pygocentrus* spp., *Rooseveltiella* spp., *Catoprion* spp., *Hydrocynus* spp., and *Salminus* spp.”

From South Carolina Legislature (2019):

“A person may not possess, sell, offer for sale, import, bring, cause to be brought or imported into this State [South Carolina], or release in this State the following species at any stage of its life cycle: [...] piranha (all members of *Serrasalmus*, *Rooseveltiella*, and *Pygocentrus* genera) [...]

From Texas Parks and Wildlife (2019):

“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.”

“Piranhas, Family Characidae

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

From Utah Office of Administrative Rules (2019):

“All species of fish listed in Subsections (2) through (30) are classified as prohibited for collection, importation and possession [...]

(22) Piranha, (*Serrasalmus*, All species) family Characidae.”

From Virginia Department of Game and Inland Fisheries (2019):

“A special permit is required, and may be issued [sic] 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 Introduction into the United States

This species has not been documented as introduced or established in the United States.

Remarks

From Hansel (2007):

“In pet stores, this species is often mislabelled and sold as *Serrasalmus spilopleura* CF (Complex Form) or *Serrasalmus rhombeus*, because juveniles of both species look very similar.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Characiformes
Family Characidae
Genus *Serrasalmus*
Species *Serrasalmus medinai* Ramírez, 1965

From Eschmeyer et al. (2018):

“**Current status:** Valid as *Serrasalmus medinai* Ramírez 1965. Serrasalmidae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 14.8 cm SL male/unsexed; [Jégu 2003]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

Climate

From Froese and Pauly (2018):

“Tropical”

Distribution Outside the United States

Native

From Eschmeyer et al. (2018):

“Amazon and Orinoco River basins: Colombia and Venezuela.”

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Hansel (2007):

“Juvenile have [sic] a silverish coloration, with a little red on the gill plates. The body is covered with small black spots, and the head shape is pointed (concave). The dark spots fade with age and are replaced by iridescent [sic], silverish scales. Red coloration expands over the gill plates and belly, sometimes all up [sic] to the anal fin area. Other adult specimen [sic] have hardly any red coloration, however. The anal and pectoral fins are red, the ventral fins transparent [sic] with sometimes a hint of red, and the dorsal and adipose fins transparent [sic] grey to more dark tints. The tail fin is lightly colored, with a dark terminal band and base. The eyes are yellow.”

Biology

From Hansel (2007):

“In the wild, *S. Medinai* [sic] is a parasitic fin-nipper and scale eater when young, and a full blown predatory carnivore when adult. A remarkable feature is that in the wild, it often lives together with large shoals of *P. Cariba* [sic]. Due to its similar coloration (mimicry), it often remains unharmed, and profits from the protection and easy meals a large shoal provides.”

Human Uses

From Hansel (2007):

“In pet stores, this species is often mislabelled and sold as *Serrasalmus spilopleura* CF (Complex Form) or *Serrasalmus rhombeus*, because juveniles of both species look very similar. But in actuality, this species is extremely rare in home aquariums, because Venezuela, where this species is mainly found, prohibited the export of this species.”

This species is in trade in the United States. For example:

From AquaScapeOnline (2018):

“Medinai Piranha (true) 2" (*Serrasalmus Medinai* [sic]) [...]

Very Rare Piranha,
Our Price: \$250.00”

Diseases

No information available. No OIE-reportable diseases (OIE 2020) have been documented for this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No introductions of this species have been reported.

The importation, possession, or trade of the piranha *Serrasalmus medinai* is prohibited or restricted in the following states: Alabama (Alabama Department of Conservation and Natural Resources 2019), Alaska (Alaska State Legislature 2019), Arizona (Arizona Office of the Secretary of State 2013), Arkansas (Arkansas Game and Fish Commission 2019), California (California Department of Fish and Wildlife 2019), Colorado (Colorado Secretary of State 2019), Connecticut (Connecticut Secretary of State 2016), Florida (FFWCC 2019), Georgia (Georgia Department of Natural Resources 2019), Hawaii (Hawaii Department of Agriculture 2019), Idaho (Idaho Office of the Administrative Rules Coordinator 2019), Illinois (Illinois Department of Natural Resources 2015), Kentucky (Kentucky General Assembly 2019), Louisiana (Louisiana State Legislature 2019), Maine (Maine Department of Inland Fisheries and Wildlife 2019), Massachusetts (Massachusetts Division of Fisheries and Wildlife 2014), Mississippi (Mississippi Secretary of State 2019), Nevada (State of Nevada 2018), New Mexico (New Mexico Department of Game and Fish 2010), New York (New York State Senate 2019), North Carolina (North Carolina Office of Administrative Hearings 2019), Oklahoma (Oklahoma Secretary of State 2019), South Carolina (South Carolina Legislature 2019), Texas (Texas Parks and Wildlife 2019), Utah (Utah Office of Administrative Rules 2019), and Virginia (Virginia Department of Game and Inland Fisheries 2019).

4 History of Invasiveness

History of invasiveness for *Serrasalmus medinai* is No Known Nonnative Population. No introductions of this species have been reported. This species is present in the aquarium trade, but trade volume appears to be low. Importation, possession, or trade is prohibited or restricted in many U.S. States.

5 Global Distribution

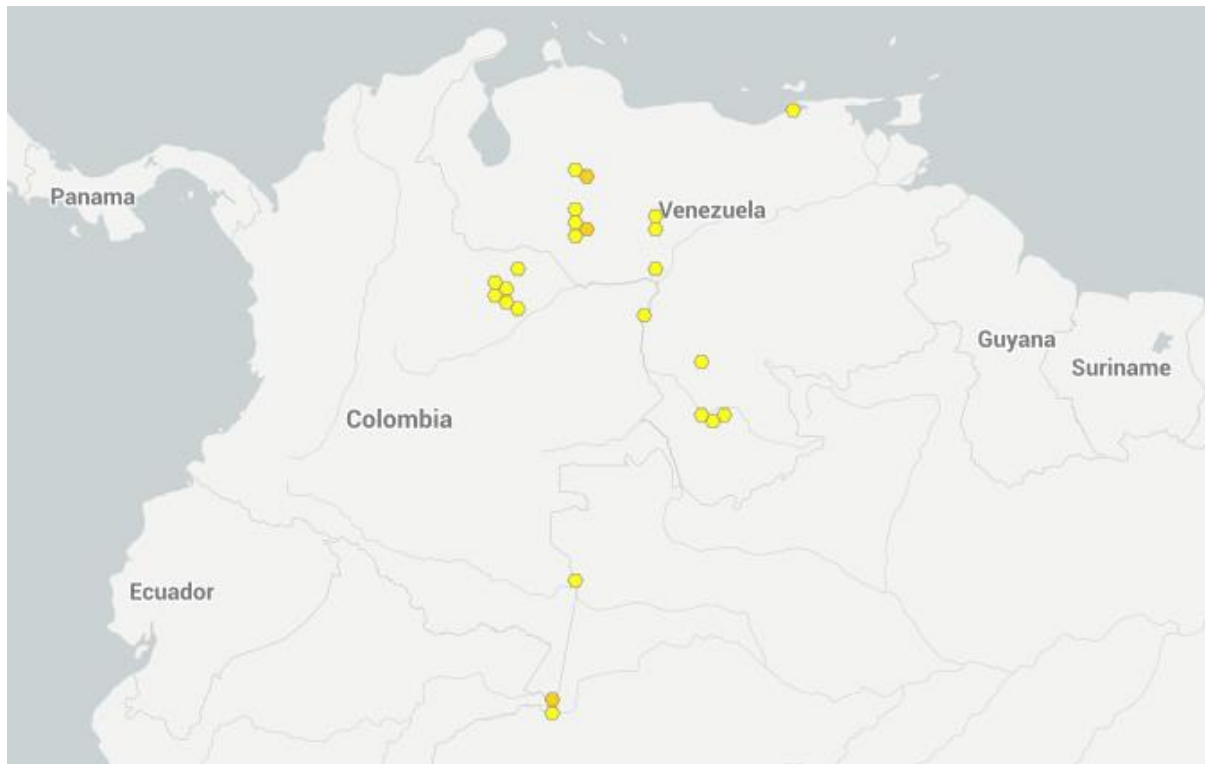


Figure 1. Known global distribution of *S. medinai*, reported from Venezuela and Colombia. Map from GBIF Secretariat (2017). The occurrence on the northern coast of Venezuela was not included in the climate matching analysis due to coordinate error.

6 Distribution Within the United States

This species has not been reported as introduced or established in the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was medium in southwestern Florida and low elsewhere in the contiguous United States. The Climate 6 score indicated that the contiguous United States had a low climate match overall (scores between 0.000 and 0.005, inclusive, are classified as low). The Climate 6 score for *S. medinai* was 0.000. All States had low individual climate scores.

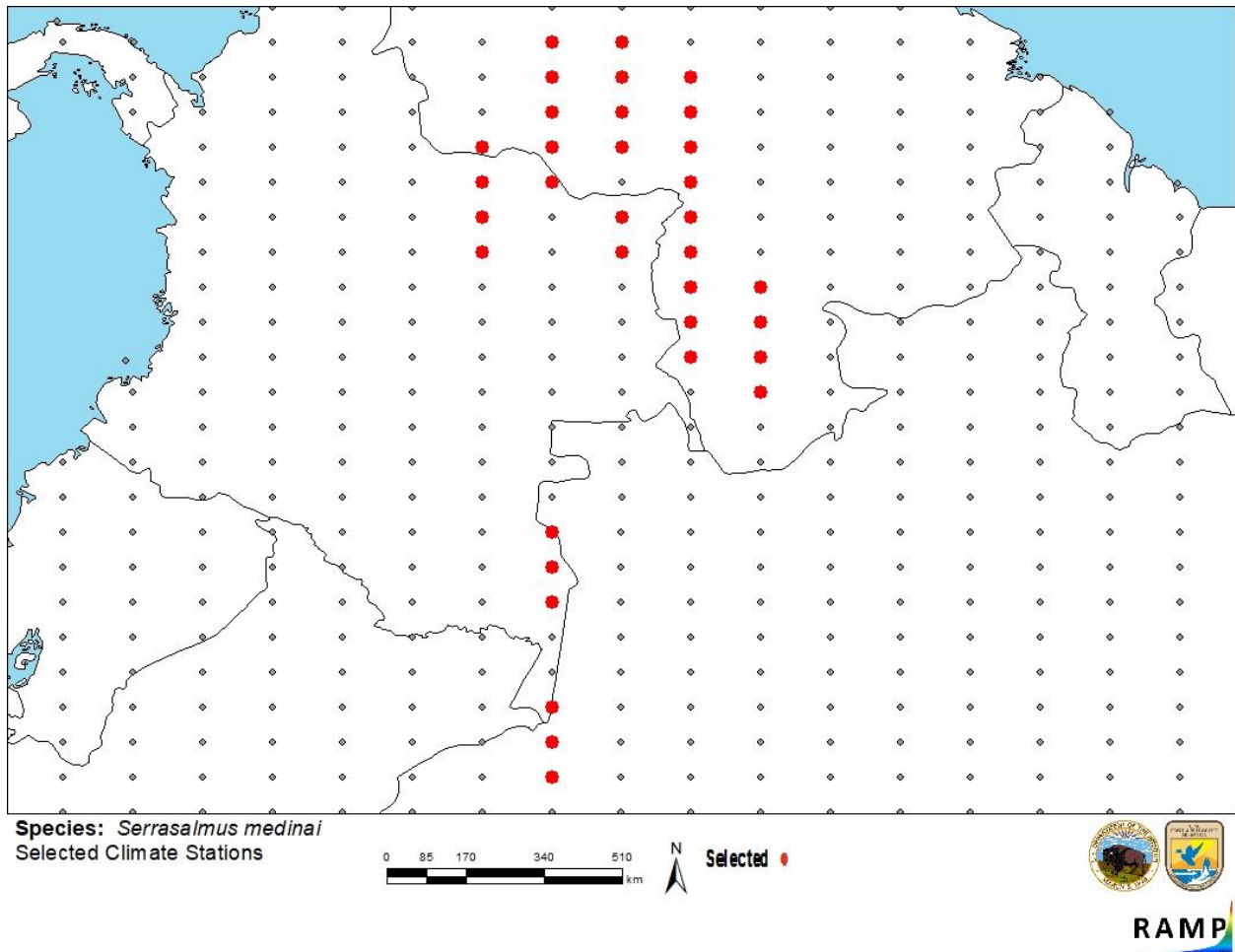


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Venezuela, Colombia, Brazil) and non-source locations (gray) for *S. medinae* climate matching. Source locations from GBIF Secretariat (2017). Source locations are selected for being located within 100 km of an occurrence record and they do not reflect exact occurrence locations.

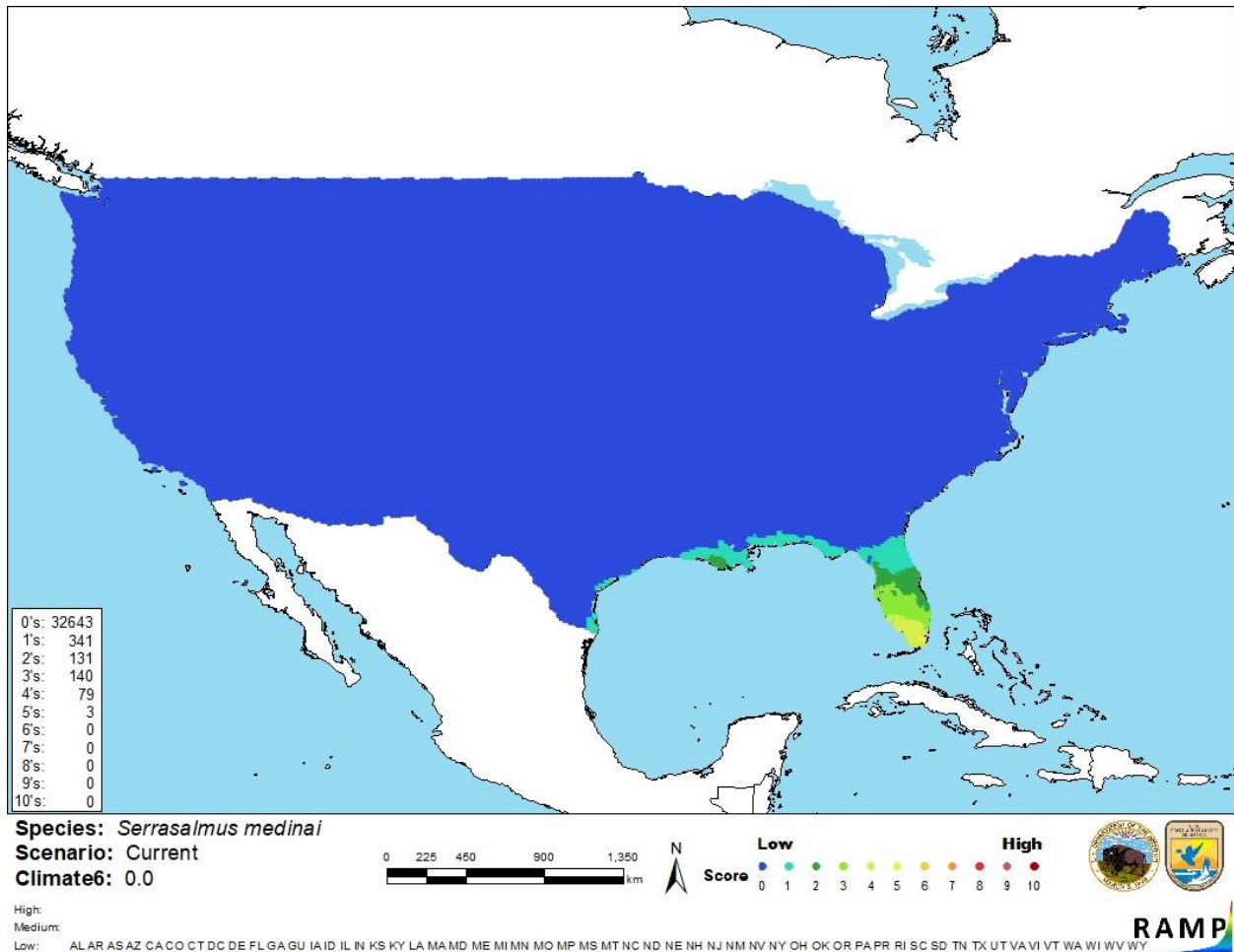


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *S. medinai* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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

Very limited information is available on the biology, ecology, and distribution of *S. medinai*. Most descriptive and biological information in this report came from an aquarium hobbyist website because English-language scientific literature was not available. No introductions of *S. medinai* have been reported, so any impacts of introduction remain unknown. Certainty of this assessment is low.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Serrasalmus medinai is a piranha native to the Amazon and Orinoco River basins in Venezuela and Colombia. It is present but rare in the aquarium trade in the United States. Numerous U.S. States prohibit the possession or trade of piranhas. No introductions of *S. medinai* have been reported, so impacts of introduction remain unknown for the species. History of invasiveness is classified as No Known Nonnative Population. Certainty of assessment is low due to a lack of information. The climate match to the contiguous United States was low overall, with medium matches occurring in southern Florida. Overall risk posed by *S. medinai* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Climate Match (Sec. 7): Low**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information: None**
- **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.

Alabama Department of Conservation and Natural Resources. 2019. Restrictions on possession, sale, importation and/or release of certain animals and fish. Alabama Department of Conservation and Natural Resources Administrative Code, Chapter 220-2-.26.

Alaska State Legislature. 2019. Prohibitions on importation and release of live fish. Alaska Administrative Code, Title 5, Chapter 41, Section 70.

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<https://www.wildlife.ca.gov/Conservation/Invasives/Species/Characidae> (August 2019).
- Colorado Secretary of State. 2019. Prohibited species. Code of Colorado Regulations, Chapter 00, Article VIII #008.
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- Kentucky General Assembly. 2019. Importation, possession, and prohibited aquatic species. Kentucky Administrative Regulations, Tourism, Arts, and Heritage Division, Department of Fish and Wildlife Resources, 301 KAR 1:122.
- Louisiana State Legislature. 2019. Exotic fish; importation, sale, and possession of certain exotic species prohibited; permit required; penalty. Louisiana Revised Statutes, Title 56, Section 319.
- Maine Department of Inland Fisheries and Wildlife. 2019. Fish and wildlife in captivity. Augusta, Maine: Maine Department of Inland Fisheries and Wildlife. Available: <https://www.maine.gov/ifw/fish-wildlife/captivity.html> (August 2019).
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- South Carolina Legislature. 2019. Importing, possessing, or selling certain fish unlawful; special permits for research; Department to issue rules and regulations; penalties. South Carolina Code of Laws, Title 50, Chapter 13, Section 1630.

State of Nevada. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Chapter 503, Section 110.

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Virginia Department of Game and Inland Fisheries. 2019. Nongame fish, reptile, amphibian and aquatic invertebrate regulations. Henrico, Virginia: Virginia Department of Game and Inland Fisheries. Available: <https://www.dgif.virginia.gov/fishing/regulations/nongame/> (August 2019).

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.

Jégu M. 2003. Serrasalminae (pacus and piranhas). Pages 182-196 in Reis RE, Kullander SO, Ferraris, Jr, CJ, editors. Checklist of the freshwater fishes of South and Central America. Porto Alegre, Brazil: EDIPUCRS.