

Sheep-pacu (*Acnodon normani*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, August 2012
Revised, August 2018
Web Version, 1/29/2018



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“South America: Amazon, Xingu and Tocantins River basins in Brazil.”

Status in the United States

This species has not been reported as introduced or established in the United States. There are limited mentions of this species for sale from U.S.-based aquarium retailers, for example, in a 2014 Facebook post by School of Fish, Inc. (<http://www.schooloffishinc.com/index.php>), and a 2016 newsletter from 5D Tropical (<http://5dtropical.com/>).

Means of Introductions in the United States

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

Remarks

From Seriously Fish (2019):

“This species is also known as ‘tiger pacu’ in the ornamental trade.”

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 *Acnodon*
Species *Acnodon normani* Gosline, 1951”

From Fricke et al. (2019):

“**Current status:** Valid as *Acnodon normani* Gosline 1951. Serrasalminidae.”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 19.9 cm TL male/unsexed; [Giarrizzo et al. 2015]; max. published weight: 110.00 g [Giarrizzo et al. 2015]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic; pH range: 5.8 - 7.2; dH range: ? - 18. [...] 22°C - 28°C [Riehl and Baensch 1991; assumed to represent recommended aquarium water temperature]”

Climate/Range

From Froese and Pauly (2018):

“Tropical; [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“South America: Amazon, Xingu and Tocantins River basins in Brazil.”

Introduced

No known introductions.

Means of Introduction Outside the United States

No known introductions.

Short Description

From Seriously Fish (2019):

“Larger adult males possess a lobe on the anal-fin, located 23-28 rays from the first branched ray. The segments of the rays where the lobe is situated are short, simple, and relatively broad.”

“There are currently three species in the genus *Acnodon*, among which *A. oligacanthus* is easily-distinguished since it lacks vertical bars on the body, has a more-or-less terminal (vs. subterminal in congeners) mouth, and is not an Amazonian species. The third member, *A. setnai*, is known only from the rio Jari, a left bank tributary which enters the Amazon slightly downstream of the rio Xingu. It is distinguished from *A. normani* by possessing a more slender body, enlarged lips on the lower jaw, and flexible gill rakers surrounded by a lobulated membrane (vs. rigid gill rakers surrounded by a smooth membrane in *A. normani*). In terms of external appearance these two appear very similar, although given their respective distributions any fish seen in aquaria are likely to be *A. normani*.”

Biology

From Seriously Fish (2019):

“Often said to be a frugivore or generalised herbivore, although aquarium observations suggest it may also feed on the scales of other fishes to an extent.”

Human Uses

From Froese and Pauly (2018):

“Aquarium: commercial”

Diseases

No information available. No OIE reportable diseases have been documented in this species.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No known introductions.

4 Global Distribution

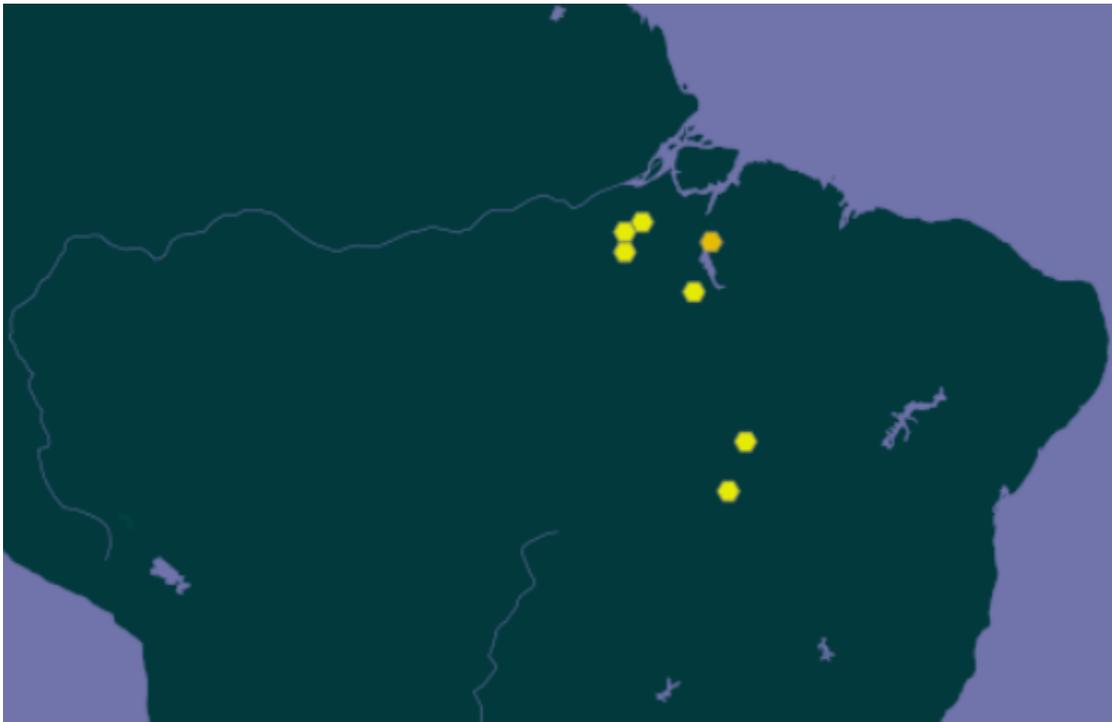


Figure 1. Known global distribution of *Acnodon normani*, in the Amazon, Xingu and Tocantins River basins in Brazil. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

No known occurrences.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.00, which is a low score. The range for a low climate match is from 0 to 0.005, inclusive. Every state recorded a low score. There was an area of medium match in southwest Florida. The remainder of the contiguous United States had a low match.

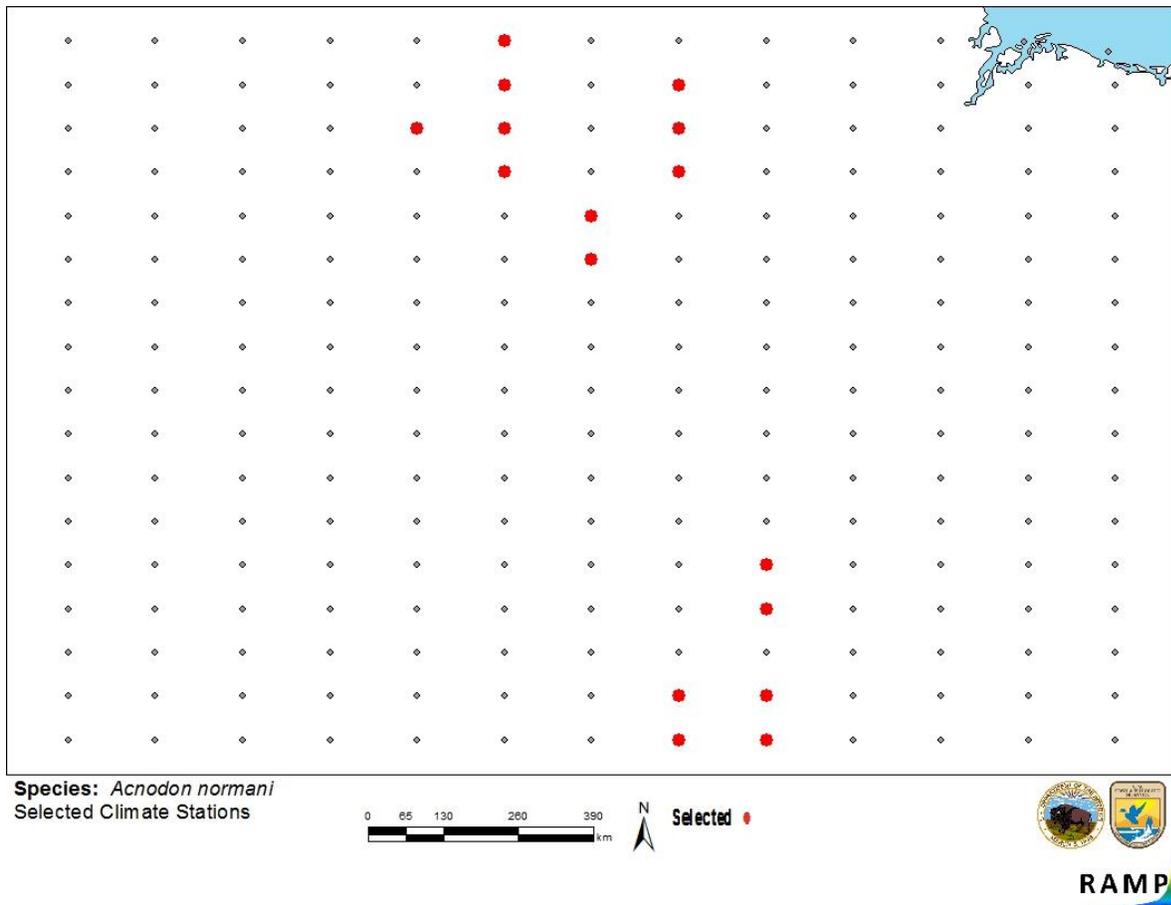


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in east-central Brazil selected as source locations (red) and non-source locations (gray) for *Acnodon normani* climate matching. Source locations from GBIF Secretariat (2017).

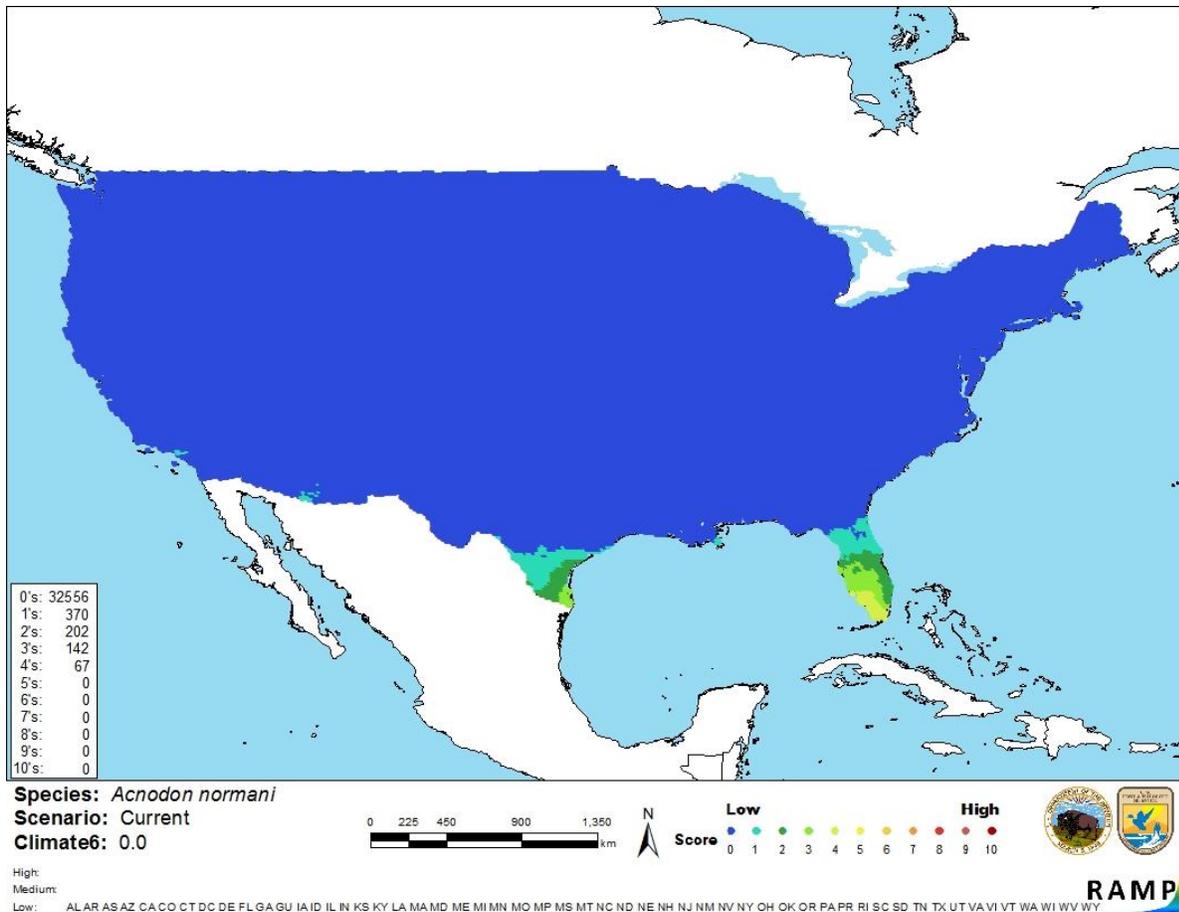


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Acnodon normani* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10= Highest match.

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

7 Certainty of Assessment

Little information is known on the biology and ecology of *Acnodon normani*. This fish has not been reported as introduced and no information is available on potential impacts if this species is introduced. Due to lack of information, the certainty of assessment is low. More information is needed to increase certainty.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Acnodon normani, Sheep-pacu, is a fish native to the Amazon, Xingu and Tocantins River basins in Brazil. It has not been reported as introduced outside of its native range. Therefore, history of invasiveness is uncertain. This species is present in the aquarium trade, although very few reports were found from U.S.-based retailers. The climate match with the contiguous United States is low with a medium match in southwestern Florida, and a low match in the remainder of the country. Certainty of assessment is low due to lack of information, and the overall risk for this species is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **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.

Fricke, R., W. N. Eschmeyer, and R. van der Laan, editors. 2019. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (January 2019).

Froese, R., and D. Pauly, editors. 2018. *Acnodon normani* (Gosline, 1951). FishBase. Available: <https://www.fishbase.de/summary/Acnodon-normani.html>. (August 2018)

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Acnodon normani* (Gosline, 1951). Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2353604>. (August 2018)

ITIS (Integrated Taxonomic Information System). 2018. *Acnodon normani* (Gosline, 1951). Integrated Taxonomic Information System, Reston, Virginia. Available: https://itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163239#null. (August 2018).

Sanders, S., C. Castiglione, and M. H. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. U.S. Fish and Wildlife Service.

Seriously Fish. 2019. *Acnodon normani* – Sheep Pacu. Available: <https://www.seriouslyfish.com/species/acnodon-normani/>. (January 2019).

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.

Giarrizzo, T., R. R. de Sena Oliveira, M. C. Andrade, A. P. Gonçalves, T. A. P. Barbosa, A. R. Martins, D. K. Marques, J. L. B. dos Santos, R. de P., da S. Frois, T. P. O. de Albuquerque, L. F. de A. Montag, M. Camargo, and L. M. de Sousa. 2015. Length-weight and length-length relationships for 135 fish species from the Xingu River (Amazon basin, Brazil). *Journal of Applied Ichthyology* 31:514-424.

Riehl, R., and H. A. Baensch. 1991. *Aquarien Atlas*, volume 1. Mergus, Verlag für Natur-und Heimtierkunde, Melle, Germany.