Aphanotorulus horridus (a catfish, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2012
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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"South America: Madeira River basin [Brazil]."

From Ray and Armbruster (2016):

"**Distribution.** *Aphanotorulus horridus* is found in the upper Amazon River [Ecuador, Peru, Bolivia, Brazil], including the mainstem, Rio Napo, Rio Marañon, Rio Ucayali, Rio Juruá, Rio Purus, and Rio Madiera […]."

Status in the United States

No records of *Aphanotorulus horridus* in the wild or in trade in the United States were found.

Means of Introductions in the United States

No records of *Aphanotorulus horridus* in the wild in the United States were found.

Remarks

Squaliforma horrida and *Hypostomus horridus* are synonyms of *Aphanotorulus horridus.* Literature reviews were conducted using *Aphanotorulus horridus* and the synonyms *Squaliforma horrida* and *Hypostomus horridus.* The new valid name for the species was instituted in 2016 (Ray and Armbruster 2016) has yet to be incorporated into most of the databases, therefore some information below will still refer to the species using one of the synonyms.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2018), *Aphanotorulus horridus* (Kner 1854) is the current valid name of this species. *Aphanotorulus horridus* was originally described as *Hypostomus horridus* Kner 1854 and previously valid as *Squaliforma horrida* Kner 1854.

No taxonomic hierarchy was available using the current valid name. Below is the hierarchy using a previously valid name; as only the genus changed with the new valid name (Ray and Armbruster 2016) the remainder of the hierarchy is still valid.

From Bailly (2017):

"Biota > Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > […] Actinopterygii (Class) > Siluriformes (Order) > Loricariidae (Family) > Hypostominae (Subfamily) > *Squaliforma* (Genus) > *Squaliforma horrida* (Species)"

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 35.5 cm SL male/unsexed; [Weber 2003]"

Environment

From Froese and Pauly (2018):

"Freshwater; demersal."

Climate/Range

From Froese and Pauly (2018):

"Tropical"

Distribution Outside the United States

Native

From Froese and Pauly (2018):

"South America: Madeira River basin [Brazil]."

From Ray and Armbruster (2016):

"**Distribution.** *Aphanotorulus horridus* is found in the upper Amazon River [Ecuador, Peru, Bolivia, Brazil], including the mainstem, Rio Napo, Rio Marañon, Rio Ucayali, Rio Juruá, Rio Purus, and Rio Madiera […]."

Introduced

No records of introductions of *Aphanotorulus horridus* were found.

Means of Introduction Outside the United States

No records of introductions of *Aphanotorulus horridus* were found.

Short Description

From Ray and Armbruster (2016):

"**Description.** […] Head moderately deep with elevated supraoccipital crest; supraoccipital crest taller than nape and posterior edge of crest gently sloping into nape. Nape flat.

Pectoral-fin spine reaches posterior to insertion of pelvic fin. Pelvic-fin spine reaches insertion of anal-fin spine. Two plates separate adipose-fin membrane and first dorsal procurrent caudal fin spine.

Lateral line plates 27–30 […]; dorsal-fin base plates six to eight […]); folded dorsal plates 10–14 […]; plates between dorsal and adipose fin six to 11 […]; adipose fin plates one to four […]; anal fin base plates one to three […]; plates from anal fin insertion to last plate on caudal peduncle 13–19 […]; plates in folded pectoral fin four to eight […]; number of teeth on dentary 10–42 […]; number of teeth on premaxilla nine to 37 […].

Sexual Dimorphism. Breeding males with short hypertrophied odontodes on ventral surfaces of body except head. Odontodes on body short; only on posterior edges of plates. Odontodes present on pectoral- and caudal-fin spines; odontodes increase in density and length distally on each fin spine. Hypertrophied odontodes absent from pelvic, dorsal, and adipose fin spines."

Biology

No information on the biology of *Aphanotorulus horridus* was found.

Human Uses

No information on the human uses of *Aphanotorulus horridus* was found.

Diseases

No information on diseases of *Aphanotorulus horridus* was found. **No records of OIE-reportable diseases were found for *A. horridus.***

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No records of introductions of *Aphanotorulus horridus* were found.

4 Global Distribution

Figure 1. Known global distribution of *Aphanotorulus horridus.* Locations are in Brazil and Peru. Map from GBIF Secretariat (2018).

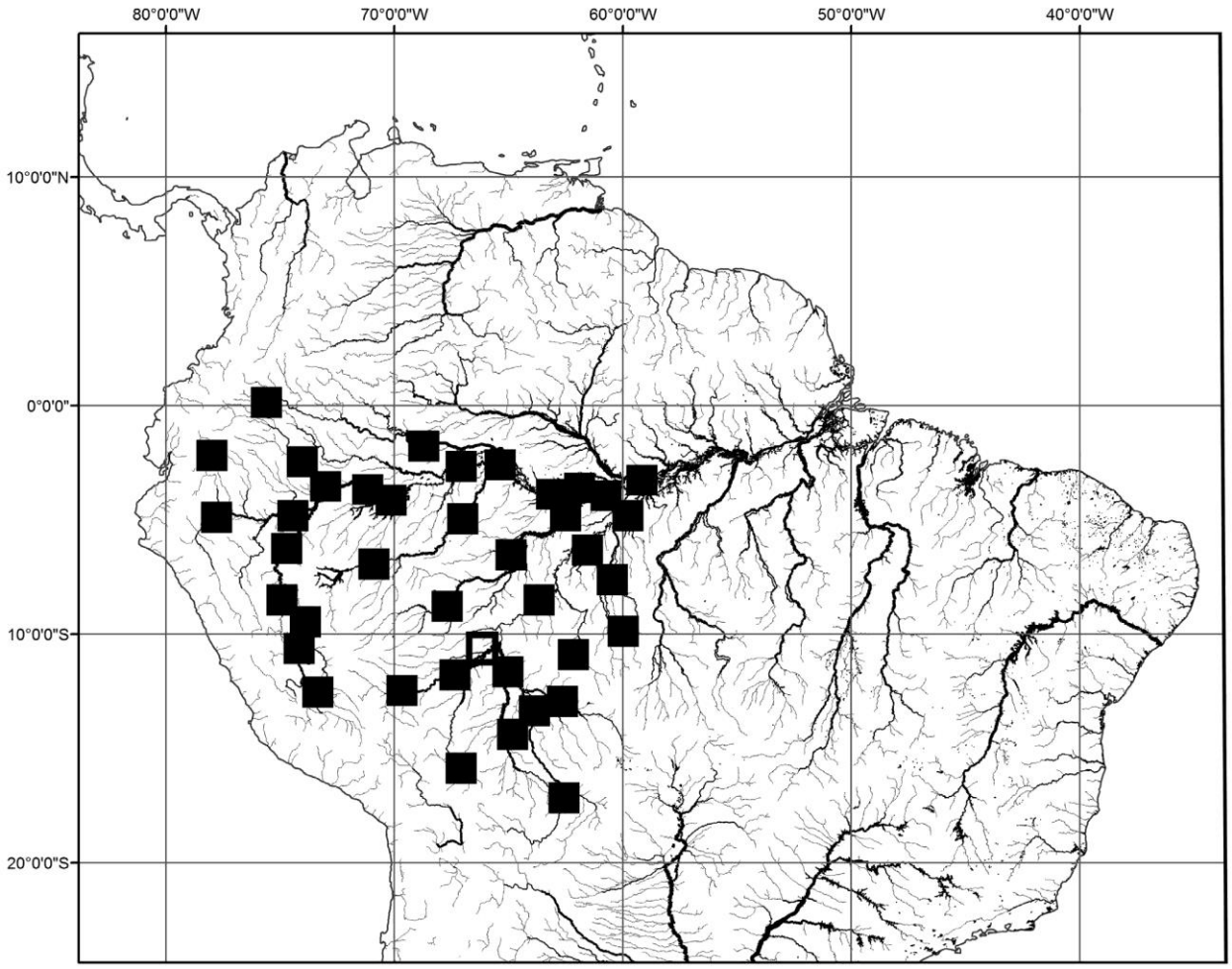

Figure 2. Additional known global distribution of *Aphanotorulus horridus*. Locations are in Ecuador, Peru, Brazil, and Bolivia. Map from Ray and Armbruster (2016; Figure 12, CC-BY license).

5 Distribution Within the United States

No records of *Aphanotorulus horridus* in the wild in the United States were found.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Aphanotorulus horridus* was low for the most of the contiguous United States. The southern half of Florida had a high match and there were areas of medium match along the southern Atlantic and Gulf Coasts. All other areas were low. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.012, medium. The range for a medium climate score is between 0.005 and 0.103. All States had low individual climate scores, except for Florida which had a high individual climate score.

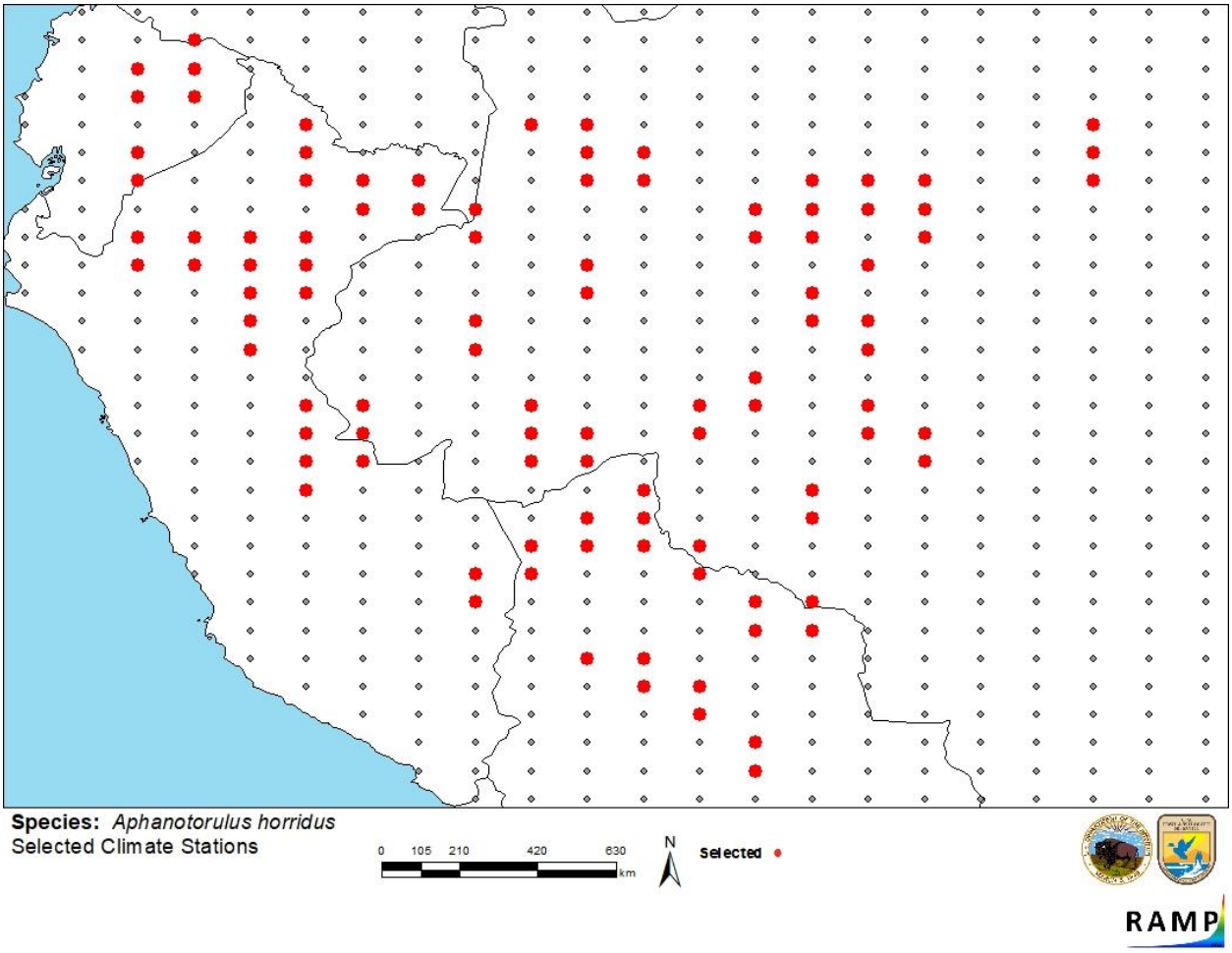

Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in northern South America selected as source locations (red; Ecuador, Bolivia, Brazil, and Peru) and non-source locations (gray) for *Aphanotorulus horridus* climate matching. Source locations from Ray and Armbruster (2016) and GBIF Secretariat (2018).

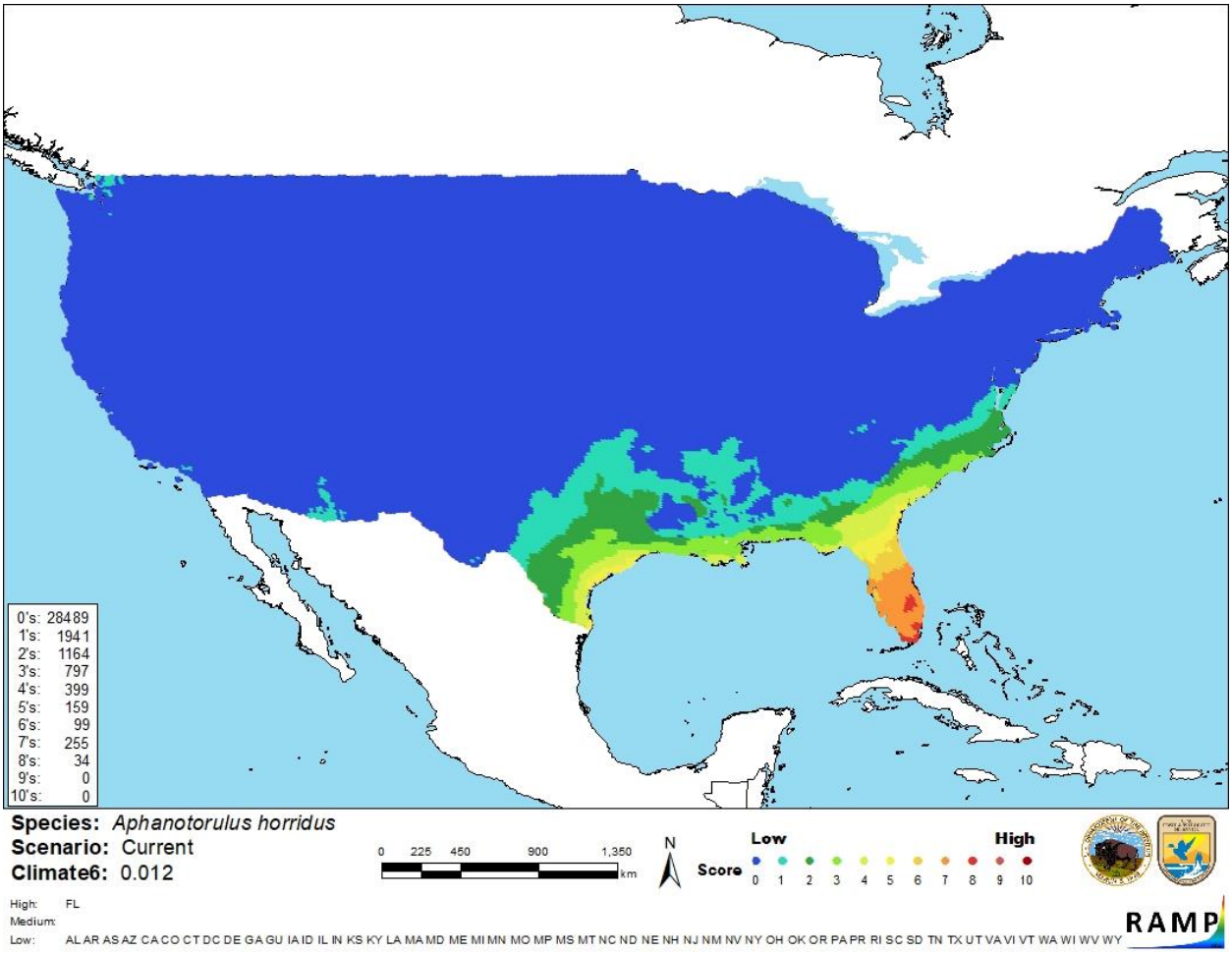

Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Aphanotorulus horridus* in the contiguous United States based on source locations reported from Ray and Armbruster (2016) and GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

The certainty of assessment for *Aphanotorulus horridus* is low. There is minimal information available for this species. Some information that is available does come from peer-reviewed sources. No information on introductions *Aphanotorulus horridus* was found.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Aphanotorulus horridus is a South American catfish native to the upper Amazon River basin in Ecuador, Peru, Bolivia, and Brazil. The history of invasiveness is uncertain. It has not been reported as introduced or established outside the native range anywhere in the world. The overall climate match for the contiguous United States was medium with all States having an individually low climate score except for Florida, which had a high individual climate score. The certainty of assessment is low. The overall risk assessment category for *Aphanotorulus horridus* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **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.

Bailly, N. 2017. *Squaliforma horrida*. *In* World Register of Marine Species. Available: http://www.marinespecies.org/aphia.php?p=taxdetails&id=1021620. (December 2018).

Froese, R., and D. Pauly, editors. 2018. *Squaliforma horrida* Kner, 1854. FishBase. Available: https://www.fishbase.de/summary/Squaliforma-horrida.html. (December 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Squaliforma horrida* (Kner, 1854). Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/2339583. (December 2018).

Ray, C. K., and J. W. Armbruster. 2016. The genera *Isorineloricaria* and *Aphanotorulus* (Siluriformes: Loricariidae) with description of a new species. Zootaxa 4072(5):501–539.

Sanders, S., C. Castiglione, and M. Hoff. 2018. Risk assessment mapping program: RAMP, version 3.1. U.S. Fish and Wildlife Service.

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.

Kner, R. 1854. Die Hypostomiden. Zweite Hauptgruppe der Familie der Panzerfische. (Loricata vel Goniodontes). Denkschriften der Kaiserlichen Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Classe 7:251–286.

Weber, C. 2003. Loricariidae - Hypostominae (armored catfishes). Pages 351–372 *in* R. E. Reis, S. O. Kullander, and C. J. Ferraris, Jr., editors. Checklist of the freshwater fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.