# *Ochmacanthus alternus* (a catfish, no common name)
## Ecological Risk Screening Summary

**U.S. Fish & Wildlife Service, November 2016**
**Revised, December 2016**
**Web Version, 3/16/2018**

Photo: Muséum National d'Histoire Naturelle. Licensed under CC BY-NC 3.0. Available: http://fishbase.org/photos/PicturesSummary.php?ID=48776&what=species. (December 2016).

# 1 Native Range, and Status in the United States

## Native Range

From Eschmeyer et al. (2016):

"Negro and Orinoco River basins: Brazil and Venezuela."

## Status in the United States

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

From FFWCC (2018):

"Prohibited nonnative species 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. Very limited exceptions may be made by permit from the Executive Director […]
Parasitic catfishes […]
*Ochmacanthus alternus*"

## Means of Introductions in the United States

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

# 2 Biology and Ecology

## Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae
Subfamily Stegophilinae
Genus Ochmacanthus
Species *Ochmacanthus alternus* Myers, 1927"

"Current Standing: valid"

## Size, Weight, and Age Range

From Froese and Pauly (2016):

"Max length : 4.0 cm SL male/unsexed; [de Pínna and W. Wosiacki 2003]"

## Environment

From Froese and Pauly (2016):

"Freshwater; benthopelagic; pH range: 6.0-7.0; dH range 5-15."

"22°C - 26°C [Baensch and Riehl 1997; assumed to indicate recommended aquarium water temperatures]"

## Climate/Range

From Froese and Pauly (2016):

"Tropical […]"

## Distribution Outside the United States

### Native

From Eschmeyer et al. (2016):

"Negro and Orinoco River basins: Brazil and Venezuela."

### Introduced

This species has not been reported as introduced or established outside of its native range.

## Means of Introduction Outside the United States

This species has not been reported as introduced or established outside of its native range.

## Short Description

From Myers (1927):

"Head $5\frac{1}{2}$ in body-length. Depth $5\frac{1}{3}$. Dorsal 8. Anal 8. Pectoral 6. Eye $4\frac{1}{2}$ in head, longer than snout, less than interorbital."

"Maxillary barbels to interopercular spines; lower barbels much shorter, with a membranous flap below. Width of head equal to length with opercular spines. Ten or eleven interopercular spines. About ten opercular spines. Teeth small, in minute series. A prominent pectoral pore. Pelvics inserted midway between head and caudal base. Anal fin-origin but slightly behind that of dorsal. Caudal rounded-truncate, with many accessory rays, not tadpole-like."

"Markings very variable, typically a double or triple series of large, irregular, alternating blotches with narrow interspaces, the spots usually partially coalescing forward on the back. Some specimens have the pattern broken up into comparatively fine mottling, but all show a trace of the typical pattern. Caudal mottled, in some with a trace of a dark median streak to the tip. Venter pale, unmarked."

## Biology

From Winemiller and Yan (1989):

"We placed three *Aequidens pulcher* (45-70 mm SL) in an aquarium with a single *O. alternus* (30 mm SL) for several weeks. *Ochmacanthus alternus* was observed to emerge from within the gravel substrate at night, and attempt to attach itself to the bodies of the cichlids soon thereafter. Repeated attempts by *O. alternus* to attach itself to the cichlids resulted in behavioral patterns that were easily interpreted as avoidance or a fright response (e.g., erection of medial fins and seemingly undirected swimming bursts of the cichlids), which suggests the presence of a negative impact of mucus-feeding on the host fish."

"Baskin et al. (1980) tentatively classified *O. alternus* from the Venezuelan llanos as a scale-feeder, since scale-feeding has been described for other genera within the subfamily

Stegophilinae, and the stomachs of all 22 of their specimens were empty. Since we only found scales in trace amounts in *O. alternus*, it appears likely that scales were removed and ingested incidentally with mucous slime."

"The unusually thin-walled alimentary canal of *O. alternus* should be adaptive for the specialized mucus diet, since mechanical breakdown of particles would be a minimal requisite. *Ochmacanthus alternus* possesses a leech-like morphology […] that presumably facilitates attachment to the host's body. The broad, ventrally oriented mouth armed with numerous minute teeth may function as a sucker in addition to its primary role as a mucus scraper. *Ochmacanthus alternus* also possesses small opercular "teeth" that may be used for attachment to the host, in a fashion similar to the blood-parasites of the related Vandelliinae. In addition, glands located near the base of each pectoral fin secrete mucus that forms large droplets just posterior to each opercle. These droplets may further promote adhesion to the external surface of the host by increasing the fish's ventral surface area with a sticky substance. Freshly caught *O. alternus* frequently stuck to the hands of the collector and required vigorous shaking for removal. We hypothesize that mucus feeding is highly advantageous for the catfish in lowland aquatic habitats where availability of invertebrate prey fluctuates seasonally (Goulding, 1980; Winemiller, 1987). The external mucous slime of fishes provides a rich source of energy and amino acids (Wessler and Werner, 1957; Enomoto et al., 1961; Lewis, 1970) in a form that is harvestable by virtually all catfish size classes. Large, relatively slow-moving, scaled fishes probably provide the primary source of mucus for the catfish. As a consequence, relative availability of mucus may vary to some degree with seasonal changes in fish densities."

### Human Uses
No information available.

### Diseases
No OIE-reportable diseases have been documented for this species.

### Threat to Humans
From Froese and Pauly (2016):

"Harmless"

## 3 Impacts of Introductions
This species has not been reported as introduced or established outside of its native range.

From FFWCC (2018):

"Prohibited nonnative species 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. Very limited exceptions may be made by permit from the Executive Director […]
Parasitic catfishes […]

*Ochmacanthus alternus*”

# 4 Global Distribution

**Figure 1.** Known global established locations of *Ochmacanthus alternus* in northern South America. Map from GBIF (2016). Source locations in southern Peru were not included in climate matching because they are outside the known established range of *O. alternus*.

# 5 Distribution Within the United States

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

# 6 Climate Matching

## Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was medium in southern Florida, southeastern Texas, and northern coastal Washington. The climate match was low throughout the rest of the contiguous United States. Climate 6 proportion indicated that the contiguous U.S. has a low climate match. The range for a low climate match is 0.000-0.005; the Climate 6 proportion of *Ochmacanthus alternus* is 0.004.

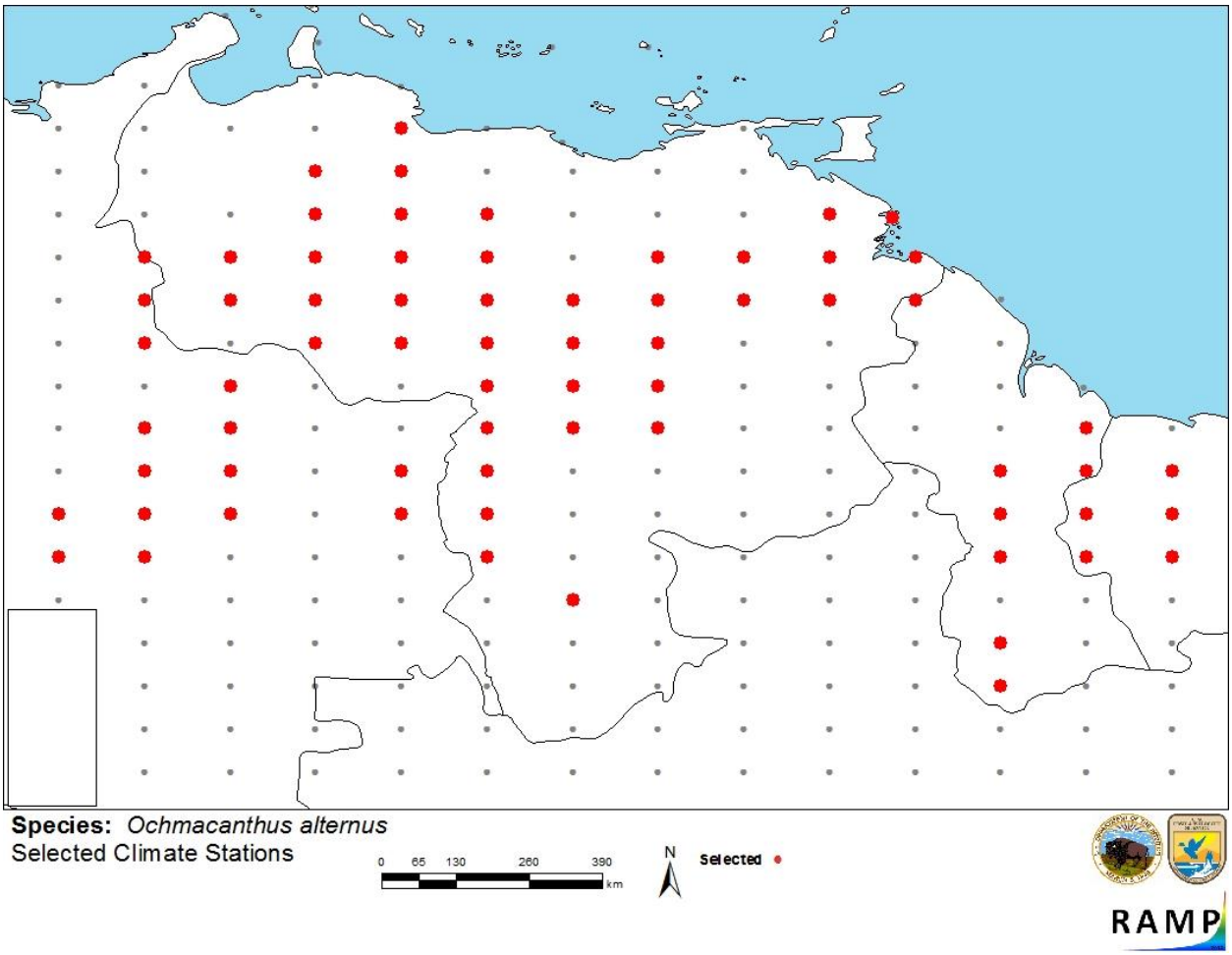


**Figure 2.** RAMP (Sanders et al. 2014) source map of northern South America showing weather stations selected as source locations (red) and non-source locations (gray) for *Ochmacanthus alternus* climate matching. Source locations from GBIF (2016). Source locations in southern Peru were not included in climate matching because they are outside the known established range of *O. alternus*.

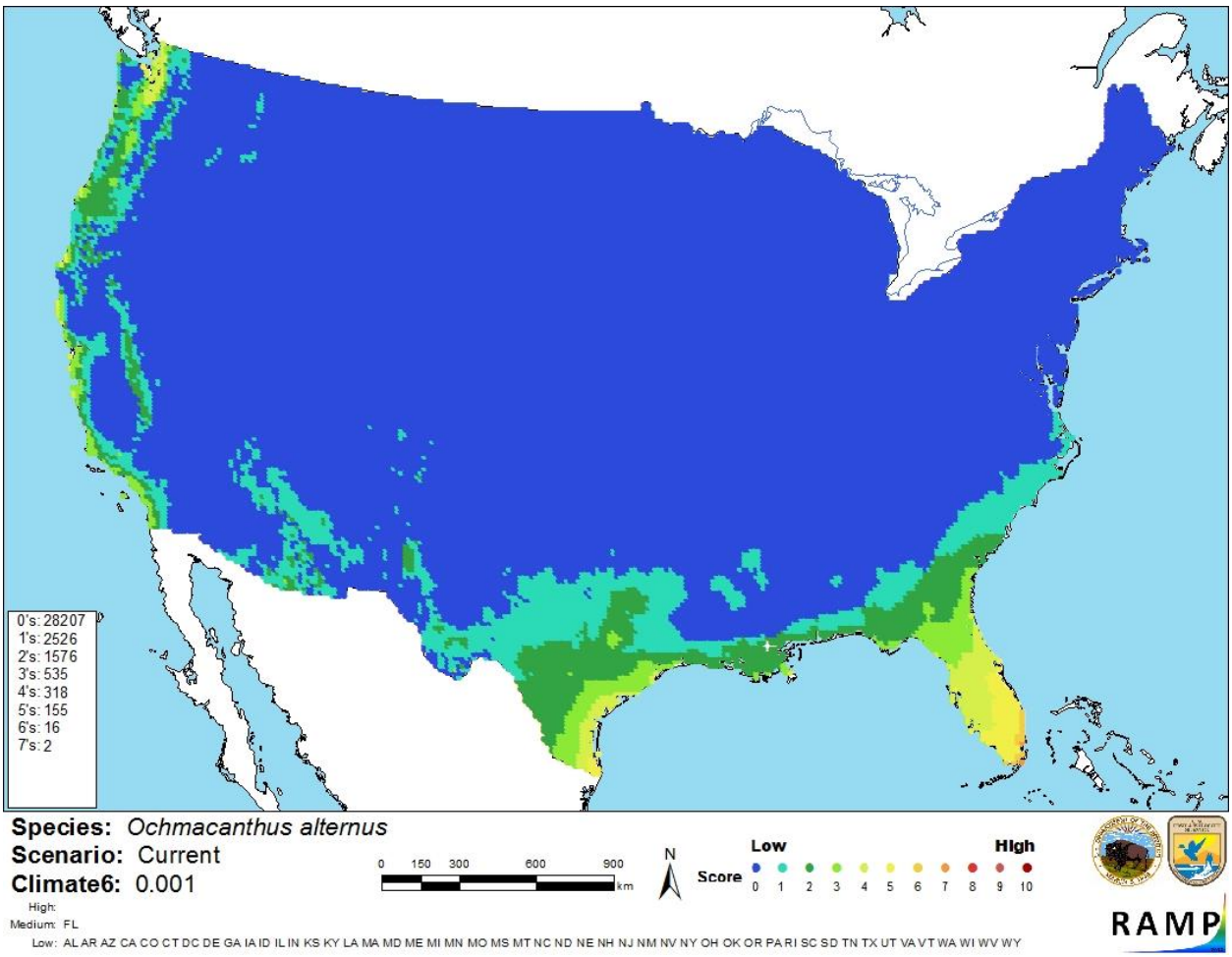


**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *Ochmacanthus alternus* in the contiguous United States based on source locations reported by GBIF (2016). Source locations in southern Peru were not included in climate matching because they are outside the known established range of *O. alternus*. 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

There is very little information available for *Ochmacanthus alternus*. Further information on the biology and distribution of *O. alternus* is needed to conduct a thorough assessment of the risk and potential negative impacts of this species outside of its native range. Certainty of this assessment is low.

# 8 Risk Assessment

## Summary of Risk to the Contiguous United States

*Ochmacanthus alternus* is a catfish native to the Negro and Orinoco River basins in the countries of Brazil and Venezuela in South America. It is a parasitic species, attaching to other fish and feeding on their mucus. Within the species native range, it has been observed that this method of feeding may cause avoidance behavior by the host and also loss of the host's scales. However, there has been no documentation on invasiveness or introductions of *O. alternus* outside of its native range. Climate matching analysis showed that the subtropical temperatures of southern Florida were a medium climate match for *O. alternus*, but the contiguous United States had a low climate match overall. Overall risk assessment category 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.**


Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2016. Catalog of fishes: genera, species, references. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (November 2016).

FFWCC (Florida Fish and Wildlife Conservation Commission). 2018. Prohibited species list. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/. (March 2018).

Froese, R., and D. Pauly, editors. 2016. *Ochmacanthus alternus* (Myers, 1927). FishBase. Available: http://www.fishbase.se/summary/48776. (November 2016).

GBIF (Global Biodiversity Information Facility). 2016. GBIF backbone taxonomy: *Ochmacanthus alternus* (Myers, 1927). Global Biodiversity Information Facility, Copenhagen. Available: http://www.gbif.org/species/2342889. (November 2016).

ITIS (Integrated Taxonomic Information System). 2016. *Ochmacanthus alternus* Myers, 1927. Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=682140#null. (November 2016).

Myers, G. S. 1927. Descriptions of new South American fresh-water fishes collected by Dr. Carl Ternetz. Bulletin of the Museum of Comparative Zoology 68:107-135.

Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. US Fish and Wildlife Service.

Winemiller, K. O., and H. Y. Yan. 1989. Obligate mucus-feeding in a South American trichomycterid catfish (Pisces: Ostariophysi). Copeia 1989(2):511-514.

# 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.**

Baensch, H. A., and R. Riehl. 1997. Aquarien Atlas, volume 5. Mergus Verlag, Melle, Germany.

Baskin, J. N., T. M. Zaret, and F. Mago-Leccia. 1980. Feeding of reportedly parasitic catfishes (Trichomycteridae and Cetopsidae) in the Rio Portuguesa Basin, Venezuela. Biotropica 12:182-186.

de Pínna, M. C. C. and W. Wosiacki. 2003. Trichomycteridae (pencil or parasitic catfishes). Pages 270-290 *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, Brasil.

Enomoto, N., T. Nagao, and Y. Tomiyasu. 1961. Studies on the external mucous substance of fishes-III. Identification of amino acids in the mucous protein from some fishes by paper chromatography. Bulletin of the Japanese Society for the Science of Fish 27:143-146.

Goulding, M. 1980. The fishes and the forest: explorations in Amazonian natural history. University of California Press, Los Angeles.

Lewis, R. W. 1970. Fish cutaneous mucus: a new source of skin surface lipids. Lipids 5:947-949.

Wessler, E., and I. Werner. 1957. On the chemical composition of some mucus substances of fish. Acta Chemica Scandinavica 2:1240-1247.

Winemiller, K. O. 1987. Feeding and reproductive biology of the currito, *Hoplosternum littorale*, in the Venezuelan llanos with comments on the use of the enlarged male pectoral spines. Environmental Biology of Fishes 20:219-227.