Spotted Rubbernose Pleco (*Chaetostoma milesi*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2014
Revised, November 2016, November 2017
Web Version, 9/10/2018

Photo: Frank Alvarez. Licensed under Creative Commons BY 3.0. Available: http://www.fishbase.org/photos/UploadedBy.php?autoctr=9310&win=uploaded. (March 31, 2014).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"South America: Magdalena and Apuré River basins."

From Ballen et al. (2016):

"The new species [*Chaetostoma joropo*] has been long confused with *Chaetostoma milesi*, a species with similar overall morphology and color pattern that is restricted to the Magdalena-Cauca River Basin."

Status in the United States
No records of *Chaetostoma milesi* in the wild or in trade United States were found.

Means of Introductions in the United States
No records of *Chaetostoma milesi* in the United States were found.

Remarks
From Ballen et al. (2016):

"The new species [*Chaetostoma joropo*] has been long confused with *Chaetostoma milesi*, a species with similar overall morphology and color pattern that is restricted to the Magdalena-Cauca River Basin."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing
According to Eschmeyer et al. (2017), *Chaetostoma milesi* Fowler 1941 is the valid name for this species. It is also the original name.

From ITIS (2013):

"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 Loricariidae
Subfamily Hypostominae
Genus *Chaetostoma*
Species *Chaetstoma milesi* Fowler, 1941"

Size, Weight, and Age Range
From Froese and Pauly (2017):

"Max length : 13.0 cm SL male/unsexed; [Fisch-Muller 2003]"

Environment
From Froese and Pauly (2017):

"Freshwater; demersal."

Climate/Range
From Froese and Pauly (2017):

"Tropical"

Distribution Outside the United States
Native
From Froese and Pauly (2017):

"South America: Magdalena and Apuré River basins."

From Ballen et al. (2016):

"The new species [*Chaetostoma joropo*] has been long confused with *Chaetostoma milesi*, a species with similar overall morphology and color pattern that is restricted to the Magdalena-Cauca River Basin."

Introduced
No records of *Chaetostoma milesi* introductions were found.

Means of Introduction Outside the United States
No records of *Chaetostoma milesi* introductions were found.

Short Description
From Ceas and Page (1996):

"*Chaetostoma yurubiense* shares with *C. milesi* and *C. tachiraense* the presence of a small, fleshy, black keel at the rear tip of the supraoccipital; […]"

Chaetostoma milesi possesses 5 anal rays, 8 dorsal rays, 5 hooked cheek spines, a slightly concave distal edge of the caudal fin, black spots on the interradial membranes of the dorsal fin, and black spots on the anterior base of the dorsal fin and adipose fin (Ceas and Page 1996).

From Ballen et al. (2016):

"Finally, *Chaetostoma joropo* differs from *C. milesi* as follows: by having the spots on the head more densely packed together, with the space between spots smaller than spot diameter (vs. spots less numerous and with space between spots larger than spot diameter in *C. milesi*); by having more spots on body that are better organized in longitudinal rows (vs. spots less numerous and

scattered in *C. milesi*); by the presence of scattered, numerous spots on the dorsal fin (vs. less numerous and always positioned anterior to each branched fin ray in *C. milesi*); by having a uniform black coloration on the dorsal surface of the pectoral spine (vs. with longitudinal row of spots on dorsal surface of pectoral spine in *C. milesi*); and by presenting undulated vertical bars on the caudal fin that transform progressively into spots (vs. caudal fin uniformly dark regardless of size in *C. milesi*)."

Biology

From Flecker (1992):

"Grazer enclosures contained the armored catfish *Chaetostoma milesi*, a medium-sized loricariid that scrapes periphyton and detritus from stone surfaces."

From Taylor et al (2006):

"Although there are other common benthic feeders in Andean piedmont streams that consume benthic algae and particulate matter Ee.g., *Parodon apolinari* (Parodontidae) and armored catfishes *Ancistrus triradiatus* and *Chaetostoma milesi* (Loricariidae) […]"

Human Uses

Information on the human uses of *Chaetostoma milesi* was not available

Diseases

Information on diseases of *Chaetostoma milesi* was not available.

Threat to Humans

From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions

No records of *Chaetostoma milesi* introductions were found.

4 Global Distribution

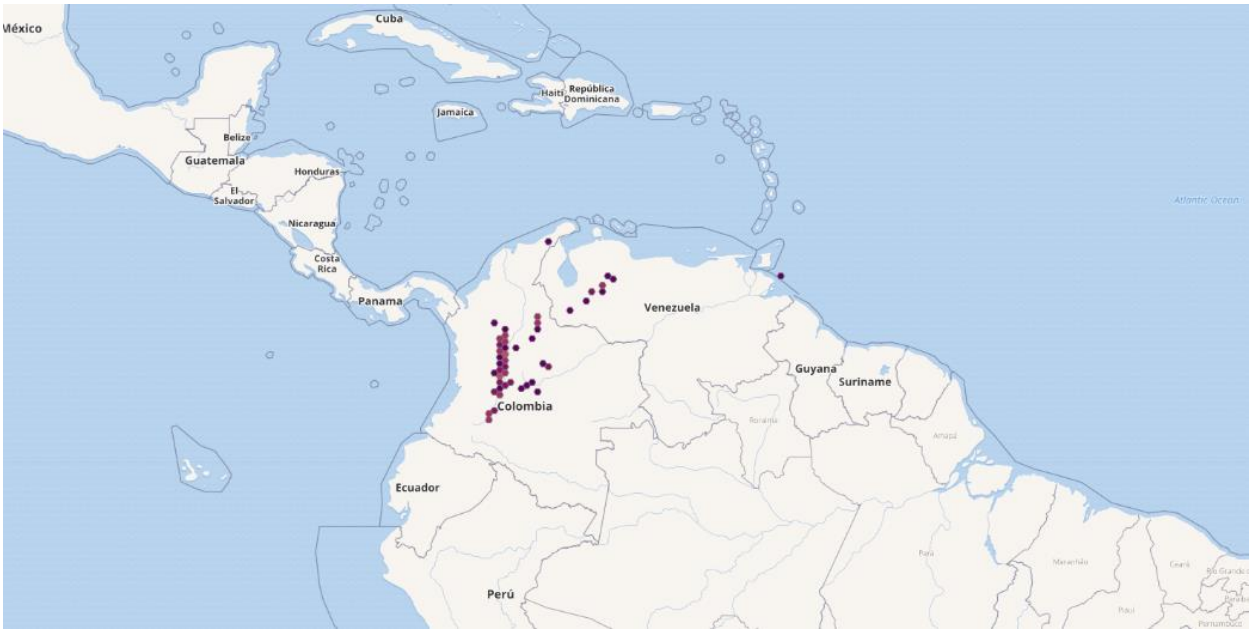

Figure 1. Known global distribution of *Chaetostoma milesi*. Locations are in Colombia and Venezuela. Map from Froese and Pauly (2017).

The location off the coast of Venezuela has an error in the recorded coordinates. The record details indicate that the collection took place in a 25.8m stream and not the open ocean (GBIF Secretariat 2017). The location furthest north is outside the described range of the species and the record details show some uncertainty in the geographic details (GBIF Secretariat 2017). These locations were not used as source points for the climate match.

Ballen et al. (2016) describe a new species *Chaetostoma joropo* which had previously been considered *Chaetostoma milesi*. The new species is present in the Orinoco River Basin and all populations of *C. milesi* in that basin would be assigned to the new species, *C. joropo*; leaving only those populations in the Magdalena River Basin as *C. milesi*.

Only those locations in Figure 1 that fall within the Magdalena River Basin in Colombia were used as source locations for the climate match, following the taxonomic distinctions laid out by Ballen et al. (2016).

5 Distribution Within the United States

No records of *Chaetostoma milesi* in the United States were found.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Chaetostoma milesi* was medium in southern Florida and Texas. The climate match was low everywhere else. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low, and no states had an individually high climate match.

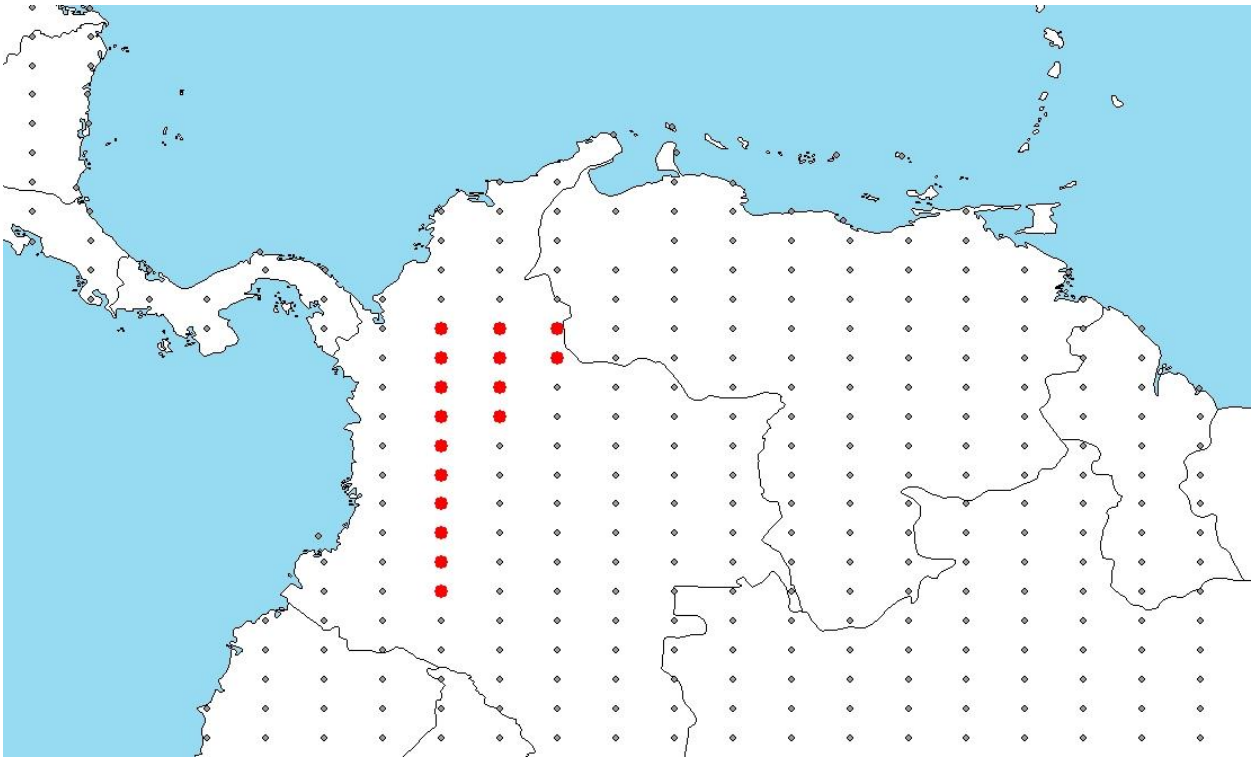

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in Columbia, South America, selected as source locations (red) and non-source locations (gray) for *Chaetostoma milesi* climate matching. Source locations from Ballen et al. (2016) and GBIF Secretariat (2017).

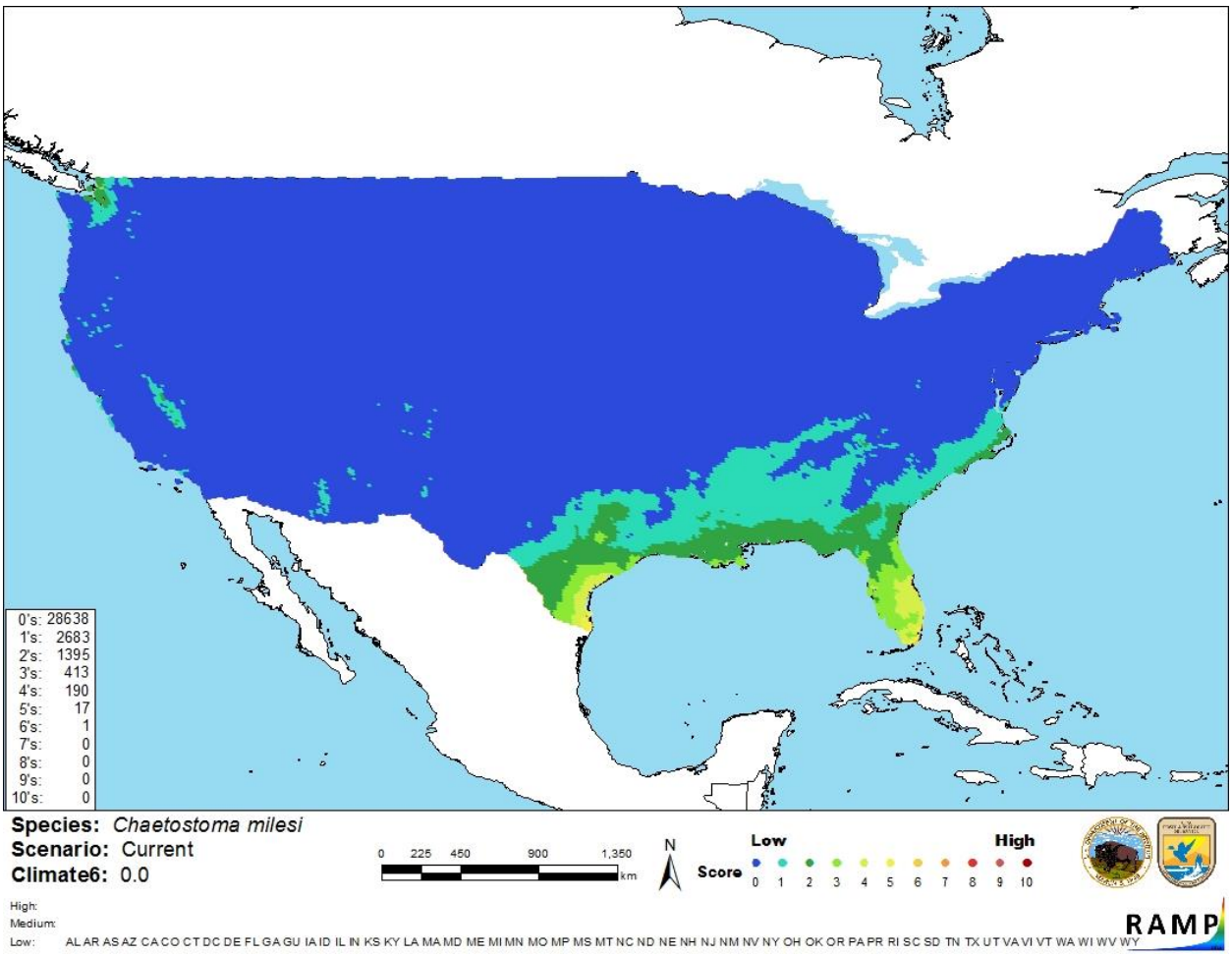

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Chaetostoma milesi* in the contiguous United States based on source locations reported by Ballen et al. (2016) and GBIF Secretariat (2017). 0 = Lowest match, 10 = Highest match. Counts of climate match scores are tabulated on the left.

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

The certainty of this assessment is low. Minimal information was available for *Chaetostoma milesi*. Recent work has determined that many of the populations once considered *C. milesi* are a separate species. It is unknown what pieces of biological and ecological information published before 2016 actually pertain to *C. milesi*. No records of introductions were found for this species.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The Spotted Rubbernose Pleco (*Chaetostoma milesi*) is a species of armored catfish native to the Magdalena River basin in Colombia. *C. milesi* is a detritivore. The history of invasiveness of *Chaetostoma milesi* is uncertain. No records of introduction were found. The climate match is 0.000, low, with small pockets of medium climate match in southern Florida and Texas. The certainty of assessment is low. There was some information available for *C. milesi*, however recent work has essentially divided the range of the species in half, attributing some populations to a new species. It is unknown what pieces of biological and ecological information published before 2016 actually pertain to *C. milesi*. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** Work published in 2016 split *Chaetostoma milesi* into two species, retaining *C. milesi* as a valid name for one.
- **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.

Ballen, G. A., A. Urbano-Bonilla, and J. A. Maldonado-Ocampo. 2016. Description of a new species of the genus *Chaetostoma* from the Ocinoco River drainage with comments on *Chaetostoma milesi* Fowler, 1941 (Siluriformes: Loricariidae). Zootaxa 4105(2):181–197.

Ceas, P. A., and L. M. Page. 1996. *Chaetostoma yururbiense* (Teleostei: Siluriformes), a new species of Loricariid catfish from the Aroa, Urama, and Yaracuy river systems in Venezuela. Copeia 1996(3):671–677.

Eschmeyer, W. N. and R. Fricke, and R. van der Laan, editors. 2017. Catalog of fishes: genera, species, references. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (November 2017).

Flecker, A. S. 1992. Fish trophic guilds and the structure of a tropical stream: weak direct vs. strong indirect effects. Ecology 73(3):927–940.

Froese, R., and D. Pauly, editors. 2017. *Chaetostoma milesi* Fowler, 1941. FishBase. Available: http://www.fishbase.org/summary/Chaetostoma-milesi.html. (March 2014).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Chaetostoma milesi* Fowler, 1941. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/5202359 (November 2017).

ITIS (Integrated Taxonomic Information System). 2013. *Chaetostoma milesi* Fowler, 1941. Integrated Taxonomic Information System, Reston, Virginia. Available: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=680066. (March 2014).

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

Taylor, B. W., A. S. Flecker, and R. O. Hall. 2006. Loss of a harvested fish species disrupts carbon flow in a diverse tropical river. Science 313:833–836.

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.

Fisch-Muller, S. 2003. Loricariidae-Ancistrinae (armored catfishes). Pages 373–400 *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.

Fowler, H. W. 1941. Notes on Colombian fresh-water fishes with descriptions of four new species. Notulae Naturae (Philadelphia) 73:1–10.