Metynnis cuiaba (a fish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2013
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Photo: *Metynnis cuiaba* (cropped) by the Museum of Comparative Zoology, Harvard University. Licensed: CC BY-NC-SA 3.0. Available: http://eol.org/data_objects/26683976. (January 2018).

1 Native Range and Status in the United States

Native Range

From Pavanelli et al. (2009):

"*Metynnis cuiaba* is known from the upper portions of rio Paraguai basin, in Cuiabá and Manso river drainages, including lakes (baías) in the Pantanal, Mato Grosso State, Central Brazil […]"

Status in the United States

There are no records of occurrences of *Metynnis cuiaba* in the United States; however, Nico et al. (2018) report that the genus *Metynnis* (species uncertain) is locally established in Florida.

From Nico et al. (2018):

"A member of this genus [*Metynnis*] was collected in **Florida** from a lake on Marco Island, Collier County in January, 1980 (FSBC 19822; listed as *Metynnis lippincotianus* in Courtenay et al. 1984, and as *Metynnis* sp. in Courtenay and Stauffer 1990 and in Courtenay et al. 1991). A reproducing population was found in Halpatiokee Regional Park Conservation Area in Martin County in 2005, with additional specimens taken in 2006 and 2007 (Shafland et al. 2008; Florida Fish and Wildlife Conservation Commission 2009). In **Kentucky**, a single fish (originally identified as a piranha and as *Metynnis roosevelti*) was taken by hook and line from Lighthouse Lake, Louisville, Jefferson County, in the summer of 1981 (Anonymous 1981; Fossett 1981)."

"There is considerable confusion surrounding the Kentucky record. In original published accounts, the fish was identified as a piranha, but the scientific name provided was *Metynnis roosevelti* (= *Metynnis maculatus*). However, in a photograph of the fish accompanying the newspaper article (Fossett 1981), the specimen actually appears to have a short adipose fin and is probably a pacu, possibly *Piaractus brachypomus*. The collectors gave the live fish to the Louisville Zoo, where it was kept in aquaria; when the fish later died, it was supposedly not preserved. The Kentucky specimen has been the basis for inclusion of the species in published lists of nonestablished foreign species, with earlier listings identifying it as *Metynnis roosevelti* (e.g., Courtenay et al. 1984) and later simply as *Metynnis* sp. (i.e., Courtenay and Stauffer 1990; Courtenay et al. 1991)."

No evidence was found to suggest that *M. cuiaba* is in trade in the United States.

Means of Introductions in the United States

From Nico et al. (2018):

"Records [for *Metynnis* sp.] mostly likely represent aquarium releases."

Remarks

From Pavanelli et al. (2009):

"Species of *Metynnis* have been studied for decades, however there are still misidentifications, mainly because of the high ontogenetic variability, the sexual dimorphism and the absence of identification keys, besides the existence of several nominal taxa of doubtful status. Perhaps further careful inventories in the rio Paraguai basin could reveal even additional new species of *Metynnis*. In spite of serrasalmin systematics are undergoing major revision and much remains to be done. Even the status of the family is still not a consensus. Some recent researchers still maintain the subfamily Serrasalminae (Jégu 2003), while others recognize them as a distinct family, the Serrasalmidae (e.g. Calcagnotto et al. 2005)."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Froese and Pauly (2018):

"Biota > Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > Pisces (Superclass) > Actinopterygii (Class) > Characiformes (Order) > Serrasalmidae (Family) > *Metynnis* (Genus) > *Metynnis cuiaba* (Species)"

"Status accepted"

Size, Weight, and Age Range

From Froese and Pauly (2017):

"Max length : 14.3 cm SL male/unsexed; [Pavanelli et al. 2009]"

Environment

From Froese and Pauly (2017):

"Freshwater; benthopelagic."

Climate/Range

From Froese and Pauly (2017):

"Tropical."

Distribution Outside the United States

Native

From Pavanelli et al. (2009):

"*Metynnis cuiaba* is known from the upper portions of rio Paraguai basin, in Cuiabá and Manso river drainages, including lakes (baías) in the Pantanal, Mato Grosso State, Central Brazil […]"

Introduced

There are no known introductions of this species outside of its native range.

Means of Introduction Outside the United States

There are no known introductions of this species outside of its native range.

Short Description
From Froese and Pauly (2017):

"Dorsal soft rays (total): 16-18; Anal soft rays: 35 - 39; Vertebrae: 38. Distinguished from other congeners by the combination of the following characters: gill rakers 22-24; scales on lateral line 100-110; scales rows above lateral line 48-56; predorsal scales 55-64; circumpeduncular scales 32-36; one or two bifurcate spines in the ventral keel; dark blotches, with ill-defined contour, sometimes forming transversal bars in the flanks [Pavanelli et al. 2009]."

From Pavanelli et al. (2009):

"Body deeply compressed, with rounded dorsal and ventral profiles. Highest body depth on vertical line passing through dorsal and pelvic fins origin. Predorsal distance longer than postdorsal. Dorsal profile of body convex from snout to dorsal-fin origin; dorsal fin with straight base, very inclined posteriorly; preadipose profile obliquely straight, slightly convex from adipose-fin origin to caudal-fin origin. Ventral profile convex, with series of 32-36 simple spines in ventral keel (mean = 34.8; 23-26 + 9-10), followed by one or two bifurcate spines, never surpassing anus. Caudal peduncle short, much deeper than longer, with dorsal and ventral margins straight or slightly concave. Dorsal profile of head concave. Ventral profile of the head oblique, almost convex. Snout roundish in lateral view. Eye lateral. Mouth terminal with molariform teeth. Inner premaxillary row with five teeth, outer with two. Dentary with four anterior teeth. Branchial membranes joint together and free of isthmus. Twenty two to 24 (mean = 22.7; 10 + 12-14) tubercular, short and thick gill rakers; cerato- and epibranchials similarly long."

Biology
No information available.

Human Uses
No information available.

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

Threat to Humans
From Froese and Pauly (2017):

"Harmless."

3 Impacts of Introductions
There are currently no recorded introductions or impacts of introductions for *Metynnis cuiaba*, however unidentified species of *Metynnis* are listed as locally established in Florida.

4 Global Distribution

Figure 1. Known global distribution of *Metynnis cuiaba*. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

There is currently no known distribution of *Metynnis cuiaba* within the United States; however, unidentified species of *Metynnis* are listed as locally established in Florida.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for *Metynnis cuiaba* in the contiguous United States was 0.003, which is low. The range for a low climate match is from 0.0 to 0.005, inclusive. Highest matches were seen in peninsular Florida and southern Texas, which had a medium match. The remainder of the contiguous United States had a low match.

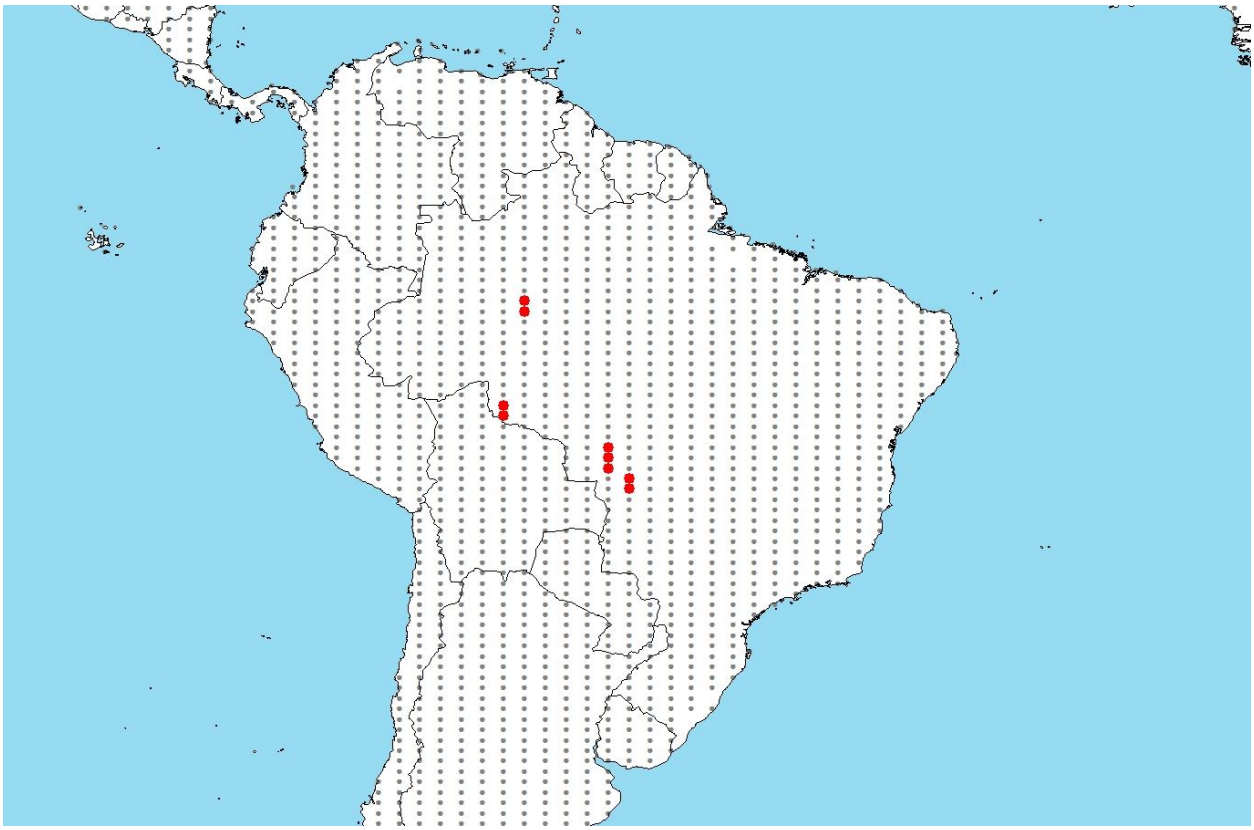

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Metynnis cuiaba* climate matching. Source locations from GBIF Secretariat (2017).

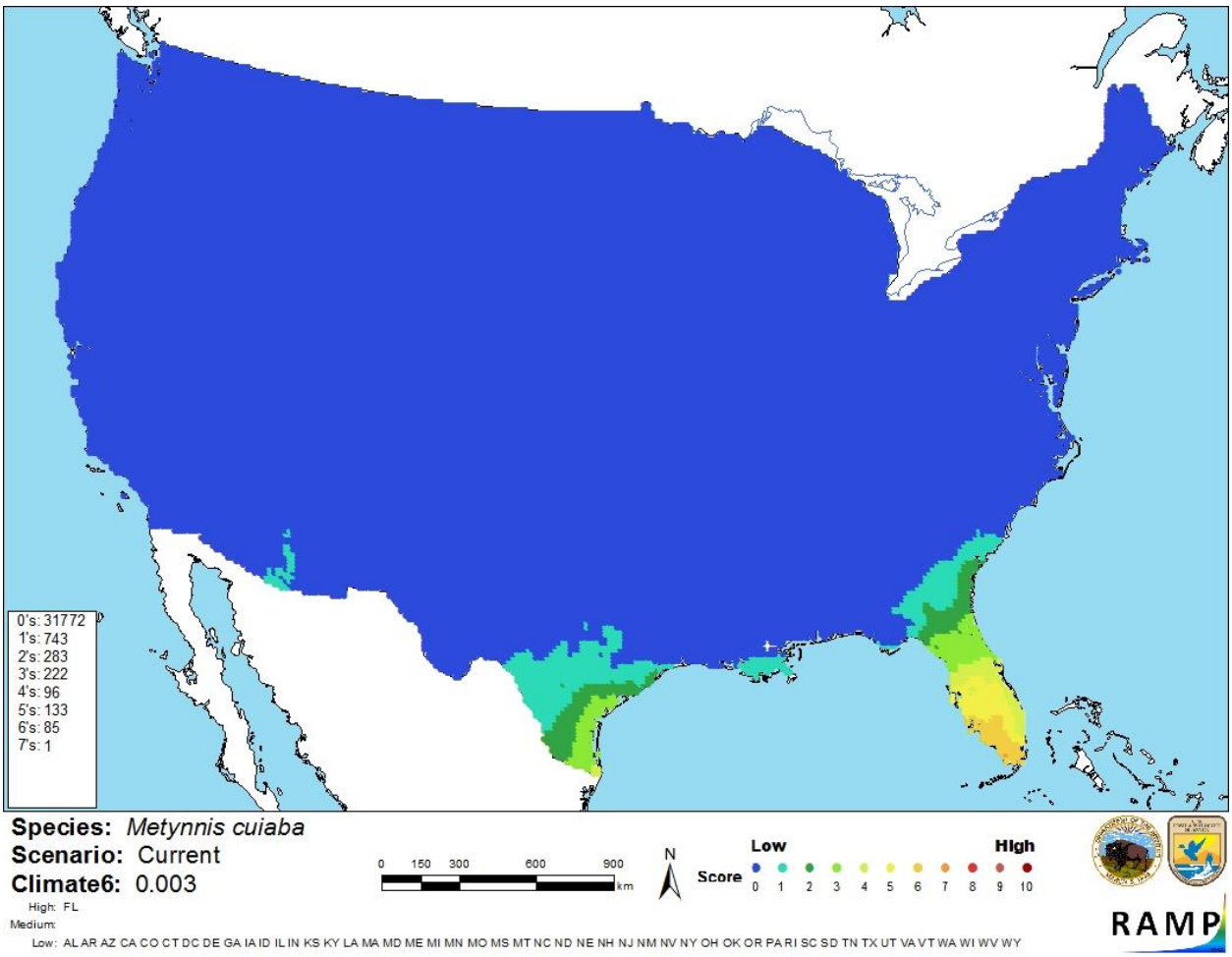

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Metynnis cuiaba* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10=Highest match.

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

7 Certainty of Assessment

Very little information is available on the biology, distribution, and uses of *Metynnis cuiaba*, from peer-reviewed sources or otherwise. No introductions of this species have been reported, so impacts of introduction are unknown. Assessment of this species is complicated due to uncertain identification of *Metynnis* spp. captured and established in the United States, and the need for systematic revision of the genus. Additional information and research on this species

will be needed to increase the certainty of this assessment. Based on available information, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Metynnis cuiaba is a recently-described fish species from western Brazil. There are no known introductions of this species outside of its native range, so its history of invasiveness is uncertain. However, members of the *Metynni*s genus (species uncertain) have been collected beyond their native range in Florida, where their status is listed as locally established. There is little information available about the biology, distribution, and use of *M. cuiaba* although it does not appear to be in trade. The climate match of *M. cuiaba* with the contiguous United States is low, with only southern Florida and the southern tip of Texas having a medium match. The certainty of this risk assessment is low due to limited information and taxonomic uncertainty about this species. Overall risk for *Metynnis cuiaba* 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.

Froese, R., and D. Pauly, editors. 2017. *Metynnis cuiaba* Pavanelli, Ota & Petry, 2009. FishBase. Available: http://www.fishbase.se/summary/64970. (January 2018).

Froese, R., and D. Pauly, editors. 2018. *Metynnis cuiaba* Pavanelli, Ota & Petry, 2009. FishBase. *In* World Register of Marine Species. Available: http://www.marinespecies.org/aphia.php?p=taxdetails&id=1008256. (August 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Metynnis cuiaba* Pavanelli, Ota & Petry, 2009. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/2353448. (January 2018).

Nico, L., P. Fuller, and M. Neilson. 2018. *Metynnis sp.* Cope, 1878. U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=423. (February 2018).

Pavanelli, C., R. Ota and P. Petry. 2009. New species of *Metynnis* Cope, 1878 (Characiformes: Characidae) from the rio Paraguay basin, Mato Grosso, Brazil. Neotropical Ichthyology 7(2):141-146.

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. 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.

Anonymous. 1981. Piranha caught in Kentucky. Pet Business 7(11):33.

Calcagnotto, D., S. A. Schaefer, and R. DeSalle. 2005. Relationships among characiform fishes inferred from analysis of nuclear and mitochondrial gene sequences. Molecular Phylogenetics and Evolution 36:135-153.

Courtenay, W. R., Jr., D. A. Hensley, J. N. Taylor, and J. A. McCann. 1984. Distribution of exotic fishes in the continental United States. Pages 41-77 *in* W. R. Courtenay, Jr., and J. R. Stauffer, Jr, editors. Distribution, biology, and management of exotic fishes. John Hopkins University Press, Baltimore, Maryland.

Courtenay, W. R., Jr., D. P. Jennings, and J. D. Williams. 1991. Appendix 2: exotic fishes. Pages 97-107 *in* C. R. Robins, R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, and W. B. Scott. Common and scientific names of fishes from the United States and Canada, 5th edition. American Fisheries Society Special Publication 20. American Fisheries Society, Bethesda, Maryland.

Courtenay, W. R., Jr., and J. R. Stauffer, Jr. 1990. The introduced fish problem and the aquarium fish industry. Journal of the World Aquaculture Society 21(3):145-159.

Florida Fish and Wildlife Conservation Commission. 2009. Florida FWC exotic database. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

Fossett, J. 1981. Here's one that didn't get away. The Courier-Journal, Louisville, Kentucky (June 19).

Jégu, M. 2003. Subfamily Serrasalminae. Pages 182-18 *in* R. E. Reis, S. O. Kullander, and C. J. Ferraris Jr., editors. Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre, Brazil.

Shafland, P. L., K. B. Gestring, and M. S. Stanford. 2008. Florida's exotic freshwater fishes - 2007. Florida Scientist 71(3):220-245.