

# Silver Dollar (*Metynnis argenteus*)

## Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2013  
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Photo: Greg Hume. Licensed under the Creative Commons Attribution-Share Alike 4.0 International license. Available: [https://commons.wikimedia.org/wiki/File:Silver\\_dollar\\_-\\_Metynnis\\_argenteus.jpg](https://commons.wikimedia.org/wiki/File:Silver_dollar_-_Metynnis_argenteus.jpg). (February 2018).

## 1 Native Range and Status in the United States

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### Native Range

From Froese and Pauly (2017):

“South America: Tapajós River basin in Brazil.”

From Eschmeyer et al. (2018):

“Amazon and Orinoco river basins: Brazil, Bolivia and Colombia.”

Roach et al. (2009) report *M. argenteus* from the Orinoco river basin in Venezuela.

De Souza et al. (2012) report *M. argenteus* from Guyana.

## Status in the United States

There are no records of occurrence for *Metynnis argenteus* 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 Halpatickee 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).”

Chapman et al. (1994) list *M. argenteus* among freshwater species imported into the United States for the ornamental trade in October 1992, when the study was conducted.

## Means of Introductions in the United States

From Nico et al. (2018):

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

## Remarks

From Nico et al. (2018):

“The genus *Metynnis* is in great need of systematic revision.”

“Several *Metynnis* species are popular aquarium fishes. 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 non-established 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).”

Froese and Pauly (2017) list four species within the genus *Metynnis* that are referred to as “Silver Dollar”.

## 2 Biology and Ecology

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### 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 Ostariophysii  
Order Characiformes  
Family Characidae  
Genus *Metynnis* Cope, 1878  
Species *Metynnis argenteus* Ahl, 1923”

“Taxonomic status: valid”

Eschmeyer et al. (2018) lists the family as “Serrasalminidae”.

From Nico et al. (2018):

“The genus *Metynnis* is in great need of systematic revision.”

### Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length: 14.0 cm SL male/unsexed; [Pavanelli et al. 2009]”

## **Environment**

From Froese and Pauly (2017):

“Freshwater; pelagic; pH range: 5.0 - 7.0; dH range: ? – 15.”

“[...] 24°C - 28°C [Riehl and Baensch 1991; assumed to be recommended aquarium water temperatures]”

## **Climate/Range**

From Froese and Pauly (2017):

“Tropical [...]”

## **Distribution Outside the United States**

Native

From Froese and Pauly (2017):

“South America: Tapajós River basin in Brazil.”

From Eschmeyer et al. (2018):

“Amazon and Orinoco river basins: Brazil, Bolivia and Colombia.”

Roach et al. (2009) report *M. argenteus* from the Orinoco river basin in Venezuela.

De Souza et al. (2012) report *M. argenteus* from Guyana.

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 van der Sleen and Albert (2018):

“[Species in the genus *Metynnias* are] Characterized by: silvery coloration; small to moderate adult body sizes, adults typically much smaller than other serrasalmids; very long adipose-fin base, equal to or longer than distance between dorsal-fin insertion and adipose-fin origin [...]; and a relatively small mouth. *Metynnias* includes species with a body profile that is very deep and discoid [...] In contrast, certain other *Metynnias* species have a slightly elongate body [...].”

## Biology

From Froese and Pauly (2017):

“In weedy side arms of the river [...]”

“[...] minimum population doubling time [estimated to be] less than 15 months [...]”

“[Life cycle and mating behavior is] Assumed to be like *Metynnis hypsauchen*.”

From van der Sleen and Albert (2018):

“[*Metynnis* are] Generalized omnivores or herbivores. Browse using specialized, shearing teeth to bite off small pieces of plants, taking small seeds, fruits, flowers, and leaves of macrophytes, some filamentous algae and periphyton, and various small invertebrates, including both aquatic and terrestrial insects, microcrustaceans, and freshwater sponges (Smith 1981, Santos et al. 1984, Sazima 1986, Goulding et al. 1988, Nico 1991, Taphorn 1992, Machado-Allison and Fink 1995). Masticate and destroy seeds during consumption, and are considered seed predators rather than dispersers (Goulding 1983). Tend to move in small groups, although juveniles may form large shoals and some join schools of other plant-eating fishes (Sazima 1986, Machado-Allison and Fink 1995).”

## Human Uses

From Froese and Pauly (2017):

“Fisheries: minor commercial; aquarium: commercial.”

## Diseases

From Casal et al. (2006):

“*Myxobolus metynnis* n. sp. (Phylum Myxozoa) is described in the connective subcutaneous tissues of the orbicular region of the fish, *Metynnis argenteus* (Characidae), collected in the lower Amazon River, near the city of Peixe Boi, Pará State, Brazil. [...] The pathology associated with this parasite appears, especially during the later stages, when some signs of lyses in the host cells were observed, corresponding to the higher mortality period. The parasite described here is the second report of a *Myxobolus* spp. in a species of the Characidae from the Amazon region.”

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

## Threat to Humans

From Froese and Pauly (2017):

“Harmless”

### 3 Impacts of Introductions

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

### 4 Global Distribution

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**Figure 1.** Reported global distribution of *Metynnis argenteus*, reported from South America. Map from GBIF Secretariat (2017).

### 5 Distribution Within the United States

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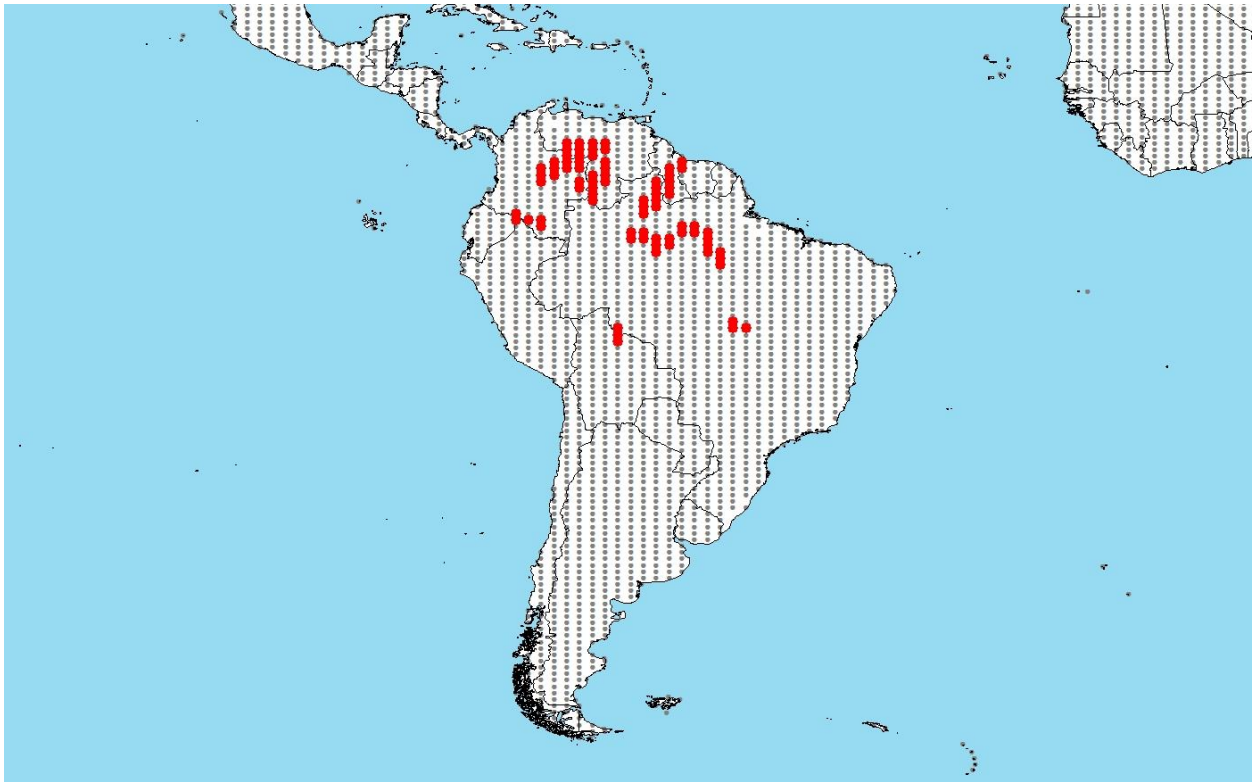
There is currently no known distribution of *Metynnis argenteus* within the United States; however, unidentified species of *Metynnis* are listed as locally established in Florida.

### 6 Climate Matching

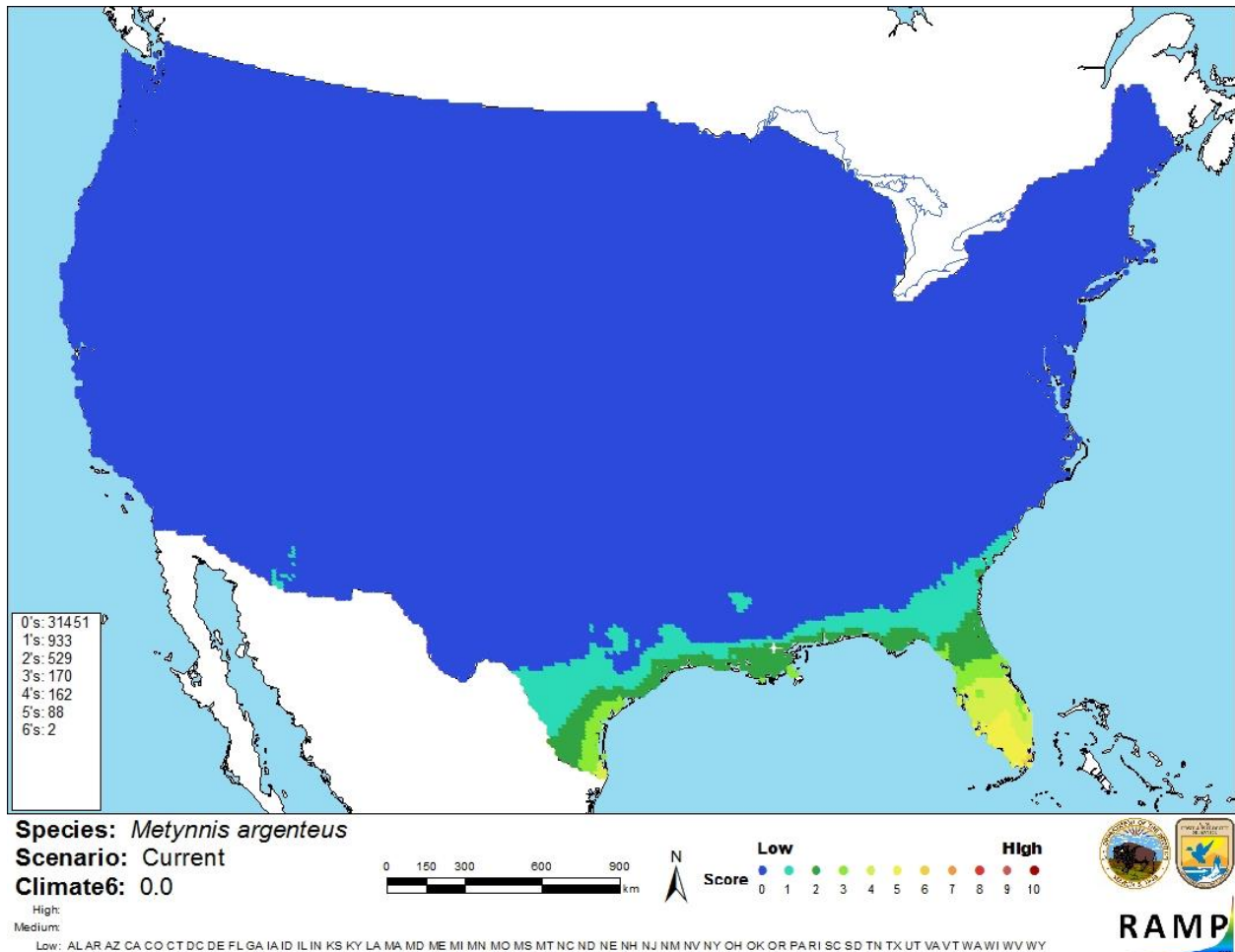
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#### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was medium for southern Florida and coastal southeastern Texas and low for rest of the United States. Climate 6 score indicated an overall low climate match for the contiguous United States. Scores of 0.005 or less are classified as low match; Climate 6 score for *Metynnis argenteus* was 0.0.



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



**Figure 3.** Map of RAMP (Sanders et al 2014) climate matches for *Metynnis argenteus* in the contiguous United States based on source locations reported by 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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

Peer-reviewed literature on the biology, ecology, distribution and potential invasiveness associated with *Metynnis argenteus* is limited. There are no reported introductions of the species, 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 data the certainty of this assessment is low.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

Silver Dollar (*Metynnis argenteus*) is a fish native to rivers of northern South America. *Metynnis* spp. are common in the pet trade, including in the United States, and support a minor commercial fishery where native. There are no reports of introductions of *Metynnis argenteus*. However, members of the *Metynnis* genus (species uncertain) have been collected beyond their native range in Florida, where their status is listed as locally established. *Metynnis* spp. found in Florida are believed to be aquarium releases. Climate match to the contiguous United States is low; however, there are areas of medium climate match in southern Florida and southeastern Texas. Certainty of assessment is low because of a lack of information and taxonomic confusion. Overall risk posed by 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

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**Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.**

Casal, G. E. Matos, and C. Azevedo. 2006. A new myxozoan parasite from the Amazonian fish *Metynnis argenteus* (Teleostei, Characidae): light and electron microscope observations. *Journal of Parasitology* 92:817-821.

Chapman, F. A., S. Fitz-Coy, E. Thunberg, J. T. Rodrick, C. M. Adams, and M. Andre. 1994. An analysis of the United States of America international trade in ornamental fish. Project final report. University of Florida, Gainesville, Florida. Submitted to the University of Hawaii.

De Souza, L. S., J. W. Armbruster, and D. C. Werneke. 2012. The influence of the Rupununi portal on distribution of freshwater fish in the Rupununi district, Guyana. *Cybium* 36(1):31-43.

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of Fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (February 2018).

Froese, R., and D. Pauly, editors. 2017. *Metynnis argenteus* Ahl, 1923. FishBase. Available: <http://www.fishbase.org/summary/Metynnis-argenteus.html>. (February 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Metynnis argenteus* Ahl, 1923. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2353432>. (February 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Metynnis argenteus*. Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=163248#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=163248#null). (February 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).

Roach, K. A., K. O. Winemiller, C. A. Layman, and S. C. Zeug. 2009. Consistent trophic patterns among fishes in lagoon and channel habitats of a tropical floodplain river: evidence from stable isotopes. *Acta Oecologica* 35(4):513-522.

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

Van der Sleen, P., and J. Albert. 2018. Field guide to the fishes of the Amazon. Princeton University Press, Princeton, New Jersey.

## 10 References Quoted But Not Accessed

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**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.

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).
- Goulding, M. 1983. The role of fishes in seed dispersal and plant distribution in Amazonian floodplain ecosystems. *Sonderbände des Naturwissenschaftlichen Vereins in Hamburg* 7:271-283.
- Goulding, M., M. L. Carvalho, and E. G. Ferreira. 1988. Rio Negro, rich life in poor water. SPB Academic Publishing, The Hague, Netherlands.
- Machado-Allison, A., and W. Fink. 1995. Sinopsis de las especies de la subfamilia Serrasalmine presentes en la cuenca del Orinoco. Claves, diagnosis e ilustraciones. LITO COLOR R.I., C.A., Caracas, Venezuela.
- Nico, L. G. 1991. Trophic ecology of piranhas (Characidae: Serrasalminae) from savanna and forest regions in the Orinoco River basin of Venezuela. Doctoral dissertation, University of Florida, Gainesville.
- 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.
- Riehl, R., and H. Baensch. 1991. *Aquarien Atlas*, volume 1. Mergus, Verlag für Natur-und Heimtierkunde, Melle, Germany.
- Santos, G. M. dos, M. Jegu, and B. de Mérona. 1984. Catálogo de peixes comerciais do baixo rio Tocantins. Eletronorte, Brasília, Brazil.
- Sazima, I. 1986. Similarities in feeding behavior between some marine and freshwater fishes in two tropical communities. *Journal of Fish Biology* 29:53–65.
- Shafland, P. L., K. B. Gestring, and M. S. Stanford. 2008. Florida's exotic freshwater fishes - 2007. *Florida Scientist* 71(3):220-245.
- Smith, N. J. 1981. *Man, fishes, and the Amazon*. Columbia University Press, New York.
- Taphorn, D. C. 1992. The characiform fishes of the Apure River drainage. *BioLlania* (special edition) 4.