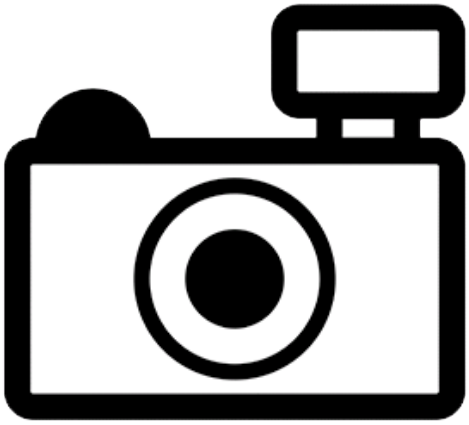
Hypostomus scaphyceps (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, January 2013
Revised, December 2018
Web Version, 10/15/2019



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

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

Status in the United States

No records of *Hypostomus scaphyceps* in the wild or in trade in the United States were found.

From Nico et al. (2018):

"Several morphologically distinct but unidentified *Hypostomus* species have been recorded as established in the United States: these included populations in Indian Springs in Nevada; Hillsborough County in Florida; and the San Antonio River and San Felipe Creek in Texas (Courtenay and Deacon 1982; Courtenay et al. 1984, 1986; Courtenay and Stauffer 1990; Page and Burr 1991; López-Fernández and Winemiller 2005). A population of an unidentified *Hypostomus* species is firmly established in Hawaii (Devick 1991a, b). Reported from Arizona, Colorado, Connecticut, Louisiana, and Pennsylvania. Failed in Connecticut, Massachusetts, and Pennsylvania."

Means of Introductions in the United States

No records of *Hypostomus scaphyceps* in the wild in the United States were found.

From Nico et al. (2018):

"Members of this genus have been introduced through a combination of fish farm escapes or releases, and aquarium releases (Courtenay and Stauffer 1990; Courtenay and Williams 1992). In Texas, the initial introduction occurred when *Hypostomus* entered local streams after escaping from pool and canal systems of the San Antonio Zoological Gardens in or before 1962 (Barron 1964); the Comal County introduction was probably due to an aquarium release (Whiteside and Berkhouse 1992)."

Remarks

From Nico et al. (2018):

"The genus *Hypostomus* contains about 116 species (Burgess 1989). Highlighting the serious need for additional taxonomic and systematic work, Armbruster (1997) concluded that it is currently impossible to identify most species in the genus. Several apparently different *Hypostomus* species have been collected in the United States but not definitively identified to species level (Page and Burr 1991; Courtenay and Stauffer 1990). Distinguishing characteristics of the genus and a key to loricariid genera were provided by Burgess (1989) and Armbruster (1997). Photographs appeared in Burgess (1989) and Ferraris (1991). *Hypostomus* has officially replaced the generic name *Plecostomus*. The genus was included in the key to Texas fishes of Hubbs et al. (1991) and several identifying traits were also given by Page and Burr (1991)."

"The Nevada population was reported originally as *Plecostomus punctatus* by Minckley (1973) and as *Hypostomus plecostomus* by Deacon and Williams (1984), but was determined to be an unidentified species of *Hypostomus* (not *H. plecostomus*; J. Armbruster, pers. comm.). Populations from Texas (e.g., Hubbs et al. 1978; Whiteside and Berkhouse 1992) and Florida (e.g., Rivas 1965) occasionally have been reported as *Hypostomus plecostomus*. According to Courtenay et al. (1974), the Florida *Hypostomus* species in the Hillsborough County area was probably different than that reported from the southern part of the state. In addition, most early reports from south Florida, and possibly elsewhere in the state, probably were based on incorrect identifications of *Pterygoplichthys* (Loftus and Kushlan 1987; Ludlow and Walsh 1991; Nico, personal observation). Courtenay (personal communication) reviewed records of loricariid catfishes from southeastern Florida and located only one specimen of the genus *Hypostomus* (UF 98938), collected from Coral Gables Canal at Red Road, Dade County, in 1960; he concluded that all other loricariids from Dade County were *Pterygoplichthys*. The *Hypostomus* inhabiting the Tampa area was reported as expanding its range into the Hillsborough River from Six Mile Creek (Courtenay and Stauffer 1990), but there are no supporting specimens, and these also may be based on misidentifications of *Pterygoplichthys* (Ludlow and Walsh 1991). Whitworth (1996) recorded the capture of specimens of an unidentified loricariid from the Thames River drainage, Connecticut, and listed it as *Hypostomus*. Unfortunately, he does not provide any information that might be useful in its positive identification. In his book, Whitworth included an illustration of a *Hypostomus*, but the drawing is from an old plate and not of the Connecticut fish.

Distribution maps for *Hypostomus* found in the United States were given in Courtenay and Hensley (1979), Hensley and Courtenay (1980), and Courtenay and McCann (1981), but these maps most likely include records based on what is now recognized to be *Pterygoplichthys*."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2018), *Hypostomus scaphyceps* (Nichols, 1919) is the current valid name of this species.

From ITIS (2018):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Loricariidae
Subfamily Hypostominae
Genus *Hypostomus*
Species *Hypostomus scaphyceps* (Nichols, 1919)"

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 3.5 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: Paranapanema River basin [Brazil]."

Introduced

No records of introductions of *Hypostomus scaphyceps* were found in trade or in the wild.

Means of Introduction Outside the United States

No records of introductions of *Hypostomus scaphyceps* were found.

Short Description

No information on a short description of *Hypostomus scaphyceps* was found.

Biology

No information on the biology of *Hypostomus scaphyceps* was found.

Human Uses

No information on human uses of *Hypostomus scaphyceps* was found.

Diseases

No information on diseases of *Hypostomus scaphyceps* was found. **No records of OIE-reportable diseases (OIE 2019) were found for *H. scaphyceps.***

Threat to Humans

From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions

No records of introductions of *Hypostomus scaphyceps* were found.

From Nico et al. (2018):

"The effects of these loricariid catfish is largely unknown. In Texas, Hubbs et al. (1978) reported possible local displacement of algae-feeding native fishes such as *Campostoma anomalum* by *Hypostomus*, and López-Fernández and Winemiller (2005) suggest that reductions in *Dionda diaboli* abundance in portions of San Felipe Creek are due to population increases of *Hypostomus*. Because of their abundance in Hawaii, introduced *Hypostomus, Pterygoplichthys*, and *Ancistrus* may compete for food and space with native stream species (Devick 1989; Sabaj and Englund 1999)."

4 Global Distribution

Figure 1. Map of the Rio de la Plata River basin which contains the Paranapanema River where *Hypostomus scaphyceps* has been reported in South America (Froese and Pauly 2018). Map adapted from original work by Karl Musser (https://commons.wikimedia.org/wiki/File:Riodelaplatabasinmap.png; licensed under Creative Commons BY-SA 3.0 unported).

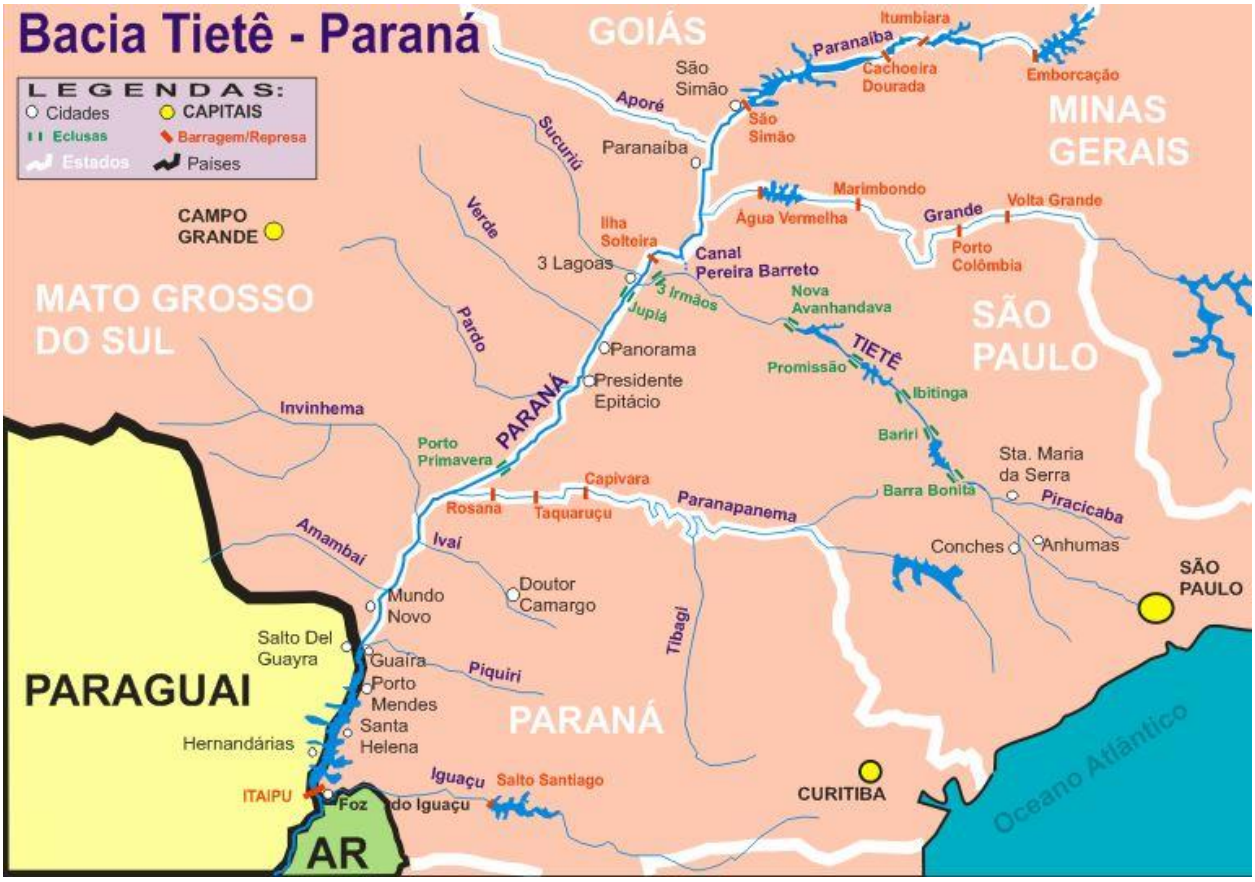


Figure 2. Map of river systems in southern Brazil showing the Paranapanema River basin. Image from Andre Koehne (2007) licensed under Creative Commons Attribution-Share Alike 3.0. Available: https://commons.wikimedia.org/wiki/File:Bacia_tiete_parana.png. (December 2018).

No georeferenced observations were available for *Hypostomus scaphyceps* to use as source locations for the climate match. Source points for the climate match were chosen to represent the Paranapanema River basin.

5 Distribution Within the United States

No records of *Hypostomus scaphyceps* in the wild in the United States were found.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Hypostomus scaphyceps* was low for the majority of the western United States. Portions of the southeast coast and southern Texas have medium match. The only area of high match was found in southern Florida. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.011, medium (scores greater than 0.005, but less than 0.103, are classified as medium). All States had low individual Climate 6 scores, except for Florida, which had a high individual score. Source points were based on location descriptions and not actual established population locations; therefore, the climate match may not be accurate.

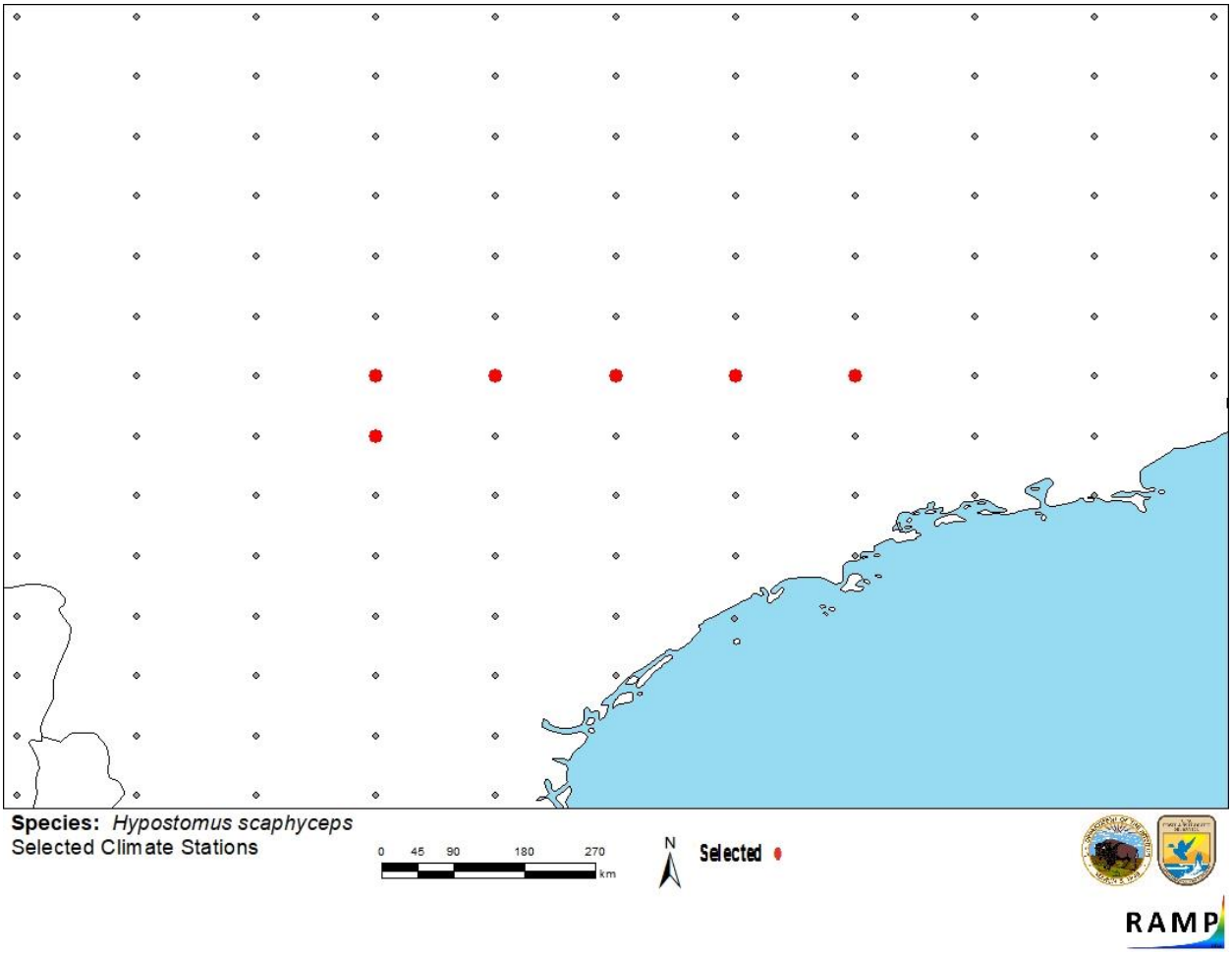


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in South America selected as source locations (red; Paranapanema River basin) and non-source locations (gray) for *Hypostomus scaphyceps* climate matching. Source point locations were based on the distribution description from Froese and Pauly (2018).

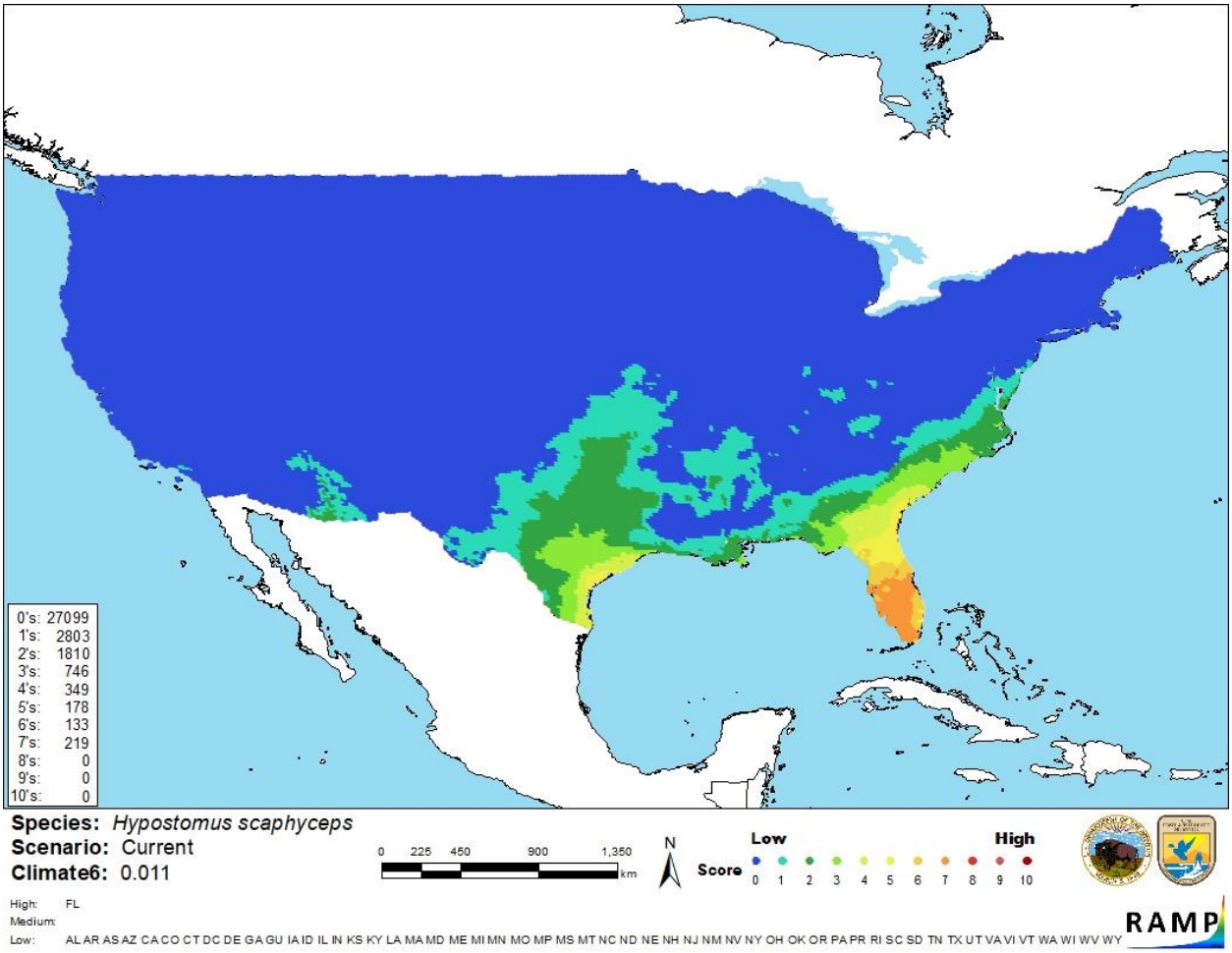


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Hypostomus scaphyceps* in the contiguous United States based on source locations reported from population description from Froese and Pauly (2018). 0 = Lowest match, 10 = Highest match.

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 *Hypostomus scaphyceps* is low. There is minimal information available for this species. No information on introductions *H. scaphyceps* was found. However, unidentified species of *Hypostomus* have become established in the United States, and it is possible that one or more of those populations could be identified later as *H. scaphyceps*.

No georeferenced observations were available for *H. scaphyceps* to use as source locations for the climate match. Source points for the climate match were chosen to represent the Paranapanema River basin.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Hypostomus scaphyceps is a South American suckermouth catfish native to the Paranapanema River basin of Brazil. The history of invasiveness is uncertain. It has not been reported as introduced or established anywhere in the world. However, unidentified species of *Hypostomus* are established in the United States. The climate match for the contiguous United States was medium with Florida having an individually high climate match. The certainty of assessment is low. The overall risk assessment category for *H. scaphyceps* 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.

Froese, R., and D. Pauly, editors. 2018. *Hypostomus scaphyceps* Nichols, 1919. FishBase. Available: https://www.fishbase.de/summary/Hypostomus-scaphyceps.html. (December 2018).

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

ITIS (Integrated Taxonomic Information System). 2018. *Hypostomus scaphyceps* (Nichols, 1919). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=680232#null. (December 2018).

Nico, L., P. Fuller, and M. Neilson. 2018. *Hypostomus sp.* Lacepède, 1803. USGS Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=762. (October 2018).

OIE (World Organisation for Animal Health). 2019. OIE-listed diseases, infections and infestations in force in 2019. Available: http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (October 2019).

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.

Armbruster, J. W. 1997. Phylogenetic relationships of the sucker-mouth armored catfishes (Loricariidae) with particular emphasis on the Ancistrinae, Hypostominae, and Neoplecostominae. Doctoral dissertation. University of Illinois, Champaign-Urbana.

Barron, J. L. 1964. Reproduction and apparent over-winter survival of the sucker-mouth armoured catfish, *Plecostomus* sp., in the headwaters of the San Antonio River. The Texas Journal of Science 16:449.

Burgess, W. E. 1989. An atlas of freshwater and marine catfishes: a preliminary survey of the Siluriformes. Tropical Fish Hobbyist Publications, Neptune City, New Jersey.

Courtenay, W. R., Jr., and J. E. Deacon. 1982. Status of introduced fishes in certain spring systems in southern Nevada. Great Basin Naturalist 42(3):361–366.

Courtenay, W. R., Jr., and D. A. Hensley. 1979. Survey of introduced non-native fishes. Phase I. Introduced exotic fishes in North America: Status 1979. Report submitted to the National Fishery Research Laboratory. U.S. Fish and Wildlife Service, Gainesville, Florida.

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. A. Hensley, J. N. Taylor, and J. A. McCann. 1986. Distribution of exotic fishes in North America. Pages 675–698 *in* C. H. Hocutt and E. O. Wiley, editors. The zoogeography of North American freshwater fishes. John Wiley and Sons, New York.

Courtenay, W. R., Jr., and J. A. McCann. 1981. Status and impact of exotic fish presently established in U.S. open waters (September 1, 1980; revised April 1981). National Fishery Research Laboratory, U.S. Fish and Wildlife Service, Gainesville, Florida.

Courtenay, W. R., Jr., H. F. Sahlman, W. W. Miley II, and D. J. Herrema. 1974. Exotic fishes in fresh and brackish waters of Florida. Biological Conservation 6(4):292–302.

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

Courtenay, W. R., Jr., and J. D. Williams. 1992. Dispersal of exotic species from aquaculture sources, with emphasis on freshwater fishes. Pages 49–81 *in* A. Rosenfield and R. Mann, editors. Dispersal of living organisms into aquatic ecosystems. Maryland Sea Grant, College Park.

Deacon, J. E., and J. E. Williams. 1984. Annotated list of the fishes of Nevada. Proceedings of the Biological Society of Washington 97(1):103–118.

Devick, W. S. 1989. Disturbances and fluctuations in the Wahiawa Reservoir ecosystem. Project F-14-R-13, Job 4, Study I. Division of Aquatic Resources, Hawaii Department of Land and Natural Resources.

Devick, W. S. 1991a. Disturbances and fluctuations in the Wahiawa Reservoir ecosystem. Project F-14-R-15, Job 4 Study I. Division of Aquatic Resources, Hawaii Department of Land and Natural Resources.

Devick, W. S. 1991b. Patterns of introductions of aquatic organisms to Hawaiian freshwater habitats. Pages 189–213 *in* New directions in research, management and conservation of Hawaiian freshwater stream ecosystems. Proceedings of the 1990 symposium on freshwater stream biology and fisheries management, Division of Aquatic Resources, Hawaii Department of Land and Natural Resources.

Ferraris, C. J., Jr. 1991. Catfish in the aquarium. Tetra Press, Morris Plains, New Jersey.

Hensley, D. A., and W. R. Courtenay, Jr. 1980. *Hypostomus* spp., armored catfishes. Page 477 *in* D. S. Lee, C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R. Stauffer Jr., editors. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History. Raleigh.

Hubbs, C., R. J. Edwards, and G. P. Garrett. 1991. An annotated checklist of freshwater fishes of Texas, with key to identification of species. Texas Journal of Science, Supplement 43(4):1–56.

Hubbs, C., T. Luciere, G. P. Garrett, R. J. Edwards, S. M. Dean, and E. Marsh. 1978. Survival and abundance of introduced fishes near San Antonio, Texas. The Texas Journal of Science 30(4):369–376.

Loftus, W. F., and J. A. Kushlan. 1987. Freshwater fishes of southern Florida. Bulletin of the Florida State Museum, Biological Sciences 31(4):147–344.

López-Fernández, H., and K. O. Winemiller. 2005. Status of *Dionda diaboli* and report of established populations of exotic fish species in lower San Felipe Creek, Val Verde County, Texas. Southwestern Naturalist 50(2):246–251.

Ludlow, M. E. and S. J. Walsh. 1991. Occurrence of a South American armored catfish in the Hillsborough River, FL. Florida Scientist 54(1):48–50.

Minckley, W. L. 1973. Fishes of Arizona. Arizona Fish and Game Department, Phoenix.

Nichols, J. T. 1919. "Cascudos" brazileiros do genero *Plecostomus* do Museu Paulista. Revista do Museu Paulista 11:409–426.

Page, L. M., and B. M. Burr. 1991. A field guide to freshwater fishes of North America north of Mexico. The Peterson Field Guide Series, volume 42. Houghton Mifflin Company, Boston.

Rivas, L. R. 1965. Florida freshwater fishes and conservation. Quarterly Journal of the Florida Academy of Sciences 28:255–258.

Sabaj, M. H., and R. A. Englund. 1999. Preliminary identification and current distribution of two suckermouth armored catfishes (Loricariidae) introduced to Oahu streams. Bishop Museum Occasional Papers 59:50–55.

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.

Whiteside, B. G., and C. Berkhouse. 1992. Some new collections locations for six fish species. The Texas Journal of Science 44(4):494.

Whitworth, W. R. 1996. Freshwater fishes of Connecticut. State Geological and Natural History Survey of Connecticut, Bulletin 114, Department of Environmental Protection, Hartford.