Redtail Catfish (*Phractocephalus hemioliopterus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, February 2011

Revised, August 2017

Web Version, 09/15/2017

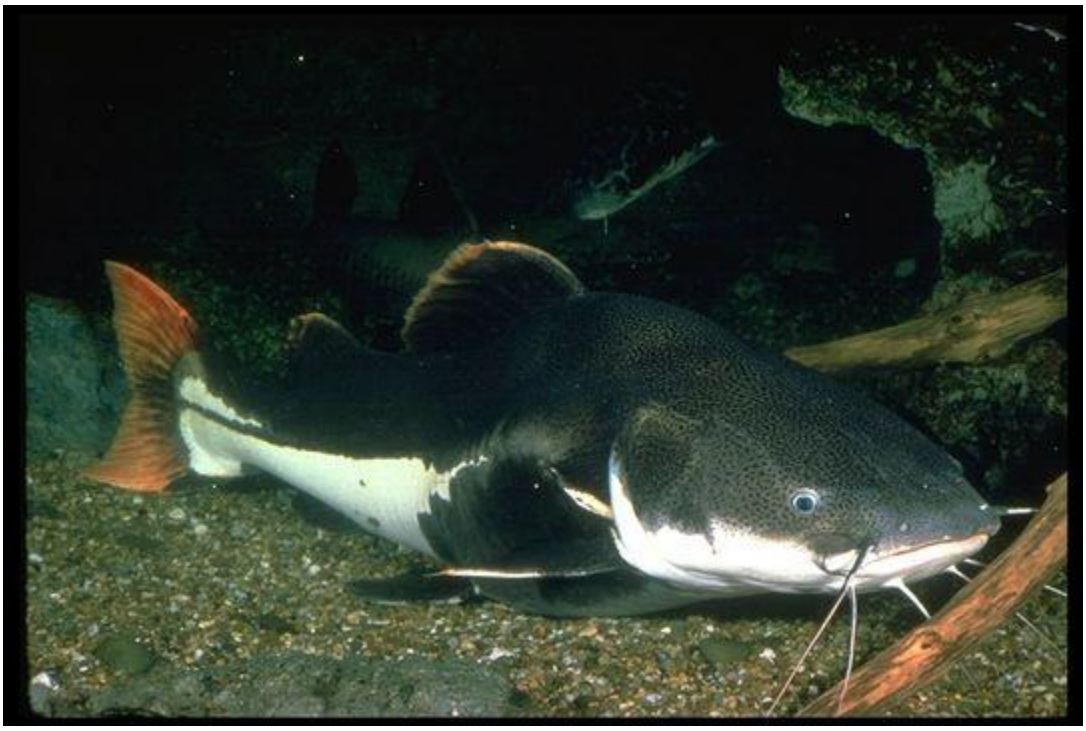

Photo: S. Middleton. Copyright California Academy of Sciences, licensed under CC BY-NC-SA. Available: http://eol.org/data_objects/12522959. (August 2017).

1 Native Range and Status in the United States

Native Range

From Schofield et al. (2017):

"Tropical America. Widespread in Amazon and Orinoco basins of South America (Barthem and Goulding 1997)."

Status in the United States

From Schofield et al. (2017):

"**Nonindigenous Occurrences**: A specimen was found dead at a marina in Panama City, **Florida** in 2007. There is also a record from an unspecified locality in **Florida** (Courtenay et al. 1991); the date of the record is presumably some time between 1979 and 1991. The redtail catfish has also been collected near Lincoln, **Nebraska** (Rasmussen 1998). One specimen was collected from the Missouri River, near Columbia **Missouri** in 2000. Three individuals were collected in fairly close proximity in September 2010 in the Lake Barkley, **Tennessee** area (B. Wilson). An angler collected a specimen in Clear Creek (a tributary of Galveston Bay), **Texas** in 2004 (R. Howells, pers. comm.). Another individual was caught in May 2012 near Mont Belvieu, Texas."

"**Status:** Failed in Florida, Nebraska, Missouri and Texas. Unknown in Tennessee. Three individuals collected in proximity to one another. This species may be able to survive winters in a warm-water refugia."

Means of Introduction into the United States

From Schofield et al. (2017):

"Probable aquarium release."

Remarks

From ITIS (2017):

"Common Name(s): redtail catfish [English]

pirarara [English]”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Status

From ITIS (2017):

“Kingdom Animalia

Subkingdom Bilateria

Infrakingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Actinopterygii

Class Teleostei

Superorder Ostariophysi

Order Siluriformes

Family Pimelodidae

Genus *Phractocephalus*

Species *Phractocephalus hemioliopterus* (Bloch and Schneider, 1801)”

“Taxonomic Status:

Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 134 cm TL male/unsexed; [IGFA 2001]; common length : 60.0 cm TL male/unsexed; [Hugg 1996]; max. published weight: 44.2 kg [IGFA 2001]”

Environment

From Froese and Pauly (2017):

“Freshwater; demersal; pH range: 5.5 - 6.8; dH range: ? - 10; potamodromous [Riede 2004].”

Climate/Range

From Froese and Pauly (2017):

“Tropical; 20°C - 26°C [Baensch and Riehl 1985]”

Distribution Outside the United States

Native

From Schofield et al. (2017):

“Tropical America. Widespread in Amazon and Orinoco basins of South America (Barthem and Goulding 1997).”

Introduced

From Ng and Tan (2010):

“A single specimen of ca. 1200 mm SL was obtained from the Pandan Reservoir [Singapore]. Several individuals of this species have been sighted at the reservoir, according to the staff there. It is currently unclear whether the species is breeding in the reservoir.”

From Mega Fishing (2017):

“Stocked in many lakes in Thailand […]”

From Zakaria (2017):

“[Malaysian a]nglers have been reported landing several varieties of the high aggressive and predatory peacock bass (*Cichla* species), Chao Phraya high fin giant catfish (*Pangasius sanitwongsei*), pirarucu (*Arapaima gigas*), pacu (Serrassalminae), red tail catfish (*Phractocephalus hemioliopterus*) and alligator gar (*Lepisosteus*).”

Means of Introduction Outside the United States

From Ng and Tan (2010):

“Fourteen fish species [including *Phractocephalus hemioliopterus*] are known from only one or two individuals caught or seen in the [Singaporean] reservoirs. It is highly likely that most, if not all, of these 14 species owe their presence in the reservoirs to either the discarding of unwanted aquarium fish or the intentional release of fish into the reservoirs by religious devotees.”

From Mega Fishing (2017):

“Stocked […]”

“[…] very popular sport fish […]”

From Zakaria (2017):

“Dr Zahar Azuar believed that these fish were set free into the [Malaysian] rivers by hobbyist when it reaches unmanageable sizes in their aquariums.”

Biology

From Froese and Pauly (2017):

“Feeds on fish, crabs and fruits [Burgess 1989]. The species is introduced but not established in Florida.”

From Schofield et al. (2017):

“[…] it uses its well-developed chemosensory and tactile abilities to sense prey. The diet consists primarily of other fishes (primarily characins and catfishes) but also may include fruits, seeds, and crustaceans, especially in seasonally-flooded forests. It is a habitat generalist, using large rivers, sloughs, streams, lagoons, and estuaries. It is a slow-moving, bottom-dwelling fish that is thought to attack prey by probing and ambush.”

Human Uses

From Froese and Pauly (2017):

“Fisheries: minor commercial; gamefish: yes; aquarium: commercial”

From Schofield et al. (2017):

“The species is an important component of the Amazonian fishery.”

“This large predacious catfish is som[e]what common in the ornamental fish trade.”

Diseases

From de Chambrier et al. (2015):

“**Fish host**	[…]	**Cestode species**	**Preval.**
[…]	[…]	[…]	[…]
Phractocephalus hemioliopterus	[…]	*Chambriella* sp. 2	50%

"**Fish host**	[…]	**Cestode species**	**Preval.**
	[…]	*Proteocephalus hemioliopteri*	10%
	[…]	*Proteocephalus* sp. 1***	20%
	[…]	*Scholzia emarginata*	100%
	[…]	*Zygobothrium megacephalum*	10%
	[…]	Monticelliinae gen. sp.	10%"

[…] ***immature. […]"

From Arredondo et al. (2014):

"*Pseudocrepidobothrium* currently includes two species, *P. eirasi* and *P. ludovici* […] both of which are parasites of *Phractocephalus hemioliopterus* […]"

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

Threat to Humans

From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions

From Schofield et al. (2017):

"**Impact of Introduction:** Unknown."

4 Global Distribution

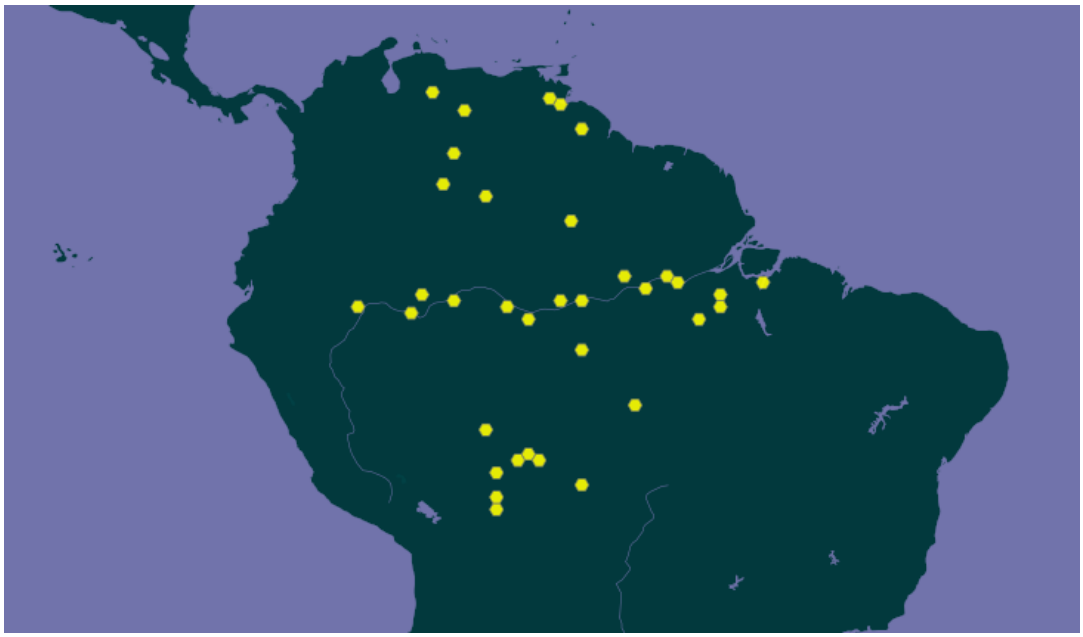

Figure 1. Known global established locations of *P. hemioliopterus*. Map from GBIF (2016). Points reported by GBIF (2016) in North America and Rio Grande do Sul, Brazil, were excluded from the map and the climate matching analysis because they are not known to represent established populations.

5 Distribution Within the United States

Figure 2. Reported locations of *P. hemioliopterus* in the United States. No locations represent confirmed established populations. Map from Schofield et al. (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was medium to high in peninsular Florida, medium in coastal Texas, and low elsewhere. Climate 6 score indicated that the contiguous U.S. has a low climate match overall. The range of scores indicating a low climate match is 0.000-0.005; Climate 6 score for *P. hemioliopterus* was 0.004.

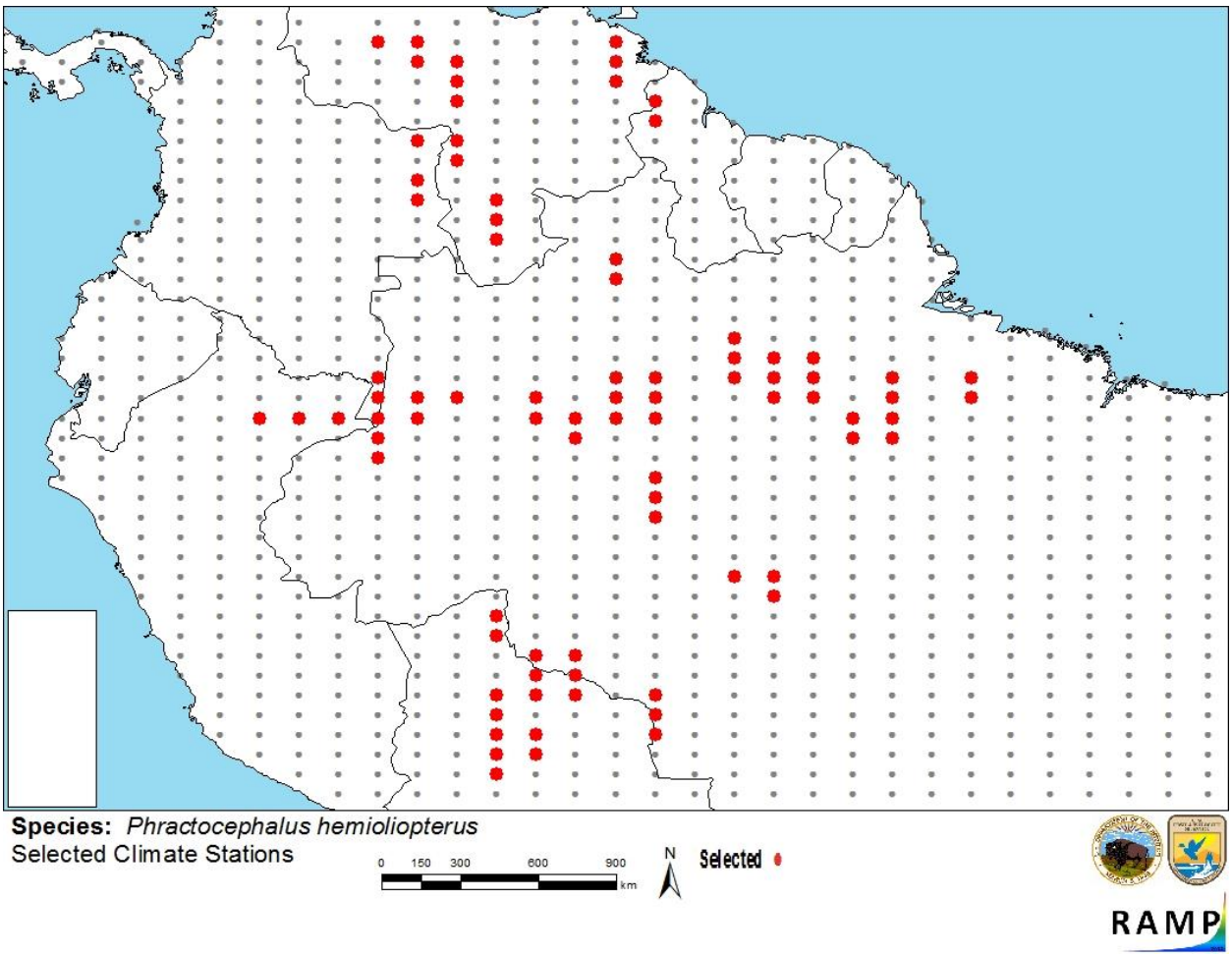

Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *P. hemioliopterus* climate matching. Source locations from GBIF (2016). Only established locations were used.

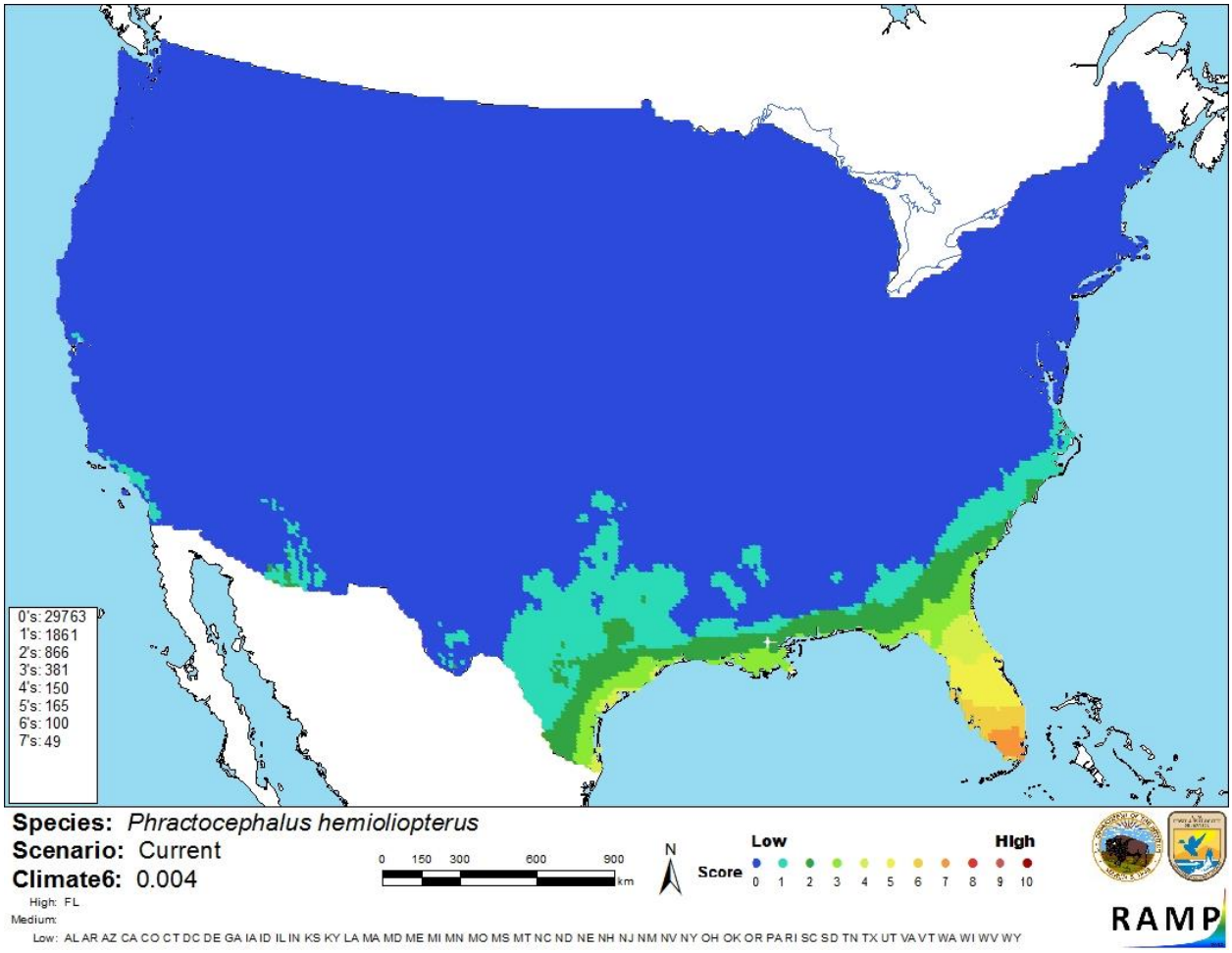

Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *P. hemioliopterus* in the contiguous United States based on source locations reported by GBIF (2016). 0=Lowest match, 10=Highest match.

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

Information on the biology, ecology, and native distribution of *P. hemioliopterus* is readily available. There is limited information on where the species has been introduced, the status of those introductions, and the impacts the species may be having on native ecosystems. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Phractocephalus hemioliopterus is a South American catfish popular as a gamefish and present in the ornamental trade. It has been recorded in several U.S. states as well as Thailand and Singapore, although none of these populations have been confirmed as established. Climate match to the contiguous U.S. is low except in Florida. Overall risk posed by *P. hemioliopterus* is uncertain.

Assessment Elements

- **History of Invasiveness: Uncertain**
- **Climate Match: Low**
- **Certainty of Assessment: 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.

Arredondo, N. J., A. A. Gil de Pertierra, and A. de Chambrier. 2014. A new species of *Pseudocrepidobothrium* (Cestoda: Proteocephalidea) from *Pseudoplatystoma reticulatum* (Pisces: Siluriformes) in the Paraná River basin (Argentina). Folia Parasitologica 61(5):462-472.

De Chambrier, A., R. Kuchta, and T. Scholz. 2015. Tapeworms (Cestoda: Proteocephalidea) of teleost fishes from the Amazon River in Peru: additional records as an evidence of unexplored species diversity. Revue Suisse de Zoologie 122(1):149-163.

Froese, R., and D. Pauly, editors. 2017. *Phractocephalus hemioliopterus* (Bloch & Schneider, 1801). FishBase. Available: http://fishbase.org/summary/Phractocephalus-hemioliopterus.html. (August 2017).

GBIF (Global Biodiversity Information Facility). 2016. *Phractocephalus hemioliopterus* (Bloch & Schneider, 1801). Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/2338793. (August 2017).

ITIS (Integrated Taxonomic Information System). 2017. *Phractocephalus hemioliopterus* (Bloch and Schneider, 1801). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=164255#null. (August 2017).

Mega Fishing. 2017. Redtail catfish (*Phractocephalus hemioliopterus*). MegaFishingThailand. Available: http://www.megafishingthailand.com/fish-species-in-thailand/introduced/redtail-catfish-phractocephalus-hemioliopterus/. (August 2017).

Ng, H. H., and H. H. Tan. 2010. An annotated checklist of the non-native freshwater fish species in the reservoirs of Singapore. Cosmos 6(1):95-116.

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

Schofield, P. J., L. Nico, and P. Fuller. 2017. *Phractocephalus hemioliopterus* (Bloch and Schneider, 1801). U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=838. (August 2017).

Zakaria, R. 2017. Invasion of foreign predators in M'sian rivers harming native fish: expert. New Straits Times (February 5). Available: https://www.nst.com.my/news/2017/02/209736/invasion-foreign-predators-msian-rivers-harming-native-fish-expert. (August 2017).

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. 1985. Aquarien Atlas, volume 2. Mergus, Verlag für Natur-und Heimtierkunde GmbH, Melle, Germany.

Barthem, R., and M. Goulding. 1997. The catfish connection: ecology, migration, and conservation of Amazon predators. Columbia University Press, New York.

Burgess, W. E. 1989. An atlas of freshwater and marine catfishes. A preliminary survey of the Siluriformes. T. F. H. Publications, Inc., Neptune City, New Jersey.

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.

Hugg, D. O. 1996. MAPFISH georeferenced mapping database. Freshwater and estuarine fishes of North America. Life Science Software, Edgewater, Maryland.

IGFA. 2001. Database of IGFA angling records until 2001. IGFA, Fort Lauderdale, Florida.

Rasmussen, J. L. 1998. Aquatic nuisance species of the Mississippi River basin. 60th Midwest Fish and Wildlife Conference, Aquatic Nuisance Species Symposium, Cincinnati, Ohio.

Riede, K. 2004. Global register of migratory species - from global to regional scales. Final report of the R&D-Projekt 808 05 081. Federal Agency for Nature Conservation, Bonn, Germany.