

# Giant Tigerfish (*Hydrocynus goliath*)

## Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2011

Revised, February 2018

Web Version, 9/10/2018



Photo: Sablegsd. Licensed under Creative Commons (CC-BY-SA-3.0). Available:  
[https://commons.wikimedia.org/wiki/File:Hydrocynus\\_goliath.jpg](https://commons.wikimedia.org/wiki/File:Hydrocynus_goliath.jpg). (February 2018).

## 1 Native Range and Status in the United States

---

### Native Range

From Froese and Pauly (2018):

“Africa: Congo River basin, from the marine lower Congo [Brewster 1986] up to the upper Lualaba [Poll 1976], in Democratic Republic of the Congo and Republic of Congo. Also reported from Lake Tanganyika [Eccles 1992; Tanzania, Democratic Republic of the Congo, Burundi, Zambia].”

## Status in the United States

This species has not been reported as introduced in the United States. This species is present in the aquarium trade in the United States. For example:

From AquaScapeOnline (2018):

“African Tiger Fish 2.5"-3.5" (Hydrocynus Goliath [*sic*]) [...]

Over Stock Special 150.00 Regularly 225.00 ea. Limited Quantity Available”

“African Tiger Fish 3"-4" (Hydrocynus Goliath [*sic*]) [...]

List Price: \$250.00

Our Price: \$175.00

You Save: \$75.00 (30%)”

The Florida Fish and Wildlife Conservation Commission has listed the tigerfish *H. goliath* as a prohibited species. Prohibited nonnative species “are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities” (FFWCC 2018).

## Means of Introductions in the United States

This species has not been reported as introduced in the United States.

## Remarks

Fricke et al. (2018) list *Hydrocyon goliath*, *Hydrocyon vittatus*, and *Hydrocyon vittiger* as synonyms for *Hydrocynus goliath*. Synonyms were used, along with the accepted scientific name, to search for information for this ERSS.

From Seriously Fish (2018):

“We cannot stress strongly enough that this is a species totally unsuited to aquarium life. Alarming, it is becoming easier to acquire, with small specimens showing up quite frequently in dealer’s tanks over the last few years. When small, it makes an interesting and undeniably impressive addition to a large aquarium but, bearing in mind its enormous adult size and the potential dangers associated with the maintenance of such a fearsome predator, we recommend it is avoided. Tank maintenance is incredibly dangerous with adult fish easily being able to sever a man’s hand. The other thing to consider is what you will do with the fish once it begins to approach 3 or 4 feet in length. It is sad when so many suitable aquarium species are available that some of these wonderful predators will be consigned to an early death.”

## 2 Biology and Ecology

---

### 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 Alestiidae

Genus *Hydrocynus* Cuvier, 1816

Species *Hydrocynus goliath* (Boulenger, 1898)”

“Taxonomic Status: valid”

## **Size, Weight, and Age Range**

From Froese and Pauly (2018):

“Max length : 133 cm FL male/unsexed; [IGFA 2001]; max. published weight: 50.0 kg [Robins et al. 1991]”

## **Environment**

From Froese and Pauly (2018):

“Freshwater; pelagic; pH range: 6.5 - 7.5; dH range: ? - 25.”

“[...] 23°C - 26°C [Baensch and Riehl 1985; assumed to represent recommended aquarium water temperatures]”

## **Climate/Range**

From Froese and Pauly (2018):

“Tropical; [...]”

## **Distribution Outside the United States**

### **Native**

From Froese and Pauly (2018):

“Africa: Congo River basin, from the marine lower Congo [Brewster 1986] up to the upper Lualaba [Poll 1976], in Democratic Republic of the Congo and Republic of Congo. Also reported from Lake Tanganyika [Eccles 1992].”

## Introduced

This species has not been reported as introduced outside its native range.

## Means of Introduction Outside the United States

This species has not been reported as introduced outside its native range.

## Short Description

From Cotterill and Goodier (2009):

“The particularly striking field characters of goliath are the larger teeth, and longer, more massive jaws; characters that set this species apart from all other tigerfish [...].”

Cotterill and Goodier (2009) also list the following diagnostic characters of *H. goliath*: 12-20 upper teeth, 8-14 lower teeth, 53-58 scales along the lateral line, dorsal fin in line or slightly in front of pelvic fins, 3/4 scale rows between lateral line and pelvic fin, very short gill rakers, and black adipose fin.

## Biology

From Froese and Pauly (2018):

“Inhabits lakes and large rivers [Eccles 1992].”

## Human Uses

From Froese and Pauly (2018):

“Fisheries: commercial; gamefish: yes”

This species is present in the aquarium trade in the United States. For example:

From AquaScapeOnline (2018):

“African Tiger Fish 2.5"-3.5" (*Hydrocynus Goliath* [*sic*]) [...]

Over Stock Special 150.00 Regularly 225.00 ea. Limited Quantity Available”

“African Tiger Fish 3"-4" (*Hydrocynus Goliath* [*sic*]) [...]

List Price: ~~\$250.00~~

Our Price: \$175.00

You Save: \$75.00 (30%)”

## Diseases

No information available. No OIE-reportable diseases have been documented.

## Threat to Humans

From Froese and Pauly (2018):

“Harmless”

From Hansford-Steele (2004):

“The goliath tigerfish [*Hydrocynus goliath*] has the somewhat singular distinction of being the only African freshwater fish (excluding the Zambezi shark, which is really a saltwater fish) known to attack humans, and there are several recorded incidents from the Congo River.”

## 3 Impacts of Introductions

---

No information available. This species has not been reported as introduced.

The Florida Fish and Wildlife Conservation Commission has listed the tigerfish *H. goliath* as a prohibited species. Prohibited nonnative species “are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities” (FFWCC 2018).

## 4 Global Distribution

---



**Figure 1.** Known global distribution of *Hydrocynus goliath*, reported from central Africa. Map from GBIF Secretariat (2017).

## 5 Distribution Within the United States

---

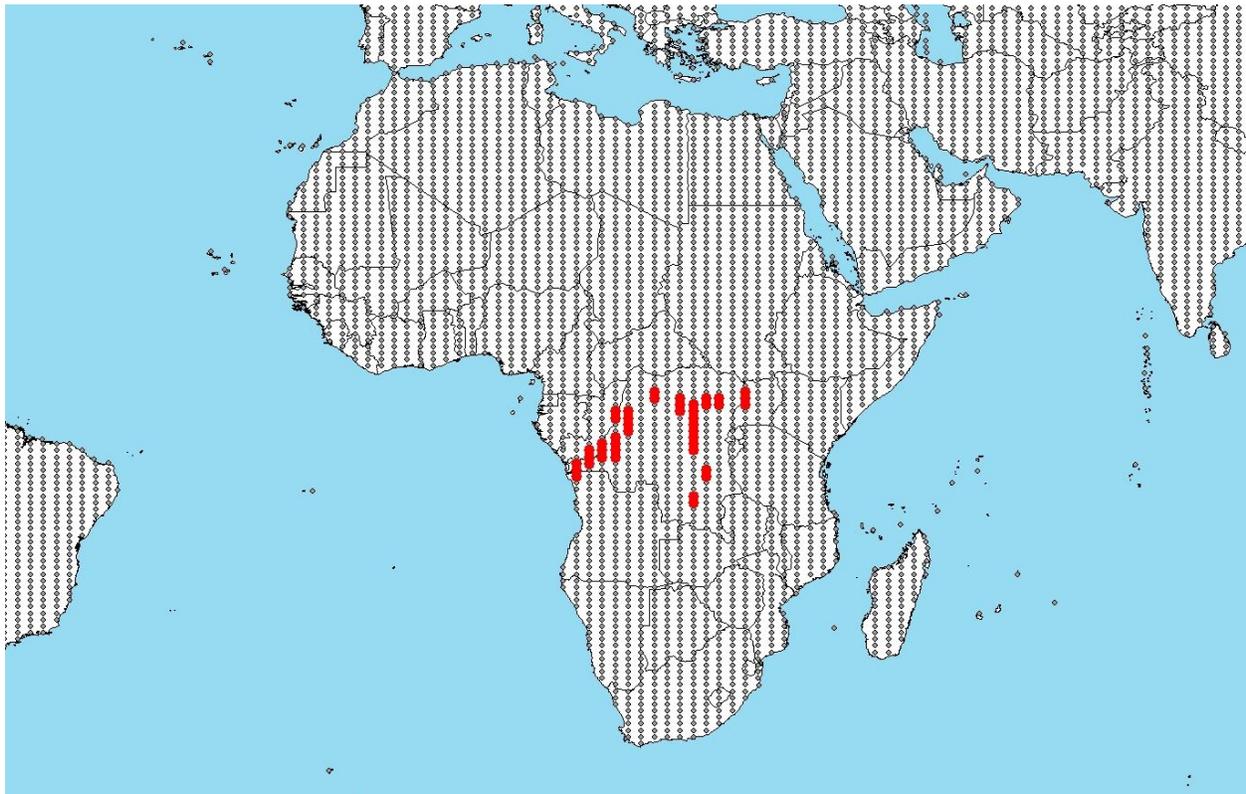
This species has not been reported as introduced in the United States.

## 6 Climate Matching

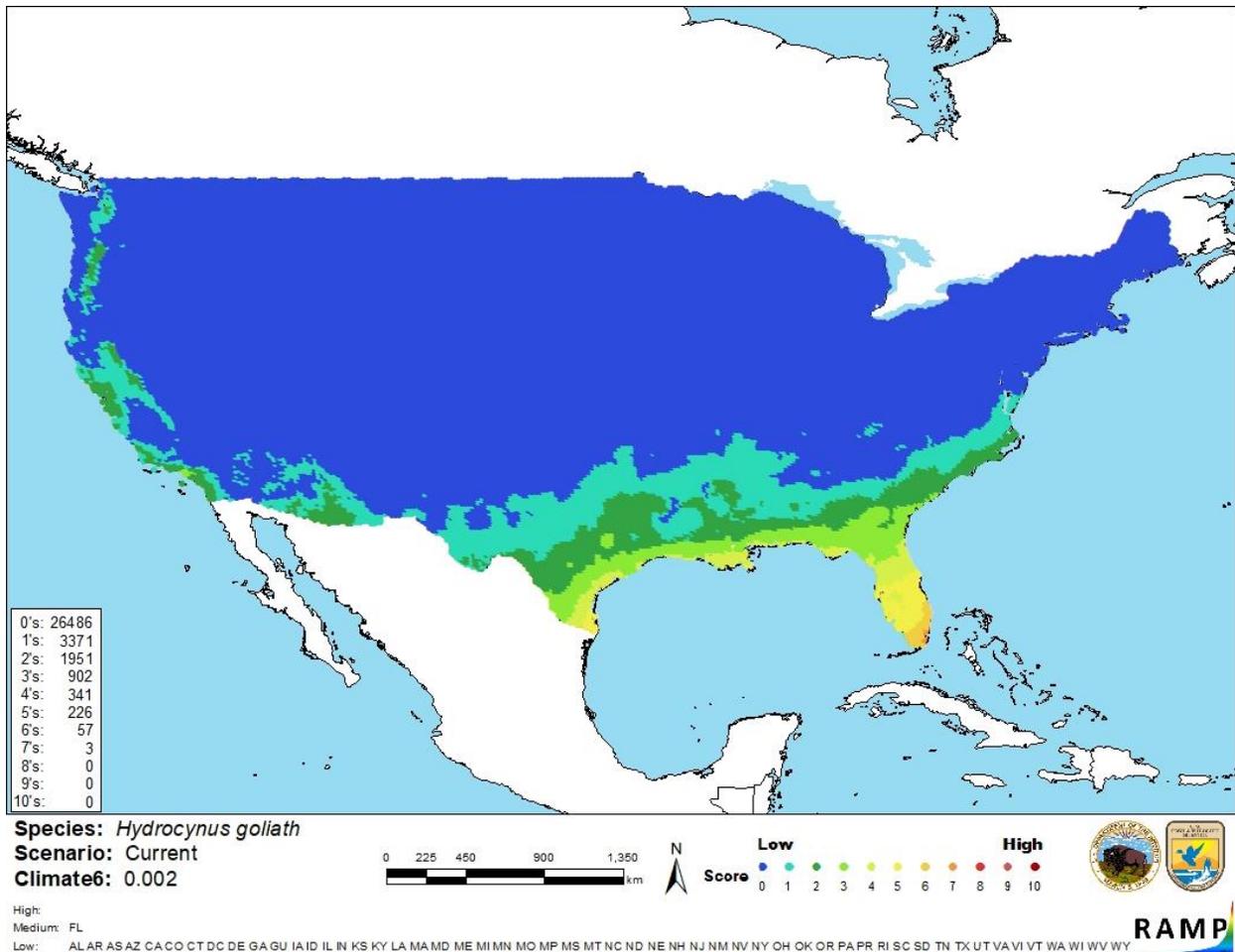
---

### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) for *Hydrocynus goliath* in the contiguous United States is low overall, represented by a Climate 6 score of 0.002. The range of scores classified as low match is 0.000 to 0.005, inclusive. Locally, peninsular Florida showed the strongest match, which was medium. Nearly all of the Gulf Coast also had medium match. Low matches were found throughout the rest of the contiguous United States.



**Figure 2.** RAMP (Sanders et al. 2018) source map showing weather stations in Africa selected as source locations (red; Democratic Republic of the Congo, Republic of the Congo, Uganda, Angola) and non-source locations (gray) for *Hydrocynus goliath* climate matching. Source locations from GBIF Secretariat (2017).



**Figure 3.** Map of RAMP (Sanders et al. 2018) climate matches for *Hydrocynus goliath* 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

---

Information on the biology and distribution of this species is not readily available. No introductions of this species have been reported, so impacts of introduction are unknown. Given the very limited amount of existing information on *Hydrocynus goliath*, the certainty of assessment is low.

## 8 Risk Assessment

---

### Summary of Risk to the Contiguous United States

*Hydrocynus goliath*, also known as the giant tigerfish, is a large fish indigenous to the Congo River Basin and Lake Tanganyika in Africa. Despite having a history of attacking and harming humans, it is a popular gamefish and target of commercial fishing. Information on the biology and distribution of this species is not readily available. No reports of introductions beyond its native range were found. The climate match for the contiguous United States is low, with only the Florida peninsula and coastline of the Gulf of Mexico representing a medium match. The State of Florida has listed *H. goliath* as a prohibited species. Given all factors, the assessment for 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

---

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

AquaScapeOnline. 2018. Goliath tigerfish. AquaScapeOnline, Belleville, New Jersey. Available: <https://www.aquascapeonline.com/prodList.asp?item=Goliath%20Tigerfish&idCategory=528>. (September 2018).

- Cotterill, F. P. D., and S. A. Goodier. 2009. How many tigerfish species? Genetic insights into the evolution of Africa's tigerfish and the taxonomic status of Tanzanian *Hydrocynus*. *African Fisherman* 20(6):37-41.
- FFWCC (Florida Fish and Wildlife Conservation Commission). 2018. Prohibited species list. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: <http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/>. (September 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>. (September 2018).
- Froese, R., and D. Pauly, editors. 2018. *Hydrocynus goliath* Boulenger, 1898. FishBase. Available: <http://www.fishbase.org/summary/SpeciesSummary.php?ID=8682&genusname=Hydrocynus&speciesname=goliath&AT=hydrocynus+goliath&lang=English>. (February 2018).
- GBIF Secretariat. 2017. GBIF backbone taxonomy: *Hydrocynus goliath* Boulenger, 1898. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2356176>. (February 2018).
- Hansford-Steele, B. 2004. African fly-fishing handbook: a guide to freshwater and saltwater fly-fishing in Africa. Struik Publishers, Cape Town, South Africa.
- ITIS (Integrated Taxonomic Information System). 2018. *Hydrocynus goliath* Boulenger, 1898. Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=641102#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=641102#null). (February 2018).
- Sanders, S., C. Castiglione, and M. H. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. U.S. Fish and Wildlife Service.
- Seriously Fish. 2018. *Hydrocynus goliath* – giant tigerfish. Seriously Fish. Available: <http://www.seriouslyfish.com/species/hydrocynus-goliath/>. (September 2018).

## 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.

Brewster, B. 1986. A review of the genus *Hydrocynus* Cuvier 1819 (Teleostei: Characiformes). Bulletin of the British Museum Natural History (Zool.) 50(3):163-206.

Eccles, D. H. 1992. FAO species identification sheets for fishery purposes. Field guide to the freshwater fishes of Tanzania. Prepared and published with the support of the United Nations Development Programme (project URT/87/016). FAO, Rome.

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

Poll, M. 1976. Exploration du Parc National de l'Upemba - Mission G.F. De Witte en collaboration avec W. Adam, A. Janssens, L. Van Meel et R. Verheyen (1946-1949). Fascicule 73. Poissons. Fondation pour favoriser les Recherches Scientifiques en Afrique, Brussels, Belgium.

Robins, C. R., R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea and W. B. Scott. 1991. World fishes important to North Americans. Exclusive of species from the continental waters of the United States and Canada. American Fisheries Society Special Publication 21.