

Tigerfish (*Hydrocynus vittatus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, August 2011
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[https://commons.wikimedia.org/wiki/File:Hydrocynus_vittatus_The_fishes_of_the_Nile_\(Pl._X_VII\)_\(6961607491\).jpg](https://commons.wikimedia.org/wiki/File:Hydrocynus_vittatus_The_fishes_of_the_Nile_(Pl._X_VII)_(6961607491).jpg). (December 2018).

1 Native Range and Status in the United States

Native Range

From Azeroual et al. (2010):

“*Hydrocynus vittatus* is known from most of sub-Saharan Africa from Senegal to Ethiopia, and south to South Africa.”

“Central Africa: *Hydrocynus vittatus* is found throughout the Congo River basin [Angola, Burundi, Cameroon, Central African Republic, Democratic Republic of the Congo, South Sudan, Tanzania, Zambia]. In Lower Guinea, it is found in the Cross and Sanaga basins [Cameroon, Nigeria].”

“Eastern Africa: This species is known from Lake Tanganyika [Burundi, Democratic Republic of the Congo, Tanzania, Zambia] and major affluent rivers, including Malagarasi river [Tanzania], as well as Lake Albert [Democratic Republic of the Congo, Uganda] and Murchison Nile [Uganda], Lake Turkana [Kenya] [Seegers et al. 2003] and Lake Rukwa [Tanzania]. It is also present in the Lower Shire river [Malawi, Mozambique], Rufigi and Ruaha Rivers [Tanzania]. According to Hopson and Hopson (1982) in the Turkana Basin [Kenya, Uganda, South Sudan] this species is principally riverine and ecological changes in the lake level have tended to inhibit incursions of *H. vittatus* into the lake. However, an erroneous identification by Worthington and Ricardo (1936) for *H. forskahlii* is also possible. In the latter case *H. vittatus* most likely does not occur in Kenya [Seegers et al. 2004].”

“Northeast Africa: It is present in the Ghazal and Jebel systems [South Sudan], White and Blue Niles [Sudan, South Sudan, Tanzania, Uganda, Democratic Republic of the Congo], and Nile to Lake Nasser (also known as Lake Nubia) [Sudan, South Sudan, Ethiopia, Uganda, Democratic Republic of the Congo, Kenya, Tanzania, Burundi].”

“Southern Africa: It occurs in the Zambezi [Zambia, Angola, Namibia, Botswana, Zimbabwe, Mozambique] and Okavango [Angola, Namibia, Botswana] (but not the Kafue [Zambia] or Lake Malawi [Malawi, Mozambique, Tanzania]), south to the Save [Zimbabwe, Mozambique], Limpopo [South Africa, Botswana, Zimbabwe, Mozambique] and Phongolo [South Africa, Mozambique] systems [Skelton 2001]. It has also been found in Lake Kariba [Zimbabwe, Zambia] [Losse 1998].”

“Western Africa: In West Africa, this species occurs in the basins of the Chad [Cameroon, Central African Republic, Chad, Niger, Nigeria, Sudan], Niger/Benue [Guinea, Mali, Niger, Benin, Nigeria, Burkina Faso], Ouémé [Benin, Nigeria], and Senegal [Senegal, Mali].”

In addition to the countries listed above, Azeroual et al. (2010) lists *Hydrocynus vittatus* as native in Ghana, Swaziland, and Togo.

Status in the United States

Hydrocynus vittatus has not been reported as introduced or established anywhere in the United States. *H. vittatus* is found in the aquarium trade in the United States.

From Aqua Imports (2018):

“AFRICAN TIGER FISH (HYDROCYNUS VITTATUS)

\$119.99

One of the largest and most fearsome predatory fish species found in Africa’s freshwater rivers and lakes, the African Tigerfish is a challenging fish to keep both due to its huge adult size and somewhat delicate temperament. They require clean, well-oxygenated water and will do best with moderate to high water flow. Recommended only for experienced fishkeepers with the largest home aquariums.”

Means of Introductions in the United States

No introductions in the wild in the United States were found.

Remarks

Hoplias microlepis is also known by the common name Tigerfish.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2018):

“**Current status:** Valid as *Hydrocynus vittatus* Castelnau 1861.”

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Characiformes
Family Alestiidae
Genus *Hydrocynus*
Species *Hydrocynus vittatus* Castelnau, 1861”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Maturity: L_m 39.8 [...]”

Max length : 105 cm FL male/unsexed; [IGFA 2001]; 74.0 cm FL (female); max. published weight: 28.0 kg [IGFA 2001]; max. reported age: 8 years [Griffith 1975]”

Environment

From Froese and Pauly (2018):

“Freshwater; demersal; potamodromous [Riede 2004]. [...] 22°C - 28°C [Baensch and Riehl 1995] [assumed to be recommended aquarium temperature]”

Climate/Range

From Froese and Pauly (2018):

“Tropical;”

Distribution Outside the United States

Native

From Azeroual et al. (2010):

“*Hydrocynus vittatus* is known from most of sub-Saharan Africa from Senegal to Ethiopia, and south to South Africa.”

“Central Africa: *Hydrocynus vittatus* is found throughout the Congo River basin [Angola, Burundi, Cameroon, Central African Republic, Democratic Republic of the Congo, South Sudan, Tanzania, Zambia]. In Lower Guinea, it is found in the Cross and Sanaga basins [Cameroon, Nigeria].”

“Eastern Africa: This species is known from Lake Tanganyika [Burundi, Democratic Republic of the Congo, Tanzania, Zambia] and major affluent rivers, including Malagarasi river [Tanzania], as well as Lake Albert [Democratic Republic of the Congo, Uganda] and Murchison Nile [Uganda], Lake Turkana [Kenya] [Seegers et al. 2003] and Lake Rukwa [Tanzania]. It is also present in the Lower Shire river [Malawi, Mozambique], Rufigi and Ruaha Rivers [Tanzania]. According to Hopson and Hopson (1982) in the Turkana Basin [Kenya, Uganda, South Sudan] this species is principally riverine and ecological changes in the lake level have tended to inhibit incursions of *H. vittatus* into the lake. However, an erroneous identification by Worthington and Ricardo (1936) for *H. forskahlii* is also possible. In the latter case *H. vittatus* most likely does not occur in Kenya [Seegers et al. 2004].”

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“Southern Africa: It occurs in the Zambezi [Zambia, Angola, Namibia, Botswana, Zimbabwe, Mozambique] and Okavango [Angola, Namibia, Botswana] (but not the Kafue [Zambia] or Lake Malawi [Malawi, Mozambique, Tanzania]), south to the Save [Zimbabwe, Mozambique], Limpopo [South Africa, Botswana, Zimbabwe, Mozambique] and Phongolo [South Africa, Mozambique] systems [Skelton 2001]. It has also been found in Lake Kariba [Zimbabwe, Zambia] [Losse 1998].”

“Western Africa: In West Africa, this species occurs in the basins of the Chad [Cameroon, Central African Republic, Chad, Niger, Nigeria, Sudan], Niger/Benue [Guinea, Mali, Niger, Benin, Nigeria, Burkina Faso], Ouémé [Benin, Nigeria], and Senegal [Senegal, Mali].”

In addition to the countries listed above, Azeroual et al. (2010) lists *Hydrocynus vittatus* as native in Ghana, Swaziland, and Togo.

Introduced

Hydrocynus vittatus has not been reported as introduced or established anywhere in the world outside of its native range.

Means of Introduction Outside the United States

Hydrocynus vittatus has not been reported as introduced or established anywhere in the world outside of its native range.

Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 0; Dorsal soft rays (total): 10; Anal spines: 0; Anal soft rays: 15. Diagnosis: 2 scale rows between lateral line and scaly process at pelvic-fin bases; eye < 70% of interorbital space [Paugy 1990, 2003]. Dorsal-fin origin at about same level as pelvic-fin insertions; tips of adipose and dorsal fins black; forked edge of caudal fin black [Paugy 1990, 2003; Paugy and Schaefer 2007].”

Biology

From Froese and Pauly (2018):

“Prefers warm, well-oxygenated water, mainly larger rivers and lakes; all but the largest form roving schools of like-sized fish; aptly described as fierce and voracious; feeds on whatever prey is most abundant but *Brycinus*, *Micralestes*, *Barbus*, and *Limnothrissa* are favored [Skelton 1993]. Useful food fish in some areas [Eccles 1992].”

From Azeroual et al. (2010):

“Breeding takes place [*sic*] on a very few days each year, when the first good rains have swollen rivers and streams, usually in December and January at which time it undertakes a spawning migration up rivers and into small streams [Jackson 1961]. The females spawn a great number of eggs in very shallow water, among the stems of grasses and other submerged and partly submerged vegetation and here the young live until the falling of the flood water forces them out of this refuge [Jackson 1961].”

Human Uses

From Froese and Pauly (2018):

“Fisheries: commercial; gamefish: yes”

Hydrocynus vittatus is found in the aquarium trade.

From Aqua Imports (2018):

“AFRICAN TIGER FISH (HYDROCYNUS VITTATUS)

\$119.99

One of the largest and most fearsome predatory fish species found in Africa’s freshwater rivers and lakes, the African Tigerfish is a challenging fish to keep both due to its huge adult size and somewhat delicate temperament. They require clean, well-oxygenated water and will do best

with moderate to high water flow. Recommended only for experienced fishkeepers with the largest home aquariums.”

Diseases

No records of OIE- reportable diseases were found for *Hydrocynus vittatus*.

No information on diseases was found.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

Hydrocynus vittatus has not been reported as introduced or established anywhere in the world outside of its native range; therefore there is no information on impacts of introduction.

4 Global Distribution



Figure 1. Known global distribution of *Hydrocynus vittatus*. Locations are in Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, The Democratic Republic of the Congo, Ghana, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and

Zimbabwe. Map from GBIF Secretariat (2018). Georeferenced locations were not available in Ethiopia, Guinea, Kenya, and South Sudan.

5 Distribution Within the United States

Hydrocynus vittatus has not been reported as introduced or established anywhere in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.019, a medium climate score. The range for a medium climate score is between 0.005 and 0.103. The southern border of the United States had a medium to high match. A majority of the northern United States had very low match. Most states had individually low climate scores except for Florida and Texas, which had individually high climate scores; and Arizona, which had a medium score.

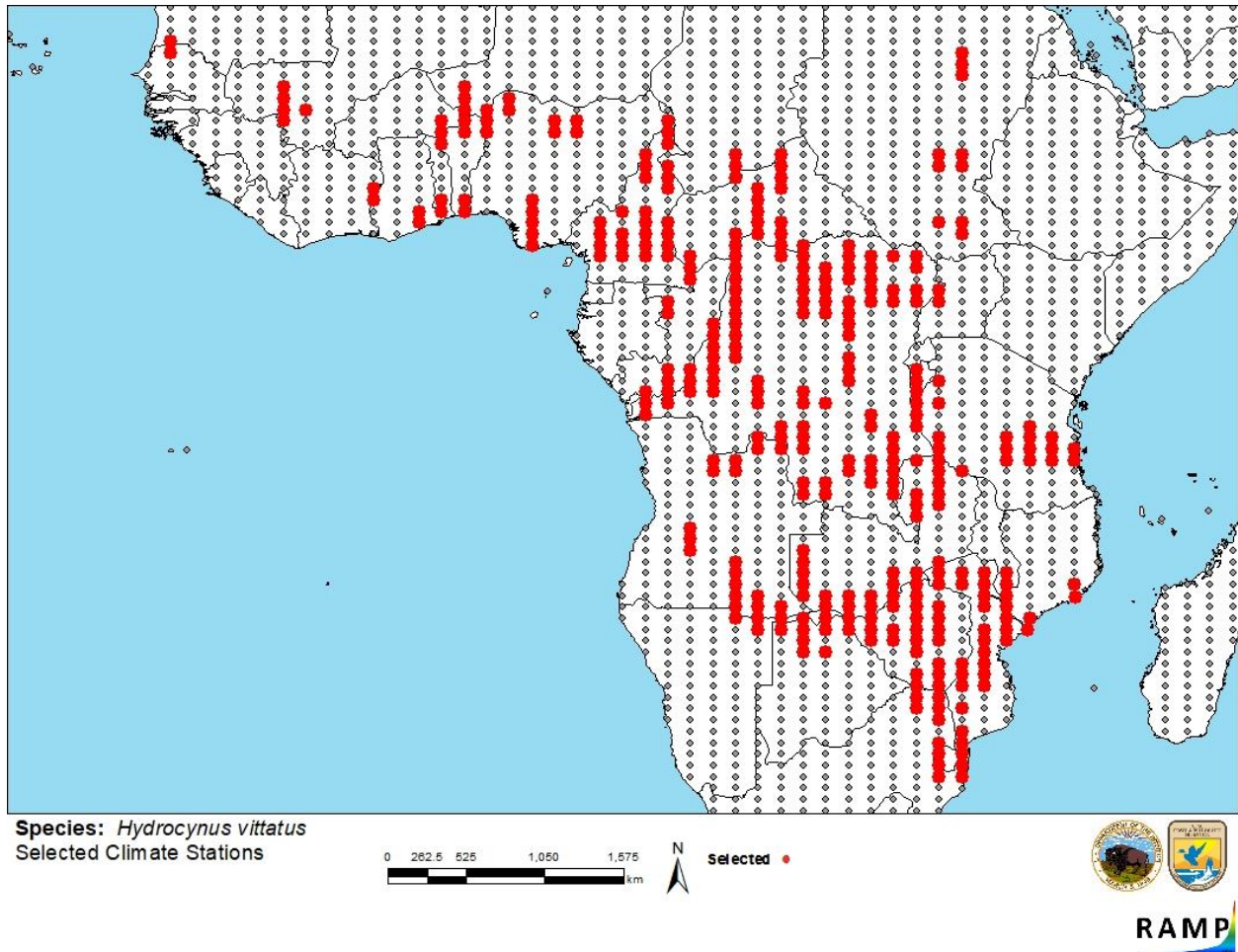


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in Angola, Benin, Botswana, Burundi, Cameroon, Central African Republic, Chad, Congo, The Democratic Republic of the Congo, Ethiopia, Ghana, Guinea, Kenya, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe selected as source locations (red) and non-source locations (gray) for *Hydrocynus vittatus* climate matching. Source locations from GBIF Secretariat (2018).

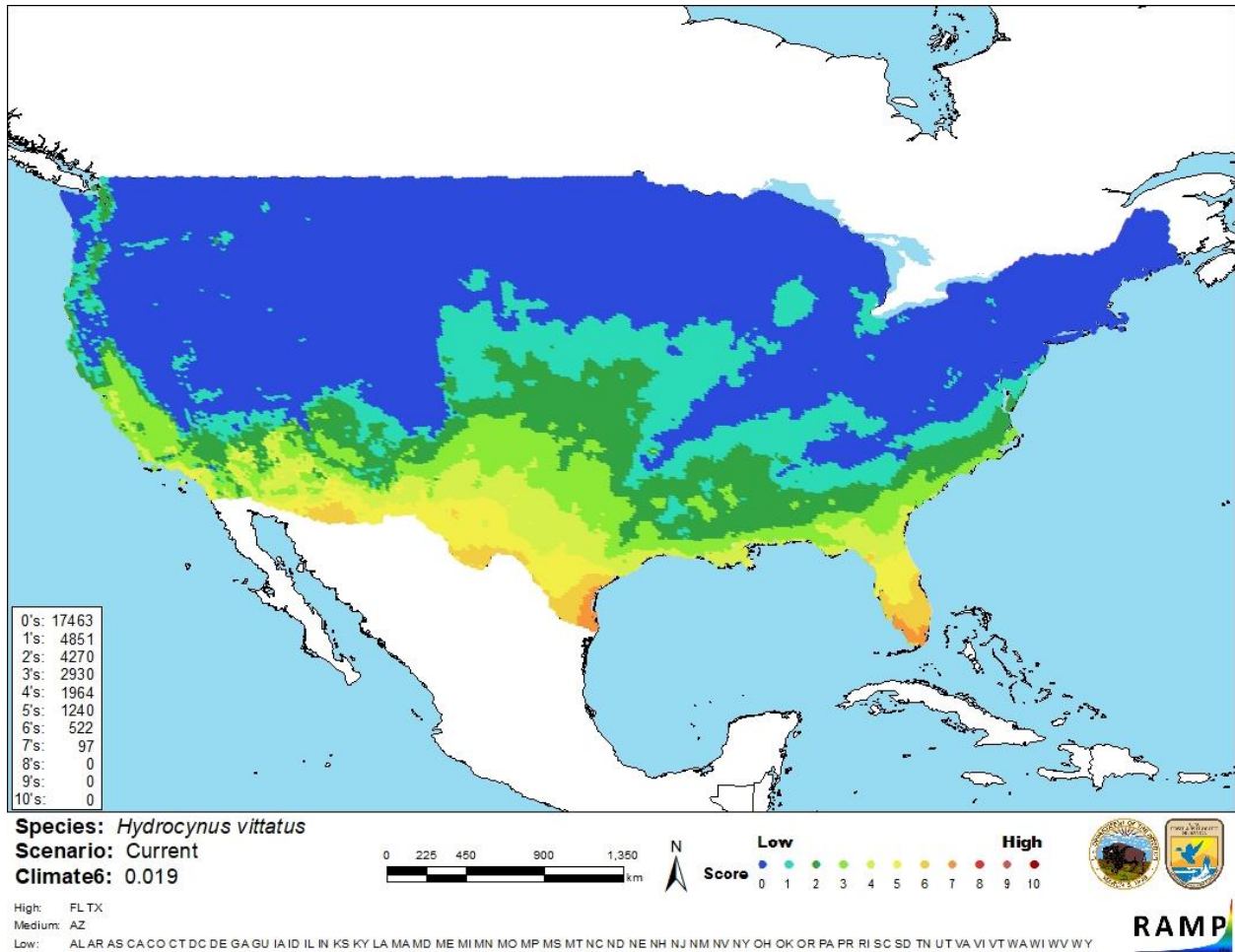


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hydrocynus vittatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Hydrocynus vittatus has not been recorded anywhere in the world outside of its native range. With no information on history of invasiveness or impacts of introduction, the certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Tigerfish, *Hydrocynus vittatus*, is a freshwater predator native to much of sub-Saharan Africa. This species is a popular game fish in its native range and sold commercially for food and within the aquarium trade. *Hydrocynus vittatus* has not been reported anywhere outside of its native distribution, resulting in an uncertain history of invasiveness. The climate match for the contiguous United States is medium. Florida and Texas scored individually high climate matches and Arizona scored a medium match. All other individual states scored low matches. The certainty of assessment is low due to a lack of information. The overall risk assessment category for *Hydrocynus vittatus* 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.

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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.

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