

Payara (*Hydrolycus armatus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2014
Revised, February 2018
Web Version, 7/31/2018



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“South America: Amazon basin, Orinoco basin, rivers of Guyana.”

From Eschmeyer et al. (2018):

“Distribution: Amazon and Orinoco River basins and rivers of Guyana: Brazil, Bolivia, Colombia, Guyana and Venezuela.”

Status in the United States

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

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

From AquaScapeOnline (2018):

“Hydrolycus Armatus [*sic*] 4" [...]

List Price: \$100.00

Our Price: \$85.00

You Save: \$15.00 (15%)”

Means of Introductions in the United States

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

Remarks

The common name “Payara” is applied to multiple species in the genus *Hydrolycus*.

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 Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysii
Order Characiformes
Family *Cynodontidae*
Subfamily *Cynodontinae*
Genus *Hydrolycus*
Species *Hydrolycus armatus*”

“Taxonomic Status: valid”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“[...] Max length : 89.0 cm TL male/unsexed; [Giarrizzo et al. 2015]; max. published weight: 8.5 kg [Cella-Ribeiro et al. 2015]”

Environment

From Froese and Pauly (2017):

“Freshwater; pelagic.”

Climate/Range

From Froese and Pauly (2017):

“Tropical”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“South America: Amazon basin, Orinoco basin, rivers of Guyana.”

From Eschmeyer et al. (2018):

“Distribution: Amazon and Orinoco River basins and rivers of Guyana: Brazil, Bolivia, Colombia, Guyana and Venezuela.”

Introduced

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

Means of Introduction Outside the United States

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

Short Description

From Seriously Fish (2018):

“The following combination of characters may be used to distinguish it from congeners: body and head silvery, slightly darker dorsally; fins hyaline with proximal portions of caudal and anal fins yellowish; caudal and anal fins with a black subdistal band and white margin; distal portions of dorsal-fin rays with dark pigmentation.”

“In particular no other member of the genus has white margins to the anal and caudal fins.”

Biology

From Layman and Winemiller (2004):

“In previous (Jepsen et al. 1997, Winemiller and Jepsen 1998) and ongoing research, seven species have been identified as the most common large- bodied (total length >350 mm)

piscivores of sandbank habitats where experiments were conducted: [...] *Hydrolycus armatus* [...]. These species are relatively mobile predators that often forage on river sandbanks.”

Human Uses

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

From AquaScapeOnline (2018):

“Hydrolycus Armatus [*sic*] 4" [...]

List Price: \$100.00

Our Price: \$85.00

You Save: \$15.00 (15%)”

From Seriously Fish (2018):

“*H. armatus* probably should not be considered a home aquarium subject at all given its eventual size and natural behaviour, and we know of only a handful of private aquarists with the facilities required to house it long-term.”

“Unfortunately, juveniles are sometimes seen for sale, most often without adequate information regarding their long-term care.”

Diseases

Magalhães et al. (2018) report that *H. armatus* is a host for the crustacean parasites *Excorallana* sp.

No OIE reportable diseases have been documented for this species.

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

There are no reported introductions for this species. Data on the impacts of introductions are lacking.

4 Global Distribution



Figure 1. Map of known global distribution of *Hydrolycus armatus*, reported from South America. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

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

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was medium in peninsular Florida and far southern Louisiana, and far southern Texas. Low matches were recorded for the rest of the United States. Climate 6 match indicated that the contiguous United States has a low climate match. The range for a low climate match is from 0.0 to 0.005, inclusive; Climate 6 match of *Hydrolycus armatus* is 0.003.

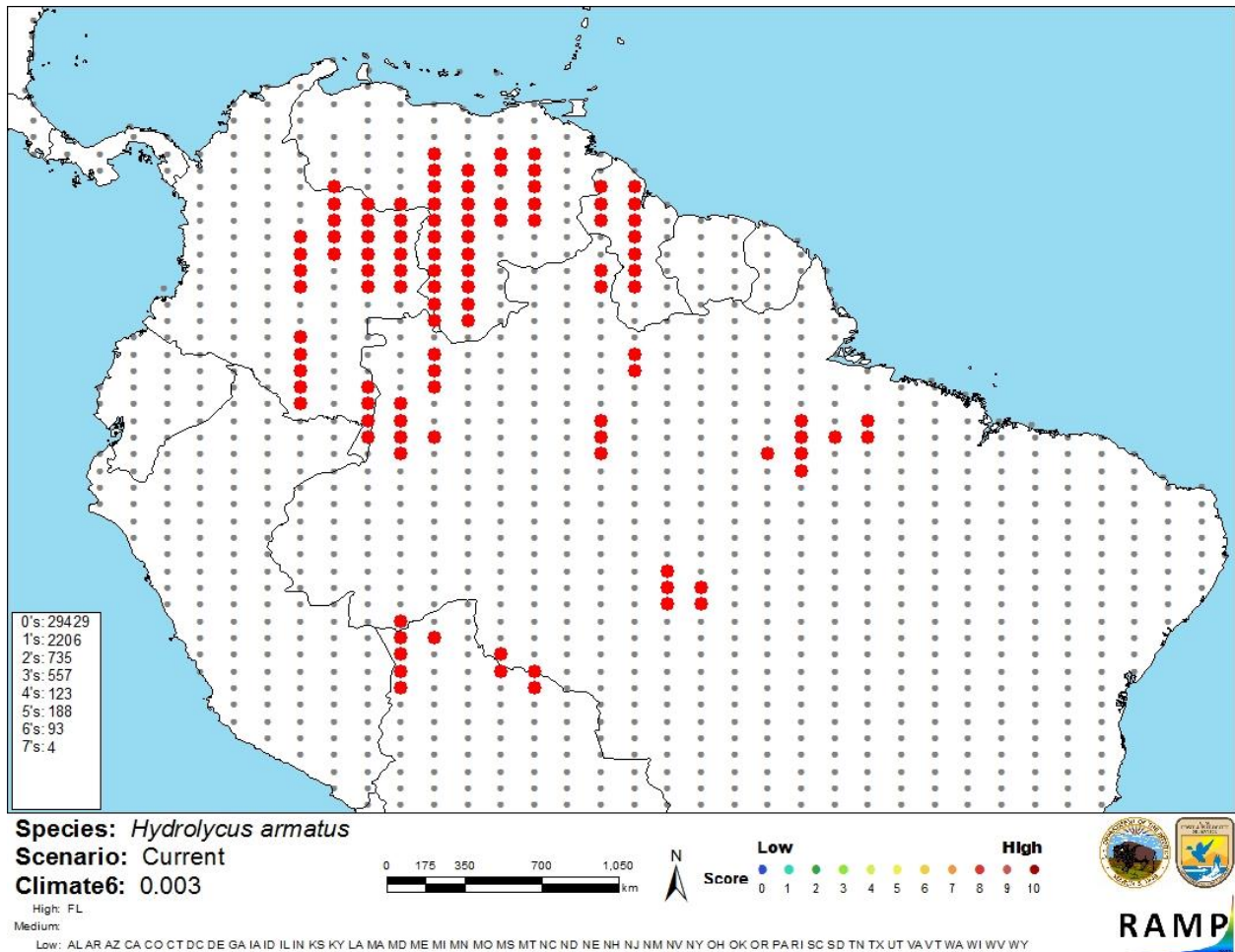


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Bolivia, Brazil, Colombia, Guyana, Venezuela) and non-source locations (gray) for *Hydrolycus armatus* climate matching. Source locations from GBIF Secretariat (2017).

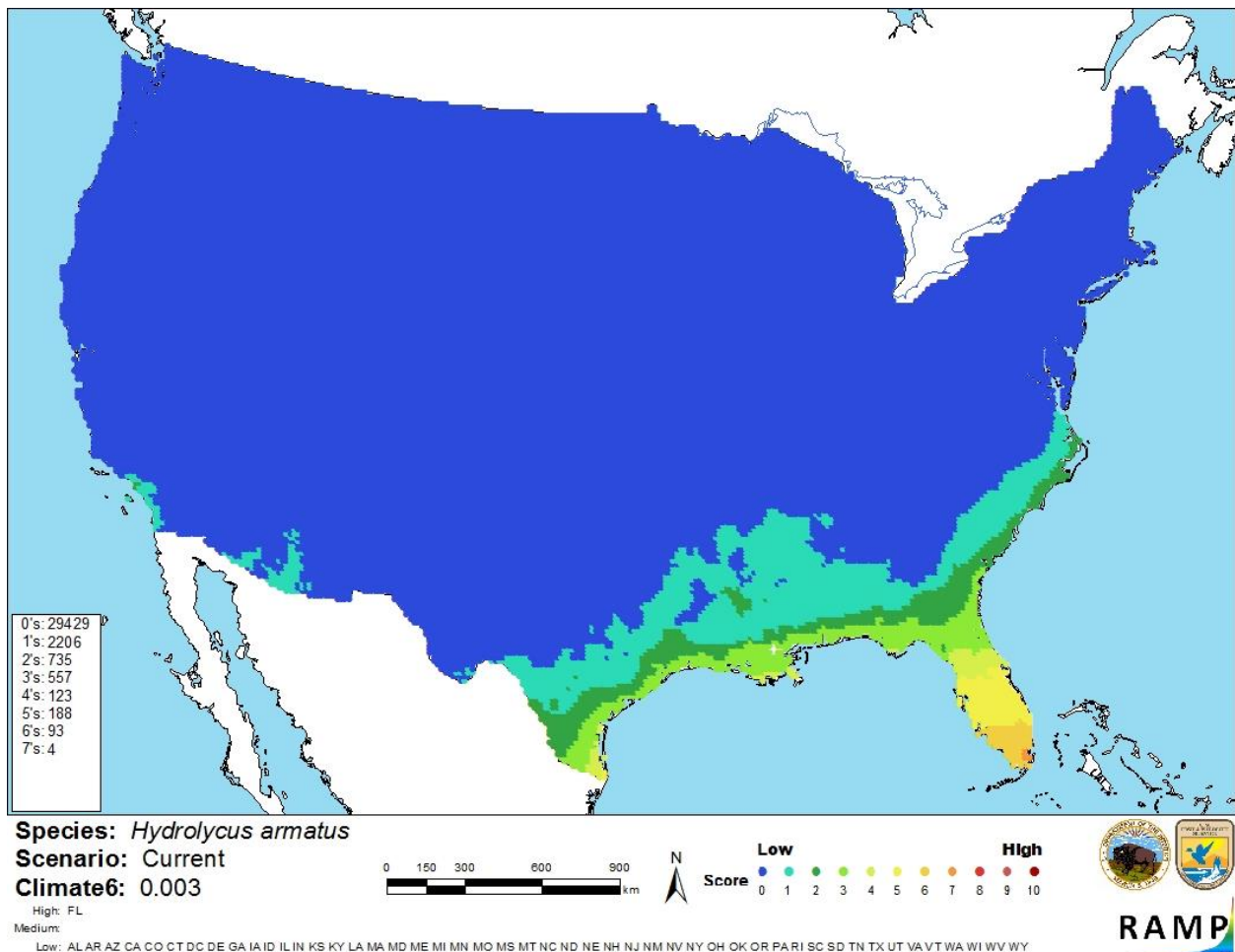


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Hydrolycus armatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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

Information on the biology of *Hydrolycus armatus* is not widely available. No introductions have been reported for this species, therefore scientific information on the impacts of introduction is lacking. Absence of this information makes the certainty of this assessment low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Payara (*Hydrolycus armatus*) is a freshwater fish species native to South America. It is found in the Amazon basin, Orinoco basin, and rivers of Guyana. Information on the biology of *H. armatus* is not widely available. No introductions for the species have been reported, although it is present in the aquarium trade in the United States. More information is needed to understand any possible impacts from introduction of *H. armatus*. Absence of this information makes the certainty of this assessment low. Climate match with the United States is low. 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

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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- Froese, R., and D. Pauly, editors. 2017. *Hydrolycus armatus* (Jardine, 1841). FishBase. Available: <http://www.fishbase.us/summary/Hydrolycus-armatus.html> (February 2018).
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- ITIS (Integrated Taxonomic Information System). 2018. *Hydrolycus armatus* (Jardine 1841). Integrated Taxonomic Information System, Reston, Virginia. Available: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=641104. (February 2018).
- Layman, C. A., and K. O. Winemiller. 2004. Size-based responses of prey to piscivore exclusion in a species-rich neotropical river. *Ecology* 85(5):1311-1320.

Magalhães, C., R. Robles, E. A. Souza-Carvalho, F. L. Carvalho, J. C. O. Malta, and F. L. Mantelatto. 2018. Annotated checklist of parasitic and decapod crustaceans from the middle and lower Xingu (Amazon Basin) above and below the Belo Monte dam complex, Pará State, Brazil. *Proceedings of the Academy of Natural Sciences of Philadelphia* 166:1-34.

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

Seriously Fish. 2018. *Hydrolycus armatus* (Jardine, 1841). Available: <http://www.seriouslyfish.com/species/hydrolycus-armatus/>. (July 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.

Cella-Ribeiro, A., M. Hauser, L. D. Nogueira, C. R. C. Doria, and G. Torrente-Vilara. 2015. Length-weight relationships of fish from Madeira River, Brazilian Amazon, before the construction of hydropower plants. *Journal of Applied Ichthyology* 31:939-945.

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Jepsen, D. B., K. O. Winemiller, and D. C. Taphorn. 1997. Temporal patterns of resource partitioning among *Cichla* species in a Venezuelan blackwater river. *Journal of Fish Biology* 51:1085–1108.

Winemiller, K. O., and D. B. Jepsen. 1998. Effects of seasonality and fish movement on tropical river food webs. *Journal of Fish Biology* 53:267–296.