

Tamasopo Cichlid (*Herichthys tamasopoensis*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, June 2017

Revised, August 2017

Web Version, 12/8/2017



Photo: J. M. Artigas Azas. Licensed under CC BY-NC-SA. Available: http://eol.org/data_objects/24197929. (August 2017).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“North America: Atlantic slope, in the Tamasopo River of Panuco River basin, Mexico.”

Status in the United States

This species has not been reported as introduced or established in the United States. This species is in trade in the U.S.

From Top Shelf Aquatics (2017):

“\$14.00
Herichthys Tamasopoensis [sic] 2”+ ”

From Bluegrass Aquatics (2017):

“*Herichthys tamasopoensis* small [...] \$8.99”

Means of Introductions in the United States

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

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Herichthys*
Species *Herichthys tamasopoensis* Artigas Azas, 1993”

From Eschmeyer et al. (2017):

“Current status: Valid as *Herichthys tamasopoensis* Artigas Azas 1993. Cichlidae: Cichlinae.”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Max length : 18.0 cm TL male/unsexed; [Kullander 2003]”

Environment

From Froese and Pauly (2017):

“Freshwater; benthopelagic; pH range: 7.8 - 8.3.”

“Occurs in hard, clear waters with pH 7.8-8.3, over rock substrate.”

Climate/Range

From Froese and Pauly (2017):

“Subtropical, preferred ?”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“North America: Atlantic slope, in the Tamasopo River of Panuco River basin, Mexico.”

Introduced

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

Means of Introduction Outside the United States

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

Short Description

From McMahan et al. (2015):

“*Herichthys* is diagnosed by six to seven vertical bars (often at the posterior of the body) with dark blotches below the upper lateral line. Breeding coloration includes a darkened color ventrally on lateral portions of the body with light- or gray-colored markings on the dorsum. The anteriormost teeth in the upper jaw are spatulate, chisel-like, or bicuspid.”

From Practical Fishkeeping (2016):

“*H. tamasopoensis* has a shallower body, longer caudal peduncle and shorter snout than the rest of the *Herichthys*.”

“Pairs change basic grey coloration with six to seven black blotches in the rear half of their flanks as soon as territories are formed. Base colour is bright creamy white and black is present in six or seven vertical bars on the rear half of their flanks, as well as in a band in the ventral area from the lower lip to the base of the anal fin. Pelvic fins become velvety black. A salmon hue shows in the frontal dorsal fin and gill covers.”

Biology

From Froese and Pauly (2017):

“Both parents tend the clutch [Werner 2003].”

From Rosenthal (2017):

“Males and females [of *Herichthys tamasopoensis*] form socially monogamous pairs over the course of the breeding season, aggressively defending their eggs and young from predators. A larger, older partner is beneficial to both males and females; larger females are more fecund, and larger individuals of both sexes are more successful at securing and defending good territories. Yet courtship in these and other substrate-spawning cichlids involves a series of ritualized interactions—parallel swimming, followed by locking jaws and vigorously wrestling—consistent with mutual assessment of body size and physical strength. Mismatched individuals interrupt courtship and fail to pair.”

From Practical Fishkeeping (2016):

“*H. tamasopoensis* seem basically herbivorous, although they probably opportunistically eat other foods too. I have seen fry and very small *H. tamasopoensis* relying on detritus as their first food.”

“These fish start breeding as the rainy season stops in the Pánuco area and river level decreases. This could be as early as mid December, when water temperature and transparency increase.”

“*H. tamasopoensis* cleans an area about 5cm/2” in diameter on the surface of a rock, on which it lays up to 200 ovoid yellowish egg. Once the babies hatch they are placed in a small pre-dug pit in the substrate about 2cm x 2cm/0.8 x 0.8”. Contrary to other *Herichthys*, these fish normally dig one pit and make it too small for large *Ictalurus mexicanus* catfish to poke in and prey on the fry at night. Some days after hatching — five under aquarium conditions — when the fry have consumed their yolk sacs, they become free swimmers and are led by their parents, opening and closing their fins to guide them.”

“By late April breeding activity is reduced and by late May, before the rains, it is almost finished.”

“Las Cascadas has many waterfalls, up to about 15m/49’ high, surrounded by lush tropical forest. They fall into pools of beautiful mineral-loaded, clear blue water and there is more than 15m/49’ visibility in the water in late winter and spring. They hold an incredible density of fish, *Herichthys tamasopoensis* being the most numerous cichlid.

“The habitat of *H. tamasopoensis* is characterised by rocky bottoms varying from boulders to limestone sediments. Rivers may be more than 15m/49’ deep immediately below waterfalls, but generally are 2-3m/6-9’. Water flow varies from moderate to moderately fast. Although aquatic vegetation is not plentiful — underwater scenery being dominated by rocks, roots and driftwood — some places offer extensive beds of *Nymphaea* sp., *Potamogeton* sp. and, in some areas, other aquatic plants such as *Ceratophyllum* sp., *Myriophyllum* sp., *Riccia fluitans* and *Chara* sp. are also present.”

Human Uses

From Practical Fishkeeping (2016):

“In captivity this fish is a slow grower and rarely looks as healthy and colourful as a wild counterpart, which could be down to the food offered in captivity. They are, however, easily kept and spawned.”

“*Herichthys tamasopoensis* are uncommon but have been on sale recently. [...] *Herichthys carpintis* and *H. cyanoguttatum* are much more common.”

Diseases

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

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

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

4 Global Distribution



Figure 1. Map of Mexico showing the known global distribution of *Herichthys tamasopoensis*. Map from GBIF (2016). The northernmost point and the southernmost point shown were not included in the climate matching analysis because they do not represent established populations of the species.

5 Distribution Within the United States

This species has not been reported as introduced or established 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 southern Florida and along the U.S.-Mexico border, and low elsewhere in the contiguous U.S. Climate 6 score indicated that the contiguous U.S. has a medium climate match overall. Scores between 0.005 and 0.103 are classified as medium match; the Climate 6 score for *H. tamasopoensis* was 0.007.

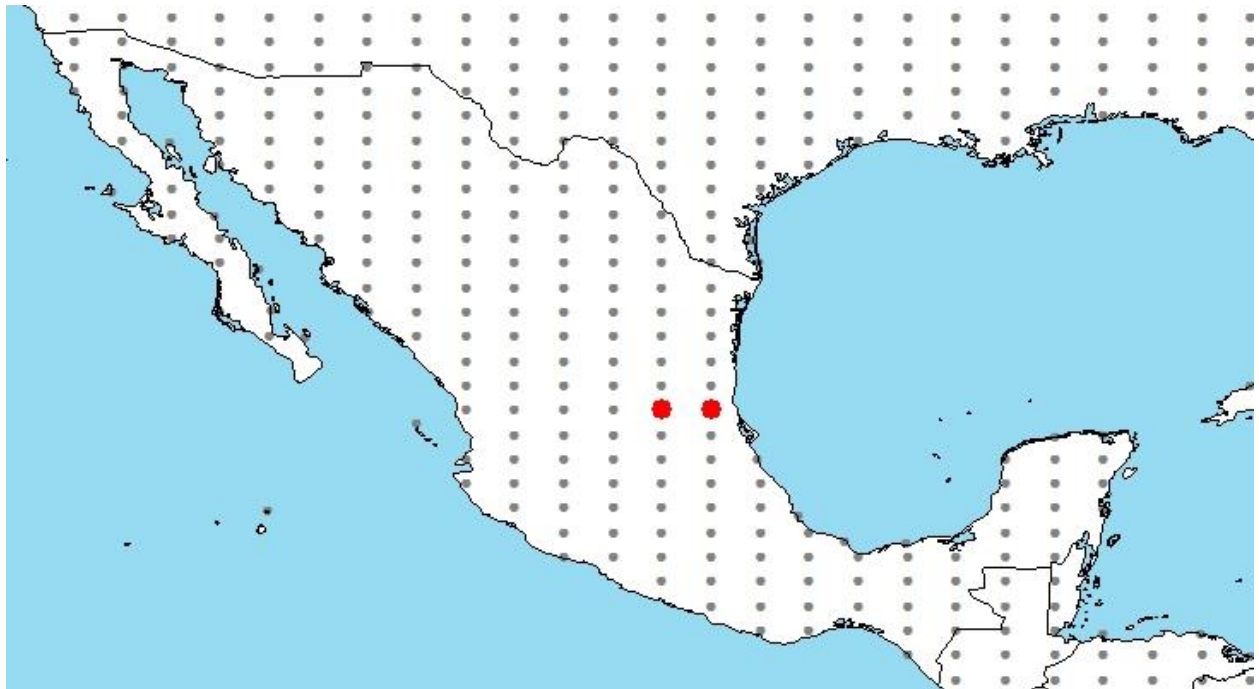


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *Herichthys tamasopoensis* climate matching. Source locations from GBIF (2016).

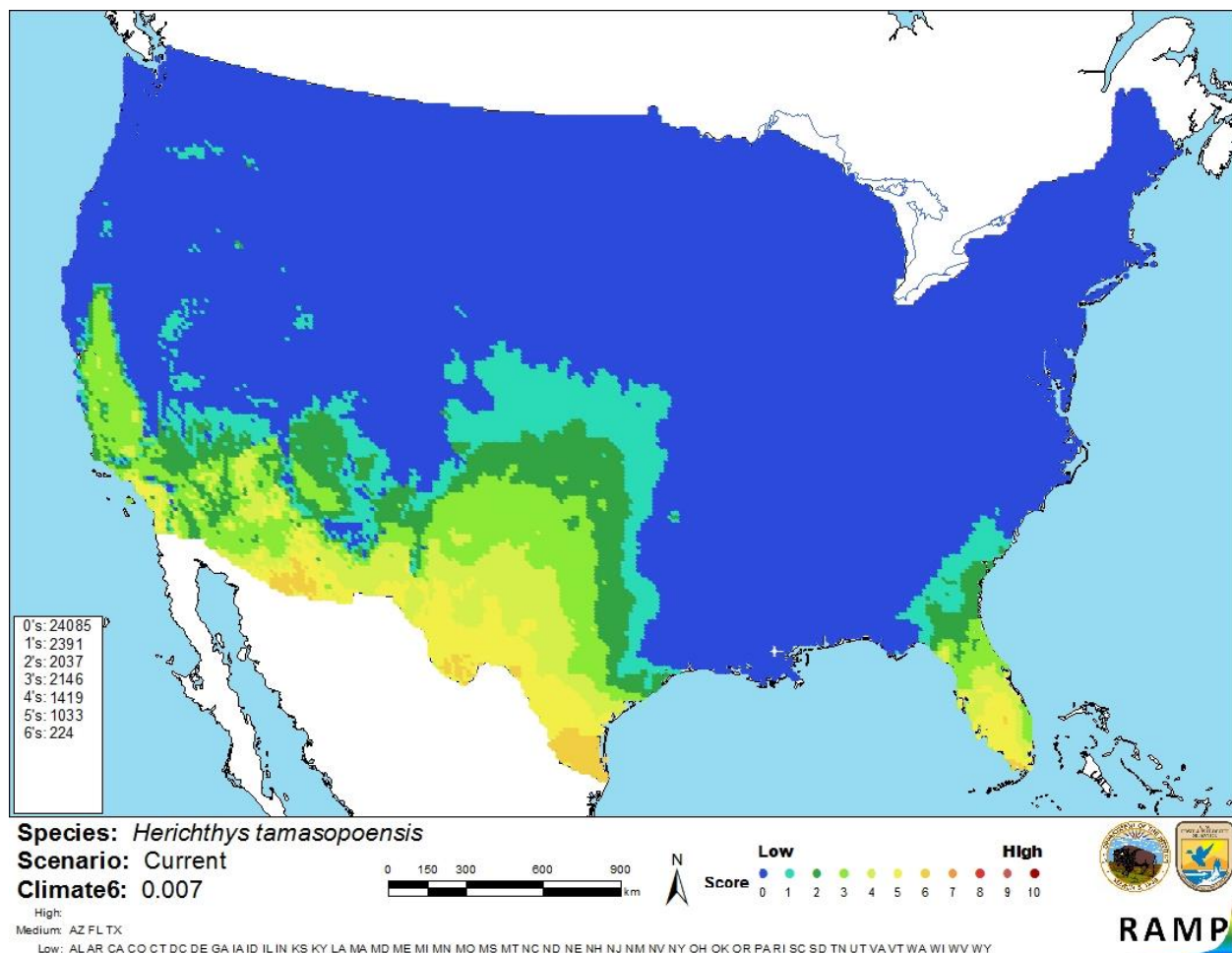


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Herichthys tamasopoensis* in the contiguous United States based on source locations reported by GBIF (2016). 0=Lowest match, 10=Highest match.

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

7 Certainty of Assessment

There is some information available on the biology and habitat preferences of *Herichthys tamasopoensis*. This species has no documented history of invasiveness, so it is not possible to determine what impacts it would have if introduced to the United States. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Herichthys tamasopoensis is a species of cichlid native to the Panuco River basin in east-central Mexico. *H. tamasopoensis* has a medium climate match with the contiguous United States. The species is present in the aquarium trade but is not as common as other cichlids in trade. *H. tamasopoensis* has no documented history of introduction; it has never been reported outside of its native range. Overall risk assessment category is uncertain, and certainty of this assessment is low.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **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.

- Bluegrass Aquatics. 2017. *Herichthys tamasopoensis* small. Available: <https://bluegrassaquatics.com/herichthys-tamasopoensis-small.html>. (August 2017).
- Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2017. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (June 2017).
- Froese, R., and D. Pauly, editors. 2017. *Herichthys tamasopoensis* (Artigas Azas, 1993). FishBase. Available: <http://www.fishbase.se/summary/Herichthys-tamasopoensis.html>. (June 2017).
- GBIF (Global Biodiversity Information Facility). 2016. GBIF backbone taxonomy: *Herichthys tamasopoensis* Artigas Azas, 1993. Global Biodiversity Information Facility, Copenhagen. Available: <http://www.gbif.org/species/2373120>. (June 2017, August 2017).
- ITIS (Integrated Taxonomic Information System). 2017. *Herichthys tamasopoensis* Artigas Azas, 1993. Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=648689#null. (June 2017).
- McMahan, C. D., W. A. Matamoros, K. R. Piller, and P. Chakrabarty. 2015. Taxonomy and systematics of the herichthyins (Cichlidae: Tribe Heroini), with the description of eight new Middle American genera. *Zootaxa* 3999(2):211-234.

Rosenthal, G. G. 2017. Mate choice: the evolution of sexual decision making from microbes to humans. Princeton University Press, Princeton, New Jersey.

Practical Fishkeeping. 2016. *Herichthys tamasopoensis* in the wild. Practical Fishkeeping Magazine. Available: <http://www.practicalfishkeeping.co.uk/features/articles/herichthys-tamasopoensis-in-the-wild>. (August 2017).

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

Top Shelf Aquatics. 2017. *Herichthys tamasopoensis* 2”+. Top Shelf Aquatics, Cincinnati, Ohio. Available: http://www.topshelf-aquatics.com/_p/prd1/4620159371/product/herichthys-tamasopoensis-2%22. (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.

Kullander, S. O. 2003. Cichlidae (Cichlids). Pages 605-654 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.

Werner, U. 2003. Perlmuttbuntbarsche-mexikanische Großcichliden. *Datz* 56(5):26-29.