Dominican Gambusia (*Gambusia dominicensis*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2011
Revised, September 2018
Web Version, 6/5/2019

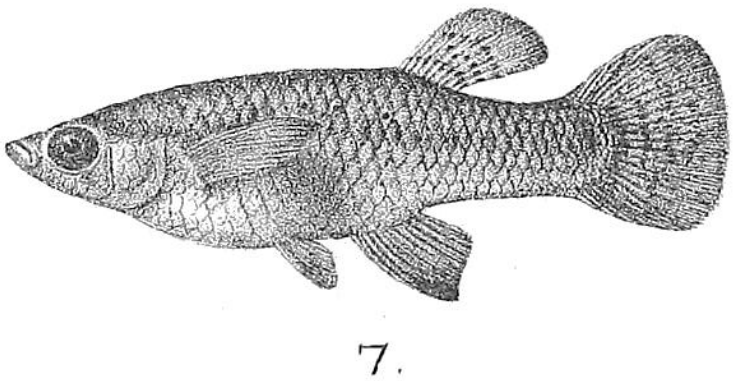

Image: Regan (1913). Public domain. Available: https://www.biodiversitylibrary.org/page/31977331#page/814/mode/1up. (September 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"Central America: Haiti and Dominican Republic."

From Snoeks et al. (2009):

"This species' native range is Lac Azuei in Haiti (111.6 km²) and Lago Enriquillo (259.5 km²) in the Dominican Republic."

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

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

Remarks
From Snoeks et al. (2009):

"Red List Category & Criteria: Endangered […]"

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 Acanthopterygii
Order Cyprinodontiformes
Suborder Cyprinodontoidei
Family Poeciliidae
Subfamily Poeciliinae
Genus *Gambusia*
Species *Gambusia dominicensis* Regan, 1913"

From Fricke et al. (2018):

"Current status: Valid as *Gambusia dominicensis* Regan 1913. Poeciliidae: Poeciliinae."

Size, Weight, and Age Range
From Froese and Pauly (2018):

"Max length : 2.5 cm TL male/unsexed; [Merrick and Schmida 1984]; 6.0 cm (female)"

Environment
From Froese and Pauly (2018):

"Freshwater; brackish; benthopelagic; non-migratory. […] 22°C - 28°C"

Climate/Range
From Froese and Pauly (2018):

"Tropical; […]"

Distribution Outside the United States
Native
From Froese and Pauly (2018):

"Central America: Haiti and Dominican Republic."

From Snoeks et al. (2009):

"This species' native range is Lac Azuei in Haiti (111.6 km²) and Lago Enriquillo (259.5 km²) in the Dominican Republic."

Introduced
From Rowe et al. (2008):

"Lloyd and Tomasov (1985) examined specimens of gambusia in the South Australian Museum thought to be *G. dominicensis* and concluded that, although they had lower lateral line scale counts, they were *G. affinis holbrooki*, and so were subsequently confirmed as *G. holbrooki*. However, no specimens of gambusia were obtained by Lloyd and Tomasov (1985) from the vicinity of Alice Springs where *G. dominicensis* may still be present (Allen et al. 2002)."

Means of Introduction Outside the United States
From Snoeks et al. (2009):

"It has been distributed around the world by the aquarium fish trade, but has so far only been recorded only in the Northern Territory, Australia. It was apparently introduced to billabongs and streams in the vicinity of Alice Springs in the 1940s and 50s for the purpose of mosquito control (Duguid et al. 2002, Allen et al. 2002), but is not yet established (Bomford and Glover 2004)."

Short Description
From Regan (1913):

"♀. Depth of body $3\frac{1}{2}$ in the length, length of head $3\frac{3}{4}$. Diameter of eye $3\frac{1}{3}$ in length of head, interorbital width 2. 28 or 29 scales in a longitudinal series. Dorsal 9 ; origin above posterior end of anal, nearer base of caudal than base of pectoral ; longest rays $\frac{2}{3}$ length of head. Anal 10-11 ; first branched ray longest. Pectoral $\frac{3}{4}$ length of head ; pelvics reaching origin of anal. Least depth of caudal peduncle $\frac{3}{5}$ length of head. Brownish, scales dark-edged ; a faint lateral stripe ; a few scattered dark spots on upper parts ; abdomen golden ; dorsal and caudal fins with series of small dark spots."

"♂. Dorsal origin equidistant from head and base of caudal."

Biology
From Snoeks et al. (2009):

"*G. dominicensis* is a benthopelagic, viviparous species, that can inhabit lakes, streams and billabongs."

Human Uses
From Froese and Pauly (2018):

"Distributed through the aquarium trade industry."

"Aquarium: commercial"

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

Threat to Humans
From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions
No information available.

4 Global Distribution

Figure 1. Known global distribution of *Gambusia dominicensis*. Map from GBIF Secretariat (2018). Highlighted in pink are Lake Azuei in Haiti and Lake Enriquillo in the Dominican Republic, the native range of *G. dominicensis* as reported by Snoeks et al. (2009). Points for occurrences in Australia could not be included in this map or in climate matching because imprecise coordinates erroneously placed the points off the coast of Tasmania.

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 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.007, which is a medium climate match. A Climate 6 score of between 0.005 and 0.103 indicates a medium climate match. The climate match was low in every state in the contiguous United States except for Florida, where the climate match was high. There was an area of medium climate match in Southern Texas.

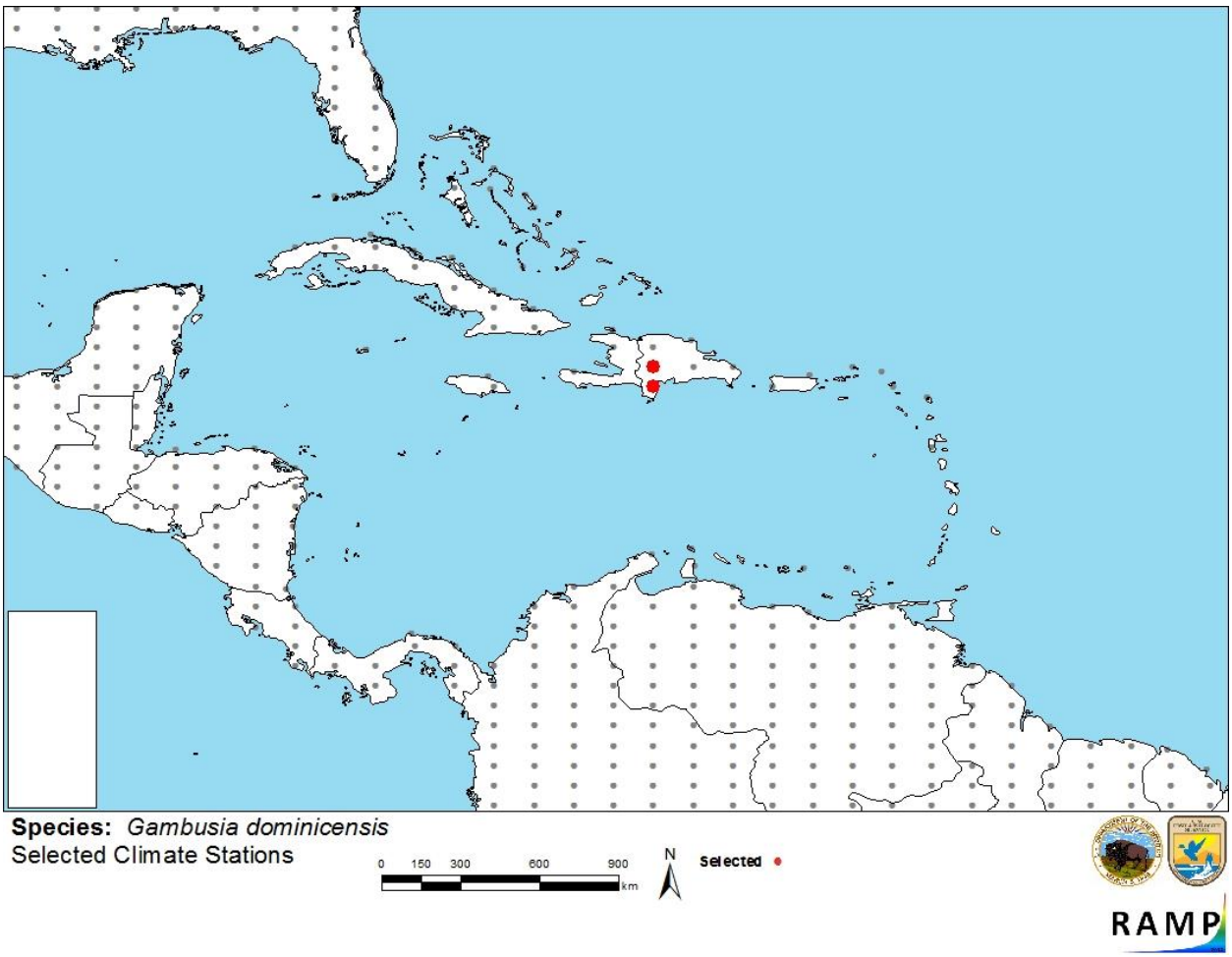

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in the Caribbean Sea selected as source locations (red; Dominican Republic) and non-source locations (gray) for *Gambusia dominicensis* climate matching. Source locations from GBIF Secretariat (2018).

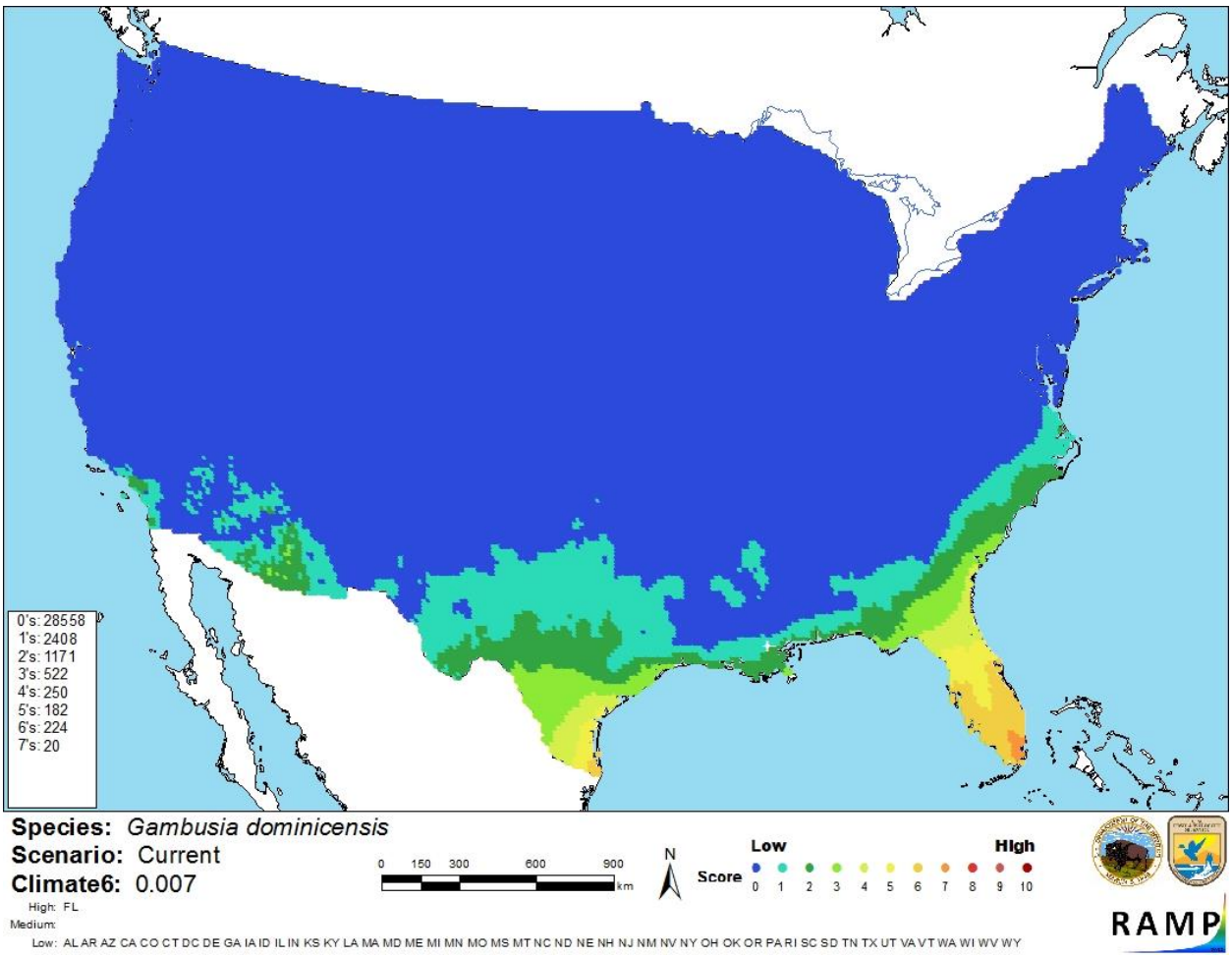

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Gambusia dominicensis* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). Counts of climate match scores are tabulated on the left. 0= Lowest match, 10=Highest match.

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

There is some information available about *Gambusia dominicensis*, but not enough to assess the risk it poses with certainty. It has been reported as introduced outside of its native range, but the status of this population is not known for certain, and no negative impacts of the introduction of *Gambusia dominicensis* have been documented. Because further information is needed to adequately assess the risk this species poses to the contiguous U.S., the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Gambusia dominicensis, the Dominican Gambusia, is a small freshwater fish species native to Lake Azuei in Haiti and Lake Enriquillo in the Dominican Republic. *G. dominicensis* is used in the aquarium trade, but no evidence of its presence in trade in the U.S. could be found. It is, however, in trade outside of the U.S. It was introduced around Alice Springs, Australia in the 1940s and 50s for mosquito control. It is not known if this species is still present near Alice Springs, and no negative impacts of this introduction have been documented. *G. dominicensis* has a medium climate match with the contiguous United States with a high climate match in Florida and a low climate match elsewhere. The certainty of this assessment is low. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **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.

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. *Gambusia dominicensis* (Regan, 1913). FishBase. Available: https://www.fishbase.de/summary/Gambusia-dominicensis.html. (September 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Gambusia dominicensis*, Regan, 1913. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/2350568. (September 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Gambusia dominicensis* (Regan, 1913). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=165890#null. (September 2018).

Regan, C. T. 1913. A Revision of the Cyprinodont fishes of the Subfamily Pœciliinæ. Proceedings of the Zoological Society of London 83(4)977-1018.

Rowe, D., A. Moore, A. Giorgetti, C. Maclean, P. Grace, S. Wadhwa, and J. Cooke. 2008. Review of the impacts of gambusia, redfin perch, tench, roach, yellowfin goby and streaked goby in Australia. Prepared for the Australian Government Department of the Environment, Water, Heritage and the Arts.

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

Snoeks, J., P. Laleye, and T. Contreras-MacBeath. 2009. *Gambusia dominicensis*. The IUCN Red List of Threatened Species 2009: e.T169400A6617999. Available: http://www.iucnredlist.org/details/169400/0. (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.

Allen, G. R., S. H. Midgley, and M. Allen. 2002. Field guide to the Freshwater Fishes of Australia. Western Australian Museum, Perth, Australia.

Bomford, M., and J. Glover. 2004. Risk assessment model for the import and keeping of exotic freshwater and estuarine finfish. Bureau of Rural Sciences for the Department of Environment and Heritage, Australia.

Duguid, A., J. Barnetson, B. Clifford, C. Pavey, D. Albrecht, J. Risler, and McNellie. 2002. Wetlands in the arid Northern Territory. Parks and Wildlife Commission of the Northern Territory, Alice Springs, Australia.

Lloyd, L. N., and J. F. Tomasov. 1985. Taxonomic status of the mosquitofish *Gambusia affinis* (Poeciliidae) in Australia. Australian Journal of Marine and Freshwater Research 36:447-451.

Merrick, J. R., and G. E. Schmida. 1984. Australian freshwater fishes: biology and management. Griffin Press Ltd., South Australia.