

***Diaphanosoma fluviatile* (a cladoceran, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, July 2018
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Photo: Beth Whitmore / Cornell University

1 Native Range and Status in the United States

Native Range

From Korovchinsky (1992):

“Brasil [*sic*] (Amazon region), North-East of Argentina, Venezuela (Lake Maracaibo), Nicaragua and Haiti.”

From Elías-Gutiérrez et al. (2001):

“[...] Catemaco Lake, Veracruz, Mexico.”

Status in the United States

D. fluviatile is described by USGS (2018) as not native to the United States.

From López et al. (2008):

“We report the cladoceran *Diaphanosoma fluviatile* Hansen 1899 in Lake Waco and Lake Mexia, two reservoirs located in central Texas. This species [...] only recently was reported from some locations in Louisiana and Florida [...] Our new records represent a westward expansion of records previously documented in the southern United States.”

Means of Introductions in the United States

According to USGS (2018), the potential pathway of introduction is unknown for populations in Horseshoe Lake in Louisiana; an unspecified waterbody in Baton Rouge, Louisiana; and Lake Cannon, in Florida.

Remarks

From López et al. (2008):

“Many records of *D. brachyurum* in the southern United States refer to this species.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Protostomia
Superphylum Ecdysozoa
Phylum Arthropoda
Subphylum Crustacea
Class Branchiopoda
Subclass Phyllopoda
Order Diplostraca
Suborder Cladocera
Infraorder Ctenopoda
Family Sididae
Genus *Diaphanosoma*
Species *Diaphanosoma fluviatile* Hansen, 1899”

“Current Standing: valid”

Size, Weight, and Age Range

From Korovchinsky (1992):

“Length: females 0.78-0.92 mm, males 0.65-0.75 mm.”

Environment

From Cisneros et al. (1991a):

“Some species are halophyllyc [*sic*] and develop better under eutrophic conditions (*Diaphanosoma fluviatile*, *Moina micrura* and *Brachionus* spp.).”

Climate/Range

From Cisneros et al. (1991a):

“[...] frequently reported from tropical lakes (INFANTE, 1980; COLLADO *et al.*, 1984; MATSUMURA-TUNDISI *et al.*, 1984).”

Distribution Outside the United States

Native

From Korovchinsky (1992):

“Brasil [*sic*] (Amazon region), North-East of Argentina, Venezuela (Lake Maracaibo), Nicaragua and Haiti.”

From Elías-Gutiérrez et al. (2001):

“[...] Catemaco Lake, Veracruz, Mexico.”

Introduced

No introductions of this species have been reported outside the United States.

Means of Introduction Outside the United States

No introductions of this species have been reported outside the United States.

Short Description

From Elías-Gutiérrez et al. (2001):

“Body elongated, head rectangular. Swimming antennae not reaching posterior margin [...]. Antennal setae 4-8/0-1-4. Ventral margin of valves lacking inflexion, armed with several setae and a row of 4–6 spinules between each two setae [...]. One dorsal spine near posterior margin of valve [...]. Postabdomen with wide dorsal proximal prominence and three spines on base of claw. Claws armed with a line of fine denticles.”

Biology

From López et al. (2008):

“[...] parthenogenetic [i.e., asexual reproduction in which offspring develop from unfertilized eggs]”

From Cisneros et al. (1991b):

“*Diaphanosoma fluviatile* ingested predominantly tiny particles (bacteria and detritus) and algal food consisted mainly of green algae (*Oocystis*) and probably (not studied) nanoplanktonic algae.”

From Cisneros et al. (1991a):

“*Diaphanosoma fluviatile* tended to be present in higher numeric proportions during the most [sic] part of the rainy season (June-September) [...]”

Fernandes et al. (2012) report the “time to hatchling” of *D. fluviatile* as 6 days.

Debastiani-Júnior et al. (2016) reports *D. fluviatile* from the limnetic zone of the Jurumirim Reservoir, Brazil.

Human Uses

No information available.

Diseases

No information available.

Threat to Humans

No information available.

3 Impacts of Introductions

No information available.

4 Global Distribution



Figure 1. Reported global distribution of *Diaphanosoma fluviatile*, reported from Mexico. Map from GBIF Secretariat (2017). The occurrences shown here in Mexico are attributed to Spanish-language publications from 2002 and 2009 that were not accessible to the authors of this report. Numerous established populations of this species are not represented in GBIF Secretariat (2017) data, including those in Brazil, Argentina, Venezuela, Nicaragua, and Haiti.

5 Distribution Within the United States

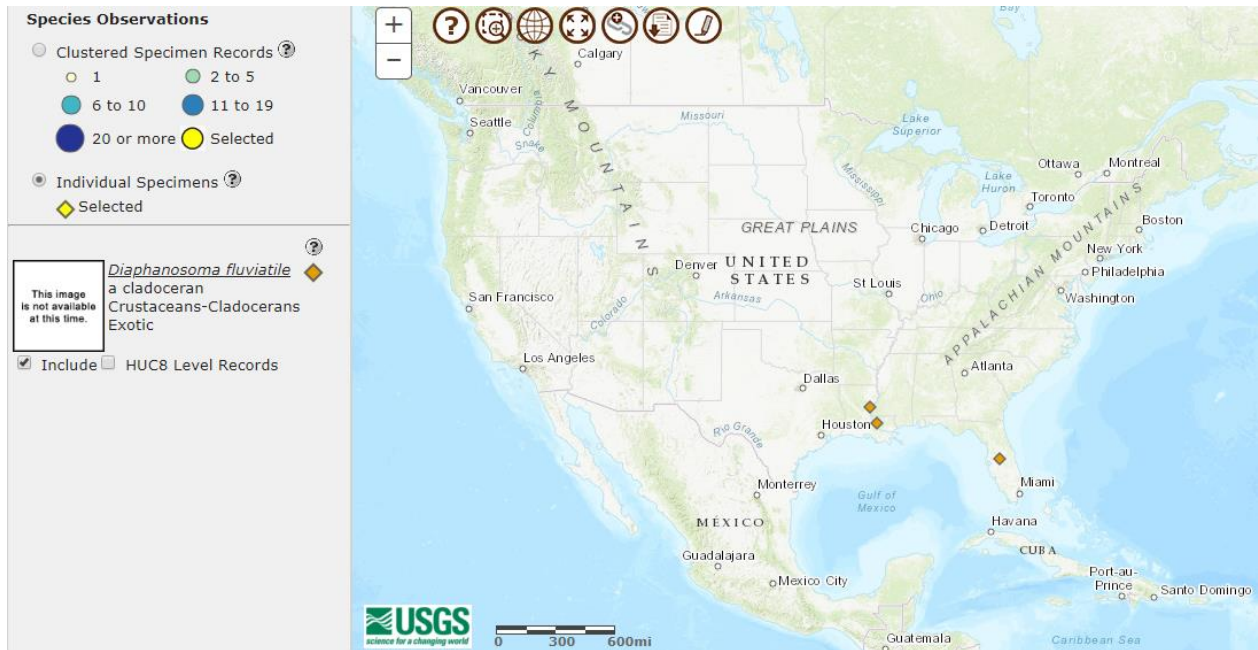


Figure 2. Reported distribution of *Diaphanosoma fluviatile* in the United States. Map from USGS (2018). Established populations of this species in Texas have not been included in the map.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was high in peninsular Florida, the central Gulf Coast, and northeastern Texas. Medium match extended over the remainder of the southeastern United States, into the Mid-Atlantic and southern Midwest regions, along much of coastal California, and around Seattle, Washington. The northern United States and much of the West had low climate matches. Climate 6 score indicated that the contiguous United States has a high climate match overall. Scores of 0.103 and greater are classified as high match; Climate 6 score for *Diaphanosoma fluviatile* was 0.187.

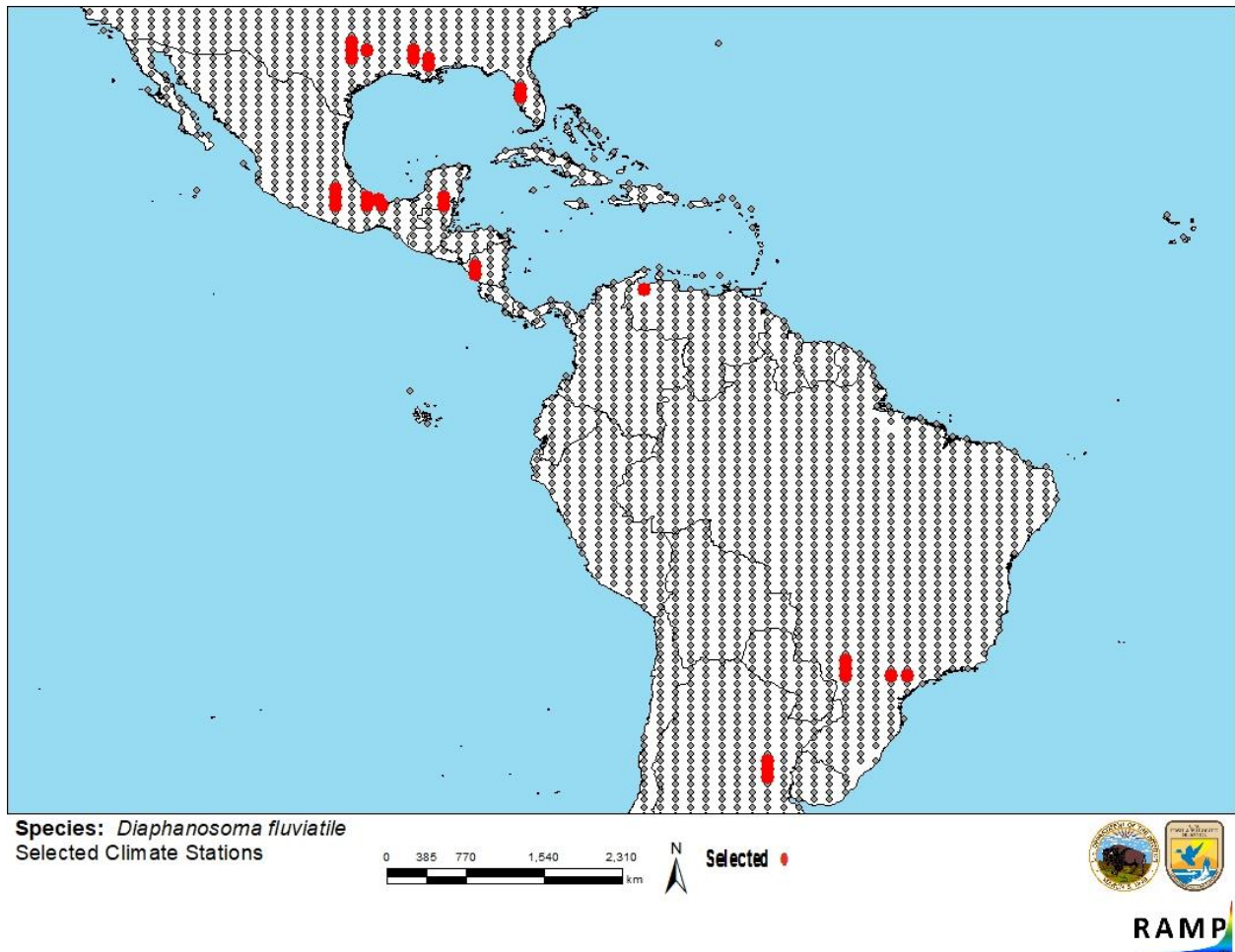


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; United States, Mexico, Nicaragua, Venezuela, Brazil, Argentina) and non-source locations (gray) for *Diaphanosoma fluviatile* climate matching. Source locations from GBIF Secretariat (2017) and USGS (2018), with additional locations from López et al. (2008; Texas), Elías-Gutiérrez et al. (2001; Mexico), Cisneros et al. (1991b; Nicaragua), Korovchinsky (1992; Venezuela), Fernandes et al. (2001; Brazil), Debastiani-Júnior et al. (2016; Brazil), Brito et al. (2011; Brazil), Panarelli et al. (2013; Brazil), and Pecorari et al. (2006; Argentina).

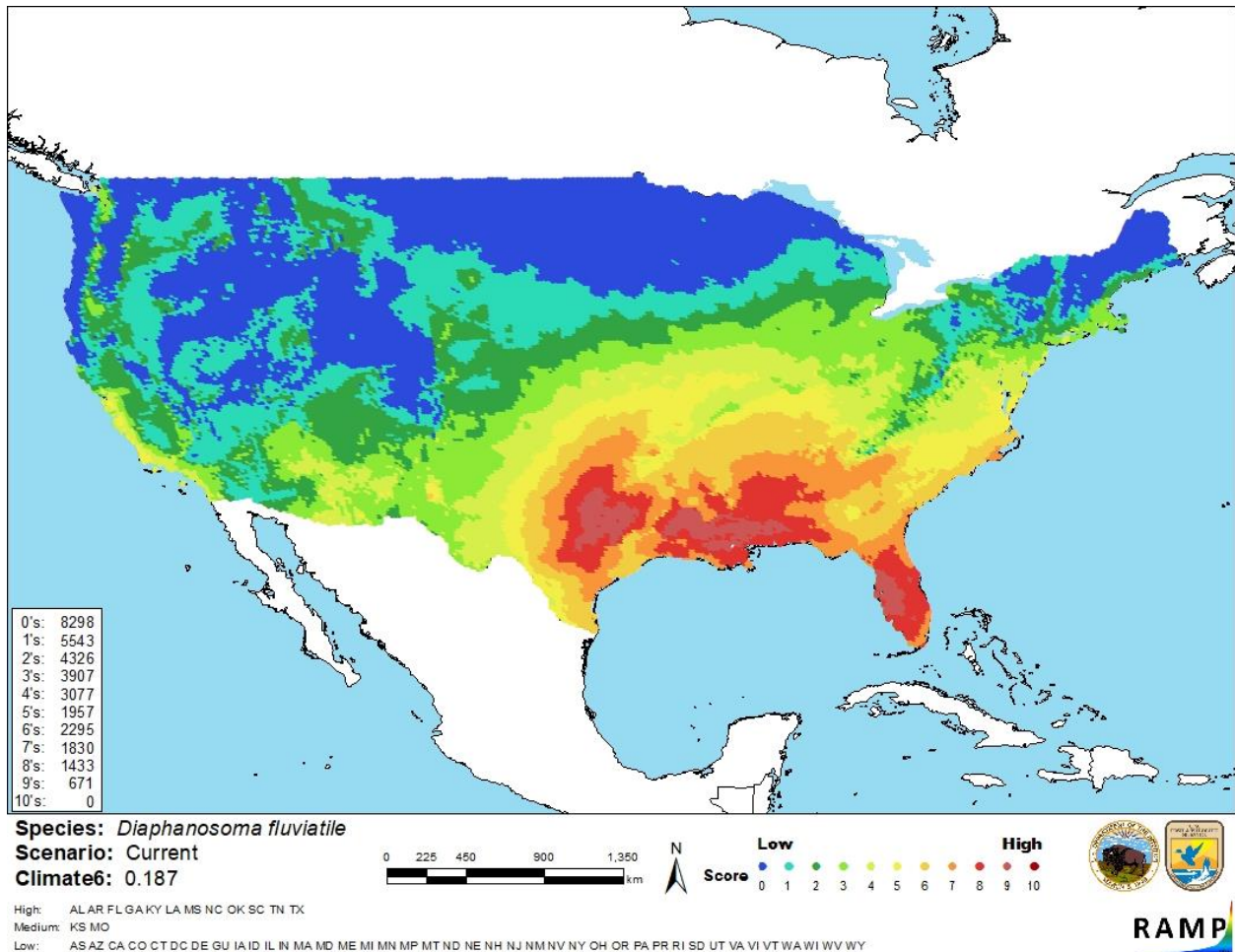


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Diaphanosoma fluviatile* in the contiguous United States based on source locations reported by GBIF Secretariat (2017), USGS (2018), López et al. (2008), Elías-Gutiérrez et al. (2001), Cisneros et al. (1991b), Korovchinski (1992), Fernandes et al. (2001), Debastiani-Júnior et al. (2016), Brito et al. (2011), Panarelli et al. (2013), and Pecorari et al. (2006). 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

Limited information is available on the biology, ecology, and distribution of this species. In particular, the distribution is patchily described, with relatively few available georeferenced occurrences of the species. In some locations, it is difficult to determine whether occurrences are the result of previous detection failures or new introductions. Occurrences in the United States

have been assumed to be introductions, but potential pathways of introduction are unknown. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Diaphanosoma fluviatile is a cladoceran zooplankton, a tiny crustacean from a group often called water fleas. It is native to Central and South America. It has been reported from Florida, Louisiana, and Texas; these occurrences are assumed to be the result of introduction events but potential pathways of introduction remain unknown. No introductions have been reported outside the United States. Climate match to the contiguous United States was high overall, with the highest matches occurring in the Gulf Coast states. Because of the knowledge gaps present in the introduction history for *D. fluviatile*, overall risk is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): High**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: Parthenogenetic**
- **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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