

***Hydrothrix gardneri* (a plant, no common name)**

Ecological Risk Screening Summary

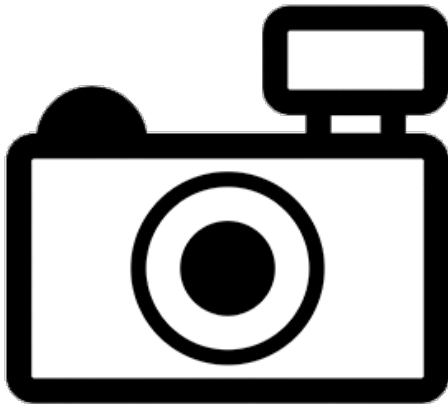
U.S. Fish & Wildlife Service, April 2021

Revised, April 2021, May 2021

Web Version, 8/24/2021

Organism Type: Plant

Overall Risk Assessment Category: Uncertain



No Photo Available

1 Native Range and Status in the United States

Native Range

From Pellegrini (2017):

“Endemic to Brazil, more specifically to the states of Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe and Minas Gerais.”

Status in the United States

No records of *Hydrothrix gardneri* in the wild or in trade in the United States were found except for occasional private sales or trades in online aquarium forums (e.g., Aquatic Plant Central, 2021).

Means of Introductions in the United States

No records of *Hydrothrix gardneri* within the United States were found.

Remarks

From World Flora Online (2021):

“Synonyms

Hookerina gardneri (Hook.f.) Kuntze

Hydrothrix verticillaris Hook.f.”

From Pellegrini (2017):

“*Hydrothrix* and *Scholleropsis*, two segregate monospecific genera placed within the *Heteranthera* s.l. clade, are here transferred to *Heteranthera* based on phylogenetic and morphological data.”

Information for this ERSS was sought using the accepted name *Hydrothrix gardneri* as well as the synonyms *Hookerina gardneri*, *Hydrothrix verticillaris*, and *Heteranthera gardneri*.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to World Flora Online (2021), the current accepted scientific name for this species is *Hydrothrix gardneri*.

From GBIF Secretariat (2021):

Kingdom Plantae

Phylum Tracheophyta

Class Liliopsida

Order Commelinales

Family Pontederiaceae

Genus *Hydrothrix*

Species *Hydrothrix gardneri*

Size, Weight, and Age Range

No information available.

Environment

From Winterton et al. (2018):

“still or slow-moving waters such as lakes, ponds, and large rivers”

From Pellegrini (2017):

“It can be found growing in slow water ponds and rivers in the Caatinga biome.”

Climate

From Araújo et al. (2007):

“The climate type [where the Caatinga biome is found] is semi-arid (Köppen’s BSh), mainly characterized by an extremely high energy entrance and elevated temperatures, evaporation and evapotranspiration rates. Annual precipitation varies from 250 to 1.200 mm, but a mean for the entire biome is less than [sic] 620 mm, generally distributed irregularly in time and space; dry season comprises from five to nine months (Ab’Saber 1974; Reis 1976; Sampaio 1995, 1996).”

Distribution Outside the United States

Native

From Pellegrini (2017):

“Endemic to Brazil, more specifically to the states of Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe and Minas Gerais.”

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Winterton et al. (2018):

“Delicate narrow branching stems, with adventitious roots produced at nodes. Leaves in whorls of 7-30, regularly spaced along entire stem, sessile; leaf blade elongate, linear, sheathed at base. Inflorescence axillary, subtended by a green spathe. Flowers paired (superficially appearing as a single flower); perianth tubular, of 6 tepals in 2 whorls of 3, lobes unequal, yellow.”

Biology

From Pellegrini (2017):

“It can be found growing in slow water ponds and rivers in the Caatinga biome.”

From Henry-Silva (2010):

“The rooted-submersed *Hydrothrix gardneri* Hooker f. and *Ceratophyllum demersum* L. were observed in great abundance and frequency in the Santa Cruz Reservoir of Apodi, especially in areas close to cage farms of Nile tilapia (*Oreochromis niloticus*) (Linnaeus, 1758).”

From Winterton et al. (2018):

“Annual. [...] Flowers are self-fertilized if they are unopen (cleistogamous) under water, or they open above water and are fertilized by insects. Dispersal is by seed.”

Human Uses

From Winterton et al. (2018):

“*H. gardneri* is a delicate plant that is rarely cultivated in aquaria, although it is surprisingly easy to propagate from stem fragments or seed.”

No records of *Hydrothrix gardneri* in trade in the United States were found except for occasional private sales or trades in online aquarium fora (e.g., Aquatic Plant Central, 2021).

Diseases

No information available.

Threat to Humans

No information available.

3 Impacts of Introductions

No introductions of this species have been documented, so no information is available on impacts of introductions.

4 History of Invasiveness

The history of invasiveness of *H. gardneri* is classified as No Known Nonnative Population. No introductions of this species have been reported outside its native range. It is occasionally found in trade, but not in high volumes.

5 Global Distribution



Figure 1. Known global distribution of *Hydrothrix gardneri*. Locations are in eastern Brazil. Map from GBIF Secretariat (2021). An occurrence reported in California (GBIF Secretariat 2021; not shown) was recorded in a greenhouse and does not represent an established population, so it was not included in the climate matching analysis.

6 Distribution Within the United States

H. gardneri has not been reported in the wild in the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Hydrothrix gardneri* was low across most of the contiguous United States, with medium matches limited to southern Florida, the southern tip of Louisiana, southern Texas, and southern coastal California. The overall Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.001, indicating a low overall climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) Texas was the only State with a medium individual Climate 6 score; all other States had low individual Climate 6 scores.

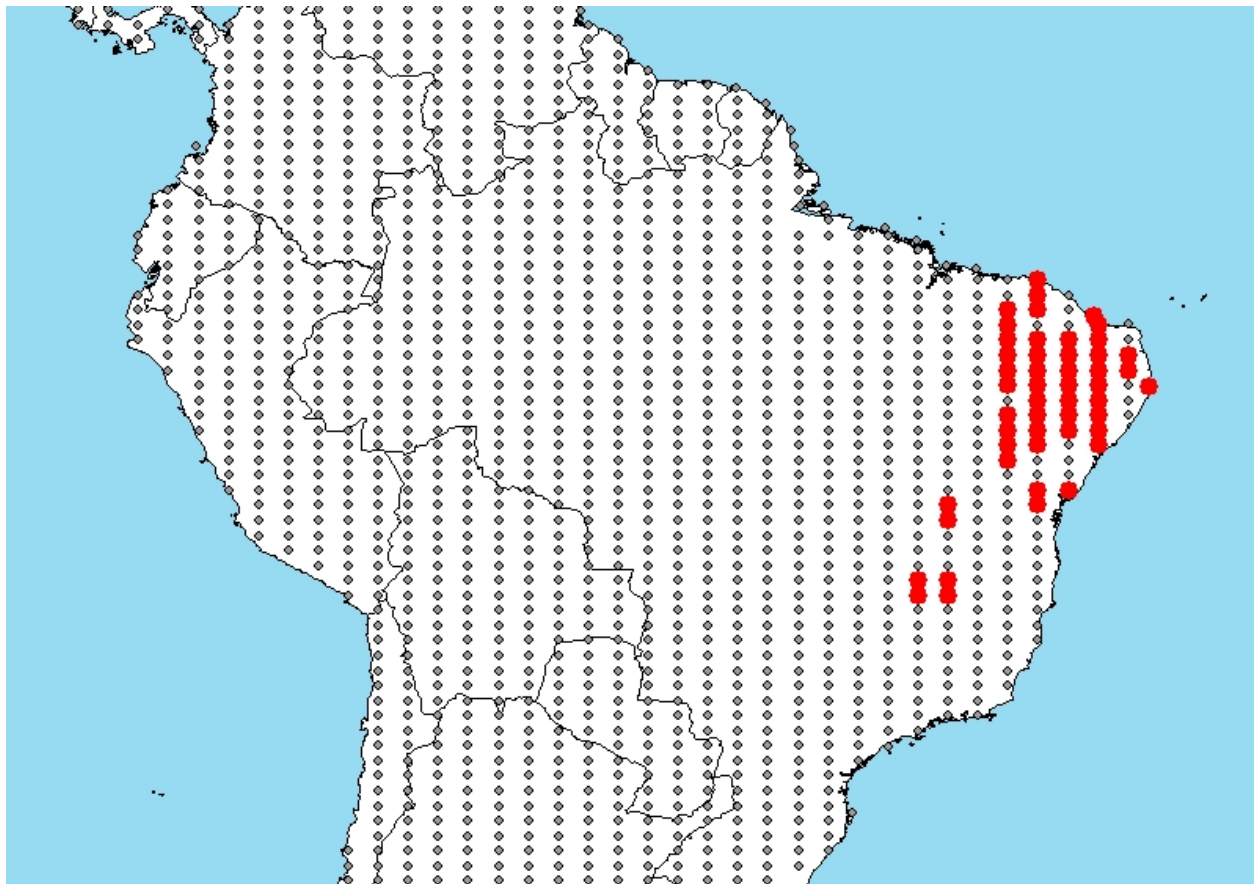


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in South America selected as source locations (red; Brazil) and non-source locations (gray) for *Hydrothrix gardneri* climate matching. Source locations from GBIF Secretariat (2021). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

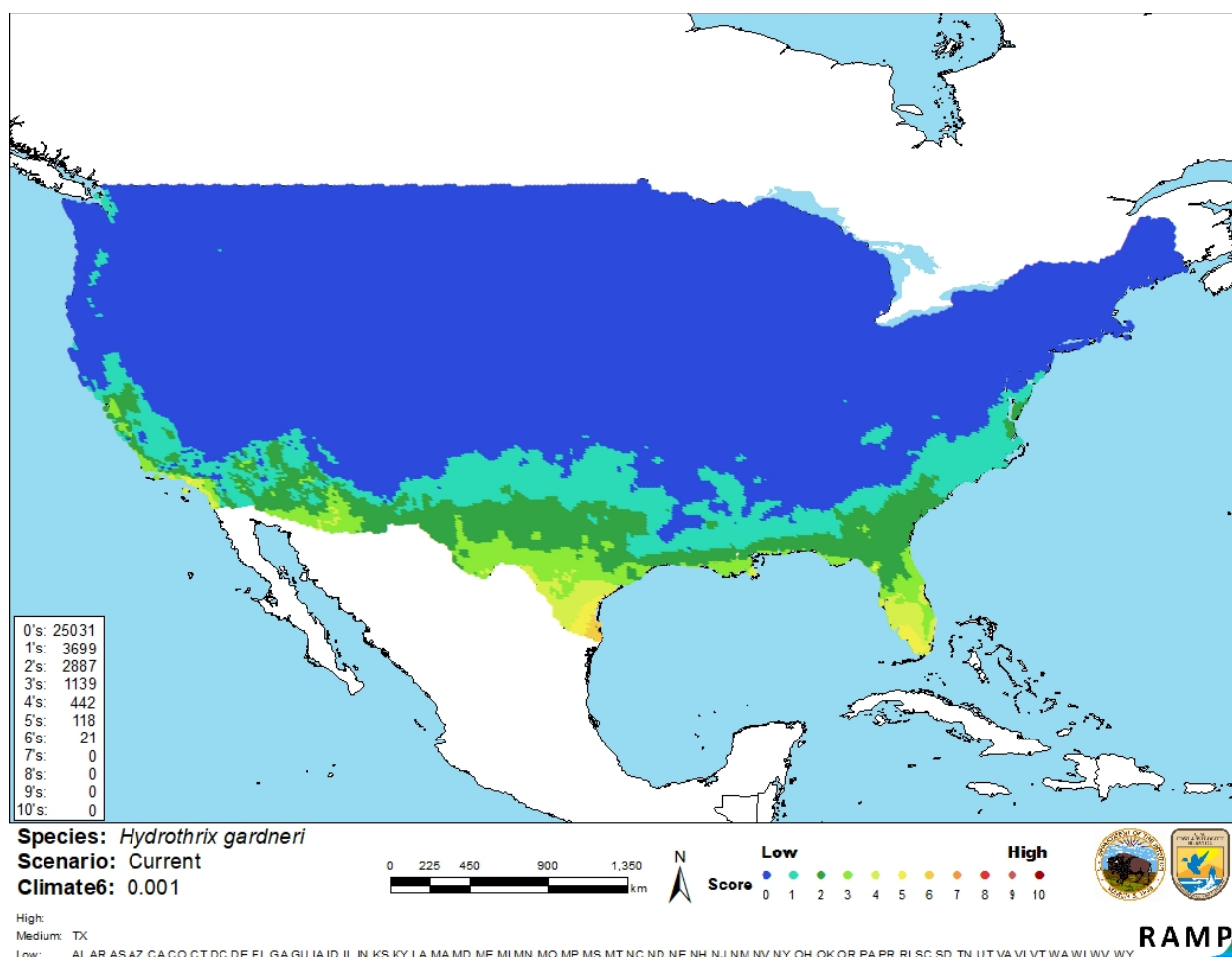


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hydrothrix gardneri* in the contiguous United States based on source locations reported by GBIF Secretariat (2021). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

8 Certainty of Assessment

Limited information is available on the biology and ecology of *Hydrothrix gardneri*. No introductions have been reported outside the species native range, so no information is available on impacts of introductions. The certainty of assessment for *Hydrothrix gardneri* is low.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Hydrothrix gardneri is an aquatic plant endemic to the Caatinga biome in eastern Brazil. It appears in the aquarium trade only rarely. *H. gardneri* has not been reported as introduced outside its native range, so the history of invasiveness is classified as No Known Nonnative Population. The climate match to the contiguous United States was low overall, with medium matches limited to southern Florida, the southern tip of Louisiana, southern Texas, and southern coastal California. The certainty of the assessment is low due to the lack of introduction history for this species. The overall risk assessment category for *H. gardneri* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Low**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks/Important additional information:** No additional remarks.
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

- Aquatic Plant Central. 2021. *Hydrothrix gardneri* - annual plant? Available: <https://www.aquaticplantcentral.com/threads/hydrothrix-gardneri-annual-plant.86142/> (May 2021).
- Araújo EL, Castro CC, Albuquerque UP. 2007. Dynamics of Brazilian Caatinga – a review concerning the plants, environment and people. *Functional Ecosystems and Communities* 1:15–28.
- GBIF Secretariat. 2021. GBIF backbone taxonomy: *Hydrothrix gardneri* Hook.f. Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2766172> (May 2021).
- Henry-Silva GG, Moura RST, Dantas LLO. 2010. Richness and distribution of aquatic macrophytes in Brazilian semi-arid aquatic ecosystems. *Acta Limnologica Brasiliensia* 22(2):147–156.
- Pellegrini MOO. 2017. Two new synonyms in *Heteranthera* (Pontederiaceae, Commelinales). *Nordic Journal of Botany* 35:124–128.
- Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.

Winterton S, Scher J, Burnett J, Redford AJ. 2018. *Hydrothrix*. Aquarium and pond plants of the world. Edition 3.0. Available: <http://idtools.org/id/appw/factsheet.php?name=16086> (April 2021).

World Flora Online. 2021. World Flora Online – a project of the World Flora Online Consortium. Available: www.worldfloraonline.org (April 2021).

11 Literature Cited in Quoted Material

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.

Ab'saber AN. 1974. O domínio morfoclimático semi-árido das caatingas brasileiras. *Geomorfologia* 43:1–37.

Reis ACS. 1976. Clima da caatinga. *Anais da Academia Brasileira de Ciências* 48:325–335.

Sampaio EVS. 1995. Overview of the Brazilian caatinga. Pages 35-58 in Bullock S, Mooney HA, Medina E, editors. *Seasonally dry tropical forests*. New York: Cambridge University Press.

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