

***Hydrocleys martii* (a plant, no common name)**

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2021

Revised, March 2021

Web Version, 8/11/2021

Organism Type: Plant

Overall Risk Assessment Category: Uncertain

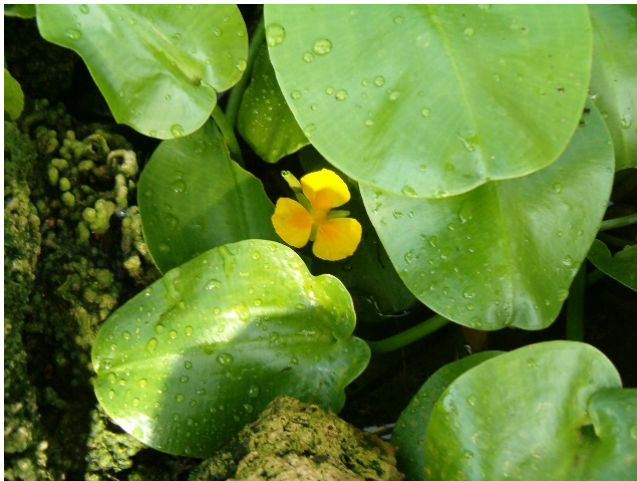


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Available: https://commons.wikimedia.org/wiki/Hydrocleys_martii. (February 2021).

1 Native Range and Status in the United States

Native Range

From Plants of the World Online (2021):

“Argentina Northeast, Brazil North, Brazil Northeast, Brazil South, Brazil Southeast, Brazil West-Central, Uruguay”

From Carvalho and Schlindwein (2011):

“*Hydrocleys martii* is distributed from Uruguay to the Brazilian states of Mato Grosso, and Pará, being especially abundant in north-eastern Brazil.”

Status in the United States

No records of *Hydrocleys martii* in trade or in the wild in the United States were found.

Means of Introductions in the United States

No records of *Hydrocleys martii* in trade or in the wild in the United States were found.

Remarks

According to World Flora Online (2021), *Hydrocleys martii* has the following synonyms: *Hydrocleys uruguayensis*, *Limnocharis martii*, and *Ostenia uruguayensis*. The valid name and all synonyms were used to search for information for this screening.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to World Flora Online (2021), *Hydrocleys martii* Seub. is the current valid scientific name for this species.

From GBIF Secretariat (2021):

“Kingdom Plantae
Phylum Tracheophyta
Class Liliopsida
Order Alismatales
Family Alismataceae
Genus *Hydrocleys*
Species *Hydrocleys martii* Seub.”

Size, Weight, and Age Range

From Haynes and Holm-Neilsen (1992):

“*Herbs* to 50 cm tall; stolons, to 50 cm long.”

Environment

From Carvalho et al. (2014):

“[...] *Hydrocleys martii* (Alismataceae) in ephemeral aquatic water bodies in semi-arid Caatinga of Brazil [...]”

“Plants of both species of *Hydrocleys* [including *H. martii*] occur in shallow water bodies.”

From Carvalho and Schlindwein (2011)

“This aquatic species is restricted to permanent or seasonal lentic water bodies such as shallow ponds and only rarely grows on river margins with weak currents.”

Climate

From Carvalho et al. (2014):

“*Hydrocleys martii* is distributed in the region of the Caatinga, northeastern Brazil (Haynes and Holm-Nielsen 1992), which is characterized by a highly seasonal climate with a long severe drought and a short rainy season with strong rainfalls that varies drastically in its magnitude year by year (Andrade-Lima 1981; Prado 2003).”

Distribution Outside the United States

Native

From Plants of the World Online (2021):

“Argentina Northeast, Brazil North, Brazil Northeast, Brazil South, Brazil Southeast, Brazil West-Central, Uruguay”

From Carvalho and Schlindwein (2011):

“*Hydrocleys martii* is distributed from Uruguay to the Brazilian states of Mato Grosso, and Pará, being especially abundant in north-eastern Brazil.”

Introduced

No records of introductions were found for *Hydrocleys martii*.

Means of Introduction Outside the United States

No records of introductions were found for *Hydrocleys martii*.

Short Description

From Carvalho et al. (2014):

“The flowers of *H. martii* [...] are bright yellow colored [...] The flowers of *H. martii* show a staminodal cone that covers the fertile stamens [...]”

From Haynes and Holm-Neilsen (1992):

“*Leaves* with blades broadly ovate to orbicular, to 12 cm × to 10 cm, with 5–7 veins, the apex obtuse to slightly mucronate, the base cordate; petioles to 40 cm × 2–5 mm, with sheathing base to 8 cm long. *Inflorescence* with 1–6 flowers, proliferating with leaves and stolons; peduncles to 30 cm long, 2–6 mm diam.; bracts elliptic, 2–4.5 × 0.4–1 cm, the apex obtuse; pedicels spreading, 3.5–17.5 cm long, 1.5–6 mm diam. *Flowers* ca. 5 cm wide, sepals 13–28 × 7–13 mm, with conspicuous midvein, the apex obtuse; petals spreading, longer than sepals, yellow-orange, 2.3–2.5 × 3.7–4 cm; stamens 12–18, in two or more series, the filaments 5–6 mm long, the anthers 5–6 × ca. 0.5 mm, the staminodia numerous; carpels 5–8, ca. 10 mm long. *Fruit* 10–15 mm long, 2–3 mm diam.; beak 3.5–5.5 mm long. *Seeds* ca. 1 mm long, densely glandular

pubescent, the glandular trichomes ca. 0.15 mm long, less than 50 µm apart, present on every epidermal cell of seed.”

Biology

From Carvalho et al. (2014):

“The flowers of *H. martii* show a staminodal cone that covers the fertile stamens [...]”

“Flower buds develop under the water surface, rise above it to bloom for 6–8 h, and then submerge again to develop mature fruits under water.”

From Carvalho and Schlindwein (2011):

“The roots are fixed in the substrate and the leaves float on the water surface (Haynes & Holm-Nielsen, 1992). The inflorescence, a cymose umbel, bears 30 ± 4 mm wide yellow flowers with a dark centre. The flowers emit a relatively strong cockroach-like odour. The androecium is composed of staminodes that surround the fertile stamens, whereas the gynoecium comprises four free carpels containing numerous ovules and a short apical stigma (Haynes & Holm-Nielsen, 1992).”

“This aquatic species is restricted to permanent or seasonal lentic water bodies such as shallow ponds and only rarely grows on river margins with weak currents. In regions with marked seasonal rainfalls, such as the Caatinga, where the growth period is restricted to a few months per year, flowering depends on the local rainfall regime and occurrence of the species is insular.”

From Haynes and Holm-Neilsen (1992):

“[...] flowering and fruiting throughout year.”

Human Uses

No known actual or potential human uses are reported for *Hydrocleys martii*.

Diseases

No information on diseases associated with this species was found.

Threat to Humans

No threats to humans have been reported for *Hydrocleys martii*.

3 Impacts of Introductions

No records of introductions were found for *Hydrocleys martii*; therefore, there is no information on impacts of introduction.

4 History of Invasiveness

The history of invasiveness is classified as No Known Nonnative Population. *Hydrocleys martii* has not been reported as introduced outside of its native range nor is this species found in trade.

5 Global Distribution



Figure 1. Known global distribution of *Hydrocleys martii*. Observations are reported from Northeast and West-Central Brazil. Map from GBIF Secretariat (2021).

Additional georeferenced observations in Uruguay and Brazil were reported in Haynes and Holm-Neilsen (1992).

Argentina is reported as part of the native range of this species, but no georeferenced observations were found to represent those populations in the climate match.

6 Distribution Within the United States

No records of *Hydrocleys martii* in the wild in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for the contiguous United States was generally low for western and northern areas. High match was found in peninsular Florida and in patches near the Gulf Coast and mid-Atlantic Coast. Medium match was found from southern Texas, across the southeast, and into Maryland, coastal New Jersey, and Long Island Sound. A small patch of medium match was also found in southern coastal California. Low match was found everywhere else in the contiguous United States. The overall Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.066, medium. (Scores between 0.005 and 0.103, exclusive, are classified as medium.) Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Mississippi, North Carolina, and South Carolina had high individual Climate 6 scores. Maryland, Tennessee, Texas, and Virginia had medium individual scores. All other States had low individual scores.

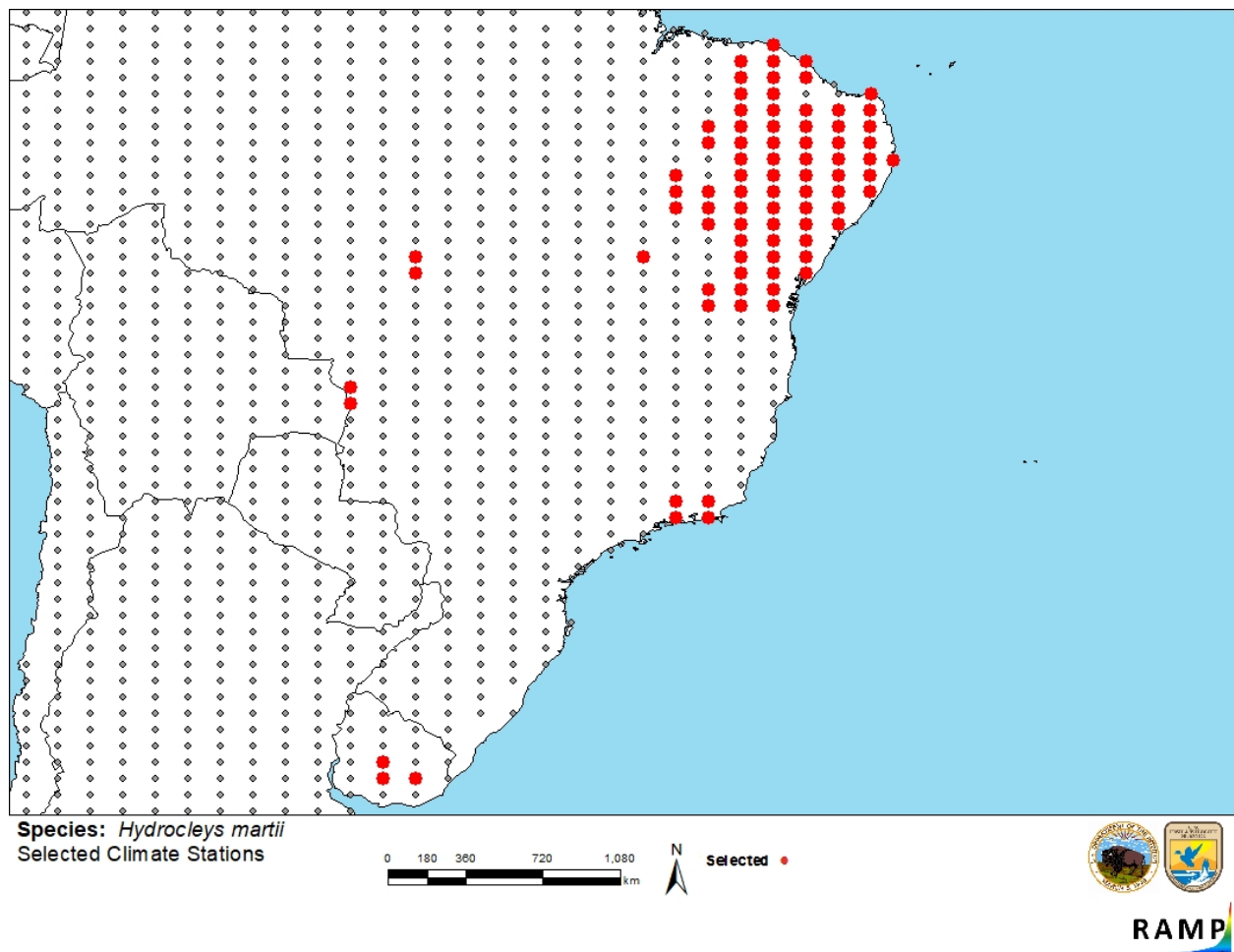


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Brazil and Uruguay) and non-source locations (gray) for *Hydrocleys martii* climate matching. Source locations from Haynes and Holm-Neilsen (1992) and GBIF Secretariat (2021). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

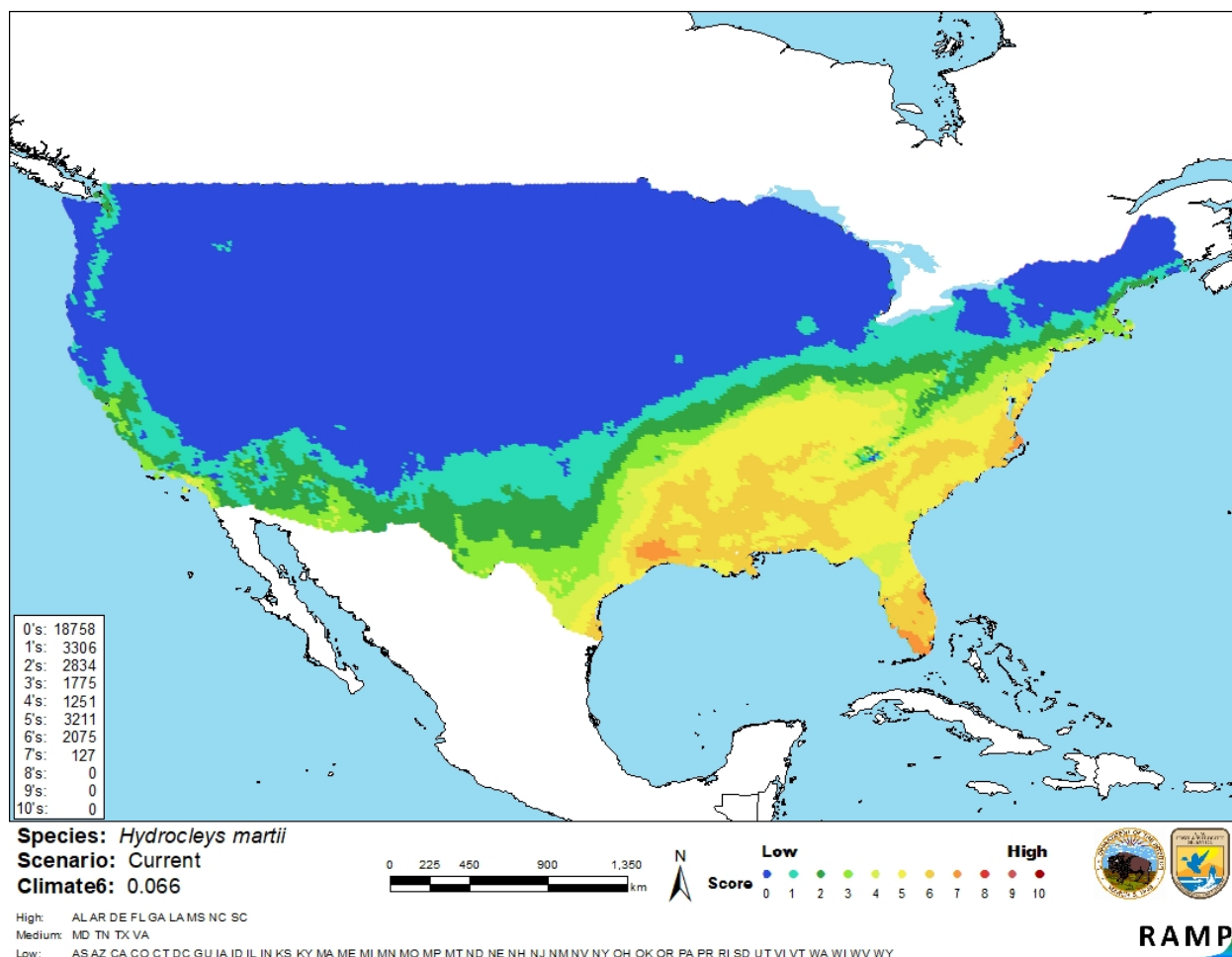


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Hydrocleys martii* in the contiguous United States based on source locations reported by Haynes and Holm-Neilsen (1992) and GBIF Secretariat (2021). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = 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

The certainty of assessment is Low. Limited information is available on the biology, ecology, and distribution of this species. No records of introduction have been found, nor has this species been found in trade.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Hydrocleys martii is an aquatic plant from South America (northeast Argentina, Brazil, and west-central Uruguay). *Hydrocleys martii* has not been reported anywhere outside of its native distribution. History of invasiveness is classified as No Known Nonnative Population. The overall climate match for the contiguous United States is Medium. Much of the contiguous United States had a low match with small patches of high found in Florida, and along the Gulf and mid-Atlantic Coasts. Most of the Gulf Coast and Southeast had a medium match. The certainty of assessment is Low due to a lack of information. The overall risk assessment category for *Hydrocleys martii* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Medium**
- **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.

Carvalho AT, Dötterl S, Schlindwein C. 2014. An aromatic volatile attracts Oligolectic bee pollinators in an interdependent bee-plant relationship. *Journal of Chemical Ecology* 40:1126–1134.

Carvalho AT, Schlindwein C. 2011. Obligate association of an oligolectic bee and a seasonal aquatic herb in semi-arid north-eastern Brazil. *Journal of the Linnean Society* 102:355–368.

GBIF Secretariat. 2021. GBIF backbone taxonomy: *Hydrocleys martii* Seub. Copenhagen: Global Biodiversity Information Facility. Available: <https://www.gbif.org/species/2864577> (March 2021).

Haynes RR, Holm-Neilsen LB. 1992. The Limnocharitaceae. *Flora Neotropica*. New York: The New York Botanical Garden. Monograph 56.

Plants of the World Online. 2021. *Hydrocleys martii* Seub. Plants of the World Online. London: Royal Botanic Gardens, Kew. Available: <http://www.plantsoftheworldonline.org/taxon/urn:lsid:ipni.org:names:278481-2> (March 2021).

Sanders S, Castiglione C, Hoff M. 2018. Risk Assessment Mapping Program: RAMP. Version 3.1. U.S. Fish and Wildlife Service.

World Flora Online. 2021. *Hydrocleys martii* Seub. World Flora Online – a project of the World Flora Online Consortium. Available: <http://www.worldfloraonline.org/taxon/wfo-0000666000> (February 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.

Andrade-Lima D. 1981. The caatingas dominium. *Revista Brasileira de Botânica* 4:149–163.

Prado D. 2003. As caatingas da América do Sul. Pages 3–73 in Leal IR, Tabarelli M, Silva JMC, editors. *Ecologia e conservação da Caatinga*. Recife, Brasil: Editora Universitária, Universidade Federal de Pernambuco.