American Spongeplant (*Hydrocharis spongia*)
Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2025
Revised, May 2025
Web Version, 6/13/2025

Organism Type: Flowering Plant
Overall Risk Assessment Category: Uncertain

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1 Native Range and Status in the United States

Native Range

From Madsen et al. (1998):

"American frogbit (*Limnobium spongia* (Bosc) Steudel [synonym of *Hydrocharis spongia*]) is a native aquatic monocot found in the southern United States through Texas and up the eastern, coastal states to New Jersey (Gleason and Cronquist 1991)."

According to USDA (2025), *Hydrocharis spongia* has a native range that includes the following U.S. States: Texas, Louisiana, Oklahoma, Arkansas, Missouri, Illinois, Indiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina, Virginia, Delaware, Maryland, New Jersey, New York, and Connecticut.

Status in the United States

From Madsen et al. (1998):

"American frogbit (*Limnobium spongia* (Bosc) Steudel) is a native aquatic monocot found in the southern United States through Texas and up the eastern, coastal states to New Jersey (Gleason and Cronquist 1991)."

From NatureServe (2025):

"Widespread and often weedy aquatic plant in its native range in the eastern United States, reportedly very abundant in some areas of central Florida. Quite rare, and perhaps repeatedly introduced but nonpersisting [sic], in the northern portion of its range (e.g., New York and Connecticut), and some states in central part of range (e.g., North Carolina)."

From Les and Capers (1999):

"Two disjunct, northern populations of *Limnobium spongia* are known from New York state (Monroe and Yates Counties) and there is one unverified record from Lake Co., Indiana (Catling and Dore 1982; Cook and Urmi-König 1983)."

"The Connecticut population of *Limnobium spongia* consisted only of a few small, emergent plants which were rooted in moist sand along the shore of an access site to the pond. […] As expected, a survey of the site on May 3, 1999, failed to detect any surviving plants. A larger disjunct northern population discovered in Monroe Co., New York, in 1828 had disappeared from that site by 1895 (House 1924). Mitchell and Tucker (1997) categorized *L. spongia* as a nonpersisting [sic] introduction in New York."

According to USGS (2025), nonindigenous occurrences of *Hydrocharis spongia* have been reported in Connecticut with a status of 'extirpated'; in New York with a status of 'failed'; and in Alabama and Kentucky with unknown status.

According to USDA (2025), New Jersey lists *Hydrocharis sponga* (as *Limnobium spongia*) as "endangered."

Hydrocharis spongia is available in trade in the United States (e.g., Play it Koi 2025; The Pond Outlet 2025; Webb's Water Garden 2025), although no estimates of trade volume are available.

Regulations

Hydrocharis spongia is regulated in California (CDFA 2021, under synonym *Limnobium spongia*). Please refer back to state agency regulatory documents for details on the regulations,

including restrictions on activities involving this species. While effort was made to find all applicable regulations, this list may not be comprehensive. Notably, it does not include regulations that do not explicitly name this species or its genus or family, for example, when omitted from a list of authorized species with blanket regulation for all unnamed species.

Means of Introductions within the United States

From Les and Capers (1999):

"The sources of disjunct populations of *Limnobium* in Connecticut and elsewhere in the northern United States are uncertain but they are unlikely due to escapes from cultivation. Although *Limnobium* has been recommended as an aquarium and water garden plant since the turn of the century (Bisset 1907; Tricker 1897), the early New York record substantially predates the popularity of water plant cultivation in the United States. The Connecticut site has no history or association with water plant cultivation."

"Lowden (1992) concluded that dispersal of *Limnobium* in United States has occurred by natural agents and not by introductions. The immature condition of the Connecticut plants led us to conclude that *Limnobium* was dispersed to this site by waterfowl."

According to USGS (2025), possible introduction pathways for former introduced populations in Connecticut and New York are "planted ornamental" and "escaped captivity."

Remarks

This ERSS was previously published in July 2021 under the scientific name *Limnobium spongia*. Revisions were completed to incorporate new information and conform to updated standards.

Some sources treat *Hydrocharis spongia* (=*Limnobium spongia*) and *Hydrocharis laevigata* (=*Limnobium laevigatum*) as being synonymous. For example, the California Invasive Plant Council lists them as synonymous (Cal-IPC 2025), stating that the species was introduced to the United States via California from Central and South America. The taxonomic authorities used in this Ecological Risk Screening Summary are defined in the Standard Operating Procedure (USFWS 2024). This report follows the chosen taxonomic authority for plants, World Flora Online, in treating scientific name *Hydrocharis spongia* as is a distinct species that it is native to the southeastern United States (WFO 2025). This assessment excludes introduced populations of the congener *Hydrocharis laevigata* in California that have been attributed to *Hydrocharis spongia* by some sources.

Many sources still use the synonym *Limnobium spongia* as the valid name for this species; other authors' use of the synonym was not modified in the case of direct quotation from the source material.

From Les and Capers (1999):

"Cook and Urmi-König (1983) recognized two New World *Limnobium* species, *L. spongia* and *L. laevigatum*; whereas, Lowden (1992) treated these taxa as morphologically distinct, allopatric

subspecies of *L. spongia. Limnobium laevigatum* (= *L. spongia* subsp. *laevigatum*) is restricted in its distribution to Mexico, South America, and the Caribbean archipelago (Lowden 1992)."

From Jepson Flora Project (2025):

"Correspondence 3 indicates that, according to Dean Kelch (pers. comm. to Baldwin), Fred Hrusa has determined that relevant California material belongs to *Limnobium laevigatum* (Humb. & Bonpl. ex Willd.) Heine and not *Limnobium spongia* (Bosc) Rich. ex Steud., and that the latter name has therefore been misapplied in California [there is one record in CCH [Consortium of California Herbaria] labeled *Limnobium spongia*, but it is from material grown in a greenhouse in CA], a situation opposite that presented in The Jepson Manual [Ed. 2]."

Mention of commercial products in this Ecological Risk Screening Summary does not entail endorsement by the U.S. Federal Government.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2025):

Kingdom Plantae
Subkingdom Viridiplantae
Infrakingdom Streptophyta
Superdivision Embryophyta
Division Tracheophyta
Subdivision Spermatophytina
Class Magnoliopsida
Superorder Lilianae
Order Alismatales
Family Hydrocharitaceae
Genus *Limnobium*
Species *Limnobium spongia* (Bosc) Rich. ex Steud.

According to WFO (2025), *Hydrocharis spongia* Bosc. is the current valid name for this species.

The following synonyms of *Hydrocharis spongia* from WFO (2025) and ITIS (2025) were used to search for information for this report: *Hydrocharis cordifolia*, *Limnobium spongia*, *Limnobium boscii*, and *Rhizakenia ovata*.

Size, Weight, and Age Range

From Illinois Wild Flowers (2025):

"The mature blades of these leaves are 1-3" (2.5-7.5 cm.) long and nearly as much across; […] The petioles are 1½-6" (4-15 cm.) long; they are longer on terrestrial or emergent leaves than floating leaves. […] Both staminate (male) and pistillate (female) flowers are about 1" (2.5 cm.)

across, […] The pedicels of staminate flowers are 1½-4" (4-10 cm.) long, while the pedicels of pistillate flowers are ¾-1½" (2-4 cm.) long."

"These fruits are about ¼-½" (0.5-1.2 cm.) across at maturity; […] In the northern part of its range (including southern Illinois), the Sponge Plant (*Limnobium spongia*) overwinters as dormant turions (starchy winter buds) that sink below the surface of the water, while in warmer climates it can grow throughout the year."

Environment

From Illinois Wild Flowers (2025):

"Habitats include swamps, the water of lakes and ponds, muddy borders of lakes and ponds, and deep ditches. In southern Illinois, the Sponge Plant can be found in Bald Cypress swamps. It can be found in both high quality and disturbed wetlands (usually the former in Illinois)."

"The preference is full or partial sun and wet conditions. The Sponge Plant (*Limnobium spongia*) can float on water or root itself in mud; it does not like to dry out. The water should be stagnant or very slow-moving."

Climate

From Illinois Wild Flowers (2025):

"The Sponge Plant can spread aggressively in warm climates by means of its stolons; this is less of a problem in climates with winter temperatures that are substantially below-freezing. This plant can be cultivated indoors in either an aquarium or wet terrarium."

Distribution Outside the United States

Native

The native range of *Hydrocharis spongia* is wholly within the United States, see section 1.

Introduced

No records were found of introduction of *Hydrocharis spongia* in the wild outside the United States.

Means of Introduction Outside the United States

No records were found of introduction of *Hydrocharis spongia* in the wild outside the United States.

Short Description

From WFO (2025):

"Herbs, to 50 cm. Roots branched; stolon buds with 10 or more roots. Leaves floating or emersed in dense vegetation and when stranded; blade 1--10 ´ 0.9--7.8 cm; primary veins forming 30--80° angle with midvein, ascending, aerenchyma extensive, nearly margin to margin, individual

aerenchyma space (located ca. 1 mm from either side of midvein) , 0.4--1.6 mm wide, 1 mm from midvein across its longest axis. Flowers: staminate flowers with 9--12(--18) stamens; pistillate flowers with 3--4 petals; ovary 6--9-carpellate, locules 6--9; styles 2-fid nearly to base; ovules 200. Fruits 4--12 mm diam."

"Lf[leaf]-blades broadly ovate (especially when emergent) to deeply cordate-orbicular but usually acute, 3–7 cm long and wide, 5–7-veined, the lateral veins arcuate- ascending; floating lvs aerenchymatous [air-filled cavities] and spongy toward the base beneath; pedicels 3–10 cm; pet white, linear or linear-oblong, ca 1 cm, not much longer than the slender sep; anthers elongate, ca 3.5 mm; stigmas conspicuous, 10–15 mm; fr 4–12 mm thick."

Biology

From Illinois Wild Flowers (2025):

"The sponge plant is dioecious or monoecious (usually the former); […]"

"Information about floral-faunal relationships for this species is relatively limited. The somewhat succulent leaves of Sponge Plant (*Limnobium spongia*) are eaten by the Slider (*Trachemys scripta*) and other turtles (Ernst et al., 1994), while its fruits and seeds are eaten by such waterfowl as the Golden Eye, Green-Winged Teal, Mallard, Old Squaw, Northern Pintail, Ring-Necked Duck, and Wood Duck (Les & Mehrhoff, 1999; observed in southern New England). The gelatinous spiny seeds can stick to the feathers or feet of waterfowl and conveyed from one wetland to another, thereby distributing the seeds to new locations. Similarly, watercraft may spread the seeds to new wetland locations using the same method."

From Madsen et al. (1998):

"It exhibits two growth habits, a rooted emergent form and a free-floating rosette form (Tarver et al. 1988) […]."

Human Uses

From Gettys (2019):

"In addition to forming nuisance-level populations in its historic range, frog's bit is also expanding its range, with new introductions most likely due to seed transportation by ducks and other waterfowl and possibly escape from cultivation, because the species is sold as an aquarium plant (Anderson, 2011; Les and Mehrhoff, 1999)."

From Les and Mehrhoff (1999):

"Its availability as a water garden and aquarium plant is generally limited, […]"

Diseases

From Illinois Wild Flowers (2025):

"A fungal disease, *Cercospora limnobii*, can cause brown lesions to develop on the leaf blades."

Threat to Humans

From Madsen et al. (1998):

"Although a native plant, American frogbit can produce extensive floating mats and create nuisance situations, such as blocking navigation, affecting water quality, fish and wildlife habitat, and recreational usage."

From Gettys (2019):

"The floating aquatic species frog's bit (also called american [sic] spongeplant) has a growth habit similar to that of water hyacinth. Although frog's bit is indigenous to North America, it routinely forms populations large enough to require management efforts (Les and Capers, 1999). For example, Bodle (1986) reported that frog's bit can have "water hyacinth-like growth"; as a result, the species is targeted for management in some aquatic ecosystems where it is native, including the often-invaded St. Johns River (Knight, 1985). The Florida Fish and Wildlife Conservation Commission (FWC), which is the state agency responsible for coordinating plant management in most of Florida's public waters, treated more than 900 acres of frog's bit between 2013 and 2018 (Florida Fish and Wildlife Conservation Commission, 2014, 2015, 2016, 2017, 2018)."

3 Impacts of Introductions

No information was available on impacts of reported introductions.

Hydrocharis spongia is regulated in California (CDFA 2021), see section 1.

4 History of Invasiveness

The History of Invasiveness for *Hydrocharis spongia* is classified as No Known Nonnative Population. There are records of occurrences outside of the native range (i.e., Connecticut, New York, Alabama, and Kentucky) but they do not represent established populations. It is uncertain how these introductions occurred. Some researchers have suggested they may have been the result of natural dispersal with seeds being transported by waterfowl, as opposed to anthropogenic pathways. *Hydrocharis spongia* is in trade as an ornamental plant. No information was found regarding the impacts *Hydrocharis spongia* may or may not have outside of its native range. It is sometimes regarded as a nuisance species within the native range and actively managed.

5 Global Distribution

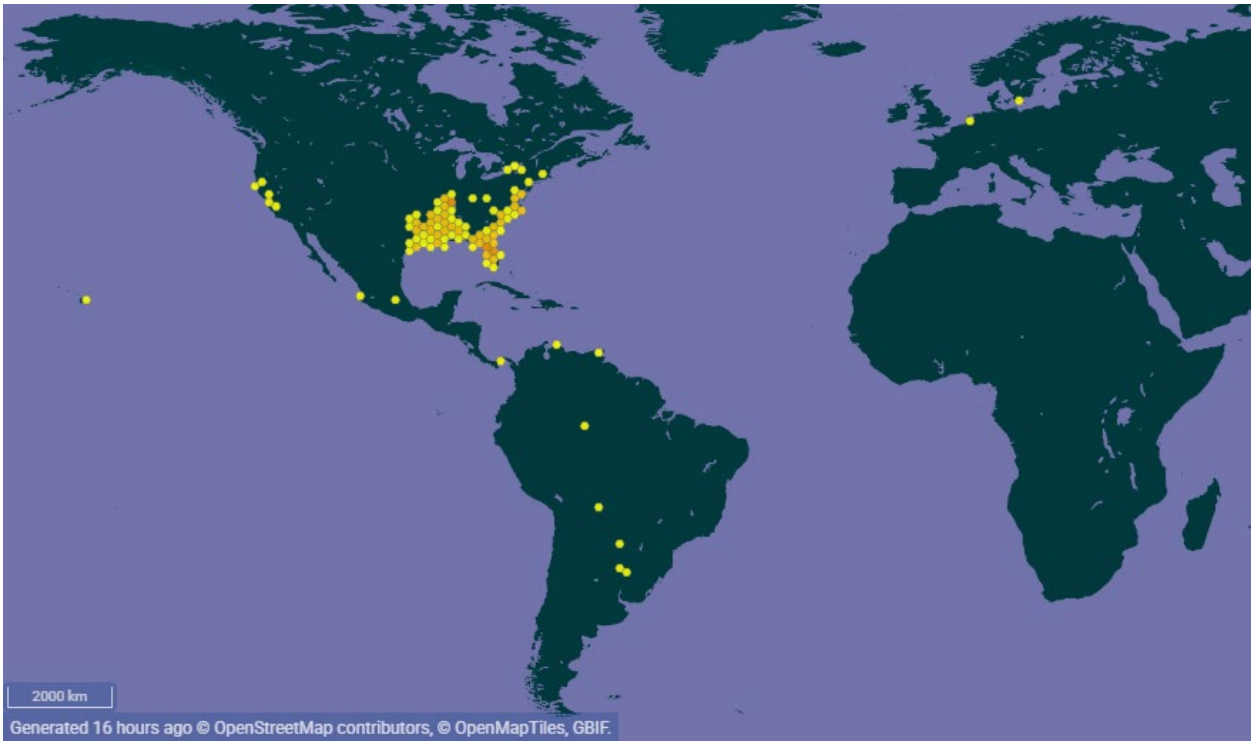

Figure 1. Reported global distribution of *Hydrocharis spongia*. Map from GBIF Secretariat (2023). Observations are reported from the United States, Argentina, Sweden, Mexico, Panama, Venezuela, Bolivia, Brazil, Netherlands, and Paraguay. Occurrences in Washington, California, Hawaii, Mexico, Panama, South America, and Europe were not included in the climate matching analysis as they are not known to represent established populations of *Hydrocharis spongia* and may be occurrences of *Hydrocharis laevigata*. Occurrences in northern Illinois, New York, and Connecticut were also excluded from the climate matching analysis as these locations represent known failed populations of *Hydrocharis spongia* (New York and Connecticut), or a location where the report of an established population could not be corroborated (northern Illinois).

6 Distribution Within the United States

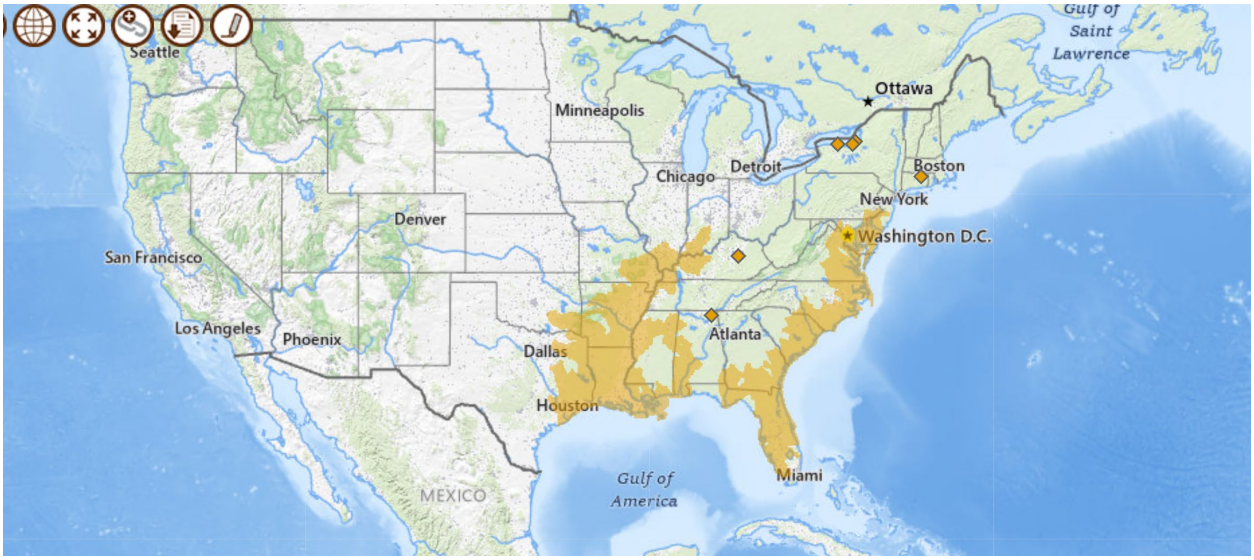

Figure 2. Reported distribution of *Hydrocharis spongia* in the United States. Map from USGS (2025). Orange points in New York, Connecticut, Alabama, and Kentucky indicate introductions that are not known to have resulted in established populations. These points were excluded from the climate matching analysis because those introductions are recorded as extirpated, failed, or unknown status. The orange polygon indicates the native range of the species.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Hydrocharis spongia* to the contiguous United States found high match in the Southeast, Gulf Coast, southern Great Lakes, Northeast, Appalachian Range, Mid-Atlantic, Southern Atlantic Coast, and Southern Florida regions. These areas include and surround its native range. Areas with medium climate match included the Northern Plains, Southern Plains, and Southwest regions, and pockets of the Western Mountains region. Areas of low climate match for *Hydrocharis spongia* were found in the Colorado Plateau, Great Basin, Northern Pacific Coast, and California regions, and most of the Western Mountains region. The overall Climate 6 score (Sanders et al. 2023; 16 climate variables; Euclidean distance) for the contiguous United States was 0.483, indicating that Yes, there is establishment concern outside its native range. The Climate 6 score is calculated as: (count of target points with scores ≥ 6)/(count of all target points). Establishment concern is warranted for Climate 6 scores greater than or equal to 0.002 based on an analysis of the establishment success of 356 nonnative aquatic species introduced to the United States (USFWS 2024).

Projected climate matches in the contiguous United States under future climate scenarios are available for *Hydrocharis spongia* (see Appendix). These projected climate matches are provided as additional context for the reader; future climate scenarios are not factored into the Overall Risk Assessment Category.

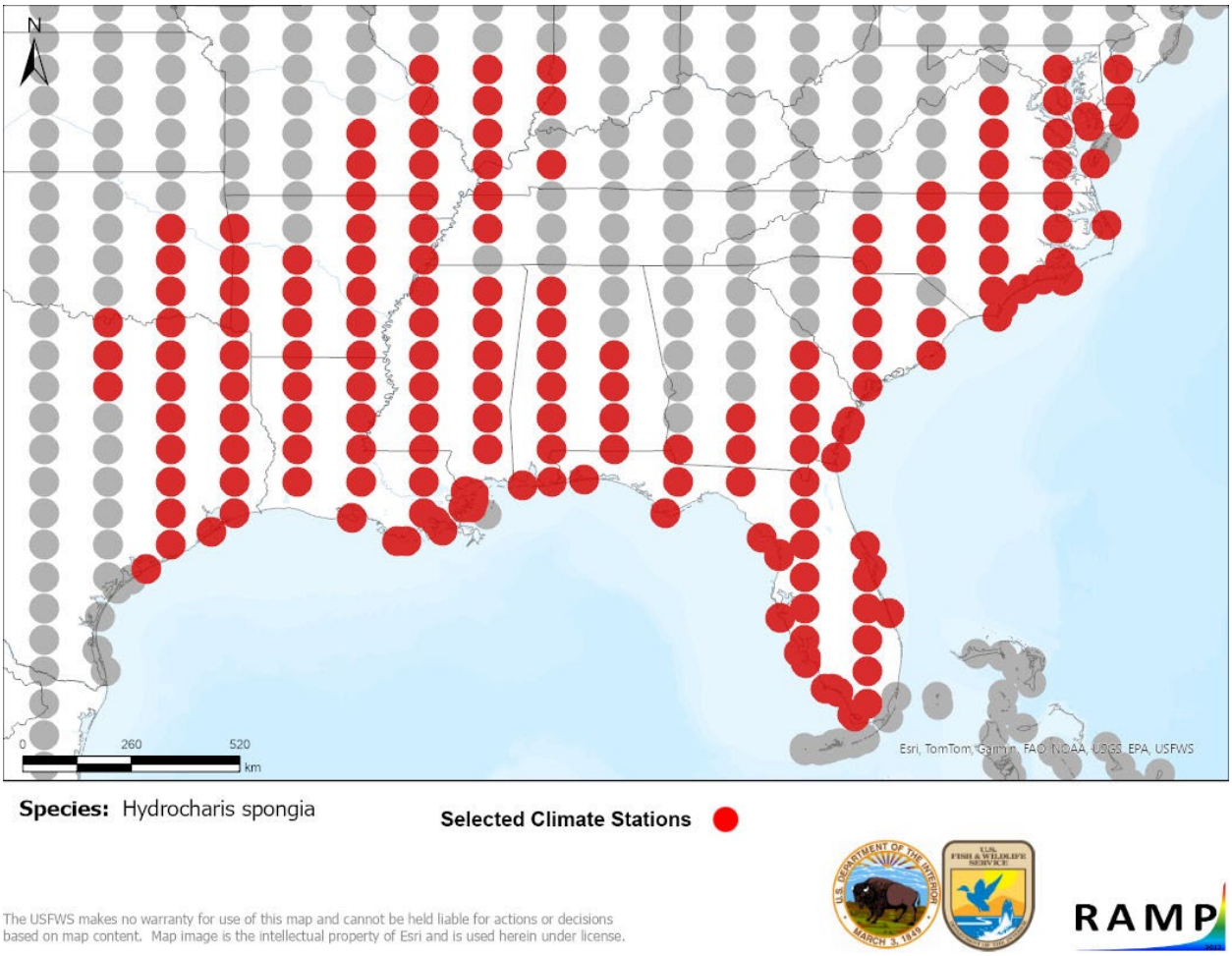

Figure 3. RAMP (Sanders et al. 2023) source map showing weather stations in southeastern North America selected as source locations (red; Florida, Georgia, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, Missouri, Illinois, Indianna, Kentucky, Tennessee, South Carolina, North Carolina, Virginia, Maryland, Delaware) and non-source locations (gray) for *Hydrocharis spongia* climate matching. Source locations from GBIF Secretariat (2023). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

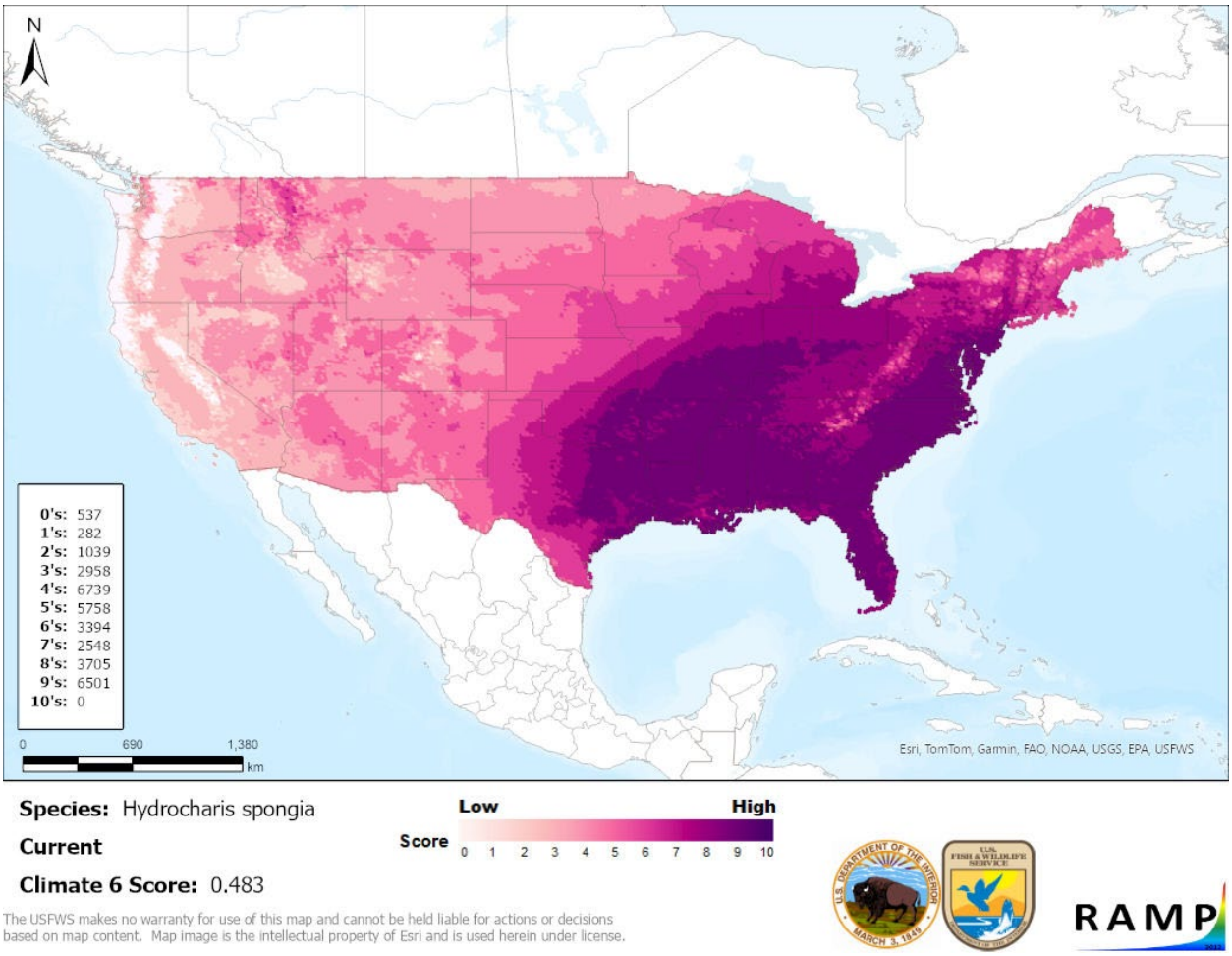

Figure 4. Map of RAMP (Sanders et al. 2023) climate matches for *Hydrocharis spongia* in the contiguous United States based on source locations reported by GBIF Secretariat (2023). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

8 Certainty of Assessment

The Certainty of Assessment for *Hydrocharis spongia* is classified as Low. There is information available about the biology and ecology of this species. However, uncertain and conflicting information was found regarding this species' native range related to its taxonomic standing. Some sources have attributed introduced populations of *Hydrocharis laevigata* to *Hydrocharis spongia* which has resulted in conflated information for the two species, particularly information regarding the distribution and potential impacts of introductions of *Hydrocharis* spp. in the United States. *Hydrocharis spongia* is in trade as an ornamental plant but specifics regarding quantity and duration of trade were not found.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Hydrocharis spongia, American Spongeplant, is a plant that is native to the southeastern United States. It is sometimes a nuisance species within the native range, forming large mats that interfere with navigation and recreational usage. New Jersey lists the species as endangered. Although some sources report introductions of *Hydrocharis spongia* to Connecticut, New York, Kentucky, and Alabama, these disjunct populations failed to establish, and it is uncertain if they were the result of natural dispersal or anthropogenic introductions. *Hydrocharis spongia* is available in trade as an ornamental plant but there are limited data to characterize the volume and duration of this trade. *Hydrocharis spongia* is regulated in California. The History of Invasiveness for *Hydrocharis spongia* is classified as No Known Nonnative Population due to records of introductions outside of the native range, but no records of established non-native populations. The climate matching analysis for the contiguous United States indicates establishment concern for this species outside its native range. Locations with the highest climate match are found throughout the Southeast where it is native, southeastern Midwest, and Mid-Atlantic regions. The Certainty of Assessment for this ERSS is classified as Low due to uncertain and conflicting information regarding this species' native and introduced range and taxonomic standing. Conflicting information on established populations and impacts of introduction is largely the result of some sources attributing introduced populations in California of the congener *Hydrocharis laevigata* to *Hydrocharis spongia*. However, most sources treat the two as distinct species. The Overall Risk Assessment Category for *Hydrocharis spongia* in the contiguous United States is Uncertain.

Assessment Elements

- **History of Invasiveness (see Section 4): No Known Nonnative Population**
- **Establishment Concern (see Section 7): Yes**
- **Certainty of Assessment (see Section 8): Low**
- **Remarks, Important additional information: Closely resembles *Hydrocharis laevigata*, which is considered a synonym by some sources.**
- **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.

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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.

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Appendix

Summary of Future Climate Matching Analysis

Future climate projections represent two Shared Socioeconomic Pathways (SSP) developed by the Intergovernmental Panel on Climate Change (IPCC 2021): SSP5, in which emissions triple by the end of the century; and SSP3, in which emissions double by the end of the century. Future climate matches were based on source locations reported by GBIF Secretariat (2023).

Under the future climate scenarios (figure A1), on average, high climate match for *Hydrocharis spongia* was projected to occur in the Appalachian Range, Great Lakes, Mid-Atlantic, Northeast, Southeast, Southern Atlantic Coast, and Southern Florida regions of the contiguous United States. The species native range was encompassed within the areas of high and medium match under all future scenarios. Areas of low climate match were projected to occur in California and the Northern Pacific Coast regions. The Climate 6 scores for the individual future scenario models (figure A2) ranged from a low of 0.478 (model: MPI-ESM1-2-HR, SSP5, 2085) to a high of 0.566 (model: UKESM1-0-LL, SSP5, 2085). All future scenario Climate 6 scores were above the Establishment Concern threshold, indicating that Yes, there is establishment concern for this species under future scenarios. The Climate 6 score for the current climate match (0.483, figure 4) falls within the range of scores for future projections. The time step and climate scenario with the most change relative to current conditions was SSP5, 2085, the most extreme climate change scenario. Primarily in time step 2085 under both SSP3 and SSP5, areas within the Northeast and Western Mountains saw a large increase in the climate match relative to current conditions. Additionally, under all time step and scenario combinations, areas within the Colorado Plateau, Great Lakes, and Northern Plains saw a moderate increase in the climate match relative to current conditions. Under one or more time step and climate scenarios, areas within the Appalachian Range, Gulf Coast, Mid-Atlantic, Southeast, Southern Atlantic Coast, Southern Florida, Southern Plains, and Southwest saw a moderate decrease in the climate match relative to current conditions. No large decreases were observed regardless of time step and climate scenarios. Additional, very small areas of large or moderate change may be visible on the maps (figure A3).

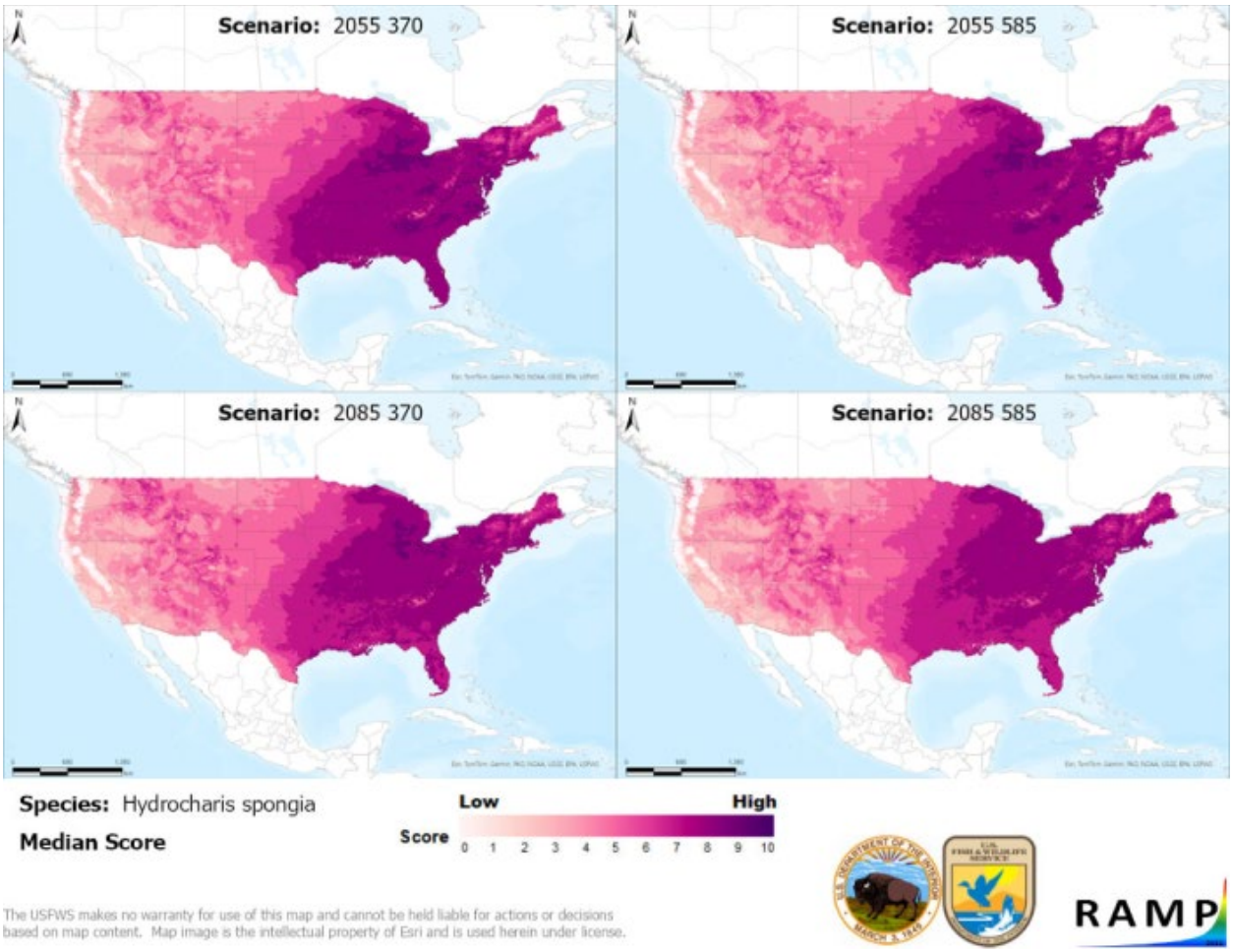

Figure A1. Maps of median RAMP (Sanders et al. 2023) climate matches projected under potential future climate conditions using five global climate models for *Hydrocharis spongia* in the contiguous United States. Climate matching is based on source locations reported by GBIF Secretariat (2023). Shared Socioeconomic Pathways (SSPs) used (from left to right): SSP3, SSP5 (IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global climate models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

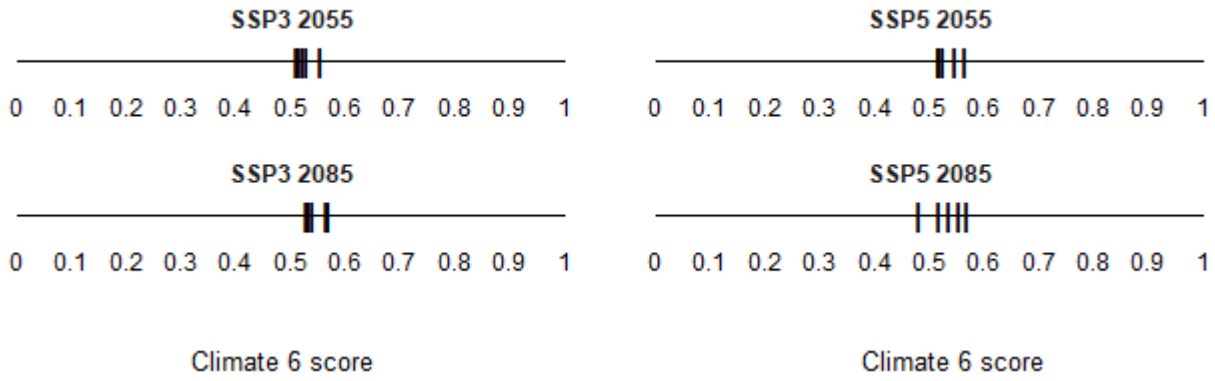

Figure A2. Comparison of projected future Climate 6 scores for *Hydrocharis spongia* in the contiguous United States for each of five global climate models under four combinations of Shared Socioeconomic Pathway (SSP) and time step. SSPs used (from left to right): SSP3, SSP5 (Karger et al. 2017, 2018; IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global climate models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0.

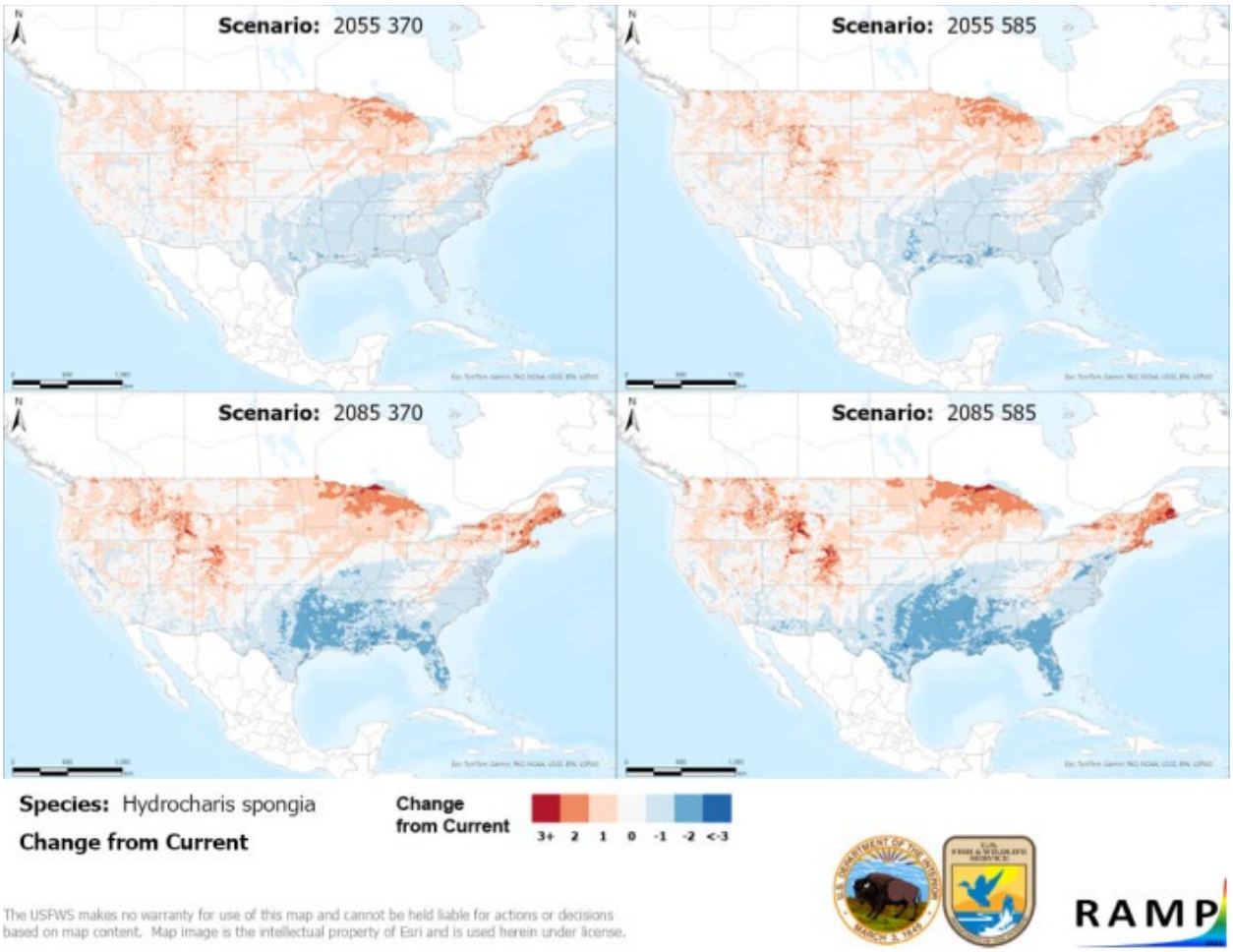

Figure A3. RAMP (Sanders et al. 2023) maps of the contiguous United States showing the difference between the current climate match target point score (figure 4) and the median target point score for future climate scenarios (figure A1) for *Hydrocharis spongia* based on source locations reported by GBIF Secretariat (2023). Shared Socioeconomic Pathways (SSPs) used (from left to right): SSP3, SSP5 (IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0. Shades of blue indicate a lower target point score under future scenarios than under current conditions. Shades of red indicate a higher target point score under future scenarios than under current conditions. Darker shades indicate greater change.

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