1 Native Range and Status in the United States

Native Range
GISD (2018) lists Limnophila sessiliflora as native in Bhutan, China, India, Indonesia, Japan, Democratic People’s Republic of Korea, Republic of Korea, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, and Viet Nam.

Rahman et al. (2010) lists Limnophila sessiliflora as present in Bangladesh.
**Status in the United States**
From Swearingen and Bargeron (2016):

“*L. sessiliflora* is listed as a Federal Noxious Weed.”

According to USDA, NRCS (2018), *Limnophila sessiliflora* is listed as a Class A noxious weed in Alabama, North Carolina, and Vermont, a quarantine species in California and Oregon, a Class 2 prohibited aquatic plant in Florida, a prohibited species in Massachusetts, and an invasive aquatic plant and plant pest in South Carolina.

GISD (2018) lists *Limnophila sessiliflora* as alien, invasive, and established in Florida, Georgia, and Texas.

From Spencer and Bowes (1985):

“For example, limnophila is well established in localized areas of Florida such as Dead Lakes (Calhoun County); Lake Seminole in Southern Georgia; Lake Pierce and Lake Weohyakapa (Polk County); the Loxahatchee River (Martin County); and Lake Tsala Apopka (Citrus County). Limnophila and hygrophila are both found in dense stands in Boggy Creek near Orlando (Osceola County).”

**Means of Introductions in the United States**
From Spencer and Bowes (1985):

“They are exotic plants to Florida, and appear to have been introduced by aquarium plant dealers ([Schoepfel 1969; Bruenner 1970; Hertel 1971; Zimpel 1972; Mahler 1980; Vandiver 1980; Les and Wunderlin 1981]).”

**Remarks**
From Spencer and Bowes (1985):

“A hybrid between *L. indica* and *L. sessiliflora* also has been reported to be a new rice weed ([Piccoli 1974]). In this context it should be noted that *L. indica* is currently [as of 1985] being sold by the aquarium industry in Florida ([Mahler 1980]), and although it has not been reported growing as naturalized, the possibility for hybridization must not be overlooked.”

**2 Biology and Ecology**

**Taxonomic Hierarchy and Taxonomic Standing**
From ITIS (2018):

“Kingdom Plantae  
  Subkingdom Viridiplantae  
  Infrakindgom Streptophyta
Superdivision Embryophyta
Division Tracheophyta
Subdivision Spermatophytina
Class Magnoliopsida
Superorder Asteranae
Order Lamiales
Family Plantaginaceae
Genus Limnophila
Species Limnophila sessiliflora (Vhal) Blume”

“Taxonomic Status: Current Standing: accepted”

Size, Weight, and Age Range
From Swearingen and Bargeron (2016):
“[…] grows up to 12 ft (3.7 m) tall.”

Environment
From GISD (2018):
“L. sessiliflora will grow in a variety of aquatic habitats and can withstand a minimum [water] temperature of 15°C, with an optimum [water] temperature between 20-26°C (IFAS, 2001).”

“In Florida, L. sessiliflora was found to grow best at pH 5-7.”

Climate/Range
No information on specific climate requirements of Limnophila sessiliflora was found.

Distribution Outside the United States
Native
GISD (2018) lists Limnophila sessiliflora as native in Bhutan, China, India, Indonesia, Japan, Democratic People’s Republic of Korea, Republic of Korea, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, and Viet Nam.

Rahman et al. (2010) lists Limnophila sessiliflora as present in Bangladesh.

Introduced
From Lukás et al. (2014):
“In total, 48 alien aquatic vascular plants were recorded as established in Hungarian inland waters (Table I): 7 species (Bacopa caroliniana, Houttuynia cordata, Hygrophila corymbosa, H. difformis, Limnophila sessiliflora, Rotala rotundifolia, and Vallisneria gigantea) are new to the DAISIE list (DAISIE 2009).”

**Means of Introduction Outside the United States**
No information on means of introduction to areas outside of the United States was found.

**Short Description**
From Swearingen and Bargeron (2016):

“Leaves of this plant have two types of whorled polymorphic leaves. The submerged stems have dissected, dark green, lance shaped leaves up to 1.2 in. (30 mm) long with irregularly serrated margins. The emergent stems have flat shiny hairs and fine, needle like leaves up to 0.12 in. (3 cm) long.”

“The small flowers are sessile and arise singly from the leaf axis. The violet, lavender, pink, or blue flowers have five fused petals that form a tube. The floral tube has two lips, which have distinct purple lines on the undersides. The five sepals are green and hairy. Sepals are from 0.16-0.2 in. (4-5 mm) long.”

“The fruit is an ellipsoid capsule that can contain up to 150 seeds.”

**Biology**
From Swearingen and Bargeron (2016):

*Limnophila sessiliflora* is a rooted, aquatic, perennial, herbaceous plant […]. It is fast growing, grows new plants from fragments, and can exist in a variety of aquatic habitats.”

From GISD (2018):

“Hall and Vandiver (2003) state that, "In late fall *L. sessiliflora* mats break loose from the hydrosoil. Since the fruit is mature in the late fall the floating mats spread the seeds as they move.""

From Spencer and Bowes (1985):

“[…] but there is doubt as to whether herbivorous fish will eat limnophila, because of a toxin supposedly present in the stem tissue ([Mahler 1980]).”

**Human Uses**
No information on human uses of *Limnophila sessiliflora* was found.

**Diseases**
No information on parasites or pathogens of *Limnophila sessiliflora* was found.
Threat to Humans
No information on threats to humans from Limnophila sessiliflora was found.

3 Impacts of Introductions
From Spencer and Bowes (1985):

“Limnophila species (including *L. sessiliflora*) are documented major weed problems in paddy rice fields of India, China, Japan, and the Philippines ([Harada et al. 1975; Misra and Tripathy 1975; Pancho 1976; Takematsu et al. 1976]). A hybrid between *L. indica* and *L. sessiliflora* also has been reported to be a new rice weed ([Piccoli 1974]).”

From GISP (2018):

“IFAS (2001) reports that, "*L. sessiliflora* is fast-growing and able to regrow from fragments. It is also able to shade out, and thus, out-compete totally submerged species. This species also clogs irrigation and flood-control canals, and pumping and power stations. *L. sessiliflora* is a major weed problem in paddy rice fields of India, China, Japan and the Philippines." The authors also state that, "*L. sessiliflora* is an efficient photosynthesizer and has a low light compensation point for long periods of photosynthesis, making it a competitive plant because it can start growing in low light before other plants do."

4 Global Distribution

![Map of Known Global Distribution of Limnophila sessiliflora](image)

**Figure 1.** Known global distribution of *Limnophila sessiliflora*. Locations are in North America, South America, Asia, Africa, and Australia. Map from GBIF Secretariat (2018).

The locations in Bolivia, Cameroon, Australia, and Papua New Guinea were used as source points for the climate match. The records indicated that the specimens were collected from the wild (GBIF Secretariat 2018).
5 Distribution Within the United States

![Figure 2](image1.png) **Figure 2.** Known distribution of *Limnophila sessiliflora* in the United States. Map from EDDMapS (2018).

![Figure 3](image2.png) **Figure 3.** Known distribution of *Limnophila sessiliflora* in the United States. Map from BISON (2018).
6 Climate Matching

Summary of Climate Matching Analysis
The climate match for *Limnophila sessiliflora* was high along the southern Atlantic and Gulf coasts, most of Florida, and central Texas. Most of the eastern contiguous United States had a medium match except for New England which was mostly low. The western contiguous United States had a low match with small areas of medium match in the southwest. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.215, high. The following states had individually high climate scores: Alabama, Arkansas, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Louisiana, Maryland, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Figure 4. RAMP (Sanders et al. 2014) source map showing weather stations in North and South America, Africa, Asia, and Australia selected as source locations (red) and non-source locations (gray) for *Limnophila sessiliflora* climate matching. Source locations from BISON (2018), EDDMapS (2018), and GBIF Secretariat (2018).
Figure 5. Map of RAMP (Sanders et al. 2014) climate matches for *Limnophila sessiliflora* in the contiguous United States based on source locations reported by BISON (2018), EDDMapS (2018), and GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match. Counts of climate match scores are tabulated on the left.

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

<table>
<thead>
<tr>
<th>Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)</th>
<th>Climate Match Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000≤X≤0.005</td>
<td>Low</td>
</tr>
<tr>
<td>0.005&lt;X&lt;0.103</td>
<td>Medium</td>
</tr>
<tr>
<td>≥0.103</td>
<td>High</td>
</tr>
</tbody>
</table>

7 Certainty of Assessment

Certainty of this assessment is low. Information on the biology, invasion history and impacts of this species is minimal, with little peer-reviewed literature. The species is reported as invasive and native in the same range depending on the source consulted. The distribution used as source points for the climate match may not be complete.
8 Risk Assessment

Summary of Risk to the Contiguous United States

*Limnophila sessiliflora* is an aquatic plant native to Southeast Asia. The history of invasiveness is not documented. *L. sessiliflora* has been successfully introduced into parts of the southern United States and potentially elsewhere. The species was introduced as an ornamental. There are reports that the species may be a crop pest or interfere with navigation and water control but they were not backed by scientific investigation. Climate matching indicated the contiguous United States has a high climate match with already established *L. sessiliflora* populations in the southeastern United States. This amphibious plant is a federally and state listed noxious species. 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): High
- Certainty of Assessment (Sec. 7): Low
- Remarks/Important additional information: *L. sessiliflora* is listed as a Federal Noxious Weed.
- 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.


### 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.


