

Rattlebox (*Ludwigia alternifolia*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2022
Revised, April 2022
Web Version, 8/9/2022

Organism Type: Plant
Overall Risk Assessment Category: Uncertain



Photo: Fritz Flohr Reynolds. Licensed under CC BY-SA 3.0. Available: https://commons.wikimedia.org/wiki/File:Ludwigia_alternifolia_-_Squarepod_waterprimrose.jpg (March 2022).

1 Native Range and Status in the United States

Native Range

From Smith (2016):

“NATIVE

Extant (resident)

Canada (Ontario, Québec); United States (West Virginia, Virginia, Texas, Tennessee, South Carolina, Rhode Island, Pennsylvania, Oklahoma, Ohio, Iowa, Indiana, Illinois, Georgia, Florida,

District of Columbia, Delaware, Connecticut, Arkansas, Alabama, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New Jersey, New York, North Carolina).”

Status in the United States

From Smith (2016):

“NATIVE

Extant (resident)

[...] United States (West Virginia, Virginia, Texas, Tennessee, South Carolina, Rhode Island, Pennsylvania, Oklahoma, Ohio, Iowa, Indiana, Illinois, Georgia, Florida, District of Columbia, Delaware, Connecticut, Arkansas, Alabama, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New Jersey, New York, North Carolina).”

Ludwigia alternifolia is in trade in the United States as an ornamental plant, and as species used habitat restoration efforts. For example:

From Roundstone Native Seed (2022):

“\$381.00 Per Pound [...] Scientific Name: *Ludwigia alternifolia*”

Roundstone Native Seed is a retailer based in Upton, Kentucky.

Means of Introductions in the United States

There are no introductions as this species is native to parts of the Midwest and eastern United States.

Remarks

From ITIS (2022):

“Common Name(s):bushy seedbox [...]seedbox”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2022):

Kingdom Plantae

Subkingdom Viridiplantae

Infrakingdom Streptophyta

Superdivision Embryophyta

Division Tracheophyta

Subdivision Spermatophytina

Class Magnoliopsida

Superorder Rosanae
Order Myrtales
Family Onagraceae
Genus *Ludwigia* L.
Species *Ludwigia alternifolia* L

From World Flora Online (2022):

“*Ludwigia alternifolia* L.

Sp. Pl.

This name is reported by Onagraceae as an accepted name in the genus *Ludwigia* (family Onagraceae).”

Size, Weight, and Age Range

From Roundstone Native Seed (2022):

“Seed Box is a 2' to 3' tall native perennial that features 3/4" wide flowers [...].”

Environment

From Smith (2016):

“The species is found in floodplains (river or stream floodplains), marshes, meadows and fields, shores of rivers or lakes, wetland margins (edges wetlands) (New England Wild Flower Society 2015).”

“Terrestrial, Freshwater (=Inland waters)”

Climate

From Roundstone Native Seed (2022):

“Regions: 1,2,3,4,5,6 [U.S. Department of Agriculture Plant Hardiness Zones]”

Distribution Outside the United States

Native

From Smith (2016):

“NATIVE

Extant (resident)

Canada (Ontario, Québec); United States (West Virginia, Virginia, Texas, Tennessee, South Carolina, Rhode Island, Pennsylvania, Oklahoma, Ohio, Iowa, Indiana, Illinois, Georgia, Florida, District of Columbia, Delaware, Connecticut, Arkansas, Alabama, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New Jersey, New York, North Carolina).”

Introduced

No records of introductions were found for *Ludwigia alternifolia*.

Means of Introduction Outside the United States

No records of introductions were found for *Ludwigia alternifolia*.

Short Description

From World Flora Online (2022):

"Erect, often freely branched perennial 4–12 dm from a cluster of fleshy-fibrous roots; lvs alternate, lanceolate or lance-linear, acute or acuminate, 5–10 cm, tapering to the sessile or subpetiolar base; pedicels 3–5 mm, with 2 lanceolate bracteoles near the top; fls 4-merous; pet about equaling the sep; stamens 4; fr 5–6 mm, glabrous or hairy, nearly cubic, with rounded base, slightly wing-angled, opening by a terminal pore, and eventually loculicidal; pedicels to about as long as the fr; $2n=16$. [From Gleason and Cronquist 1991]"

Biology

From World Flora Online (2022):

"Swamps and wet soil; Mass. and s. Ont. to Io. and s. Neb., s. to Fla. and Tex. July, Aug. Ozarkian plants, extending e. to s. Ind., tend to be evidently short-hairy, and have been distinguished from the more eastern or northern, essentially glabrous plants, as var. *pubescens* E. J. Palmer & Steyerl. [From Gleason and Cronquist 1991]"

From Roundstone Native Seed (2022):

"The plant is reported as a larval host plant for the Banded Sphinx Moth."

Human Uses

From Roundstone Native Seed (2022):

"Seed Box is a good garden plant for edges of water features or other damp sites and is used in wetland restoration and wildlife habitat."

Diseases

No records of diseases were found for *Ludwigia alternifolia*.

Threat to Humans

No records of threats to humans were found for *Ludwigia alternifolia*.

3 Impacts of Introductions

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

4 History of Invasiveness

According to CABI (2019), an introduction was reported in Hungary, but no information was found to support this occurrence or any other introduction. The history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution

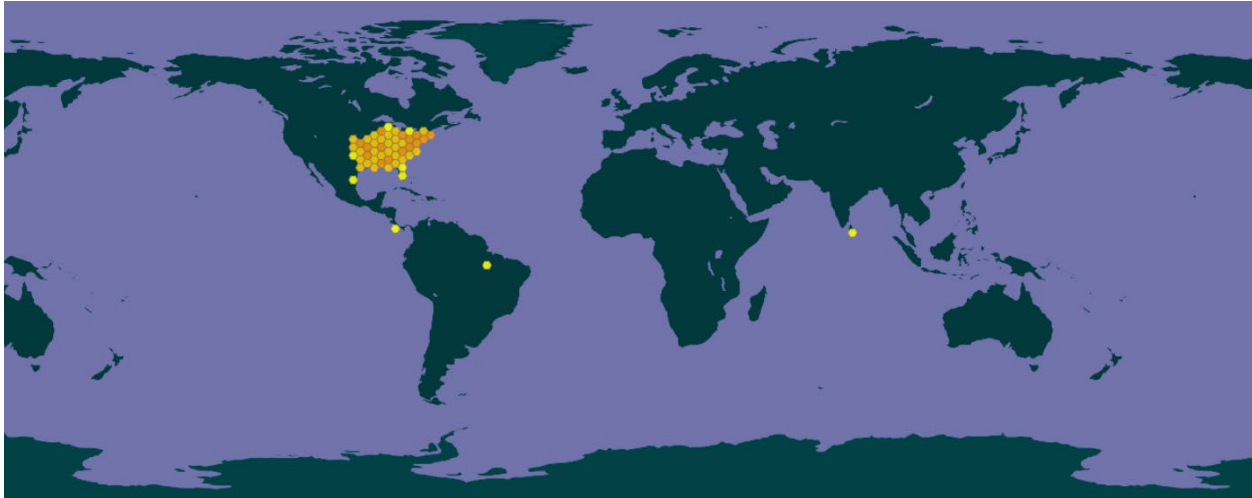


Figure 1. Known global distribution of *Ludwigia alternifolia*. Observations are reported from the United States, Canada, Sri Lanka, Panama and Brazil. Map from GBIF Secretariat (2022). Points in Sri Lanka, Brazil and Panama were removed from the climate matching analysis as they do not represent any known populations.

6 Distribution Within the United States

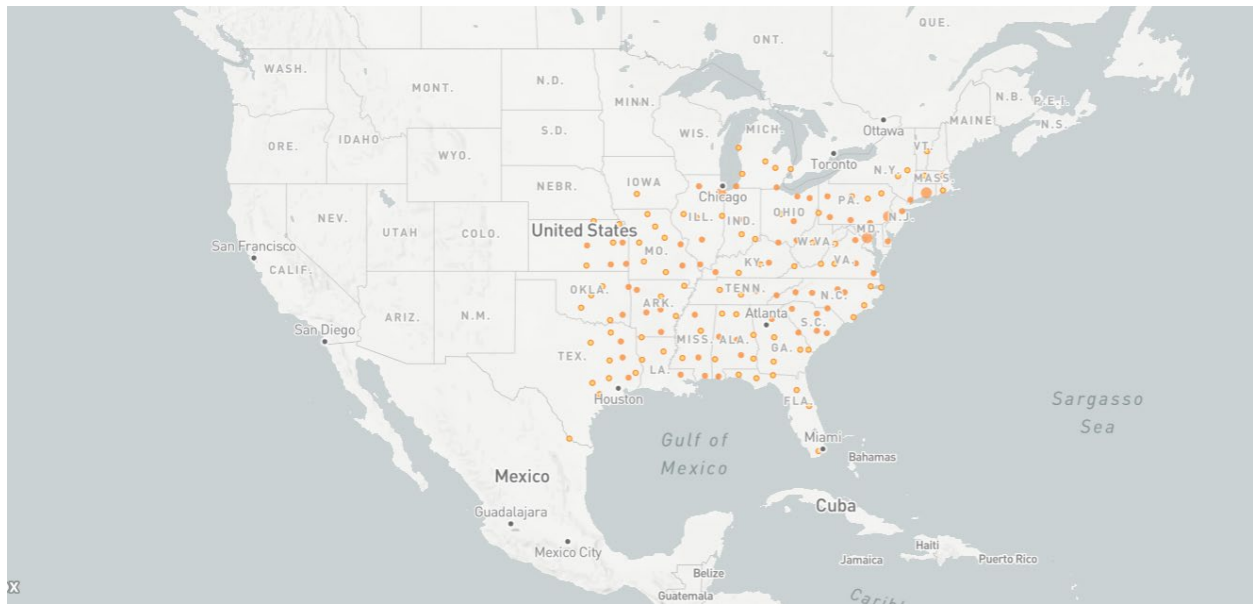


Figure 2. Known distribution of *Ludwigia alternifolia* in the United States. Map from GBIF-US (2022).

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Ludwigia alternifolia* was generally very high in its native range in the eastern portion of the contiguous United States. However, it was also high across the Great Plains region extending west to the Rocky Mountains. Medium matches were found throughout much of the Intermountain West with low matches restricted to Pacific Coast States, and isolated portions of Idaho and Nevada. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.781, high (scores greater than or equal to 0.103, are classified as high). Most States had high individual climate scores. California, Nevada, Washington and Oregon recorded medium scores. No States had low individual scores.

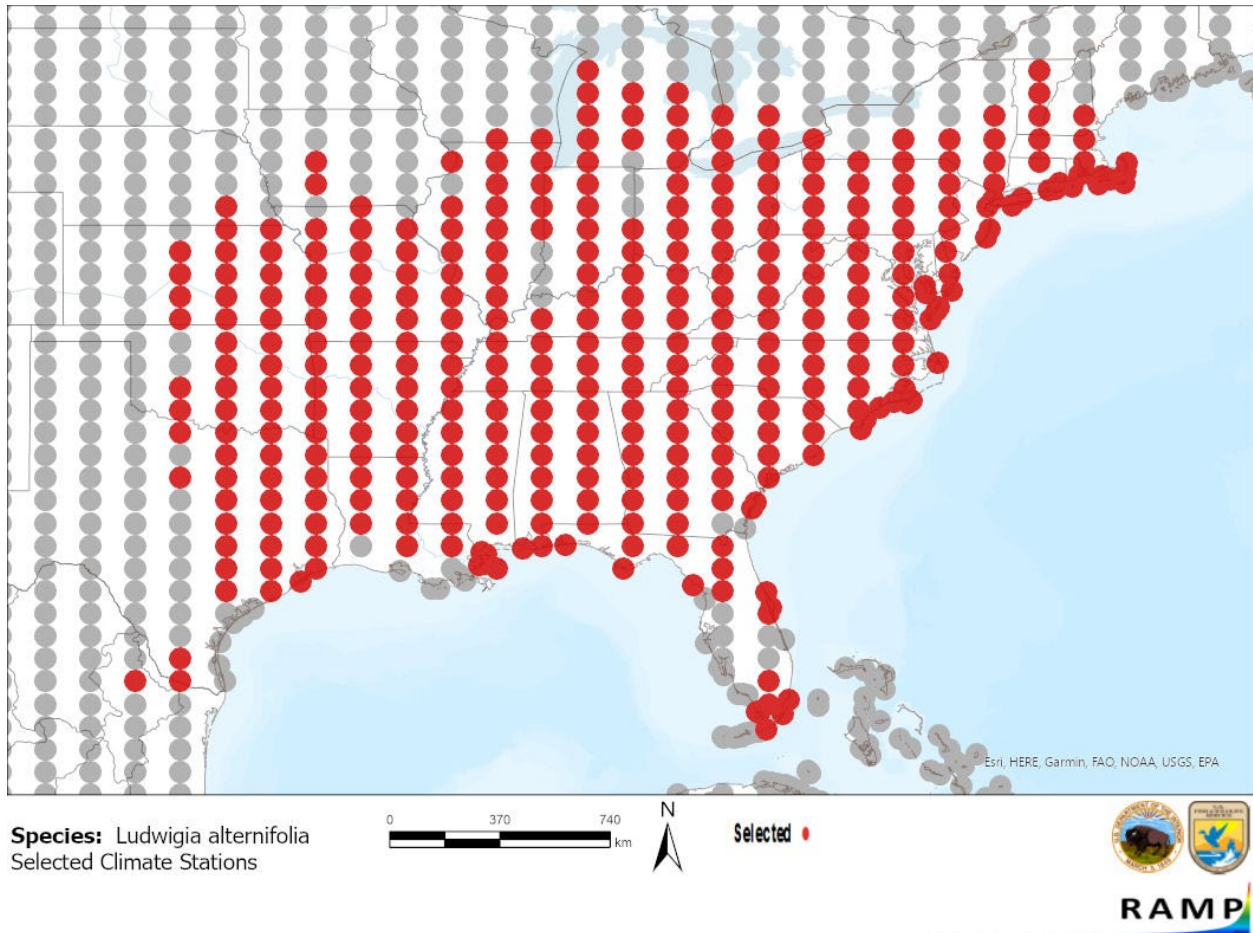


Figure 3. RAMP (Sanders et al. 2021) source map showing weather stations in the United States and Canada selected as source locations (red) and non-source locations (gray) for *Ludwigia alternifolia* climate matching. Source locations from GBIF Secretariat (2022). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

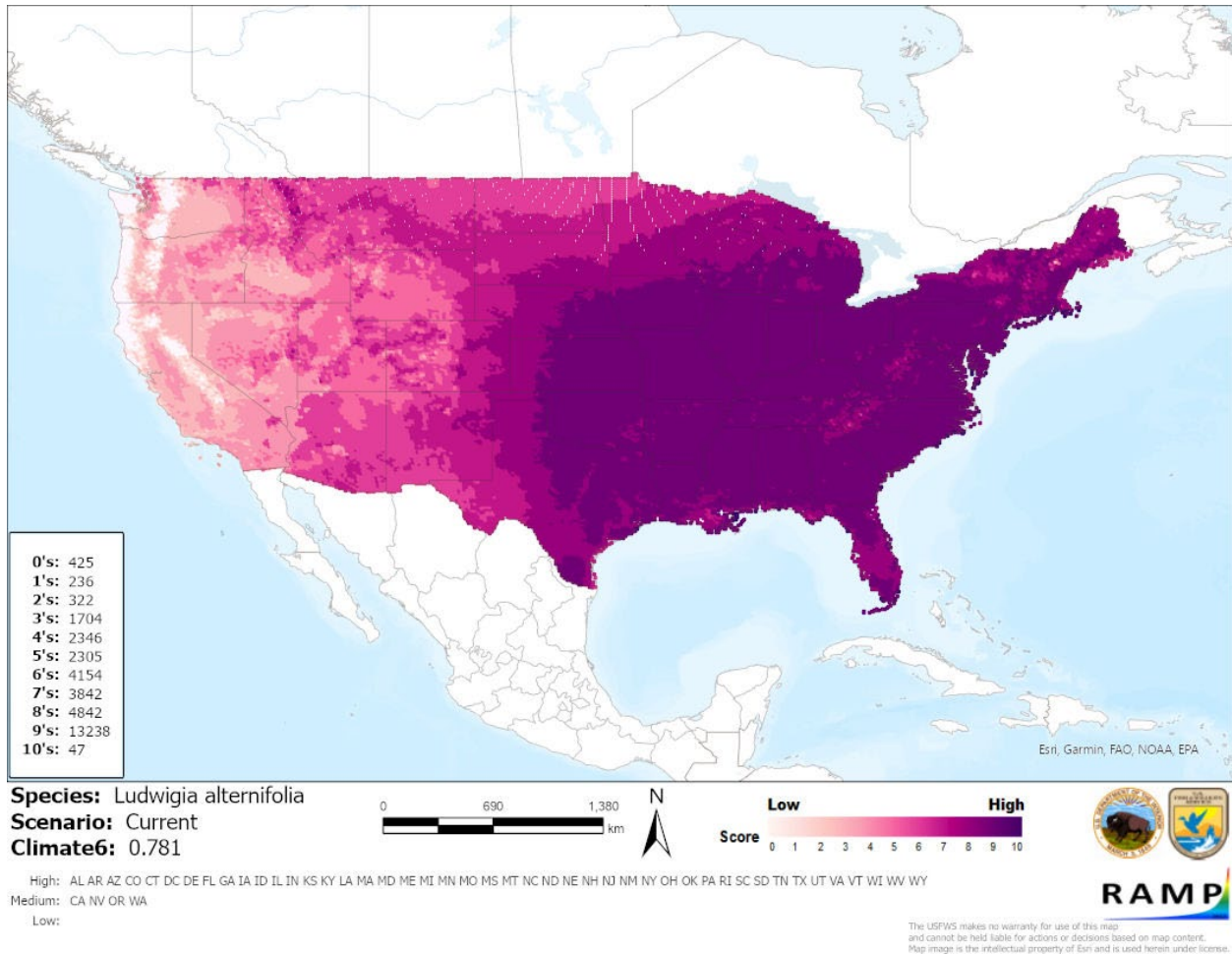


Figure 4. Map of RAMP (Sanders et al. 2021) climate matches for *Ludwigia alternifolia* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Light Pink = Lowest match, 10/Dark Purple = Highest match.

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 for *Ludwigia alternifolia* is low. This species is native to the eastern portion of the United States and southern Canada. While distribution data is readily available, information on its biology and ecology is generally lacking. Although no known nonnative

populations were found for this species, it is available from plant retailers based in the United States.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Rattlebox (*Ludwigia alternifolia*) is a plant that is native to parts of the Midwest and East Coast of the United States, as well as parts of Ontario and Quebec in Canada. This species is available from plant retailers based in the United States. No information confirming introductions outside of its native range was found, resulting in the history of invasiveness being classified as No Known Nonnative Population. The climate match with the contiguous United States was High, with high matches occurring from the East Coast to the Rocky Mountains. The certainty of assessment was Low due to a lack of information regarding the ecology and history of invasiveness for this species. The overall risk assessment category for *L. alternifolia* is Uncertain.

Assessment Elements

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

[CABI] CABI International. 2019. *Ludwigia alternifolia* [original text by Seebens et al. 2017]. CABI Invasive Species Compendium. Wallingford, United Kingdom: CAB International. Available: <https://www.cabi.org/isc/datasheet/115389#REF-DDB-203451> (March 2022).

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Ludwigia alternifolia* L. Copenhagen: Global Biodiversity Information Facility. Available: <https://doi.org/10.15468/dl.fdekac> (March 2022).

GBIF-US. 2022. Species occurrences: *Ludwigia alternifolia* L. Available: <https://doi.org/10.15468/dl.9ne8dz> (March 2022).

[ITIS] Integrated Taxonomic Information System. 2020. *Ludwigia alternifolia* L. Reston, Virginia: Integrated Taxonomic Information System. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=27335#null (March 2022).

Roundstone Native Seed. 2022. Seed box [*Ludwigia alternifolia*]. Available: <https://roundstoneseed.com/native-wildflowers/53-seed-box.html> (April 2022).

Sanders S, Castiglione C, Hoff M. 2021. Risk Assessment Mapping Program: RAMP. Version 4.0. U.S. Fish and Wildlife Service.

Smith K. 2016. *Ludwigia alternifolia*. The IUCN Red List of Threatened Species 2016: e.T64317439A67730007. <https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T64317439A67730007.en>. Available: <https://www.iucnredlist.org/species/64317439/67730007> (March 2022).

World Flora Online (2022): *Ludwigia alternifolia* L. World Flora Online – a project of the World Flora Online Consortium. Available: <http://www.worldfloraonline.org/taxon/wfo-0001087420> (March 2022).

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.

Gleason HA, Cronquist AJ. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. New York: New York Botanical Garden.

New England Wild Flower Society. 2011–2015. Go botany. Discover thousands of New England plants. Available: <https://gobotany.newenglandwild.org>.