Ludwigia affinis (a plant, no common name)

Ecological Risk Screening Summary

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

Organism Type: Plant
Overall Risk Assessment Category: Uncertain

Photo: Alexey Yakovlev. Licensed under CC BY-SA 2.0. Available: https://commons.wikimedia.org/wiki/File:Ludwigia_affinis_(Onagraceae)_(29278473903).jpg (March 18, 2022).

1 Native Range and Status in the United States

Native Range

From POWO (2022):

"Tropical America"

"Belize, Bolivia, Brazil North, Brazil Northeast, Brazil West-Central, Cayman Is., Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, French Guiana, Guyana, Honduras, Jamaica, Nicaragua, Panamá, Peru, Suriname, Trinidad-Tobago, Venezuela."

Status in the United States

GBIF-US (2022) reports the presence of *Ludwigia affinis* in Puerto Rico. It is unclear if *L. affinis* is native or introduced to Puerto Rico.

No records of trade of *Ludwigia affinis* in the United States were found.

Means of Introductions in the United States

This species is not currently known to be introduced to and spread within the United States.

Remarks

It is listed on the National Red List of Columbia (2021) as Potential Least Concern (POWO 2022). The basionym for *Ludwigia affinis* is *Jussiaea affinis* DC. (GBIF Secretariat 2022). Other synonyms for this species include *J. affinis* var. *genuine* Munz, *J. affinis* var. *multiflora* Jonker, *J. distans* Pohl ex Micheli, *J. ferruginea* Rusby, *J. hexamera* Miq., *J. micropetala* Mart., *J. rigida* Poepp. ex Micheli, and *J. variabilis* var. *affinis* (DC.) Kuntze (POWO 2022). Information found under synonyms was included in this screening.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to WFO (2022), *Ludwigia affinis* (DC.) H.Hara is the accepted name for this species.

From GBIF Secretariat (2022):

Kingdom: Plantae
Phylum: Tracheophyta
Class: Magnoliopsida
Order: Myrtales
Family: Onagraceae
Genus: *Ludwigia* L.
Species: *Ludwigia affinis* (DC.) Hara

Size, Weight, and Age Range

From POWO (2022):

"[…] to 4 ft. high or more."

Environment

From POWO (2022):

"Elevation range: 0–1700 m a.s.l."

Climate

No information on climate is available for this species.

Distribution Outside the United States

Native

From POWO (2022):

"Belize, Bolivia, Brazil North, Brazil Northeast, Brazil West-Central, Cayman Is., Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, French Guiana, Guyana, Honduras, Jamaica, Nicaragua, Panamá, Peru, Suriname, Trinidad-Tobago, Venezuela."

Introduced

From POWO (2022):

"Congo, Gambia, Ivory Coast, Liberia, Sierra Leone, Zaïre"

Means of Introduction Outside the United States

No information on means of introduction for *Ludwigia affinis* were found.

Short Description

From POWO (2022):

"Herbaceous, or shrubby"

From Eyde (1981):

"The big septal bundles are separate all the way down. Petal midveins end in the girdle. Ovules are supplied by steeply rising transseptal strands in addition to a conspicuous central system that is somewhat more centralized than the reticulate central system of *L. leptocarpa*. Major style bundles, all symmetrically placed, link with the stamen bundles below the girdle, at the level of the uppermost ovule or two. I can not identify minor style bundles in sections of *L. affinis*, and they are just visible enough in my cleared flowers that I can say they are there and nothing more."

"Nectaries of *Ludwigia affinis*, like those of *L. leptocarpa*, are hairy inverted V's. Raven (1963) described those of *L. africana* (Brenan) Hara, also in sect. *Seminuda*, as glabrous. A hairless nectary seems out of place in a close relative of *L. leptocarpa* and *L. affinis*, so I looked at rehydrated flowers of *L. africana- Zenker & Staudt 323*, Cameroon (US)-and I found long hairs fringing the nectaries."

Biology

From POWO (2022):

"Habitat according IUCN Habitats Classification: forest and woodland, savanna, shrubland, native grassland, wetlands (inland), artificial – terrestrial."

From Wogu et al. (2000):

"The largest seeds were observed in L. affinis while the smallest seeds were in L. decurrens."

Human Uses

Ludwigia affinis is a plant used as a medicine (POWO 2022).

Diseases

No information on diseases was found for *Ludwigia affinis*.

Threat to Humans

No information on threat to humans was found for *Ludwigia affinis.*

3 Impacts of Introductions

No information on impacts of the introductions in Africa were found.

4 History of Invasiveness

Ludwigia affinis has been reported as introduced in Congo, Gambia, Ivory Coast, Liberia, Sierra Leone, and Zaïre. The introductions resulted in established populations but there is no information on the impacts of introduction. The history of invasiveness is classified as data deficient.

5 Global Distribution

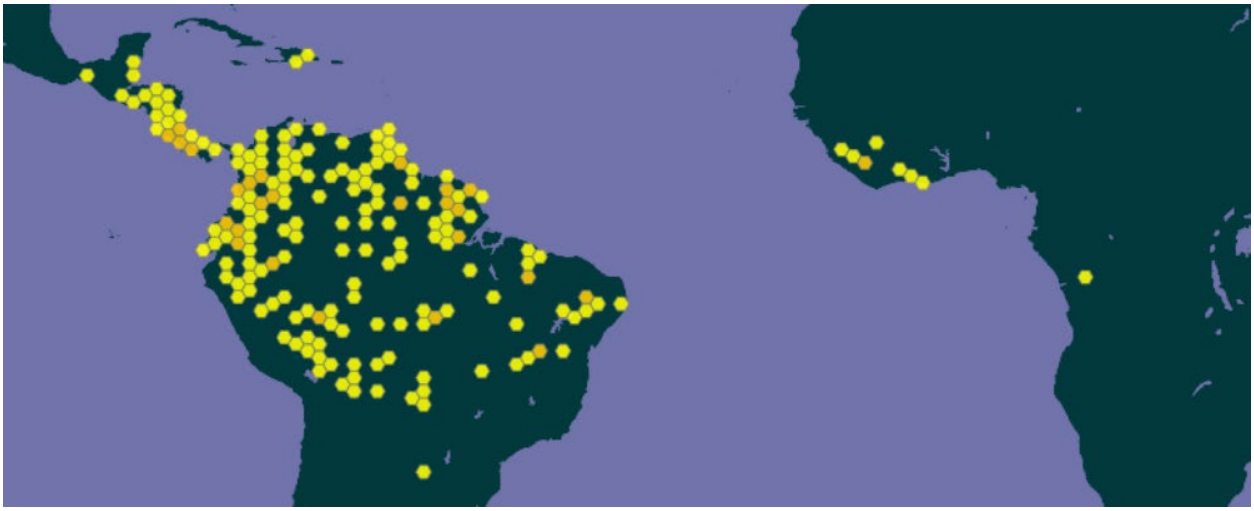

Figure 1. Known global distribution of *Ludwigia affinis*. Observations are reported from Central America, South America, and Africa. Map from GBIF Secretariat (2022).

6 Distribution Within the United States

Ludwigia affinis has been recorded in Puerto Rico (GBIF-US 2022) but there were no coordinates with the observation.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Ludwigia affinis* to the contiguous United States was generally medium. Areas of high match were found along the Gulf Coast, through Florida, and along the southern Atlantic Coast. The Northeast, northern Great Plains, Rocky Mountains, and much of the West Coast had low matches. Everywhere else had a medium match. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.084, medium. (Scores greater than 0.005 and less than 0.103 are classified as medium.) States with a high individual Climate 6 score are Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. Virginia and Washington had a medium individual score. All other States had low individual scores.

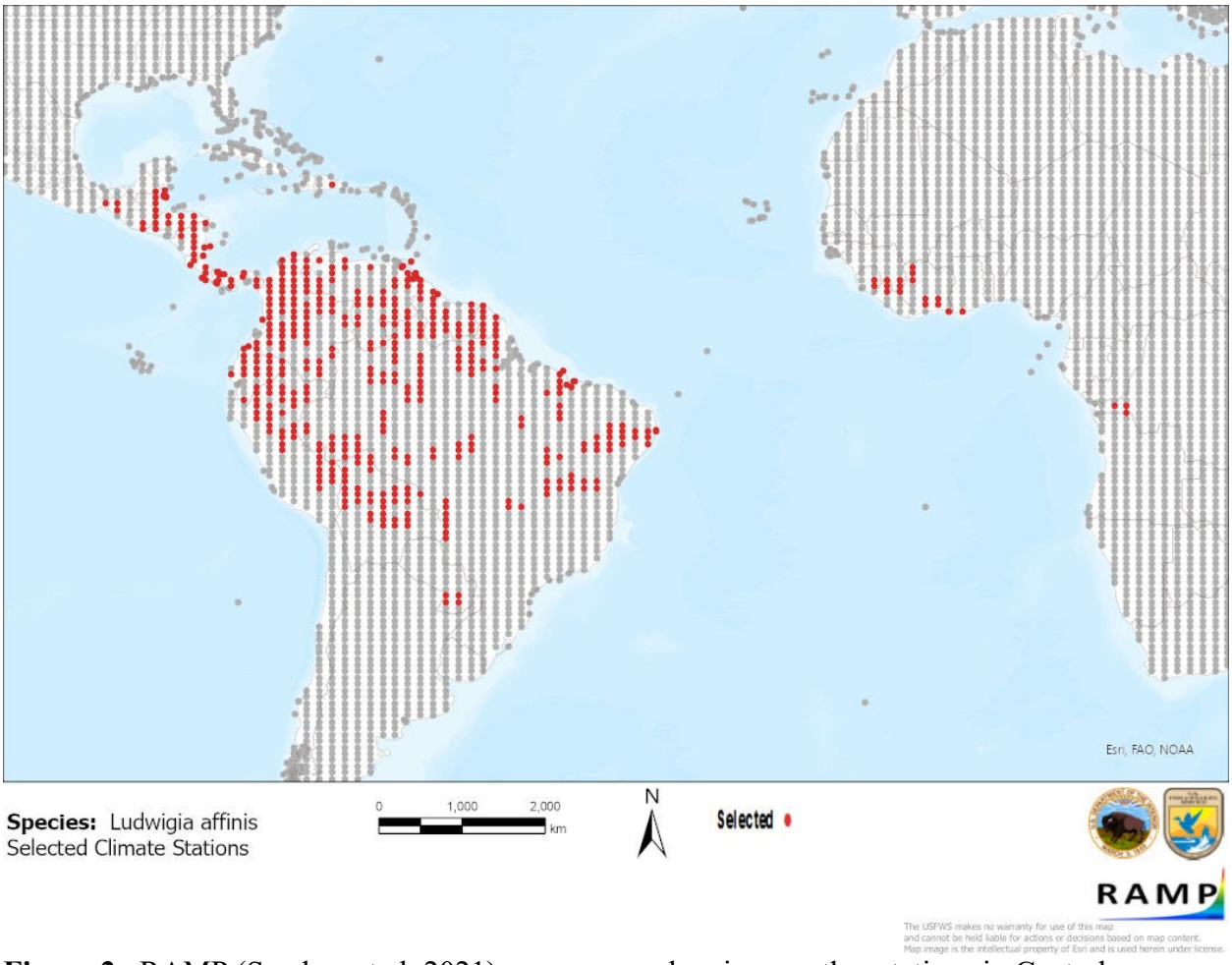

Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in Central America, South America, and western Africa selected as source locations (red; Belize, Bolivia,

Brazil, Colombia, Costa Rica, Côte d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Ecuador, El Salvador, French Guiana, Ghana, Guatemala, Guinea, Guyana, Honduras, Liberia, Mexico, Nicaragua, Panama, Paraguay, Peru, Sierra Leone, Suriname, Trinidad and Tobago, Venezuela) and non-source locations (gray) for *Ludwigia affinis* 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.

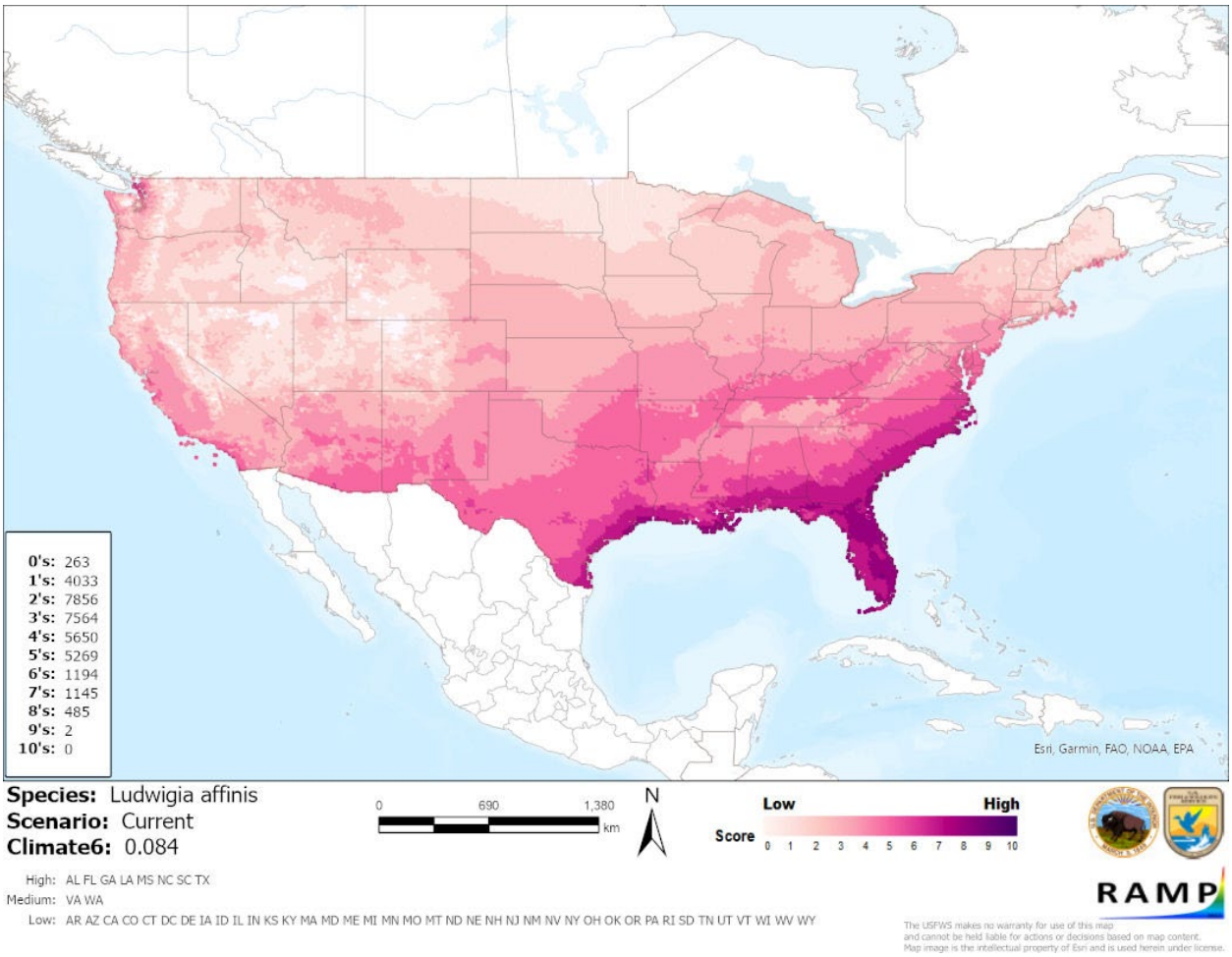

Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Ludwigia affinis* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

The certainty of assessment is low. *Ludwigia affinis* is stated to be introduced to the Congo, Gambia, Ivory Coast, Liberia, Sierra Leone, and Zaïre, however, there is no information on impacts of introduction. Additionally, the bulk of the scientific literature for this species was not available in English, further reducing the certainty of this assessment.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Ludwigia affinis is a freshwater plant native to Tropical America. Introductions outside of its native range have been reported in the Congo, Gambia, Ivory Coast, Liberia, Sierra Leone, and Zaïre. The introductions resulted in established populations, but the no information was found regarding impacts of the introductions. The history of invasiveness is classified as data deficient. Overall climate match with the contiguous United States is medium. Areas of high match include the Gulf and southern Atlantic coasts. The certainty of this assessment is low due to a lack of information regarding this species' history of invasiveness. The overall risk assessment category for *Ludwigia affinis* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): Data Deficient**
- **Overall Climate Match Category (Sec. 7): Medium**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information: No additional information**
- **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.

Eyde RH. 1981. Reproductive structures and evolution in *Ludwigia* (Onagraceae). III. Vasculature, nectaries, conclusions. Annuals of the Missouri Botanical Garden 68(3):379–412.

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Ludwigia affinis* (DC.) Hara. Copenhagen: Global Biodiversity Information Facility. Available: https://doi.org/10.15468/dl.82u9ny (March 2022).

GBIF-US. 2022. Species occurrences: *Ludwigia affinis* (DC.) Hara. Available: https://doi.org/10.15468/dl.vfcy7k (May 2022).

POWO. 2022. *Ludwigia affinis* (DC.) H. Hara. Plants of the World Online. Royal Botanic Gardens, Kew. Available: https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:144328-2 (March 2022).

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

Wogu A, Ugborogho RE. 2000. Seed morphology, germination and seedling characters in *Ludwigia* species (Onagraceae) in Nigeria as aids to identification. Seed Science and Technology 28(3):657–697. (Abstract only.)

World Flora Online. 2022. *Ludwigia affinis* (DC.) H. Hara. World Flora Online – a project of the World Flora Online Consortium. Available: http://www.worldfloraonline.org/taxon/wfo-0000443140 (May 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.

Raven PH. 1963. The Old World species of *Ludwigia* (including *Jussiaea*), with a synopsis of the genus (Onagraceae). Reinwardtia 6:327–427.