U.S. Fish & Wildlife Service

Vallisneria caulescens (a plant, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2022
Revised, June 2022
Web Version, 8/25/2022

Organism Type: Plant
Overall Risk Assessment Category: Uncertain

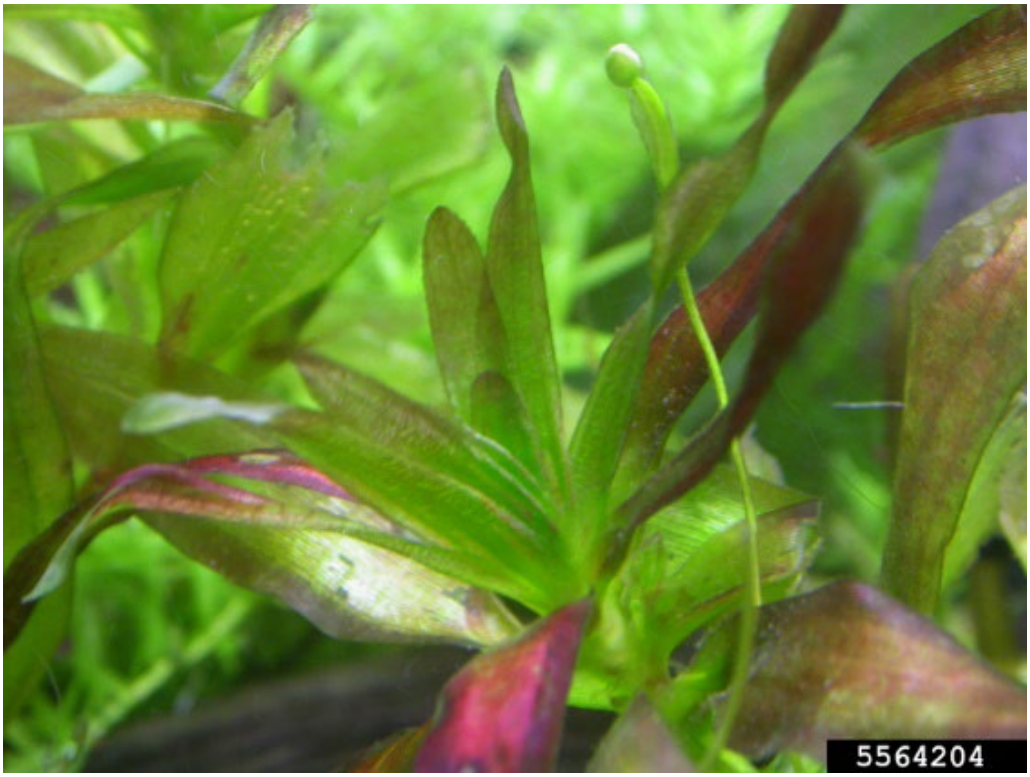

Photo: Shaun Winterton, Aquarium and Pond Plants of the World, Edition 3, USDA APHIS PPQ, Bugwood. Licensed under CC BY-NC 3.0. Available: https://www.invasive.org/browse/detail.cfm?imgnum=5564204 (June 21, 2022).

1 Native Range and Status in the United States

Native Range

From Jacobs and Frank (1997):

"Five species of *Vallisneria* are recognised from Australia, namely the cauline-leafed species *V. caulescens* and *V. triptera* and the non-cauline or tufted species *V. americana* (var. *americana*), *V. nana* and *V. annua*."

POWO (2022) lists *Vallisneria caulescens* as native to the Australian states of Queensland and Western Australia, as well as the Northern Territory.

Status in the United States

No records of *Vallisneria caulescens* in the wild or in trade in the United States were found.

Means of Introductions in the United States

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

Remarks

From Winterton et al. (2018):

"The taxonomy of *Vallisneria* is highly problematic, resulting in numerous species being described and these names being widely distributed in the aquarium plant trade. Reliable identification of species is only possible by examining floral structures. […] *Vallisneria caulescens* F.M. Bailey & F. Muell. and *V. triptera* S.W.L. Jacobs & K.A. Frank are two closely related species from northern Australia that grow as stem plants, with leaves arranged alternately along the stems, rather than as compact, basal rosettes."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to WFO (2022), *Vallisneria caulescens* F.M.Bailey & F.Muell. is the accepted name for this species.

From GBIF Secretariat (2022):

"Kingdom Plantae
Phylum Tracheophyta
Class Liliopsida
Order Alismatales
Family Hydrocharitaceae
Genus *Vallisernia* P.Micheli ex L.
Species *Vallisneria caulescens* F.M.Bailey & F.Muell."

Size, Weight, and Age Range
The height of this species is noted as 10-30 centimeters (FindFish 2022).

Environment
No information was found regarding environmental requirements of *Vallisneria caulescens*.

Climate
No information available on climate requirements for *Vallisneria caulescens*.

Distribution Outside the United States
Native
From Jacobs and Frank (1997):

"Five species of *Vallisneria* are recognised from Australia, namely the cauline-leafed species *V. caulescens* and *V. triptera* and the non-cauline or tufted species *V. americana* (var. *americana*), *V. nana* and *V. annua*."

POWO (2022) lists *Vallisneria caulescens* as native to the Australian states of Queensland and Western Australia as well as the Northern Territory.

Introduced
No records of introductions were found for *Vallisneria caulescens*.

Means of Introduction Outside the United States
No records of introductions were found for *Vallisneria caulescens*.

Short Description
From Jacobs and Frank (1997):

"Of the three facultative annual species, *V. triptera* has the filaments partly fused, whereas *V. caulescens* and *V. annua* have them free to, or almost to, the base."

"In *V. caulescens* the [leaf] margin is usually almost straight, the serrulations jutting out from an otherwise almost straight margin; […]"

"*V. caulescens* has flattened 2-winged fruits to 5 mm wide and 10 cm long (3–5 × 40–100 mm); […]"

Vallisneria caulescens has three leave nerves (Jacobs and Frank 1997).

From McConchie and Kadereit (1987):

"The female flowers differ from those of other species of *Vallisneria* in being bipartite as opposed to tripartite and having the stigma branches arranged above instead of between the

sepals. Further notes are made about the pollen and male flowers, in which adjacent pollen grains may be linked by intine bridges. These results are compared with the floral structure of the closely related genera *Maidenia* and *Nechamandra*."

Biology
No information regarding the biology of *Vallisneria caulescens* was found.

Human Uses
Vallisneria caulescens is a plant used in aquariums (Aquagreen 2022; Shuemee Aquatic Center 2022).

Diseases
No information on diseases was found for *Vallisneria caulescens*.

Threat to Humans
No information on threats to humans was found for *Vallisneria caulescens.*

3 Impacts of Introductions
Vallisneria caulescens has not been reported as introduced or established outside of its native range; therefore, impacts of introductions are unknown.

4 History of Invasiveness
Vallisneria caulescens has not been reported as introduced or established outside of its native range. This species is present in trade internationally, but the trade volume and duration are unknown. The history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution

Figure 1. Known global distribution of *Vallisneria caulescens*. Observations are reported from Australia. Map from GBIF Secretariat (2022).

6 Distribution Within the United States

Vallisneria caulescens has not been reported in the wild within the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Vallisneria caulescens* to the contiguous United States was high along the Mexican border from Texas through most of Arizona. There were areas of medium match in the southern central United States and Southwest, as well as peninsular Florida. Everywhere else had a low match. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.035, Medium. (Scores greater than 0.005 and less than 0.103 are classified as medium.) The following States had high individual Climate 6 scores: Arizona, New Mexico, and Texas. Florida had a medium individual score. All other States had low individual scores.

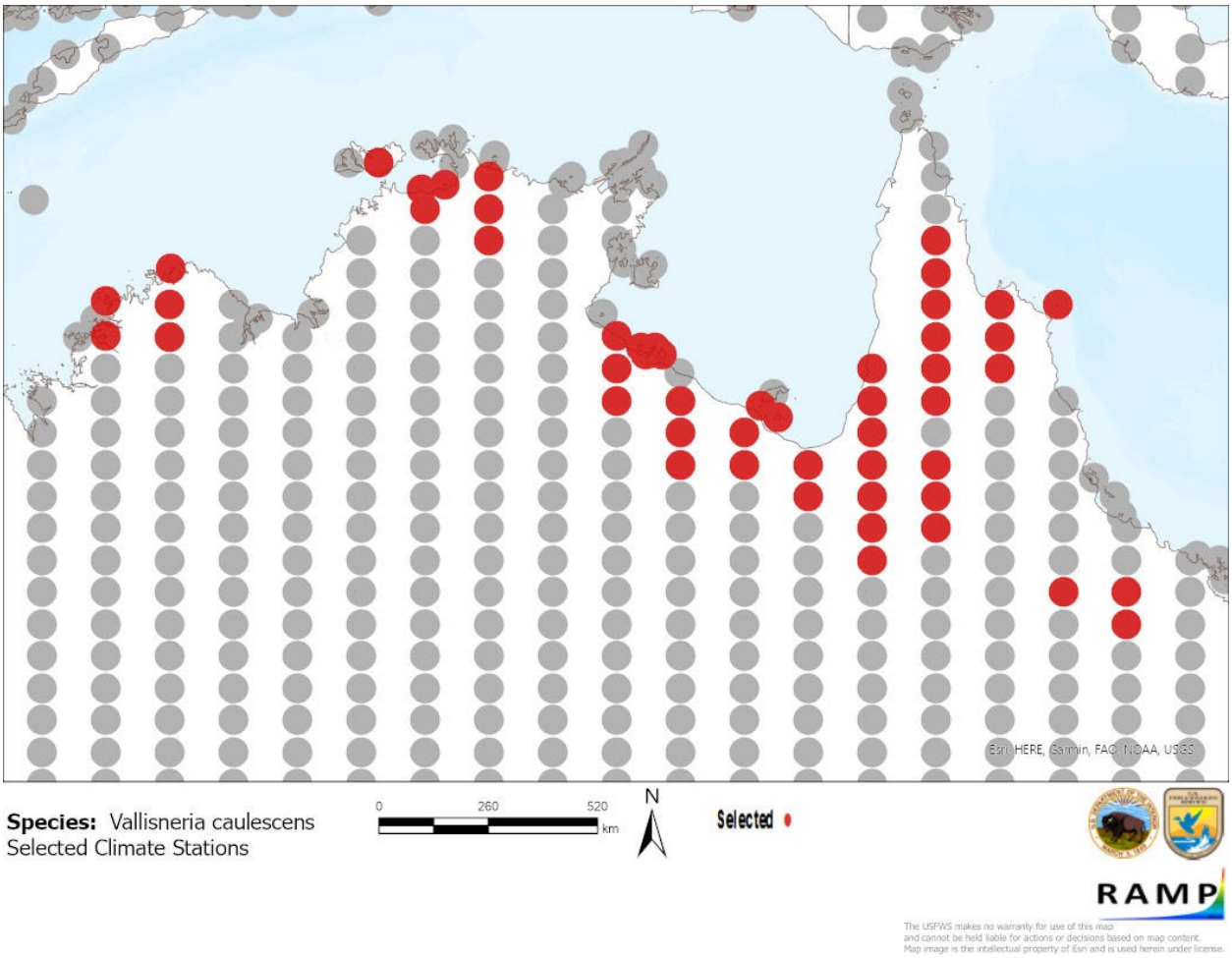

Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in Australia selected as source locations (red) and non-source locations (gray) for *Vallisneria caulescens* climate matching. Source locations from GBIF Secretariat (2022). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

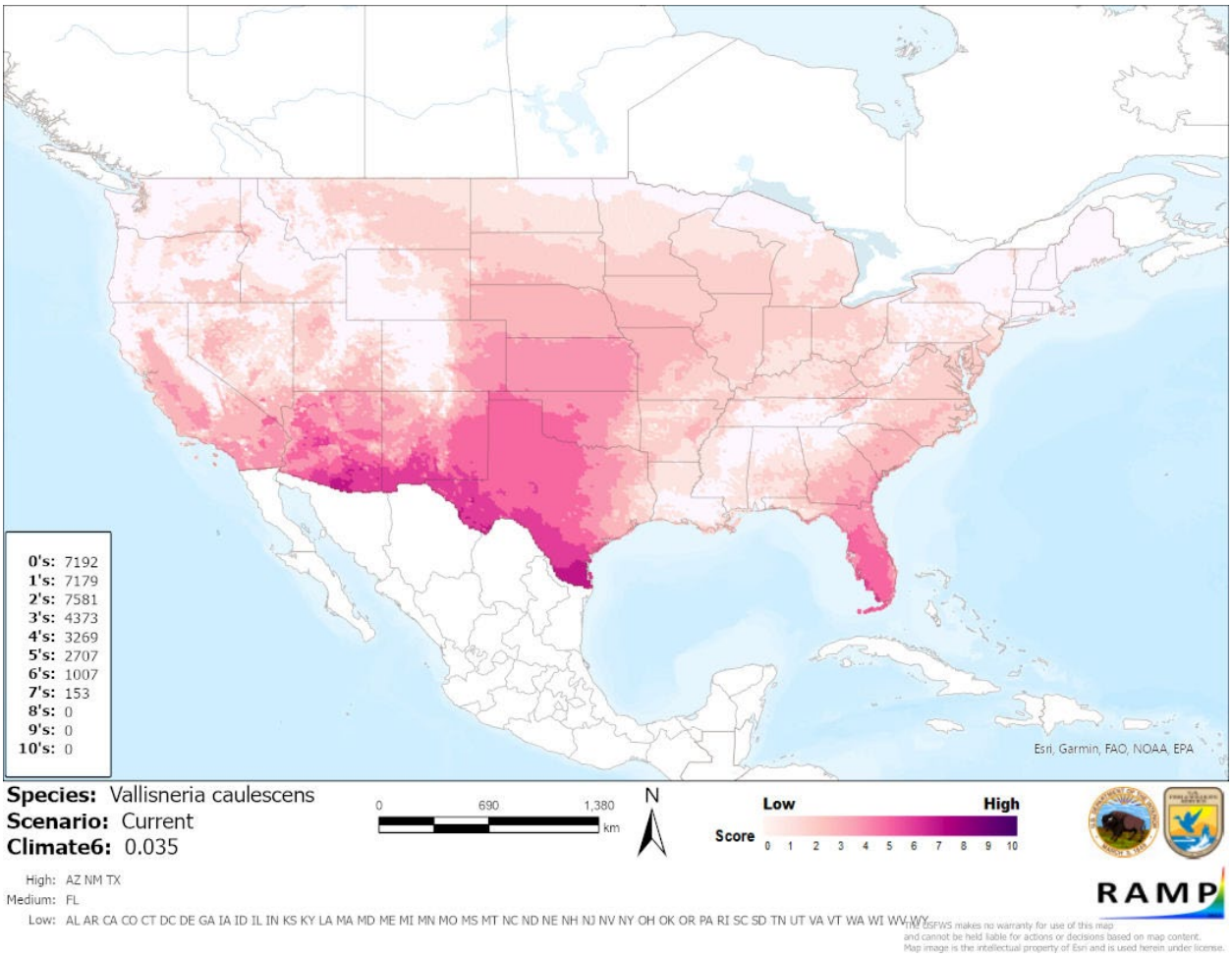

Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Vallisneria caulescens* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

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. There was limited information regarding the biology and ecology of this species. No records of introductions were found for *Vallisneria caulescens*; therefore, there is no information on impacts of introduction and history of invasiveness.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Vallisneria caulescens is a freshwater plant native to Australia. It is present in the aquarium trade internationally. No introductions outside of its native range have been reported; the history of invasiveness is classified as No Known Nonnative Population. Overall climate match with the contiguous United States is Medium. Areas of high match were found along the Mexican border, with areas of medium match in peninsula Florida, the Southwest, and southcentral United States. 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 *Vallisneria caulescens* 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 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.

Aquagreen. 2002. Australian native plants. Aquagreen: Australian native water plants for aquariums. Howard Springs, Northern Territory: Aquagreen. Available: https://www.aquagreen.com.au/catalog.html (March 2022).

FindFish. 2022. Aquatic plants American wild celery (*Vallisneria caulescens*), red. Available: https://findfish.info/aquatic-plants/american-wild-celery-176 (March 2022).

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Vallisneria caulescens* F.M.Bailey & F.Muell. Copenhagen: Global Biodiversity Information Facility. Available: https://doi.org/10.15468/dl.wvbwkm (March 2022).

Jacobs SWL, Frank KA. 1997. Notes on *Vallisneria* (Hydrocharitaceae) in Australia, with descriptions of two new species Telopea 7(2):111–118.

McConchie CA, Kadereit JW. 1987. Floral structure of *Vallisneria caulescens* Bailey & F. Mueller Aquatic Botany 29(2):101–110. (Abstract only.)

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

Shuemee Aquatic Center. 2022. *Vallisneria caulescens*. Jawa Barat, Indonesia: Shuemee Aquatic Center. Available: https://shuemeeaquaticcenter.com/product/vallisneria-caulescens/ (March 2022).

[WFO] World Flora Online. 2022. *Vallisneria caulescens* F.M.Bailey & F.Muell. World Flora Online – a project of the World Flora Online Consortium. Available: http://www.worldfloraonline.org/taxon/wfo-0000770238 (June 2022).

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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.

No references in this section.