

# European Stream Valvata (*Valvata piscinalis*) Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2023  
Revised, March 2023  
Web Version, 3/31/2025

Organism Type: Mollusk  
Overall Risk Assessment Category: Uncertain



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[https://commons.wikimedia.org/wiki/File:Valvata\\_piscinalis.png](https://commons.wikimedia.org/wiki/File:Valvata_piscinalis.png) (January 2023).

## 1 Native Range and Status in the United States

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### Native Range

From Kipp et al. (2023):

“The European valve snail is native to Europe, the Caucasus, western Siberia and Central Asia and is common in many freshwater environments therein (Grigorovich et al. 2005).”

From Fofonoff et al. (2018):

“It is present in Britain and Ireland, but absent from Iceland (Grigorovich et al. 2005).”

## Status in the United States

From Grigorovich et al. (2005):

“The European valve snail was first recorded [as *V. obtusa*] in North America in Lake Ontario near the mouth of the Genesee River, New York, in 1897, where it reached high densities within a few years (Baker 1898, 1900). Four decades later, the snail had dispersed into Lake Erie and since then has colonized the neighboring St. Lawrence and Hudson rivers and inland lakes Champlain and Cayuga (Oughton 1938, Robertson 1945, Harman 1968, Jokinen 1992, Strayer 1999).”

“*Valvata piscinalis* was found at three new locations beyond its previously reported distribution in the Great Lakes—Superior Bay (Minnesota), Lake Michigan (Wisconsin), and Oneida Lake (New York) [...]. Living *V. piscinalis* individuals were present at four littoral sites sampled in Superior Bay in 1995.”

“Living *V. piscinalis* specimens were also found [...] in the southern basin of Lake Michigan off Butt Creek in August 2002 [...]. *Valvata piscinalis* was also present at numerous localities within its previously reported range in the lower Great Lakes [...]. These findings indicate that the European valve snail has spread across the Great Lakes basin.”

“During August 2002, *V. piscinalis* was detected at 13 of 15 sites in Oneida Lake.”

From Fofonoff et al. (2018):

“In the tidal Hudson River, *V. piscinalis* was collected at several locations near Poughkeepsie, New York in 1985. This snail appears to be rare in the Hudson (Strayer 1987; Mills et al. 1997). It was not found in a 2008 survey of the river between Poughkeepsie and Albany (Coote and Strayer 2009), but such a small snail is easily overlooked.”

According to Kipp et al. (2023), U.S. states with nonindigenous occurrences include Illinois, Minnesota, Michigan, New York, Ohio, Pennsylvania, and Wisconsin.

No records of *Valvata piscinalis* in trade in the United States were found.

## Regulations

*V. piscinalis* is regulated in Wisconsin (Wisconsin DNR 2023). 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 Kipp et al. (2023):

“The European valve snail was most likely first introduced to Lake Ontario in packing material made of straw and marsh grasses used to protect breakable items arriving from Europe (Mills et al. 1993). Subsequent range expansion may have occurred via natural dispersal, while more recent records of the 1990s and the first decade of the 21st century may have been aided by human-mediated dispersal in ships and via canals (Grigorovich et al. 2005).”

From Grigorovich et al. (2005):

“Its distributional patterns and appearances in disjunct, restricted localities support the hypothesis that *V. piscinalis* was assisted in its dispersal by humans.”

From Fofonoff et al. (2018):

“The Erie Canal or ballast sediments of ocean-going ships are possible vectors.”

## Remarks

From Kipp et al. (2023):

“Synonyms and Other Names: European valve snail”

“The European valve snail can be confused with *V. sincera*, a native species in the Great Lakes; however, the native species has a more spherical aperture, a wider umbilicus, a conical spire and more widely spaced and rough growth lines on the shell in comparison with the introduced species (Grigorovich et al. 2005).”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2023):

Kingdom Animalia  
Subkingdom Bilateria  
Infrakingdom Protostomia  
Superphylum Lophozoa  
Phylum Mollusca  
Class Gastropoda  
Order Heterostropha  
Family Valvatidae  
Genus *Valvata*  
Species *Valvata piscinalis* (Muller, 1774)

According to MolluscaBase (2025), *Valvata piscinalis* is the current accepted name of this species.

The following synonyms of *Valvata piscinalis*, employed by Grigorovich et al. (2005) and GBIF Secretariat (2023) and verified as not pertaining to another valid species with MolluscaBase (2025), were used to search for information for this report: *Cincinna piscinalis*, *Valvata obtusa*, *Valvata pulchella*.

## Size, Weight, and Age Range

From Myzyk (2007):

“The shell height and width are up to 5–7 mm.”

From Fofonoff et al. (2018):

“Breeding takes place at about 1 year of age, and the life span is about 13 to 21 months.”

From Kipp et al. (2023):

“In the Great Lakes, mature adult European valve snails are 5 mm high and 3–5 mm wide (Grigorovich et al. 2005). In Europe, this snail has been found up to 7 mm high and 6.5 mm wide, but is usually smaller (Fretter and Graham 1978).”

## Environment

From Fofonoff et al. (2018):

“The European Valve Snail apparently has a wide temperature tolerance, considering its wide range in Europe (Grigorovich et al. 2005). It has a very limited salinity tolerance though, not occurring above 2.5 PSU in the Baltic (Remane and Schleiper 1971).”

“In European estuaries and the Baltic, its salinity limit is between 2 and 3 PSU (Remane and Schleiper 1971; Wolff 1973; Zettler and Daunys 2007).”

From Kipp et al. (2023):

“*Valvata piscinalis* tolerates varying calcium concentrations and generally does not require very high temperatures to survive (Fretter and Graham 1978, Grigorovich et al. 2005).”

“This species is found anywhere from 0.5–23 m in the Great Lakes (Grigorovich et al. 2005). In Europe, it usually is found up to 10 m (Fretter and Graham 1978).”

From Welter Schultes (2013):

“[...] up to 80 m deep, commonly 3-10 m, [...]”

## **Climate**

From Fofonoff et al. (2018):

“Cold temperate-Warm Temperate”

## **Distribution Outside the United States**

### **Native**

From Kipp et al. (2023):

“The European valve snail is native to Europe, the Caucasus, western Siberia and Central Asia and is common in many freshwater environments therein (Grigorovich et al. 2005).”

From Fofonoff et al. (2018):

“It is present in Britain and Ireland, but absent from Iceland (Grigorovich et al. 2005).”

### **Introduced**

From Seddon et al. (2014):

“Introduced:  
Canada (Ontario, Québec); [...]”

From Grigorovich et al. (2005):

“[...] empty shells of *V. piscinalis* were detected at a littoral site adjacent to Thunder Bay, Ontario (I. Grigorovich, unpubl. data).”

## **Means of Introduction Outside the United States**

From Fofonoff et al. (2018):

“Its spread into Lake Erie may have been aided by the Welland Canal or the discharge of ballast water sediment.”

## **Short Description**

From Kipp et al. (2023):

“*Valvata piscinalis* has a somewhat pinched aperture and an attenuate spire (Grigorovich et al. 2005). Spire height tends to increase in more eutrophic conditions (Fretter and Graham 1978, Grigorovich et al. 2005). Shells of this species often exhibit 4–5 whorls (Grigorovich et al. 2005) and are white to beige with more orange to red pigmentation apically (Fretter and Graham 1978). The operculum shows spiral markings of around 10 turns, originating almost centrally (Fretter and Graham 1978). The animals are yellow colored, spotted grey and white, with blue eyes and darker pigmentation on the snout, mantle and base of the penis (Fretter and Graham 1978).”

Valvatids all exhibit a bipectinate ctenidium (respiratory organ) that is visible as the animal moves (Fretter and Graham 1978).”

## Biology

From Fofonoff et al. (2018):

“*Valvata piscinalis* is a freshwater snail found in standing and slowly flowing fresh waters. It is hermaphroditic, with one individual acting as a male and the other as a female, with internal fertilization. Breeding takes place at about 1 year of age, and the life span is about 13 to 21 months. Spawning occurs 2 or 3 times a year, with up to 150 eggs in each spawning. Eggs are laid on vegetation and hatch as miniature snails (Fretter and Graham 1962; Grigorovich et al. 2005).”

“Its preferred habitats are silty, vegetated substrates, but it can survive where vegetation is sparse, and in highly disturbed habitats, such as canals (Fretter and Graham 1962; Grigorovich et al. 2005). It feeds on benthic macroalgae, epiphytic algae on plants, detritus, and the tissues of aquatic plants. It can also feed by filtering phytoplankton in eutrophic waters (Fretter and Graham 1962; Grigorovich et al. 2005).”

## Human Uses

From Ducrot et al. (2007):

“The freshwater gastropod *Valvata piscinalis* might be an interesting species for use in sediment toxicity tests with mollusks because of its ecological and toxicological relevance. [...] *Valvata piscinalis* shares common biological and ecological traits with other hermaphroditic gastropods [Ducrot et al. 2005], so that it could become a surrogate species in ecotoxicity tests.”

*Valvata piscinalis* was found to be for sale online from Belgium for \$2.10 (Conchology 2023).

## Diseases

**No information was found associating *Valvata piscinalis* with any diseases listed by the World Organisation for Animal Health (2023).**

From Kipp et al. (2023):

“*Valvata piscinalis* is a common first intermediate host for the parasitic trematode *Echinoparyphium recurvatum* and has also been shown to act as the first and second intermediate hosts to *E. mordwilokoi* in native environments in Europe (Evans et al. 1981, Grabda-Kazubska and Kiseliene 1991, McCarthy 1990).”

From Karatayev et al. (2012):

“At least 12 trematode taxa have been reported from the European stream valvata in its native range (Ginetzinskaja 1959, Sudarikov et al. 2002), including *C. bushiensis*, *E. recurvatum* (Sудариков et al. 2002), and a sanguinicolid species (Ginetzinskaja 1959). Thus far, none of these

trematodes has been reported for North American populations since the initial introduction of the snail in Lake Ontario in 1897 (reviewed in Grigorovich et al. (2005)). However, as *V. piscinalis* is known to host *C. bushiensis* and *E. recurvatum* in its native range (Sudarikov et al. 2002), and because these 2 parasites are present in the Great Lakes Region, we suggest that their finding in North American populations of the snail is only a matter of time. The ability of the European *Valvata* to host *C. bushiensis* is especially alarming because, in addition to *B. tentaculata*, *V. piscinalis* can contribute to the circulation of this highly pathogenic trematode in the Great Lakes Region. Our discovery of *Echinostoma* sp. cercariae along with unidentified digenean metacercariae indicates that *V. piscinalis* in the Great Lakes Region already hosts at least 2 species of trematodes that may pose a risk to their vertebrate hosts.”

From Fofonoff et al. (2018):

“Parasitism by *C. bushiensis* has been associated with mortality of waterfowl in the Great Lakes and upper Mississippi Valley (Hoeve and Scott 1988).”

## Threat to Humans

No information was found on threats to humans from *Valvata piscinalis*.

## 3 Impacts of Introductions

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From Grigorovich et al. (2005):

“*Valvata piscinalis* may adversely affect native gastropod communities by competing for food and space. Similar to another introduced snail in the Great Lakes, *Bithynia tentaculata*, *V. piscinalis* is an effective competitor in eutrophic waters, where it can feed on suspended particles (Tsikhon-Lukanina 1961a, 1961b) which are unavailable to native gastropods. The introduction of *B. tentaculata* into Oneida Lake has resulted in displacement of pleurocerid snails (Harman 2000). Similarly, the establishment of the abundant population of *V. piscinalis* has coincided with reduced abundance of native hydrobiid snails in the same lake (I.A. Grigorovich, unpubl. data). Further work is necessary to ascertain the ecological impacts of *V. piscinalis* on native gastropod fauna.”

From Fofonoff et al. (2018):

“Grigorovich et al. (2005) considered it a potential competitor for native snails, if its abundance increases. However, no detectable impacts have been reported from North America.”

From Kipp et al. (2023):

“Current research on the environmental impact of *Valvata piscinalis* in the Great Lakes is inadequate to support proper assessment.”

*Valvata piscinalis* is regulated in Wisconsin (Wisconsin DNR 2023). See section 1.

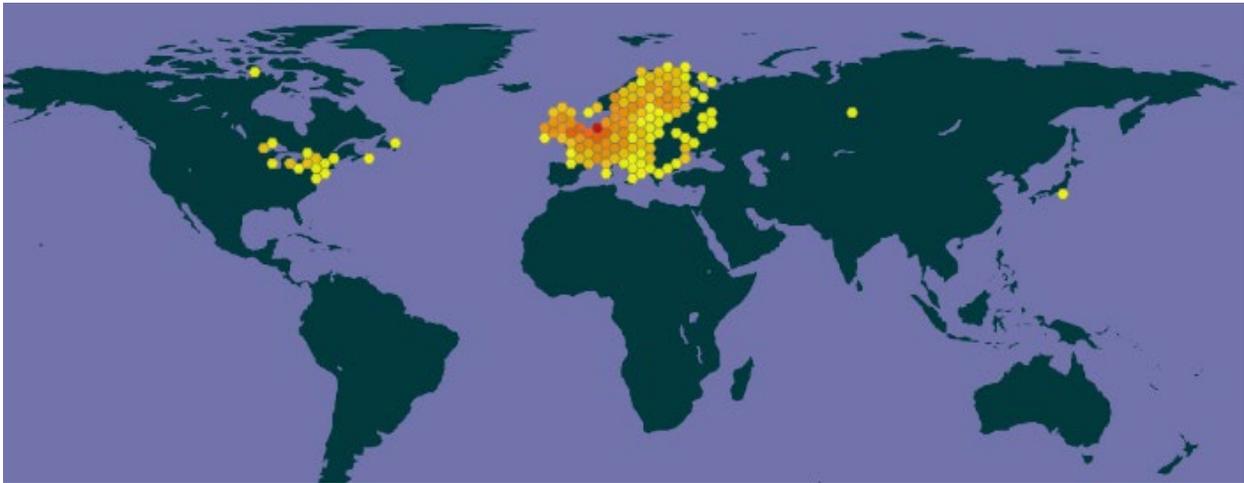
## 4 History of Invasiveness

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The History of Invasiveness for *Valvata piscinalis* is classified as Data Deficient. Introductions of *Valvata piscinalis* have resulted in established populations. Negative impacts of introduction have been suggested, specifically to native snail populations, but there is insufficient documentation of such impacts to date. *Valvata piscinalis* is present in trade, but the volume and duration of trade are unknown.

## 5 Global Distribution

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**Figure 1.** Reported global distribution of *Valvata piscinalis*. Map from GBIF Secretariat (2025). Observations are reported from Europe, the United States, Canada, Siberia, and Japan. Locations in Canada outside of the Great Lakes region represent coordinate errors and were not included in the climate matching analysis. The location in Japan is not known to represent an established population of *V. piscinalis* and was not included in the climate matching analysis.

No georeferenced occurrences were available for portions of the native range of *Valvata piscinalis* in the Caucasus or Central Asia.

## 6 Distribution Within the United States

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**Figure 2.** Reported distribution of *Valvata piscinalis* in the United States. Map from Kipp et al. (2025). Observations are reported from Minnesota, Wisconsin, Michigan, New York, Illinois, and Pennsylvania. Map also depicts known observations in Ontario, Canada.

## 7 Climate Matching

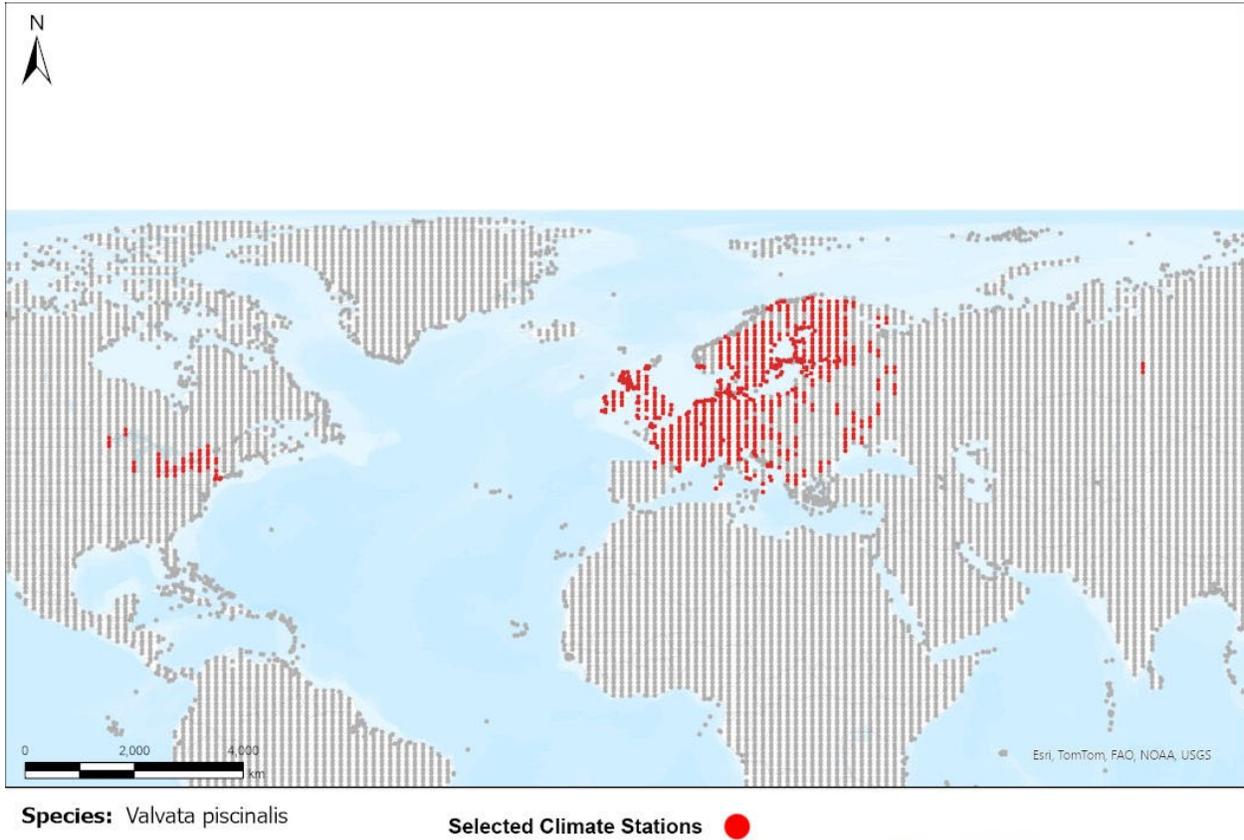
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### Summary of Climate Matching Analysis

The climate match for *Valvata piscinalis* to the contiguous United States was highest in the Northeast, Mid-Atlantic, and Great Lakes regions. There were additional small and scattered areas of high match in the Rocky Mountains, central Texas, and near Seattle. Much of the rest of the contiguous United States had a medium climate match. The largest areas of low climate match were along the Gulf Coast, in the coastal Pacific Northwest, Sierra Nevada and Cascade Mountains, and southwestern Arizona. Due to the potential underrepresentation of the species' native range in the source points for the climate matching analysis, the results may underestimate the climate match to the contiguous United States. Nevertheless, the overall Climate 6 score (Sanders et al. 2023; 16 climate variables; Euclidean distance) for the contiguous United States was 0.877, indicating that Yes, there is establishment concern for this species. The Climate 6 score is calculated as: (count of target points with scores  $\geq 6$ )/(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 *Valvata piscinalis* (see Appendix). These projected climate matches are provided as

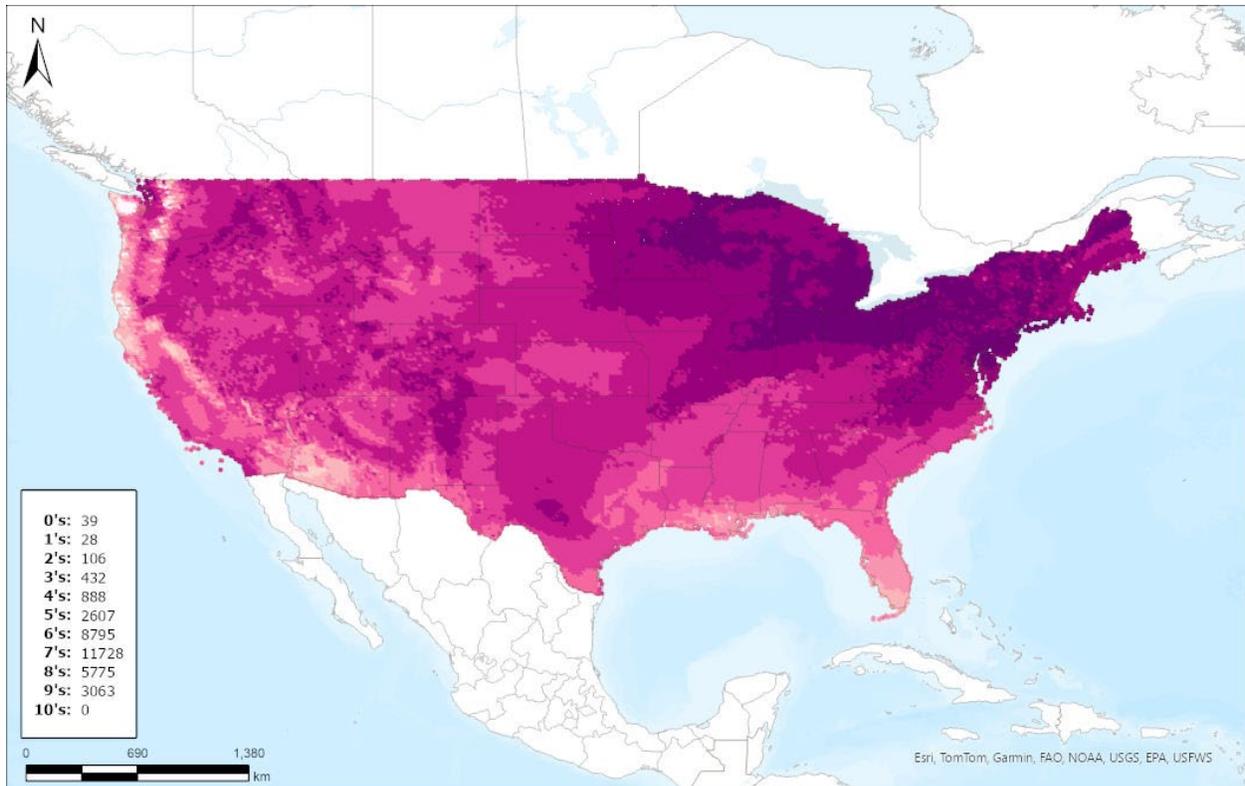
additional context for the reader; future climate scenarios are not factored into the Overall Risk Assessment Category.



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**Figure 3.** RAMP (Sanders et al. 2023) source map showing weather stations in North America and Europe selected as source locations (red; United States, Canada, Russia, and across Europe) and non-source locations (gray) for *Valvata piscinalis* climate matching. Source locations from GBIF Secretariat (2025). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.



Species: *Valvata piscinalis*

Current

Climate 6 Score: 0.877



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**Figure 4.** Map of RAMP (Sanders et al. 2023) climate matches for *Valvata piscinalis* in the contiguous United States based on source locations reported by GBIF Secretariat (2025). 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 *Valvata piscinalis* is classified as Low. The biology of *Valvata piscinalis* is well understood. The distribution has been adequately described for Europe, but georeferenced occurrences needed for the climate matching analysis were not available from parts of the native range in Asia. The history of introduction of this species into North America has also been well-documented in scientific literature. However, despite multiple populations of *V. piscinalis* occurring outside of its native range, information on impacts of its introductions is lacking.

## 9 Risk Assessment

### Summary of Risk to the Contiguous United States

*Valvata piscinalis*, the European Stream Valvata, is a freshwater snail native to Europe, the Caucasus, western Siberia, and Central Asia. This species can reach up to 7mm in length and can

tolerate a wide range of temperature and habitat conditions. It is a short-lived species that can spawn multiple times a year. The History of Invasiveness for *Valvata piscinalis* is Data Deficient. It has been documented as introduced to multiple locations in North America, primarily in the Great Lakes; however, no observed impacts of these introductions have been documented in the scientific literature. It is thought to have decreased native gastropod abundance in Oneida Lake, New York, but supporting documentation has not been published. *V. piscinalis* is regulated in Wisconsin. The climate matching analysis for the contiguous United States indicates establishment concern for this species. *V. piscinalis* has a high climate match with the contiguous United States, especially where it is established in the Great Lakes region and the Northeast, as well as in the Mid-Atlantic region. The Certainty of Assessment for this ERSS is classified as Low due to the lack of information on the impacts of introductions, which would inform the history of invasiveness. The Overall Risk Assessment Category for *Valvata piscinalis* in the contiguous United States is Uncertain.

## Assessment Elements

- **History of Invasiveness (see section 4): Data Deficient**
- **Establishment Concern (see section 7): Yes**
- **Certainty of Assessment (see section 8): Low**
- **Remarks, Important additional information: None**
- **Overall Risk Assessment Category: Uncertain**

## 10 Literature Cited

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**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

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**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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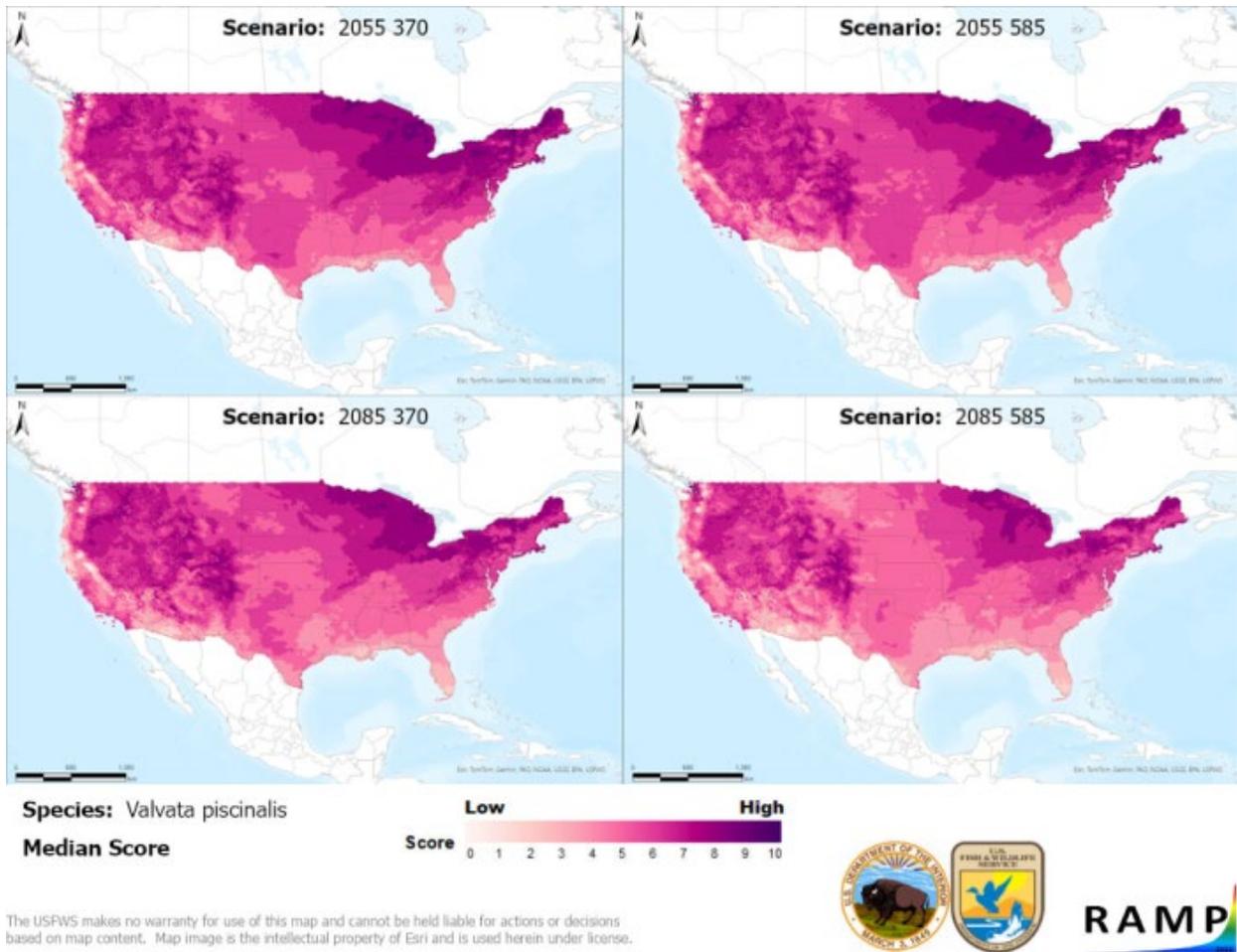
# Appendix

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## Summary of Future Climate Matching Analysis

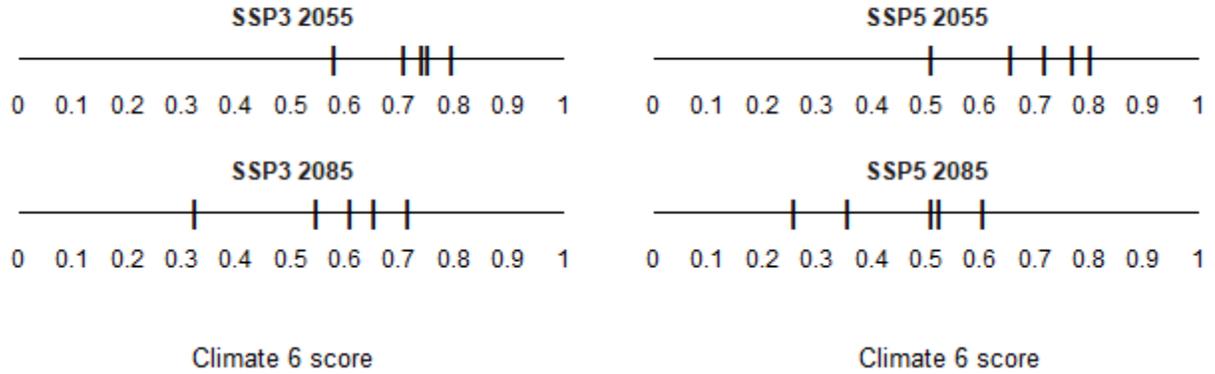
Future climate projections represent two Shared Socioeconomic Pathways (SSP) developed by the Intergovernmental Panel on Climate Change (IPCC 2021): SSP5, in which emissions triple by the end of the century; and SSP3, in which emissions double by the end of the century. Future climate matches were based on source locations reported by GBIF Secretariat (2025).

Under the future climate scenarios (figure A1), on average, high climate match for *Valvata piscinalis* was projected to occur in the Great Lakes and Northeast regions of the contiguous United States. Areas of low climate match were projected to occur consistently in the Southern Florida region. Other areas of low match under at least some scenarios included the Northern Pacific Coast and the Southwest. The areas of low match were larger under SSP5 than under SSP3, and for 2085 relative to 2055. In the SSP5, 2085 scenario, most of the contiguous United States was projected to be a medium to low climate match. The Climate 6 scores for the individual future scenario models (figure A2) ranged from a low of 0.257 (model: UKESM1-0-LL, SSP5, 2085) to a high of 0.799 (model: MPI-ESM1-2-HR, SSP5, 2055). 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 (0.877, figure 4) falls above 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. Under all time step and climate scenarios only minor or no increases in the climate match relative to the current match were observed. Under one or more time step and climate scenarios, areas within the Appalachian Range, Great Lakes, Gulf Coast, Mid-Atlantic, Northeast, Northern Plains, Southeast, Southern Plains, and Southwest saw a large decrease in the climate match relative to current conditions. Additionally, areas within California, the Colorado Plateau, Great Basin, Southern Atlantic Coast, Southern Florida, and Western Mountains saw a moderate decrease in the climate match relative to current conditions. Additionally, very small areas of large or moderate change may be visible on the maps (figure A3). The extent of decreased climate match was projected to be particularly large at the 2085 time step under SSP5, although the SSP3, 2085 scenario also had substantial areas of decreased climate match relative to current conditions.

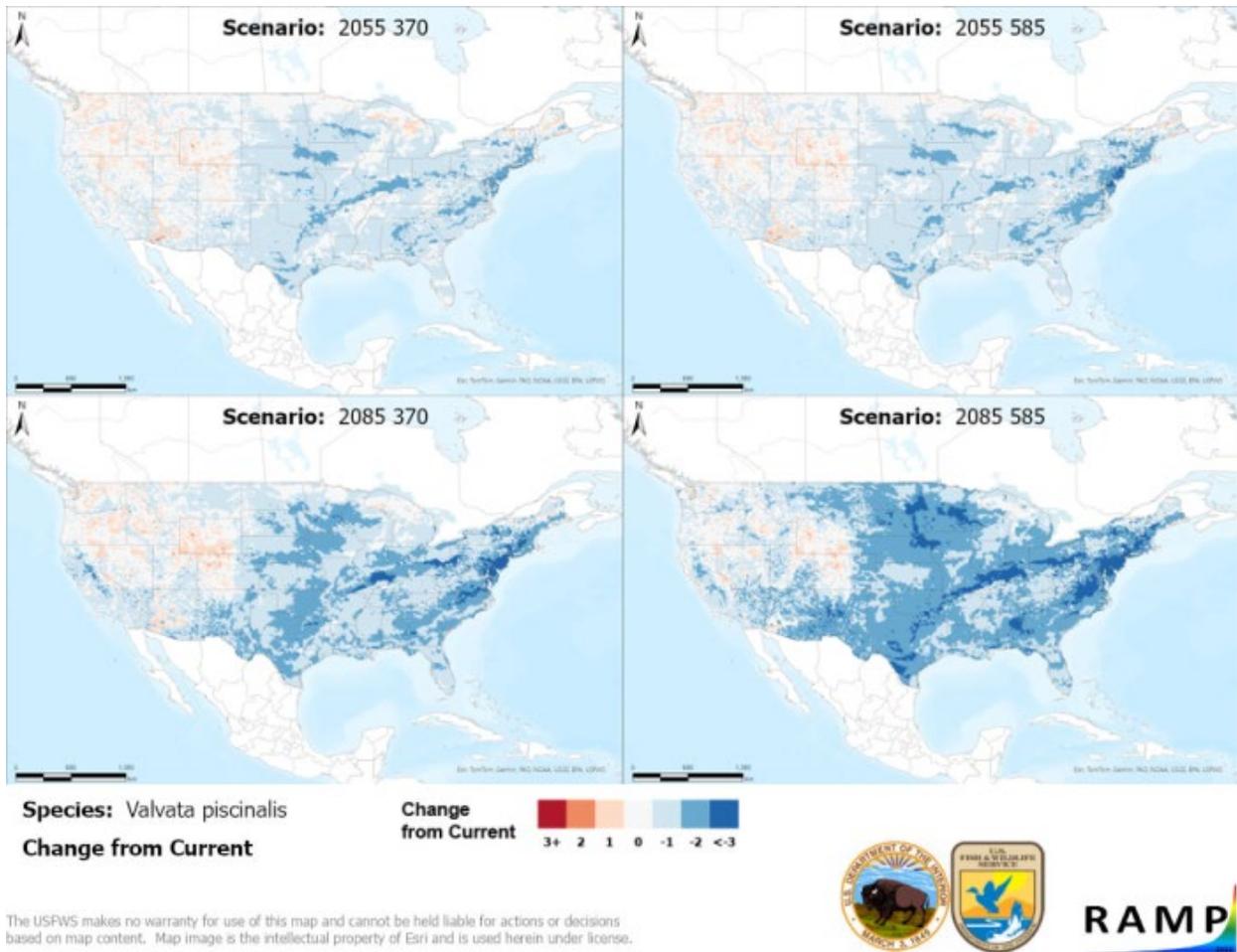


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**Figure A1.** Maps of median RAMP (Sanders et al. 2023) climate matches projected under potential future climate conditions using five global climate models for *Valvata piscinalis* in the contiguous United States. Climate matching is based on source locations reported by GBIF Secretariat (2025). 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 *Valvata piscinalis* 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 *Valvata piscinalis* based on source locations reported by GBIF Secretariat (2025). 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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