

## Lister's River Snail (*Viviparus contectus*)

U.S. Fish and Wildlife Service, February 2022

Revised, June 2022

Web Version, 7/22/2022

Organism Type: Mollusk

Overall Risk Assessment Category: Uncertain



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Available: [https://commons.wikimedia.org/wiki/File:Viviparus\\_contectus\\_01.JPG](https://commons.wikimedia.org/wiki/File:Viviparus_contectus_01.JPG) (February 2022).

## 1 Native Range and Status in the United States

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### Native Range

From Kebapçı et al. (2014):

“*Viviparus contectus* is a Palearctic species, occurring over most of the European states in the west, north and east, but much rarer in southern Europe. It is widespread in northern and central Europe, and is recorded from the UK in west of the region, to northern countries of Sweden,

Latvia, Estonia and Denmark, through to Germany, Switzerland, south to Italy, Slovenia and east to Greece and Bulgaria. This [*sic*] species is mainly Palaearctic in distribution extending to western Siberia (Welter-Schultes 2011).”

“There are records from Turkey (Kebapci and Yildirim 2010), from the larger water bodies, such as lakes and ponds Karaot pond (Province Isparta), Beysehir Lake (Province Konya) as well as older records from the Black Sea Region (Schütt 1965) and Lakes Region (Bilgin 1980).”

MolluscaBase (2022a) reports *V. contectus* from the following countries: Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Romania, Russia (Kaliningrad), Serbia, Slovakia, Sweden, Switzerland, and Ukraine.

From Welter-Schultes (2013):

“[...] not Norway, not Finland, in SE Sweden S of 57°N”

## Status in the United States

From Evans and Ray (2008):

“Questionable Records [...]

*Viviparus contectus* (Millet 1813). This species is a European species that was reported to occur in Philadelphia (Bailey, 1909). It is unclear whether this is actually *Viviparus contectus* or *Viviparus georgianus*, which has to occur in Philadelphia (ANSP 98696, 105814, 105977) and the Lehigh River (CMNH 62.12838).”

Evans and Ray (2008) do not include *V. contectus* in their list of freshwater snail species of Pennsylvania. No records of *Viviparus contectus* in trade or in the wild in the United States were found. No species-specific regulations on possession or trade were found within the United States.

## Means of Introductions in the United States

No records of *Viviparus contectus* in the wild in the United States were found.

## Remarks

From Kebapçı et al. (2014):

“Kantor et al. (2009) put this [species] in the genus *Contectiana* Bourguignat, 1880 following the volume of Fauna Ukraine (Vol. 29). However the majority of users still consider this to be a subgeneric level classification.”

“[...] the species hybridises with *V. ater*, thus rendering identification difficult (Trüb and Ribí 1997).”

From MolluscaBase (2022b):

“Synonymised names:

*Contectiana (Contectiana) fennica* (Kobelt, 1909) · unaccepted (a junior synonym)  
*Cyclostoma contectum* Millet, 1813 · unaccepted (original combination)  
*Paludina inflata* Villa, 1841 · unaccepted  
*Paludina mamillata* Küster, 1852 · unaccepted  
*Valvata (Tropidina) levantica* Halaváts, 1889 † · unaccepted (junior subjective synonym)  
*Vivipara contecta* (Millet, 1813) · unaccepted (unaccepted combination)  
*Vivipara contecta* var. *kormosi* Kobelt, 1909 · unaccepted (junior synonym)  
*Vivipara contecta* var. *russiensis* Milaschewitch, 1881 · unaccepted (a junior synonym)  
*Vivipara lacustris* Beck, 1847 · unaccepted (a junior synonym)  
*Viviparus (Contectiana) contectus* (Millet, 1813) · alternate representation  
*Viviparus fasciatus* var. *nigerrimus* Schlesch, 1930 · unaccepted (a junior synonym)  
*Viviparus mamillatus* (Küster, 1852) · unaccepted”

Literature searches were conducted using the valid scientific name *Viviparus contectus* and each of the above synonyms.

From Glöer and Georgiev (2014):

“Before 1959 the names *V. contectus* and *V. viviparus* have been partly used in reverse sense (e.g. Zilch 1955: *V. contectus* = *V. viviparus*, *V. viviparus* = *V. fasciatus*), thus many old citations in the literature cannot be trusted (Glöer 2002). On the other hand there are many misidentifications because species of the genus *Viviparus* are not easy to identify. Falniowski *et al.* (1996a, 1996b, 1997, 1998) examined the morphological and anatomical characters of the European *Viviparus* spp. and discussed the taxonomical status as well as the phylogeny and could show that all species have a wide morphological plasticity and thus it is hard to identify the species.”

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From MolluscaBase (2022b):

“Status:  
accepted”

Biota > Animalia (Kingdom) > Mollusca (Phylum) > Gastropoda (Class) > Caenogastropoda (Subclass) > Architaenioglossa (Order) > Viviparoidea (Superfamily) > *Viviparidae* (Family) > *Viviparinae* (Subfamily) > *Viviparus* (Genus) > *Viviparus contectus* (Species)”

### Size, Weight, and Age Range

From Welter-Schultes (2013):

“Size: 25-55 x 20-40 mm, very variable, females are larger than males”

From Kebapçı et al. (2014):

“This species can live up to 13 years. Maturity is reached after three months for the spring generation and eight months for the autumn generation (Welter-Schultes 2011).”

## Environment

From Kebapçı et al. (2014):

“This species lives in generally lentic habitats, in large slow-flowing rivers, large drainage ditches, fenland dykes, ditches on grazing marshes, and occasionally in large ponds and lakes (Welter-Schultes 2011).”

From Welter-Schultes (2013):

“Standing small and large waters with rich vegetation, swamps and temporary water bodies. Tolerates acid water and up to 0.4 % salt. Artificially created new habitats are rarely accepted in Austria. In N Italy up to 4-10 m deep, maximum 15 m. In Switzerland up to 400 m, in Germany 800 m.”

From Eleutheriadis and Lazaridou-Dimitriadou (1995):

“The water variable which proved to be significant for the density of *V. contectus* was dissolved oxygen.”

## Climate

From Vinarski et al. (2015):

“**Family Viviparidae Gray, 1847** Most species of this family inhabit water bodies of the temperate zone [...]”

## Distribution Outside the United States

Native

From Kebapçı et al. (2014):

“*Viviparus contectus* is a Palearctic species, occurring over most of the European states in the west, north and east, but much rarer in southern Europe. It is widespread in northern and central Europe, and is recorded from the UK in west of the region, to northern countries of Sweden, Latvia, Estonia and Denmark, through to Germany, Switzerland, south to Italy, Slovenia and east to Greece and Bulgaria. This [*sic*] species is mainly Palearctic in distribution extending to western Siberia (Welter-Schultes 2011).”

“There are records from Turkey (Kebapci and Yildirim 2010), from the larger water bodies, such as lakes and ponds Karaot pond (Province Isparta), Beysehir Lake (Province Konya) as well as older records from the Black Sea Region (Schütt 1965) and Lakes Region (Bilgin 1980).”

MolluscaBase (2022a) reports *V. contectus* from the following countries: Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Romania, Russia (Kaliningrad), Serbia, Slovakia, Sweden, Switzerland, and Ukraine.

From Welter-Schultes (2013):

“[...] not Norway, not Finland, in SE Sweden S of 57°N”

### Introduced

No records of introductions were found for *Viviparus contectus*.

### Means of Introduction Outside the United States

No records of introductions were found for *Viviparus contectus*.

### Short Description

From Glöer and Georgiev (2014):

“Whorls convex and stepped, apex acute”

From Welter-Schultes (2013):

“Shell evenly greenish brown or with blurry colour bands, often with hammer pattern, apex strongly pointed, 5.5-6 strongly convex whorls with deep suture, umbilicus narrow but open.”

“Animal blackish or greenish, with many yellow dots, tentacles long, in males the right tentacle is shorter, eyes big, circular and black, located on two small tubercles at the base of the tentacles.”

### Biology

From Kebapçı et al. (2014):

“Despite its widespread distribution, population trends are currently thought to be decreasing in parts of its range.”

“The species is still widespread within its known range and is moderately pollution sensitive; however, there is evidence of decline in some parts of its range.”

From Welter-Schultes (2013):

“Feeds grazing on mud, or by filtrating water. Animals dig into the muddy substrate to hibernate. In N Greece reproduction takes place in spring and autumn, sex ratio is 1:1 (also in E Poland), in Greece and France 12-30 egg capsules are present in the uterus of females (in Poland 5-15, in autumn less), the 2.5-10 mm sized juveniles hatch in the course of the summer [...] Females may

retain embryos at water temperatures below 15°C, they migrate from 0.5 m to deeper [*sic*] water (1-2 m) in October and hibernate in the mud, to give birth in the next season.”

## Human Uses

From Kebapçı et al. (2014):

“It is also spread across Europe via the aquarium trade (D. van Damme pers. comm. 2012).”

## Diseases

**No records of OIE-reportable diseases (OIE 2022) were found for *Viviparus contectus*.**

From Našincová (1991):

“During the studies of larval trematodes from water snails collected in the pond Žehuňský near Kolín (Central Bohemia, 60 km east of Prague), we found metacercariae of *Linstowiella viviparae* (Linstow, 1877) in the snail *Viviparus contectus* (Millet, 1913). [...] the total prevalence was 80%, intensity of infection ranged between 1—43.”

From Cichy et al. (2020):

“The diversity of digenean trematodes found in *V. contectus* snails includes 6 species: (a) cercariae of *Cercaria vesiculosa* (Diesing 1850), *Furcocercaria* sp. B sensu Cichy and Žbikowska (2016), *Paracoenogonimus ovatus* Katsurada, 1914, *Prosthodendrium chilostomum* (Mehlis, 1831), *Neoacanthoparyphium echinatoides* (Filippi, 1854) and (b) metacercariae of *Amblosoma exile* Pojmańska, 1972 and *N. echinatoides*.”

MolluscaBase (2022a) reports that *V. contectus* is a host for endoparasitic larvae of the following species: *Cotylurus cornutus* (Rudolphi, 1809), *Echinostoma bolschewense* (Kotova, 1939), *Echinostoma jurini* (Skvortzov, 1924), *Paracoenogonimus ovatus* Katsurada, 1914.

## Threat to Humans

No information was found on threats to humans from *Viviparus contectus*.

## 3 Impacts of Introductions

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No verified records of introductions were found for *Viviparus contectus*; therefore, there is no information on impacts of introduction.

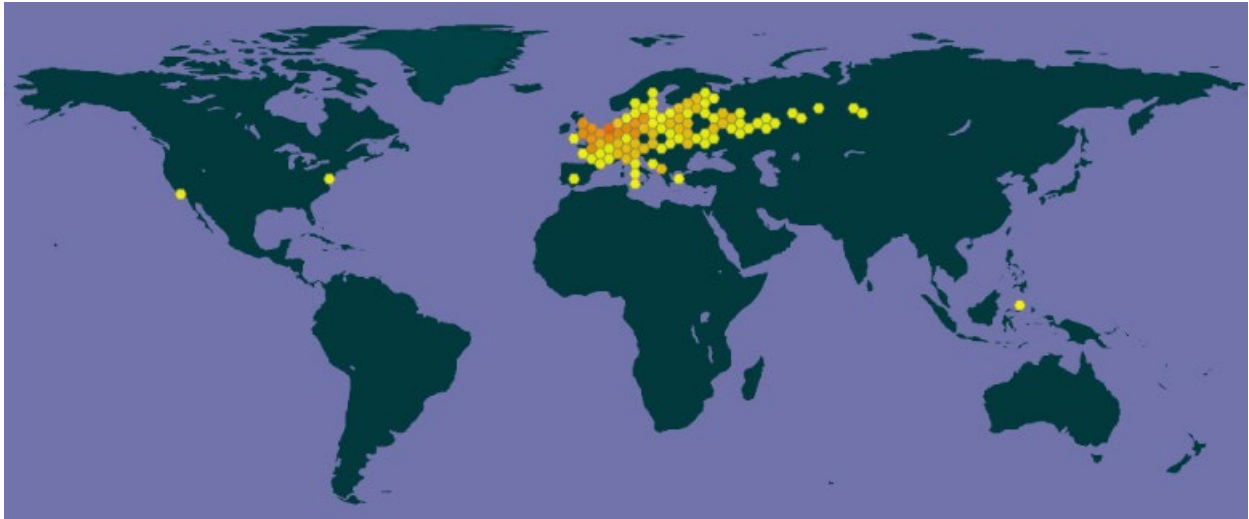
## 4 History of Invasiveness

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There are no verified records of introductions of *Viviparus contectus* outside of its native range. One source suggests that *V. contectus* is in trade within its native range, but no information was available on trade volume or the occurrence of trade outside the native range. Due to the absence of reported introductions and lack of information on trade history, the history of invasiveness for this species is classified as No Known Nonnative Population.

## 5 Global Distribution

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**Figure 1.** Reported global distribution of *Viviparus contectus*. Map from GBIF Secretariat (2021). Reported occurrences in North America, Spain, Indonesia, Kazakhstan, Finland, and Russia (except in the Baltic Sea basin) were not used in the climate matching analysis. The Indonesian record may refer to a different species, and introduction and establishment could not be confirmed for North America, Spain, Kazakhstan, Finland, or Russia (except in the Baltic Sea basin). Occurrences in central Russia have been reported through iNaturalist (GBIF Secretariat 2021) and may be misidentifications given the difficulty of distinguishing among species within genus *Viviparus* (see Remarks).

No georeferenced occurrences were available for portions of the native range in Bulgaria, Croatia, Czech Republic, Luxembourg, Macedonia, Romania, Serbia, or Slovakia.

## 6 Distribution Within the United States

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No confirmed records of *Viviparus contectus* in the wild in the United States were found.

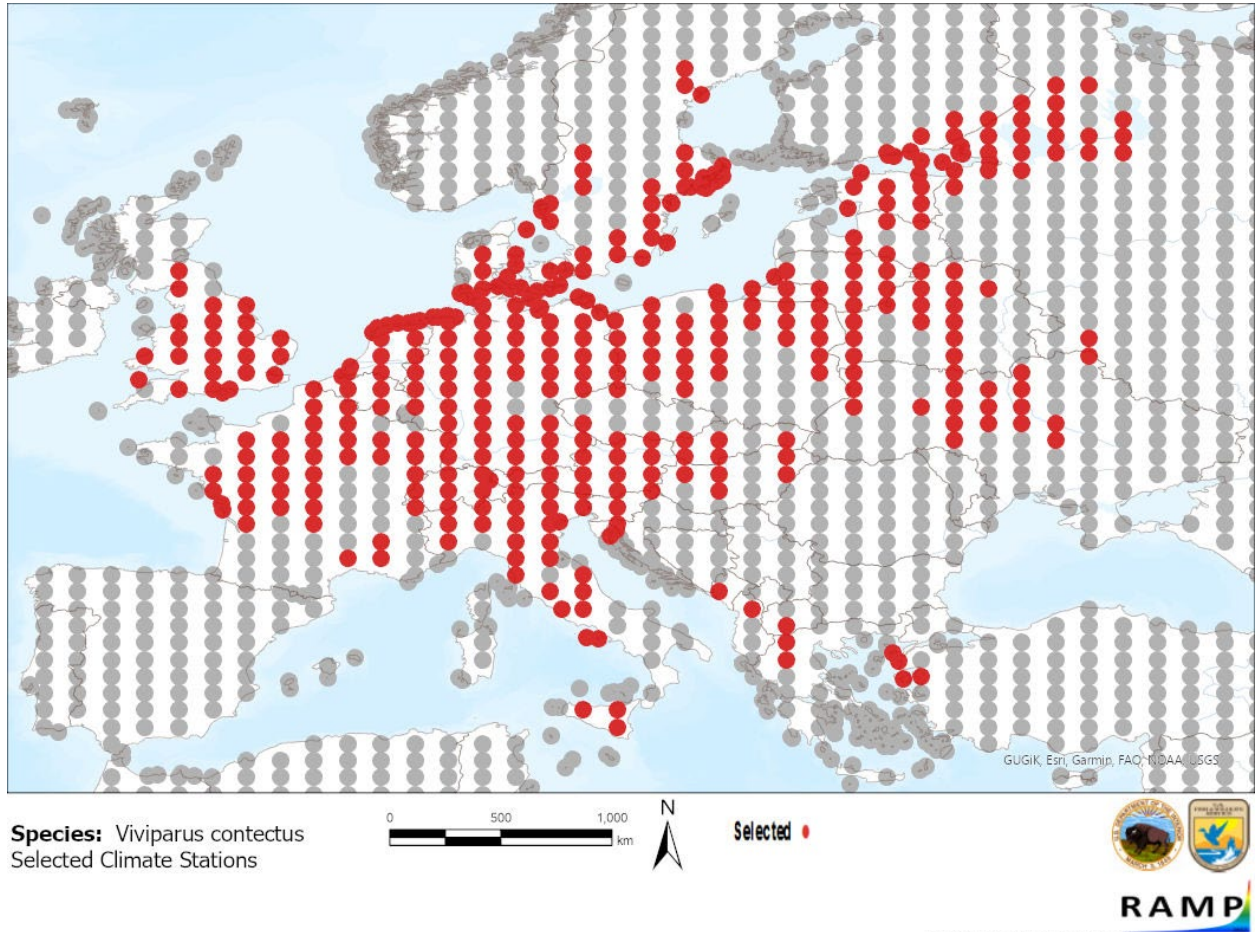
## 7 Climate Matching

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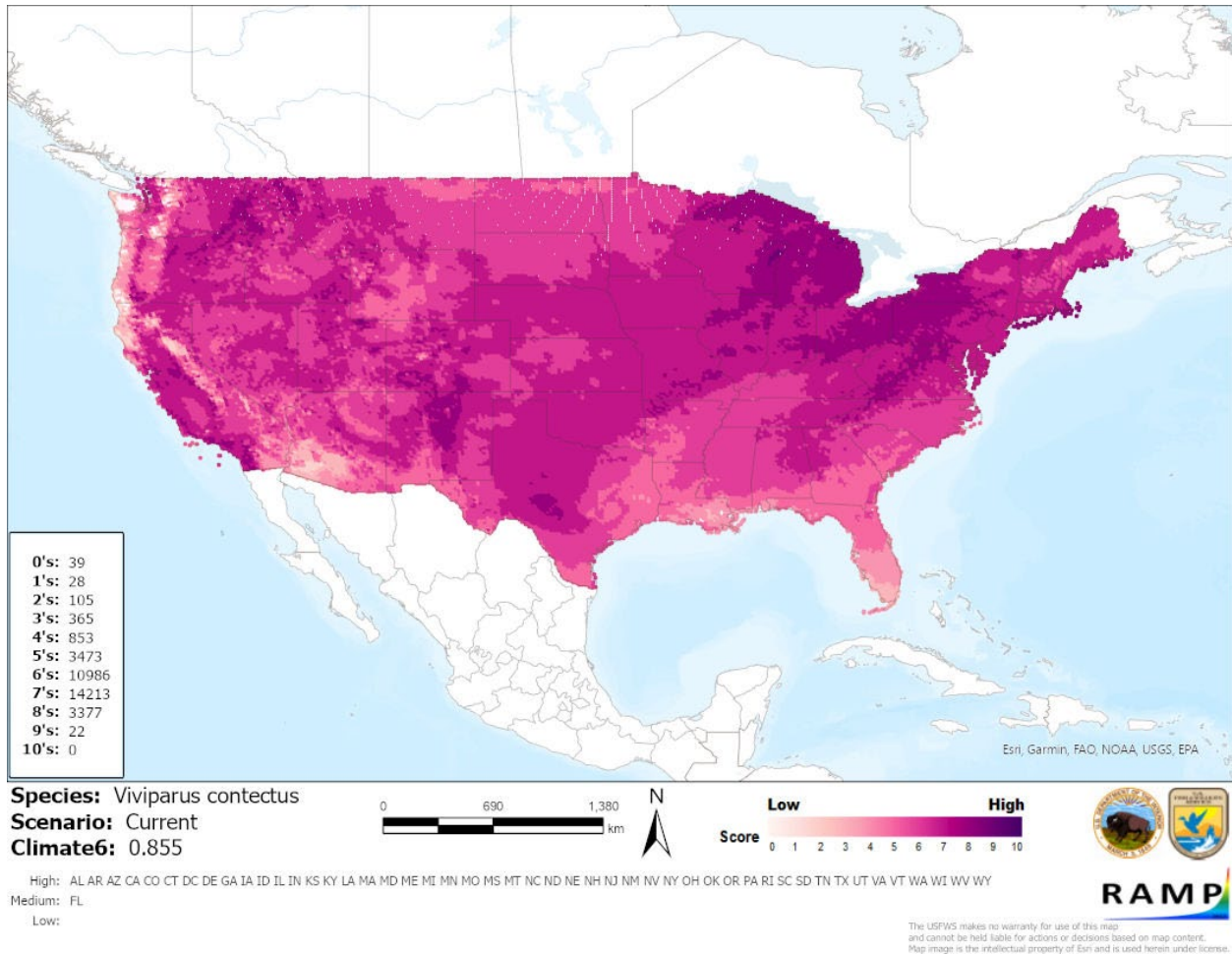
### Summary of Climate Matching Analysis

The climate match for *Viviparus contectus* was generally high for the contiguous United States with small areas of medium and low climate match. The highest matches occurred in the Great Lakes region from western New York to Minnesota, along the spine of the Appalachian Mountains in the Mid-Atlantic region, in north-central New Mexico, and in scattered locations in California, Texas, western Montana, Idaho, and eastern Washington. Areas of low to medium-low match were found in southern Florida, Louisiana, southern Arizona, in the Sierra Nevada and Cascade Mountains, and along the Pacific coast from Washington south into northern California. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean

distance) was 0.855, high. (Scores of 0.103 and greater are classified as high.) All States had high individual Climate 6 scores except Florida, which had a medium individual Climate 6 score.



**Figure 2.** RAMP (Sanders et al. 2021) source map showing weather stations in Europe and Asia selected as source locations (red; Albania, Austria, Belarus, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Macedonia, Montenegro, Netherlands, Poland, Russia, Slovakia, Slovenia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom) and non-source locations (gray) for *Viviparus contectus* climate matching. Source locations from GBIF Secretariat (2021). 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 *Viviparus contectus* in the contiguous United States based on source locations reported by GBIF Secretariat (2021). 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
$\geq 0.103$	High

## 8 Certainty of Assessment

The certainty of assessment is low. Information is available on the biology, ecology, and distribution of *Viviparus contectus*, but no information is available on impacts of introduction and minimal information is available on the use of *V. contectus* in trade. This species may be

difficult to distinguish from similar species, which resulted in a previous false report in Pennsylvania and increases the uncertainty in other reported occurrences.

## 9 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Viviparus contectus*, Lister's River Snail, is a freshwater snail native to most of Europe, from the United Kingdom east to Estonia and Turkey. *Viviparus contectus* has not been reported as introduced outside its native range and there is no indication this species is in trade outside its native range. The history of invasiveness for this species is classified as No Known Nonnative Population. The overall climate match to the contiguous United States was High, with high matches particularly concentrated in the Great Lakes and central Appalachian regions and scattered throughout the West. All States had high individual climate scores except Florida, with a medium individual climate score. The certainty of assessment is Low due to the lack of information on introductions and trade as well as the difficulty in distinguishing this species from similar species. The overall risk assessment category for *Viviparus contectus* 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: 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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- Eleutheriadis N, Lazaridou-Dimitriadou M. 1995. Density and growth of freshwater prosobranch snails (*Bithynia graeca* and *Viviparus contectus*) in relation to water chemistry in Serres, Northern Greece. *Journal of Molluscan Studies* 61(3):347–352.
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- Welter-Schultes F. 2013. Species summary for *Viviparus contectus*. AnimalBase. Göttingen, Germany: Zoological Institute of the University of Göttingen. Available: <http://www.animalbase.uni-goettingen.de/zooweb/servlet/AnimalBase/home/species?id=2079> (June 2022).

## 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.**

- Bailey JT. 1909. *Viviparus* in Philadelphia. *Nautilus* 23:60.
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