

# *Sinanodonta jourdyi* (a mussel, no common name)

## Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2022

Revised, March 2022

Web Version, 1/3/2023

Organism Type: Mollusk

Overall Risk Assessment Category: Uncertain



Photo: Muséum National d'Histoire Naturelle. Licensed under CC BY-NC-ND 4.0. Available: <https://science.mnhn.fr/institution/mnhn/collection/im/item/2000-1726> (March 2022).

## 1 Native Range and Status in the United States

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### Native Range

From Kondakov et al. (2018):

“Pearl, Red and Lam River basins (Vietnam)”

### Status in the United States

No records of *Sinanodonta jourdyi* in trade or in the wild in the United States were found.

## Means of Introductions in the United States

No records of *Sinanodonta jourdyi* in the wild in the United States were found.

## Remarks

From Kondakov et al. (2018):

“The *Sinanodonta woodiana* species complex includes several cryptic species-level phylogenetic lineages, the taxonomic placement of which is unclear.”

“[...] the name *Sinanodonta woodiana* may also be a senior synonym of *S. jourdyi* (Morlet, 1886), which has been found in a tributary of the Pearl River in northern Vietnam (Do et al. 2018). This taxonomic puzzle could be solved in a future on the basis of molecular sequences of *Sinanodonta* spp. from Taiwan and the downstream of [sic] Pearl River near Guangzhou.”

“Based on molecular data, Do et al. (2018) found that a single *Sinanodonta* species is distributed in northern Vietnam (Table 1 [in source material]). According to this evidence, *S. jourdyi* inhabits the Red and Pearl River drainage basins. *S. hunganhi* Thach, 2016, from the Lam River appears to be a variety of *S. jourdyi* (Do et al. 2018). Do et al. (2018) listed *S. elliptica* (Heude, 1878) as a synonym of *S. jourdyi*. However, *S. elliptica* has been described from Kien-te (Chien-te), Anhui, China [Yangtze River basin] (Heude 1878) and it may therefore represent a separate species.”

Both the current accepted name *Sinanodonta jourdyi* and the synonym *Anodonta jourdyi* were used when conducting literature searches in preparation of this ERSS.

Additional information on *Sinanodonta jourdyi* was found in languages other than English during preparation of this assessment, but the ERSS includes information from English language sources only.

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From MolluscaBase (2022):

“Animalia (Kingdom) > Mollusca (Phylum) > Bivalvia (Class) > Autobranchia (Subclass) > Heteroconchia (Infraclass) > Palaeoheterodonta (Subterclass) > Unionida (Order) > Unionoidea (Superfamily) > Unionidae (Family) > Unioninae (Subfamily) > Cristariini (Tribe) > *Sinanodonta* (Genus) > *Sinanodonta jourdyi* (Species)”

“Status: accepted”

### Size, Weight, and Age Range

No information on size, weight, and age range was found for *Sinanodonta jourdyi*.

## **Environment**

No information on environmental conditions was found for *Sinanodonta jourdyi*.

## **Climate**

The native range of *Sinanodonta jourdyi* includes part of the Pearl River Basin in Vietnam, although the majority of the basin is in China. The following is a general description of the climate of the entire Pearl River Basin:

From Zong et al. (2009):

“The Pearl River catchment basin is under a monsoonal climate (An, 2000). At present the annual average precipitation is between 1600 and 2000 mm/yr, but over 80% of rainfall occurs during spring and summer, indicative of a warm humid summer and a dry cool winter. The annual average temperature is around 22°C.”

## **Distribution Outside the United States**

### **Native**

From Kondakov et al. (2018):

“Pearl, Red and Lam River basins (Vietnam)”

### **Introduced**

No records of introductions were found for *Sinanodonta jourdyi*.

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

No records of introductions were found for *Sinanodonta jourdyi*.

## **Short Description**

From Bogan and Do (2018):

“*Sinanodonta jourdyi* has a thin shell and lacks any hinge teeth.”

## **Biology**

No information on the biology of *Sinanodonta jourdyi* was available.

## **Human Uses**

No information on human uses was found for *Sinanodonta jourdyi*.

## **Diseases**

**No records of OIE-reportable diseases (OIE 2022) were found for *Sinanodonta jourdyi*.**

No information available on diseases associated with *Sinanodonta jourdyi*.

## Threat to Humans

No information found.

## 3 Impacts of Introductions

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

## 4 History of Invasiveness

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*Sinanodonta jourdyi* has not been documented as introduced or established outside of its native range. There is no data on its use in trade. Its History of Invasiveness is therefore classified as No Known Nonnative Population.

## 5 Global Distribution

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**Figure 1.** Known global distribution of *Sinanodonta jourdyi*. Observations are reported from Vietnam. Map from GBIF Secretariat (2022).

## 6 Distribution Within the United States

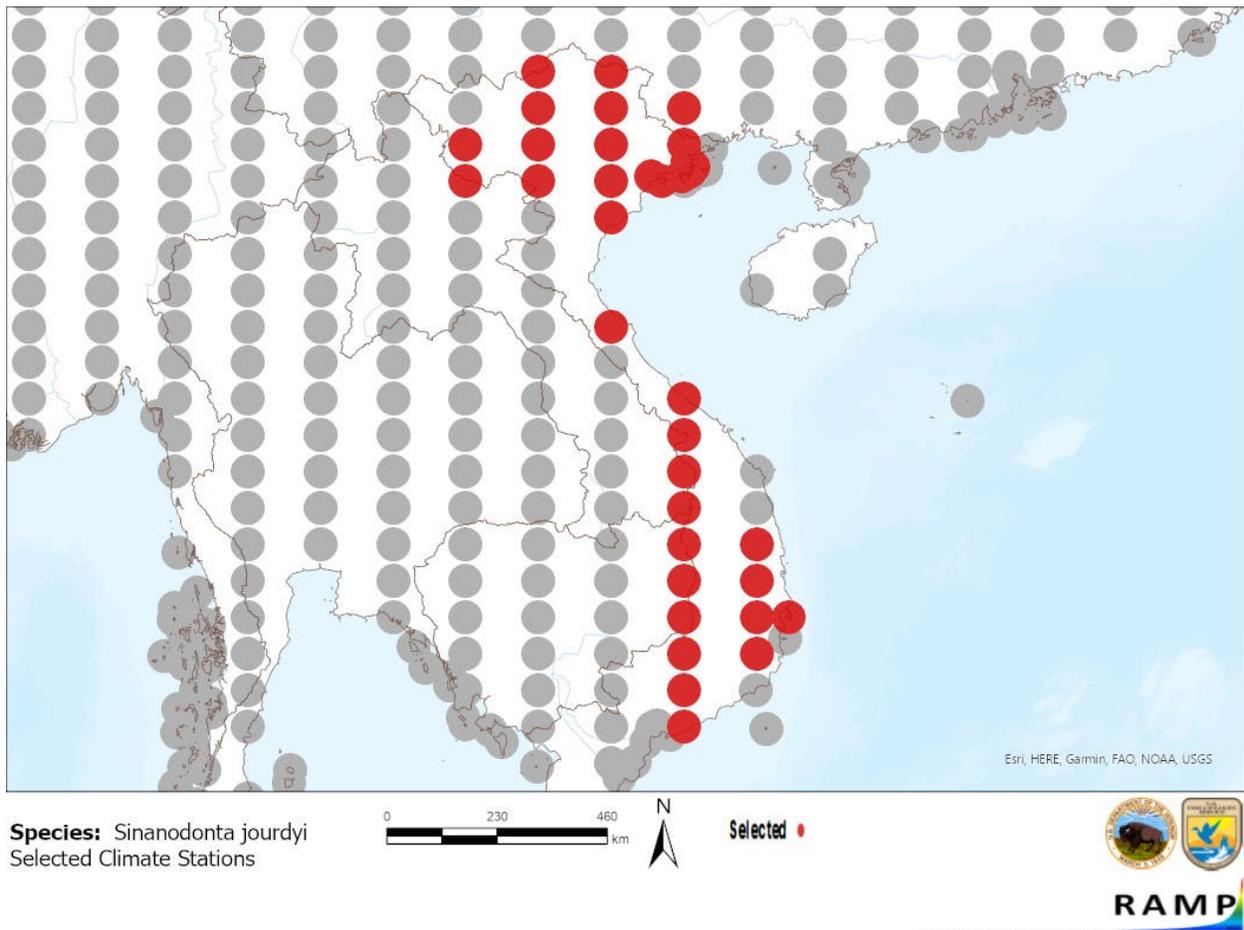
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No records of *Sinanodonta jourdyi* in the wild in the United States were found.

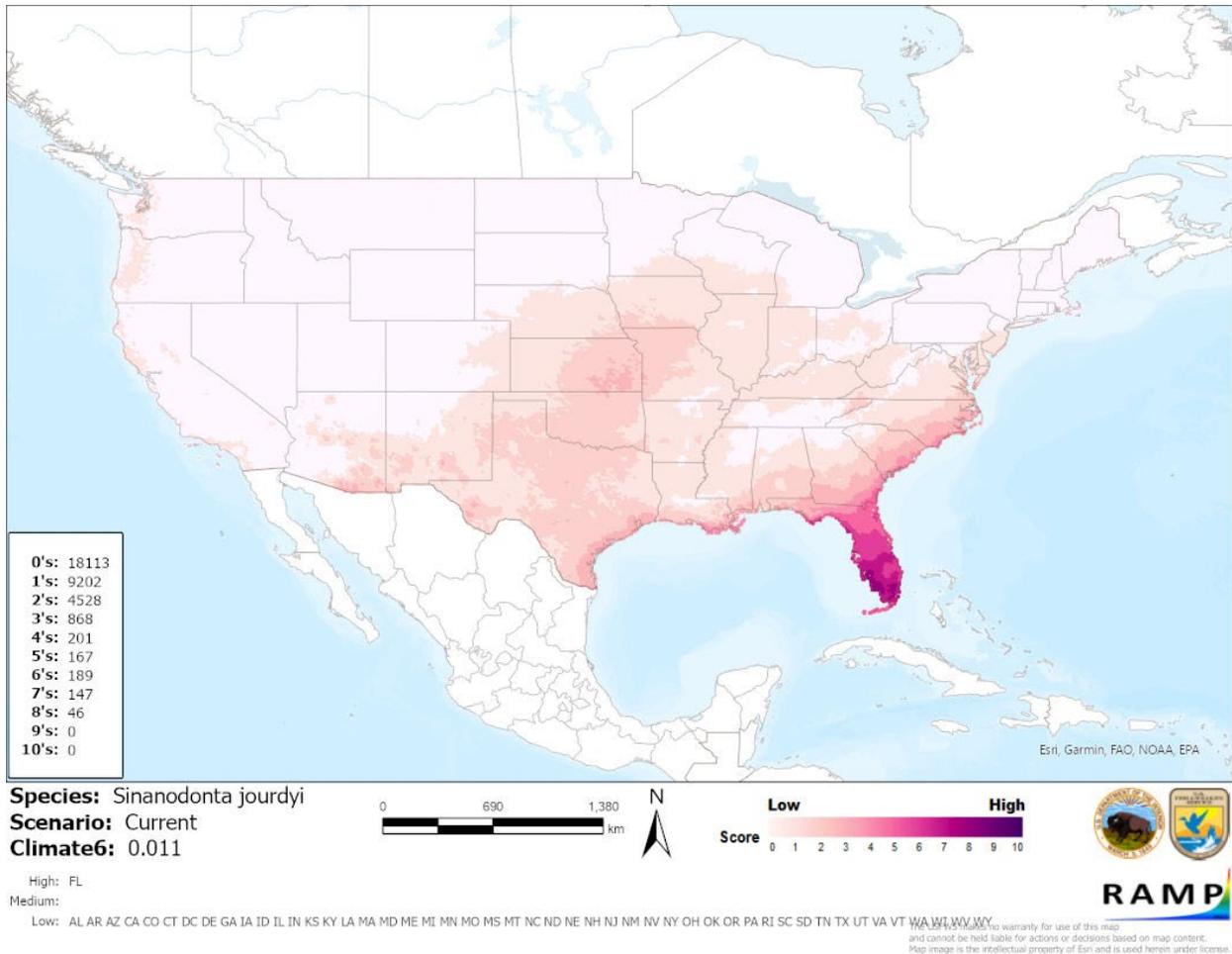
# 7 Climate Matching

## Summary of Climate Matching Analysis

In general, the climate match for *Sinanodonta jourdyi* within the contiguous United States was low. In the south-central and southeastern United States, the climate match was slightly higher, but still low. The match was medium in northern Florida and high in southern Florida. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.011, Medium (scores between 0.005 and 0.103, exclusive, are classified as Medium). Florida was the only State with a High individual Climate 6 score. All other States had Low climate match.



**Figure 2.** RAMP (Sanders et al. 2021) source map showing weather stations in Southeast Asia selected as source locations (red; Vietnam) and non-source locations (gray) for *Sinanodonta jourdyi* 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 *Sinanodonta jourdyi* 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
$\geq 0.103$	High

## 8 Certainty of Assessment

There was very little information available about *Sinanodonta jourdyi*. No information could be found about the species' biology or the environmental conditions where it occurs. This species has not been reported as introduced or established outside of its native range, so there is no information on impacts of introductions from which to assess the risk *S. jourdyi* poses to the

United States. Additionally, some of the scientific literature for this species was not available in English, further reducing certainty of assessment. Certainty of Assessment is Low.

## 9 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Sinanodonta jourdyi* is a freshwater mussel native to the Pearl, Red, and Lam River basins in Vietnam. There are no records of this species outside of its native range, and very little information is available about the species in general. The history of invasiveness is No Known Nonnative Population. *S. jourdyi* has a medium climate match with the contiguous United States; the climate match was medium to high in Florida and low everywhere else. Certainty of this assessment is Low because of a lack of available information on the invasive potential of *S. jourdyi*. The Overall Risk Assessment Category 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:** Additional information on this species may be available in languages other than English.
- **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.**

Bogan AE, Do VT. 2018. An overlooked new species of freshwater bivalve from northern Vietnam (Mollusca: Bivalvia: Unionidae). *Raffles Bulletin of Zoology* 66:78–86.

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Sinanodonta jourdyi* (Morlet, 1886). Copenhagen: Global Biodiversity Information Facility. Available: <https://doi.org/10.15468/dl.2w399x> (March 2022).

Kondakov AV, Palatov DM, Rajabov ZP, Gofarov MY, Konopleva ES, Tomilova AA, Vikhrev IV, Bolotov IN. 2018. DNA analysis of a non-native lineage of *Sinanodonta woodiana* species complex (Bivalvia: Unionidae) from Middle Asia supports the Chinese origin of the European invaders. *Zootaxa* 4462(4):511–522.

MolluscaBase, editors. 2022. *Sinanodonta jourdyi* (Morlet, 1886). World Register of Marine Species. Available: <https://www.marinespecies.org/aphia.php?p=taxdetails&id=1251113#attributes> (March 2022).

[OIE] World Organisation for Animal Health. 2022. Animal diseases. Available: <https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-diseases/> (March 2022).

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

Zong Y, Huang G, Switzer AD, Yu F, Yim WS. 2009. An evolutionary model for the Holocene formation of the Pearl River delta, China. *The Holocene* 19:129–142.

## **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.**

An Z. 2000. The history and variability of the East Asian paleomonsoon climate. *Quaternary Science Reviews* 19:171–187.

Do VT, Tuan LQ, Bogan AE. 2018. Freshwater mussels (Bivalvia: Unionida) of Vietnam: diversity, distribution, and conservation status. *Freshwater Mollusk Biology and Conservation* 21:1–18.