

***Dreissena caputlacus* (a mussel, no common name)**

Ecological Risk Screening Summary

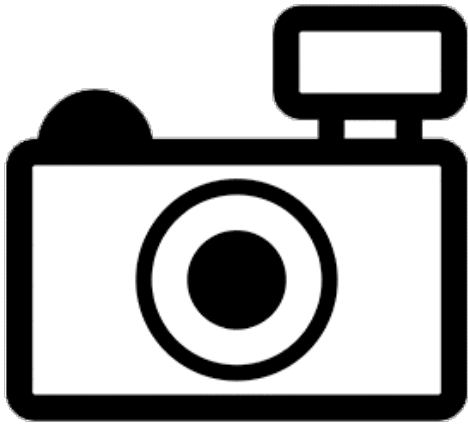
U.S. Fish & Wildlife Service, January 2022

Revised, February 2022

Web Version, 9/26/2022

Organism Type: Mollusk

Overall Risk Assessment Category: Uncertain



No Photo Available

1 Native Range and Status in the United States

Native Range

Gurlek (2019), lists *Dreissena caputlacus* as endemic to the Ceyhan river system.

From Rosenberg et al. (1994):

“*Dreissena caputlacus* was named recently from a lake in southwestern Turkey.”

Status in the United States

No records of *Dreissena caputlacus* in trade or in the wild in the United States were found.

From Arizona Office of the Secretary of State (2013):

“Mollusks listed below are considered restricted live wildlife: [...]”

2. All species of the family *Dreissenidae*. Common names include: zebra and quagga mussel.”

From California Department of Fish and Wildlife (2019):

“It shall be unlawful to import, transport, or possess live animals restricted in subsection (c) below except under permit issued by the department. [...]

Restricted species include: [...]

Class Bivalvia-Bivalves: All members of the genus *Dreissena* (zebra and quagga mussels)”

From State of Nevada (2018):

“Except as otherwise provided in this section and NAC 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited: [...]

Zebra and quagga mussels [...] All species in the genus *Dreissena*”

From Oregon Secretary of State (2022):

“Except as otherwise provided in these rules or other rules of the commission, live wildlife listed below may not be imported, possessed, sold, purchased, exchanged or transported in the state: [...]

(ii) Zebra mussel, Quagga mussel — Dreissenidae — All species (whether live or dead).”

From Texas Parks and Wildlife (2020):

“The organisms listed here are legally classified as exotic, harmful, or potentially harmful. No person may possess or place them into water of this state except as authorized by the department. Permits are required for any individual to possess, sell, import, export, transport or propagate listed species for zoological or research purposes; for aquaculture (allowed only for Blue, Nile, or Mozambique tilapia, Triploid Grass Carp, or Pacific White Shrimp); or for aquatic weed control (for example, Triploid Grass Carp in private ponds). [...]

Zebra and Quagga Mussels, Family Dreissenidae

All species of genus *Dreissena*, including but not limited to *Dreissena polymorpha* (Zebra mussel)”

From Washington State Senate (2019):

“The following species are classified as prohibited level 3 species: [...]

Family Dreissenidae: All members of the genus Dreissenid [sic] except the species zebra mussel, *Dreissena polymorpha*, and the quagga mussel, *Dreissena rostriformis bugensis*.”

Means of Introductions in the United States

No records of *Dreissena caputlacus* in the wild in the United States were found.

Remarks

From Gelembiuk et al. (2006):

“The additional clade, *Dreissena caputlacus*, is a recent discovery and its systematic placement had not been extensively considered.”

“Like *D. stankovici*, *D. caputlacus* showed a pattern of high haplotype diversity and possible evidence of an ancient expansion. The high haplotype diversity at Seyhan Dam reservoir [Turkey] was consistent with a large historical population size, conforming to our expectation for a stable lake habitat.”

“Climatic cycles caused hydrological instability in this region during the late Pleistocene. High water levels last existed here during the last glacial maximum, 23 000–17 000 bp (Karabiyikoglu et al. 1999), coinciding with the population expansion event inferred from haplotype data. [...] *D. caputlacus*, might have resulted from secondary introduction from its previously described range.”

From Rosenberg et al. (1994):

“Further research is needed on the status of *D. caputlacus*, *D. diluvia*, and *D. bourguignati* to determine if one, two, or three living species are represented by these names.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From MolluscaBase (2021):

“Animalia (Kingdom) > Mollusca (Phylum) > Bivalvia (Class) > Autobranchia (Subclass) > Heteroconchia (Infraclass) > Euheterodonta (Subterclass) > Imparidentia (Superorder) > Myida (Order) > Dreissenoidea (Superfamily) > Dreissenidae (Family) > Dreisseninae (Subfamily) > *Dreissena* (Genus) > *Dreissena caputlacus* (Species)”

“Status accepted”

Size, Weight, and Age Range

From Rosenberg et al. (1994):

“The species has the broadest shell of living *Dreissena*.”

From MolluscaBase (2021):

“Body size [...] 2.0-200 mm”

Environment

From Gurlek (2019):

“Ceyhan River is located in the eastern Mediterranean region of Turkey and rises in the Taurus Mountains at the altitude of 2200 metres.”

According to MolluscaBase 2021, *Dreissena caputlacus* is a freshwater species.

Climate

No information on climate was found for *Dreissena caputlacus*.

Distribution Outside the United States

Native

Gurlek (2019), lists *Dreissena caputlacus* as endemic to the Ceyhan river system.

From Rosenberg et al. (1994):

“*Dreissena caputlacus* was named recently from a lake in southwestern Turkey.”

Introduced

No records of introductions were found for *Dreissena caputlacus*.

Means of Introduction Outside the United States

No records of introductions were found for *Dreissena caputlacus*.

Short Description

From Mienis et al. (2009):

“(Shell) rather broad, triangular specimens with a well developed carina.”

From Gelembiuk et al. (2006):

“The morphological form of *D. caputlacus* closely resembles that of the fossil taxon *Dreissena diluvii* (Schütt 1993).”

“*Dreissena caputlacus* is a recently described species (Schütt 1993) that is highly distinctive, both morphologically (Fig. 4, Appendix S2 in Supplementary materials [in source material]) and genetically.”

Biology

No information on the basic biology of *Dreissena caputlacus* was found.

Human Use

No information on human uses was found for *Dreissena caputlacus*.

Diseases

No records of OIE-reportable diseases (OIE 2022) were found for *Dreissena caputlacus*.

No information on diseases was found for *Dreissena caputlacus*.

Threat to Humans

No information on threats to humans was found specifically for *Dreissena caputlacus*.

From Mienis et al. (2009):

“*Dreissena* is a fouling organism of economic importance in Turkey. Since the water of Lake Seyhan is used for producing hydroelectric power and for irrigation, these mussels could therefore easily become an economic problem in Lake Seyhan [Bobat et al. 2004].”

3 Impacts of Introductions

No records of introductions were found for *Dreissena caputlacus*; therefore there is no information on impacts of introduction.

From Gelembiuk et al. (2006):

“It is possible that the stable geological history and relative environmental constancy of tectonic lakes could have resulted in species less able to survive environmental shifts and, consequently, less able to readily invade. In addition to possible constraints due to physiology, life history, or adaptive potential, it is also possible that limited opportunity for transport is a factor, as shipping traffic from ancient Eurasian freshwater lakes is generally lower than traffic from Ponto-Caspian drainages.”

The importation, possession, or trade of *Dreissena caputlacus* is prohibited or restricted in the following States: Arizona (Arizona Office of the Secretary of State 2013), California (California Department of Fish and Wildlife 2019), Nevada (State of Nevada 2018), Oregon (Oregon Secretary of State 2022), Texas (Texas Parks and Wildlife 2020), and Washington (Washington State Senate 2019).

4 History of Invasiveness

Dreissena caputlacus has not been reported as introduced or established outside of its native range. This species is not found in trade. The history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution



Figure 1. Known global distribution of *Dreissena caputlacus*. Observations are reported from Ceyhan river (Turkey) systems and collecting locations (specifically Kartalkaya dam lake, Menzelet dam lake, and Sir dam lake). Map created using ArcPro (Esri 2022) based on the native range described by Gurlek (2019).

6 Distribution Within the United States

Dreissena caputlacus has not been reported in the wild within the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Dreissena caputlacus* was mainly medium to high in the western half and low in the eastern half of the contiguous United States. Areas of medium match were also located around the western Great Lakes. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.204, High. (Scores equal to or greater than 0.103 are classified as high.) The following States had high individual Climate 6 scores: Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming. The following States had medium individual scores: Nebraska and South Dakota. All other States had low individual scores.

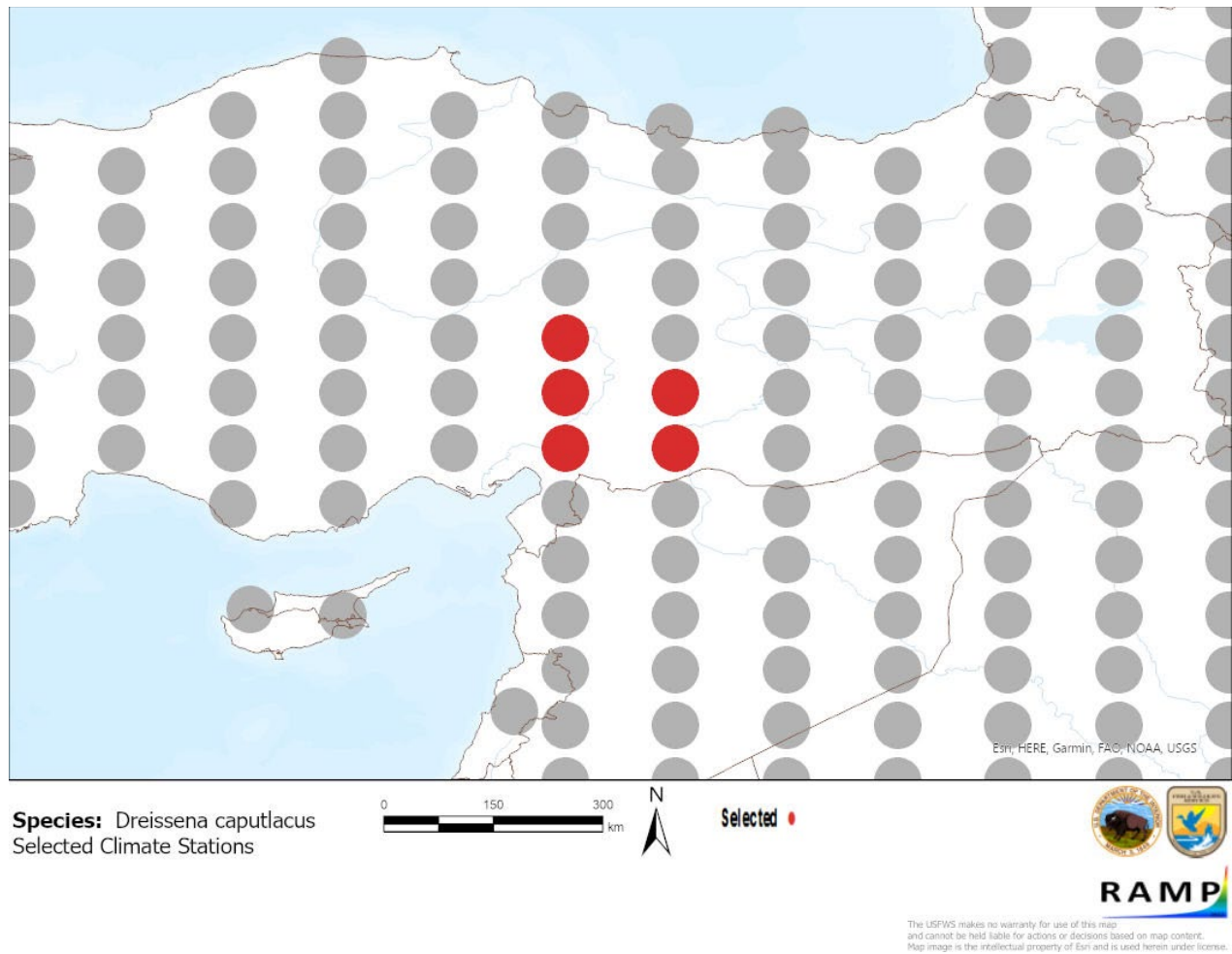


Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in the Near East selected as source locations (red; Turkey) and non-source locations (gray) for *Dreissena caputlacus* climate matching. Source locations from Gurlek (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

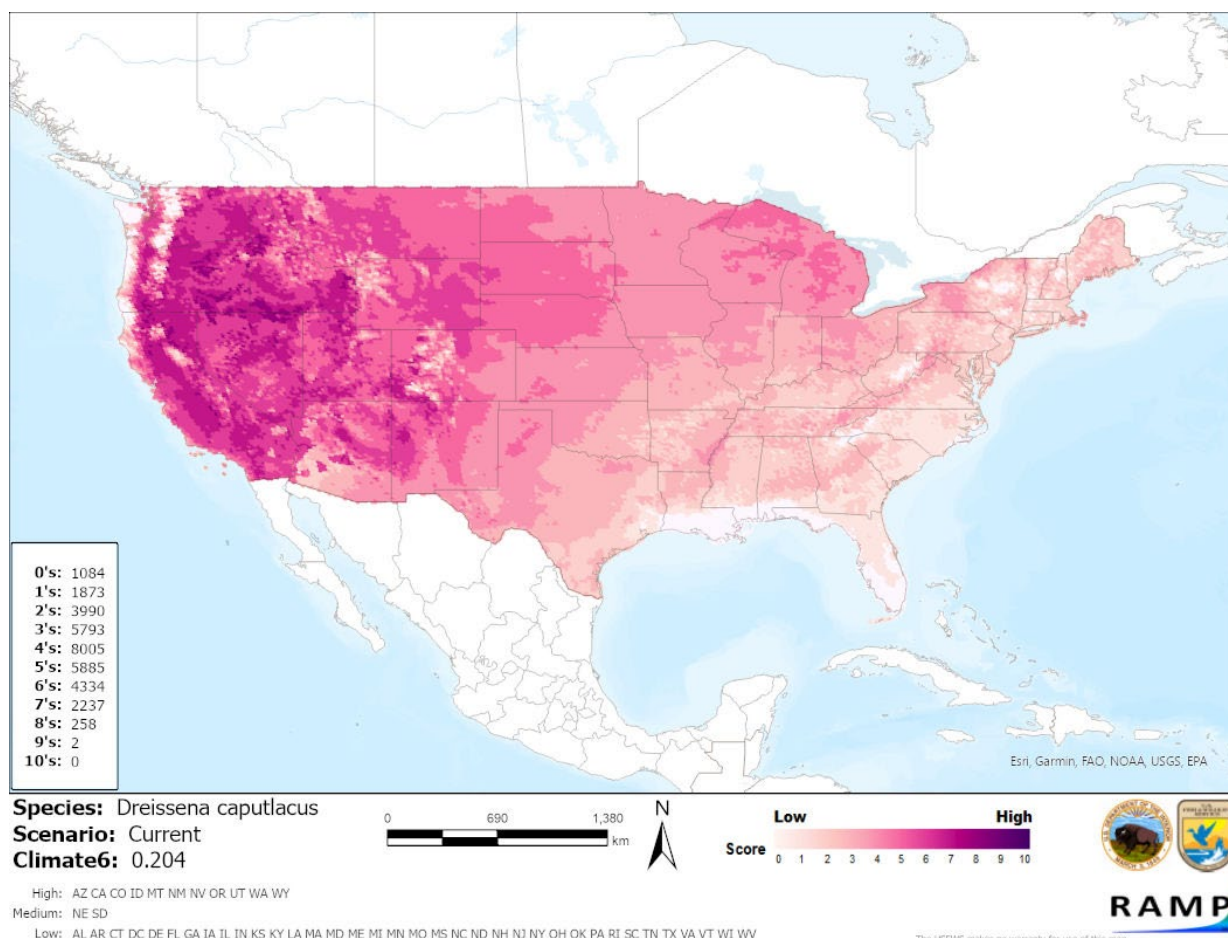


Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Dreissena caputlacus* in the contiguous United States based on source locations reported in Gurlek (2019). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

8 Certainty of Assessment

The certainty of assessment is Low. No records of introductions were found for *Dreissena caputlacus*; therefore, there is no information on impacts of introduction. There may be some taxonomic uncertainty regarding *Dreissena caputlacus* and a couple closely related *Dreissena*

species. Additionally, the bulk of the scientific literature for this species was not available in English, further reducing certainty of assessment.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Dreissena caputlacus is a freshwater mollusk native to Turkey. Little information is available for this species and the taxonomy of this species and a few closely related *Dreissena* species may not be resolved. It is not currently present in trade. It is regulated as part of the Dreissenidae family or *Dreissena* genus in six States. No introductions outside of its native range have been reported. The history of invasiveness is classified as No Known Nonnative Population. The overall climate match with the contiguous United States is High. Areas of high and medium match were found mainly in the western half of the United States, and around the Great Lakes. The certainty of this assessment is Low due to a lack of information. The overall risk assessment category for *Dreissena caputlacus* 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:** No additional remarks or 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.

Arizona Office of the Secretary of State. 2013. Live wildlife. Arizona Administrative Code, Game and Fish Commission, Title 12, Chapter 4, Article 4.

California Department of Fish and Wildlife. 2019. Restricted species laws and regulations manual. Available: <https://wildlife.ca.gov/Conservation/Invasives/Regulations> (January 2022).

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Gelembiuk GW, May GE, Lee CE. 2006. Phylogeography and systematics of zebra mussels and related species. *Molecular Ecology* 15:1033–1050.

Gurlek ME. 2019. A new genus and two new species of freshwater Gastropoda from the Ceyhan River Basin in the eastern Mediterranean (Mollusca: Gastropoda: Truncatelloidea). *Zoology in the Middle East* 65:59–65.

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- [OIE] World Organisation for Animal Health. 2022. Animal diseases. Available: <https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-diseases/> (January 2022).
- Oregon Secretary of State. 2022. Importation, possession, confinement, transportation and sale of nonnative wildlife. Chapter 635, Division 56 in Oregon Administrative Rules Database. Available: <https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=2948> (March 2022).
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- Smith KG, Barrios V, Darwall WRT, Numa C, editors. 2014. The status and distribution of freshwater biodiversity in the Eastern Mediterranean. *ICUN* xiv: 118.
- State of Nevada. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Chapter 503, Section 110.
- Texas Parks and Wildlife. 2020. Invasive, prohibited and exotic species. Austin: Texas Parks and Wildlife. Available: https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml (January 2022).
- Washington State Senate. 2019. Invasive/nonnative species. Washington Administrative Code, Chapter 220-640.

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.

- Bobat A, Hengirmen MO, Zapletal W. 2004. Zebra mussel and fouling problems in the Euphrates basin. *Turkish Journal of Zoology* 28:161–177.