Pygmy Peaclam (*Odhneripisidium moitessierianum*)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2023
Revised, February 2023
Web Version, 4/4/2025

Organism Type: Mollusk
Overall Risk Assessment Category: Uncertain

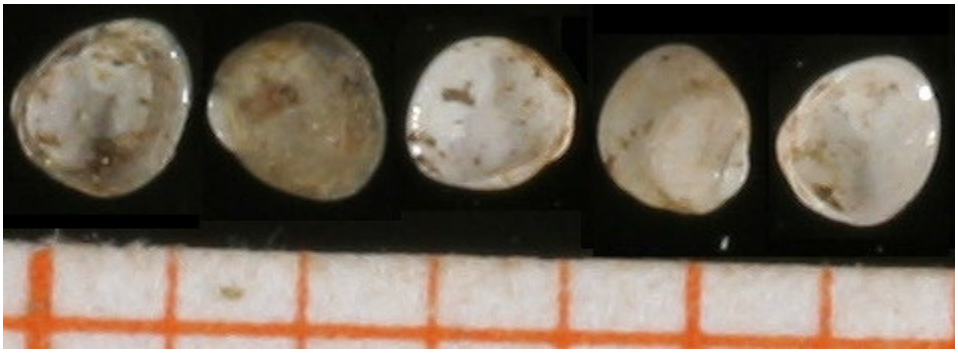

Photo: Welter Schultes F. Scale in millimeters. Public Domain. Available: http://www.animalbase.uni-goettingen.de/zooweb/servlet/AnimalBase/home/picture?id=2371 (February 2023).

1 Native Range and Status in the United States

Native Range

From Kipp et al. (2023a):

"*Pisidium moitessierianum* [synonym of *Odhneripisidium moitessierianum*] is native to eastern and western European countries as well as Asia in southwestern Siberia and northeastern Kazakhstan (Grigorovich et al. 2000)."

From Killeen et al. (2011):

"This is a European and western Palearctic species. Its range covers Europe from Ireland to western Russia, and southern Scandinavia. Apart from some places in the Balkans, it is largely absent from southern Europe. The species is also known from Kazakhstan, Israel, Turkey and Syria […] (I. Killeen pers. comm. 2009)."

"In Ireland *P. moitessierianum* was thought to be extinct at one time but discovered along the Royal and Grand Canals by Moorkens and Killeen (2005). It has since been recorded from Lough Conn, Co. Mayo (I. Killeen and E. Moorkens, pers. comm., 2009)."

Killeen et al. (2011) state that *Odhneripisidium moitessierianum* is native and extant in Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Russian Federation (European regions), Slovakia, Sweden, Switzerland, and Ukraine.

Killeen et al. (2011) state that the presence of *Odhneripisidium moitessierianum* in Russian Federation (Northwest European Russia) and Spain is uncertain.

Status in the United States

From Kipp et al. (2023b):

"*Pisidium moitessierianum* was observed for the first time in the Great Lakes basin in the Tuscarawas River, which is connected to the Ohio and Erie Canal, in the 1890s. It was originally identified as *P. punctatum*. It has also been recorded from Lake St. Clair, the St. Clair River delta, western Lake Erie, and Lake Superior, in 1997–2001 (Grigorovich et al. 2000, Grigorovich et al. 2003a, Korniushin et al. 2001)."

Kipp et al. (2023a) report nonindigenous occurrences of *Odhneripisidium moitessierianum* in Illinois (Puncheon Creek), Michigan (Lake St. Clair and St. Clair River), Minnesota (St. Louis River), Ohio (Lake Erie, Portage County, Tuscarawas River), and Wisconsin (Lake Superior, St. Louis River, Oconomowoc Lake). They report the status as "established where recorded."

From Grigorovich et al. (2000):

"Here we confirm the presence of reproducing populations of the Moitessier's pea clam, *P. moitessierianum*, in 4 of 53 sites in the Lake Erie-St. Clair River corridor."

No records of *Odhneripisidium moitessierianum* in trade in the United States were found.

Regulations

No species-specific regulations on possession or trade were found within the United States.

Means of Introductions within the United States

From Kipp et al. (2023a):

"*Pisidium moitessierianum* was very likely introduced in ships to the Great Lakes sometime in the 1890s, most likely in solid ballast, which was in use at the time (Grigorovich et al. 2000; Grigorovich et al. 2003a; Grigorovich et al. 2003b)."

Remarks

From Kipp et al. (2023a):

"*Pisidium moitessierianum* is really *P. (Neopisidium) moitessierianum*, part of the polyphyletic subgenus *Neopisidium* (Kurniushin and Glaubrecht 2002)."

From Korniushin (2002):

"Most of the subgeneric groups assigned here to the genus *Euglesa* are treated as separate subgenera of *Pisidium* by Falkner et al. (2001). The genus *Neopisidium* in the broad understanding suggested by Korniushin (1999) cannot be accepted because of confusion about the type species (G. Falkner, pers. comm.), therefore the name is restricted here to "*Pisidium conventus*" species group (=*Conventus* auct.); all three groups of the so called "neotenic pisidia" (e. g. distinguished by reductions in many organs) are treated as separate genera, while the taxon traditionally defined as *Pisidium moitessierianum* is tentatively included in *Odhneripisidium*."

From Grigorovich et al. (2000):

"The origin of *P. moitessierianum* in North America has yet to be resolved, but many European records indicate a Palaearctic origin. By contrast, its known North American occurrence is confined to the lower Great Lakes, suggesting its nonindigenous origin in the New World. The restricted range of *P. moitessierianum* in North America also contrasts with the broad geographical distribution of native North American sphaeriids, often extending from the Atlantic to the Pacific coast (Burch, 1975; Clarke, 1981). However, considering the problem in identifying *P. moitessierianum* in North America, it is possible that the species' range extends beyond the Laurentian Great Lakes. Occurrence and arrival sequence of introduced sphaeriid species are poorly understood in the Great Lakes due to insufficient taxonomic study; however, at least two Sphaeriidae, *P. amnicum* and *P. henslowanum*, were recognized as introductions from Europe prior to the early 1900s (see Herrington, 1962). It is possible that *P. moitessierianum* may have been misidentified as *P. punctatum* in the lower Great Lakes basin-St. Lawrence River in 1894 (Sterki, 1895). This suggests that it was overlooked or confused with *P. punctatum* or with other similar looking North American species for > 100 years."

The species' valid name, *Odhneripisidium moitessierianum*, along with the synonyms *Pisidium moitessierianum* and *P. (Neopisidium) moitessierianum* (Vinarski 2020; Kipp et al. 2023a) were used to search for information during this assessment.

According to Kipp et al. (2023a), Moitessier's pea/pill clam and pisidiid clam are other common names used for this species.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Vinarski (2020):

"Biota > Animalia (Kingdom) > Mollusca (Phylum) > Bivalvia (Class) > Autobranchia (Subclass) > Heteroconchia (Infraclass) > Euheterodonta (Subterclass) > Imparidentia (Superorder) > Sphaeriida (Order) > Sphaerioidea (Superfamily) > Sphaeriidae (Family) > Sphaeriinae (Subfamily) > *Odhneripisidium* (Genus) > *Odhneripisidium moitessierianum* (Species)"

"Status accepted"

Size, Weight, and Age Range

From Kipp et al. (2023a):

"Size: around 1.8 to 2.8 mm long (Grigorovich et al. 2000, Holopainen 1979)."

Environment

From Kipp et al. (2023a):

"Moitessier's pea clam occurs in mud, silty sand, sand, silty gravel, and amongst macrophytes. It occurs from 0.5–20 m depth in the littoral zone of lakes and in wide slow rivers. It usually favors oligotrophic water with oxygen content over 50% saturation but it can tolerate some anoxic conditions over winter. *Pisidium moitessierianum* is relatively thermophilic, preferring lower river reaches, and has recently been able to colonize Lake Annecy, France, possibly due to increasingly warm lake water. It can, however, tolerate an annual water temperature range of 1-20ºC."

Climate

NatureServe (2023) states that the range extent of *Odhneripisidium moitessierianum* is within Holarctic regions.

Distribution Outside the United States

Native

From Kipp et al. (2023a):

"*Pisidium moitessierianum* is native to eastern and western European countries as well as Asia in southwestern Siberia and northeastern Kazakhstan (Grigorovich et al. 2000)."

From Killeen et al. (2011):

"This is a European and western Palearctic species. Its range covers Europe from Ireland to western Russia, and southern Scandinavia. Apart from some places in the Balkans, it is largely absent from southern Europe. The species is also known from Kazakhstan, Israel, Turkey and Syria […] (I. Killeen pers. comm. 2009)."

"In Ireland *P. moitessierianum* was thought to be extinct at one time but discovered along the Royal and Grand Canals by Moorkens and Killeen (2005). It has since been recorded from Lough Conn, Co. Mayo (I. Killeen and E. Moorkens, pers. comm., 2009)."

Killeen et al. (2011) state that *Odhneripisidium moitessierianum* is native and extant in Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Russian Federation (European regions), Slovakia, Sweden, Switzerland, and Ukraine.

Killeen et al. (2011) state that the presence of *Odhneripisidium moitessierianum* in Russian Federation (Northwest European Russia) and Spain is uncertain.

Introduced

No records were found for introductions of *Odhneripisidium moitessierianum* in the wild outside the United States.

Means of Introduction Outside the United States

No records were found for introductions of *Odhneripisidium moitessierianum* in the wild outside the United States.

Short Description

From Kipp et al (2023a):

"This triangle- to trapezoid-shaped pea clam displays a relatively rounded, thick, and coarsely striated shell with a height to length ratio of 0.88–0.90. The somewhat flattened beaks barely protrude above the dorsal margin, which exhibits a fold or ridge that is parallel to the growth rings. The 3rd cardinal tooth inside the right valve is curved and thick at both ends, with a bifurcated posterior part. The 2nd cardinal in the left valve is triangular and the 4th cardinal is a thin plate-like structure that is somewhat curved. In live individuals, there is only one siphon (Grigorovich et al. 2000)."

Biology

From Kipp et al. (2023a):

"*Pisidium moitessierianum* is ovoviviparous, hermaphroditic, can undergo self-fertilization, and generally carries 1–10 embryos. In Lake Paajarvi, Finland, it becomes sexually mature around 1 year, lays eggs in August to September, broods its offspring, releases them in July around 2 years of age, and then dies (Grigorovich et al. 2000, Holopainen 1979)."

"Species in the genus *Pisidium* are interstitial feeders, creating burrows into which they draw water by using their cilia and foot. They feed on suspended material in the water column and also directly ingest deposits from the substrate in which they live (Lopez and Holopainen 1987)."

Human Uses

No information was found on human uses of *Odhneripisidium moitessierianum*.

Diseases

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

No information was found on diseases associated with *Odhneripisidium moitessierianum*.

Threat to Humans

No information was found on threats to humans from *Odhneripisidium moitessierianum*.

3 Impacts of Introductions

From Kipp et al. (2023a):

"The impacts of this species are currently unknown, as no studies have been done to determine how it has affected ecosystems in the invaded range. The absence of data does not equate to lack of effects. It does, however, mean that research is required to evaluate effects before conclusions can be made."

From Kipp et al. (2023b):

"While the distribution of *P. moitessierianum* is thought to be patchy in parts of the Great Lakes, diffusing any significant ecological impact, it is apparently widespread in the Superior-Duluth Harbor (Grigorovich et al. 2000, Trebitz et al. 2010). It is known to coexist with other aquatic invertebrates, though its impact on other species and the ecosystem is unknown."

4 History of Invasiveness

The History of Invasiveness for *Odhneripisidium moitessierianum* is classified as Data Deficient. *O. moitessierianum* has been introduced outside its native range to the Great Lakes region of the United States, likely through international shipping. Since its introduction to the Great Lakes region, it has become established. The impacts of its introduction and establishment remain unknown. Also, no evidence of *O. moitessierianum* in trade was found.

5 Global Distribution

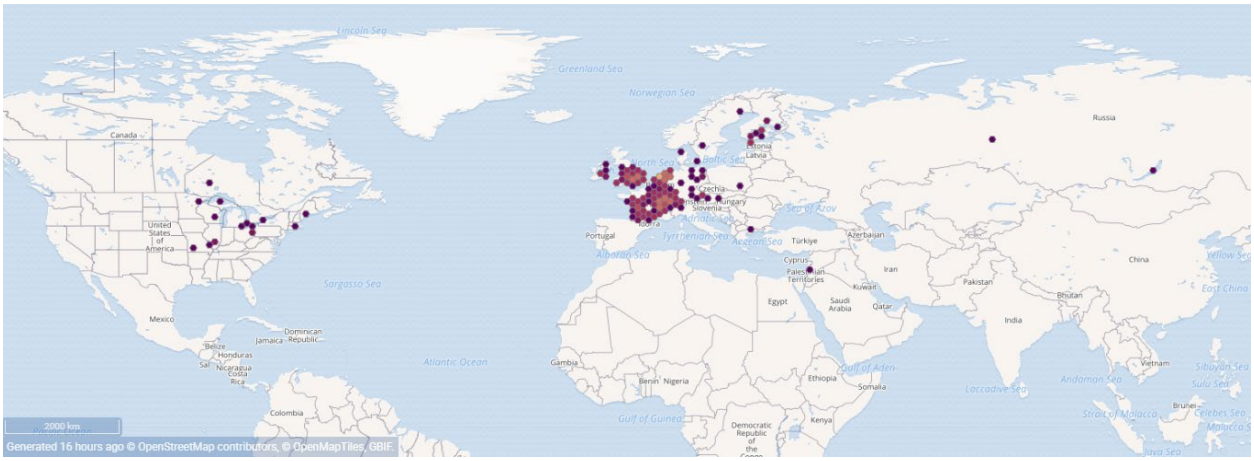

Figure 1. Reported global distribution of *Odhneripisidium moitessierianum*. Map from GBIF Secretariat (2025). Observations are reported from United States, Netherlands, France, United Kingdom, Switzerland, Finland, Austria, Germany, Ireland, Belgium, Greece, Russia, and Israel. No georeferenced occurrences were available for portions of the native range of *O. moitessierianum* within Kazakhstan, Turkey, or Syria. Observations in North America outside of the Great Lakes basin and southern Illinois as well as the observation in eastern Russia could not be verified as established populations and were excluded from the climate matching analysis.

6 Distribution Within the United States

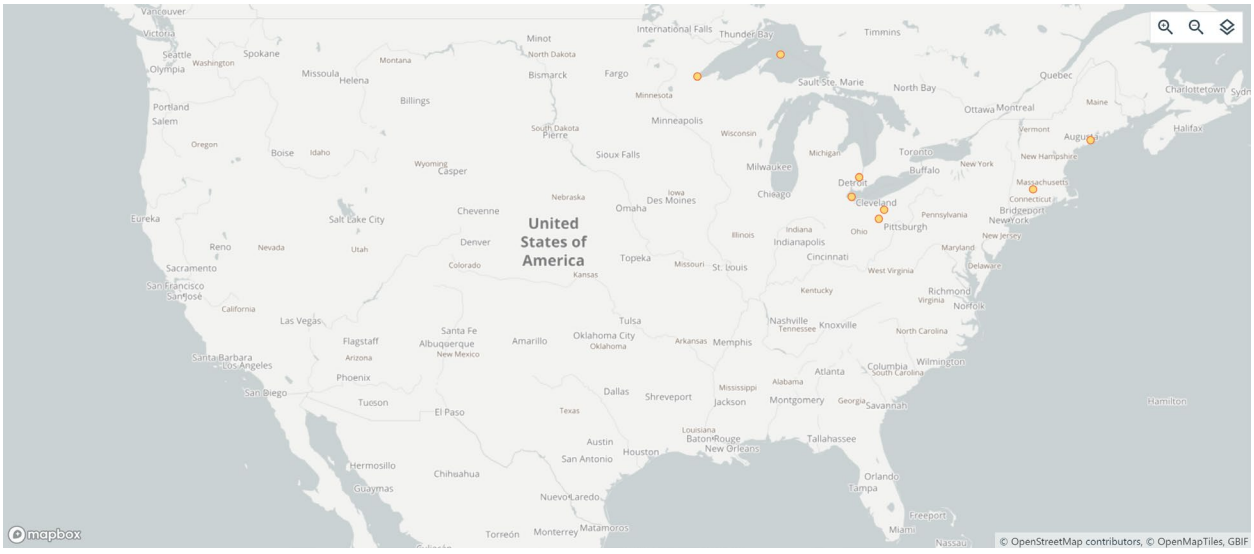

Figure 2. Reported distribution of *Odhneripisidium moitessierianum* in the United States. Map from GBIF-US (2023). Observations are reported from Wisconsin, Michigan, Ohio, Massachusetts, and Maine. Observations outside of the Great Lakes basin could not be verified as established populations and were excluded from the climate matching analysis.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Odhneripisidium moitessierianum* was generally medium to high in the contiguous United States. Areas of highest match were found in the Great Lakes, Midwest, Mid-Atlantic, New England, and in patches in the Appalachian and Rocky Mountain ranges. Areas of low match were found in the Pacific Northwest, Southwest, Peninsular Florida, the Gulf Coast, and in the Cascade-Sierra Nevada Mountains. The overall Climate 6 score (Sanders et al. 2023; 16 climate variables; Euclidean distance) for the contiguous United States was 0.833, indicating establishment concern for this species. The Climate 6 score is calculated as: (count of target points with scores ≥ 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 *Odhneripisidium moitessierianum* (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.

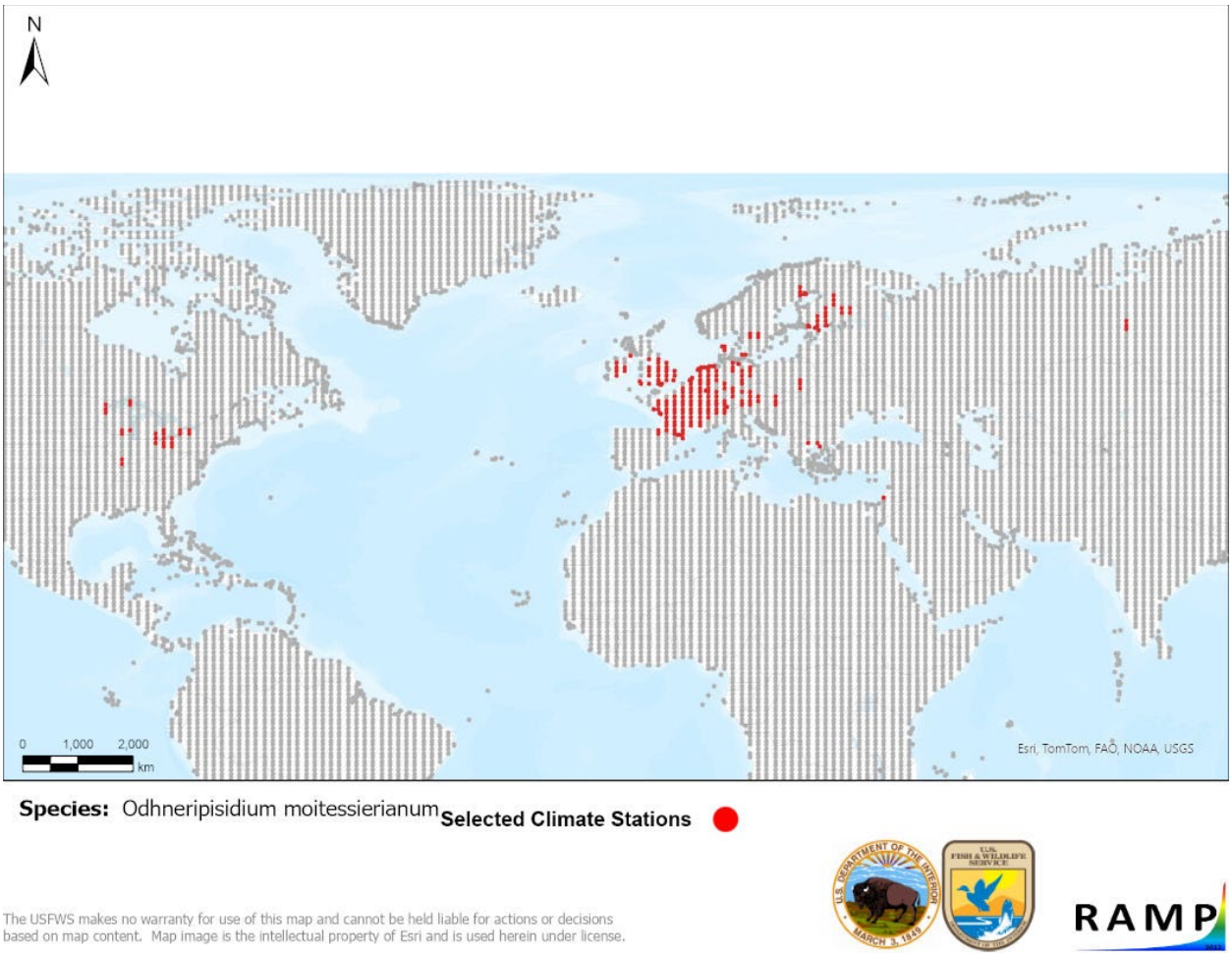

Figure 3. RAMP (Sanders et al. 2023) source map showing weather stations in North America, Europe, and Asia selected as source locations (red; United States, Netherlands, France, United Kingdom, Switzerland, Finland, Austria, Germany, Ireland, Belgium, Russia, and Israel) and non-source locations (gray) for *Odhneripisidium moitessierianum* 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.

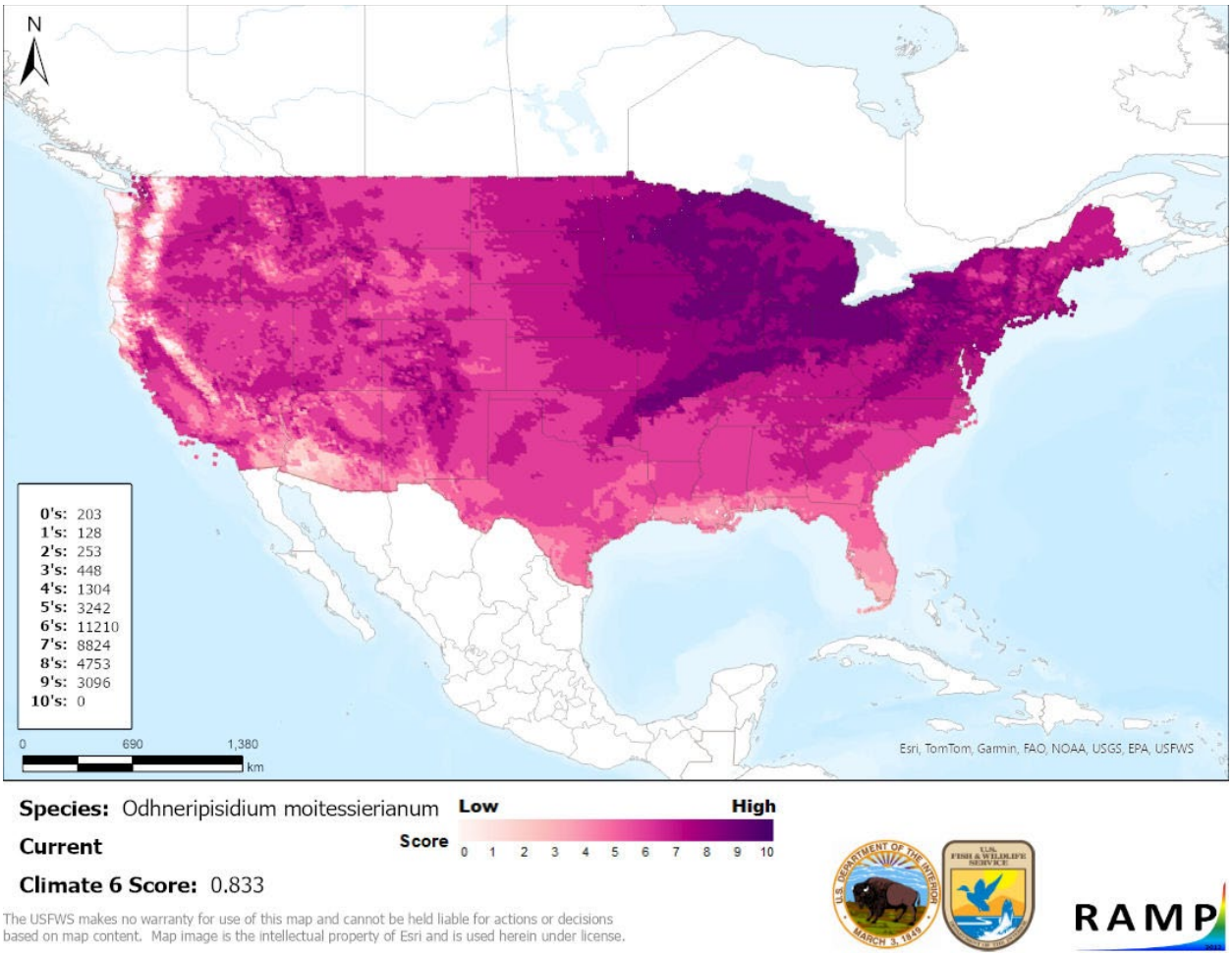

Figure 4. Map of RAMP (Sanders et al. 2023) climate matches for *Odhneripisidium moitessierianum* in the contiguous United States based on source locations reported by GBIF Secretariat (2025). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

8 Certainty of Assessment

The Certainty of Assessment for *Odhneripisidium moitessierianum* is classified as Low. Information is available on the biology, ecology, and distribution of *O. moitessierianum*. Records of introduction and establishment were found but there was no information available regarding impacts or lack of impacts.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Odhneripisidium moitessierianum, Pygmy Peaclam, is a small mollusk with a native range that spans from western Europe to western Russia and to some areas of the Middle East.
O. moitessierianum is found in a variety of sediments as well as in the littoral zone of lakes and wide slow-moving rivers. It has been introduced to and become established in the United States, likely introduced via international shipping. While *O. moitessierianum* is established outside its

native range, impacts of introductions remain unknown. The History of Invasiveness for *O. moitessierianum* is classified as Data Deficient due to a lack of evidence on either impacts of its introduction or lack of impacts, as well as no information found on its use in trade. The climate matching analysis for the contiguous United States indicated establishment concern for this species. Areas of highest match were found in the Great Lakes, Midwest, Mid Atlantic, New England, and in small areas of the Appalachian and Rocky Mountain ranges. The Certainty of Assessment for this ERSS is classified as Low due to limited information on the History of Invasiveness of *O. moitessierianum*. The Overall Risk Assessment Category for *O. moitessierianum* 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

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

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

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 *Odhneripisidium moitessierianum* was projected to occur in the Great Lakes region of the contiguous United States. Under some scenarios, patches of high match were projected to occur in the Colorado Plateau and Western Mountains. Areas of low climate match were projected to occur in the Northern Pacific Coast and Southern Florida regions. Under both SSP3 and SSP5, primarily in time step 2085, there was an area of low match projected in the south from the Desert Southwest to the southern Atlantic Coast. The Climate 6 scores for the individual future scenario models (figure A2) ranged from a low of 0.217 (model: UKESM1-0-LL, SSP5, 2085) to a high of 0.704 (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 (0.833, 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 one or more time step and climate scenarios, areas within California and the Southwest saw a moderate increase in the climate match relative to current conditions. No large increases were observed regardless of time step and climate scenarios. Under one or more time step and climate scenarios, areas within the Appalachian Range, Colorado Plateau, Great Lakes, Gulf Coast, Mid-Atlantic, Northern Plains, Southeast, Southern Plains, and Southwest saw a large decrease in the climate match relative to current conditions. Additionally, areas within the Great Basin, Northeast, Southern Atlantic Coast, Southern Florida, and Western Mountains saw a moderate decrease in the climate match relative to current conditions. Additional, very small areas of large or moderate change may be visible on the maps (figure A3).

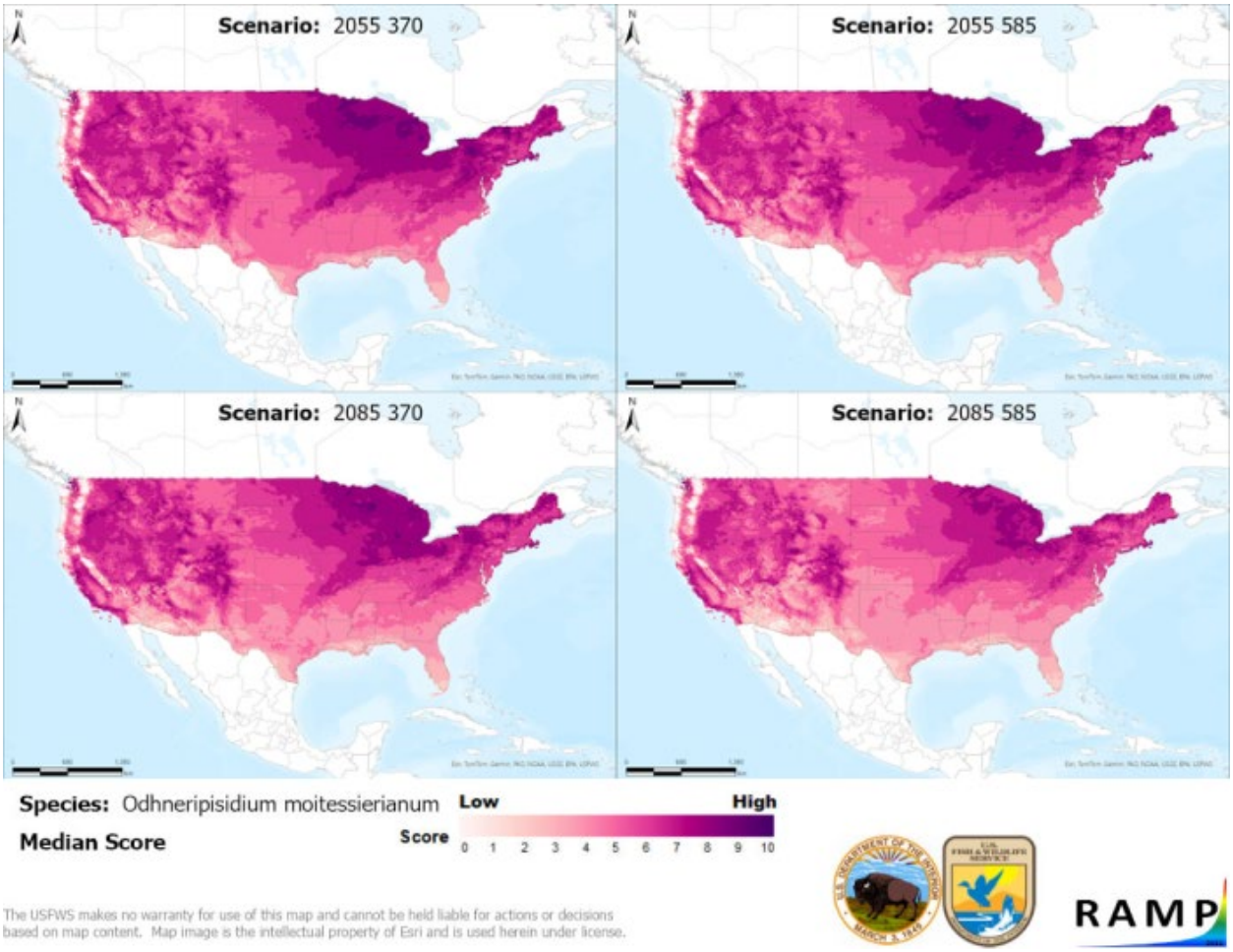

Figure A1. Maps of median RAMP (Sanders et al. 2023) climate matches projected under potential future climate conditions using five global climate models for *Odhneripisidium moitessierianum* in the contiguous United States. Climate matching is based on source locations reported by GBIF Secretariat (2025).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

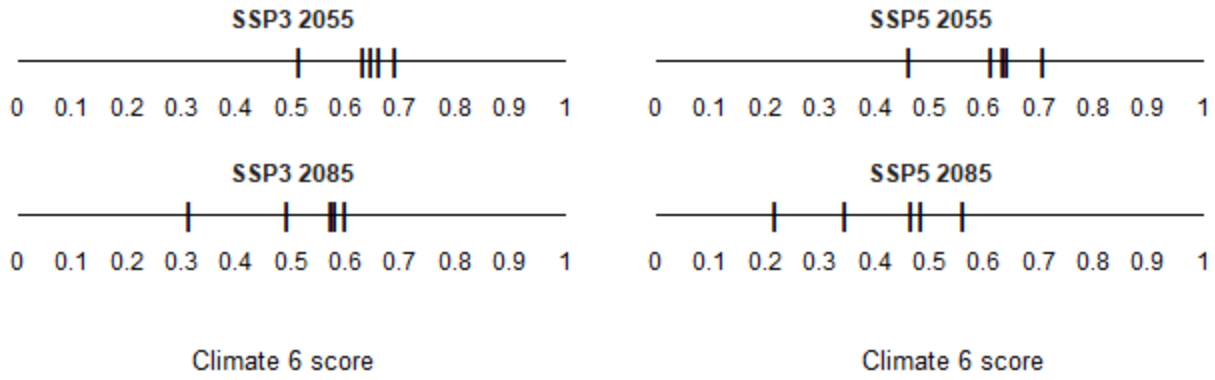

Figure A2. Comparison of projected future Climate 6 scores for *Odhneripisidium moitessierianum* in the contiguous United States for each of five global climate models under four combinations of Shared Socioeconomic Pathway (SSP) and time step. SSPs used (from left to right): SSP3, SSP5 (Karger et al. 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.

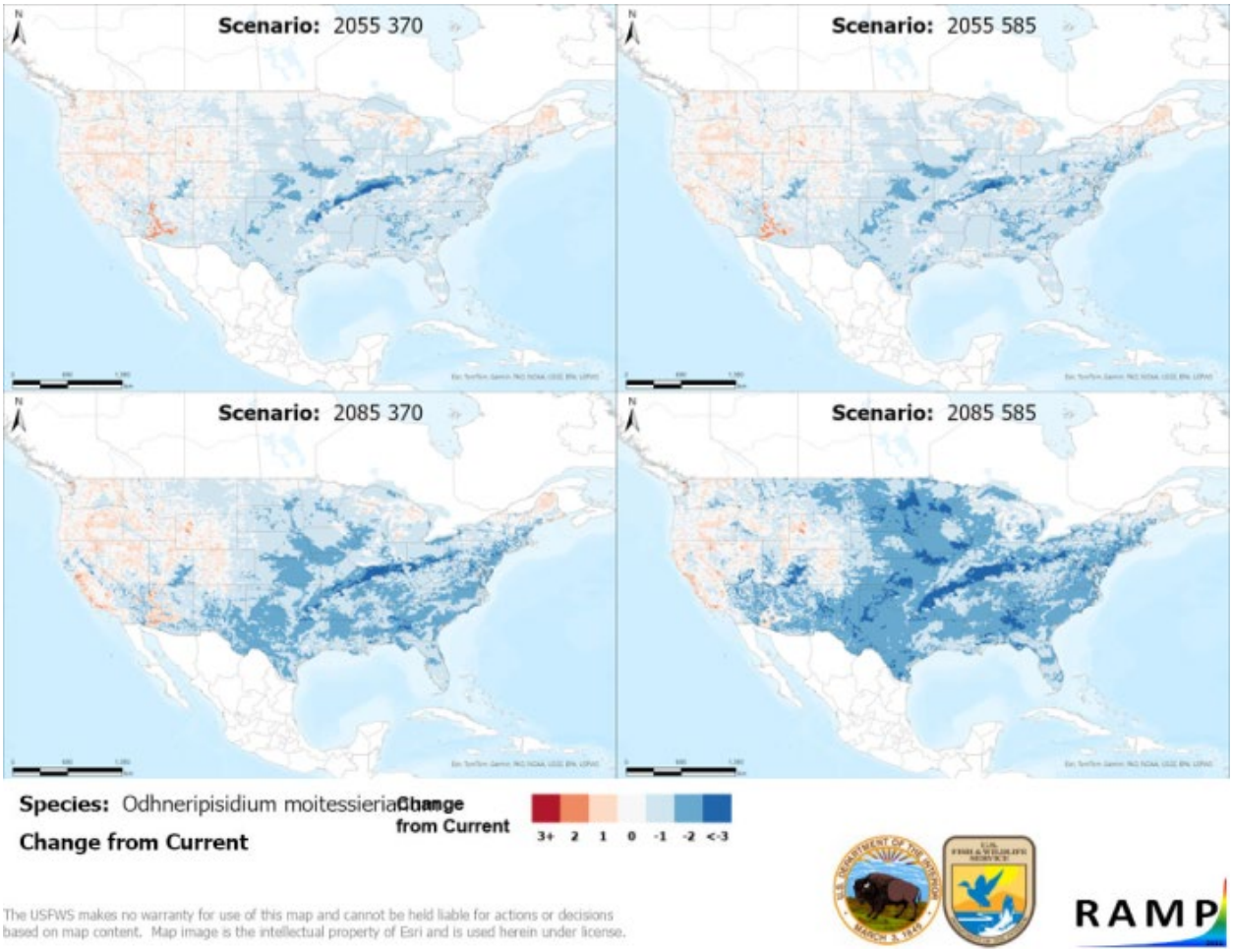

Figure A3. RAMP (Sanders et al. 2023) maps of the contiguous United States showing the difference between the current climate match target point score (figure 4) and the median target point score for future climate scenarios (figure A1) for *Odhneripisidium moitessierianum* based on source locations 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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