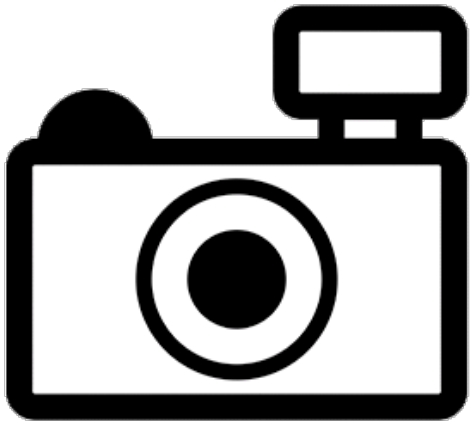
Pontogammarus palmatus (an amphipod, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, January 2022
Revised, February 2022
Web Version, 12/21/2022

Organism Type: Crustacean
Overall Risk Assessment Category: Uncertain



1 Native Range and Status in the United States

Native Range

From Grabowski (2022):

"Distribution […] Caspian"

From Copilaș-Ciocianu and Sidorov (2022):

"Distribution basin […]
Caspian"

Status in the United States

No records of *Pontogammarus palmatus* in trade or in the wild in the United States were found.

Means of Introductions in the United States

No records of *Pontogammarus palmatus* in the wild in the United States were found.

Remarks

Although some sources suggest *Pontogammarus palmatus* may be synonymous with *Dikerogammarus haemobaphes*, this assessment follows Valls Domedel (2019) and only incorporates information attributed to *P. palmatus* and *D. palmatus*, a recognized synonym. A separate published ERSS is available for *D. haemobaphes* (USFWS 2018).

From Pjatakova and Tarasov (1996):

"Summarizing, do not all the described forms of *Dikerogammarus villosus* (Sowinsky) and *D. haemobaphes* (and perhaps *D. aralensis* (Uljanin)) belong to a single species: *D haemobaphes*? We agree with Derzhavin (1925) and Birstein and Romanova (1968) who proposed uniting *D. villosus* and *D. palmatus* Martynov with *D. haemobaphes*."

Copilaș-Ciocianu and Sidorov (2022) indicate the taxonomic status of *Pontogammarus palmatus* as "doubtful." Adding the taxonomic remarks: "Poor description without illustrations."

Additional information for *Pontogammarus palmatus* was found during this assessment in languages other than English.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Valls Domedel et al. (2019):

"Animalia (Kingdom) > Arthropoda (Phylum) > Crustacea (Subphylum) > Multicrustacea (Superclass) > Malacostraca (Class) > Eumalacostraca (Subclass) > Peracarida (Superorder) > Amphipoda (Order) > Senticaudata (Suborder) > Gammarida (Infraorder) > Gammaridira (Parvorder) > Gammaroidea (Superfamily) > Pontogammaridae (Family) > *Pontogammarus* (Genus) > *Pontogammarus palmatus* (Species)"

"Status accepted
Rank Species"

"Synonymised names *Dikerogammarus palmatus* Martynov, 1925"

Size, Weight, and Age Range

No information on size, weight, and age range was found for *Pontogammarus palmatus.*

Environment

No information on environmental conditions was found for *Pontogammarus palmatus.*

Climate
No information on climate was found for *Pontogammarus palmatus*.

Distribution Outside the United States
Native
From Grabowski (2022):

"Distribution […] Caspian"

From Copilaș-Ciocianu and Sidorov (2022):

"Distribution basin […]
Caspian"

Introduced
No records of introductions were found for *Pontogammarus palmatus*.

Means of Introduction Outside the United States
No records of introductions were found for *Pontogammarus palmatus*.

Short Description
No short description was found for *Pontogammarus palmatus*.

Biology
No information on the biology of *Pontogammarus palmatus* was found.

Human Uses
No information on human uses was found for *Pontogammarus palmatus*.

Diseases
No records of OIE-reportable diseases (OIE 2021) were found for *Pontogammarus palmatus*.

No information is available on diseases associated with *Pontogammarus palmatus*.

Threat to Humans
No information on threats to humans was found for *Pontogammarus palmatus*.

3 Impacts of Introductions
No records of introductions were found for *Pontogammarus palmatus*; therefore, there is no information on impacts of introduction to evaluate.

4 History of Invasiveness

No records of introductions were found for *Pontogammarus palmatus*; therefore, the history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution

Figure 1. Known global distribution of *Pontogammarus palmatus*. *P. palmatus* has been reported generally from the Caspian Sea (red). Georeferenced occurrences have not been reported and it is uncertain where in the Caspian Sea basin this species may occur. Map from Google Earth (2021) based on the native range described by Grabowski (2022) and Copilaș-Ciocianu and Sidorov (2022).

6 Distribution Within the United States

No records of *Pontogammarus palmatus* in the wild in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Pontogammarus palmatus* in the contiguous United States was generally medium to high. High matches stretched from western Texas through the Intermountain West. Additionally, smaller areas of high match were found in the Midwest surrounding the upper Great Lakes; central Appalachia; and along the central coast of Maine. East of the continental divide, the climate match was generally medium with low matches occurring in small areas along the Gulf Coast and the southern tip of Florida. The largest area of low match was found

along the Pacific Coast and Cascade-Sierra Mountains. The overall Climate 6 score (Sanders et al. 2021; 16 variables; Euclidean distance) was 0.681, high (scores greater than or equal to 0.103, are classified as high). Most States had high individual scores except for Louisiana, Massachusetts, Maine, Mississippi, North Carolina, New Hampshire, and Vermont which had medium individual scores, and Connecticut, Delaware, Florida, New Jersey, and Rhode Island, which had low individual scores. The climate match was based on the generalized native range (i.e., Caspian Sea) described by Grabowski (2022) and Copilaș-Ciocianu and Sidorov (2022) because no georeferenced occurrences were available. It is uncertain where in the Caspian Sea basin this species may occur, and no information was found characterizing this species' ability to survive in freshwater. The climate match does not account for salinity tolerance.

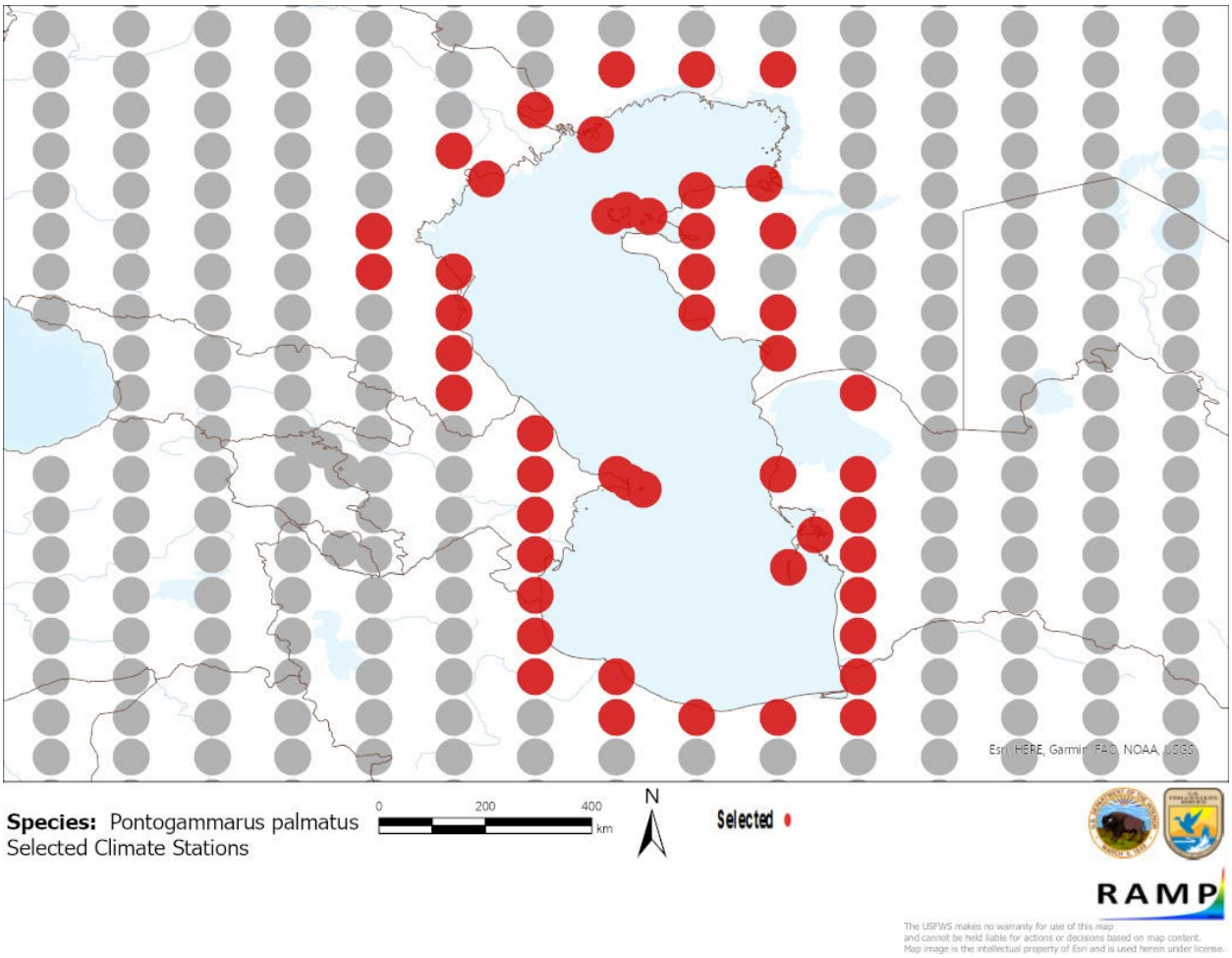


Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in the Caspian Sea region selected as source locations (red; Azerbaijan, Iran, Kazakhstan, Russia, Turkmenistan) and non-source locations (gray) for *Pontogammarus palmatus* climate matching. Source locations are within 100 km of the Caspian Sea and do not represent the locations of occurrences as no georeferenced data was found for *P. palmatus*. Source locations based on the generalized native range described by Grabowski (2022) and Copilaș-Ciocianu and Sidorov (2022).

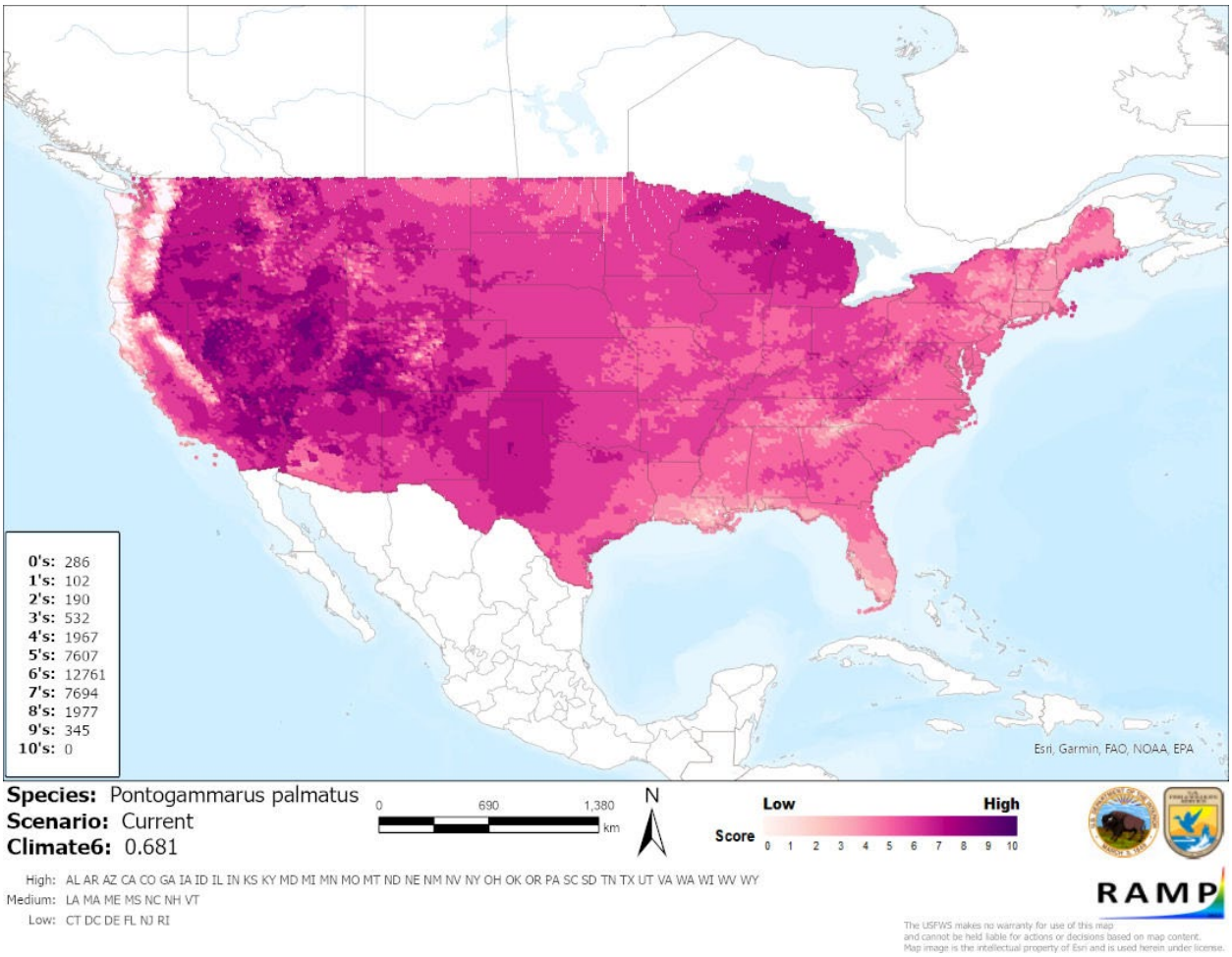


Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Pontogammarus palmatus* in the contiguous United States based on source locations inferred from the generalized native range described by Grabowski (2022) and Copilaș-Ciocianu and Sidorov (2022). Counts of climate match scores are tabulated 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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

The certainty of this assessment is low. There is almost no information available for *Pontogammarus palmatus*. Information on its biology could not be found, and no georeferenced points where available; information regarding its distribution was limited to a generalized range

(i.e., Caspian Sea). It is uncertain where in the Caspian Sea basin this species may occur, reducing the certainty of the climate matching. The climate matching does not account for any salinity requirements the species may have. Additionally, the original description of this species is not in English and was not available during this assessment. There is taxonomic confusion in the literature, with some noting that *P. palmatus* may be synonymous with *Dikerogammarus haemobaphes.*

9 Risk Assessment

Summary of Risk to the Contiguous United States

Pontogammarus palmatus is an amphipod reportedly from the Caspian Sea basin. Little information is available for this species, and georeferenced occurrences are currently lacking. No introductions were found for *P. palmatus*. The history of invasiveness is classified as No Known Nonnative Population. The climate match for the contiguous United States was categorically high with the highest matches occurring in the Intermountain West and Upper Midwest. The certainty of this assessment is low due to a lack of information, potential taxonomic uncertainty, lack of georeferenced observations to use in the climate match, and unknown salinity requirements. The overall risk assessment category for *P. palmatus* 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:** Some sources regard this species as synonymous with *Dikerogammarus haemobaphes*.
- **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.

Copilaș-Ciocianu D, Sidorov D. 2022.Taxonomic, ecological and morphological diversity of Ponto-Caspian gammaroidean amphipods: a review. Organisms Diversity & Evolution 22:285–315. doi:10.1007/s13127-021-00536-6.

Google. 2021. Google Earth desktop. Map data from SIO, NOAA, U.S. Navy, NGA, GEBCO, Landsat/Copernicus.

Grabowski M. 2022. Check-list for Ponto-Caspian amphipods (brackish & freshwater). Caspian Sea Biodiversity Project. Available: https://www.zin.ru/projects/caspdiv/caspian_amphipods.html (January 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/ (January 2022).

Pjatakova GM, Tarasov AG. 1996. Caspian Sea amphipods: biodiversity, systematic position and ecological peculiarities of some species. International Journal of Salt Lake Research 5:63–79.

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

[USFWS] U.S. Fish & Wildlife Service. 2018. Demon Shrimp (*Dikerogammarus haemobaphes*). Ecological Risk Screening Summary. U.S. Fish & Wildlife Service. Available: https://www.fws.gov/fisheries/ans/erss/highrisk/ERSS-Dikerogammarus-haemobaphes-FINAL-July2018.pdf (January 2022).

Valls Domedel G. 2019. *Pontogammarus palmatus* (Martynov, 1925). World Register of Marine Species. Available: https://www.marinespecies.org/aphia.php?p=taxdetails&id=550252#sources (February 2022).

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.

Birstein YA, Romanova NN. 1968. Amphipoda. Pages 241–289 in Birstein YA, Vinogradova LG, Kondakova NN, editors. Atlas bespozvonochnykh Kaspiiskogo morya. Moscow: Pishevaya Promyshlennost.

Derzhavin AN. 1925. Materials of the Ponto-Azov carcinofauna (Mysidacea, Cumacea, Amphipoda). Russkiy hidrobiologicheskyi Zhurnal 4(1-2):10–35.