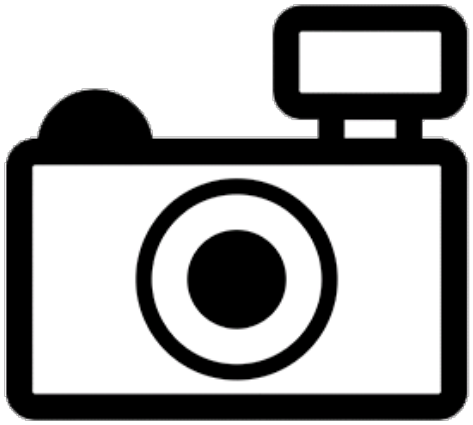
Pontogammarus aestuarius (an amphipod, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2022
Revised, March 2022
Web Version, 8/18/2022

Organism Type: Amphipod
Overall Risk Assessment Category: Uncertain



1 Native Range and Status in the United States

Native Range

From Özbek et al. (2004):

"The amphipod *Pontogammarus aestuarius* (Derzhavin, 1924) has a Ponto-Caspian distribution, extending from the Caspian Sea, via the Sea of Azov and the Black Sea to the Caucausus (BARNARD & BARNARD 1983)."

"A total of 14 specimens of *P. aestuarius* were sampled from Taşkısığı Lake [Anatolia], including five adult males."

Status in the United States

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

Means of Introductions in the United States

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

Remarks

From Özbek et al. (2004):

"In earlier studies (CARAUŞU 1943, CARAUŞU et al. 1955), *P. aestuarius* was listed as a subspecies of *Pontogammarus robustoides*, but is now classified as an independent species of *Pontogammarus* (BARNARD & BARNARD 1983)."

The valid name, *Pontogammarus aestuarius*, as well as the synonym subspecies name *Pontogammarus robustoides aestuarius*, were used for information searches for this screening.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Valls Domedel (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 aestuarius* (Species)"

"Status accepted"

Size, Weight, and Age Range

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

Environment

From Valls Domedel (2019):

"Environment […] fresh […]"

From Özbek et al. (2004):

"As a result of the physico-chemical measurements made in situ, the following parameters were obtained: Temperature: 29.5°C, pH 7.43, dissolved oxygen: 9.8 mg/l, oxygen saturation: 110%, salinity: 0.3‰, conductivity: 631 µS (at 25°C)."

Climate

No information on climate was found for *Pontogammarus aestuarius*.

Distribution Outside the United States

Native

From Özbek et al. (2004):

"The amphipod *Pontogammarus aestuarius* (Derzhavin, 1924) has a Ponto-Caspian distribution, extending from the Caspian Sea, via the Sea of Azov and the Black Sea to the Caucausus (BARNARD & BARNARD 1983)."

"A total of 14 specimens of *P. aestuarius* were sampled from Taşkısığı Lake [Anatolia], including five adult males."

Introduced

According to GBIF Secretariat (2022) there is a record of introduction of *Pontogammarus aestuarius* into Hungary, but the exact location could not be determined.

Means of Introduction Outside the United States

No information on a means of introduction outside the United States was found for *Pontogammarus aestuarius*.

Short Description

From Özbek et al. (2004):

"Antenna 1 (Fig. 1A[in source material]) with robust peduncle segments, 21-segmented flagellum, and 5-segmented accessory flagellum. On the segments of accessory flagellum, some small bifid spines and, on most of the flagellar segments, aesthetascs were observed. The setation is poor. – Antenna 2 (Fig. 1B) with straight gland cone and 11-segmented flagellum. Especially 3rd to 5th peduncle segments with many setae, the ventral ones longer than the diameter of the segment on which they are placed."

"Gnathopod 1 (Fig. 1C): Coxal plate slightly widened in distal portion, rounded and with long setae along the distal margin. Carpus triangular. Propodus ovate; palmar angle spines and a mid-palmar spine observed. – Gnathopod 2 (Fig. 3 A): Coxal plate with many long setae on the rounded distal margin. Basis with 3 long anterior and many long posterior setae. Carpus triangular. Propodus elliptical; 1 mid-palmar and 5 palmar angle spines; anterior margins of both propodus almost bare."

"Pereiopod 3 (Fig. 2B) with rectangular, ventrally setose, coxal plate. Basis with 4 long anterior and many long posterior setae. Ischium, merus, carpus and propodus with long setae along their posterior margins. The setae along the posterior margin of carpus are ungrouped while the others are in tufts. In addition to long setae, there are 3 spines on the posterior margin of carpus. – Pereiopod 4 (Fig. 2C) with sub-quadrate, ventrally setose, coxal plate. Basis with 4 long anterior and many long posterior setae. Posterior margin of ischium, merus, carpus and propodus with numerous long setae. The setae implanted along the posterior margin of merus and carpus are ungrouped; three posterodistal spines present on the posterior margin of carpus. Carpus widened. – Pereiopod 5 (Fig. 3A): Basis with slightly concave posterior margin; anterior margin with long

setae and some spines; posterior margin with short setae; 6–7 groups of long setae present on the inner surface. Merus with long setae on both margins. Carpus with long setae on anterior margin only. – Pereiopod 6 (Fig. 3B): Basis with concave posterior margin; posterodistal corner not produced; many groups of long setae on the inner surface. Merus and carpus with long setae intermixed with spines on both margins. – Pereiopod 7 (Fig. 3C): Basis with strongly produced and overhanging posterodistal corner; concave posterior margin with many setae; numerous groups of long setae exist on the inner surface of the basal segment. Armature of remaining segments more or less as in pereiopod 6."

Biology
No information on biology was found for *Pontogammarus aestuarius*.

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

Diseases
No records of OIE-reportable diseases (OIE 2022) were found for *Pontogammarus aestuarius*. No information was found on diseases for *Pontogammarus aestuarius*.

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

3 Impacts of Introductions
There was an introduction of *Pontogammarus aestuarius* recorded in Hungary but where this introduction occurred, when, and if there were any impacts was not found.

4 History of Invasiveness
The history of invasiveness is classified as No Known Nonnative Population. There was a record of *Pontogammarus aestuarius* outside of its native range in Hungary but there was no evidence found suggesting that establishment occurred. There were also no impacts recorded with this introduction. No trade history or trade volume could be found for *Pontogammarus aestuarius*.

5 Global Distribution

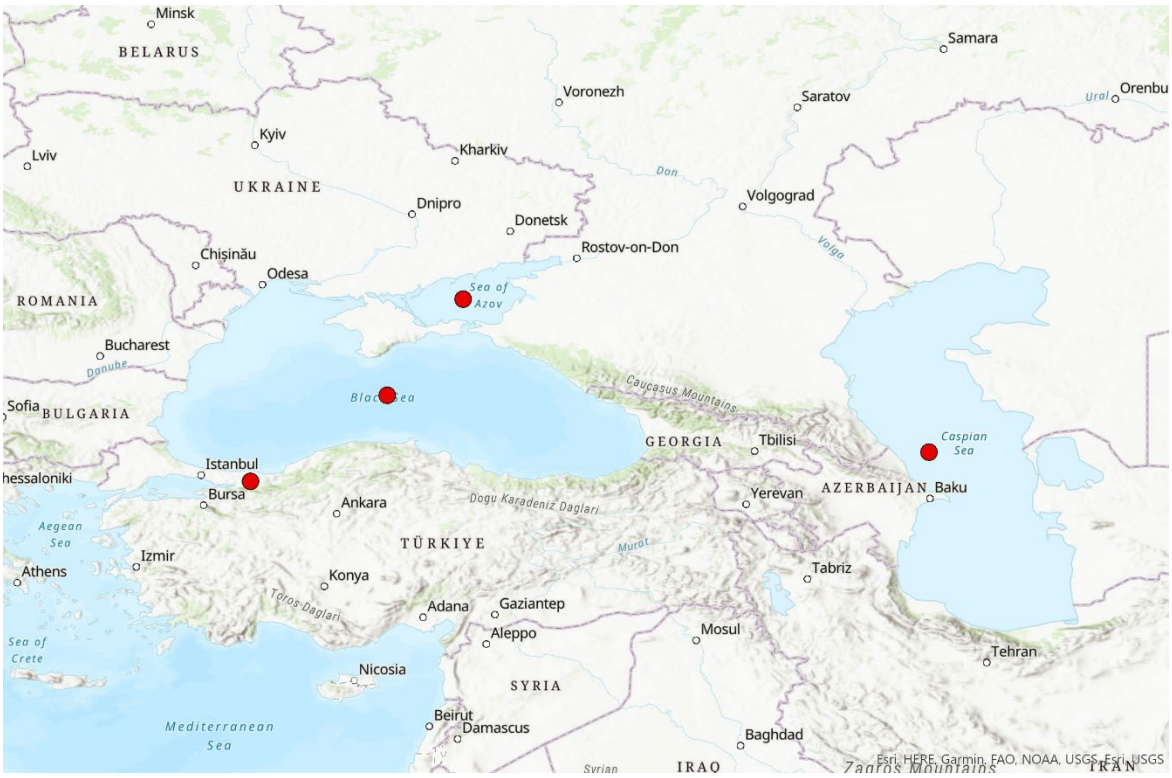


Figure 1. Known general global distribution of *Pontogammarus aestuarius*. Observations are reported from Turkey. The remainder of the range encompasses the Black Sea, the Sea of Azov, and the Caspian Sea. Map made with ArcPro v2.9 ©Esri (2022) based on locations described by Özbek et al. (2004). Only general location information was found in the literature for *Pontogammarus aestuarius*, therefore source points will be added in for Taşkısığı Lake, around the Black Sea, Sea of Azov, and the Caspian Sea to the Caucasus.

6 Distribution Within the United States

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

7 Climate Matching

Summary of Climate Matching Analysis

There was a mix of high, medium, and low match found throughout the contiguous United States. The highest match was found around the Great Lakes and scattered throughout the Rocky Mountain range. The lowest match was found along the northern west coast, scattered in the northeast, and in the Gulf Coast. The overall Climate 6 score (Sanders et al. 2021; 16 climate variables; Euclidean distance) for the contiguous United States was 0.641, High (scores of 0.103 or greater are classified as high). All States had a high individual Climate 6 score except for Maine, North Carolina, and New Hampshire, which had medium individual Climate 6 score, and Florida which had a low individual Climate 6 score.

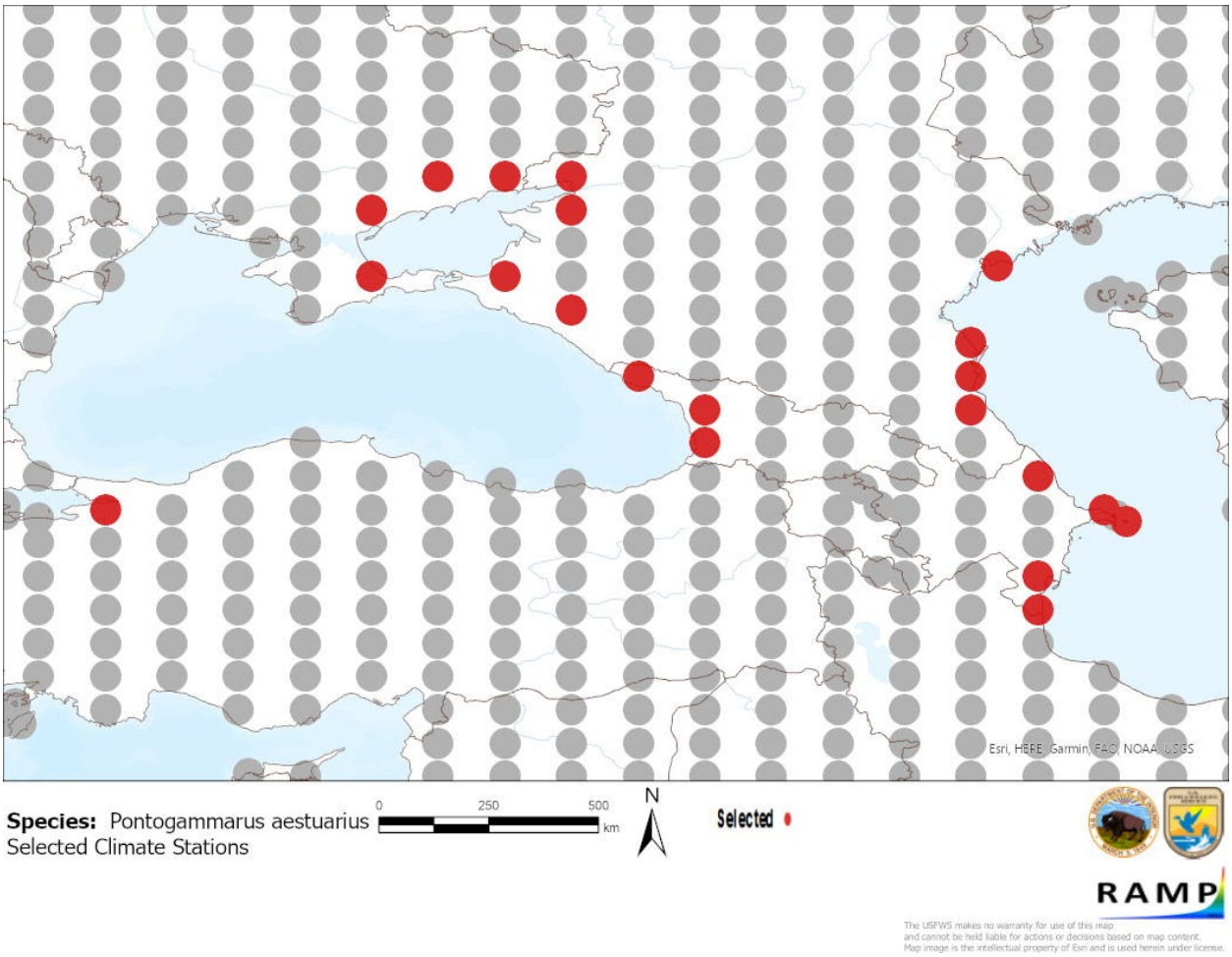


Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in the Ponto Caspian Sea region selected as source locations (red; Russia, Azerbaijan, Georgia, Ukraine, and Turkey) and non-source locations (gray) for *Pontogammarus aestuarius* climate matching. Source locations from Özbek et al. (2004). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

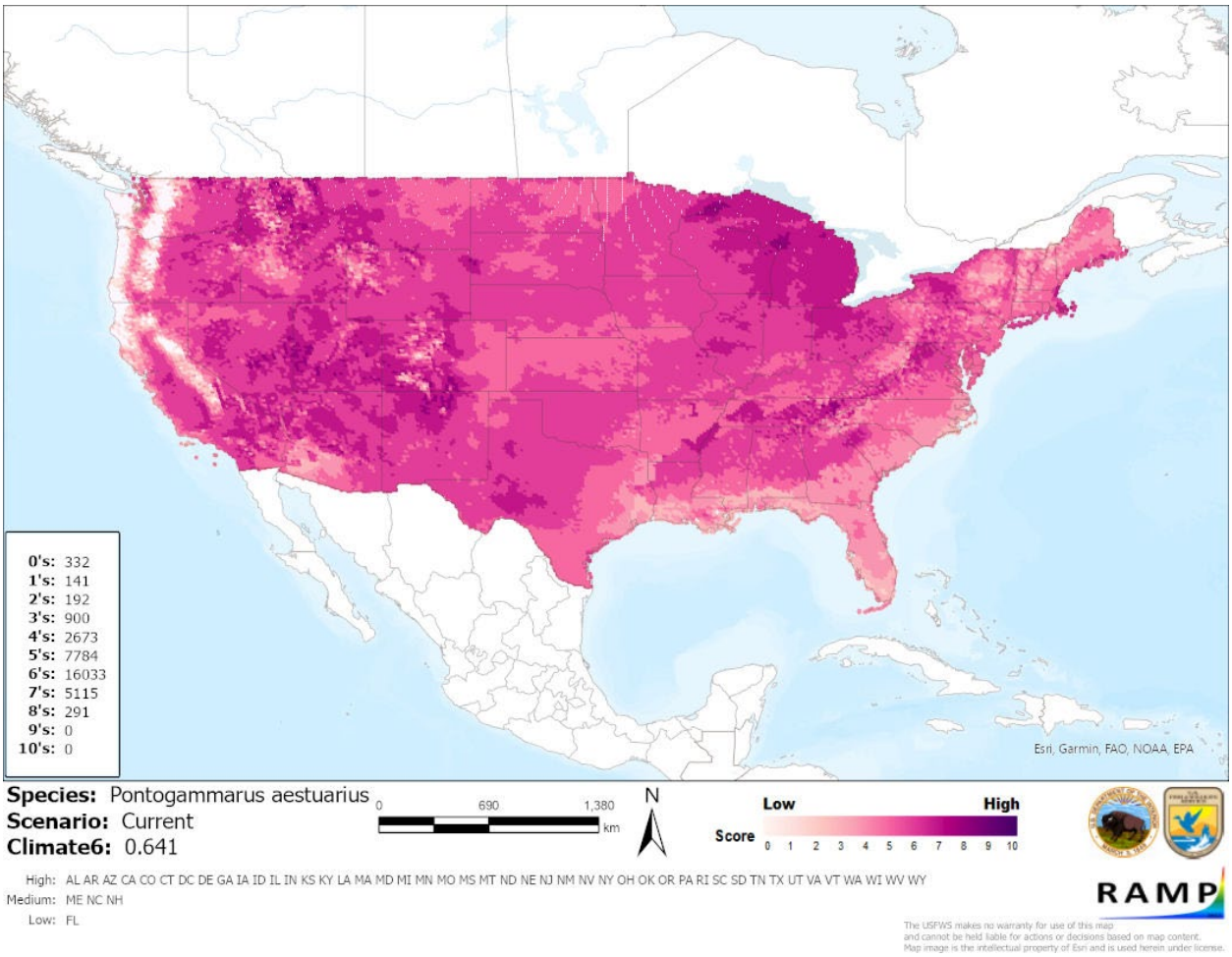


Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Pontogammarus aestuarius* in the contiguous United States based on source locations reported by Özbek et al. (2004). Counts of climate match scores are tabulated on the left. 0/Light Pink = Lowest match, 10/Dark Purple = Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

The certainty of assessment for *Pontogammarus aestuarius* is Low. There was very minimal information available on this species biology and distribution. There was one recorded introduction of *Pontogammarus aestuarius* into Hungary, but it could not be determined where

in Hungary this introduction happened or if it was able to become established. There were also no impacts of introductions found for this species and there was no associated trade history.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Pontogammarus aestuarius is a freshwater amphipod native to the Ponto-Caspian Sea region. Very little information was found for this species regarding its biology and specific native range. *Pontogammarus aestuarius* has been recorded as introduced into Hungary but there was no scientific evidence found to back up this sighting and the original source did not provide any information on if establishment occurred or when this introduction happened. There were also no impacts of introductions found and no documented trade history. The History of Invasiveness is classified as No Known Nonnative Population. The overall Climate 6 score for *Pontogammarus aestuarius* was High. Most of the country had a locally medium to high climate match except for the middle and northern west coast which had low local climate matches. The certainty of assessment is Low because of the general lack of information for *Pontogammarus aestuarius* and the lack of impacts of introductions information found. The overall risk assessment category 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.
- **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.

Esri. 2022. ArcGIS Pro 2.9.3. Redlands, California: Environmental Systems Research Institute. Map data from Esri.

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Pontogammarus aestuarius* (Derzhavin, 1924). Copenhagen: Global Biodiversity Information Facility. Available: https://www.gbif.org/species/4417072 (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).

Özbek M, Balık S, Ustaoğlu MR. 2004. An amphipod species new for the Turkish fauna: *Pontogammarus aestuarius* (Derzhavin, 1924). Zoology in the Middle East 32:63–68.

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

Valls Domedel G. 2019. *Pontogammarus aestuarius*. World Register of Marine Species. Available: https://www.marinespecies.org/aphia.php?p=taxdetails&id=550249 (March 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.

Barnard JL, Barnard CM. 1983. Freshwater Amphipoda of the world. Volume I. Evolutionary Patterns, I-VIII, IX-XVIII, 1-358; Vol. II. Handbook and Bibliography, XIX, 359- 830.

Carauşu S. 1943. Amphipodes de Roumanie. 1. Gammaridés de type Caspien. – Monographia, Institutul de Cercetări Piscicole al României 1:1–293.

Carauşu S, Dobreanu E, Manolache C. 1955. Amphipoda forme salmastre şi de apa dulce. Fauna. – Fauna Republicii Populare Romîne, Crustacea 4(4):1–409.