

***Ponticola bathybius* (a goby, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2012

Revised, August 2018

Web Version, 10/28/2019



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<http://eol.org/pages/215017/overview>. (August 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018a):

“Former USSR and Asia: Caspian Sea. Restricted to brackish water habitats [Patzner et al. 2011]”

According to Naseka and Bogutskaya (2009), *P. bathybius* is endemic to the whole Caspian Sea.

Status in the United States

This species has not been reported as introduced or established in the United States. This species was not found in the aquarium trade.

Means of Introductions in the United States

This species has not been reported as introduced or established in the United States.

Remarks

According to Eschmeyer et al. (2018), historical synonyms for *P. bathybius* include *Gobius bathybius*, *Chasar bathybius*, and *Neogobius bathybius*. All synonyms were used to search for information for this report.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Froese and Pauly (2018b):

“Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > Actinopterygii (Class) > Perciformes (Order) > Gobioidae (Suborder) > Gobiidae (Family) > Gobiinae (Subfamily) > *Ponticola* (Genus) > *Ponticola bathybius* (Species)”

From Eschmeyer et al. (2018):

“*bathybius*, *Gobius* [...] Current status: Valid as *Ponticola bathybius* (Kessler 1877).”

Size, Weight, and Age Range

From Froese and Pauly (2018a):

“Max length : 29.3 cm TL male/unsexed; [Abdoli et al. 2009]”

Environment

From Froese and Pauly (2018a):

“Brackish; demersal; depth range ? - 198 m [Eschmeyer 1998].”

From Bani et al. (2013):

“This species is commonly found at the depth of 75 m and perhaps deeper in cold conditions.”

Climate/Range

From Froese and Pauly (2018a):

“Temperate”

Distribution Outside the United States

Native

From Froese and Pauly (2018a):

“Former USSR and Asia: Caspian Sea.”

According to Naseka and Bogutskaya (2009), *P. bathybius* is endemic to the whole Caspian Sea.

Introduced

From Eschmeyer et al. (2018):

“introduced in Aral Sea, Eurasia.”

According to Mitrofanov and Mamilov (2015), *P. bathybius* is not established in the Aral Sea.

Means of Introduction Outside the United States

There is no information available on means of introduction outside the United States.

Short Description

From FEOW (2015):

“*Neogobius bathybius* [...] differs from other gobies by its slender body and head, and grey monotonous coloration.”

Biology

From Bani et al. (2013):

“It prefers sand and shell bottoms and occasionally, in smaller numbers, can be found on firm silt.”

From FEOW (2015):

“Its biology is poorly known.”

From Tajbakhsh et al. (2016):

“Totally, six preys [*sic*] taxa were identified in the digestive tract of *P. bathybius* in all localities: *Neogobius melanostomus*, *N. pallasii*, *Clupeonella* sp., *Atherina boyeri*, *Cardium* sp. and unrecognizable gobies [*sic*] fish. [...] feeding in deepwater goby is heterogeneous, with most predators specializing in *N. pallasii* for Salmanshahr (IRI [Index of Relative Importance] = 51.44%) and unrecognizable gobiid fish for Bandar-e-Anzali and Miankaleh localities (IRI= 55.71% and 53.41%, respectively) [...] *P. bathybius* has a narrow dietary niche in all localities.”

Human Uses

There are no human uses reported.

Diseases

No OIE-reportable diseases (OIE 2019) have been documented in this species.

According to Pazooki and Masoumian (2012), *P. bathybius* (as *N. bathybius*) is parasitized by the nematodes *Cucullanus sphaerocephalus*, *Eustrongilides excisus*, and *Raphidascaris acus*, and the acanthocephalan *Corynosoma strumosum*.

From Rezaei et al. (2013):

“*Dichelyne minutus* (Rudolphi, 1819) is a typical and widespread parasite of Gobiidae. In this research, histopathological changes in the intestinal wall of *Neogobius bathybius* (Kessler) (Actinopterygii: Gobiidae) due to infection caused by *D. minutus* were studied. [...] These changes may disrupt normal mucosal integrity, cause local blockage of the alimentary canal, and disrupt the overall absorption efficiency of the intestine, and thus the fish’s growth. Therefore, these alterations are significant enough to decrease the level of fitness of the fish by restricting its food intake. Finally, these changes may result in a weaker immune system and fatality.”

Threat to Humans

From Froese and Pauly (2018a):

“Harmless”

3 Impacts of Introductions

There is no information available on impacts of introductions.

4 Global Distribution

No georeferenced occurrences were available for this species from GBIF Secretariat (2019).



Figure 1. Location of the Caspian Sea within Western Asia. According to Naseka and Bogutskaya (2009), *P. bathybius* is endemic to the whole Caspian Sea. Map image: Kmusser. Licensed under Creative Commons (BY-SA 2.5). Available: <https://commons.wikimedia.org/wiki/File:Caspianseamap.png>. (September 2019).

5 Distribution Within the United States

There are no known occurrences within the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.162, which is a high match. (Scores of 0.103 or greater are classified as high.) The climate match was high in the central Rocky Mountains, Great Basin, and southeastern California. Medium matches surrounded the high match areas and extended into the Great Plains and western Great Lakes regions. Most of the eastern United States and Pacific Northwest had a low climate match. Georeferenced occurrences were not available to inform source locations for this climate matching analysis, so source locations were estimated from a verbal description of the species established range.

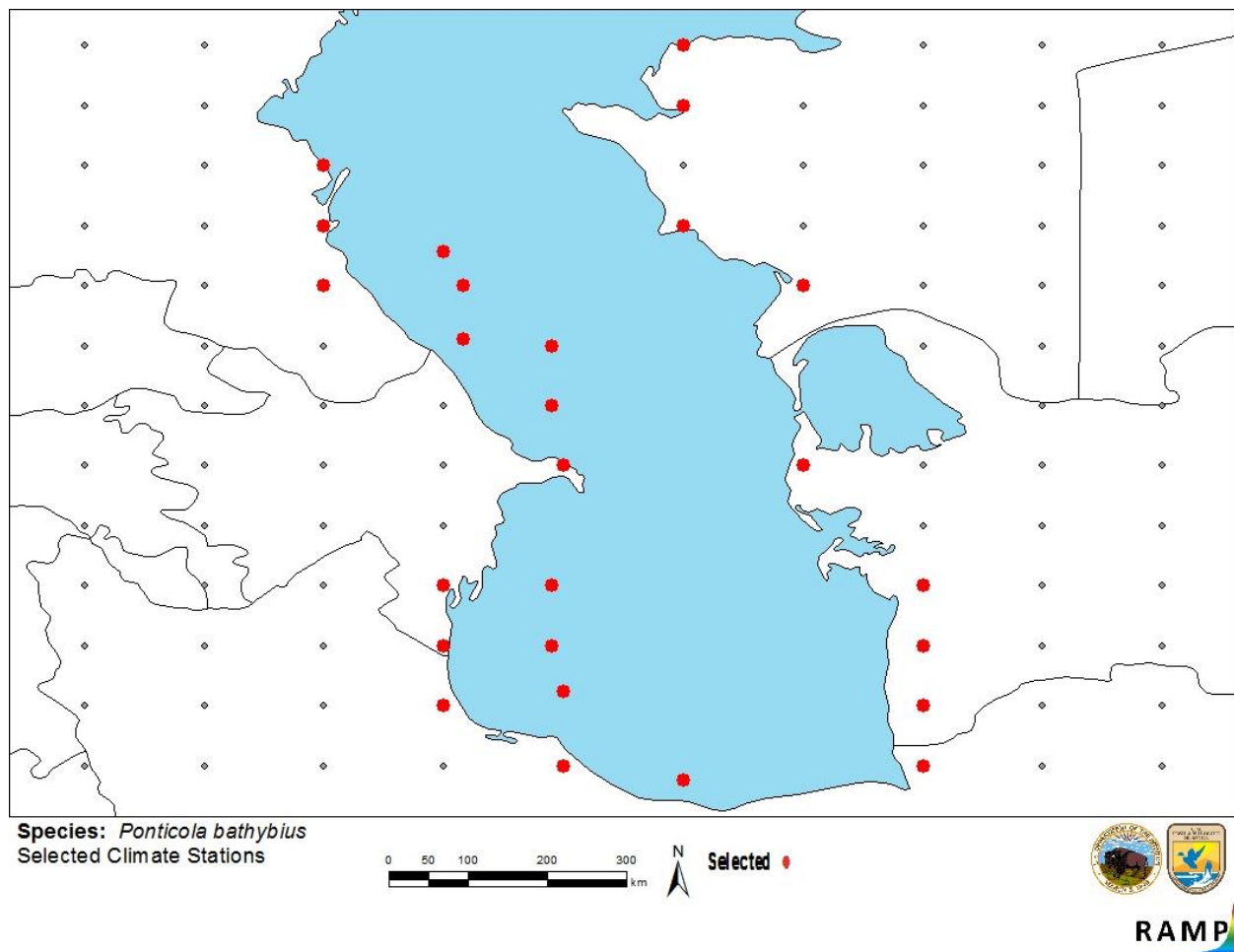


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Caspian Sea coastline of Russia, Azerbaijan, Iran, Turkmenistan, and Kazakhstan) and non-source locations (gray) for *Ponticola bathybius* climate matching. Source locations estimated from verbal description in Froese and Pauly (2018a).

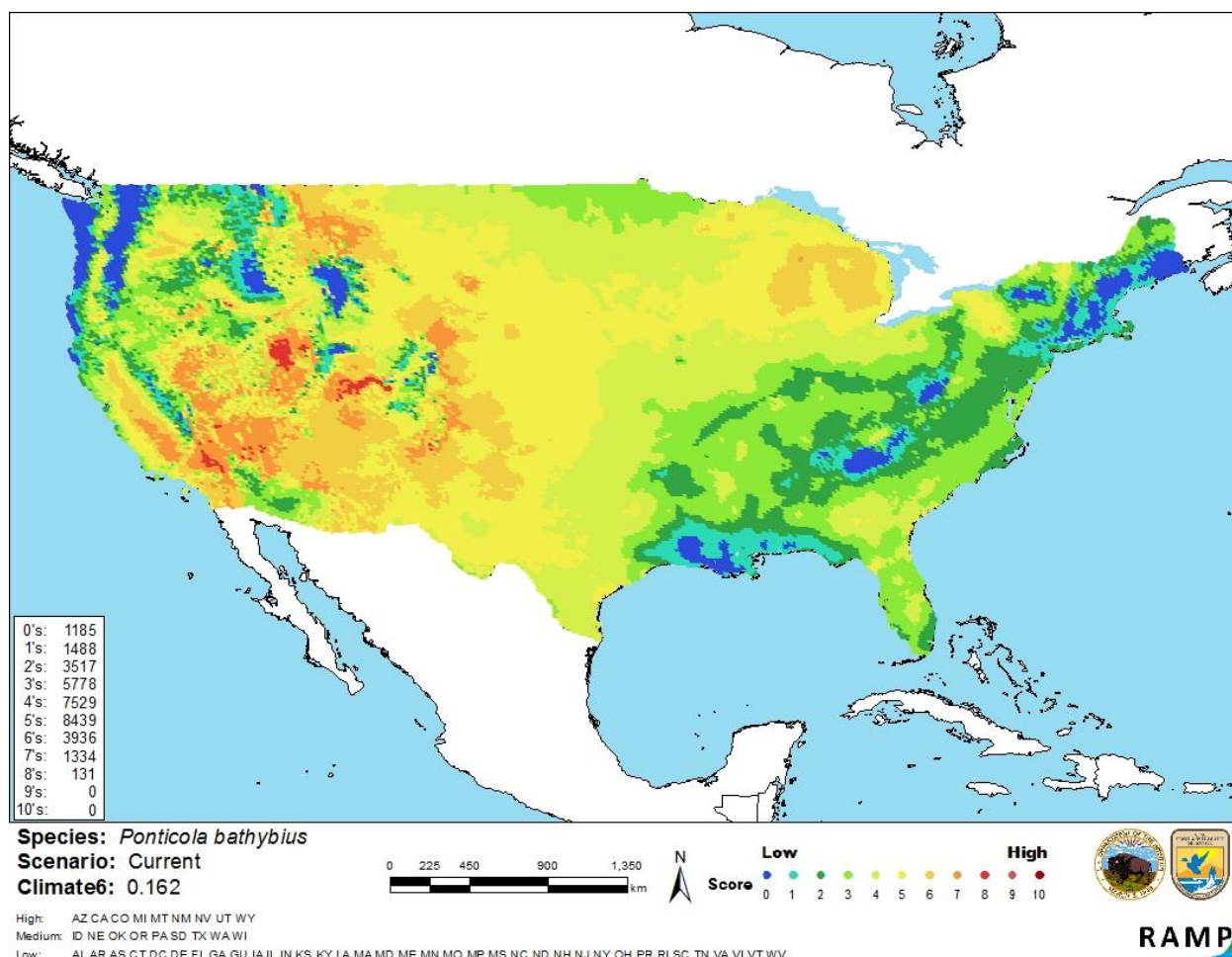


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Ponticola bathybius* in the contiguous United States based on source locations estimated from verbal description in Froese and Pauly (2018a). 0 = Lowest match, 10 = Highest match.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Very little information is known on the biology and ecology of *Ponticola bathybius*. This fish has been reported as introduced into the Aral Sea but did not become established, and there is no information available about impacts of introduction. No georeferenced occurrences were available to inform the selection of source locations for the climate matching analysis. Due to this lack of information, the certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Ponticola bathybius is a goby that is native to the Caspian Sea. It was reported as introduced into the Aral Sea, but it did not become established and there is no information on impacts of introduction. History of invasiveness is uncertain. Georeferenced occurrences were not available, so source locations for the climate match were estimated based on verbal descriptions of the species range. Climate match with the contiguous United States was high. High matches were found in the Interior West, while much of the Eastern United States had a low match. Due to lack of information, certainty of assessment is low. The overall risk posed by *P. bathybius* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): High**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

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- Tajbakhsh, F., A. A. Abdoli, H. Rajabi Maham, I. Hashemzadeh Segherloo, and B. Kiabi. 2016. A study of food consumption of the deepwater Goby, *Ponticola bathybius* (Kessler, 1877), during spring migration in the southern Caspian Sea. *Iranian Journal of Fisheries Sciences* 15(4):1616-1623.

10 References Quoted But Not Accessed

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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