

# Caspian Monkey Goby (*Neogobius pallasii*)

## Ecological Risk Screening Summary

Web Version—07/25/2014



Photo: © K. Abbasi from EOL (2014).

## 1 Native Range, and Status in the United States

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### Native Range

From Kottelat and Freyhof (2007):

“Europe and Asia: Caspian basin; common in Volga drainage, upriver to Moscow.”

### Status in the United States

This species is not documented as either introduced or established anywhere in the United States (including territories).

### Means of Introductions in the United States

This species is not documented as either introduced or established anywhere in the United States (including territories).

### Remarks

*Neogobius pallasii* has recently been declared as a species; it was formerly considered a subspecies of *Neogobius fluviatilis* (Neilson and Stepien 2011 in Grabowska 2014). This has led to difficulties in distinguishing the introductions and impacts of the two species. This risk assessment will only document information clearly assigned to *Neogobius pallasii*, although it should be noted that *Neogobius fluviatilis* is considered invasive in Europe (Grabowska 2014).

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## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2012):

“Kingdom Animalia  
Phylum Chordata  
Subphylum Vertebrata  
Superclass Osteichthyes  
Class Actinopterygii  
Subclass Neopterygii  
Infraclass Teleostei  
Superorder Acanthopterygii  
Order Perciformes  
Suborder Gobioidi  
Family Gobiidae  
Genus *Neogobius*  
Species *Neogobius pallasii* (Berg, 1916)

Taxonomic Status: Valid.”

### Size, Weight, and Age Range

From Kottelat and Freyhof (2007):

“Maturity: Lm ? range ? - ? cm; Max length : 20.0 cm SL male/unsexed.”

### Environment

From Kottelat and Freyhof (2007):

“Freshwater; benthopelagic.”

### Climate/Range

From Kottelat and Freyhof (2007):

“Temperate.”

### Distribution Outside the United States

Native

From Kottelat and Freyhof (2007):

“Europe and Asia: Caspian basin; common in Volga drainage, upriver to Moscow.”

## Introduced

From Kottelat and Freyhof (2007):

“Introduced in Aral basin.”

## Means of Introduction Outside the United States

Not reported.

## Short description

From Kottelat and Freyhof (2007):

“This species is distinguished from its congeners entering freshwater in the Caspian Sea basin by the following characters: first branched ray of second dorsal about as long as penultimate ray; nape completely scaled; pelvic-disc fraenum with small rounded lobes and the length is less than 1/6 of width at base; pelvic disc reaching 90-100% of distance between its origin and anus; scales in midlateral series 55-63 + 2-3; in juveniles at least, posterior part of first dorsal with black spot.”

## Biology

From Kottelat and Freyhof (2007):

“Occurs in lagoons and lakes, large- to medium- size rivers, on sand or mud bottom; usually on open sand or sand-shell bottom. Lives up to 3 years. Spawns for the first time at 1 year, rarely at 2. Spawns in April-September. Individual females may repeat spawning during a season. Adhesive eggs are deposited on stones, shells and aquatic plants and are guarded by males until hatching. Feeds on a wide variety of invertebrates (mainly crustaceans and insect larvae) and small fish. Is the most important commercial species of goby in the Caspian Sea (Berg 1965).”

## Human uses

From Kottelat and Freyhof (2007):

“Fisheries: commercial.”

## Diseases

There are no known OIE-reportable diseases for this species.

## Threat to humans

Harmless.

### 3 Impacts of Introductions

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None reported.

### 4 Global Distribution

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**Figure 1.** Map of known global distribution of *Neogobius pallasii*. Map from GBIF (2014).

### 5 Distribution within the United States

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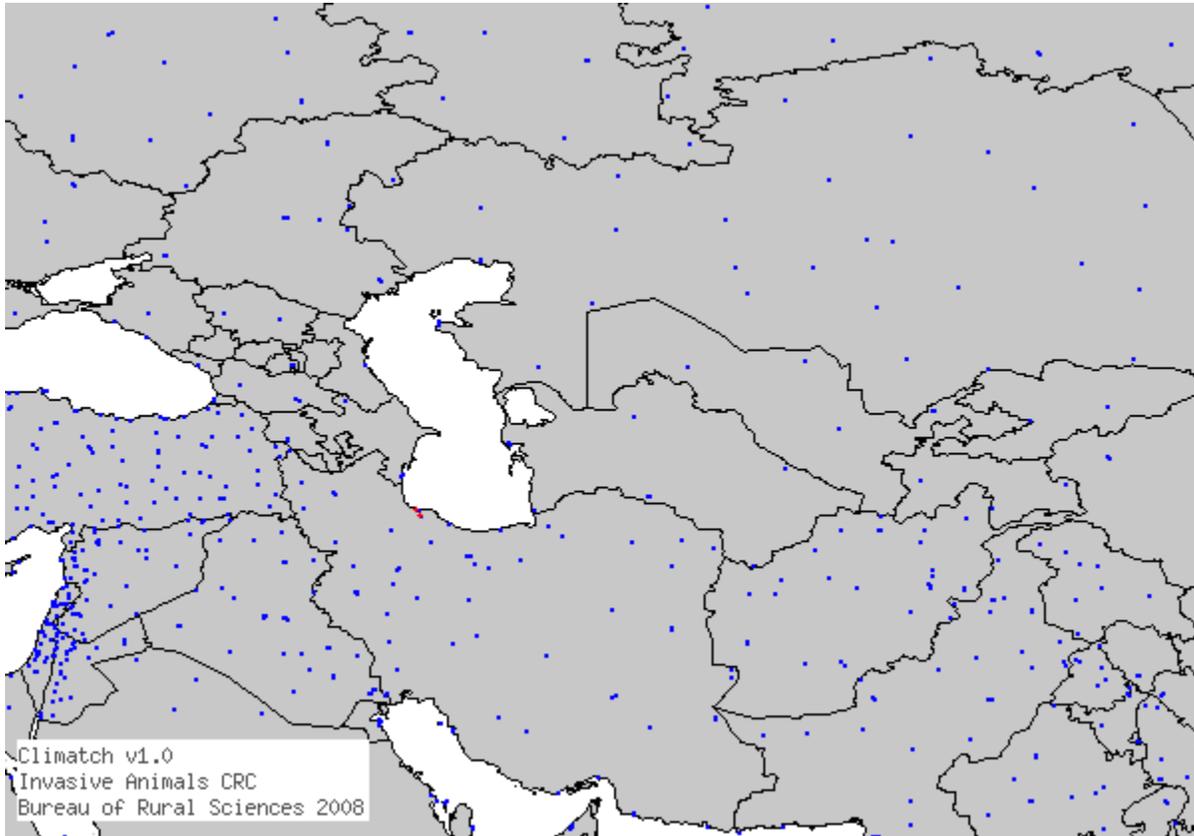
This species is not documented as either introduced or established anywhere in the United States (including territories).

## 6 CLIMATCH

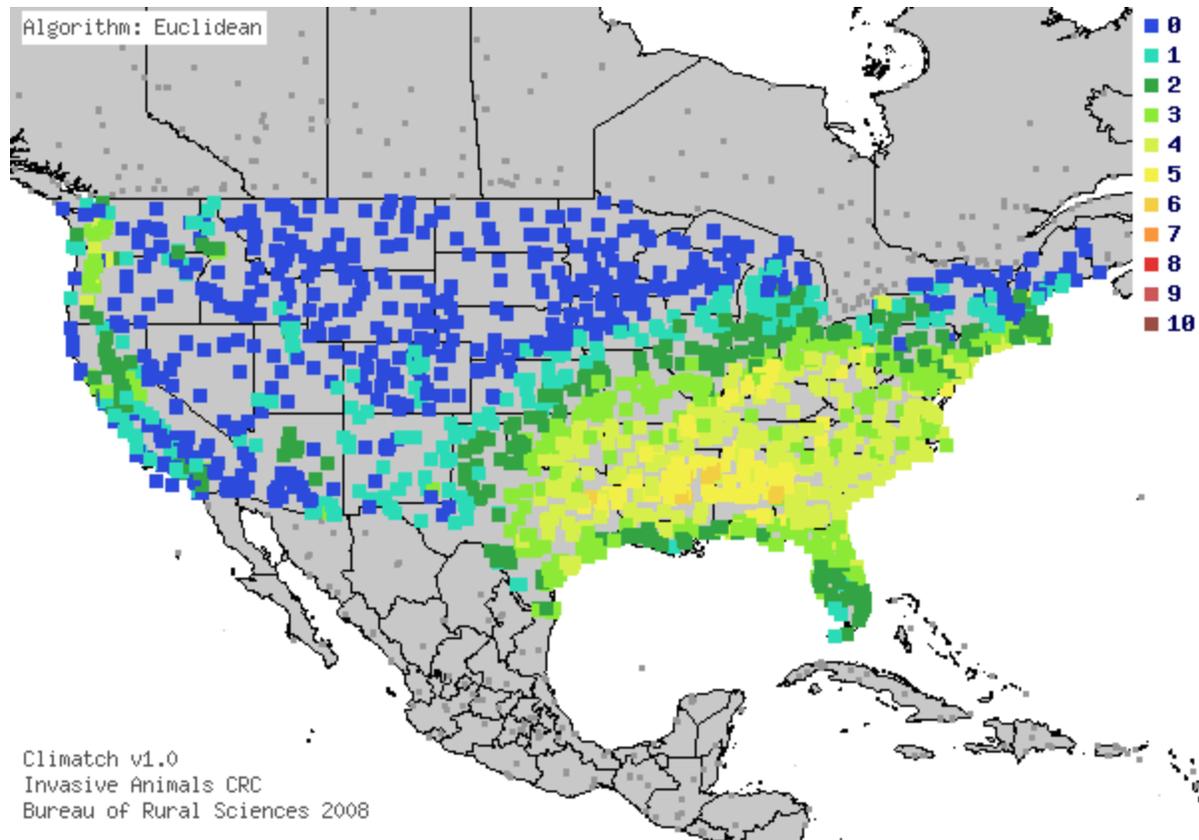
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### Summary of Climate Matching Analysis

The climate match (Australian Bureau of Rural Sciences 2008; 16 climate variables; Euclidean Distance) was medium in the southeastern and isolated locations of the northwestern U.S. Low match covered the rest of the contiguous U.S. Highest match was found in the Southeast. Climate 6 proportion indicated that the contiguous U.S. has a medium climate match. The range for a medium climate match is 0.005 - 0.103; climate match of *Neogobius pallasii* is 0.006.



**Figure 2.** CLIMATCH (Australian Bureau of Rural Sciences 2008) source map showing weather stations selected as source locations (red) and non-source locations (blue) for *Neogobius pallasii* climate matching. Source locations from GBIF (2014).



**Figure 3.** Map of CLIMATCH (Australian Bureau of Rural Sciences 2008) climate matches for *Neogobius pallasii* in the contiguous United States based on source locations reported by GBIF (2014). 0= Lowest match, 10=Highest match.

**Table 1.** CLIMATCH (Australian Bureau of Rural Sciences 2008) climate match scores.

CLIMATCH Score	0	1	2	3	4	5	6	7	8	9	10
Count	575	301	347	316	313	110	12	0	0	0	0
Climate 6 Proportion =		0.006									

## 7 Certainty of Assessment

Little is known about the introductions and impacts of *Neogobius pallasii*, due in part to its limited distribution and in part to its recent designation as a species. More information is needed to evaluate the potential and actual impacts the species may be having in introduced areas before the certainty of assessment can be ranked better than low.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Neogobius pallasii* is a freshwater fish native to the Caspian Sea. It has reportedly been introduced to the Aral Sea, although further information on this introduction is not available. This species was, until recently, considered a subspecies of *Neogobius fluviatilis*, which is considered invasive in many locations in Europe. There is little information available on introductions or impacts of *Neogobius pallasii*. This species has an uncertain history of invasiveness. *Neogobius pallasii* is a member of the family Gobiidae, which has highly invasive members that have already established within the United States. This species has an overall medium climate match with the contiguous United States, with most likely habitat in the Southeast. There are no reports of this species in the United States. Overall risk for this species is uncertain.

### Assessment Elements

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

## 9 References

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

Australian Bureau of Rural Sciences. 2008. CLIMATCH. Available:  
<http://data.daff.gov.au:8080/Climatch/climatch.jsp>. (March 2012).

Encyclopedia of Life (EOL). 2014. *Neogobius pallasii*. Photo license available:  
<http://creativecommons.org/licenses/by-sa/3.0/legalcode>. (July 2014).

Froese, R., and D. Pauly. Editors. 2012. FishBase. Available:  
<http://www.fishbase.org/summary/neogobius-pallasii.html>. (March 2012).

Global Biodiversity Information Facility (GBIF). 2014. Available:  
<http://www.gbif.org/species/2379080>. (July 2014).

Grabowska, J. 2014. *Neogobius fluviatilis*. CAB International, Wallingford, UK. Available:  
<http://www.cabi.org/isc/datasheet/115759>. (July 2014).

ITIS. 2012. *Neogobius pallasii*. Integrated Taxonomic Information System. Available:  
[http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=172070](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=172070). (March 2012).

Kottelat, M., and J. Freyhof. 2007. Handbook of European freshwater fishes. Publications Kottelat, Cornol, Switzerland.

## 10 References Quoted But Not Accessed

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**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.**

Berg, L.S. 1965. Freshwater fishes of the U.S.S.R. and adjacent countries. Volume 3, 4th edition. Israel Program for Scientific Translations Ltd, Jerusalem. (Russian version published 1949).

Neilson, M.E., and C.A. Stepien. 2011. Historic speciation and recent colonization of Eurasian monkey gobies (*Neogobius fluviatilis* and *N. pallasii*) revealed by DNA sequences, microsatellites, and morphology. *Diversity and Distributions* 17(4): 688-702.