

Racer Goby (*Babka gymnotrachelus*)

Ecological Risk Screening Summary

Web Version—08/26/2014



Photo: © M. Haertl from Haertl et al. (2012)

1 Native Range, and Status in the United States

Native Range

From Miller (1986):

“Eurasia: Black Sea, Sea of Azov, Caspian Sea basins and tributaries.”

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

*Fishbase has this species listed under two names, *Babka gymnotrachelus* and its synonym *Neogobius gymnotrachelus*. The information below from Eschmeyer (2014) validated the name of *Babka gymnotrachelus* therefore that will be the name used in this risk screening.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2012) and Eschmeyer (2014):

“Kingdom Animalia
Phylum Chordata
Subphylum Vertebrata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Gobioidi
Family Gobiidae
Genus *Babka*
Species *Babka gymnotrachelus* (Kessler, 1857)

Taxonomic Status: Valid.”

Size, Weight, and Age Range

From Miller (1986):

“Maturity: Lm ?, range 6 - ? cm; Max length : 16.2 cm TL male/unsexed; (Berg 1965); max. reported age: 5 years (Kottelat and Freyhof 2007).”

Environment

From Miller (1986):

“Freshwater; brackish; benthopelagic.”

Climate/Range

From Miller (1986):

“Temperate; 4°C - 20°C (Baensch and Riehl 1991) 49°N - 40°N, 25°E - 54°E.”

Distribution Outside the United States

Native

From Miller (1986):

“Eurasia: Black Sea, Sea of Azov, Caspian Sea basins and tributaries.”

Introduced

From Miller (1986):

Species is reported as introduced in the Danube, Austria from the Black Sea (Wiesner 2004) and to the Baltic basin in Poland from an unknown location (Grabowska and Grabowska 2004). Both populations are known to be established.

From Haertl et al. 2012:

“The Ponto-Caspian racer goby [*Babka*] *gymnotrachelus* (Kessler, 1857) is recorded for the first time in Germany from a Danube backwater close to the city of Regensburg, and from the Danube main channel close to the village of Mariaposching.”

Establishment status in Germany is unknown.

Means of Introduction Outside the United States

From Miller (1986):

“Reached the Baltic basin through the artificial channel connecting the Pripet and Bug rivers. Recorded from the Bug river (left tributary of the Vistula) in 1995 and has until now colonized the Vistula to its downstream section (Grabowska and Grabowska 2004). Has invaded the littoral of oligohaline zone of sea bays, lower courses of large lowland rivers (Grabowska et al. 2010).”

The introductions are both reported as diffused from other countries and both introductions are reported as likely having some adverse impacts on native species (Grabowska and Grabowska 2004, Wiesner 2004).

Short description

From Miller (1986):

“Dorsal spines (total): 7 - 8; Dorsal soft rays (total): 14-18; Anal spines: 1; Anal soft rays: 12 - 16. This species is distinguished from its congeners entering freshwater in Europe by the following characters: irregular position and shape of diagonal bars on body; first branched ray of second dorsal about as long as penultimate ray; no scales on midline of nape, in front of preoperculum; pelvic-disc fraenum with small rounded lobes and the length is less than 1/6 of width at base; scales in midlateral series 54-62 + 2-3; posterior part of first dorsal without black spot (Kottelat and Freyhof 2007).”

Biology

From Miller (1986):

“Occurs in brackish- and fresh-water habitats with low salinity (< 2 ppt); lagoons and lakes; large rivers to small, fast-flowing streams; on sand or mud bottom; mainly in well vegetated or high-complexity habitats. Abundant in backwaters and still channels (Kottelat and Freyhof 2007). Longevity is 4-5 years; spawns for the first time at 2 years; spawning season in April to

June, occasionally until mid-August; females may repeat spawning during a season; usually spawns for a single season. Males guard eggs until hatching; with adhesive eggs deposited on stones, shells and aquatic plants (Kottelat and Freyhof 2007). Feeds on crustaceans (esp. Corophiid amphipods), aquatic insects (mostly chironomid larvae), polychaetes, also small fish and mollusks.”

Human uses

No information reported for this species.

Diseases

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

Threat to humans

Harmless.

3 Impacts of Introductions

From Grabowska and Grabowski (2005):

“In conclusion, racer goby appears to display great plasticity and opportunism in its feeding habits, taking a variety of prey types and usually choosing the most abundant food organisms (Kostrzewa and Grabowski 2003). Such an opportunistic feeding strategy is thought to be optimal for invasive species during the establishment of a population in a novel environment, where food base may be different from what it is in natural range (Kostrzewa and Grabowski 2003).”

From Grabowska et al. (2010):

“The negative impact of alien fish species on native ecosystems in Poland is still speculative rather than proved and needs further studies. One group of threats is related to their foraging behavior. It is usually expected that aliens may compete with indigenous fish species for food resources [...] The high dietary overlap between native percid fishes and the invading Ponto-Caspian gobies were found in the Danube (Copp et al. 2008). There are not too many studies considering that problem in Polish waters while those dealing with it did not reveal diet overlap e.g. between racer goby and native perch and ruff in the Vistula River (Grabowska & Grabowski 2005). The non-native species are also often blamed for predation on eggs and fry of native ones and due to that decrease of their reproduction success. This kind of prey was not often found in the diet of racer goby and monkey goby in the Włocławski Reservoir (Kostrzewa & Grabowski 2003, Grabowska & Grabowski 2005, Kakareko et al. 2005).”

From Miller (1986):

“[For introduction to Austria:] Significant ecological interactions: probably some – adverse. Significant socio-economic effects: - (Wiesner 2004).”

“[For introduction to Poland:] Significant ecological interactions: some – adverse. Significant social effects: - . Control of the species should be considered (Grabowska and Grabowska 2004).”

4 Global Distribution



Figure 1. Global distribution of *Babka gymnotrachelus*. Map from DAISIE (2012), Yellow blocks are from occurrence data from Froese and Pauly (2012).

5 Distribution within the United States

This species is not currently believed to be established in United States waters.

6 CLIMATCH

Summary of Climate Matching Analysis

The climate match (Australian Bureau of Rural Sciences 2008; 16 climate variables; Euclidean Distance) for the contiguous U.S. was high in the Columbia River Valley and within the Great Lakes area, especially in Michigan. Medium to low match occurred throughout the rest of the contiguous U.S. Climate 6 match indicated that the contiguous U.S. has a high climate match. The range for a high climate match is 0.103 and greater; climate match of *Babka gymnotrachelus* is 0.193.

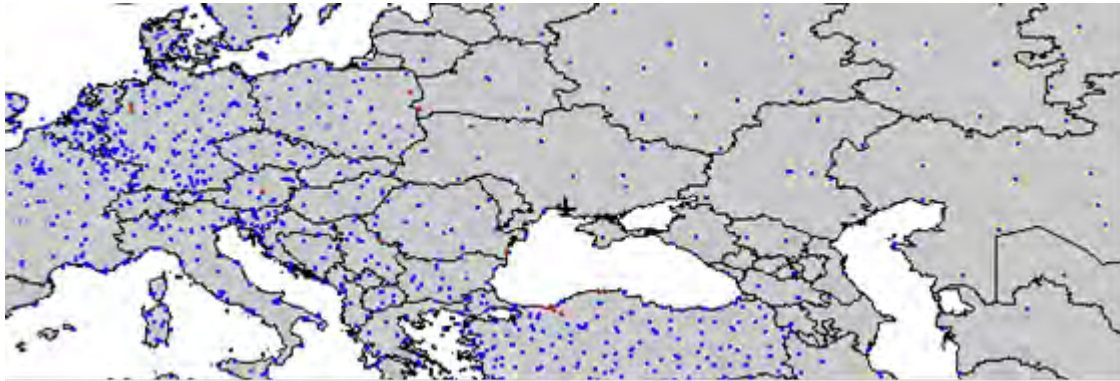


Figure 2. CLIMATCH (Australian Bureau of Rural Sciences 2008) source map showing weather stations selected as source locations (red) and non-source locations (blue) for *Babka gymnotrachelus* climate matching. Source locations from Froese and Pauly (2012) and DAISIE (2012).

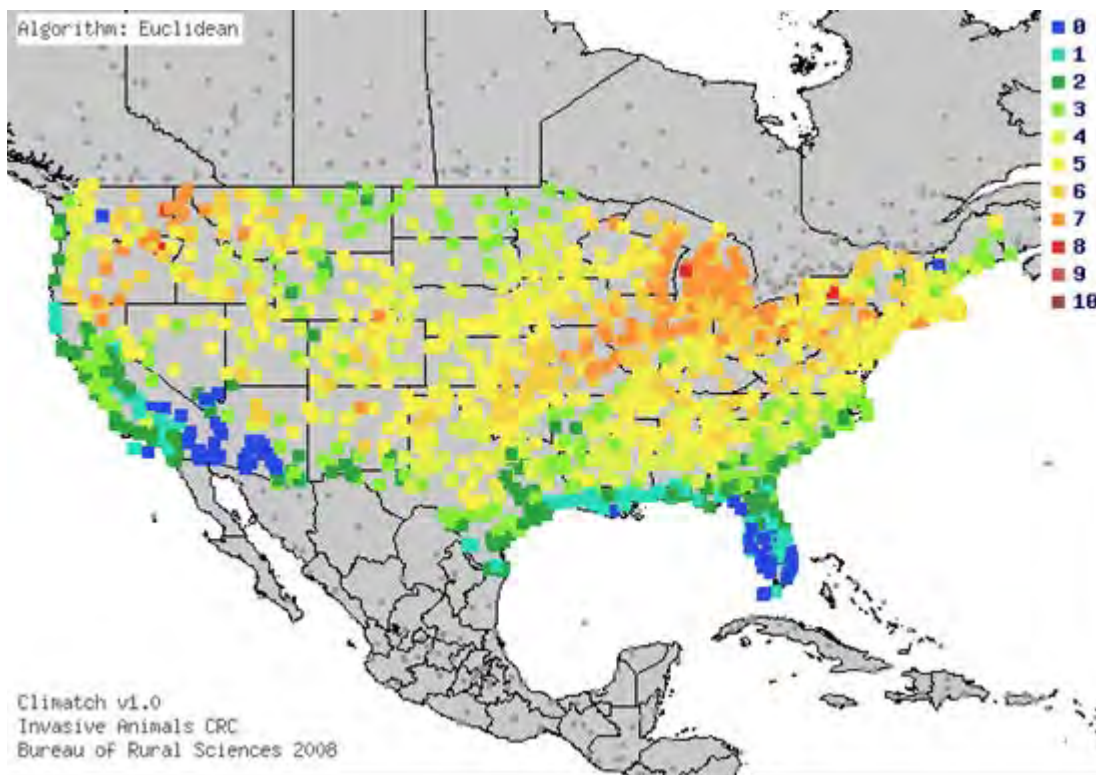


Figure 3. Map of CLIMATCH (Australian Bureau of Rural Sciences 2008) climate matches for *Babka gymnotrachelus* in the contiguous United States based on source locations reported by Froese and Pauly (2012) and DAISIE (2012). 0= Lowest match, 10=Highest match.

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	50	86	162	222	460	579	297	65	10	0	0
Climate 6 Proportion =		0.193									

7 Certainty of Assessment

Babka gymnotrachelus has been introduced to and established in several countries. There is, however, minimal documentation of exact locations where this species has established. Negative impacts from introductions of this species are suggested in the scientific literature, but have not been supported by credible evidence. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Babka gymnotrachelus is a freshwater and brackish water fish native to the Black Sea, Sea of Azov, and Caspian Sea basins and tributaries. Introduced populations have established in the Danube River and the Baltic Sea basins. This species has an overall high climate match score with the contiguous U.S. The high climate match in the Great Lakes region is of particular concern. *Babka gymnotrachelus* is closely related to the round goby (*Neogobius melanostomus*) which has become highly invasive in the Great Lakes. Other locations within the U.S. that have high matches are the Colorado River Basin, Eastern Columbia River Basin, and most of the western plains. There are concerns about the invasiveness of *Babka gymnotrachelus* in its introduced range, but there is no conclusive evidence of negative impacts. More evidence is needed to conclude that this species is high risk. There are no reports of this species being introduced in the U.S. Overall risk is uncertain at this time.

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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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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