Black Sharkminnow (*Labeo chrysophekadion*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, November 2010
Revised, May 2018, June 2018
Web Version, 6/14/2018

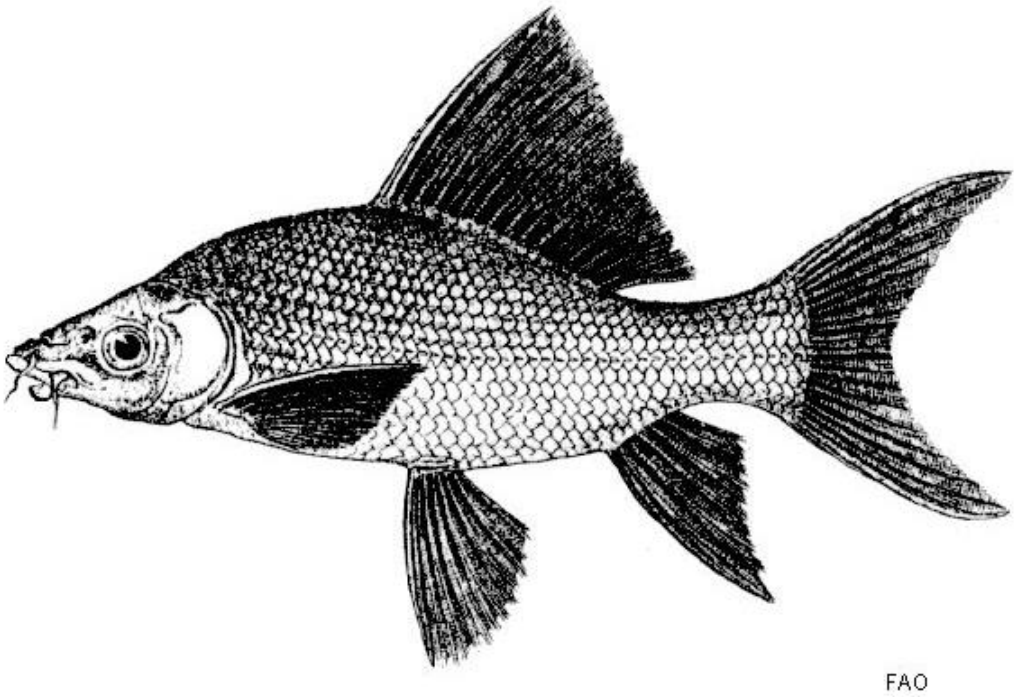

Image: FAO. Licensed under Creative Commons BY-NC 3.0 Unported. Available: http://eol.org/data_objects/20863144. (May 14, 2018)

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"Asia: Mekong and Chao Phraya basins [Cambodia, Laos, Thailand], Malay Peninsula, Sumatra, Java and Borneo."

"Known from the Mekong basin [in Cambodia] [Rainboth 1996; Kottelat 1998]. Found in the Tonle Sap river [sic] and Great Lake [Thouk and Sina 1997], Prek Krauchmar and Battembang [in Cambodia] [Kottelat 1985]."

"Occurs in Sumatra, Java and Borneo [Indonesia] [Kottelat 1998]. Found in the Kapuas Lakes Area, western Borneo. Recorded from Danau Sentarum National Park in the Kapuas basin of Borneo, Kalimantan Barat [Kottelat and Widjanarti 2005]."

"Occurs in the Mekong basin [in Laos]. Found in the lower and middle Xe Bangfai [Kottelat 1998] and Ban Hang Khone at Don Khone, 3 km below the fall line of the great waterfalls of the Mekong basin at Lee Pee [in Laos] [Roberts 1993]. Enters flooded forest on Don Khone, just below the great waterfalls [in Laos] [Roberts 1993]."

"Known from Salween, Tenasserim basins [in Myanmar] through Mekong [Vidthayanon et al. 2005]."

"Found in the Chao Phraya, Mekong River, Maeklong, Salween, Peninsular and Southeast Thailand river systems [Vidthayanon et al. 1997]."

Status in the United States

Nico et al. (2018) lists a failed introduction of *Labeo chrysophekadion* in Florida in 1984.

From Nico et al. (2018):

"This species is a popular aquarium fish [in the United States]."

Means of Introductions in the United States

From Nico et al. (2018):

"Probable aquarium release or escape from fish farm."

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata

Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Cypriniformes
Superfamily Cyptinoidea
Family Cyprinidae
Genus *Labeo*
Species *Labeo chrysophekadion* (Bleeker, 1850)"

According to Eschmeyer et al. (2018), *Labeo chrysophekadion* (Bleeker 1849) is the current valid name for this species. *Labeo chrysophekadion* was originally described as *Rhotia chrysophekadion* (Bleeker 1849).

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 90.0 cm TL male/unsexed; [Sokheng et al. 1999]; max. published weight: 7.0 kg [Sokheng et al. 1999]"

Environment

From Froese and Pauly (2018):

"Freshwater; benthopelagic; pH range: 6.5 - 7.5; dH range: ? - 15; […] 24°C - 27°C [assumed to be recommended aquarium temperature] [Riehl and Baensch 1991]"

Climate/Range

From Froese and Pauly (2018):

"Tropical; […]"

Distribution Outside the United States

Native

From Froese and Pauly (2018):

"Asia: Mekong and Chao Phraya basins [Cambodia, Laos, Thailand], Malay Peninsula, Sumatra, Java and Borneo."

"Known from the Mekong basin [in Cambodia] [Rainboth 1996; Kottelat 1998]. Found in the Tonle Sap river [sic] and Great Lake [Thouk and Sina 1997], Prek Krauchmar and Battembang [in Cambodia] [Kottelat 1985]."

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Introduced

Froese and Pauly (2018) report *Labeo chrysophekadion* as introduced to the Philippines, however, it is unknown whether it is established there.

Means of Introduction Outside the United States

No information on the means of introduction to the Philippines was found.

Short Description

From Froese and Pauly (2018):

"Has black body and fins; a large dorsal fin, with anterior branched dorsal rays longer than head length; 15-18 branched dorsal rays; both lips fringed; juveniles all black; large adults grey with one iridescent spot on each scale [Kottelat 1998]."

Biology

From Froese and Pauly (2018):

"Occurs in rivers, streams, canals and inundated floodplains. Sometimes seen in impoundments, but not in great numbers. Like other planktivorous and detritivorous carps, it begins spawning after the first thunderstorms of the coming rainy season. It spawns upstream from shallow sandbars that line long river bends. The eggs settle out in the shallow water and hatch just as water levels begin to rise following the initiation of seasonal rains. The fry immediately move into inundated grasses along the bank and continue to follow the leading edge of the advancing water as floodwaters spread over the land. Adults also migrate out into seasonally flooded areas where they feed on algae, periphyton, phytoplankton and detritus. They return to rivers from October to December [Rainboth 1996]. In Laos and Thailand, it migrates upstream at the onset of rainy season. In Cambodia, it undertakes upstream migration between October and March and downstream migration from March to August [Sokheng et al. 1999]."

"According to local people in Kinnak market, southern Laos the species appears in reproductive condition in June and July [Roberts and Warren 1994]. Undertakes upstream migration from March to August [Sokheng et al. 1999]. Known to migrate into tributaries, small streams and canals and migration commences at the onset of the rainy season or when the water starts rising

[Sokheng et al. 1999]. Also reported to migrate upstream during the dry season in December/March in Southern Laos [Singhanouvong et al. 1996]."

From Nico et al. (2018):

"*Labeo chrysophekadion* is primarily herbivorous, consuming algae, periphyton, portions of terrestrial plants, and detritus (Poulsen et al. 2004)."

Human Uses

From Froese and Pauly (2018):

"A desirable food fish which is marketed fresh, dried and salted [Rainboth 1996]."

"Captured from the wild for the ornamental fish trade [Ukkatawewat 2005]."

From Vidthayanon (2012):

"Captured from the wild for the ornamental fish trade. It is an important commercial species in the Mekong River basin and in southern Lao PDR (Singhanouvong and Phouthavong 2002)."

Diseases

No records of OIE-reportable diseases were found for *Labeo chrysophekadion*.

Chai et al. (2014) list *L. chrysophekadion* as an intermediate host for *Opisthorchis viverrini* and *Haplorchis yokogawai*.

Threat to Humans

From Xuan et al. (2003):

"This report expands the number of freshwater fish associated with this intoxication [ichthyosarcotoxism] to include the shark (minnow) fish (*M chrysophekadion* [*Labeo chrysophekadion*]) and the bony-lipped barb fish (*O melanopi*). We are the third group to report death associated with this ingestion. [Yamamoto et al. 1988; Sahoo et al. 1995]"

"After ingestion, gastrointestinal symptoms were seen in all patients: nausea, vomiting, and/or diarrhea. Onset typically occurred within hours and likely represents the direct effect of a toxin"

3 Impacts of Introductions

No information on impacts of introductions of *Labeo chrysophekadion* was found.

4 Global Distribution

Figure 1. Known global distribution of *Labeo chrysophekadion*. Locations are in Myanmar, Thailand, Cambodia, Indonesia, Laos, and Malaysia. Map from GBIF Secretariat (2018).

The record in Australia is representative of a wild-caught fish (GBIF Secretariat), however it was a single specimen and no other sources indicate any occurrence of this species in Australia. This location was not used as a source point in the climate match.

5 Distribution Within the United States

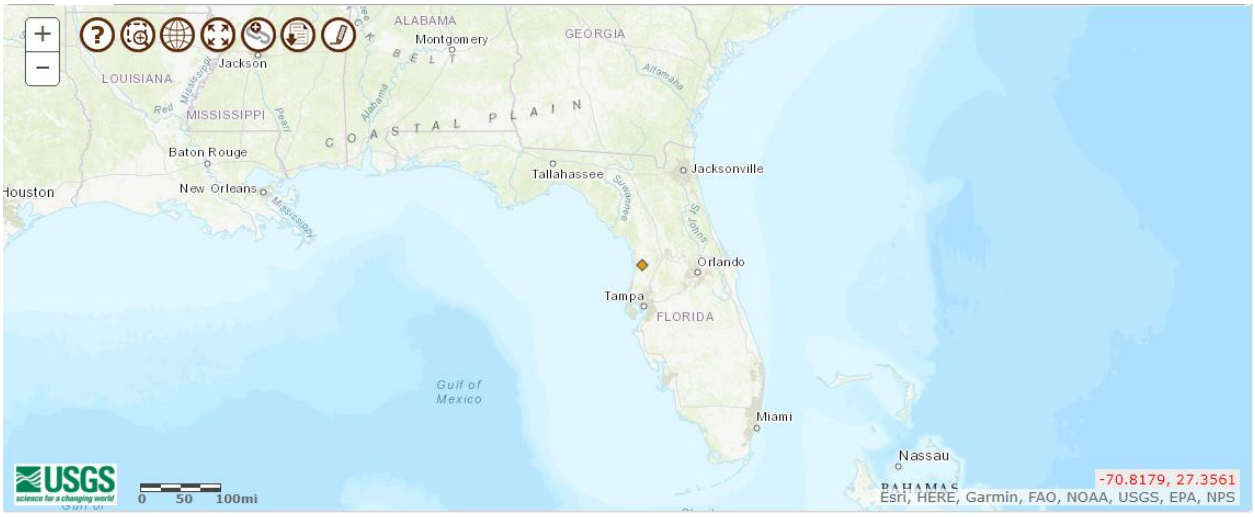

Figure 2. Location of the failed introduction in Florida. Map from Nico et al. (2018).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Labeo chrysophekadion* was medium in southwestern Florida, southern Texas, and southern Arizona. The climate match was low everywhere else. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low. The range for a low climate match is from 0.000 to 0.005, inclusive. All states in the contiguous United States had low individual climate scores.

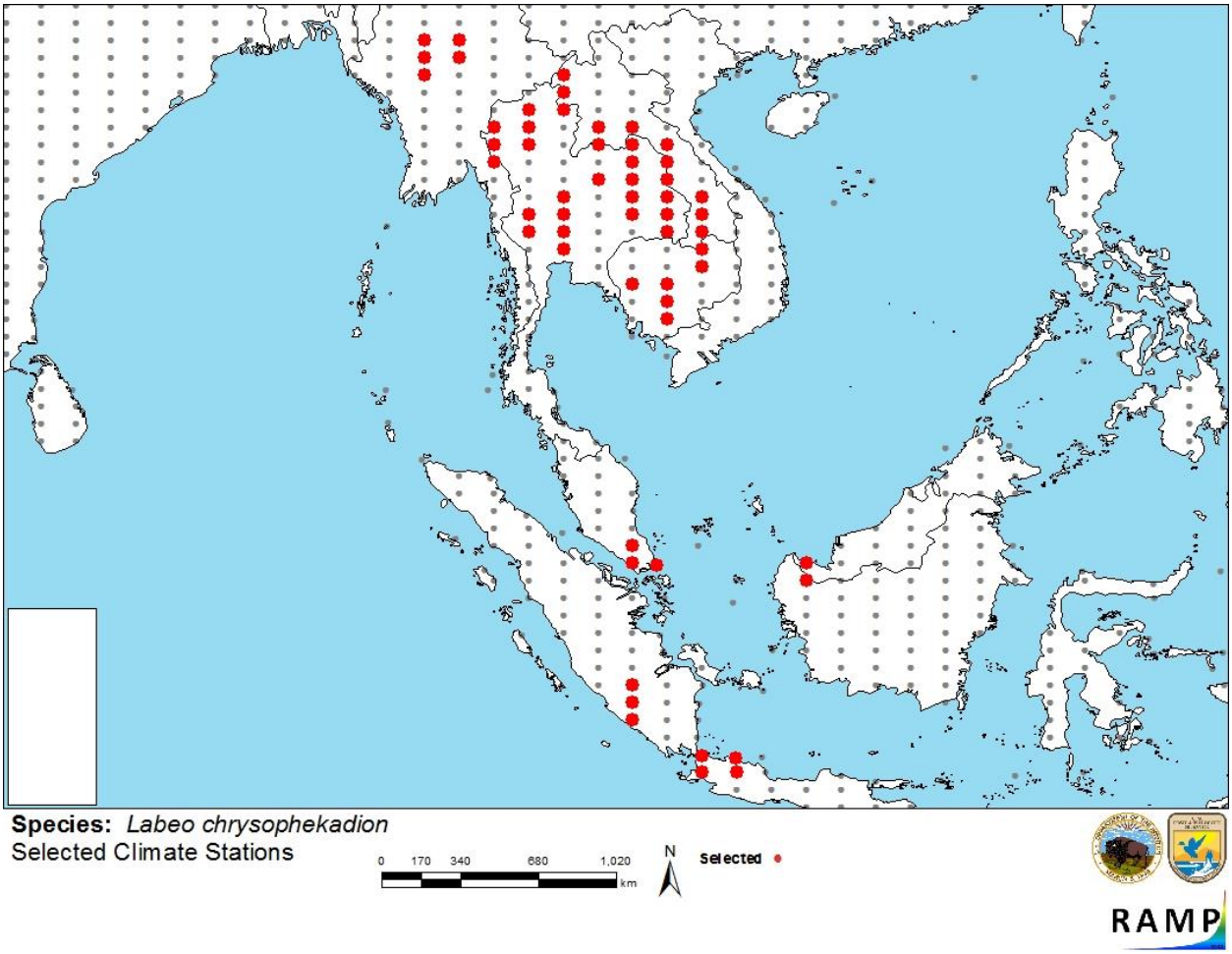

Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations in Southeast Asia selected as source locations (red; Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand) and non-source locations (gray) for *Labeo chrysophekadion* climate matching. Source locations from GBIF Secretariat (2018).

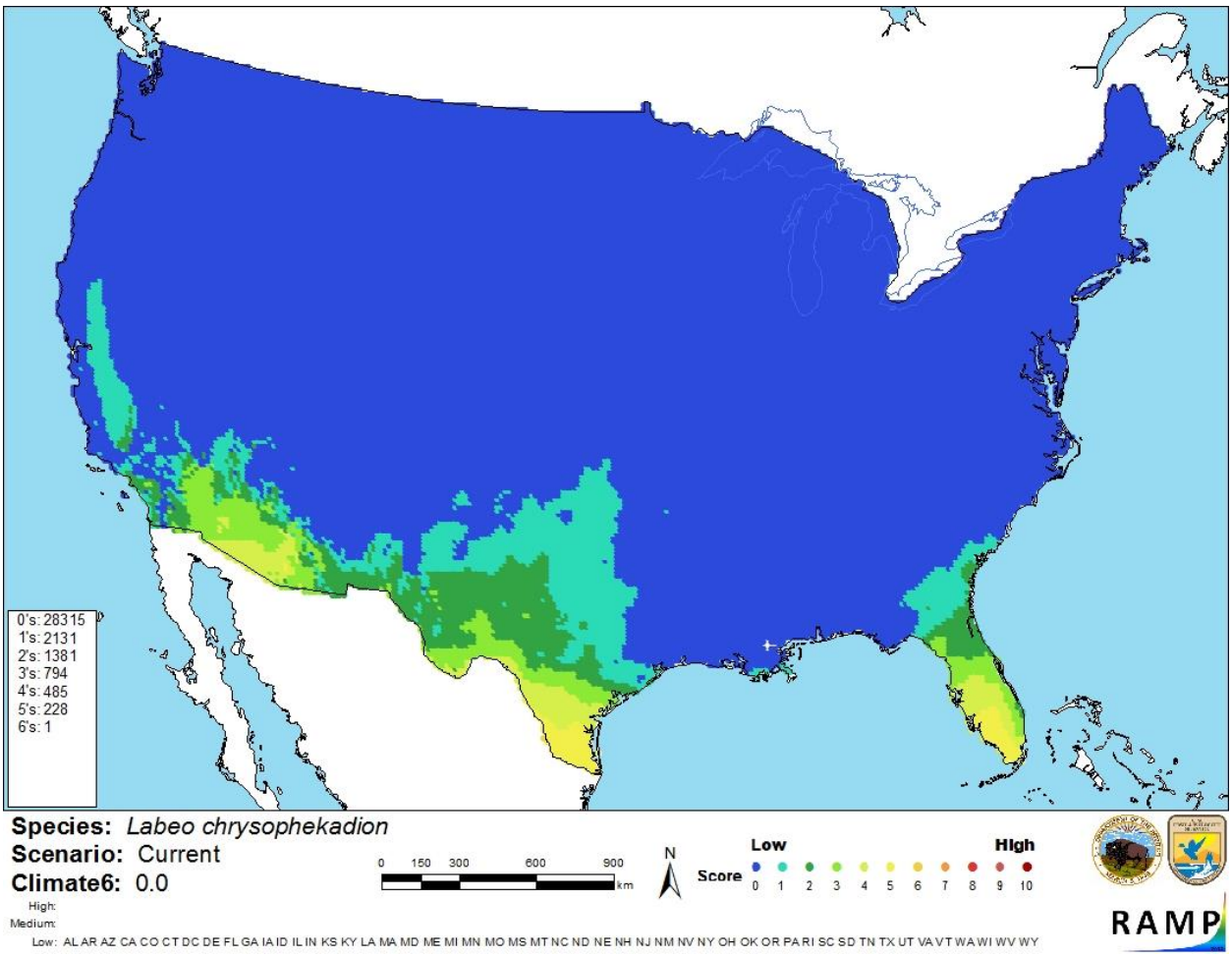

Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Labeo chrysophekadion* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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

7 Certainty of Assessment

The certainty of assessment for *Labeo chrysophekadion* is low. There is some information available about the ecology and biology of this species. Two records of introductions were found with minimal information. No peer-review literature was available regarding the impacts of the introductions.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Black Sharkminnow (*Labeo chrysophekadion*) is a freshwater fish popular as a food source in Southeast Asia and in the aquarium trade; it is native to Southeast Asia. The history of invasiveness for *L. chrysophekadion* is uncertain. A record of a failed introduction in Florida was found along with a record of introduction to the Philippines. It is uncertain whether *L. chrysophekadion* is established in the Philippines. No information was found about impacts of the introduction to the Philippines. There are reports of *L. chrysophekadion* infested with ichthyosarcotoxism causing gastrointestinal symptoms or death in humans when consumed**.** The climate match was low, and all states in the contiguous United States had low individual climate scores. The certainty of assessment is low. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** A failed introduction occurred in Florida. There are reports of *L. chrysophekadion* infested with ichthyosarcotoxism causing gastrointestinal symptoms or death in humans when consumed.
- **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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