

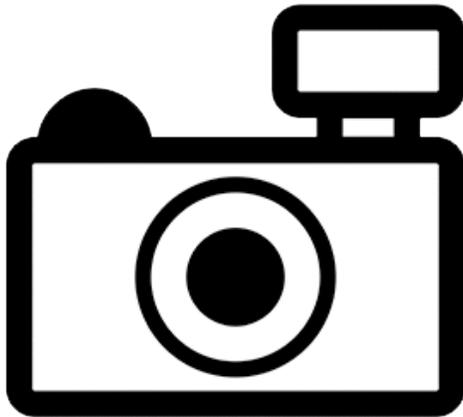
## ***Barbodes lindog* (a fish, no common name)**

### **Ecological Risk Screening Summary**

U.S. Fish and Wildlife Service, December 2013

Revised, July 2018

Web Version, 8/3/2018



No Photo Available

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

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### **Native Range**

From Froese and Pauly (2018):

“Asia: endemic to Lake Lanao, Mindanao, Philippines.”

### **Status in the United States**

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

### **Means of Introductions in the United States**

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

### **Remarks**

Both the accepted name *Barbodes lindog* and the synonym *Puntius lindog* were used when researching in preparation of this assessment.

## 2 Biology and Ecology

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### 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 Ostariophysii  
Order Cypriniformes  
Superfamily Cyprinoidea  
Family Cyprinidae  
Genus *Puntius*  
Species *Puntius lindog* (Herre, 1924)”

From Eschmeyer et al. (2018):

“Current status: Valid as *Barbodes lindog* Herre 1924. Cyprinidae: Smiliogastrinae.”

### Size, Weight, and Age Range

From Ismail and Escudero (2011):

“Maximum size 145 mm SL, 37 g.”

### Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

From Ismail et al. (2014):

“Lake Lanao is the largest (surface area 357 km<sup>2</sup> ; volume 21.5 km<sup>3</sup>) and deepest (maximum and mean depth of 112 m and 60.3 m) freshwater lake in the Philippines.”

“The lake is 702 m above sea level with a mean monthly surface temperature varying between 22.2 °C and 27.6 °C (Naga 2010). It is of tectonic-volcanic origin and its basin is shallowest in the north and progressively becomes deeper towards the south. The lake is considered to be oligotrophic or relatively low in nutrients.”

## **Climate/Range**

From Froese and Pauly (2018):

“Tropical”

## **Distribution Outside the United States**

Native

From Froese and Pauly (2018):

“Asia: endemic to Lake Lanao, Mindanao, Philippines.”

Introduced

This species has not been reported as introduced or established outside of its native range.

## **Means of Introduction Outside the United States**

This species has not been reported as introduced or established outside of its native range.

## **Short Description**

From Ismail and Escudero (2011):

“D IV 8; A 5; P1 14; P2 I 7–10. Elongate body, mouth terminal, two small barbels hidden under maxillary. Lateral scales 24–26. Blackish bronze above, silvery dusky, and gray to whitish below. Dorsal, caudal, and pectoral fins dusky or blackish, other fins colorless (Fowler 1941). Scales cycloid, 4th spinous dorsal soft-ray is the longest.”

## **Biology**

From Ismail and Escudero (2011):

“Habitat and ecology: In the deeper southern portion of the lake (down to 112 m) (Escudero et al. 1980). Feeds on zooplankton, phytoplankton, and occasionally scavenges on human food waste along lake shore. Reproduction: Breeds year round (Escudero et al. 1980), peak October to March. Spawns 500–5500 spherical eggs 0.9– 1.1 mm on aquatic vegetation, no parental care (Escudero et al. 1980).”

## **Human Uses**

From Froese and Pauly (2018):

“Considered a food fish in the region.”

“Fisheries: highly commercial”

From Ismail and Escudero (2011):

“[...] Previously comprised 50–65% of the total fish catch (Escudero et al. 1980), about 17% by 1982–83, 12% in 1990–91 (Escudero 1994; Escudero and Demoral 1983), 2008, only 13 specimens in the market.”

## Diseases

No information available. No OIE-reportable diseases have been documented for this species.

## Threat to Humans

From Froese and Pauly (2018):

“Harmless”

## 3 Impacts of Introductions

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This species has not been reported as introduced or established outside of its native range.

## 4 Global Distribution

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**Figure 1.** Known global distribution of *Barbodes lindog* showing occurrences in Lake Lanao in the Philippines. Map from GBIF Secretariat (2018).

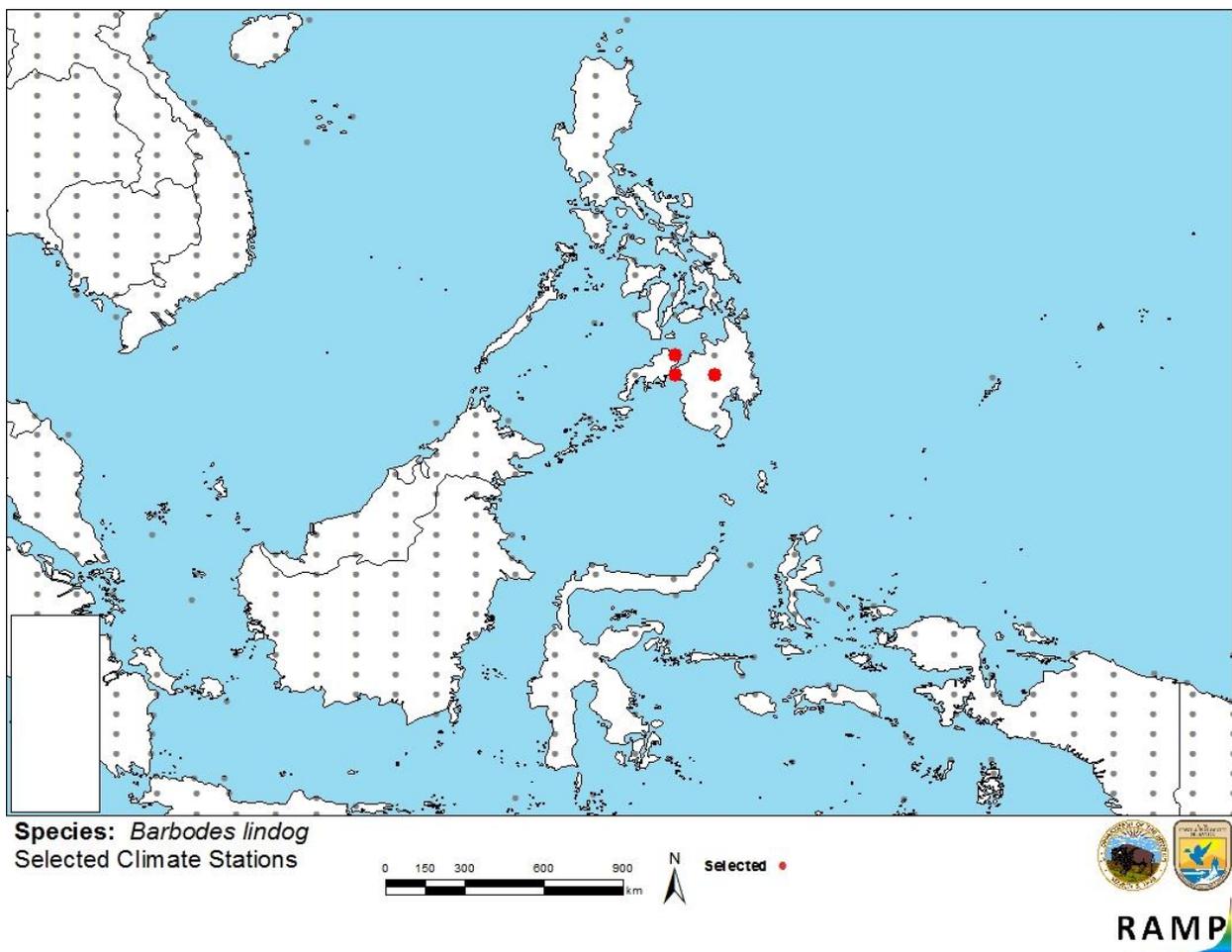
## 5 Distribution Within the United States

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

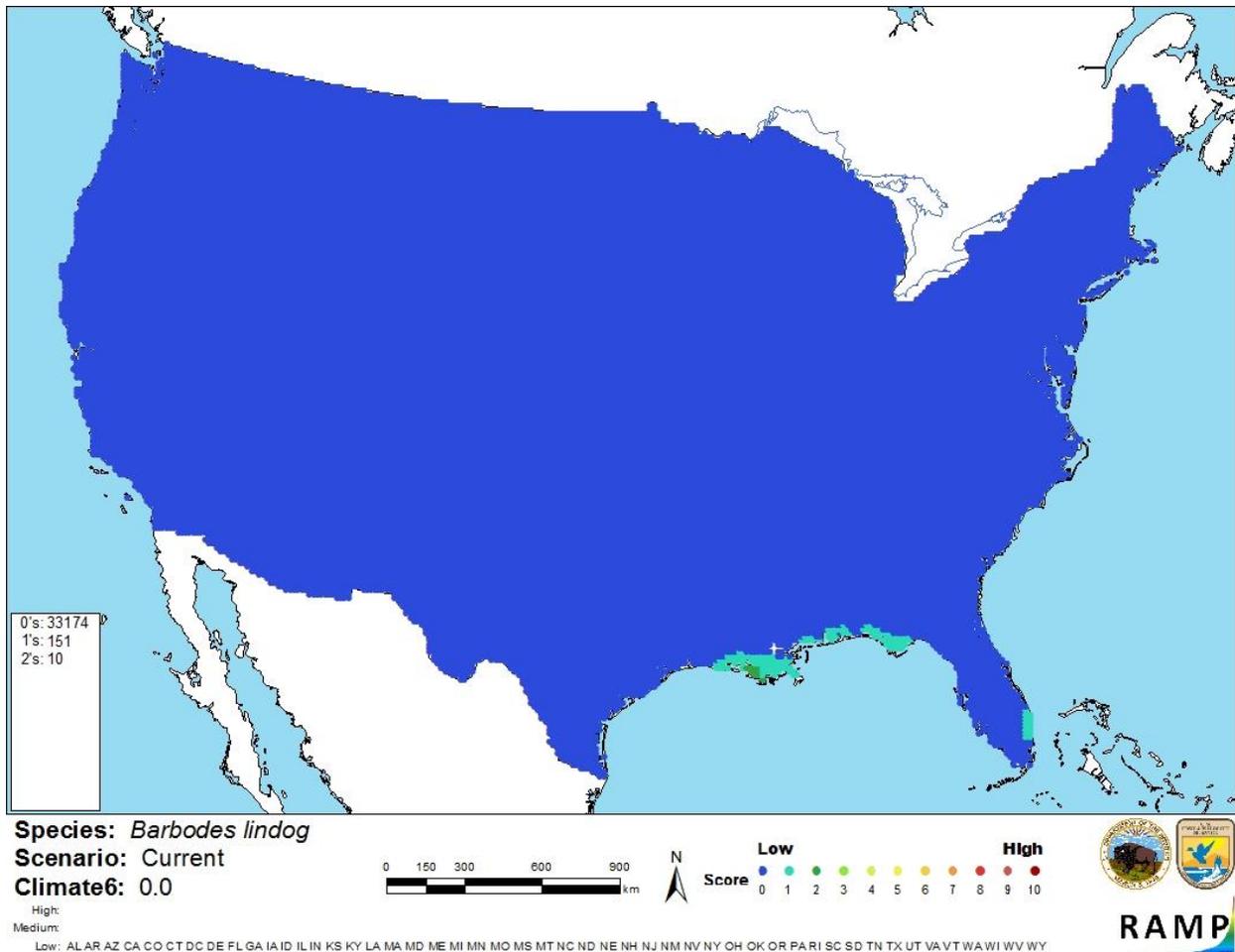
## 6 Climate Matching

### Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, which is a low climate match. The range for a low climate match is from 0.000 to 0.005, inclusive. The climate match was low across the entire contiguous United States. There were small areas of slightly higher, but still low, climate match along the Gulf Coast and in southeast Florida.



**Figure 2.** RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Philippines) and non-source locations (gray) for *Barbodes lindog* climate matching. Source locations from GBIF Secretariat (2018).



**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *Barbodes lindog* 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
$0.000 \leq X < 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

There is some information available about the biological characteristics of *Barbodes lindog*. It is endemic to only one lake in the Philippines, so its range is well known. There have been no documented introductions of this species outside of its native range. Because of this, there is no information available on negative impacts of introduction of this species from which to base an assessment of risk. Certainty of this assessment is low.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Barbodes lindog* is a small cyprinid endemic to Lake Lanao in the Philippines. In the Philippines, it is used as a food fish, but it has declined in proportion of total fish catch since the mid-twentieth century. This species has never been reported as introduced or established outside of Lake Lanao. *B. lindog* has a low climate match with the contiguous United States. Because there is no information on introductions of *B. lindog* outside of its native range from which to assess the invasive potential of this species, the certainty of this 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**
- **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.**

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of fishes: genera, species, references. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (July 2018).

Froese, R., and D. Pauly, editors. 2018. *Barbodes lindog* (Herre, 1924). FishBase. Available: <https://www.fishbase.de/summary/Barbodes-lindog.html>. (July 2018).

GBIF Secretariat. 2018. GBIF backbone taxonomy: *Barbodes lindog*, Herre, 1924. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2363864>. (July 2018).

Ismail, G. B., and P. T. Escudero. 2011. Threatened fishes of the world: *Puntius lindog* Herre, 1924 (Cyprinidae). *Environmental Biology of Fishes* 91(1):117-118.

Ismail, G. B., D. B. Sampson, and D. L. Noakes. 2014. The status of Lake Lanao endemic cyprinids (*Puntius* species) and their conservation. *Environmental Biology of Fishes* 97(4):425-434.

ITIS (Integrated Taxonomic Information System). 2018. *Puntius lindog* (Herre, 1924). Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=689818#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=689818#null). (July 2018).

Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. US Fish and Wildlife Service.

## 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.**

Escudero, P. T. 1994. Lake Lanao fisheries: problems and recommendations. *Philippine Biota* 27(1):8–18.

Escudero, P. T., and M. A. Demoral. 1983. Preliminary studies on the biology and fishery of *Hypseleotris agilis* Herre (Eleotridae). *Journal of Fisheries and Aquaculture* 4(1–2):3–89.

Escudero, P. T., O. M. Gripaldo, and N. M. Sahay. 1980. Biological studies of the *Glossogobius giurus* (Hamilton & Buchanan) and the *Puntius sirang* (Herre) in Lake Lanao. *Journal of Fish Aquaculture* 1(1):1-154.

Fowler, H. W. 1941. The fishes of the groups Elasmobranchii, Holocephali, Isospondyli, and Ostariophysi obtained by United States Bureau of Fisheries Steamer Albatross in 1907 to 1910, chiefly in the Philippine Islands and adjacent seas. *Bulletin of the U.S. National Museum* 100(13):1-879.

Naga, P. O. 2010. Lake Lanao: An ancient lake in distress. Paper presented in the 13th World Lake Conference in China.