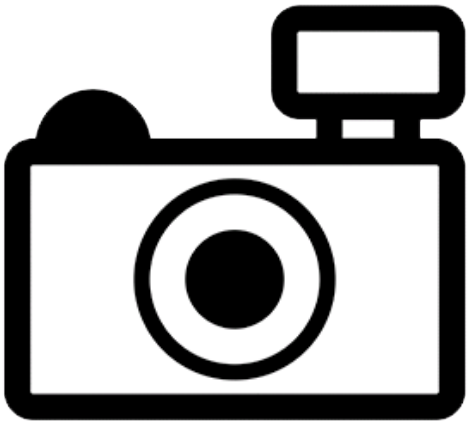
Corbicula possoensis (a clam, no common name)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, September 2011
Revised, December 2018, February 2019
Web Version, 7/8/2019



No Photo Available

1 Native Range and Status in the United States

Native Range

From Rintelen and Bogan (2012):

"This species is endemic to Lake Poso, Sulawesi [Indonesia] [Sarasin and Sarasin 1898, Glaubrecht et al. 2003, Rintelen and Glaubrecht 2005]."

Status in the United States

No records of *Corbicula possoensis* in the wild or in trade were found in the United States.

Means of Introductions in the United States

No introductions have been recorded outside of their native range.

Remarks

According to Rintelen and Bogan (2012) this species is endangered.

The taxonomy of *Corbicula* is not fully understood (see Korniushin and Blaubrecht 2003). *Corbicula possoensis* has been synonymized with other species in the genus by some authors (see Korniushin and Blaubrecht 2003) but it is treated here as a distinct species. Only information using the name *Corbicula possoensis* was considered in this screening.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Rintelen and Bogan (2012):

"Kingdom Animalia
Phyllum Mollusca
Class Bivalvia
Order Veneroida
Family Cyrenidae
Genus *Corbicula*
Scientific Name *Corbicula possoensis* [Sarasin and Sarasin, 1898]"

From Korniushin and Glaubrecht (2003):

"[…] *C. possoensis* which was made synonymous with *C. matannensis* Sarasin & Sarasin, 1898 by Djajasasmita (1975). However, its peculiar mode of brooding suggests species distinctness."

Size, Weight, and Age Range

No information on size, weight or age was found.

Environment

From Rintelen and Bogan (2012):

"It only occurs at the lake fringes and down to a depth of about 20 m [T. von Rintelen pers. comm. 2012]."

Climate/Range

No information on climate or range was found.

Distribution Outside the United States

Native

From Rintelen and Bogan (2012):

"This species is endemic to Lake Poso, Sulawesi [Indonesia] [Sarasin and Sarasin 1898, Glaubrecht et al. 2003, Rintelen and Glaubrecht 2005]."

Introduced

C. possoensis has not been reported anywhere outside of its native range.

Means of Introduction Outside the United States

C. possoensis has not been reported anywhere outside of its native range.

Short Description

From Korniushin and Glaubrecht (2003):

"All juveniles of *C. possoensis* […] were similar in size (0.26–0.30 mm long); the shape was rounded or slightly elongated (height to length ratio about 0.80) and the hinge margin was straight. No teeth anlagen were seen."

"This similarity in histological structure of gills, as well as in larval size and morphology, indicated that *C. possoensis* and those taxa with a typical mode of brooding could basically have the same source of embryonic nourishment and the same developmental strategy. However, the outer demibranch in this species is apparently adapted for incubation of brood as an additional structure, when compared to those involved in all other corbiculid taxa studied.'

Biology

From Korniushin and Glaubrecht (2003):

"Tetragenous brooding was observed for *C. possoensis*."

"The majority of gravid specimens of this species had numerous larvae in both demibranchs of each gill […] with the exception of only one specimen which carried offspring in the inner demibranchs only. SEM study of gills in typical specimens revealed similar changes in both demibranchs […]: Water tubes were connected, interlamellar septae and interfilamentar junctions were thickened, and 'tissue bridges' were lined with cylindrical cells. However, interlamellar spaces of the outer demibranch were somewhat broader than in the inner demibranch, and interlamellar 'bridges' were quantitatively less developed."

Human Uses

No information was found regarding human uses of *C. possoensis*.

Diseases

No information was found on diseases. **No OIE-reportable diseases (OIE 2019) were found to be associated with *Corbicula possoensis*.**

Threat to Humans

No information on threats to humans was found.

3 Impacts of Introductions

No introductions of *Corbicula possoensis* have been recorded.

4 Global Distribution

Figure 1. Known global distribution of *Corbicula possoensis* (Lake Poso, Sulawesi). Map from Rintelen and Bogan (2012).

No georeferenced observations could be found for *Corbicula possoensis*.

5 Distribution Within the United States

No records of *Corbicula possoensis* were found in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for the contiguous United States was uniformly low. There are no areas of high or medium match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low (scores between 0.000 and 0.005, inclusive, are classified as low). All States had low individual Climate 6 scores. No georeferenced locations were available for the climate match, so general locations where the species was reported from were used to select source points.

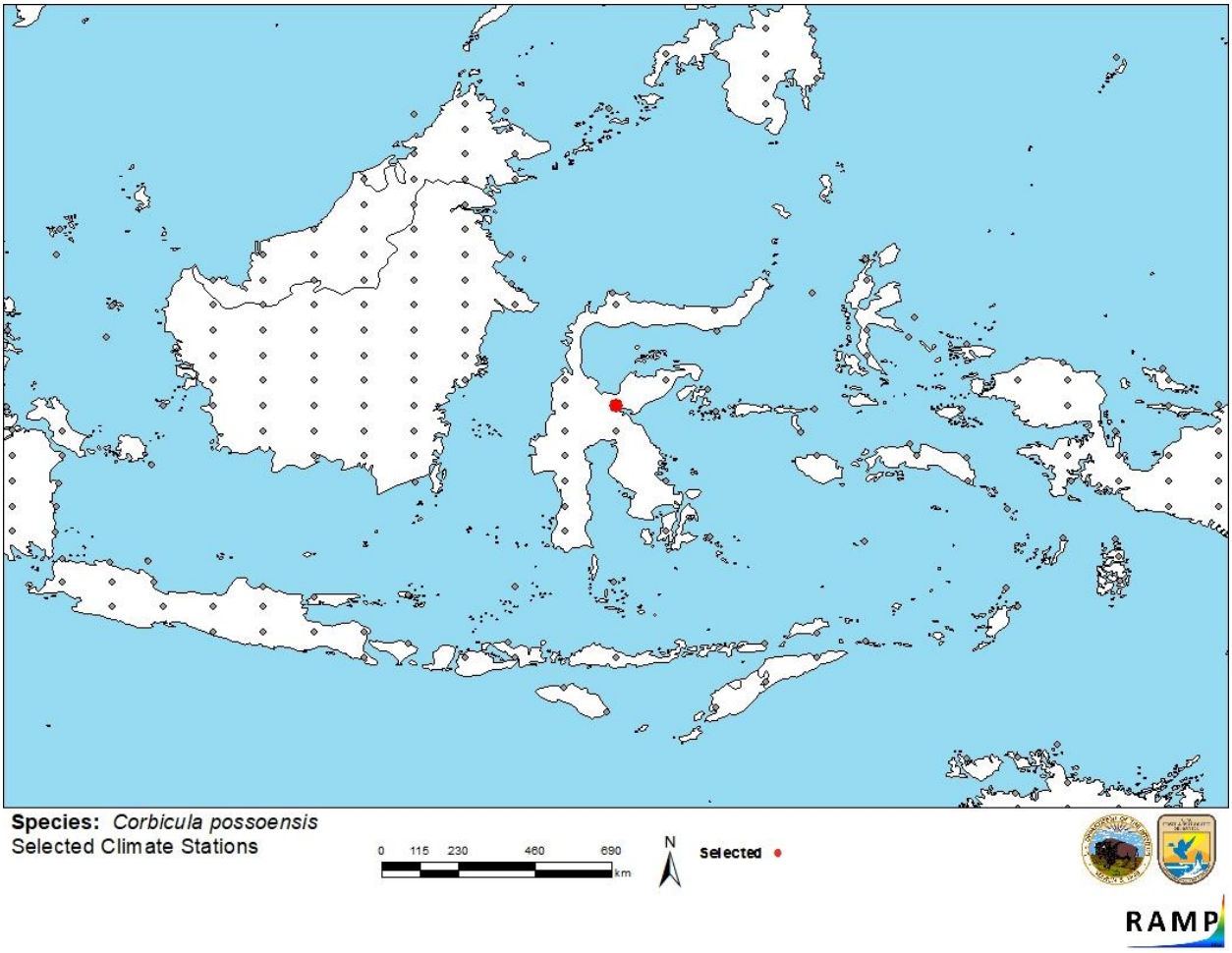


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in Sulawesi, Indonesia selected as source locations (red) and non-source locations (gray) for *Corbicula possoensis* climate matching. Source locations from Rintelen and Bogan (2012).

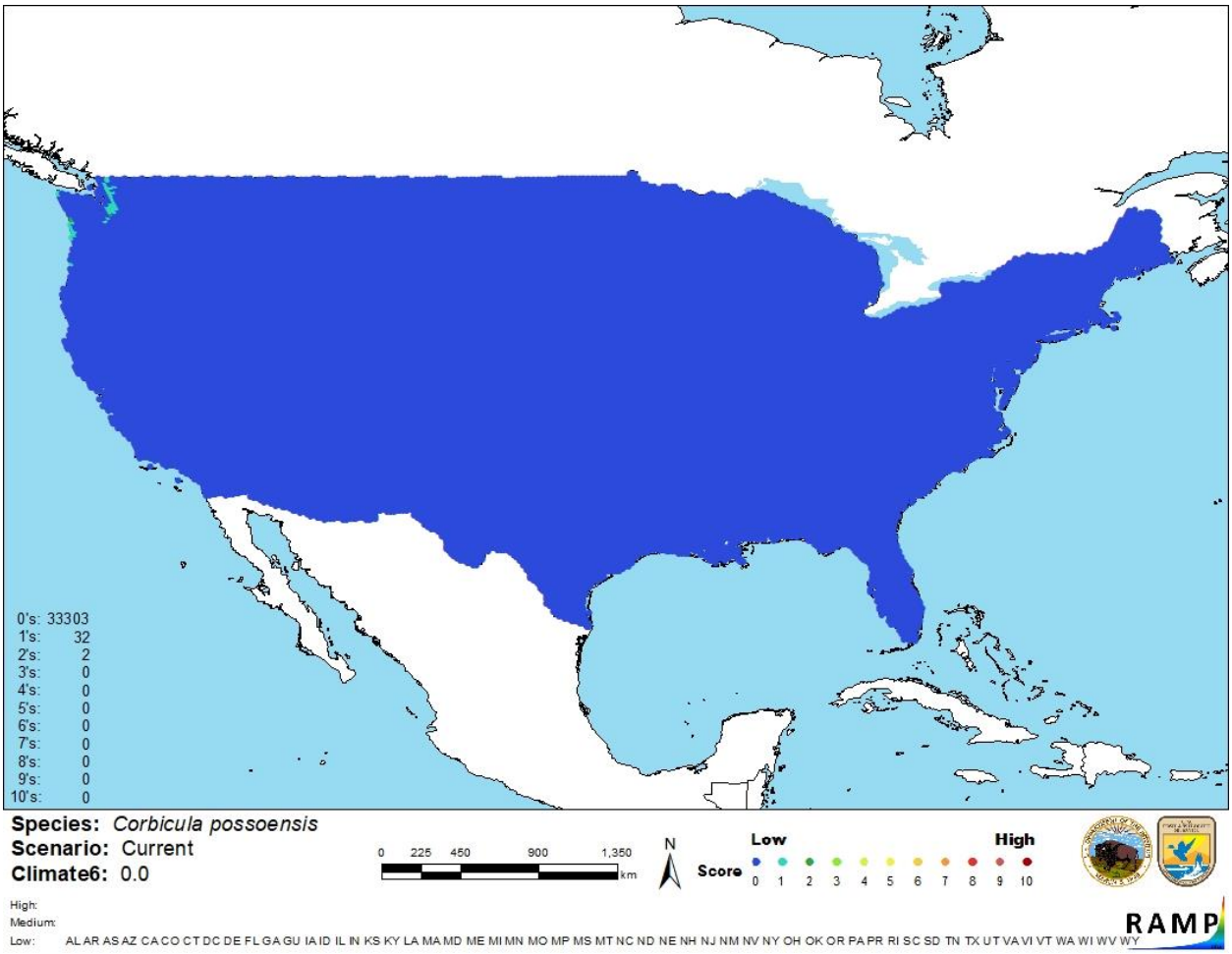


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Corbicula possoensis* in the contiguous United States based on source locations reported by Rintelen and Bogan (2012). 0 = Lowest match, 10 = Highest match.

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 is low. Limited information is available for this species. No records of introduction have been found for *Corbicula possoensis*, so impacts of introduction cannot be determined.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Corbicula possoensis is a freshwater bivalve endemic to Lake Poso in Sulawesi, Indonesia. This species is listed as endangered. *C. possoensis* has an uncertain history of invasiveness; it has not been reported outside of its native range or found in trade. The climate match for the contiguous United States was uniformly low with all individual states scoring a low climate score. No georeferenced locations were available to use in selecting source locations for the climate match, so source locations were selected based on a general description of the range of the species. The certainty of assessment is low. The overall risk assessment for *Corbicula possoensis* 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:** This species is listed as endangered.
- **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.

Rintelen, T., and A. Bogan. 2012. *Corbicula possoensis*. The IUNC Red List of Threatened Species 2012: e.T13509199A13509201. Available: http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T13509199A13509201.en. (December 2018).

Korniushin, T. V., and M. Glaubrecht. 2003. Novel reproductive modes in freshwater clams: brooding and larval morphology in Southeast Asian taxa of Corbicula (Mollusca, Bivalvia, Corbiculidae). Acta Zoologica 84(4):293–315.

OIE (World Organisation for Animal Health). 2019. OIE-listed diseases, infections and infestations in force in 2019. Available: http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (July 2019).

Sanders, S., C. Castiglione, and M. Hoff. 2018. Risk assessment mapping program: RAMP, version 3.1. U.S. Fish and Wildlife Service.

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.

Djajasasmita, M. 1975. On the species of the genus *Corbicula* from Celebes, Indonesia (Mollusca, Corbiculidae). Bulletin Zoologisch Museum Universiteit Van Amsterdam 4:83–87.

Glaubrecht, M., T. von Rintelen, and A. V. Korniushin. 2003. Toward a systematic revision of brooding freshwater Corbiculidae in southeast Asia (Bivalvia, Veneroida): on shell morphology, anatomy and molecular phylogenetics of endemic taxa from islands in Indonesia. Malacologia 45:1–40.

Sarasin, P., and F. Sarasin. 1898. *Die Süßwassermollusken von Celebes.* Kreidel, Wiesbaden, Germany.