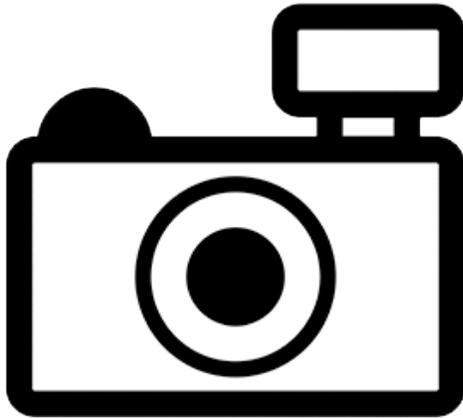


***Corbicula matannensis* (a clam, no common name)**

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, September 2011
Revised, February 2019
Web Version, 7/10/2019



No Photo Available

1 Native Range and Status in the United States

Native Range

From Djajasasmita (1977):

“Distribution.- Central and East Celebes. Type-locality.- Lake Matano [Sulawesi, Indonesia].”

From Djajasasmita (1975):

“Localities of the specimens examined: Lake Matano, [...]; Lake Posso, [...]; Lake Mahalona, [...]; Lake Towuti, [...]; Kuramei, [...]; Tonusu river, Lake Posso area, [...]; Lake Matano, [...]. [Locations are all on the island of Sulawesi in Indonesia]”

Status in the United States

No records of *C. matannensis* in the wild or in trade were found in the United States.

Means of Introductions in the United States

No introductions of *C. matannensis* have been recorded outside of their native range.

Remarks

Information for this ERSS was searched for using the valid name *Corbicula matannensis* and the synonym *C. mahalonensis*.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Djajasasmita (1975):

“Some species of *Corbicula* from Celebes have been reviewed. Four of these are considered to be valid species: [...] *C. matannensis* Sarasin & Sarasin, 1898 [...]”

“It is also justified to regard *C. mahalonensis* a synonym of *C. matannensis*.”

From EOL (2019):

“[Superkingdom] Eukaryota
 Opisthokonta
 [Kingdom] Metazoa
 [Subkingdom] Bilateria
 [Infrakingdom] Protostomia
 Spiralia
 [Phylum] Mollusca
 [Class] Bivalvia
 [Subclass] Heterodonta
 [Infraclass] Euheterodonta
 [Superorder] Imparidentia
 [Order] Venerida
 [Superfamily] Cyrenoidea
 [Family] Cyrenidae
 [Genus] *Corbicula*
 [Species] *Corbicula matannensis* Sarasin and Sarasin 1898”

Size, Weight, and Age Range

From Djajasasmita (1975):

“The average measurements of 30 typical specimens of *C. matannensis* examined: length 26.1 mm, height 23.6 mm, diameter 13.5 mm.”

Environment

From Glaubrecht et al. (2006):

“*Corbicula* an ideal model group for [...] shelled larvae in freshwater lineages, [...]”

Climate/Range

No information on climate or range was found for *C. matannensis*.

Distribution Outside the United States

Native

From Djajasasmita (1977):

“Distribution.- Central and East Celebes. Type-locality.- Lake Matano [Sulawesi, Indonesia].”

From Djajasasmita (1975):

“Localities of the specimens examined: Lake Matano, [...]; Lake Posso, [...]; Lake Mahalona, [...]; Lake Towuti, [...]; Kuramei, [...]; Tonusu river, Lake Posso area, [...]; Lake Matano, [...]. [Locations are all on the island of Sulawesi in Indonesia]”

Introduced

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

Means of Introduction Outside the United States

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

Short Description

From Djajasasmita (1975):

“Shell thick, ovate to trigonal, usually somewhat inflated. Anterior dorsal margin generally concave, posterior dorsal margin convex, posterior margin truncate-roundish, angular at transition to ventral margin. Anterior margin angular rounded. Dorsal margin sloping steeper in front. Ventral margin strongly arched. Umbo slightly inflated, light violet. Concentric ribs coarse, generally regular but irregular in the ventral area, closely placed, concentric growth lines fine. Ligament strong. Lunula small or not distinct. Periostracum olivaceous to blackish green, faintly shining. Inner surface of valve white to dark violet, especially at the ventral part, shiny below palliai line. Hinge teeth normal, lateral teeth straight or somewhat arched.”

Biology

According to Glaubrecht et al. (2006), *C. matannensis* can incubate several hundred larvae within their inner demibranchs.

From Korniusshin and Glaubrecht (2003):

“In contrast, a third method is seen in the following taxa that incubate their young in their inner demibranchs only until the stage of juveniles with straight-hinged shells (D-shaped): *C. matannensis* Sarasin & Sarasin, 1898 from Lake Matano and Lake Mahalona [...].”

“Larvae of *Corbicula matannensis* were usually observed in inner demibranchs, but one specimen contained its brood in the outer demibranchs as well. The interlamellar septae of the inner demibranch in brooding specimens of this species were thickened and, especially in the ventral part of the gill, also perforated (i.e. interrupted into several segments), thus forming ‘tissue bridges’ of various lengths [...]. Accordingly, adjacent water tubes were connected, increasing the space available for incubation.”

According to Korniushev and Glaubrecht (2003), *C. matannensis* brood their larvae in their inner demibranchs until the larvae become D-shaped and reach a size of 0.33-0.42 mm to be released as juveniles. This is known as synchronous brooding.

Human Uses

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

Diseases

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

Threat to Humans

No information on threats to humans was found.

3 Impacts of Introductions

No introductions of *Corbicula matannensis* have been recorded.

4 Global Distribution

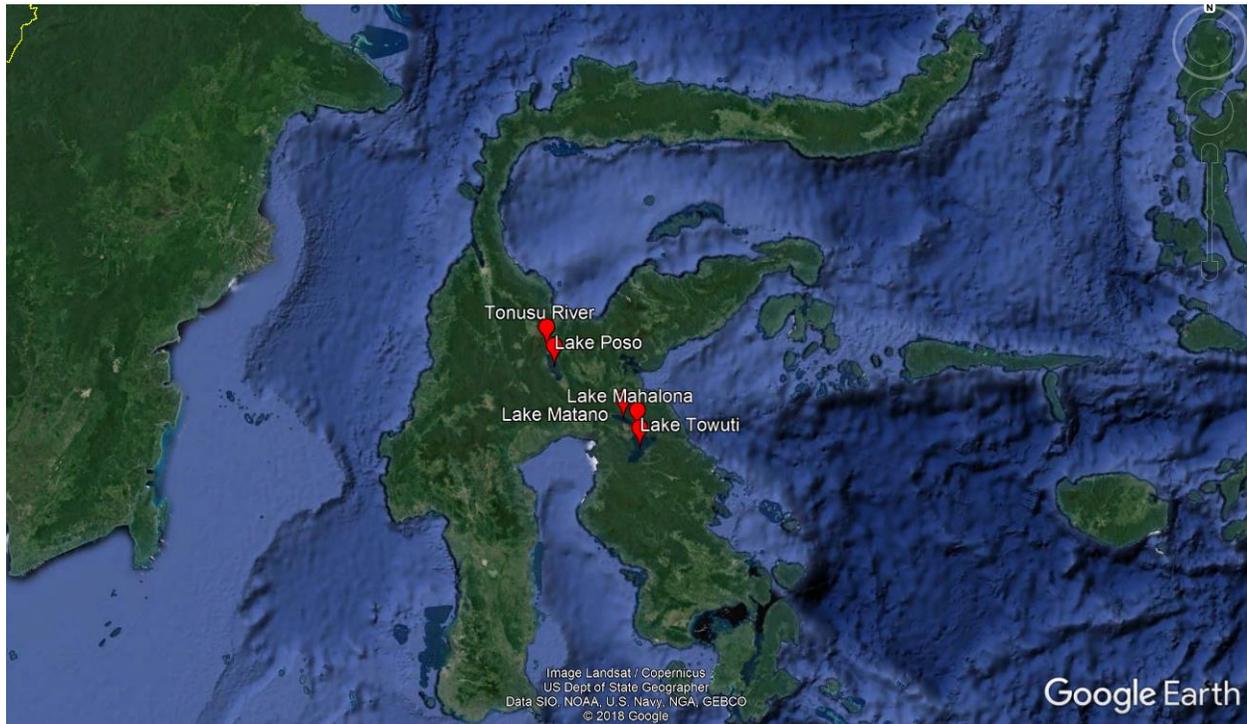


Figure 1. Map of Sulawesi, Indonesia where *Corbicula matannensis* are known to be found. According to Djajasasmita (1975, 1977), *Corbicula matannensis* has been reported as established in Lake Matano, Lake Poso, Lake Mahalona, Lake Towuti, Tonusu river, and Lake Posso area. Map from Google Earth (2019). No georeferenced observations were available for *Corbicula matannensis* to use in selecting source locations for the climate match. Source points for the climate match were chosen to represent the recorded localities.

5 Distribution Within the United States

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

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for the contiguous United States was generally very low. There are no areas of high or medium match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for contiguous United States was 0.000, low (scores 0.000 to 0.005, inclusive, are considered low). All States had low individual Climate 6 scores. While still low, the highest climate match was along the Gulf Coast and parts of the eastern coast of Florida. No georeferenced locations were available to use for selecting source points for climate matching, so collection locations reported in the literature were used.

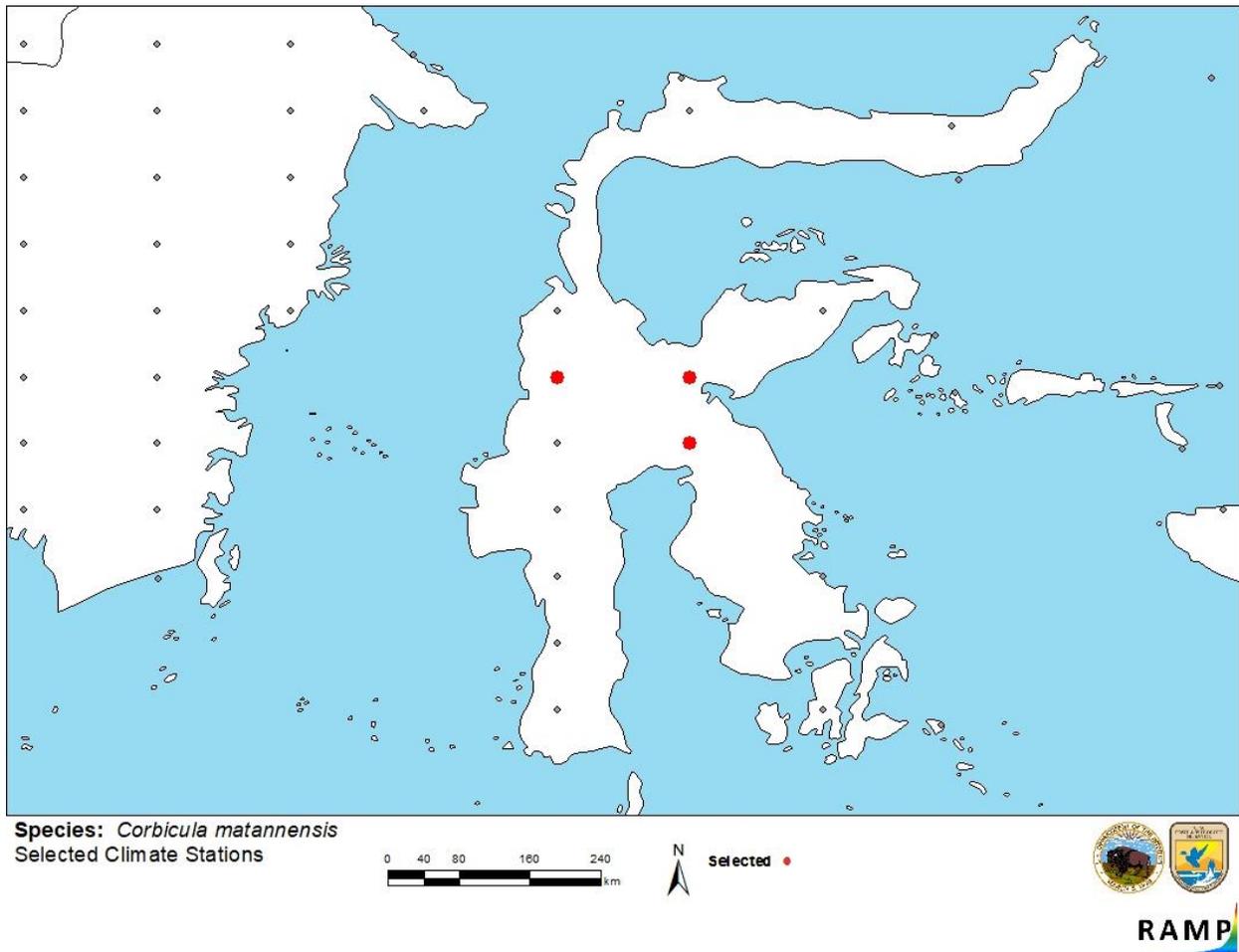


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in Sulawesi, Indonesia selected as source locations (red) and non-source locations (gray) for *Corbicula matannensis* climate matching. Source locations from Djajasasmita (1975, 1977).

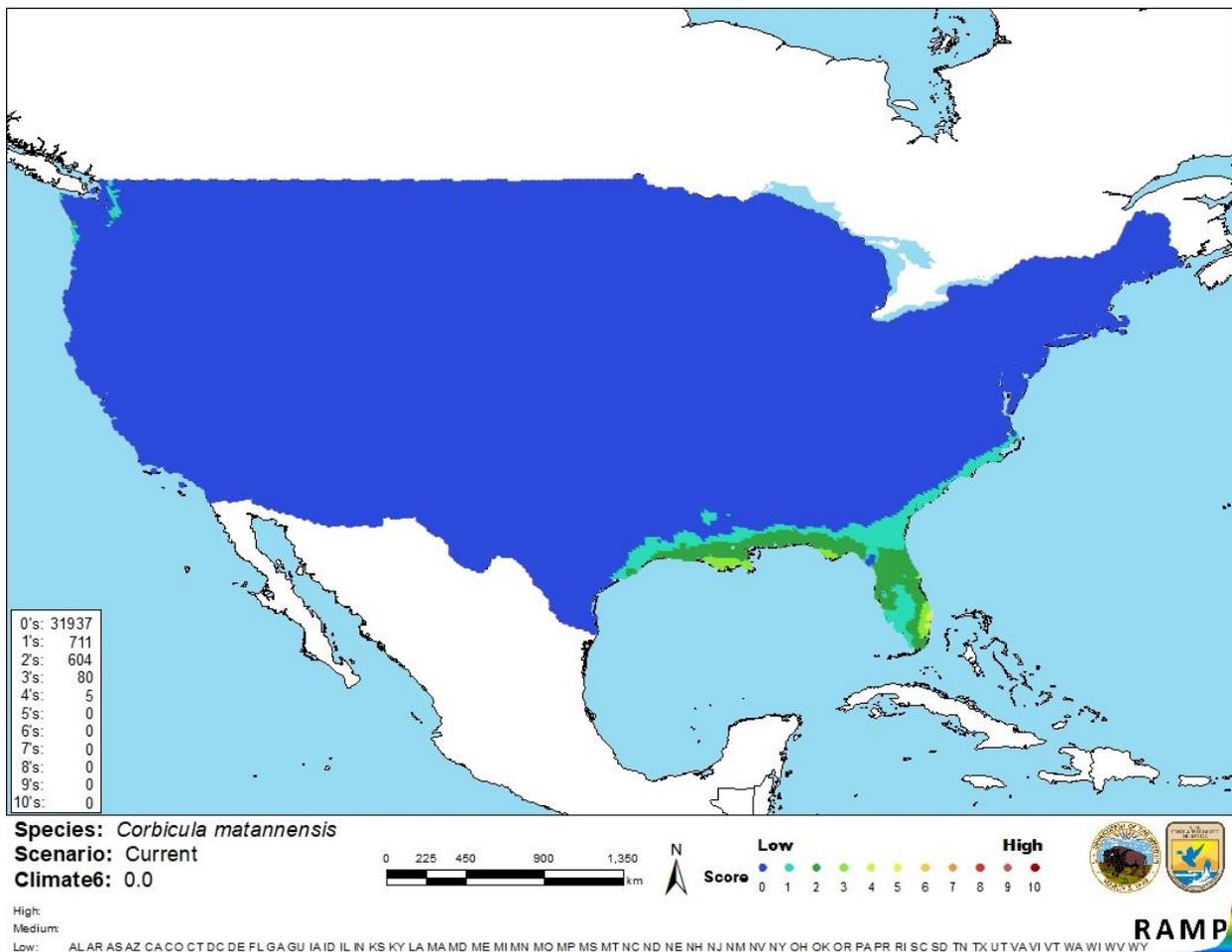


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Corbicula matannensis* in the contiguous United States based on source locations reported by Djajasasmita (1975, 1977). 0 = Lowest match, 10 = Highest match.

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
$0.000 \leq X \leq 0.005$	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 introductions have been found for *Corbicula matannensis* so impacts of introduction cannot be determined.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Corbicula matannensis is a freshwater bivalve found in Sulawesi, Indonesia. *C. matannensis* is found in Lake Matano, Lake Posso, Lake Mahalona, Lake Towuti, Tonusu River, and Lake Posso area. *C. matannensis* has an uncertain history of invasiveness because it has not been reported outside of its native range or found in trade. The climate match for the contiguous United States was low with all States having a low individual Climate 6 score. No georeferenced locations were available for climate matching, so collection locations reported in the literature were used. The certainty of assessment is low due to lack of information. The overall risk assessment for *Corbicula matannensis* 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:** No additional remarks.
- **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.

EOL (Encyclopedia of Life). 2019. *Corbicula matannensis*. Available: <https://eol.org/pages/4757272/names>. (February 2019).

Djajasmita, M. 1975. On the species of the Genus *Corbicula* from Celebes, Indonesia (Mollusca: Corbiculidae). *Bulletin Zoologisch Museum* 4(10):83–87.

Djajasmita, M. 1977. An annotated list of the species of the genus *Corbicula* from Indonesia (Mollusca: Corbiculidae). *Bulletin Zoologisch Museum* 6(1):1–9.

Glaubrecht, M., Z. Feher, and T. von Rintelen. 2006. Brooding in *Corbicula madagascariensis* (Bivalvia, Corbiculidae) and the repeated evolution of viviparity in corbiculids. *Zoologica Scripta* 35(6):641–654.

Google Earth. 2019. Map of Sulawesi, Indonesia. Google Earth Pro. Google Inc.

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/>. (June 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.

No references in this section.