

Ninja Shrimp (*Caridina serratirostris*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, August 2017

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1 Native Range and Status in the United States

Native Range

From De Grave et al. (2013):

“Australia (Queensland); Fiji; Japan (Kyushu); Madagascar; New Caledonia; Philippines; Vanuatu”

From Tiwari and Pillai (1971):

“It is widely distributed in the islands of the Indo-West Pacific, having been recorded in literature from Madagascar, the Seychelles, from Mauritius to Okinawa, New Caledonia and Polynesia. It is so far not known from the Indian mainland and is being reported from the Andamans for the first time.”

From Hung et al. (1993):

“In 1987, Shy and Yu added *C. serratirostris* de Man, 1892 (see de Man, [1892]) [...] to the Taiwanese fauna.”

From Marquet (1991):

“In French Polynesia [...]”

Status in the United States

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

From PetShrimp (no date):

“This Shrimp is particularly popular in Japan, but has not found wide distribution elsewhere. At this point I do not know of any shrimp keepers or breeders in North America or Europe who even have this shrimp.”

Means of Introductions in the United States

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

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From GBIF (2016):

“KINGDOM Animalia
PHYLUM Arthropoda
CLASS Malacostraca
ORDER Decapoda
FAMILY Atyidae
GENUS *Caridina*
SPECIES *Caridina serratirostris*”

“TAXONOMIC STATUS
accepted species”

Size, Weight, and Age Range

From Tiwari and Pillai (1971):

“Carapace in a large ovigerous female 7.0 mm long from tip of rostrum to its hind margin measured in a straight line; the same in a large male 5mm.”

Environment

From De Grave et al. (2013):

“The species lives in the lower reaches of rivers and streams which discharge to the sea.”

“Freshwater”

From Aquatic Community (2009):

“This species requires saltwater to reproduce [...]”

Climate/Range

From Aquatic Community (2009):

“The Ninja shrimp needs fairly warm water, ideally in the 72 - 81 °F / 22 - 27 °C range.”

From Choy (1991):

“*C. serratiostris* is often found close to the sea [...] It has, however, been also reported from an altitude of 130 m (Costa, 1980).”

Distribution Outside the United States

Native

From De Grave et al. (2013):

“Australia (Queensland); Fiji; Japan (Kyushu); Madagascar; New Caledonia; Philippines; Vanuatu”

From Tiwari and Pillai (1971):

“It is widely distributed in the islands of the Indo-West Pacific, having been recorded in literature from Madagascar, the Seychelles, from Mauritius to Okinawa, New Caledonia and Polynesia. It is so far not known from the Indian mainland and is being reported from the Andamans for the first time.”

From Hung et al. (1993):

“In 1987, Shy and Yu added *C. serratiostris* de Man, 1892 (see de Man, [1892]) [...] to the Taiwanese fauna.”

From Marquet (1991):

“In French Polynesia [...]”

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 Tiwari and Pillai (1971):

“Rostrum dagger-shaped, shorter than antennular peduncle, upper margin straight. Rostral formula 18-28/3-7 (usually 20-24/4-6) with 7 to 9 teeth on the carapace behind the orbital border. Two small examples with rostral formula 15/2. Upper teeth sharp, extending to the tip; lower teeth leaving a short gap at the apex.

Ratio between the pre-orbital length of the antennular peduncle and post-orbital length of carapace 0.8. Antennal spine sharp; pterygostomian angle rounded; stylocerite distinct, exceeding the basal segment of antennular peduncle, reaching almost to half the length of the second segment.

Carpus of first peraeopod very slightly excavated distally, 4 times as long as broad; chela of the same 2.8 times as long as broad; proportion between finger and palm about 1.3.

Carpus of second peraeopod much slenderer, 9 to 10 times as long as broad; chela 4 to 4.7 times as long as broad; finger 1.5 times the length of palm.

Propodus of third peraeopod 4 to 4.2 times the length of dactylus. Dactylus with 6 spinules on its ventral aspect including the terminal claw; propodus with 12 to 13 spines; merus with 4 to 5 strong sharp spines. Propodus of fifth peraeopod 4.4 times the length of dactylus; dactylus with 15 short spinules; merus with 2 to 3 strong spines.

Telson armed with 4 to 5 pairs of dorsal (excluding the apical lateral pair) and 10 to 12 terminal spines; the laterals shorter than intermediates which are articulated, plumose and of equal length. Exopod of the uropod with 16 to 19 movable spines.

Sixth abdominal somite 1.4 to 1.5 times as long as broad.”

Biology

From Watanabe and Kano (2009):

“All collected shrimps seemed to have amphidromous life cycles, while several different types of longitudinal distribution ranges were found for the eight species : *C. serratiostris* lived in the lowermost freshwater [...]”

From Tiwari and Pillai (1971):

“Eggs 0.33 to 0.37 mm along the larger diameter and 0.2 mm along the shorter.”

From Saito et al. (2012):

“*Caridina serratirostris* prefer leaf litters and riverbank vegetation, and often found hiding under boulders (Hamano et al., 2008).”

Human Uses

From Planet Inverts (2007):

“The Ninja Shrimp is a wild caught species due to the fact that captive breeding is difficult and requires saltwater. It is found in Asia and is imported virtually 100% of the time unless it is acquired from a breeder that has managed to captive breed this species. [...] Due to minimal spread of the Ninja Shrimp throughout the Freshwater Aquarium Shrimp Hobby little is known about it.”

Diseases

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

Threat to Humans

No information available.

3 Impacts of Introductions

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

4 Global Distribution



Figure 1. Known global distribution of *Caridina serratirostris*. Map from GBIF (2016). Locations in the Pacific Ocean north of Fiji and in the Northern Territory, Australia, were not included in the climate matching analysis because these locations are not described as established populations (see Distribution Outside the United States, above).

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 match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was medium to high in Florida, medium along the Gulf Coast and the Atlantic Coast as far north as South Carolina, and low elsewhere. Climate 6 score indicated that the contiguous U.S. has a medium climate match. Scores between 0.005 and 0.103 are classified as medium match; Climate 6 score for *C. serratirostris* was 0.013.

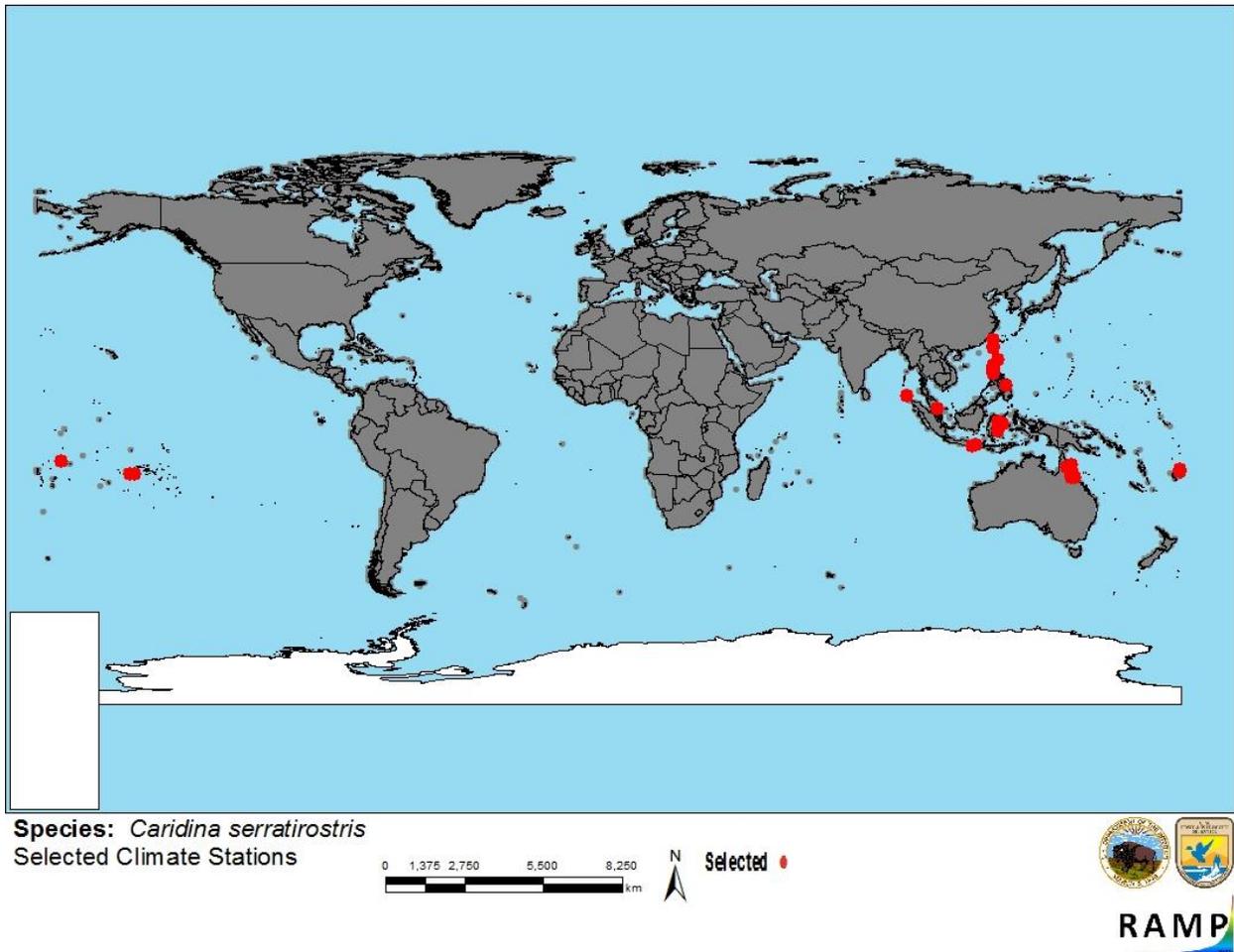


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *Caridina serratiostris* climate matching. Source locations from GBIF (2016).

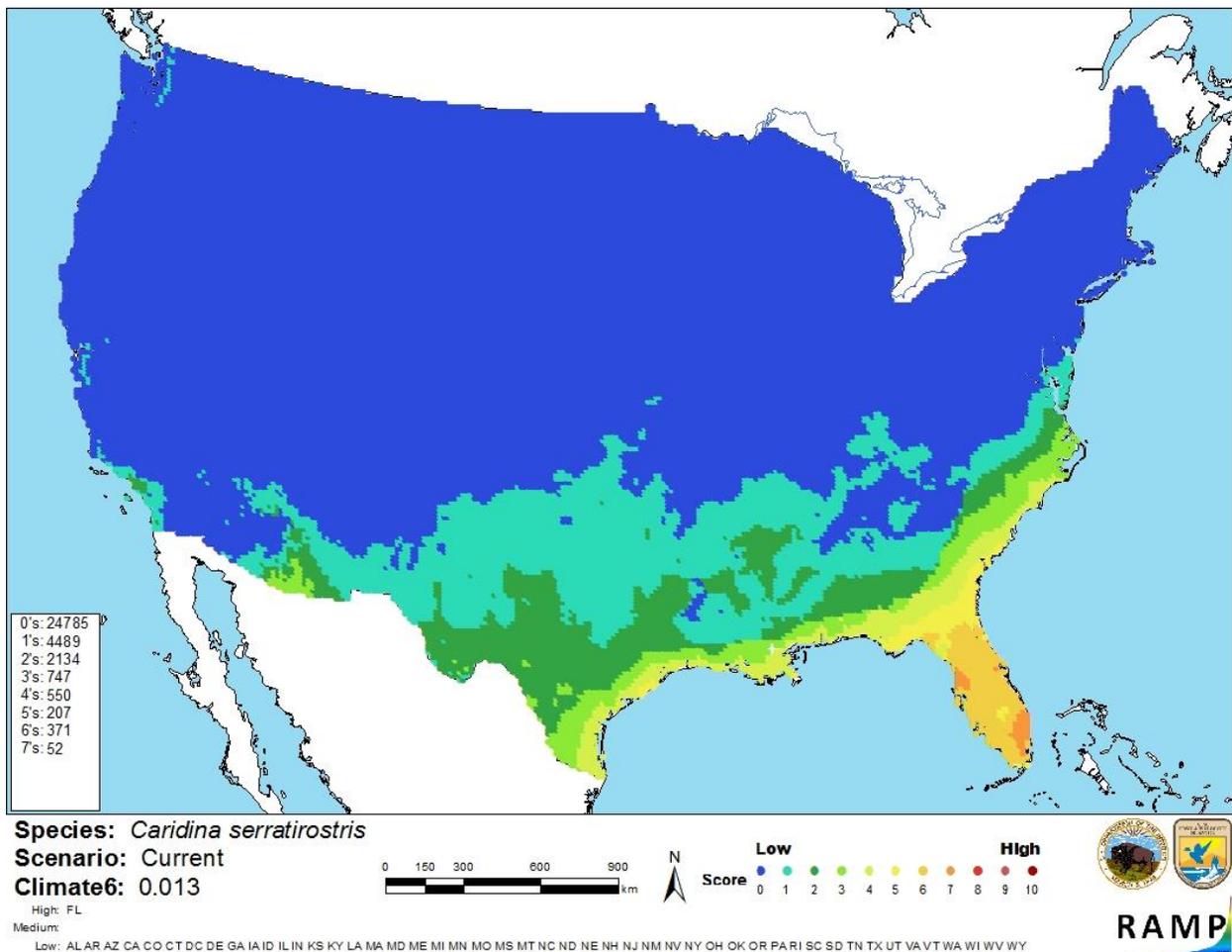


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Caridina serratiostris* in the contiguous United States based on source locations reported by GBIF (2016). 0=Lowest match, 10=Highest match.

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

There is little information available on *Caridina serratiostris*. Further information is needed on its biology, habitat preferences, and trade to adequately assess the risk this species poses to the U.S. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Caridina serratirostris is a small freshwater shrimp native to coastal rivers in Asia and Oceania. It has an amphidromous life cycle, which makes it difficult to breed the species in captivity. *C. serratirostris* has a medium climate match with the contiguous U.S. Further information is needed to adequately assess the risk this species poses to the U.S., so certainty of this assessment is low. Overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **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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- Watanabe, J., and Y. Kano. 2009. Occurrence and longitudinal distribution of shrimps in Kaeda and Ibi Rivers, Miyazaki, Japan. *Bulletin of the Faculty of Agriculture, Miyazaki University* 55:25-35.

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.

- Costa, H. H. 1980. Results of the Austrian Hydrobiological Mission, 1974, to the Seychelles-, Comores- and Mascarene-Archipelagos, part III. The ecology and the distribution of Decapoda Caridea in the Indian Ocean Islands of Seychelles, Mauritius, Comores and Reunion. *Annalen des Naturhistorischen Museums in Wien* 83:673-700.
- de Man, J. G. 1982. Decapoden des Indischen Archipels. Pages 265-527 in M. Weber. *Zoologische Ergebnisse einer Reise in Niederländisch Ost-Indien* 2.
- Hamano, T., N. Ito, and K. Yamamoto. 2008. *Mizube-no-kowaza*, enlarged and revised edition. Civil engineering and Construction Division, Yamaguchi Prefecture, Yamaguchi, Japan. (In Japanese.)