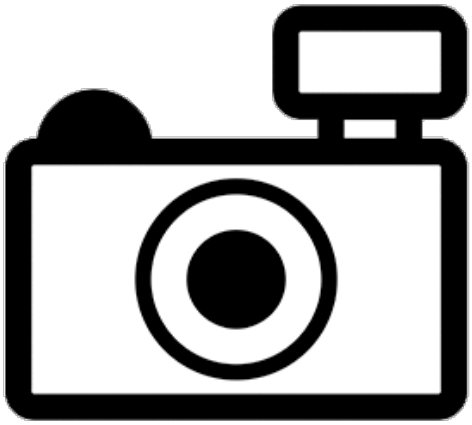
Ptychognathus altimanus (a crab, no common name)
Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, September 2020
Revised, January 2021
Web Version, 4/5/2021

Organism Type: Crustacean
Overall Risk Assessment Category: Uncertain



1 Native Range and Status in the United States

Native Range

From Sakai (2020):

"Range: Nias (Tesch, 1918a); Japan - Ishigaki-jima (Minei, 1972, Miyake, 1983), Kinokawa, Wakayama (Nomoto et al., 1999); Philippines - Luzon (Rathbun, 1914a); Indonesia - Ambon (Serène & Moosa, 1971)."

From Serene and Moosa (1971):

"In spite of the rarity of the records it seems that the species has a wide distribution in South East Asia from Philippines to the Indian Ocean shores (Tesch 1918)."

From Naruse et al. (2005):

"Widely distributed in the Western Pacific: Nias and Ambon, Indonesia; Point Jamelo, Luzon, the Philippines (type locality, Rathbun, 1914); Pingtung Co., Taiwan; IriomoteI., Ishigaki I., Okinawa I., Amami-oshima I., and Yaku I., the Ryukyu Is.; Kinokawa R., Wakayama Pref., main islands of Japan (Tesch 1918; Serène and Moosa, 1971; Minei, 1972; Nakasone, 1977; Nomoto et al., 1999; Kishino and Wada, 2001; Kishino et al., 2001; Naruse, 2005; this study)."

Status in the United States

No records of *Ptychognathus altimanus* in trade or in the wild in the United States were found.

Means of Introductions in the United States

No records of *Ptychognathus altimanus* in trade or in the wild in the United States were found.

Remarks

Information for this assessment was searched for using the valid name *Ptychognathus altimanus* and the synonym *Varuna altimana.*

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to WoRMS (2020); *Ptychognathus altimanus* (Rathbun, 1914) is the current valid name for this species.

From WoRMs (2020):

"Biota > Animalia (Kingdom) > Arthropoda (Phylum) > Crustacea (Subphylum) > Multicrustacea (Superclass) > Malacostraca (Class) > Eumalacostraca (Subclass) > […] Decapoda (Order) > Pleocyemata (Suborder) > Brachyura (Infraorder) > Eubrachyura (Section) > Thoracotremata (Subsection) > Grapsoidea (Superfamily) > Varunidae (Family) > Varuninae (Subfamily) > Ptychognathus (Genus) > *Ptychognathus altimanus* (Species)"

Size, Weight, and Age Range

From Naruse et al. (2005):

"[Body size] smaller; male G1 reaches thoracic sternite V in individuals with a CL [carapace length] > 8.3 mm; fifth abdominal segment equal to that of the third abdominal segment in an individual with a CL of 13.4 mm"

Environment

From Naruse et al. (2005):

"*Ptychognathus altimanus* was collected from underwater vegetation along the riverbank or in the riverbed of upper basins with brackish waters; the substratum was pebbly-muddy."

From Selvakumar and Khan (1993):

“Inhabits muddy substrata along intertidal region.”

From WoRMS (2021):

“marine, brackish”

Climate

No climate preferences were found for *P. altimanus.*

Distribution Outside the United States

Native

From Sakai (2020):

“Range: Nias (Tesch, 1918a); Japan - Ishigaki-jima (Minei, 1972, Miyake, 1983), Kinokawa, Wakayama (Nomoto et al., 1999); Philippines - Luzon (Rathbun, 1914a); Indonesia - Ambon (Serène & Moosa, 1971).”

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“In spite of the rarity of the records it seems that the species has a wide distribution in South East Asia from Philippines to the Indian Ocean shores (Tesch 1918).”

From Naruse et al. (2005):

“Widely distributed in the Western Pacific: Nias and Ambon, Indonesia; Point Jamelo, Luzon, the Philippines (type locality, Rathbun, 1914); Pingtung Co., Taiwan; IriomoteI., Ishigaki I., Okinawa I., Amami-oshima I., and Yaku I., the Ryukyu Is.; Kinokawa R., Wakayama Pref., main islands of Japan (Tesch 1918; Serène and Moosa, 1971; Minei, 1972; Nakasone, 1977; Nomoto et al., 1999; Kishino and Wada, 2001; Kishino et al., 2001; Naruse, 2005; this study).”

Introduced

There are no known introductions of *P. altimanus* outside of its native range.

Means of Introduction Outside the United States

There are no known introductions of *P. altimanus* outside of its native range.

Short Description

From Selvakumar and Khan (1993):

“Carapace brown, cardiac region less brighter [sic].”

“From 'S' shaped orbital margin the species can be easily identified.”

From Naruse et al. (2005):

“Outer end of granulated ridge of metabranchial region […] separated from the latter anterolateral tooth by the outer length of the former anterolateral tooth.”

“Width of exopod of third maxilliped […] wide; larger individuals (especially males) have a wider exopod; width to ischium width 0.6~1.8 in males; 0.68~0.84 in females.”

“Anterior margin of large male chelipedal merus […] lined with long setae”

“Dorsal margin of large male chela […] proximal part keel-like”

“Female sternal knob […] placed closer to anterior margin of sternite V”

“Coloration of *P. altimanus* variable. Small individuals dark to slightly purple; manus lilac with white spots […]. Dorsal surfaces of carapace and ambulatory legs of large individuals dark khaki, while manus orange […].”

Biology

From Sakai (2020):

“The eggs of the female are very small and most numerous.”

From Masagca (2011):

“This varunid crab [*Ptychognathus altimanus*] is abundant in the backshore portions of the mangroves. Found in the back mangroves of Quezon and Catanduanes [Philippines] (near the rice paddies) and at the edges near the areas where freshwater streams are flowing”

Human Uses

Ptychognathus altimanus has no reported human uses.

Diseases

No records of OIE-reportable diseases (OIE 2021) were found in association with *Ptychogathus altimanus.*

No information on diseases associated with *Ptychognathus altimanus* was found.

Threat to Humans

No information on threats to humans was found.

3 Impacts of Introductions

No records of introductions were found for *Ptychognathus altimanus*; therefore there is no information on impacts of introduction.

4 History of Invasiveness

Ptychognathus altimanus has not been reported outside its native range. The history of invasiveness is classified as No Known Nonnative Population.

5 Global Distribution

Figure 1. Known global distribution of *Ptychognathus altimanus*. Observations are reported from India, Japan, the Solomon Islands, Samoa, and the Philippines. Map from GBIF Secretariat (2020). The locations in India, the Solomon Islands, and Samoa do not represent established populations and were not used in the climate match. The basis for those records are either unknown or over 100 years old with no corroboration in the literature. Because the climate matching analysis (section 7) is not valid for marine waters, no marine occurrences were used in the climate matching analysis.

Additional locations in Indonesia are given in Sakai (2020). No georeferenced observations were found in Taiwan.

6 Distribution Within the United States

Ptychognathus altimanus has not been reported in the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Ptychognathus altimanus* was generally low throughout the contiguous United States. There was a small patch of medium match in southern Florida. The overall Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) 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 information was found regarding this species' salinity tolerances during reproduction, therefore the results of the climate match only refer to where the species may be able to survive and not necessarily where it can reproduce.

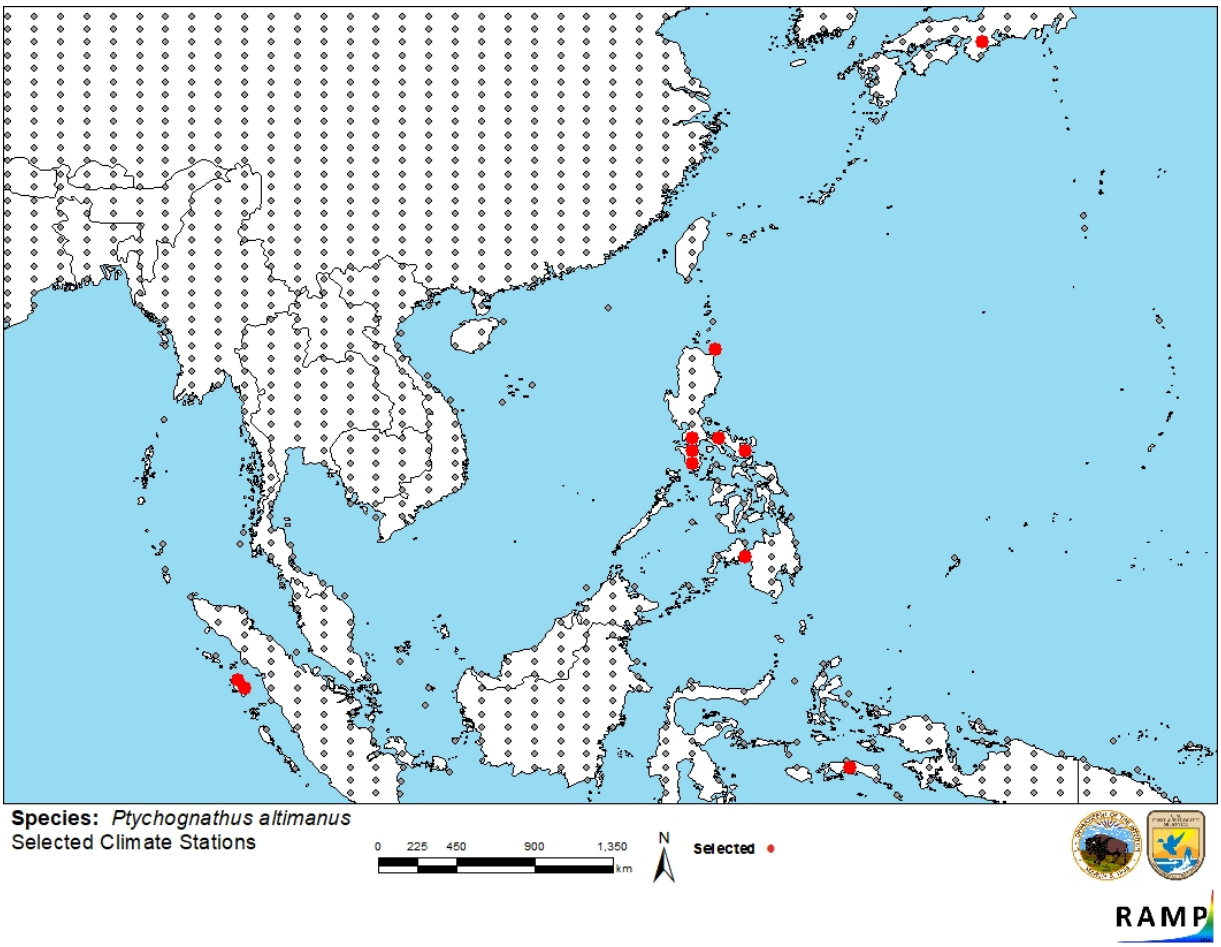

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations from selected source locations (red; Japan, the Philippines, Indonesia) and non-source locations (gray) for *Ptychognathus altimanus* climate matching. Source locations from GBIF Secretariat (2020) and Sakai (2020). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

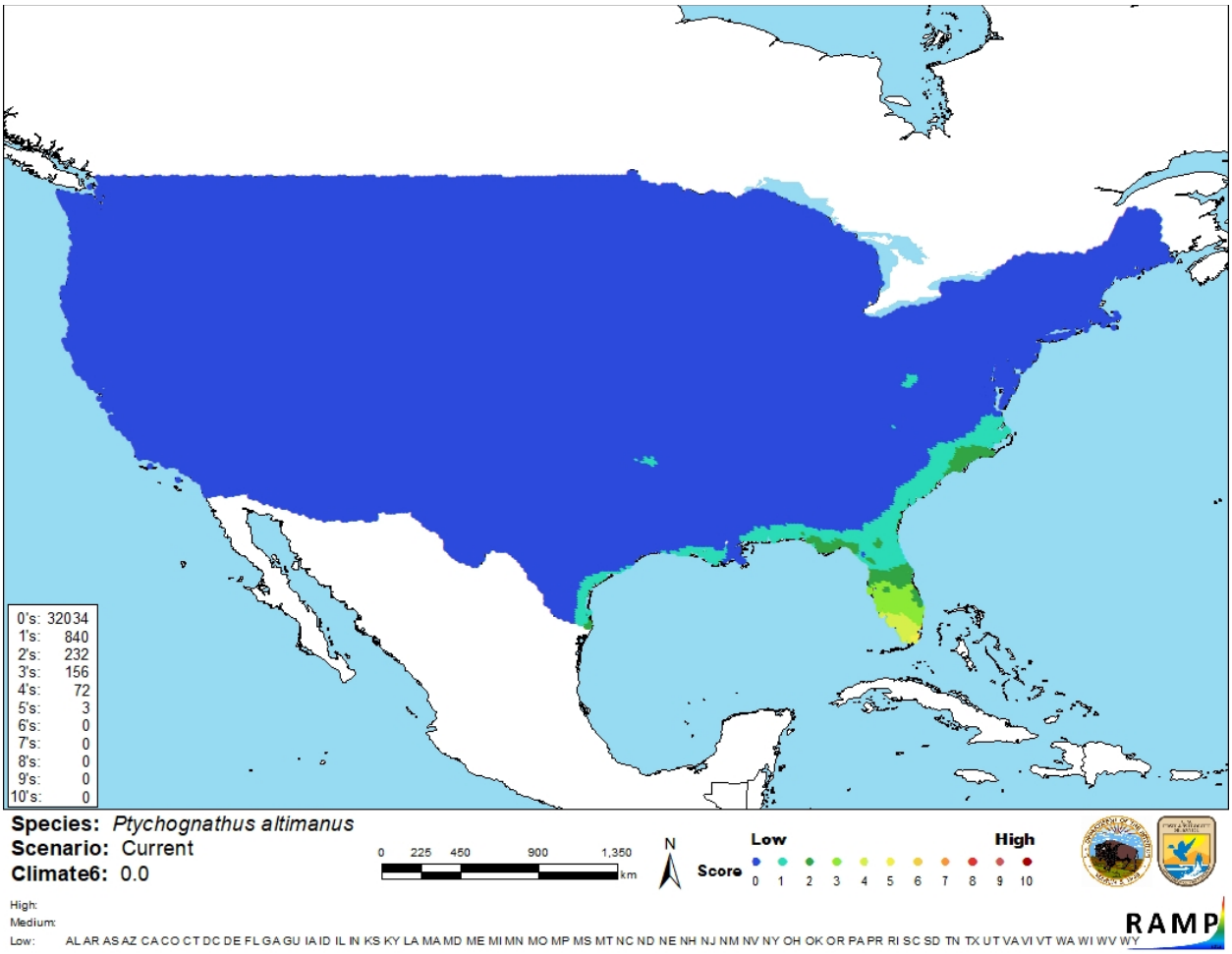

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Ptychognathus altimanus* in the contiguous United States based on source locations reported by GBIF Secretariat (2020) and Sakai (2020). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

8 Certainty of Assessment

The certainty of assessment is Low. Limited information is available on the biology and ecology, and few georeferenced points were available within the native range of *Ptychognathus altimanus.* No information was found regarding this species salinity tolerances during reproduction, therefore the results of the climate match only refers to where the species may be

able to survive and not necessarily where it can reproduce. There are no reported introductions, and therefore no information on impacts due to introductions.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Ptychognathus altimanus is a crab species native to Japan, Indonesia, the Philippines and the Solomon Islands. It is a mainly described as a brackish water species. No information was found regarding whether marine or freshwater environments are required for reproduction of this species. *Ptychognathus altimanus* has not been reported outside of its native range. The history of invasiveness for this species is classified as No Known Nonnative Population. The climate match for the contiguous United States was Low. The entire contiguous United States had a low climate match except the southern tip of Florida, which had a medium match. Due to the lack of information regarding the needed environment for reproduction, the results of the climate match only refers to where the species may be able to survive and not necessarily where it can reproduce. The certainty of assessment is Low due to a lack of information. The overall risk assessment category for *Ptychognathus altimanus* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): No Known Nonnative Population**
- **Overall Climate Match Category (Sec. 7): Low**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information: No Additional Remarks**
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 11.

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Sakai K. 2020. Crabs of Japan *Ptychognathus altimanus.* Marine Species Identification Portal. Available: http://species-identification.org/species.php?species_group=crabs_of_japan&id=1672&menuentry=soorten (August 2020).

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11 Literature Cited in Quoted Material

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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Rathbun MJ. 1914. New species of crabs of the families Grapsidae and Ocypodidae. In Scientific results of the Philippine Cruise of the Fisheries steamer Albatross. Proceedings of the United States National Museum 47(2044): 69–85.

Serène R, Moosa MK. 1971. New and few known species of Brachyura from Ambon. Marsh Restoration Indonesia 11:3–24.

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