

Crescent Betta (*Betta imbellis*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2011
Revised, July 2018
Web Version, 8/20/2018



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<http://eol.org/pages/223141/overview>. (July 2018)

1 Native Range and Status in the United States

Native Range

Froese and Pauly (2018) report *B. imbellis* as native to Indonesia, Malaysia, and Thailand.

Status in the United States

This species has not been reported as introduced or established in the United States. A search of online aquarium retailers did not show this species in trade in the United States.

Means of Introductions in the United States

No known occurrences.

2 Biology and Ecology

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 Acanthopterygii
Order Perciformes
Suborder Anabantoidei
Family Osphronemidae
Subfamily Macropodinae
Genus *Betta*
Species *Betta imbellis* Ladiges, 1975”

“Taxonomic status:
Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 6.0 cm SL male/unsexed; [Vidthayanon 2002]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic; pH range: 6.0 - 7.0; dH range: 5 - 19. [...] 24°C - 28°C [Riehl and Baensch 1991; presumed to represent recommended aquarium water temperatures]”

Climate/Range

From Froese and Pauly (2018):

“Tropical [...]”

Distribution Outside the United States

Native

Froese and Pauly (2018) report *B. imbellis* as native to Indonesia, Malaysia, and Thailand.

Introduced

From Froese and Pauly (2018):

“Singapore”

Means of Introduction Outside the United States

From Froese and Pauly (2018):

“It is uncertain whether this was ever native to Singapore but if introduced, original stock may have come from both Thailand and Malaysia [Ng et al. 1993].”

Short Description

From Froese and Pauly (2018):

“Diagnosed by having the following combination of characters: A bright red crescent on distal edge of caudal fin; absence of caudal transverse bars; dorsal transverse bars on distal two-thirds of dorsal fin; iridescent blue opercle scales; body dark brown to black; lateral scales 30-32; body depth 24.2-30.1% SL; dorsal-fin origin above lateral scales 15-17 (mode 16); length of dorsal-fin fin base 12.9-18.9% SL; and height of pectoral-fin origin 14.8-18.9% SL [Tan and Ng 2005].”

Biology

From Froese and Pauly (2018):

“Occurs usually in stagnant pools and ditches in clear to brown water [Tan and Ng 2005]. Found also in lowland swamps and paddy field. Bubble nest builder species [Vidthayanon 2002]. Eggs shrink [*sic*] to the bottom and were then collected by one or both parents and were embedded among the foam bubbles in the nest [Britz and Cambray 2001].”

Human Uses

From Froese and Pauly (2018):

“Aquarium: commercial”

Diseases

No OIE reportable diseases. No additional information found.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No information found.

4 Global Distribution

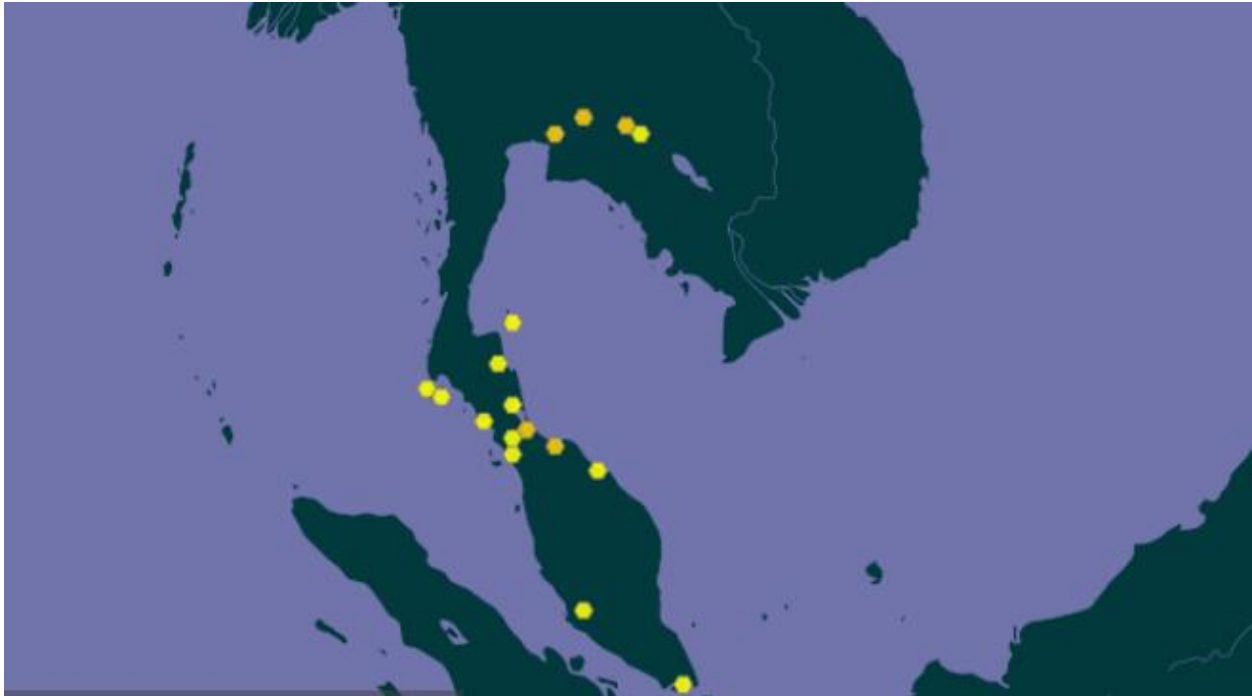


Figure 1. Known global distribution of *Betta imbellis*, reported from Thailand, Malaysia, Singapore, and Cambodia. Map from GBIF Secretariat (2017). No georeferenced locations were available for populations in Indonesia. Locations in Cambodia were excluded from the climate matching analysis because the species is not known to be established there.

5 Distribution Within the United States

No known occurrences.

6 Climate Matching

Summary of Climate Matching Analysis

The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for *Betta imbellis* in the contiguous United States was 0.000, which is a low score. The range for a low climate match is from 0.0 to 0.005, inclusive. No state had a medium or high overall climate score. Southern peninsular Florida had a medium match. The remainder of the contiguous United States had a low match. The highest match was 5 out of 10 which was located in southern Florida. The majority of the United States recorded 0 out of 10.

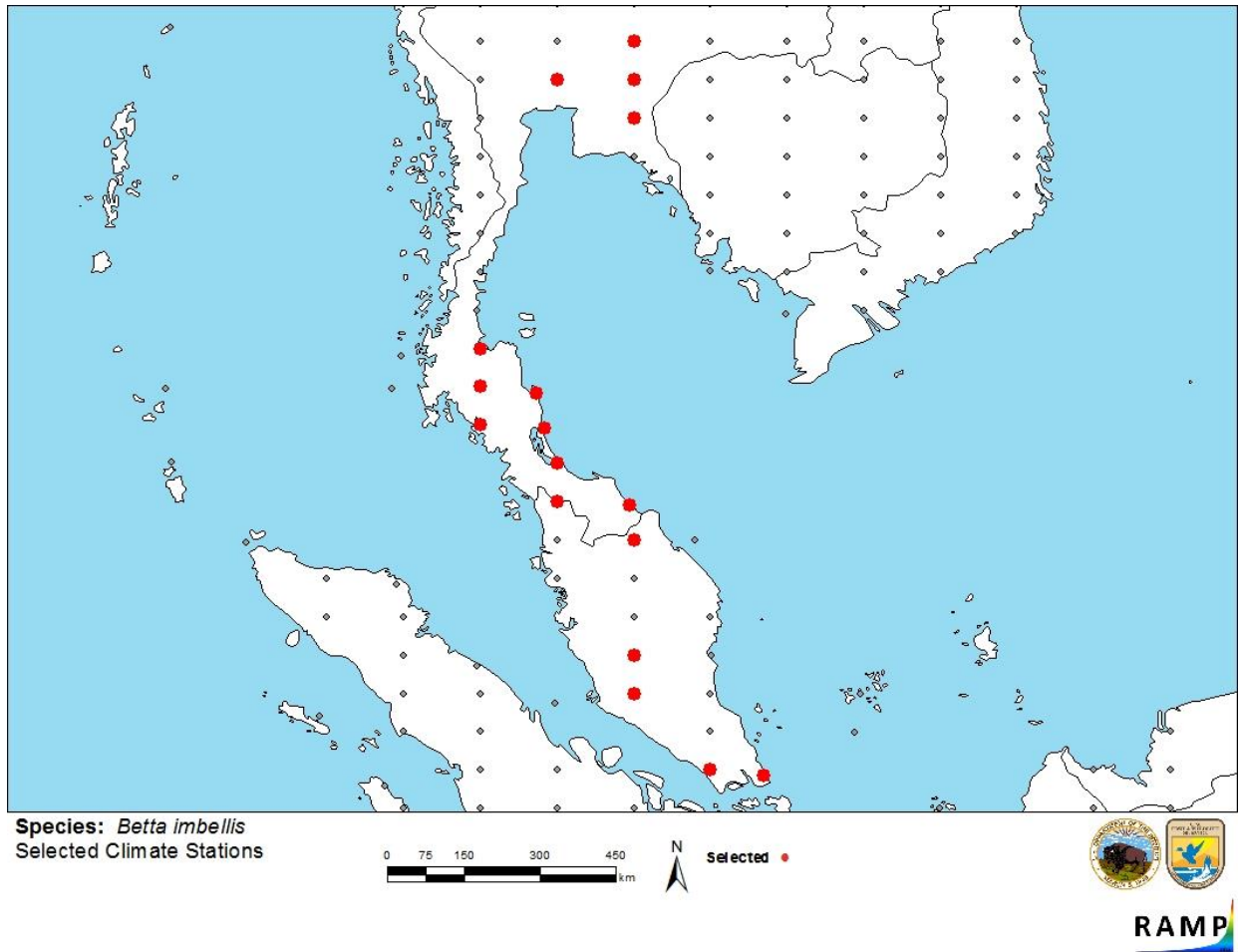


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Thailand, Malaysia and Singapore) and non-source locations (gray) for *Betta imbellis* climate matching. Source locations from GBIF Secretariat (2017).

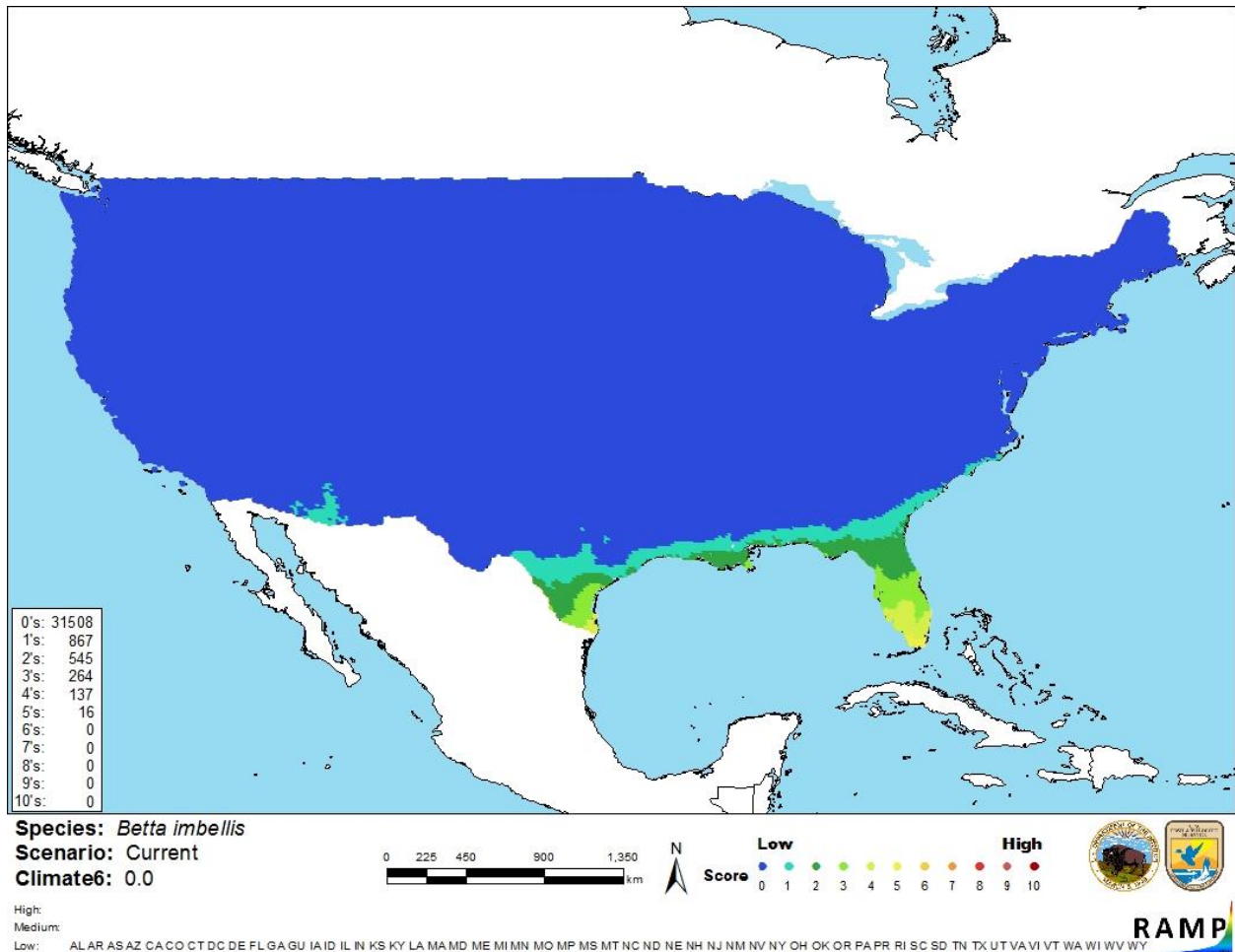


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Betta imbellis* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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
≥ 0.103	High

7 Certainty of Assessment

Some information is available about the biology and ecology of *Betta imbellis*. There is uncertainty about whether the species is native or introduced in Singapore. No impacts of *B. imbellis* in Singapore have been reported. Due to lack of information, the certainty of assessment is low. More information is needed to increase the certainty of the assessment.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Crescent betta (*Betta imbellis*) is a fish native to Thailand, Malaysia, and Indonesia. It is used in the aquarium trade, but does not appear to be sold in the United States. *B. imbellis* has been reported as introduced outside of its native range to Singapore, although it is possible that the species was originally native there. No information about impacts, or lack thereof, of its introduction has been reported. The climate match with the contiguous United States is low, with a medium match only in south Florida. Due to lack of information about the impacts of introduction of *B. imbellis*, the risk is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Low**
- **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.

Froese, R., and D. Pauly, editors. 2018. *Betta imbellis* Ladiges, 1975. FishBase.

Available: <https://www.fishbase.de/summary/Betta-imbellis.html>. (July 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Betta imbellis* Ladiges, 1975. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2394051>. (July 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Betta imbellis* Ladiges, 1975. Integrated Taxonomic Information System, Reston, Virginia. Available: https://itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=172615#null. (July 2018).

Sanders, S., C. Castiglione, and M. H. 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.

Britz, R., and J. A. Cambray. 2001. Structure of egg surfaces and attachment organs in anabantoids. *Ichthyological Exploration of Freshwaters* 12(3):267-288.

- Ng, P. K. L., L. M. Chou, and T. J. Lam. 1993. The status and impact of introduced freshwater animals in Singapore. *Biological Conservation* 64:19-24.
- Riehl, R., and H. A. Baensch. 1991. *Aquarien atlas, volume 3*. Mergus, Verlag für Natur- und Heimtierkunde, Melle, Germany.
- Tan, H. H., and P. K. L. Ng. 2005. The fighting fishes (Teleostei: Osphronemidae: Genus *Betta*) of Singapore, Malayasia and Brunei. *Raffles Bulletin of Zoology Supplement* (13):43-99.
- Vidthayanon, C. 2002. *Peat swamp fishes of Thailand*. Office of Environmental Policy and Planning, Bangkok, Thailand.