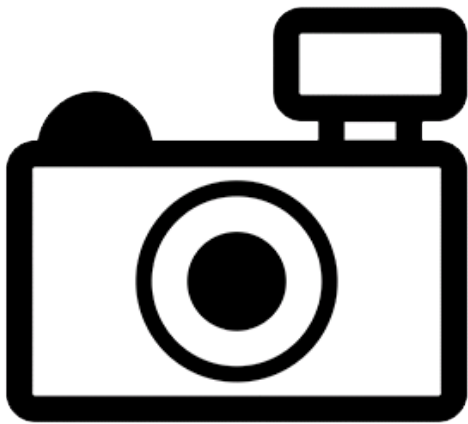


Slim Betta (*Betta bellica*)

Ecological Risk Screening Summary

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



No Photo Available

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

“Asia: Indonesia and Malaysia.”

Status in the United States

This species is not documented as introduced or established in the United States. Although Betta fish are popular in the aquarium trade, a check of several online retailers did not find this species in the United States aquarium trade.

Means of Introductions in the United States

No known introductions in the United States.

Remarks

From Seriously Fish (2018):

“Populations from different localities are often labelled as such in order to maintain accuracy and preserve pure bloodlines, e.g., Selangor, Perak, Pahang, Johor. Sauvage’s single original type specimen was supposed to have derived from Perak, but it was lost and never recovered. Sumatran populations were described as *B. fasciata* by Regan, 1910, but this taxon was later synonymised with *B. bellica* by Witte and Schmidt (1992), a decision ratified by Tan and Ng (1996).”

The synonymized name, *B. fasciata*, was used as a search term in finding information for this report, in addition to the accepted scientific name (*B. bellica*).

Seriously Fish (2018) also refers to this species with the common name “Slender Betta”.

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 bellica* Sauvage, 1884 – slim fighting fish”

“Taxonomic status:

Current Standing: valid”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 10.0 cm TL male/unsexed; [Riehl and Baensch 1991]”

Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic; pH range: 6.5 - 7.5; dH range: ? - 15. [...] 24°C - 30°C [Riehl and Baensch 1991; presumed to represent recommended aquarium water temperature]”

Climate/Range

From Froese and Pauly (2018):

“Tropical;”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Asia: Indonesia and Malaysia.”

Introduced

From Froese and Pauly (2018):

“Dominican Republic”

Means of Introduction Outside the United States

From Froese and Pauly (2018):

“During hurricane 'David', *B. bellica* escaped, presumably from a tropical fish farm or a private aquarist, into the polluted waters of the Rio Ozama where they are now abundant.”

Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 0 - 1; Dorsal soft rays (total): 11-12; Anal spines: 1-2; Anal soft rays: 29 - 31; Vertebrae: 32 - 33. Anal fin ray mode 31; dorsal fin ray mode 12; lateral line scale mode 33; postdorsal scale mode 8; pelvic fin length 23.6-38.8% SL; reaching end of 8th anal ray; pelvic fin flange ending halfway [*sic*] pelvic filament; non-overlap of adpressed pelvic fin branched rays with anal fin origin; and less sloping lateral head profile [Tan and Ng 2005a].”

Biology

From Froese and Pauly (2018):

“Usually occurs in peat swamps. Also found in swamp forest habitats [Tan and Ng 2005b]. A bubble nest builder [Tan and Ng 2005b].”

Human Uses

From Froese and Pauly (2018):

“Aquarium: commercial”

Diseases

No OIE reportable diseases have been documented for this species. No additional information found.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No known impacts.

4 Global Distribution

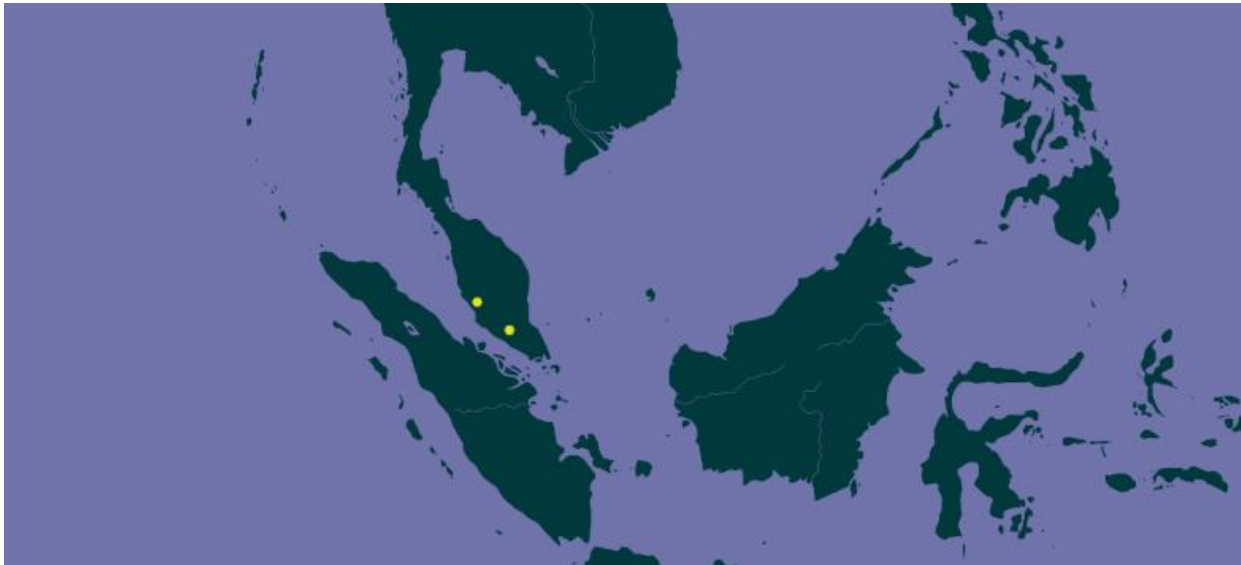


Figure 1. Known global distribution of *Betta bellica* in Malaysia. Map from GBIF Secretariat (2017). Georeferenced locations were not available for populations in Indonesia or the Dominican Republic.

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 bellica* 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 recorded a medium or high match. The entire contiguous United States had a low match. The highest match was 2 out of 10 which was located in southern Louisiana along the Gulf Coast. The majority of the United States recorded 0 out of 10. No georeferenced occurrences were available for *Betta bellica* populations in Indonesia or established in the Dominican Republic. The accuracy of the climate matching analysis is limited by the unavailability of georeferenced occurrences, and may underestimate the climate match.

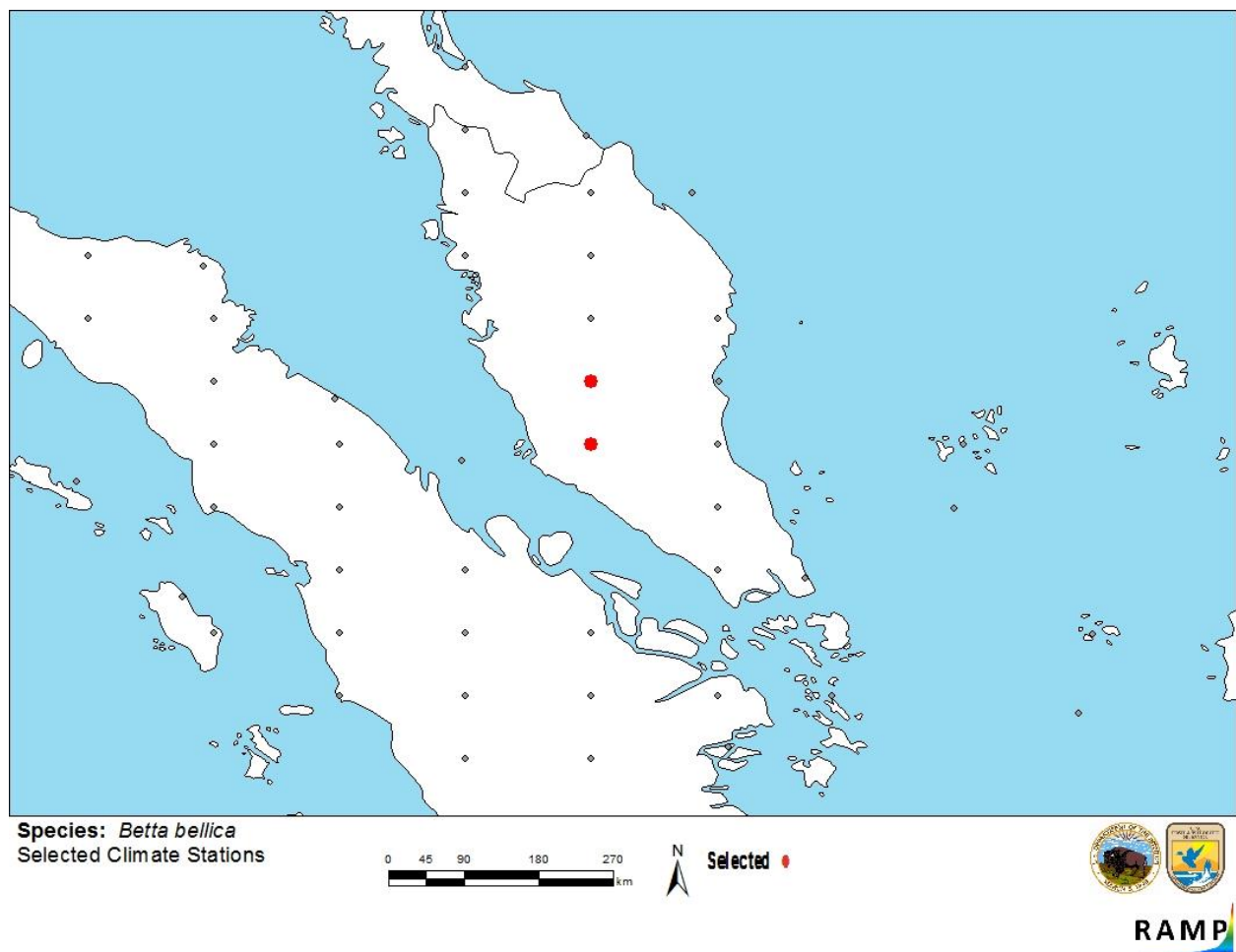


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Malaysia) and non-source locations (gray) for *Betta bellica* climate matching. Source locations from GBIF Secretariat (2017).

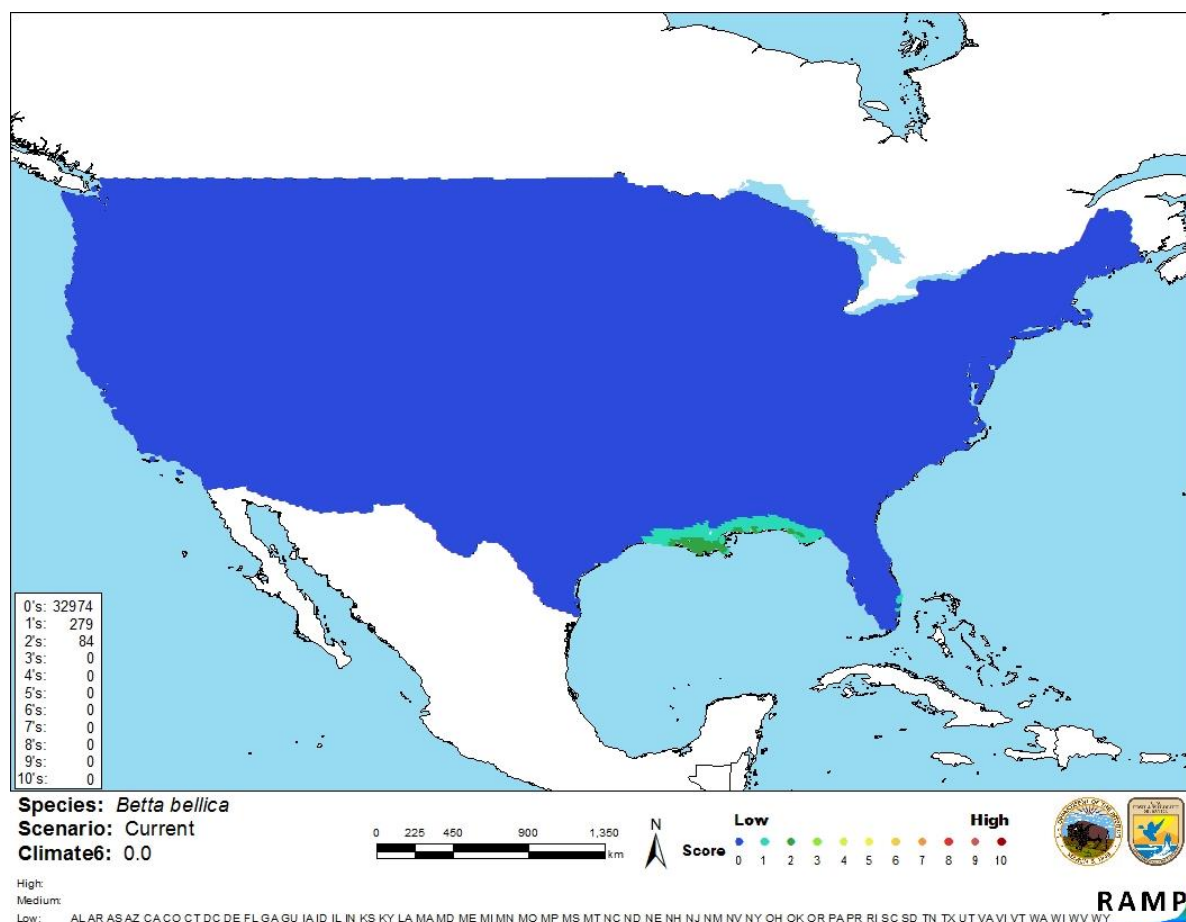


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Betta bellica* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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
$0.000 \leq X \leq 0.005$	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 bellica*. There is one record showing introduction of this species outside of its native range to the Dominican Republic. It is now abundant but no studies of impacts were available. In addition, the climate match may be under estimated because georeferenced locations were not available for all populations. Due to lack of information, the certainty of assessment is low. More information is needed to increase certainty of the assessment.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The slim betta (*Betta bellica*) is a fish native to Malaysia and Indonesia. It is used in the aquarium trade, but does not appear to be sold in the United States. There is one record of this species being introduced outside of its native range into the Dominican Republic, where it is now established and abundant. No information about impacts, or lack thereof, from its introduction has been reported. Climate match with the United States is low, but since georeferenced locations were not available for all populations the climate match may be underestimated. Due to lack of information about impacts of introduction of *B. bellica*, 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 bellica* Sauvage, 1884. FishBase. Available: <https://www.fishbase.de/summary/Betta-bellica.html>. (July 2018, August 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Betta bellica* Sauvage, 1884. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2394004>. (July 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Betta bellica* Sauvage, 1884. Integrated Taxonomic Information System, Reston, Virginia. Available: https://itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=172619#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.

Seriously Fish. 2018. *Betta bellica* – Slender Betta (*Betta fasciata*). Seriously Fish. Available: <https://www.seriouslyfish.com/species/betta-bellica/>. (August 2018).

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.

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. 1996. Redescription of *Betta bellica* Sauvage, 1884 (Teleostei: Belontiidae), with description of a new allied species from Sumatra. Raffles Bulletin of Zoology 44(1):143-155.

Tan, H. H., and P. K. L. Ng. 2005a. The labyrinth fishes (Teleostei: Anabantoidei, Channoidei) of Sumatra, Indonesia. Raffles Bulletin of Zoology Supplement (13):115-138.

Tan, H. H., and P. K. L. Ng. 2005b. The fighting fishes (Teleostei: Osphronemidae: Genus *Betta*) of Singapore, Malayasia and Brunei. Raffles Bulletin of Zoology Supplement (13):43-99.

Witte, K.-E., and J. Schmidt. 1992. *Betta brownorum*, a new species of anabantoids (Teleostei: Belontiidae) from northwestern Borneo, with a key to the genus. Ichthyological Exploration of Freshwaters 2(4):305-330.