# *Vandellia sanguinea* (a catfish, no common name)

## Ecological Risk Screening Summary

**U.S. Fish and Wildlife Service, January 2017**
**Revised, June 2018**
**Web Version, 9/3/2019**


Photo: Field Museum of Natural History. Licensed under CC BY-NC. Available: https://www.gbif.org/occurrence/666742181. (June 2018).

# 1 Native Range and Status in the United States

## Native Range

From Eschmeyer et al. (2018):

"Amazon, Orinoco and Essequibo River basins: Brazil, Bolivia[,] Guyana and Venezuela."

## Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication from the literature or online aquarium retailers that this species is in trade in the United States.

From FFWCC (2016):

"Prohibited nonnative species are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities."

The Florida Fish and Wildlife Conservation Commission (FFWCC) lists the parasitic catfish *Vandellia sanguinea* as a prohibited species.

## 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 ITIS (2018):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae Bleeker, 1858
Subfamily Vandelliinae
Genus *Vandellia*
Species *Vandellia sanguinea* Eigenmann, 1917"

From Eschmeyer et al. (2018):

"Current status: Valid as *Vandellia sanguinea* Eigenmann 1917. Trichomycteridae: Vandelliinae."

## Size, Weight, and Age Range
From Froese and Pauly (2016):

"Max length : 8.4 cm SL male/unsexed; [de Pínna and Wosiacki, 2003]"

## Environment
From Froese and Pauly (2016):

"Freshwater; demersal."

## Climate/Range
From Froese and Pauly (2016):

"Tropical"

## Distribution Outside the United States
### Native
From Eschmeyer et al. (2018):

"Amazon, Orinoco and Essequibo River basins: Brazil, Bolivia[,] Guyana and Venezuela."

### 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 Eigenmann (1917):

"Head 11.66; depth 12; D. 4 + 8.5 ; A. 3 + 7; P. 7; nearly the entire eye in the anterior half of the head, a little more than four in the length of the head to the tip of the opercular spines."

"Maxillary barbel extending to the tip of the interopercular spines, two in the head; the lower barbel minute, only about half a millimeter long as compared with the 2.5 mm. of the maxillary barbel; two, flat, recurved teeth on the end of the maxillary concealed just in front of the barbel; five premaxillary teeth graduated from the long middle one to the minute lateral ones; the mandibles widely separated from each other, each with about five minute teeth; the teeth concealed by the lip; five spines in the main row of the interopercle, the middle ones very strong, directed backward, about five spines in supplementary rows; five spines in the main row of the opercle, about ten in supplementary rows ; distance between origin of ventrals and base of middle caudal rays two in its distance form [*sic*] the snout; origin of anal behind the origin of the dorsal, the last dorsal ray over the middle of the anal, distance between anal and base of middle caudal rays five and five tenths in the length; distance between origin of dorsal and base of

middle caudal rays two and eight tenths in its distance from the snout; caudal truncate, with numerous accessory rays. Translucent, the eyes black."

## Biology

From Zuanon and Sazima (2004):

"*Vandellia cirrhosa* and *V. sanguinea* displayed similar feeding behaviour. The feeding sequence began with the candiru approaching a host fish and swimming alongside it, aiming at the gill chamber. When close to the edge of the gill cover, the candiru attempted to penetrate the gill chamber by forcing itself underneath."

"Our observations support the suggestion by de Pinna & Wosiacki (2003) that large candirus of the genus *Vandellia* take blood from their hosts through major gill vessels. The evidence obtained here supports the view that these vessels are the ventral and dorsal aorta and/or the afferent and efferent gill arteries. This view is strengthened by the observation of the candiru's positioning, its quick engorging with blood, and the blood spurting from the gill chamber [*sic*] Blood pulses from a damaged artery, not from a vein."

## Human Uses

No information available.

## Diseases

No information available. No OIE-reportable diseases (OIE 2019) have been documented for this species.

## Threat to Humans

From Froese and Pauly (2016):

"Harmless"

# 3 Impacts of Introductions

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

The Florida Fish and Wildlife Conservation Commission has listed the parasitic catfish *V. sanguinea* as a prohibited species (FFWCC 2016).

# 4 Global Distribution

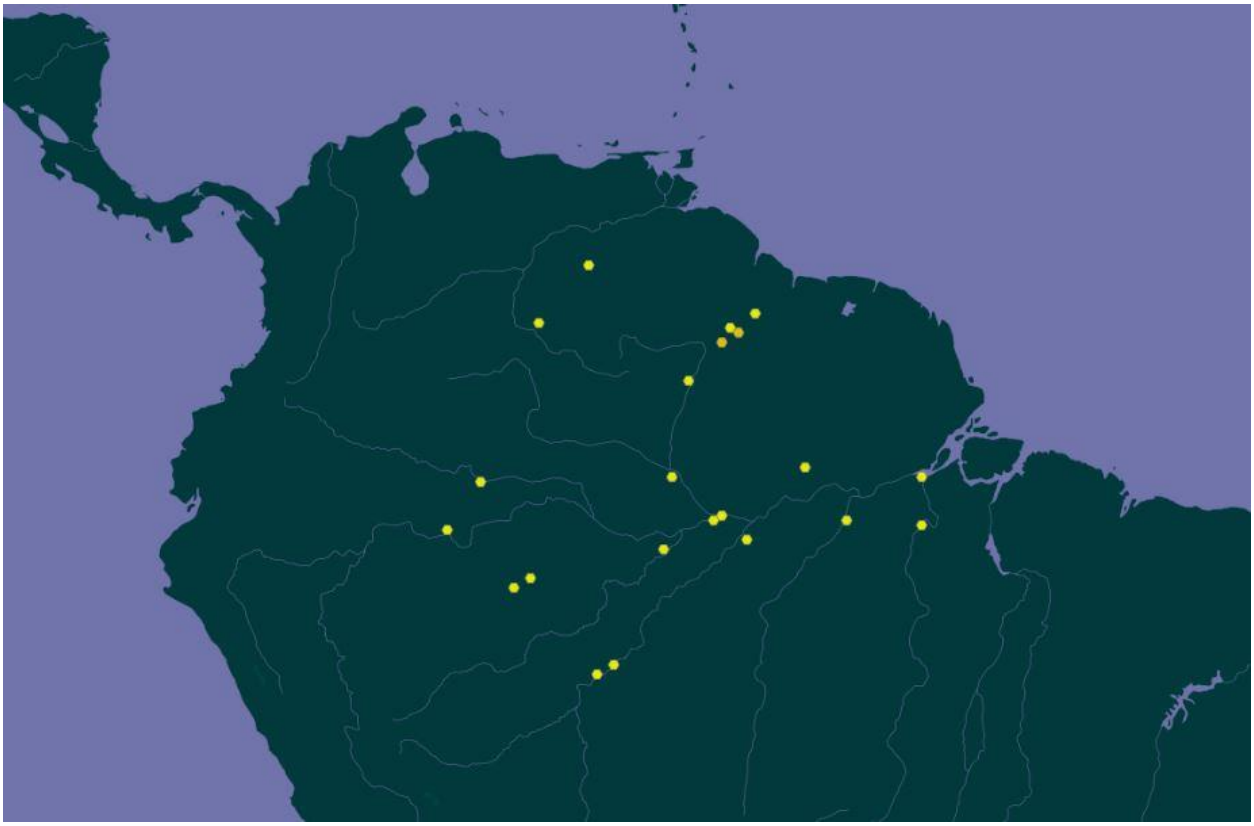

**Figure 1**. Known global distribution of *Vandellia sanguinea*, reported from Brazil, Guyana, Venezuela, and Colombia. Map from GBIF Secretariat (2018). Although Colombia is not listed among countries where this species is native (see Native Range, above), the single occurrence in Colombia occurs in the Amazon River basin near the border with Brazil, so it was considered a valid occurrence. No georeferenced occurrences were available for the portion of the species range in Bolivia.

# 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 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.0, which is a low climate match. (Scores between 0.000 and 0.005, inclusive, are classified as low.) The climate score was low in every State in the contiguous United States. There was an area of slightly higher, but still low, climate match along the Gulf Coast. The only area of medium climate match was located in southern Florida.

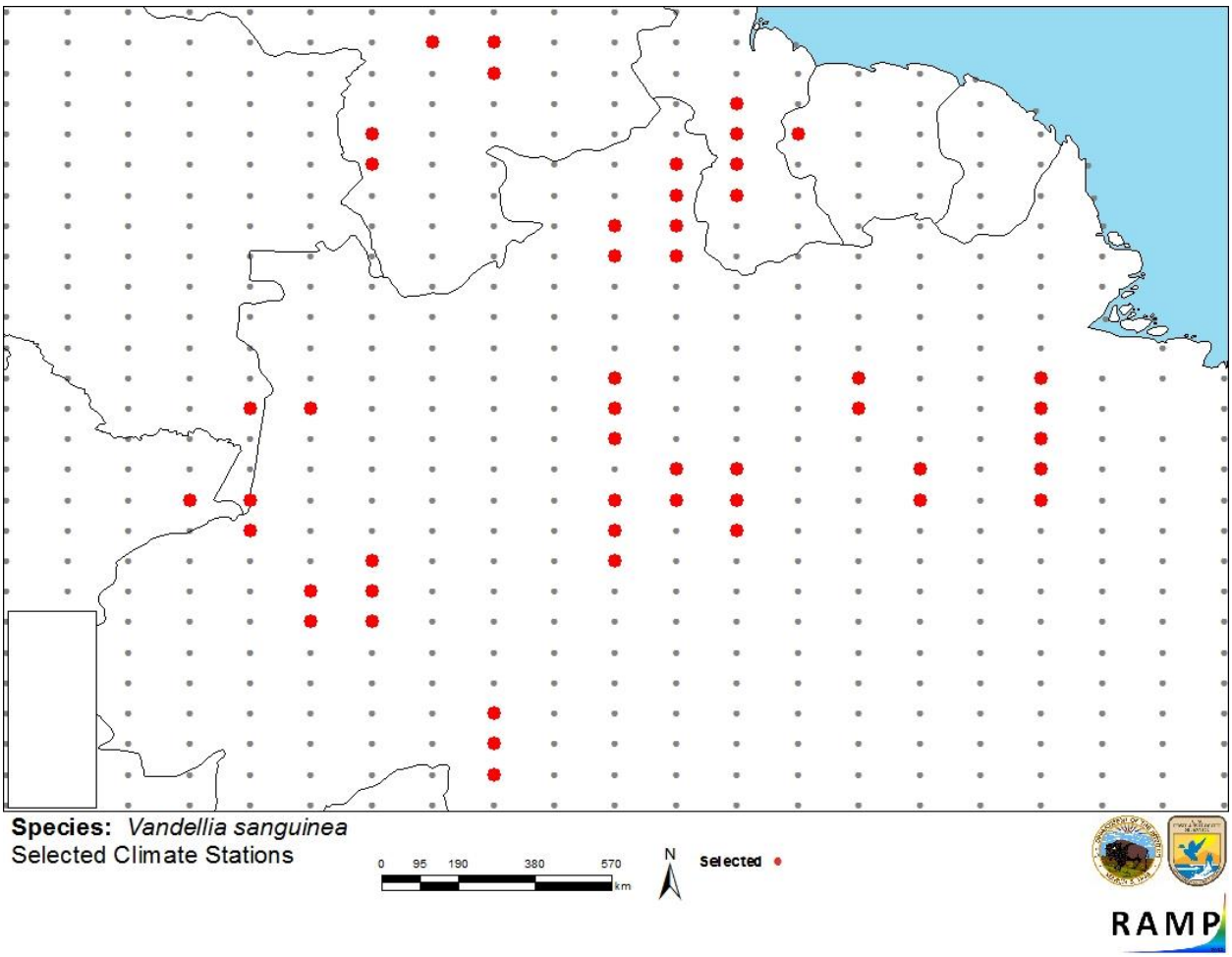


**Figure 2**. RAMP (Sanders et al. 2014) source map showing weather stations in northern South America selected as source locations (red; Brazil, Suriname, Guyana, Venezuela, Colombia, Peru) and non-source locations (gray) for *Vandellia sanguinea* climate matching. Source locations from GBIF Secretariat (2018). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

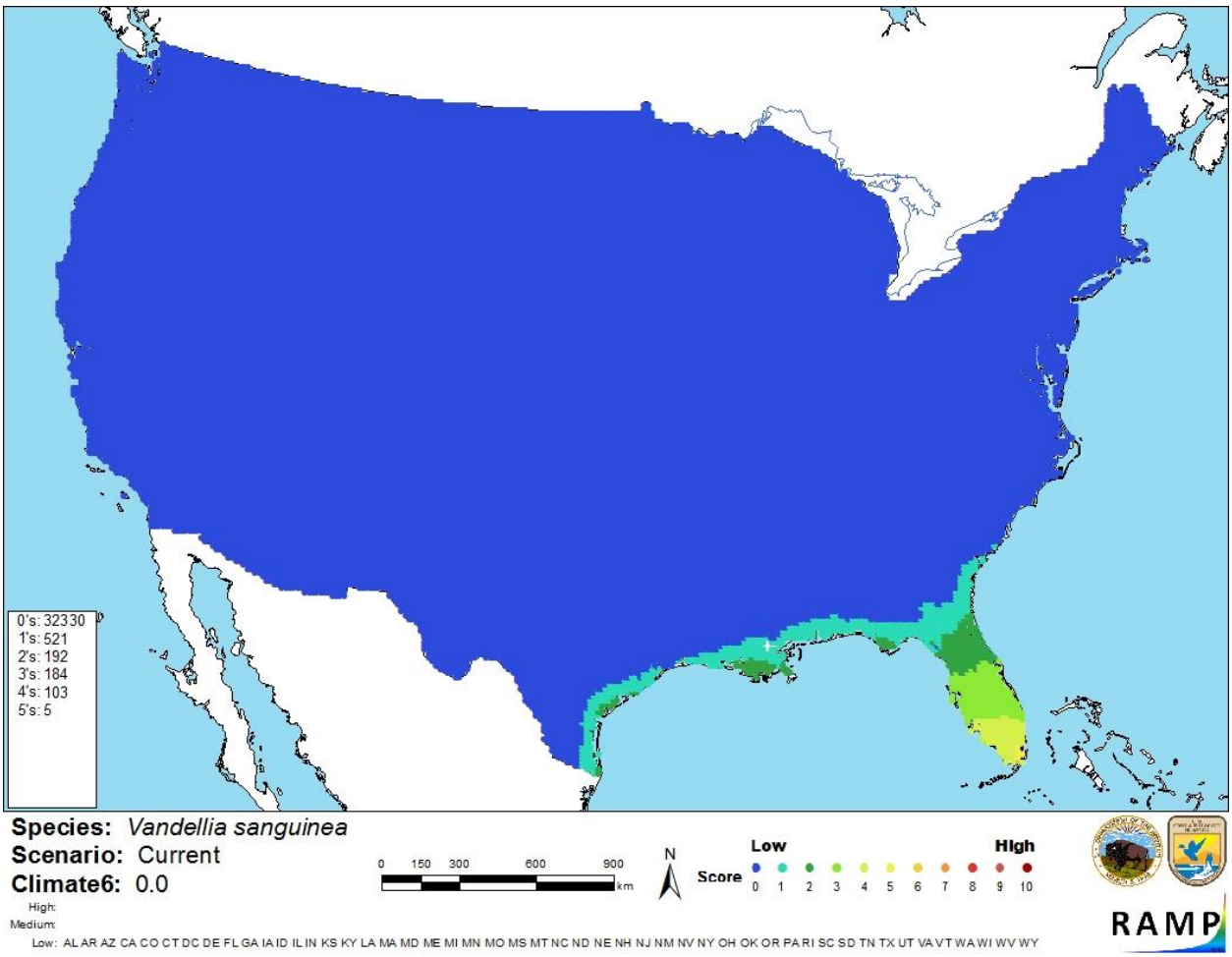


**Figure 3**. Map of RAMP (Sanders et al. 2014) climate matches for *Vandellia sanguinea* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0= Lowest match, 10=Highest match.

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≤X≤0.005 | Low |
| 0.005<X<0.103 | Medium |
| ≥0.103 | High |

# 7 Certainty of Assessment

There is very limited information available on the biology of *Vandellia sanguinea*. No introductions of this species have been reported, so impacts of an introduction are unknown. Due to a lack of information, the certainty of this assessment is low.

# 8 Risk Assessment

## Summary of Risk to the Contiguous United States

*Vandellia sanguinea* is a parasitic catfish species native to the Amazon, Orinoco and Essequibo River basins in South America. The climate match for *V. sanguinea* with the contiguous United States was low. Very little is known about its biology. *V. sanguinea* has not been reported as introduced outside its native range, so impacts of introduction of this species are unknown and history of invasiveness is uncertain. The Florida Fish and Wildlife Conservation Commission has listed the parasitic catfish *V. sanguinea* as a prohibited species. Certainty of this assessment is low due to a lack of information concerning this species. The overall risk assessment category is Uncertain.

## Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **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.**


Eigenmann, C. H. 1917. Descriptions of sixteen new species of Pygidiidae. Proceedings of the American Philosophical Society 56:690-703.

Eschmeyer, W. N., R. Fricke, and R. van der Laan, editors. 2018. Catalog of fishes: genera, species, references. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (June 2018).

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Froese, R., and D. Pauly, editors. 2016. *Vandellia sanguinea* (Eigenmann, 1917). FishBase. Available: https://www.fishbase.de/summary/Vandellia-sanguinea.html. (January 2017).

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Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

Zuanon, J., and I. Sazima. 2004. Vampire catfishes seek the aorta not the jugular: candirus of the genus *Vandellia* (Trichomycteridae) feed on major gill arteries of host fishes. aqua 8(1):31-36.

# 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.**

de Pínna, M. C. C., and W. Wosiacki. 2003. Trichomycteridae (pencil or parasitic catfishes). Pages 270-290 *in* R. E. Reis, S. O. Kullander, and C. J. Ferraris, Jr., editors. Checklist of the freshwater fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.