

Bronze Corydoras (*Corydoras aeneus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, December 2013

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http://eol.org/data_objects/26103910. (July 2017).

1 Native Range and Status in the United States

Native Range

From Nico and Schofield (2017):

“Tropical America. Widespread in South America including, but not limited to, Trinidad (type locality), and the Amazon and Orinoco basins; from Venezuela and the Guianas in the north to São Paulo and Mato Grosso, Brazil, in the south (Nijssen and Isbrücker 1980).”

Status in the United States

From Nico and Schofield (2017):

“Established in streams on Oahu and Kauai, Hawaii, since about 1984 (Devick 1991a, 1991b; Mundy 2005).”

Means of Introductions in the United States

From Nico and Schofield (2017):

“Probable aquarium release or escape (Mundy 2005).”

Remarks

From Nico and Schofield (2017):

“Nijssen and Isbrücker (1980) treated *C. aeneus* as a valid species, but also recognized a *C. aeneus* species complex with 25 species.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Callichthyidae
Subfamily Corydoradinae
Genus *Corydoras*
Species *Corydoras aeneus* (Gill, 1858)”

“Taxonomic Status:

Current Standing: valid”

Size, Weight, and Age Range

From Nico and Schofield (2017):

“In aquaria, to about 7.5 cm; in nature, rarely exceeds 4 cm SL.”

Environment

From Froese and Pauly (2017):

“Freshwater; demersal; pH range: 6.0 - 8.0; dH range: 5 - 19.”

Climate/Range

From Froese and Pauly (2017):

“Subtropical; 25°C - 28°C [Schliewen 1992]”

Distribution Outside the United States

Native

From Nico and Schofield (2013):

“Tropical America. Widespread in South America including, but not limited to, Trinidad (type locality), and the Amazon and Orinoco basins; from Venezuela and the Guianas in the north to São Paulo and Mato Grosso, Brazil, in the south (Nijssen and Isbrücker 1980).”

Introduced

Froese and Pauly (2017) report that *Corydoras aeneus* has been introduced to the Philippines and Spain; establishment is unknown in both cases.

From Yu and Quilang (2014):

“In the Philippines, Froese & Pauly (2013) in FishBase list 31 species of catfishes belonging to eight families [...] However, *Corydoras aeneus*, the single species of Callichthyidae, is questionable as it was only reported as a specimen in a fish living museum (Froese & Pauly 2013).”

Ishikawa and Tachihara (2014) report that *Corydoras aeneus* was introduced to Okinawa-jima Island, Japan, between 1981 and 1990 and that the introduction failed.

Means of Introduction Outside the United States

From Froese and Pauly (2017):

“Reason: ornamental”

From Ishikawa and Tachihara (2014):

“Ornamental”

Short Description

From Froese and Pauly (2017):

“Dorsal spines (total): 1; Dorsal soft rays (total): 7; Anal spines: 1-2; Anal soft rays: 5 - 6. Short and rounded snout (1.9 to 2.1 times in TL); body height 2.5 to 2.9 times in SL; interorbital space 2 to 2.2 times in TL; pectoral spine (3.5 to 4.5 times in SL) with a slightly denticulated internal side; 23-24 dorsal plates; 20-22 ventral plates; 2-5 pre-adipose plates; body color yellow or pink, white belly, blue-grey over head and back; fins yellow or pink and immaculate [Le Bail et al. 2000]. A brownish-orange patch is usually present on the head, just before the dorsal fin, and is their most distinctive feature when viewed from above in the stream [Yamamoto and Tagawa 2000].”

Biology

From Froese and Pauly (2017):

“Found mostly in quiet, shallow waters with soft bottoms [Burgess 1992], but also inhabits running waters [Kenny 1995]. Benthic [Mundy 2005]. Stays in schools of 20 to 30 individuals. Because of its ability to breathe air intestinally, it takes air 1 to 45 times per hour [Le Bail et al. 2000]. Nocturnal [Le Bail et al. 2000]. Feeds on worms, crustaceans, insects and plant matter [Mills and Vevers 1989]. Spawning occurs when the physical-chemical quality of the water changes with the onset of the rainy season [Le Bail et al. 2000].”

“During the spawning process, corys assume the so-called ‘T’ position, with the male assuming the top part of the ‘T’ and the female oriented perpendicular to him [Yamamoto and Tagawa 2000]. The male stirs up the female with his barbels on her head and back; the female collects sperm in its mouth; lays down about 20 eggs (yellow in color, 1 mm in size) which she collects with her pelvic fins, then fertilizes them and fixes them to submerged rocks or plants. Such sequence takes place for 2-3 hours, thus resulting in spawning of 100-200 eggs. Several spawnings are possible in the same season. At 22°C, hatching occurs after 5 days, the vitellin being absorbed 3 days later [Le Bail et al. 2000].”

Human Uses

From Froese and Pauly (2017):

“Fisheries: of no interest; aquarium: highly commercial”

From Nico and Schofield (2017):

“This species is one of the most common *Corydoras* in the aquarium trade (Burgess 1989).”

Chapman et al. (1994) report that over 31,500 individual *Corydoras aeneus* were imported into the U.S. in October 1992, accounting for 0.2% of total fish imports into the U.S. In 1971, *C. aeneus* accounted for 1.6% of total fish imported into the U.S.

Diseases

From Froese and Pauly (2017):

“Fin-rot Disease (late stage), Bacterial diseases
Fin Rot (early stage), Bacterial diseases
Bacterial Infections (general), Bacterial diseases
Procamallanus Infection 33, Parasitic infestations (protozoa, worms, etc.)”

From Chiorean et al. (2014):

“Bacterial haemorrhagic septicemia – the disease has been reported in species *Corydoras aeneus*. BHS prognosis is serious in acute forms [...] In the chronic form of the disease, the prognosis is easy, the disease is cured by the application of measures to improve the life conditions.”

“Nocardiosis – after a period of a month, the first symptoms of disease occurred in species *Corydoras aeneus*. [...] Prognosis is serious only if massive infections.”

“Diseases caused by microfungi were reported in fish species *Corydoras aeneus*. The identified microfungi were those belonging to the genera *Aspergillus*, *Trichophyton*, *Trichoderma* and *Penicillium* [...]”

“Trichodiniosis was found in the species of *C. aeneus*. [...] The prognosis depends on the degree of parasitizing, being serious only during big invasions of parasite. At small invasions, as the ones noticed in *C. aeneus*, the parasites did not produce evident signs of disease, nor severe anatomical-pathological modifications.”

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

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

From Nico and Schofield (2017):

“Impact of Introduction: Unknown.”

From Layhee et al. (2014):

“Non-native fish and reptile species had the highest trophic positions at [eight of nine site-year combinations along streams in Kaua’i, HI] In the low-reach sites these non-native top consumers include *M. salmoides*, *Corydoras aeneus* (bronze catfish), and *Palea steindachneri* (wattle-necked softshell turtle) [...] In streams with an increased number of introduced species, we also observed isotopic overlap among native and non-native species and an additional trophic level

dominated by non-native predator species. These community stressors in addition to degraded habitat and increased human land use are likely contributing to the declining native species richness observed in heavily disturbed streams across the archipelago.”

4 Global Distribution



Figure 1. Known global distribution of *C. aeneus*. Map from GBIF (2016).

5 Distribution Within the United States

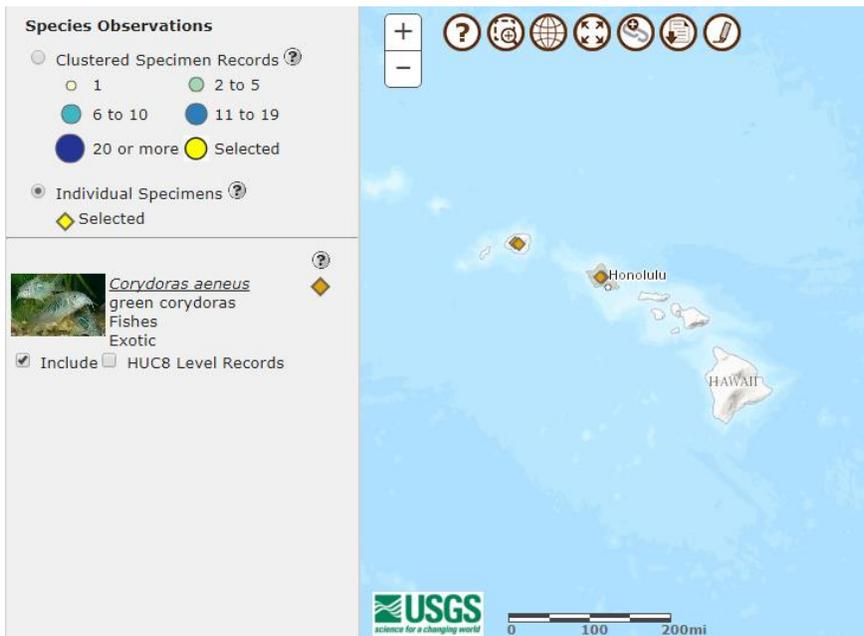


Figure 2. Known established locations of *C. aeneus* in the United States. Map from Nico and Schofield (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in Florida and along the Gulf Coast. Medium matches occurred throughout the Southeast and along the northern coastal Pacific Northwest and parts of the California coastline. Low matches covered much of the western and northern contiguous U.S. Climate 6 match indicated that the contiguous U.S. has a medium climate match overall. Scores between 0.005 and 0.103 are classified as medium match; Climate 6 score for *C. aeneus* was 0.045.

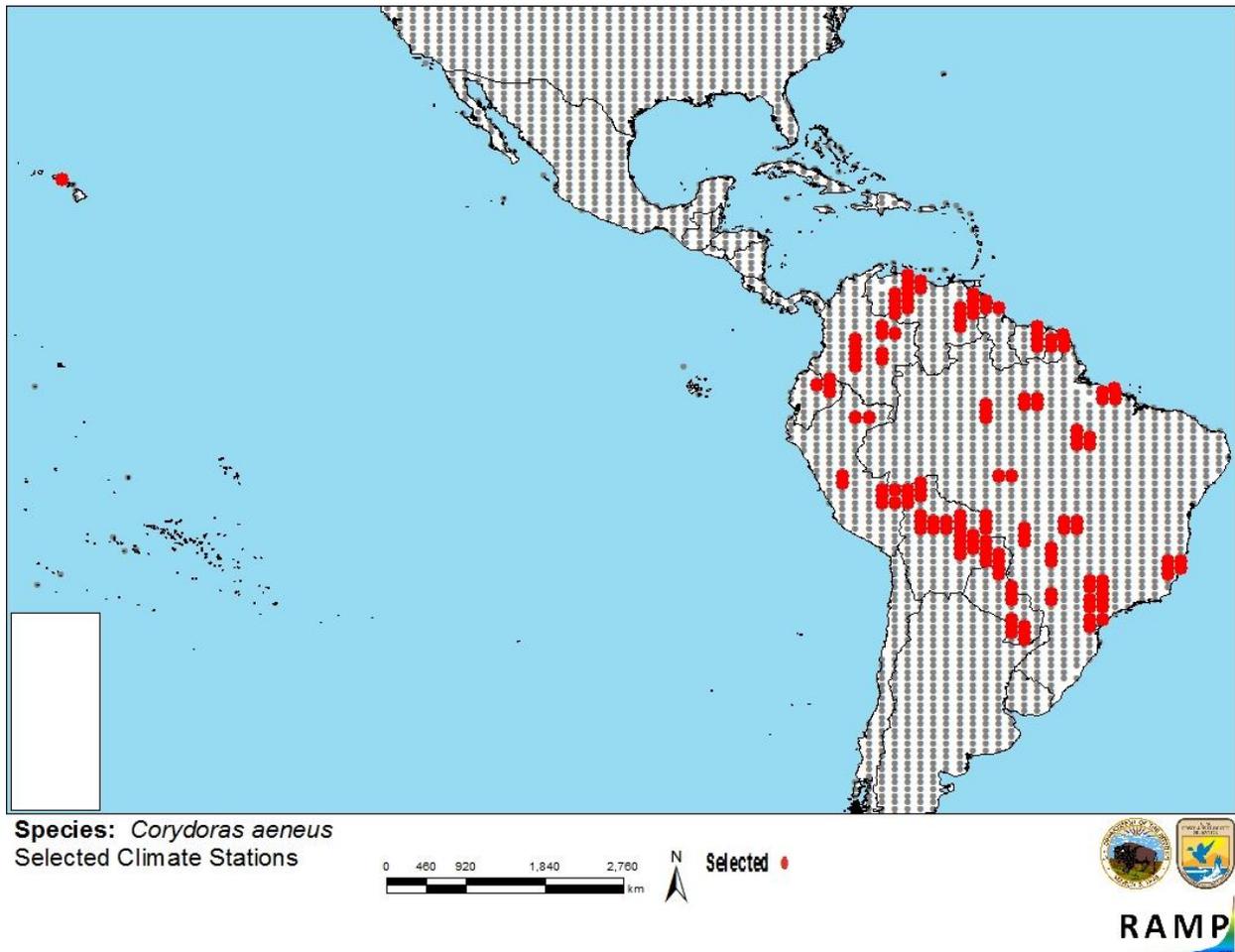


Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *C. aeneus* climate matching. Source locations from GBIF (2016).

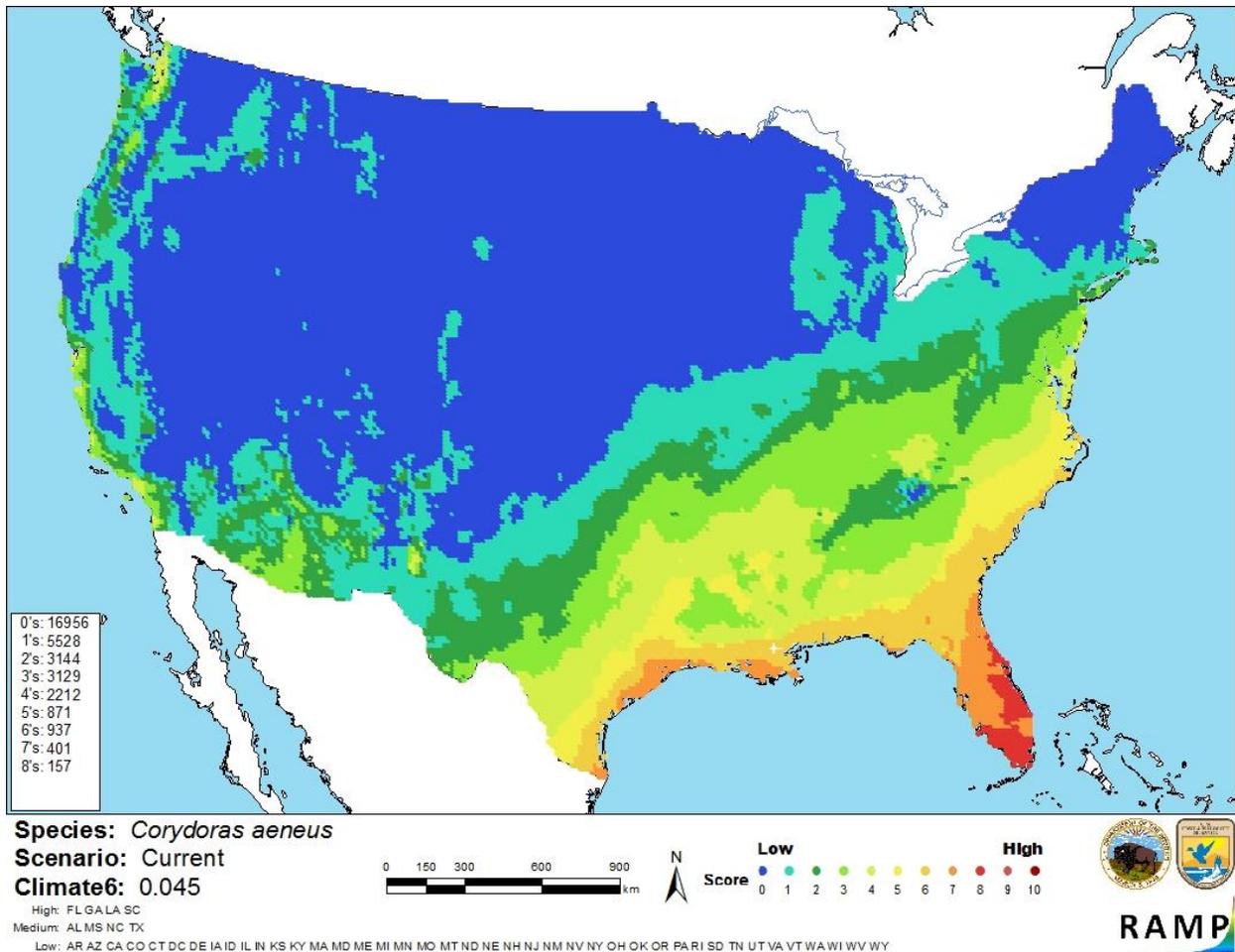


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *C. aeneus* in the contiguous United States based on source locations reported by GBIF (2016). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

Information on the biology, ecology, and distribution of *C. aeneus* is abundant and easily accessed. However, very little information is available on the impacts of this species where it has been introduced outside its native range. For that reason, certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Corydoras aeneus is a small catfish native to South America and popular in the pet industry. This species has become established on two islands in Hawaii after introduction in the 1980s. Little information is available on what, if any, effects *C. aeneus* is having on native species in Hawaii. There is some evidence that along with other non-native consumers, *C. aeneus* is changing the trophic structure of the biotic community in Kaua'i streams. Climate match with the contiguous U.S. is medium, with areas of highest match occurring in the Southeast. Without more information on the history of invasiveness, overall risk assessment for *C. aeneus* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **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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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.

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