

Cockatoo Cichlid (*Apistogramma cactuoides*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2021
Revised, March 2021
Web Version, 8/31/2021

Organism Type: Fish
Overall Risk Assessment Category: Uncertain



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<https://commons.wikimedia.org/wiki/File:Cacatuoides.JPG>. (March 2021).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2021):

“South America: Amazon River basin, in tributaries of the Ucayali [Peru], Amazon and Solimões rivers [Brazil] from the Pachitea River [Peru] to Tabatinga [Brazil].”

According to Froese and Pauly (2021), *A. cactuoides* is native to Brazil, Colombia, and Peru.

Status in the United States

No records of *Apistogramma cacatuoides* in the wild in the United States were found. *A. cacatuoides* is available in the aquarium trade in the United States. This species was found for sale by multiple online aquarium retailers.

Chapman et al. (1994) list *A. cacatuoides* as one of the species imported to the United States in October 1992, but it was not in list of 22 principal species that made up 64% of the imports that month.

From Aqua Imports (2021):

“Cockatoo Dwarf Cichlid (*Apistogramma cacatuoides*)”

“\$10.99”

All species in the genus *Apistogramma* are on Hawaii’s Conditional Animal List (Hawaii Department of Agriculture 2019).

Means of Introductions in the United States

No records of *Apistogramma cacatuoides* in the wild in the United States were found.

Remarks

This ERSS was previously published in April 2018. Revisions were completed to incorporate new information and bring the document in line with current standards.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2021), *Apistogramma cacatuoides* Hoedeman 1951 is the current valid name of this species as well as the original name of this species.

From ITIS (2021):

Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae

Genus *Apistogramma*

Species *Apistogramma cacatuoides* Hoedeman, 1951

Size, Weight, and Age Range

From Froese and Pauly (2021):

“Max length: 5.0 cm SL male/unsexed; [Kullander 2003]”

Environment

From Froese and Pauly (2021):

“Freshwater; benthopelagic; pH range: 6.0 - 8.0; dH range: 5 - 19. [...]; 24°C - 25°C [assumed to be recommended aquarium temperature range] [Riehl and Baensch 1991]”

Climate

From Froese and Pauly (2021):

“Tropical; [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2021):

“South America: Amazon River basin, in tributaries of the Ucayali [Peru], Amazon and Solimões rivers [Brazil] from the Pachitea River [Peru] to Tabatinga [Brazil].”

According to Froese and Pauly (2021), *A. cacatuoides* is native to Brazil, Colombia, and Peru.

Introduced

No records of *Apistogramma cacatuoides* introductions have been found.

Means of Introduction Outside the United States

No records of *Apistogramma cacatuoides* introductions have been found.

Short Description

From Hoedeman (1951):

“Body elongate, deeper anteriorly; greatest depth 2.96 (2.8 in female) at ventral origin; least depth of caudal peduncle 9.4 (9.25) in length, or 3.02 (2.88) in head: greatest depth of caudal peduncle 7.5 (7.2) in length, or 2.52 (2.4) in head; anus slightly more than a scale length in advance of first anal ray.”

“Head 3.09 (3.1) in length; snout rather short. 3.4 (3.37) in head; none of the lips projecting; nostril just half way between orbit and posterior border of maxillary; interorbital width 3.3 (3.51)

in head; preorbital width 2.6 (2.41) in eye. Maxillary 2.8 (3.1) in head, extending to beyond eye. Teeth small and slender, brown tipped, in 3 rows in each jaw, outer series slightly larger.

Gill-membranes joined, free from isthmus; gill-rakers very short, knoblike, 13 on lower branch of first arch: superior lobe distinct. Branchiostegals 5. No pseudobranchiae.

Scales feebly ctenoid, with 7 to 11 radials, and 1 to 5 radials in the cheek and opercular scales; circuli fine, coarser apically; about 25 very fine apical denticles. In a median lateral series 24-27, and up to 10 rows of very small scales on the basal half of the caudal fin; 9 scales between first dorsal spine obliquely downward and afterward to ventral; $7\frac{1}{2}$ scales between first anal spine obliquely upward and forward to base of dorsal; 8-9 predorsal scales; 11 scales round caudal peduncle; scales rather regularly arranged, smaller on caudal peduncle, on head, and on cheeks and operculum. Cheek scales in 3 rows; interopercular naked; 4 rows of opercular scales, and 2 rows of subopercular scales. Lateral line scales in the upper section 10 to 13, grooved in the posterior exposed part, not perforated by a pore; scales in lower section 5-8, rudimentary, the anterior ones usually only partly grooved.

Dorsal fin XV/5 (XV/4), inserted slightly in advance of the base of the pectorals; spines increasing in length to the sixth, then decreasing in length for five spines, the last spines of about equal length. The longest spine 0.8 in head; last spines 3.2 in head. AU membranes behind the spines produced into elongate lappets; the lappets of the anterior six spines very long, from half the length of the spine in the sixth, to more than the length of the spine in the first. Spines, including membranes, free from each other to the base from first to fourth, for most of its length from fourth to seventh, and free for the lappets only in the other spines. Membranes not much produced in female. Last branched rays produced into a more or less distinct filament.

Anal fin III/7 (III/7), much as dorsal fin, except for the peculiar free anterior spiny rays in the latter. Sixth branched ray the longest, produced into a filament.

Caudal fin ii/9/ii (ii/7/ii), the outer principal rays prolonged in the male ; this fin, as well as the anal fin rounded in the female.

Ventral fins 1/5, very elongate in the male, reaching to the base of the first soft anal ray or the filament beyond it. Pectoral fins iii/5/ii, inserted low, a little in advance of ventral origin, rounded, middle rays longest, none filamentous.

COLOURATION. Ground-colour in live, olive brown, with reflecting metallic blue scales. A dark band from hind margin of eye to the caudal root, very distinct in both sexes. A blackish ocellus-like, rather irregular spot at the base of the last dorsal rays. First four dorsal rays very dark, scattered with melanophores, fins otherwise light blue, with darker blue dots on the posterior soft anal rays and near the base of the caudal fin. An irregular, rather broad black band extending from the outer margin of the eye obliquely downward to the angle of the operculum. There is a whitish streak at the upper side along the dark lateral band; back with dark brownish flecks. Belly lighter, above base of anal fin bright yellow ; a yellow to greenish spot posteriorly above the eye; operculum with orange and light green to blue flecks. Occasionally a narrow dark streak on the lower part of the body from pectoral base to lower part of caudal peduncle, and

some transverse bands from the end of the dorsal fin, from the tenth to thirteenth dorsal spine, and from the sixth to ninth dorsal spine. Usually a dark spot in front of the first dorsal spine, at the posterior angle of the operculum, and at the corner of the mouth.”

Biology

From Froese and Pauly (2021):

“Produces up to 80 eggs. Eggs are attached to the ceiling of caves, female cares for eggs and larvae [Kosłowski 2002].”

From Engelking et al. (2010):

“*A. cacatuoides* prefer richly structured areas with scattered driftwood and branches and a thick leaf layer where they can hide and establish their breeding territories (see RÖMER, 2000).”

Human Uses

From Froese and Pauly (2021):

“Fisheries: of no interest; aquarium: commercial”

From Hoedeman (1951):

“The Dwarf-cichlid genus *Apistogramma*, very popular among aquarists and at present among students of animal behavior [...]”

According to Nolan et al. (2014), 14,223,855 *Apistogramma cacatuoides* were imported to Australia in 2009.

According to Tribuzy-Neto et al. (2021), there were only 430 specimens of *A. cacatuoides* exported from the Amazonas State of Brazil between 2006 and 2015, which accounted for <0.01% of the total exports.

Chapman et al. (1994) list *A. cacatuoides* as one of the species imported to the United States in October 1992, but it was not in list of 22 principal species that made up 64% of the imports that month.

A. cacatuoides is available in the aquarium trade in the United States. This species was found for sale by multiple online aquarium retailers.

From Aqua Imports (2021):

“Cockatoo Dwarf Cichlid (*Apistogramma cacatuoides*)”

“\$10.99”

Diseases

No records of OIE reportable diseases (OIE 2021) were found to be associated with *A. cactuoides*.

From Froese and Pauly (2021):

“White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Costia Disease, Parasitic infestations (protozoa, worms, etc.)
Turbidity of the Skin (Freshwater fish), Parasitic infestations (protozoa, worms, etc.)
Bacterial Infections (general), Bacterial diseases
Hole-in-the-Head Disease, Parasitic infestations (protozoa, worms, etc.)
Ichthyobodo Infection, Parasitic infestations (protozoa, worms, etc.)”

Threat to Humans

From Froese and Pauly (2021):

“Harmless”

3 Impacts of Introductions

Apistogramma cactuoides has not been reported as introduced outside of its native range, therefore no impacts of introduction have been documented.

A. cactuoides is regulated in Hawaii.

4 History of Invasiveness

The history of invasiveness is classified as No Known Nonnative Population. *Apistogramma cactuoides* has not been reported as introduced outside of its native range, therefore no impacts of introduction have been documented. This species is available in the aquarium trade.

A. cactuoides has been in trade since at least the 1950s. Some information on the volume of trade was available, but most of the information was of volume for short amounts of time, such as one month or one year for a single country. Information on exports of the species from one Brazilian state for almost a decade, showing a low number of individuals exported, was available. However, this may not be an accurate reflection of the number of species in trade due to many ornamental species being bred in captivity outside their native range. More comprehensive trade volume information is needed to assess if this species has a substantial trade history. With the information currently available, *A. cactuoides* cannot be classified as having a substantial trade history which would have allowed for a history of invasiveness classification of low.

5 Global Distribution



Figure 1. Known global distribution of *Apistogramma cacatuoides*. Observations are reported from Peru, Colombia, Brazil, and Suriname. Map from GBIF Secretariat (2021). Locations in Suriname, in central Brazil, and off the coast of Colombia will not be included in the climate match as they represent museum specimen and not established populations. Location in southern Peru will not be included as this observation still requires identification verification according to GBIF Secretariat (2021). Location in eastern Colombia will not be included as the coordinates do not coincide with the documented county of collection.

6 Distribution Within the United States

Apistogramma cacatuoides has not been reported in the wild in the United States.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for the contiguous United States is low. Low match is found throughout the country; no areas of medium or high match were found. The overall Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low (scores between 0.000 and 0.005, inclusive, are classified as low). All States had low individual Climate 6 scores.

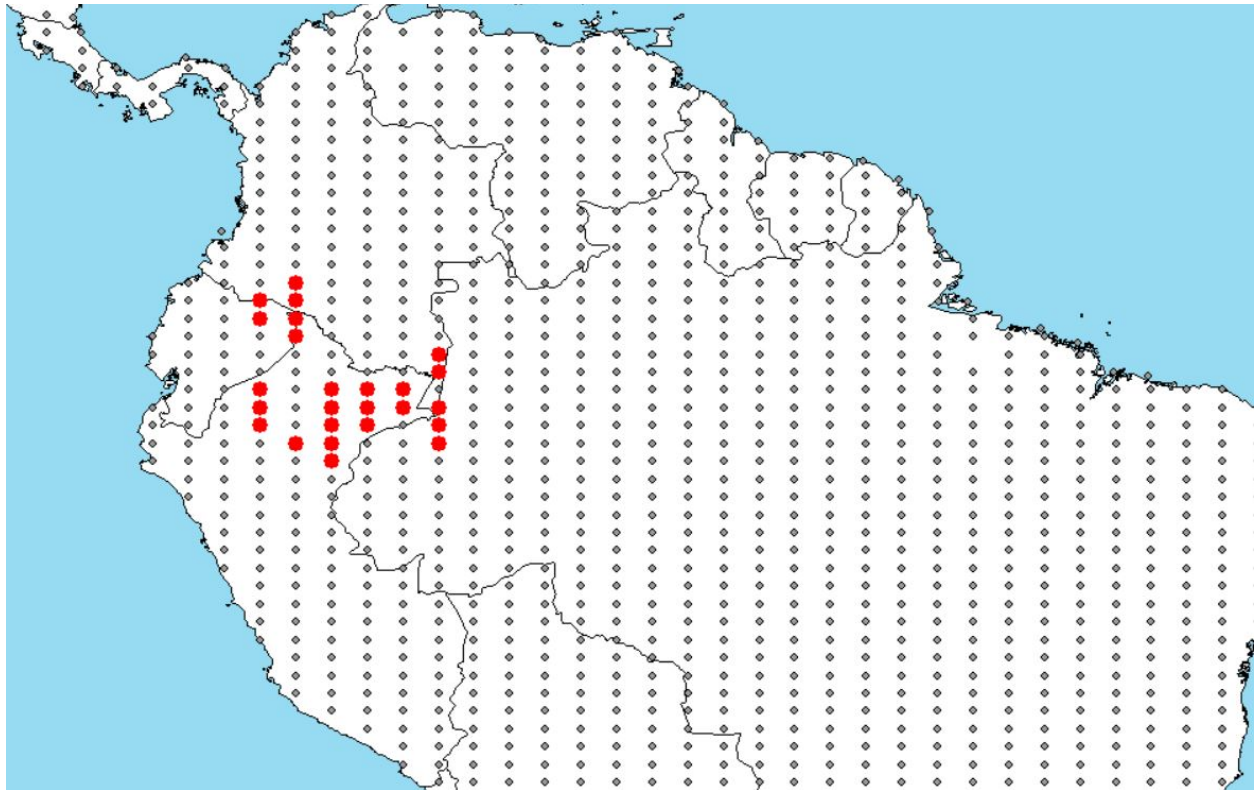


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in northern South America selected as source locations (red; Brazil, Colombia, Peru, and Ecuador) and non-source locations (gray) for *Apistogramma cacatuoides* climate matching. Source locations from GBIF Secretariat (2021). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

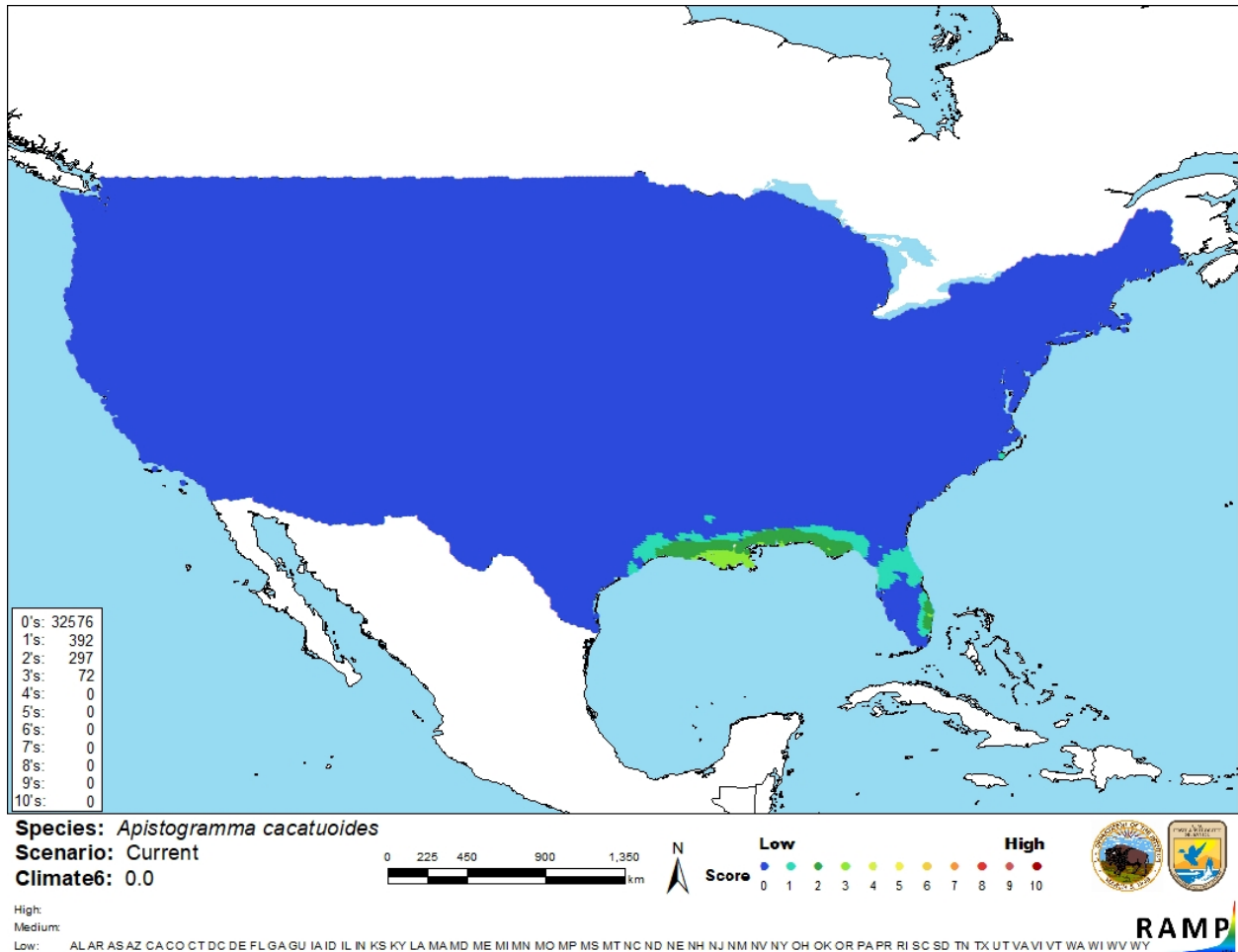


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Apistogramma cacatuoides* in the contiguous United States based on source locations reported by GBIF Secretariat (2021). Counts of climate match scores are tabulated on the left. 0/Blue = Lowest match, 10/Red = Highest match.

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
$0.000 \leq X \leq 0.005$	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 of this species. *Apistogramma cacatuoides* has not been reported in the wild outside of its native range, therefore no information on impacts of introduction is available. This species is found in

the aquarium trade however long-term trade volume is uncertain. Further information is needed to increase certainty.

9 Risk Assessment

Summary of Risk to the Contiguous United States

The Cockatoo Cichlid, *Apistogramma cacatuoides*, is a freshwater fish native to the Amazon Basin in northwestern South America, including Colombia, Brazil, and Peru. This species is widely available in the aquarium trade, however only limited information was available regarding trade volume. *A. cacatuoides* is regulated in Hawaii. The information available was not sufficient to determine if a substantial trade history exists for *A. cacatuoides*. This species has not been reported in the wild outside of its native range; therefore, no impacts of introduction have been documented. The history of invasiveness is classified as No Known Nonnative Population. The overall climate match for the contiguous United States is Low, with no areas of medium or high match. The certainty of assessment is Low due to limited available information. The overall risk assessment category for *Apistogramma cacatuoides* 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 information**
- **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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- Chapman FA, Fitz-Coy S, Thunberg E, Rodrick JT, Adams CM, Andre M. 1994. An analysis of the United States of America trade in ornamental fish. University of Florida, Department of Fisheries and Aquatic Sciences, and Food and Resource Economics Department. Project Final Report.
- Engelking B, Roemer U, Beisenherz W. 2010. Intraspecific colour preference in mate choice by female *Apistogramma cacatuoides* HOEDEMAN, 1951 (Teleostei: Perciformes: Cichlidae). *Vertebrate Zoology* 60(2):123–138.
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- Nolan D, Stephens F, Crockford M, Jones JB, Snow M. 2014. Detection and characterization of viruses of the genus *Megalocytivirus* in ornamental fish imported into an Australian border quarantine premises: an emerging risk to national biosecurity. *Journal of Fish Diseases* DOI:10.1111/jfd.12222.
- [OIE] World Organisation for Animal Health. 2021. OIE-listed diseases, infections and infestations in force in 2021. Available: <http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2021/> (March 2021).
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- Tribuzy-Neto IA, Beltrão H, Benzaken ZS, Yamamoto KC. 2021. Analysis of the ornamental fish exports from the Amazon State, Brazil. *Boletim do Instituto de Pesca* 46(4):e554.

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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