

***Copionodon pecten* (a catfish, no common name)**

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, December 2016

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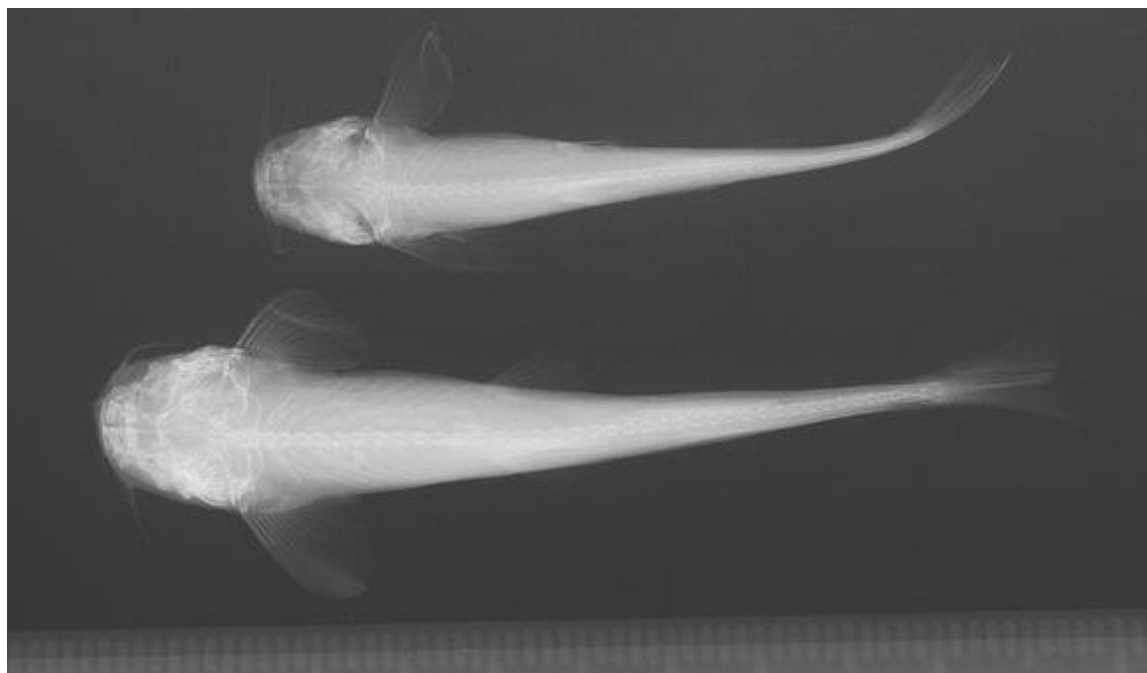


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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2016):

“South America: Mucujê River, tributary of the Paraguaçu River in Brazil.”

From Rantin and Bichuette (2013):

“The epigeal species, *C. pecten*, occurs in the rivers Coisa Boa, Xavier and Paraguaçu [...]”

Status in the United States

This species has not been reported as introduced in the United States.

The parasitic catfish, *Copionodon pecten*, is a prohibited nonnative species in Florida. According to the FFWCC (2017), “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.”

Means of Introductions in the United States

This species has not been reported as introduced in the United States.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

- “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
- Subfamily Copionodontinae
- Genus *Copionodon* de Pinna, 1992
- Species *Copionodon pecten* de Pinna, 1992”

“Taxonomic Status: valid”

Size, Weight, and Age Range

From Froese and Pauly (2016):

“Maturity: L_m ? range ? - ? cm

Max length : 6.2 cm SL male/unsexed; [de Pínna and Wosiacki 2003]”

Environment

From Froese and Pauly (2016):

“Freshwater; benthopelagic.”

From Zanata and Primitivo (2014):

“The ranges of physicochemical characteristics of water at the study site throughout the study period were: [...] pH 6.0–7.8, conductivity 19–24 $\mu\text{S}/\text{cm}$ and flow velocity 0.11–0.66 m/s at the pool surface. Dissolved oxygen was only measured in September 2010 and was 6.6–7.3 mg/L. [...] well-oxygenated and rocky-bottomed pools along riffles with moderate to strong water currents. Water flow preferences are linked to the stage of development, with juveniles usually occupying slow-moving parts of pools and larger individuals mainly in areas with water currents higher than 0.66 m/s. Individuals anchored to the substrate were observed in areas with water currents strong enough to carry the fish away from the pool.”

Climate/Range

From Froese and Pauly (2016):

“Tropical, preferred ?”

From Zanata and Primitivo (2014):

“The ranges of physicochemical characteristics of water at the study site throughout the study period were: temperature 22–28°C [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2016):

“South America: Mucujê River, tributary of the Paraguaçu River in Brazil.”

From Rantin and Bichuette (2013):

“The epigeal species, *C. pecten*, occurs in the rivers Coisa Boa, Xavier and Paraguaçu [...]”

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Zanata and Primitivo (2013):

“[...] can be distinguished from congeners by its colour pattern, by the extremely elongated interopercular patch of odontodes, and by the anteroposteriorly thickened and ventrally flattened upper lip, which is folded over itself.”

“Living sub-adults and adults usually with less conspicuous dark spots and golden reflections on head and dorsal portion of body [...]”

Biology

From Bichuette et al. (2008):

“Copionodontines occur exclusively in the Chapada Diamantina, a vast and complex plateau composed of Proterozoic terrain extending along a more or less north-south axis in the State of Bahia, northeastern Brazil. Much of the plateau is above 1000 m altitude, with several peaks reaching over 2000 m. The Chapada Diamantina is drained by four different basins, rio São Francisco to the west, rio de Contas to the south, rio Paraguaçu to the east and north and rio Itapicuru to the north. So far, copionodontines have been found exclusively in drainages associated with the rio Paraguaçu. However, much of the Chapada Diamantina is accessible only with difficulty and vast portions of it remain unsampled. It is possible that copionodontine catfishes will be found to occur also in suitable environments in headwaters of the other drainages in the plateau.”

“Copionodontines occupy the upper reaches of fast-flowing streams on rocky beds, often with tiny or no water flow in the dry season. Fish tend to concentrate on quiet deep pools, though some individuals lodge in narrow rock crevices in fast flowing sectors. Habitat preferences also vary according to species. Water in the upper reaches of the Chapada Diamantina is cool and usually black (tea-stained), but there are records of copionodontines in a few clear water streams as well. Usually they share their environment with few or no other fish species.”

From Zanata and Primitivo (2013):

“This catfish is mainly benthonic and dwells in pools beneath riffles, over rocky substrates. Periods of activity, spatial distribution, foraging strategy and diet show variation according to ontogenetic stage, together with variation in external morphological characteristics. Small juveniles are diurnally active, swim mainly in the water column near the border of shallow pools and feed mainly on algae (*Spirogyra* sp.). Sub-adults and adults of *C. pecten* are strongly active at night, occupy the bottom of shallow pools and feed mainly on a complex of periphytic algae scratched from the substrate. Dissected specimens have a long digestive tract, which is in accordance with a predominantly algivorous diet. Immature aquatic insects constitute an important food item throughout the life of the fish. Small individuals are gregarious at night, whereas adults congregate especially during the day. When less active, these catfish are observed usually in polarized groups facing upstream. Adult individuals are apparently more numerous than juveniles within the studied population. No distinct reproductive season was recorded for *C.*

pecten during the study, with mature individuals present throughout the year. Oocytes in various stages of development were observed within ovaries, suggesting multiple spawning over a long reproductive period. The species has low fecundity and does not show parental care or external sexual dimorphism. No evidence for a complex behavioural repertoire was found and medium- to large-sized specimens have a tendency to occupy deeper and more sheltered places.”

Human Uses

No information available.

Diseases

No information available.

Threat to Humans

From Froese and Pauly (2016):

“Harmless”

3 Impacts of Introductions

No introductions of this species have been reported.

The parasitic catfish, *Copionodon pecten*, is a prohibited nonnative species in Florida. According to the FFWCC (2017), “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.”

4 Global Distribution



Figure 1. Known global established location of *Copionodon pecten*, reported from eastern Brazil. Map from GBIF (2016).

5 Distribution Within the United States

This species has not been reported 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) was low, 0.001. The range for Climate 6 proportions indicating a low climate match is 0.000 to 0.005. Medium matches occurred in southern Florida, coastal southern Texas, and coastal southern California; the remainder of the contiguous United States showed low matches.



Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in eastern Brazil selected as source locations (red) and non-source locations (gray) for *Copionodon pecten* climate matching. Source locations from GBIF (2016).

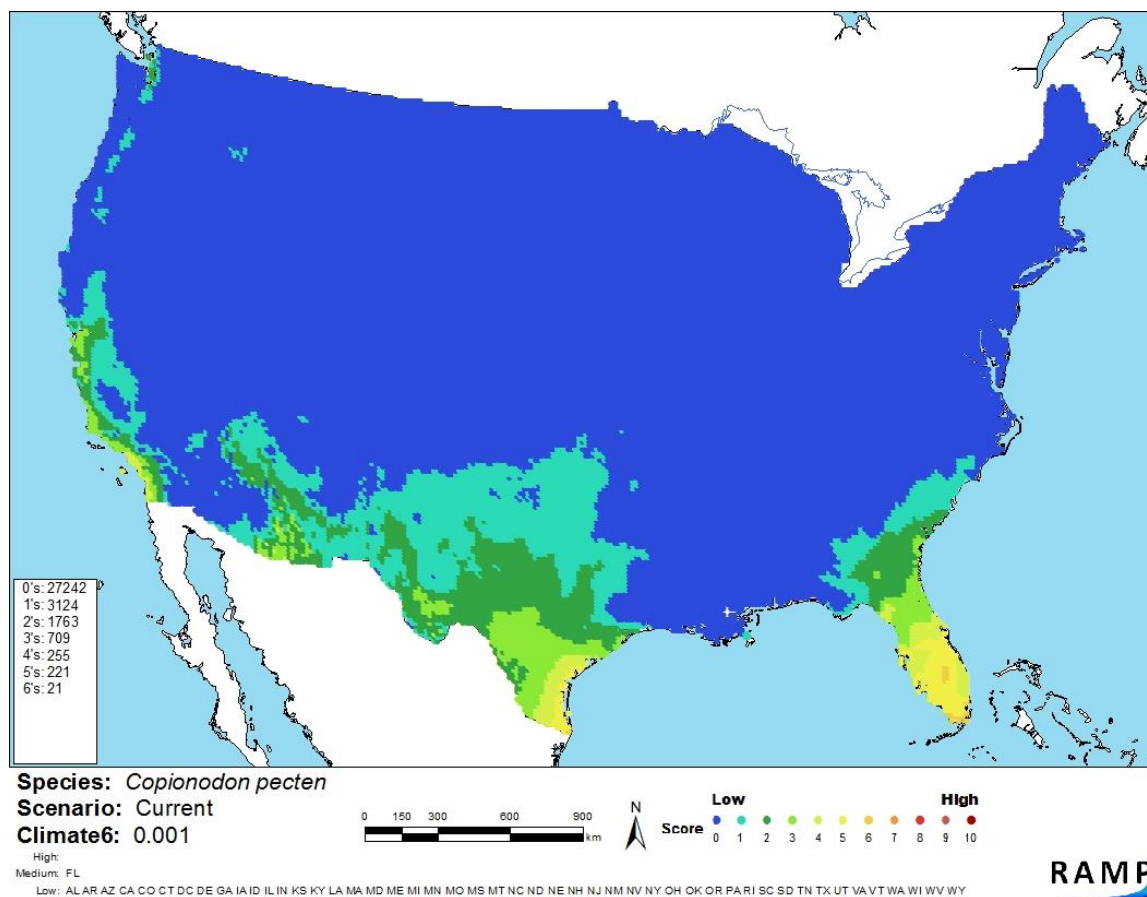


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Copionodon pecten* in the contiguous United States based on source locations reported by GBIF (2016). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Information on the biology and range of *C. pecten* is limited. In addition, no introductions of the species have been reported so potential impacts are unknown. Because of the lack of information, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Copionodon pecten is a fish species native to eastern Brazil from the family Trichomycteridae. Relatively little is known about its biology, and it has not been reported as introduced outside its native range, so impacts of introduction are unknown. Climate match to the continental U.S. is low. Overall risk posed by *C. pecten* 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.

- Bichuette, M. E., M. C. C. de Pinna, and E. Trajano. 2008. A new species of *Glaphyropoma*: the first subterranean copionodontine catfish and the first occurrence of opercular odontodes in the subfamily (Siluriformes: Trichomycteridae). *Neotropical Ichthyology* 6(3):301-306.
- FFWCC (Florida Fish and Wildlife Conservation Commission). 2017. Prohibited species list. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: <http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/#nogo>. (December 2016).
- Froese, R., and D. Pauly, editors. 2016. *Copionodon pecten* de Pinna, 1992. FishBase. Available: <http://www.fishbase.org/summary/Copionodon-pecten.html>. (December 2016).
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- Rantin, B., and M. E. Bichuette. 2013. Phototactic behavior of subterranean Copiodontinae Pinna, 1992 catfishes (Siluriformes, Trichomycteridae) from Chapada Diamantina, central Bahia, northeastern Brazil. *International Journal of Speleology* 42(1):57-63.

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

Zanata, A. M., and C. Primitivo. 2014. Natural history of *Copionodon pecten*, an endemic trichomycterid catfish from Chapada Diamantina in northeastern Brazil. *Journal of Natural History* 48(3-4):203-228.

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.