Metynnis polystictus (a fish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2013
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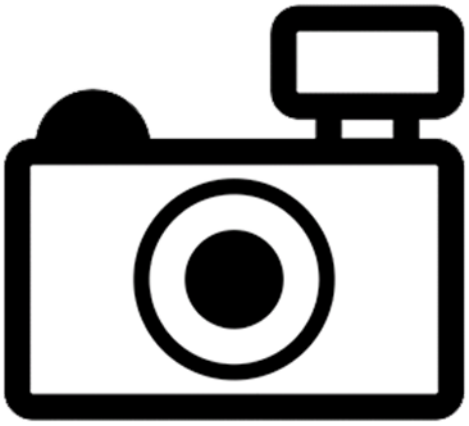

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"South America: Brazil. Río Xingu"

Status in the United States

There are no records of occurrences of *Metynnis polystictus* in the United States; however, Nico et al. (2018) report that the genus *Metynnis* (species uncertain) is locally established in Florida.

From Nico et al. (2018):

"A member of this genus [*Metynnis*] was collected in **Florida** from a lake on Marco Island, Collier County in January, 1980 (FSBC 19822; listed as *Metynnis lippincotianus* in Courtenay et al. 1984, and as *Metynnis* sp. in Courtenay and Stauffer 1990 and in Courtenay et al. 1991). A reproducing population was found in Halpatiokee Regional Park Conservation Area in Martin County in 2005, with additional specimens taken in 2006 and 2007 (Shafland et al. 2008; Florida Fish and Wildlife Conservation Commission 2009). In **Kentucky**, a single fish (originally

identified as a piranha and as *Metynnis roosevelti*) was taken by hook and line from Lighthouse Lake, Louisville, Jefferson County, in the summer of 1981 (Anonymous 1981; Fossett 1981)."

"There is considerable confusion surrounding the Kentucky record. In original published accounts, the fish was identified as a piranha, but the scientific name provided was *Metynnis roosevelti* (= *Metynnis maculatus*). However, in a photograph of the fish accompanying the newspaper article (Fossett 1981), the specimen actually appears to have a short adipose fin and is probably a pacu, possibly *Piaractus brachypomus*. The collectors gave the live fish to the Louisville Zoo, where it was kept in aquaria; when the fish later died, it was supposedly not preserved. The Kentucky specimen has been the basis for inclusion of the species in published lists of nonestablished foreign species, with earlier listings identifying it as *Metynnis roosevelti* (e.g., Courtenay et al. 1984) and later simply as *Metynnis* sp. (i.e., Courtenay and Stauffer 1990; Courtenay et al. 1991)."

There is no indication that *M. polystictus* is in trade in the United States.

Means of Introductions in the United States

From Nico et al. (2018):

"Records [for *Metynnis* sp.] mostly likely represent aquarium releases."

Remarks

This species is often referred to as some variation of 'silver dollar' fish, although this term likely represents many species in the genus *Metynnis*.

From Ota et al. (2016):

"Taxonomic confusion is rife in the literature dealing with *Metynnis* species. There are 28 nominal species and only around half of them are recognized as valid. The elevated number of synonyms is probably a consequence of the enormous variability of body shape and color pattern, which in turn are highly influenced by ontogeny and sexual dimorphism (Zarske & Géry, 1999; Jégu, 2003; Pavanelli et al., 2009; Ota et al., 2013). As a consequence, there is little information about the phylogenetic relationships among species of *Metynnis*."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Froese and Pauly (2018):

"Biota > Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > Pisces (Superclass) > Actinopterygii (Class) > Characiformes (Order) > Serrasalmidae (Family) > *Metynnis* (Genus) > *Metynnis polystictus* (Species)"

"Status accepted"

Size, Weight, and Age Range
From Foese and Pauly (2017):

"Max length : 16.7 cm SL male/unsexed; [Zarske and Gery 2008]"

Environment
From Froese and Pauly (2017):

"Freshwater; pelagic."

Climate/Range
From Froese and Pauly (2017).

"Tropical"

Distribution Outside the United States
Native
From Froese and Pauly (2017).

"South America: Brazil. Río Xingu."

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

Means of Introduction Outside the United States
This species has not been reported as introduced outside the United States.

Short Description
From Nico et al. (2018):

"[…] members of the genus *Metynnis* are characterized by their long-based adipose fins […]"

From Zarske and Géry (2008):

"*Metynnis polystictus* sp. n. – a new species of Silverdollar from the río Xingu in Brazil is described. The new species is closely related to *Metynnis anisurus* AHL, 1924, which is considered as valid. *M. polystictus* sp. n. is clearly differentiated from *M. anisurus* by its (1) colouration (body without spots in *M. anisurus* vs. two different kinds of spots in *M. polystictus* sp. n.) and (2) the enlarged lower lobe of caudal fin (developed in *M. anisurus* vs. absent in *M. polystictus* sp. n.)."

Biology
From Mol (2012):

"In […] *Metynnis,* […] teeth are molariform, heavily attached to the jaw, and mainly used to grind fruits and seeds."

"During the breeding period, […] *Metynnis* […] exhibit sexual dimorphism in the form of a supplementary lobe of the anal fin, dorsal fin rays elongated into long filaments or a red pattern on the body."

Human Uses
From Nico et al. (2018):

"Several *Metynnis* species are popular aquarium fishes."

M. polystictus was not found for sale in a search of several online aquarium retailers.

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

Threat to Humans
From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions
There are currently no recorded introductions or impacts of introductions of *Metynnis polystictus,* however unidentified species of *Metynnis* are listed as locally established in Florida (Nico et al. 2018).

4 Global Distribution

Figure 1. Known global distribution of *Metynnis polystictus*, reported from Brazil. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

There is currently no known distribution of *Metynnis polystictus* within the United States; however, unidentified species of *Metynnis* are listed as locally established in Florida.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was low for the entire contiguous United States. The state of Florida had a slightly higher climate match than the rest of the contiguous United States, although it was still a low match. The Climate 6 score indicated a low climate match overall for the contiguous United States. Scores from 0.000 and 0.005, inclusive, are classified as low match; Climate 6 score for *Metynnis polystictus* was 0.000.

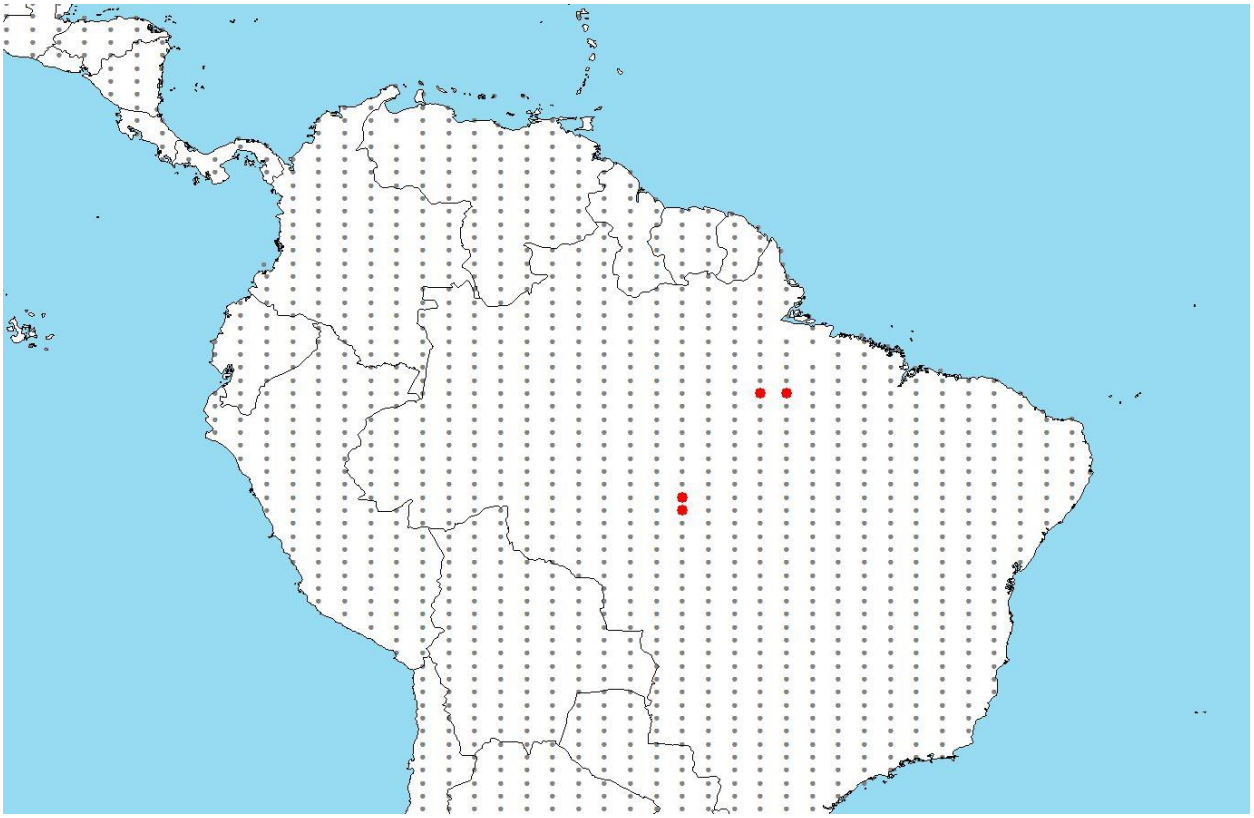

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations as source locations (red; Brazil) and non-source locations (gray) for *Metynnis polystictus* climate matching. Source locations from GBIF Secretariat (2017).

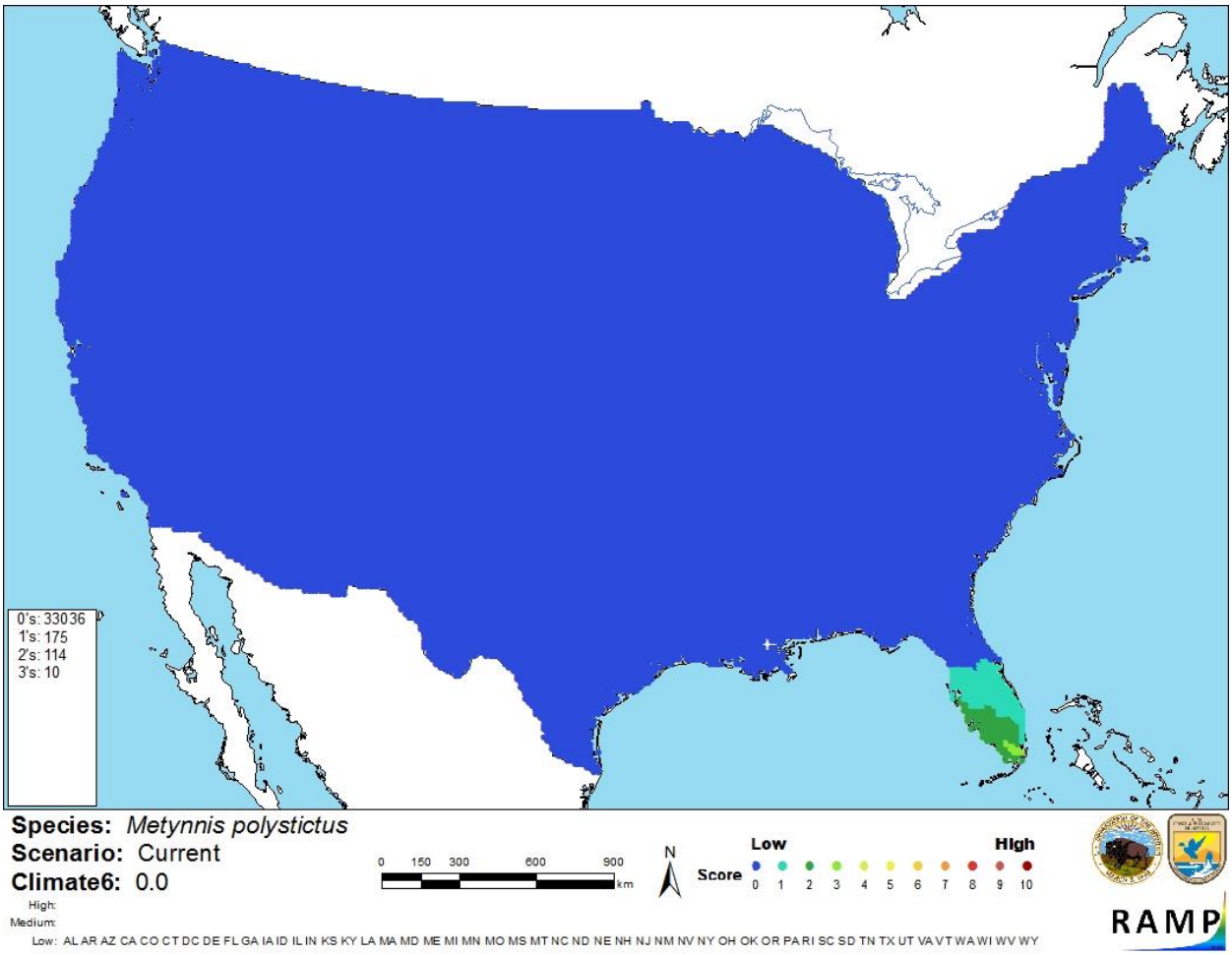

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Metynnis polystictus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10= Highest match.

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

7 Certainty of Assessment

Information on the biology, ecology and distribution associated with *Metynnis polystictus* is limited. *M. polystictus* has not been introduced outside of its native range, so impacts of introduction are unknown. Assessment of this species is complicated due to uncertain identification of *Metynnis* spp. captured and established in the United States, and the need for systematic revision of the genus. Additional information and research on this species will be

needed to increase the certainty of this assessment. Based on available data, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Metynnis polystictus is a fish native to the Río Xingu in Brazil. *Metynnis* species are very popular in the aquarium trade. *Metynnis polystictus* has a low climate match in the contiguous United States, with a slightly higher match in southern Florida. There are no reports of introductions of *M. polystictus*. However, members of the *Metynni*s genus (species identification uncertain) have been collected beyond their native range in Florida, where their status is listed as locally established. *Metynnis* spp. found in Florida are believed to be aquarium releases. Therefore, the history of invasiveness of *M. polystictus* in the contiguous United States is uncertain. Certainty of assessment is low because of a lack of information and taxonomic confusion. The overall risk posed by *M. polystictus* 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.

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