

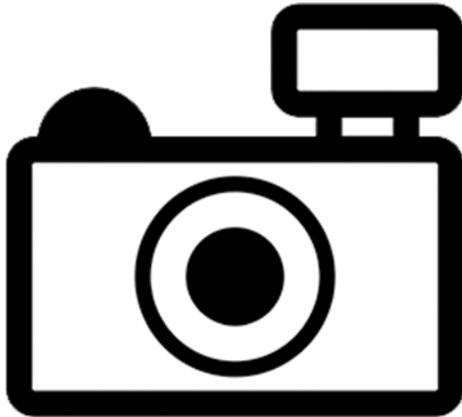
## ***Metynnis orinocensis* (a fish, no common name)**

### **Ecological Risk Screening Summary**

U.S. Fish and Wildlife Service, March 2013

Revised, January 2018

Web Version, 8/24/2018



No Photo Available

## **1 Native Range and Status in the United States**

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### **Native Range**

From Froese and Pauly (2017):

“South America: Orinoco River basin [Venezuela].”

From Velasco-Santamaría and Cruz-Casallas (2008):

“[...] *Metynnis orinocensis* (Steindachner 1908) is a native characin of the Orinoco and Amazon rivers basin in Colombia and Venezuela [...].”

### **Status in the United States**

There are no records of occurrences of *Metynnis orinocensis* 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 Halpatokee 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).”

From Livengood et al. (2013):

“Colombia has been a world leader in ornamental fish exports and the largest exporter of wild-caught ornamental fishes to the USA (Chapman et al 1997; Chapman 2000). Silver dollars [defined earlier as *Metynnis orinocensis*] or, "monedas" as they are regionally called, are among the principal species exported from that country (Gil & Martinez 2001).”

“A [...] stock of silver dollars, also collected from the wild and exported from Colombia, was sampled at an import wholesale facility in Miami, USA.”

## 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* in the aquarium trade.

From Aquatic-experts (2011):

“*Metynnis orinocensis* are commonly called the Orinoco River Silver dollars.”

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

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### Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia  
Subkingdom Bilateria  
Infrakingdom Deuterostomia  
Phylum Chordata  
Subphylum Vertebrata  
Infraphylum Gnathostomata  
Superclass Actinopterygii  
Class Teleostei  
Superorder Ostariophysi  
Order Siluriformes  
Family Characidae  
Genus *Metynnis*  
Species *Metynnis orinocensis* (Steindendachner, 1908)”

“Current standing: valid”

### Size, Weight, and Age Range

From Livengood et al. (2013):

“The silver dollar fish collected directly from the wild and sampled on site (n= 20) were  $1.6 \pm 0.5$  g BW and  $42.6 \pm 4.6$  mm TL. The aquaculture fish sampled directly on farm (n= 20) were  $0.5 \pm 0.4$  g BW and  $28.7 \pm 6.2$  mm TL. The wild-caught silver dollars sampled at the import wholesale facility (n= 20) were  $5.9 \pm 2.4$  g BW and  $52.8 \pm 6.6$  mm TL.”

### 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: Orinoco River basin [Venezuela].”

From Velasco-Santamaría and Cruz-Casallas (2008):

“[...] *Metynnis orinocensis* (Steindachner 1908) is a native characin of the Orinoco and Amazon rivers basin in Colombia and Venezuela [...].”

Introduced

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

## **Means of Introduction Outside the United States**

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

## **Short Description**

From Nico et al. (2018):

“[...] members of the genus *Metynnis* are characterized by their long-based adipose fins [...].”

## **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.”

From Livengood et al. (2013):

“Silver dollars or ‘monedas’, (*M. orinocensis*) were collected in the wild along the shallow water fringes of flooded palm forests known as ‘morichales’ [...].”

## Human Uses

From Livengood et al. (2013):

“Silver dollars are amongst the most popular and valuable of ornamental fishes from South America, and are in high demand the world over.”

## 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

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

## 4 Global Distribution

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**Figure 1.** Known global distribution of *Metynnis orinocensis*, reported from northern South America (Venezuela and Colombia). Map from GBIF Secretariat (2017).

## 5 Distribution Within the United States

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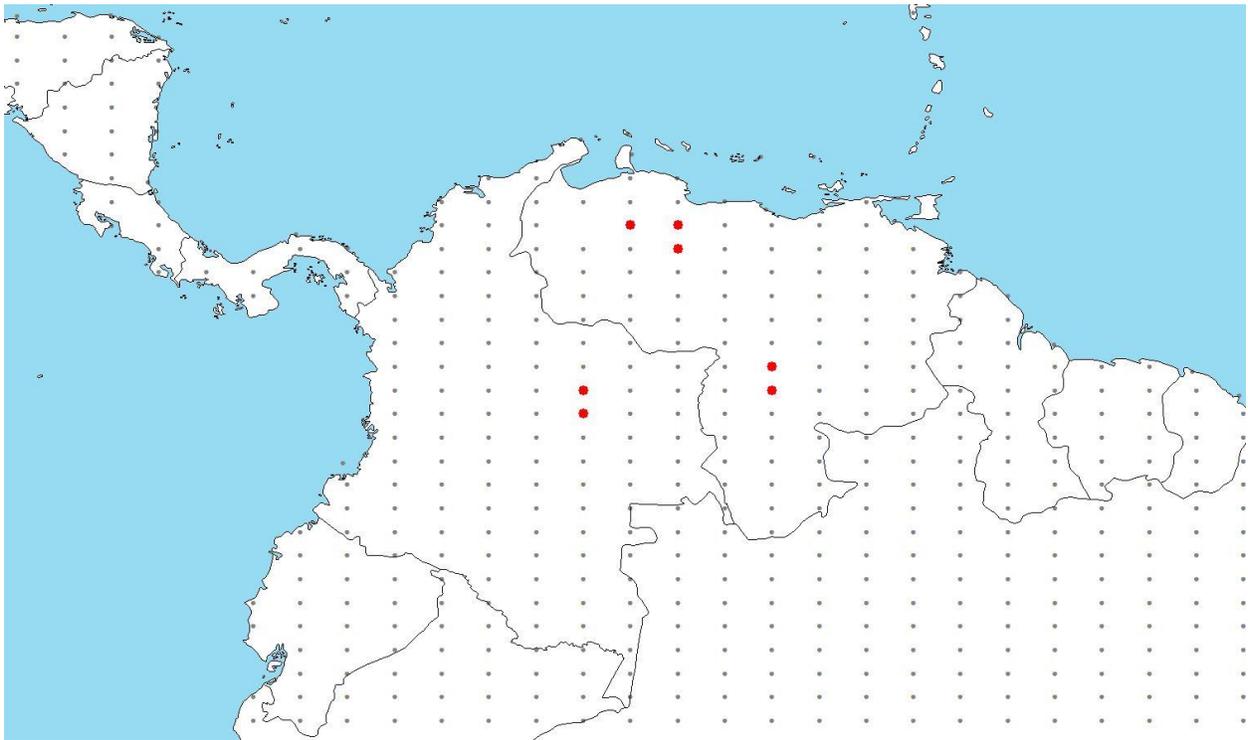
There is currently no known distribution of *Metynnis orinocensis* within the United States; however, unidentified species of *Metynnis* are listed as locally established in Florida.

## 6 Climate Matching

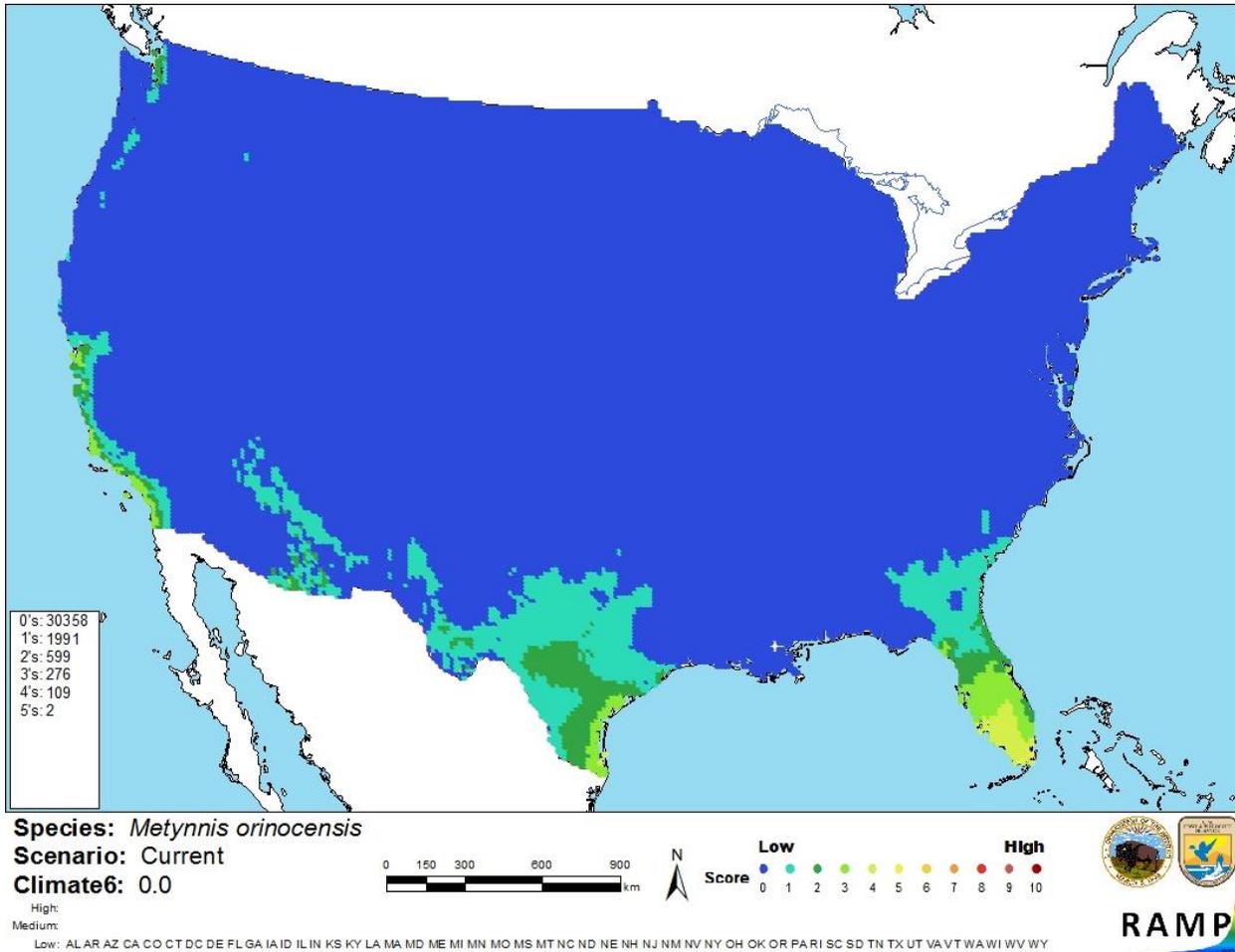
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### Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was medium in southwestern peninsula Florida and low to medium in the extreme southeastern Texas Gulf Coast and western coast of California. The majority of the contiguous United States was a low climate match. The Climate 6 score indicated a low climate match for the contiguous United States. Scores from 0.000 and 0.005, inclusive, are classified as low match. Climate 6 score for *Metynnis orinocensis* was 0.000, the lowest match.



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



**Figure 3.** Map of RAMP (Sanders et al. 2014) climate matches for *Metynnis orinocensis* 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
$0.000 \leq X < 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

Peer-reviewed literature on the biology, ecology and distribution associated with *Metynnis orinocensis* is limited. No introductions of this species have been reported, so impacts of introduction and potential invasiveness 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

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### Summary of Risk to the Contiguous United States

*Metynnis orinocensis* is native to the Orinoco and Amazon River basins in Venezuela and Columbia. It is part of a genus of fishes very popular in the aquarium trade. There are no reports of introductions of *M. orinocensis*. However, members of the *Metynnis* 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. orinocensis* in the contiguous United States is uncertain. *M. orinocensis* has a low climate match in the contiguous United States, with medium climate match results restricted to the southern Florida and low to medium match in the extreme margin of the Texas Gulf Coast and California shoreline. Certainty of assessment is low because of taxonomic confusion and a lack of information. The overall risk posed by *M. orinocensis* 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

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**Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.**

Aquatic-Experts. 2011. *Metynnis orinocensis*. Available: [http://www.aquatic-experts.com/Metynnis\\_orinocensis.html](http://www.aquatic-experts.com/Metynnis_orinocensis.html). (February 2018).

Froese, R. and D. Pauly, editors. 2017. *Metynnis orinocensis*, Steindachner, 1908. FishBase. Available: <http://www.fishbase.org/summary/Metynnis-orinocensis.html>. (February 2018).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Metynnis orinocensis*, Steindachner, 1908. Global Biodiversity Information Facility, Copenhagen. Available: <https://www.gbif.org/species/2353436>. (February 2018).

ITIS (Integrated Taxonomic Information System). 2018. *Metynnis orinocensis*, Steindachner, 1908. Integrated Taxonomic Information System, Reston, Virginia. Available: [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=641345#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=641345#null). (February 2018).

- Livengood, E. J., E. Aya, J. A. Arias, and F. A. Chapman. 2013. Quantitative measurement of epithelial injury in ornamental silver dollar fish (*Metynnis orinocensis*) captured in the wild imported wild-caught, and aquacultured. *AAFL Bioflux* 6(5):470-477.
- Mol, J. H. A., editor. 2012. *The freshwater fishes of Suriname*. Brill Academic Publishers, Leiden, Netherlands.
- Nico, L., P. Fuller, and M. Neilson. 2018. *Metynnis sp.* Cope, 1878. U.S. Geological Survey, Nonindigenous Aquatic Species Database, Gainesville, Florida. Available: <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=423>. (February 2018).
- Ota, R. P., L. H. R. Py-Daniel, and M. Jégu. 2016. A new Silver Dollar species of *Metynnis* Cope, 1878 (Characiformes: Serrasalminae) from Northwestern Brazil and Southern Venezuela. *Neotropical Ichthyology* 14(4):e160023.
- Sanders, S., C. Castiglione, and M. H. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service
- Velasco-Santamaría, Y. M., and P. E. Cruz-Casallas. 2008. Behavioural and gill histopathological effects of acute exposure to sodium chloride in moneda (*Metynnis orinocensis*). *Environmental Toxicology and Pharmacology* 25:365-372.

## 10 References Quoted But Not Accessed

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**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.**

- Anonymous. 1981. Piranha caught in Kentucky. *Pet Business* 7(11):33.
- Axelrod, H. R., W. E. Burgess, N. Pronek, and J. G. Walls. 1985. *Dr. Axelrod's atlas of freshwater aquarium fishes*. Tropical Fish Hobbyist Publications, Inc., Neptune City, New Jersey.
- Courtenay, W. R., Jr., D. A. Hensley, J. N. Taylor, and J. A. McCann. 1984. Distribution of exotic fishes in the continental United States. Pages 41-77 in W. R. Courtenay, Jr., and J. R. Stauffer, Jr., editors. *Distribution, biology, and management of exotic fishes*. John Hopkins University Press, Baltimore, Maryland.
- Courtenay, W. R., Jr., D. P. Jennings, and J. D. Williams. 1991. Appendix 2: exotic fishes. Pages 97-107 in C. R. Robins, R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, and W. B. Scott. *Common and scientific names of fishes from the United States and Canada*, 5th edition. American Fisheries Society Special Publication 20. American Fisheries Society, Bethesda, Maryland.
- Courtenay, W. R., Jr., and J. R. Stauffer, Jr. 1990. The introduced fish problem and the aquarium fish industry. *Journal of the World Aquaculture Society* 21(3):145-159.

- Chapman F. A. 2000. Ornamental fish culture, freshwater. Pages 602-610 *in* R. R. Stickney, editor. Encyclopedia of aquaculture. John Wiley & Sons, Inc., New York.
- Chapman F. A., S. A. FitzCoy, E. M. Thunberg, and C. M. Adams. 1997. United States of America trade in ornamental fish. *Journal of the World Aquaculture Society* 28:1-10.
- Florida Fish and Wildlife Conservation Commission. 2009. Florida FWC exotic database. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.
- Fossett, J. 1981. Here's one that didn't get away. *The Courier-Journal*, Louisville, Kentucky (June 19).
- Géry, J. 1977. Characoids of the world. Tropical Fish Hobbyist Publications, Inc., Neptune City, New Jersey.
- Gil, H. R., and R. E. A. Martinez R. E. A. 2001. La pesca en la baja Orinoquia colombiana: una vision integral. Instituto Nacional de Pesca y Acuicultura (INPA), Bogota, Colombia.
- Jégu, M. 2003. Subfamily Serrasalminae (pacus and piranhas). Pages 182-196 *in* R. E. Reis, S. O. Kullander, and C. J. Ferraris Jr., editors. Check list of the freshwater fishes of South and Central America. Edipucrs, Porto Alegre, Brazil.
- Ota, R. P., C. P. Röpkke, J. Zuanon, and M. Jégu. 2013. Serrasalmidae. Pages 15-47 *in* L. J. Queiroz, G. Torrente-Vilara, W. M. Ohara, T. H. S. Pires, J. Zuanon, and C. R. C. Dória, organizers. Peixes do rio Madeira, volume II. Santo Antônio Energia, São Paulo, Brazil.
- Pavanelli, C. S., R. P. Ota, and P. Petry. 2009. New species of *Metynnis* Cope, 1878 (Characiformes: Characidae) from the rio Paraguay basin, Mato Grosso State, Brazil. *Neotropical Ichthyology* 7:141-146.
- Sakurai, A., Y. Sakamoto, and F. Mori. 1993. Aquarium fish of the world: the comprehensive guide to 650 species. Chronicle Books, San Francisco.
- Shafland, P. L., K. B. Gestring, and M. S. Stanford. 2008. Florida's exotic freshwater fishes - 2007. *Florida Scientist* 71(3):220-245.
- Zarske, A., and J. Géry. 1999. Revision der neotropischen Gattung *Metynnis* Cope, 1878. 1. Evaluation der Typusexemplare der nominellen Arten (Teleostei: Characiformes: Serrasalmidae). *Zoologische Abhandlungen Staatliches Museum für Tierkunde Dresden* 50:169-216.