

TWO NEW SPECIES OF CURIMATID FISHES (OSTARIOPHYSI: CHARACIFORMES) FROM RIO GRANDE DO SUL, BRAZIL

Richard P. Vari

Abstract.—*Curimata spilota* is described from two localities in the Rio Uruguay basin in southeastern Brazil. The species is unique in the family in its higher number of branched dorsal-fin rays (10 or 11). *Curimata stigmosa* is described from the coastal rivers of southeastern Brazil and Uruguay and from one locality in the Rio Uruguay basin, and is the first member of its phyletic lineage known from that region. The possession of lobulate fleshy processes on the roof of the oral cavity, the distinctive pigmentation pattern, and meristic values distinguish the species within the family.

Recent collecting efforts by Carlos A. S. Lucena, Luiz R. Malabarba, and Roberto E. Reis of the Museu de Ciências of the Pontificia Universidade Catolica do Rio Grande do Sul, Rio Grande do Sul, Brazil have produced a number of interesting species. Included in those collections are two undescribed species belonging to separate lineages within the characiform family Curimatidae. The family is the subject of ongoing phylogenetic and revisionary studies (Vari 1982, 1983, 1984), but the species in question are members of genera that will not be published on for some time. In order to make the names of these species available for ongoing ecological and faunal studies, those taxa are described separately in this paper.

Counts and measurements in the species descriptions follow the methods outlined in Vari (1982, 1984). Ranges of counts and measurements include values of all specimens. Values in square brackets are those of the holotype. Specimens examined for this study are deposited in the following institutions: Museu de Ciências da Universidade Catolica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil, MCP; Museu de Zoologia da Universidade do São

Paulo, São Paulo, Brazil, MZUSP; and National Museum of Natural History, Smithsonian Institution, Washington, D.C., USNM.

A variety of very different classifications have been utilized by authors publishing on the Curimatidae. Under these classifications, the number of genera recognized in the family has ranged from seven (Eigenmann 1910) to 29 (Fernández-Yépez 1948). Research completed (Vari 1982, 1984) or in progress, attempts to redefine subunits of the family along natural lines, and has or will result in the synonymization of numerous genera and the redefinition of those taxa that will be recognized. Pending completion of those studies, the species described herein are retained in the broadly encompassing genus *Curimata* which has included the bulk of the species of the family in the more widely used classificatory schemes.

Curimata spilota, new species
Figs. 1, 2

Holotype.—Brazil, Rio Grande do Sul, Rio Santa Maria, at bridge on highway Br 293, between Dom Pedrito and Livramento

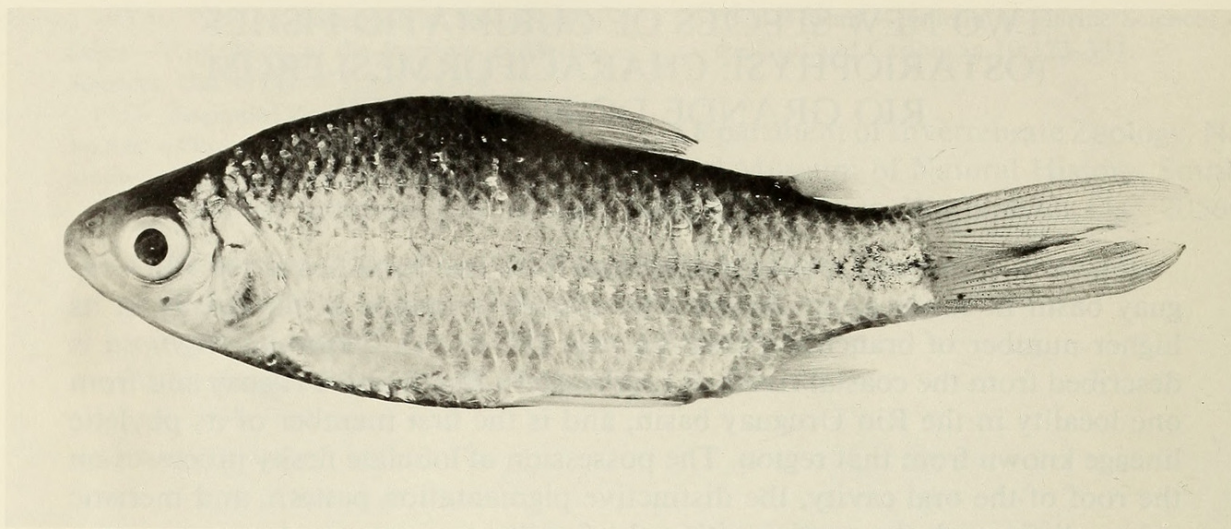


Fig. 1. *Curimata spilota*, holotype, MZUSP 37133, 56.9 mm SL; Brazil, Rio Grande do Sul, Rio Santa Maria, at bridge on highway Br 293, between Dom Pedrito and Livramento.

(listed as Santana do Livramento on some maps), C. Lucena and L. Malabarba, 22 Jan 1982, MZUSP 37133, 56.3 mm.

Paratypes.—Brazil, Rio Grande do Sul, taken with holotype, MZUSP 37134, 7, 34.7–43.4 mm; USNM 285194, 12, 36.9–59.7 mm (2 specimens cleared and counterstained for cartilage and bone).—Brazil, Rio Grande do Sul, headwaters of Rio Negro, at Bagé, C. Lucena and L. Malabarba, 25 Oct 1983, MCP 9613, 4, 43.4–62.8 mm.

Diagnosis.—The possession of 10 or 11 (typically 10) branched dorsal-fin rays distinguishes *Curimata spilota* from all other members of the family Curimatidae which have 8 or 9, rarely 10, branched dorsal-fin rays. The few species of curimatids reported as having 10 branched dorsal-fin rays in occasional individuals are members of the genus *Potamorhina* (Vari, 1984), all of which have 75 or more lateral line scales, contrary to the 30 to 33 scales in that series in *Curimata spilota*. The low lateral line count (30 to 33) of *C. spilota* also distinguishes the species from the vast majority of curimatids. The *Curimatopsis* species with such low lateral line counts (*evelynae*, *macrolepis*, *crypticus*, *myersi*) all have an anteriorly convex ventral portion of the maxilla that is lacking in *Curimata spilota*, along with pronounced sexual dimorphism that is also

absent in the latter species (see Vari 1983: 4–11).

Within the LaPlata drainage system, three species are phenetically similar to *C. spilota* and have comparable scale counts. The first of these, *C. gillii*, described by Eigenmann and Kennedy (1903:510) from the Río Paraguay in Paraguay, differs in having fewer branched dorsal-fin rays (8 or 9) than *C. spilota* (10 or 11). The second similar species in that basin is *Curimata saladensis*, described by Meinken (1933) in *Curimatopsis*. That species, which is not closely related phylogenetically to *Curimatopsis* (see Vari 1983:10–12), can be readily distinguished from *C. stigmosa* in having 8 or 9 branched dorsal-fin rays, and having the pores of the laterosensory canal system of the body developed only on the anterior 7 to 9 scales, contrary to the completely developed series of such pores in *C. spilota*. *Curimata stigmosa*, a partially sympatric species described in this paper, has very similar lateral line counts to *C. spilota*, but is distinguished by the presence of fleshy lobulate processes on the roof of the mouth.

Description.—Body moderately elongate, somewhat compressed, more so in juveniles. Dorsal profile of head convex anteriorly, straight from above nostrils to rear of head. Dorsal profile of body slightly con-

vex from rear of head to origin of rayed dorsal fin; straight and slightly posteroventrally slanted at base of dorsal fin, gently convex from base of last dorsal-fin ray to caudal peduncle. Dorsal surface of body transversely rounded anteriorly, with indistinct median keel immediately anterior to rayed dorsal fin, smoothly rounded transversely posterior to fin. Ventral profile of body gently curved from tip of lower jaw to caudal peduncle. Prepelvic region obtusely flattened, with median series of scales proximate to pelvic fin origin. An obtuse median keel posterior to pelvic fin insertion.

Greatest body depth at origin of rayed dorsal fin, depth 0.33–0.41 [0.39]; snout tip to origin of rayed dorsal fin 0.50–0.53 [0.52]; snout tip to origin of anal fin 0.82–0.86 [0.84]; snout tip to insertion of pelvic fin 0.55–0.58 [0.58]; snout tip to anus 0.79–0.82 [0.81]; origin of rayed dorsal fin to hypural joint 0.53–0.59 [0.53]. Rayed dorsal-fin margin rounded; anteriormost rays three to three and one-half times length of ultimate ray. Pectoral fin pointed; length of pectoral fin 0.18–0.21 [0.21], extending two-thirds to three-quarters distance to vertical through insertion of pelvic fin. Pelvic fin pointed, length of pelvic fin 0.22–0.26 [0.25], reaching approximately two-thirds distance to origin of anal fin. Caudal fin deeply forked. Adipose dorsal fin well developed. Anal fin emarginate, anteriormost branched rays about two and one-half times length of ultimate ray. Caudal peduncle depth 0.14–0.15 [0.15].

Head obtusely pointed, head length 0.28–0.32 [0.31]; upper jaw slightly longer, mouth subterminal; snout length 0.26–0.31 [0.31]; nostrils very close, anterior circular, posterior crescent shaped with aperture closed by thin flap of skin separating nares; orbital diameter 0.30–0.36 [0.30]; adipose eyelid present, more developed anteriorly, with broad vertically ovoid opening over center of eye; length of postorbital portion of head 0.40–0.45 [0.45]; gape width 0.20–0.25 [0.22]; interorbital width 0.40–0.46 [0.42].

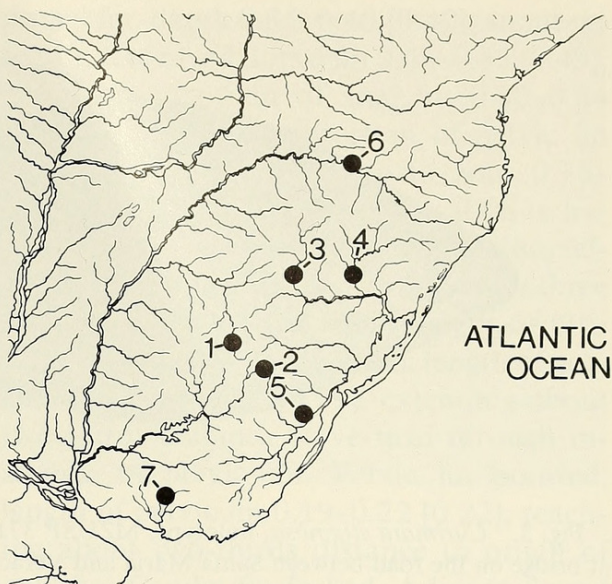


Fig. 2. Map of major drainages in southeastern Brazil, Uruguay, and proximate portions of Argentina showing collecting localities of specimens reported on in this paper (all localities in Brazil, state of Rio Grande do Sul unless otherwise noted): 1, Rio Santa Maria (holotype and paratypes of *Curimata spilota*); 2, upper Rio Negro, at Bagé (paratypes of *C. spilota*); 3, Rio Jacui (holotype and paratypes of *Curimata stigmata*); 4, Rio Forqueta (paratypes of *C. stigmata*); 5, Arroio Sarandi and Arroio Chasqueiro (paratypes of *C. stigmata*); 6, Brazil, state of Santa Catarina, Rio Uruguai near Concórdia (*C. stigmata*); and 7, Uruguay, Florida, Arroio Chamizo (*C. stigmata*).

Pored lateral line scales from supracleithrum to hypural joint 30 to 33 [31]; all scales of lateral line pored, canals in scales straight; 2 to 4 series of scales extending beyond hypural joint onto caudal fin base; $6\frac{1}{2}$ [$6\frac{1}{2}$] scales in transverse series from origin of rayed dorsal fin to lateral line; $4\frac{1}{2}$ or 5 (5 rare) [$4\frac{1}{2}$] scales in transverse series from lateral line to origin of anal fin.

Dorsal-fin rays ii, 10 or 11, or iii, 10 or 11 (ii, 11 and iii, 11 less common; when three unbranched rays present, first ray very short) [iii, 10]; anal-fin rays ii, 7 or iii, 7 (when three unbranched rays present, first ray very short) [iii, 7]; pectoral-fin rays 13 to 15 [14]; pelvic fin rays i, 8 [i, 8].

Total vertebrae 30 (4), 31 (20), 32 (3).

Color in alcohol.—Specimens retain some guanine on scales; silvery overall, purplish dorsally and whitish ventrally. Head darker

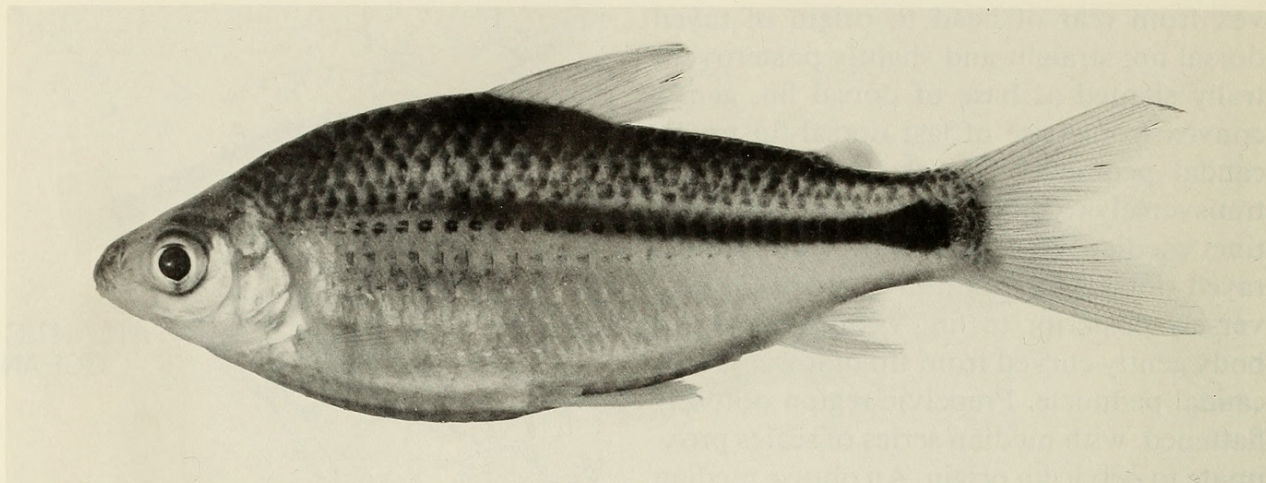


Fig. 3. *Curimata stigmosa*, holotype, MZUSP 37135, 73.4 mm SL; Brazil, Rio Grande do Sul, Rio Jacui, at bridge on the road between Santa Maria and Veracruz.

dorsally. Iris, opercle and ventral portions of head silvery. Obscure midlateral dusky band extending from supracleithrum to caudal peduncle. Horizontally elongate midlateral spot on caudal peduncle. Spot somewhat diffuse, more apparent in individuals in which guanine is largely lacking. Median fins with small chromatophores scattered over membranes; dusky overall. Adipose dorsal fin dusky. Paired fins hyaline.

Distribution.—Rio Uruguay basin (Fig. 2). The two localities from which this species is known (localities 1 and 2, Fig. 2) although relatively close, lie within the basins of two different tributaries of the Rio Uruguay whose mouths are distant from each other. This occurrence of the species in the headwaters of those two rivers may indicate that the species is widely distributed through the Rio Uruguay basin.

Etymology.—The specific name, *spilota*, from the Greek for spotted or stained, refers to the midlateral spot on the caudal peduncle.

Curimata stigmosa, new species

Figs. 2, 3

Holotype.—Brazil, Rio Grande do Sul, Rio Jacui, at bridge on the road between Santa Maria and Veracruz (approx. 29°41'S, 53°19'W), C. Lucena, L. Malabarba, and R.

Reis, 16 Sep 1983, MZUSP 37135, 73.4 mm SL.

Paratypes.—(All specimens collected in Brazil, Rio Grande do Sul, unless noted otherwise), taken with holotype, USNM 285193, 3, 65.5–73.6 mm (one specimen cleared and counterstained for cartilage and bone); MCP 9224, 3, 58.1–70.4 mm; MZUSP 37136, 3, 52.5–74.3 mm.—Rio Forqueta, and Marquês de Souza, Município de Lajeado, MZUSP/USNM expedition, 7 Nov 1979, USNM 285191, 1, 53.7 mm; MZUSP 21721, 1, 53.4 mm.—Arroio Sarandi, along highway (Br 116) between Pelotas and Jaguarão, MZUSP/USNM expedition, 14 Dec 1978, MZUSP 21728, 1, 43.0 mm.—Arroio Chasqueiro (empties into Lagoa Mirim north of Arroio Grande), along highway (Br 116) between Pelotas and Jaguarão, MZUSP/USNM expedition, 14 Dec 1978, USNM 285190, 2, 43.5–56.5 mm.

The following non-typical specimens were also examined: Brazil, Santa Catarina, pools along Rio Uruguai, near Concórdia, MZUSP 28252, 4, 71.5–72.3 mm.—Uruguay, Florida, Arroio Chamizo, USNM 285192, 2, 64.2–70.4 mm.

Diagnosis.—The presence of a series of lobulate fleshy processes in the roof of the mouth of *Curimata stigmosa* distinguishes the species from the majority of curimatids with the exception of those species phylet-

ically aligned with *Curimata elegans* Steindachner (1874). The wide deep-lying stripe of dark pigmentation is distinctive for *C. stigmosa* in that assemblage. Only three other species with lobulate processes on the roof of the oral cavity inhabit river systems proximate to the known distribution of *C. stigmosa*. These are *C. elegans* Steindachner of the coastal drainages of Brazil north of São Paulo state, *C. insculpta* (Fernández-Yépez, 1948) an inhabitant of the Rio Paraná above Sete Quedas rapids, and *C. nitens* Holmberg (1891) of the Paraguay, lower Paraná and Uruguay rivers. *Curimata insculpta* is readily distinguished from *C. stigmosa* by differences in lateral line scale counts (37 to 42 versus 30 to 33). *Curimata nitens*, which is sympatric with *C. stigmosa* in the Uruguay basin, differs from the latter species in having an intense black stripe along the entire extent of the lateral line, and in lacking the wide deep-lying band of pigmentation on the caudal peduncle characteristic of the latter species. *Curimata elegans* similarly lacks the pronounced deep-lying wide band on the caudal peduncle.

Description.—Body moderately deep, more so in larger specimens, somewhat compressed. Dorsal profile of head convex anteriorly, straight from over nostrils to rear of head. Dorsal profile of body gently convex from rear of head to origin of rayed dorsal fin; straight and slightly posteroventrally slanted at base of dorsal fin, straight or gently convex from base of last dorsal-fin ray to caudal peduncle. Dorsal surface of body transversely rounded anteriorly, with indistinct median keel immediately anterior to rayed dorsal fin, smoothly rounded transversely posterior to fin. Ventral profile of body gently curved from tip of lower jaw to caudal peduncle. Prepelvic region obtusely flattened proximate to pelvic fin origin. Obtuse median keel posterior to pelvic fin insertion. Secondary obtuse keel on each side of postventral portion of body one scale dorsal of ventral midline.

Greatest body depth at origin of rayed

dorsal fin, depth 0.35–0.40 [0.40]; snout tip to origin of rayed dorsal fin 0.48–0.53 [0.49]; snout tip to origin of anal fin 0.80–0.84 [0.82]; snout tip to insertion of pelvic fin 0.53–0.57 [0.56]; snout tip to anus 0.76–0.79 [0.78]; origin of rayed dorsal fin to hypural joint 0.52–0.57 [0.55]. Rayed dorsal-fin margin rounded; anteriormost rays three to three and one-half times length of ultimate ray. Pectoral fin pointed; length of pectoral fin 0.17–0.21 [0.19], extending about two-thirds distance to vertical through insertion of pelvic fin. Pelvic fin pointed, length of pelvic fin 0.19–0.22 [0.22], reaching about two-thirds distance to origin of anal fin. Caudal fin forked. Adipose dorsal fin well developed. Anal fin emarginate, anteriormost branched rays about two and one-third to two and two-thirds times length of ultimate ray. Caudal peduncle depth 0.12–0.14 [0.12].

Head obtusely pointed, head length 0.25–0.29 [0.26]; upper jaw slightly longer, mouth subterminal; snout length 0.29–0.33 [0.30]; nostrils very close, anterior circular, posterior crescent shaped with aperture closed by thin flap of skin separating nares; orbital diameter 0.30–0.36 [0.31]; adipose eyelid present, more developed anteriorly, with vertically ovoid opening over center of eye; length of postorbital portion of head 0.39–0.44 [0.39]; gape width 0.25–0.29 [0.28]; interorbital width 0.44–0.50 [0.44].

Pored lateral line scales from supracleithrum to hypural joint 31 to 34 [32]; all scales of lateral line pored, canals in scales straight; 2 to 4 series of scales extending beyond hypural joint onto caudal fin base; 5½ to 6 [5½] scales in transverse series from origin of rayed dorsal fin to lateral line; 4½ [4½] scales in transverse series from lateral line to origin of anal fin.

Dorsal-fin rays ii,9 or iii,9 (iii,9 rare) [ii,9]; anal-fin rays ii,7 [ii,7]; pectoral-fin rays 13 to 15 [14]; pelvic-fin rays i,8 or 9 [i,8].

Total vertebrae 33 (21), 34 (1).

Color in alcohol.—Overall ground coloration of specimens lacking guanine on

scales tan to tannish-brown, darker on dorsal portions of head and body. Obscure mid-dorsal band from rear of head to origin of rayed dorsal fin, and between rayed and adipose dorsal fins. Scales of dorsal portion of body with field of dark chromatophores on exposed surface; field more extensive on dorsal scales. Lateral line scales with pores surrounded by patches of dark pigmentation. Deep-lying dark band extends from vertical through origin of dorsal fin posteriorly to somewhat beyond hypural joint; both deep-lying stripe and surface chromatophores forming dark, anteriorly pointed slightly elongate spot on lateral surface of caudal peduncle. Field of small chromatophores continuing posteriorly on body surface to base of middle caudal-fin rays. Median fins somewhat dusky; other fins hyaline.

Distribution.—Atlantic coastal drainages of Rio Grande do Sul in Brazil, Uruguay, and Rio Uruguai in Santa Catarina, Brazil (Fig. 2).

Etymology.—The specific name, *stigmosa*, from the Latin for full of marks, refers to the series of dark spots surrounding the pores of the lateral line scales.

Relationships.—*Curimata stigmosa* is the first member of the *Curimata elegans* Steindachner (1874) lineage that has been collected in the coastal drainages of far southeastern Brazil and Uruguay. The lineage, characterized by the presence of fleshy lobulate processes on the roof of the oral cavity, is widely distributed through the freshwaters of South America. Three members of the lineage occur in regions close to that inhabited by *C. stigmosa* (see "Diagnosis" for that species); however, the exact phylogenetic relationships of *C. stigmosa* to these and other members of the lineage are unknown.

Resumo

Duas novas espécies de Characiformes da família Curimatidae (Pisces: Ostariophysi)

do Estado do Rio Grande do Sul, no sudeste do Brasil, são descritas. *Curimata spilota* é descrita dos rios Santa Maria e Negro, tributários do rio Uruguai. A espécie é única na família pelo número mais elevado de raios ramificados na nadadeira dorsal (10 ou 11). *Curimata stigmosa* é descrita dos rios da região costeira atlântica do Uruguai e sudeste do Brasil; e de uma localidade na bacia do rio Uruguai. A espécie é caracterizada por processos lobulares carnosos no teto da cavidade oral e um padrão de pigmentação distinto. Estas características e valores merísticos distinguem a espécie dentro da família. A posse dos processos na cavidade oral é característica única do complexo *Curimata elegans*. Nenhum membro deste grupo foi anteriormente assinalado para a área habitada por *C. stigmosa*.

Acknowledgments

The specimens that served as the basis for this paper were made available by Carlos A. S. Lucena, Luiz R. Malabarba, and Roberto E. Reis of MCP, and Heraldo A. Britski and Naércio A. Menezes of MZUSP. I also thank the latter two individuals and Jose Lima de Figueirido of the same institution for their hospitality during my visits. Technical assistance at the Smithsonian was provided by Andrew G. Gerberich and Jeffrey Clayton. Figures 1 and 3 were prepared by Theophilus Britt Griswald. The map is a modification of a base map prepared by Marilyn J. Weitzman. This paper benefitted from the comments and suggestions of Stanley H. Weitzman, Wayne C. Starnes, Ricardo M. C. Castro, and Ann M. Williams. Prof. Castro also provided the Portuguese translation of the "Resumo." I thank all of the above for their assistance and interest. Research associated with this study and travel expenses for museum studies in Brazil were partially supported by the Neotropical Lowland Research Program of the International Environmental Sciences Program of the Smithsonian Institution.

Literature Cited

- Eigenmann, C. H. 1910. Catalogue of the fresh-water fishes of tropical and south temperate America.—Reports of the Princeton University Expeditions to Patagonia, 1896–1899, 3 (Zoology, 4): 375–511.
- , and C. H. Kennedy. 1903. On a collection of fishes from Paraguay, with a synopsis of the American genera of cichlids.—Proceedings of the Academy of Natural Sciences of Philadelphia 55(2):497–537.
- Fernández-Yépez, A. 1948. Los Curimátidos (peces fluviales do Sur América). Catálogo descriptivo con nuevas adiciones genéricas y específicas.—Boletín Taxonómico del Laboratorio de Pesquería de Caiquire 1:1–86.
- Holmberg, E. L. 1891. Sobre algunos peces nuevos o poco conocidos de la Republica Argentina.—Revista Argentina de Historia Natural 1:180–193.
- Steindachner, F. 1874. Die Süßwasserfishe der Südöstlichen Brasiliens.—Sitzungsberichte der Akademie der Wissenschaften, Wien 70:499–538.
- Vari, R. P. 1982. Systematics of the Neotropical characoid genus *Curimatopsis* (Pisces: Characoid-ei).—Smithsonian Contributions to Zoology 373: 1–28.
- . 1983. Phylogenetic relationships of the families Curimatidae, Prochilodontidae, Anostomidae, and Chilodontidae (Pisces: Characiformes).—Smithsonian Contributions to Zoology 378:1–60.
- . 1984. Systematics of the Neotropical characiform genus *Potamorhina* (Pisces: Characiformes).—Smithsonian Contributions to Zoology 400:1–36.

Department of Vertebrate Zoology (Fishes), National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.



Vari, Richard P. 1987. "Two new species of curimatid fishes (Ostariophysi: Characiformes) from Rio Grande Do Sul, Brazil." *Proceedings of the Biological Society of Washington* 100, 603–609.

View This Item Online: <https://www.biodiversitylibrary.org/item/107532>

Permalink: <https://www.biodiversitylibrary.org/partpdf/44721>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Biological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.