

New Species of *Cyphocharax* (Ostariophysi: Characiformes: Curimatidae) from the Rio de Contas Drainage, Bahia, Brazil

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***Cyphocharax pinnilepis*, a species of curimatid characiform apparently endemic to the Rio de Contas system in Bahia, Brazil, is described as new. It is only the sixth member of the Curimatidae known from the coastal rivers of Brazil across the expanse from south of the mouth of the Amazon River to the state of São Paulo, but the third curimatid species from the Rio de Contas. The basis for the assignment of the species to *Cyphocharax* is discussed, and it is diagnosed from congeners on details of pigmentation, the pattern of scales on the lobes of the caudal fin, meristics, and morphometrics.**

***Cyphocharax pinnilepis*, uma espécie de caraciforme curimatídeo aparentemente endêmica do sistema do Rio de Contas da Bahia, Brasil, é descrita como nova. É apenas o sexto integrante de Curimatidae conhecido dos rios costeiros do Brasil, do sul da foz do Amazonas ao Estado de São Paulo, mas o terceiro curimatídeo do Rio de Contas. A inclusão da espécie em *Cyphocharax* é discutida e esta é diagnosticada de suas congêneres com base em detalhes de pigmentação, no padrão de escamas nos lobos na nadadeira caudal, dados merísticos e morfométricos.**

THE characiform family Curimatidae includes 100 species (Vari, 2003; Lucinda and Vari, 2009) with the 34 species of *Cyphocharax* (Vari, 1989a, 1992a) making that genus the most speciose among the eight genera in the family (Vari, 2003). *Cyphocharax* has a broad range through southern Central America and South America. To the west of the Andean Cordilleras, *Cyphocharax* inhabits the Pacific coastal rivers of Costa Rica and Panama along with the Río Atrato and Río Magdalena drainages and the Lago Maracaibo basin. Only one species of the genus occurs in some of the smaller drainages of the Caribbean versant of northern Venezuela. Atlantic drainages of the continent are inhabited by a distinctly more diverse assemblage of *Cyphocharax* species that range from the Río Orinoco basin through the rivers of the Guianas, eastern Brazil, and the Amazon basin south to the Río de La Plata basin and several small coastal drainages of central Argentina. Although numerous species of the Curimatidae have been described as new in the last quarter century, ichthyological explorations continue to reveal previously unknown species of the family (Lucinda and Vari, 2009). Surveys of fishes in the rivers of the state of Bahia, Brazil, yielded a previously unknown species of *Cyphocharax* with an unusual pattern of scales on the caudal-fin lobes that we describe as new herein.

MATERIALS AND METHODS

Museum abbreviations follow Leviton et al. (1985) with the addition of the Museu de Zoologia da Universidade Federal da Bahia, Salvador (UFBA). Counts and measurements follow Vari (1992a). Measurements were point-to-point linear distances taken using digital calipers with a precision of 0.1 mm. In the description, the number of examined specimens with a particular count is provided in parentheses with the value of the holotype in square brackets. Paratypes are limited to specimens critically examined for purposes of the species description, with other reported specimens of the new species designated as non-types. Comparisons were

made to a subset of the specimens of *Cyphocharax* and *Curimatella* cited in Vari (1992a, 1992b). Preparation of cleared-and-counterstained specimens (CS) followed procedures outlined by Taylor and Van Dyke (1985). Vertebral counts are from specimens examined by radiography (R). Other abbreviations in the text are head length (HL) and standard length (SL).

Cyphocharax pinnilepis, new species

Figures 1–2, Table 1

Holotype.—MZUSP 103250, 93.2 mm SL, Brazil, Bahia, Aurelino Leal, Laje do Banco, Rio do Banco, tributary of Rio Gongogi, Rio de Contas basin, 14°22'01"S, 39°24'56"W, 13 February 2008, A. M. Zanata, P. Camelier, R. Burger, and A. B. A. Góes.

Paratypes.—All from Brazil, Bahia, Rio de Contas basin. UFBA 4170, 5, 30.1–63.8 mm SL, collected with holotype. UFBA 4885, 10, 37.4–52.6 mm SL, collected at type locality, 23 February 2009, A. M. Zanata, R. Burger, T. A. Carvalho, and A. B. A. Góes. UFBA 4884, 10, 38.7–93.0 mm SL, collected at type locality, 1 March 2009, A. M. Zanata, R. Burger, T. A. Carvalho, and A. B. A. Góes. UFBA 4164, 7, 22.7–33.9 mm SL, Anagé, Rio Gavião, 14°36'38"S, 41°08'51"W, 9 February 2008, A. M. Zanata, R. Burger, P. Camelier, and A. B. A. Góes. UFBA 4176, 6, 42.5–51.6 mm SL, Gongogi, Rio Gongogi, Fazenda São Carlos, 14°20'11"S, 39°28'38"W, 13 February 2008, A. M. Zanata, P. Camelier, R. Burger, and A. B. A. Góes. UFBA 4886, 2, 56.8–57.1 mm SL, Rio Gongogi below confluence with Rio Novo, Fazenda Amaralina, Dário Meira, 14°26'11"S, 39°54'28"W, 9 July 2008, P. H. Carvalho. USNM 298248, 4, 32.4–101.2 mm SL, Rio Gongogi, on Fazenda Itamarati, 4 km from town of Dário Meira, small pools in otherwise dry bed of tributary stream, 14°22'S, 39°49'W, 26 July 1988, S. Jewett, A. Zanata, H. Santos, et al.

Non-type specimens.—UFBA 5273, 10, 37.8–45.3 mm SL, UFBA 5274, 17, 24.9–40.6 mm SL, Brazil, Bahia, Aurelino

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Fig. 1. *Cyphocharax pinnilepis*, holotype, MZUSP 103250, 93.2 mm SL; Brazil, Bahia, Aurelino Leal, Laje do Banco, Rio do Banco, tributary of Rio Gongogi, Rio de Contas drainage.

Leal, Laje do Banco, Rio do Banco, tributary of Rio Gongogi, Rio de Contas basin, 14°22'01"S, 39°24'56"W. USNM 298255, 4, 31.0–35.2 mm SL, Rio Gongogi, on Fazenda Itamarati, 5 km from town of Dário Meira, small pool just off main channel of river, 14°22'S, 39°49'W.

Diagnosis.—*Cyphocharax pinnilepis* is distinguished from all congeners by the combination of the possession of 33–36 pored scales along the lateral line from the supracleithrum to the hypural joint, 33–35 vertebrae, the greatest body depth of 33.5–39.3% of SL, the distance from the snout to the anal-fin origin of 76.2–83.4% of SL, the least depth of the caudal peduncle of 11.7–13.8% of SL, the length of the postorbital portion of the head of 33.8–41.5% of HL, the interorbital width of 32.8–43.8% of HL, the presence in adults of a field of scales with a parabolic margin extending onto each lobe of the caudal fin, the absence in adults of prominent dark stripes or spots on the body or a dark spot at

the base of the caudal fin, and the absence of a patch of dark pigmentation on the dorsal or adipose fins.

Description.—Morphometric data presented in Table 1. Body somewhat compressed and moderately elongate; elongation more pronounced in larger specimens. Dorsal profile of head convex from margin of upper lip to vertical through anterior nares, nearly straight from that point to posterior terminus of head. Dorsal profile of body slightly convex from tip of supraoccipital spine to dorsal-fin origin; straight to slightly convex and posteroventrally slanted from base of last dorsal-fin ray to origin of adipose fin and then slightly concave to insertion of anteriormost dorsal procurrent ray. Dorsal surface of body with barely apparent median ridge anterior to dorsal fin and transversely rounded posterior to fin. Ventral profile of head very slightly convex to nearly straight from margin of lower lip to isthmus. Ventral profile of body smoothly convex from isthmus to pelvic-fin insertion, convex from that point to rear of anal-fin base and then slightly concave to insertion of anteriormost ventral procurrent ray. Prepelvic region smoothly flattened transversely with midventral series of scales comparable in size to those on adjoining portions of body. Postpelvic region of body transversely rounded.

Dorsal fin pointed, with distal margin straight and first and second branched rays longest. Longest ray approximately four to five times length of ultimate ray. Pectoral-fin profile pointed. Tip of adpressed pectoral fin falls four or five scales short of vertical through pelvic-fin insertion. Pelvic fin profile pointed. Tip of adpressed pelvic fin reaches anus or falls at most one scale short of that aperture. Caudal fin forked with tips of lobes somewhat pointed. Adipose fin well developed. Anal fin emarginate with first branched ray longest and about three times length of ultimate ray. Tip of adpressed anal fin falls slightly short of insertion of ventralmost caudal-fin ray.

Head profile anteriorly pointed overall from lateral view, but rounded in region of mouth and snout. Upper jaw slightly longer than lower jaw with mouth subterminal. Nostrils very close; anterior circular, posterior crescent-

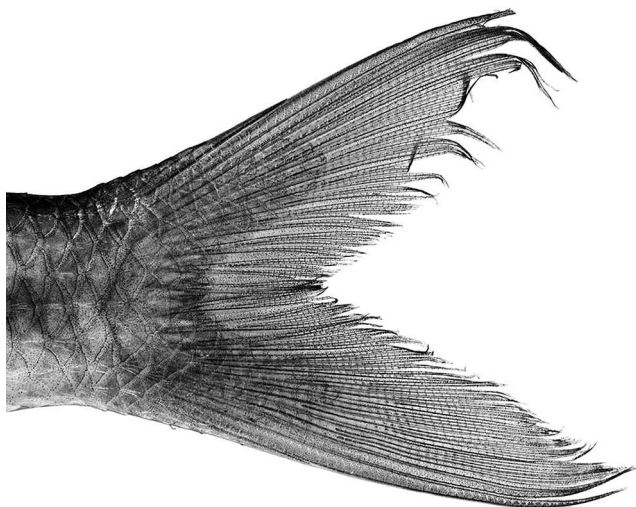


Fig. 2. *Cyphocharax pinnilepis*, USNM 298248, 101.2 mm SL; caudal fin showing distribution of scales overlying base of fin lobes.

Table 1. Morphometrics of Holotype and 31 Paratypes of *Cyphocharax pinnilepis*, New Species. Range and mean include all specimens.

	Holotype	Range	Mean
Standard length (mm)	93.2	30.1–93.2	–
Percent of SL			
Greatest body depth	38.2	33.5–39.3	36.5
Snout to dorsal-fin origin	46.8	46.8–52.2	50.0
Snout to pectoral-fin origin	27.9	25.9–30.6	28.7
Snout to pelvic-fin origin	53.9	53.4–57.5	55.7
Snout to anal-fin origin	80.8	76.2–83.4	80.4
Snout to anus	76.0	71.9–78.7	75.7
Dorsal-fin origin to hypural joint	57.1	52.8–57.1	55.4
Dorsal-fin origin to anal-fin origin	47.4	43.5–48.8	46.3
Dorsal-fin origin to pelvic-fin insertion	38.1	33.5–39.1	37.0
Dorsal-fin origin to pectoral-fin insertion	38.3	34.0–38.3	36.5
Caudal-peduncle depth	13.0	11.7–13.8	13.0
Pectoral-fin length	18.6	17.4–22.7	19.7
Pelvic-fin length	20.7	19.5–23.4	21.7
Dorsal-fin length	26.7	26.7–34.4	31.1
Head length	26.3	26.3–32.2	29.0
Percent of HL			
Snout length	30.2	23.5–31.8	28.3
Orbital diameter	30.2	26.8–35.2	31.5
Postorbital length	39.6	33.8–41.5	36.9
Interorbital width	42.0	32.8–43.8	38.5

shaped with aperture closed by thin flap of skin separating nares. Adipose eyelid well developed and extending posteriorly onto anterodorsal portion of opercle. Central aperture in adipose eyelid round in smaller specimens and approximately corresponds to limits of pupil. Aperture vertically ovoid in larger individuals with eyelid overlapping anterior and posterior portions of pupil.

All scales of lateral line pored with primary laterosensory canal straight. Pored lateral line scales from supracleithrum to hypural joint 33 (3), 34 (12), 35 (12), or 36 (7) [34]. Pored scales on basal portions of caudal fin posterior of hypural joint 2 (5), 3 (24), or 4 (5) [2]. Scales in transverse series from dorsal-fin origin to lateral line 6 (34) or 7 (1) [6]. Scales in transverse series from anal-fin origin to lateral line 5 (33) or 6 (2) [5]. Scales between anus and anal-fin origin 2 (24) or 3 (9) [3]. Middorsal series of scales from rear of supraoccipital spine to dorsal-fin origin 11 (15), 12 (15), or 13 (1) [11]. Caudal fin with field of adherent scales continuing posteriorly onto each lobe of fin in mid-sized and larger specimens. Anterior scales similar in size to those on posterior portion of caudal peduncle but with scale size decreasing slightly distally. Margins of scale field on each lobe posteriorly parabolic and asymmetrically positioned toward dorsal and ventral margins of fin (Fig. 2). Scales extending distally approximately one-fifth length of marginal ray of lobe, reaching middle of central rays of each lobe in adults, but absent from much of middle rays of caudal fin even in largest examined specimens. Smaller individuals lacking scales over caudal-fin lobes.

Dorsal-fin rays ii,10 (34) or iii,9 (2) [ii,10]; with first ray very short when three unbranched rays present. Anal-fin rays ii,7 (14) or iii,7 (22) [iii,7]; with first ray very short when

three unbranched rays present. Pelvic-fin rays i,8 (36) [i,8]. Pectoral-fin rays 13 (5), 14 (22), 15 (8), or 16 (1) [13]. Total vertebrae 31 (1), 32 (8), or 33 (2).

Coloration in alcohol.—Specimens up to approximately 50 mm SL with overall dusky coloration; coloration darker on dorsal portion of head, and dorsolateral and dorsal regions of body. Deep-lying, dark chromatophores forming dusky midlateral stripe on body. Stripe most evident posterior of vertical through base of ultimate dorsal-fin ray and with posterior section of stripe slightly expanded vertically. Stripe terminates immediately anterior of hypural joint. Fin rays, particularly those on median fins, outlined by small, dark chromatophores. Adipose fin speckled with small dark chromatophores.

Overall coloration of larger specimens retaining guanine on scales silvery or silvery golden. Ground coloration of larger specimens lacking guanine on head and body tan overall, but more yellowish ventrally. Middorsal region of head and body covered with series of small dark chromatophores from tip of snout to anterior border of adipose fin and darker than adjoining areas. Head dusky dorsolaterally and light colored ventrally. Chromatophores in postorbital region of head slightly larger than those on snout other than in area posterior of orbit overlapped by adipose eyelid. Overall pigmentation of postorbital region consequently somewhat lighter than that of adjoining areas.

Scales on dorsolateral and dorsal regions of body with dark marginal band along free border of scale, and such bands cumulatively forming overall reticulate pattern on those portions of body. Dark chromatophores sparsely distributed over central portion of exposed region of scales but more concentrated anteriorly. Dark pigmentation absent on scales on lateral surface of body ventral to horizontal through base of pectoral fin and also on abdomen.

Dorsal, anal, and caudal fins somewhat dusky, with ray margins outlined by small, dark chromatophores. Pigmentation most developed distally on caudal-fin lobes, dorsal fin, and anterior rays of anal fin. Pectoral and pelvic fins hyaline overall, but with rays outlined by small, dark chromatophores. Adipose fin dusky.

Coloration in life.—Infraorbitals, preopercle, central and ventral portions of opercle, ventral portion of head, and scales on lateral and ventral regions of body with covering of silvery guanine. Snout, dorsal portion of head, dorsal region of opercle, and middorsal portion of body dark. Scales on dorsolateral region of body with guanine overlying darker basal pigmentation. Silvery coloration in that region often most concentrated on middle portions of scales with dark pigmentation more intense along dorsal and ventral margins of scales. Patterns of guanine and dark pigmentation form somewhat inconspicuous, alternatively silvery and dark irregular stripes on dorsolateral surface of body. Scales overlying portions of caudal-fin lobes lacking guanine. Dorsal, caudal, anal, and adipose fins yellow-orange. Pectoral and pelvic fins hyaline with rays outlined by dark pigmentation.

Habitat and ecology.—*Cyphocharax pinnilepis* was captured in small rivers (5 to 15 m wide and up to 1.8 m deep) characterized by relatively slow currents and somewhat turbid water. The species was also collected in shallow areas of a reservoir along the Rio Gongogi. Substrates at all

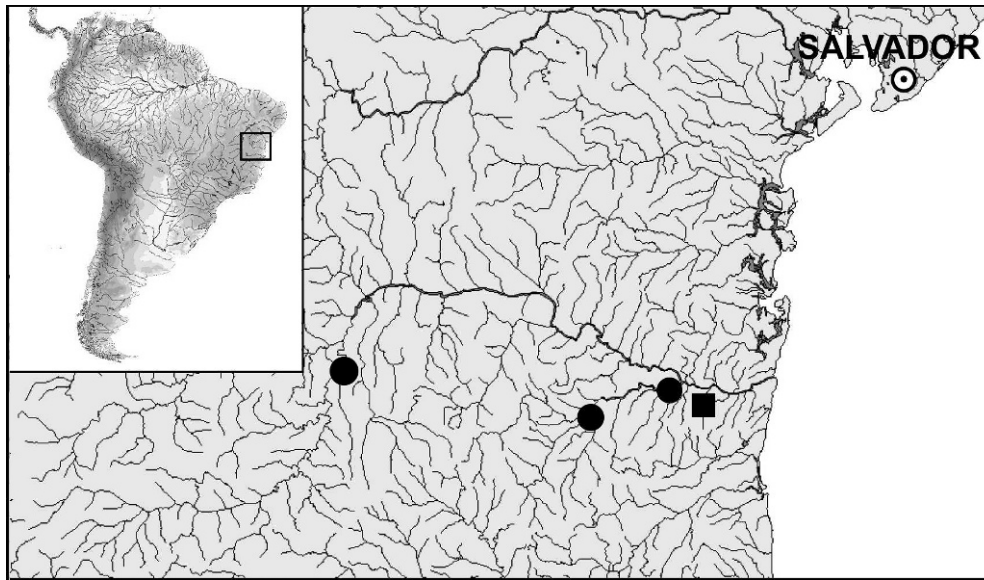


Fig. 3. Map of Rio de Contas basin, Bahia, northeastern Brazil, showing collection localities of *Cyphocharax pinnilepis* (filled in square = type locality; some symbols represent more than one lot of specimens).

locations were muddy to some degree, with mud particularly prevalent along the Rio do Banco where large amounts of decomposing vegetation covered the river bottom. Floating plants including *Pistia* sp. and *Salvinia* sp. were abundant at sampling sites along the Rio do Banco, with grasses the dominant riparian vegetation. All localities in the Rio Gongogi and Rio Gavião where *Cyphocharax pinnilepis* was captured were originally surrounded by the Atlantic Forest. During recent centuries, the surrounding forest was first converted to cocoa plantations and more recently to cattle ranches with resultant major changes to riparian habitats and most likely in water conditions and quality (see discussion of Atlantic Forest drainages in Menezes et al., 2007).

Distribution.—Known from Rio Gongogi and Rio Gavião, tributaries of Rio de Contas, a relatively small coastal drainage in Bahia, northeastern Brazil (Fig. 3). Extensive ichthyological collecting efforts through all of the main coastal rivers across Bahia in recent years failed to yield samples of *Cyphocharax pinnilepis* from outside the Rio de Contas drainage, making it possible that the species is endemic to that river basin.

Etymology.—The specific name, *pinnilepis*, from *pinnis*, meaning fin, and *lepis*, meaning scale, alludes to the presence of a patch of scales over basal portions of caudal-fin lobes.

Generic placement.—As presently defined, *Cyphocharax* is delimited by the combination of the possession of the synapomorphies for a quadrotomy formed by that genus, *Curimatella*, *Pseudocurimata*, and *Steindachnerina* in conjunction with the absence of the synapomorphies diagnostic for each of those other genera (Vari, 1989a, 1991, 1992b). The lack of identified derived features common to the species of *Cyphocharax* leaves open the possibility that the closest relatives of *C. pinnilepis* (and some other species in *Cyphocharax*) lie with one of *Curimatella*, *Pseudocurimata*, and *Steindachnerina* rather than with nominal congeners.

Notwithstanding that complication, *Cyphocharax pinnilepis* lacks the synapomorphies that characterize *Pseudocurimata* (the expansion of the ossified and cartilaginous components of the portion of the second hypobranchial proximate to the third basibranchial with an associated fission of the articular cartilage on the anterior and medial surfaces of the second hypobranchial; the posterior shift of the interdigitation of the ventral portion of the first proximal radial pterygiophore of the dorsal fin to between the neural spines of the fifth and sixth or sixth and seventh vertebrae posterior of the Weberian complex; and the pronounced reduction to complete loss of the second set of uroneurals; Vari, 1989a:58, 1989b:8). In a comparable mode, *Cyphocharax pinnilepis* lacks the synapomorphies recognized for *Steindachnerina* (the expansion of the cartilaginous portion of the first infrapharyngobranchial; the presence of ventral and dorsal ridges on the lateral surface of the second infrapharyngobranchial that bracket the anteromedial portion of the third infrapharyngobranchial; the attachment of the ligament between the second and third hypobranchials to a distinct anterior process on the anterolateral surface of the ventral process of the third hypobranchial; and the pronounced lateral expansion of the anterior portion of the basihyal and basihyal tooth-plate; Vari, 1989a:58, 1991:23). The absence of these derived features excludes *Cyphocharax pinnilepis* from *Pseudocurimata* and *Steindachnerina* under present definitions of those genera.

Less straight forward is the differentiation of *Cyphocharax pinnilepis* from the species of *Curimatella*. As noted under the diagnosis and description, *Cyphocharax pinnilepis* has a posteriorly parabolic field of scales covering the basal portions of each caudal-fin lobe. Eigenmann and Eigenmann (1889:7) delimited their subgenus *Curimatella* within *Curimata* by its possession of “caudal lobes thickly scaled to their tips,” a feature which contrasted with the absence of such scalation in most species of the Curimatidae. In his analysis, Vari (1992b:8) recognized *Curimatella* as a genus and more explicitly defined that taxon by the possession of a broad sheet of scales on the caudal fin, with the scales smaller than those present on the posterior of the caudal peduncle. This sheet of scales covered most of the lobes of the caudal fin

including the basal portions of the middle caudal-fin rays (Vari, 1992b:fig. 1). The fields of scales overlying portions of each caudal-fin lobe in *Cyphocharax pinnilepis* differ from the scales covering the basal region of the caudal fin in the species of *Curimatella* both in size of the individual scales (scales on the caudal-fin lobes approximately the same size as those on the adjoining caudal peduncle versus being smaller than the scales on the peduncle, respectively) and in the extent of coverage of the caudal fin (scales absent from much of the middle caudal-fin rays versus scales present on those rays and covering more than the basal one-half of that portion of fin in adults, respectively). Given these differences in the relative size of the scales and the degree and pattern of coverage of the caudal fin by scales, we assign the new species to *Cyphocharax*.

Remarks.—Possession of scales on the basal portions of the central rays of each lobe of the caudal fin was the basis for the assignment of *Curimatus xinguensis* to the subgenus *Curimatella* by Steindachner (1908). As discussed by Vari (1992a), Steindachner's nominal species is equivalent to *Cyphocharax leucostictus*, a species known from the Rio Amazonas basin, and coastal drainages of Amapá, Brazil, and which Eigenmann and Eigenmann (1889:17) reported to possess scales on the basal portion of the caudal-fin rays. Scales on the caudal fin of *C. leucostictus* form a posteriorly parabolic field on each lobe of the caudal fin. At its maximum extent, the scale field extends distally one-third the length of the central rays of each lobe contrary to one-half that length in *C. pinnilepis*. In addition to the common possession of fields of large scales on the caudal fin, *C. leucostictus* and *C. pinnilepis* have similar overall head and body forms and pigmentation patterns. This may be indicative of a close relationship between the two forms. Distinguishing *C. pinnilepis* from *C. leucostictus* are the number of pored scales along the lateral line from the supracleithrum to the hypural joint (33 to 36 versus 39 to 45, respectively), the number of scales between the anus and the anal-fin origin (2, rarely 3, versus 4, very rarely 3, respectively), and the least depth of the caudal peduncle (11.7–13.8% of SL versus 9.9–11.8%, respectively).

Northeastern Brazil has a relatively depauperate curimatid fauna, with only six of the nearly 100 species in the family inhabiting the river systems across the expanse from the Rio Parnaíba in the state of Pará south to the northeastern portion of the state of São Paulo (Vari and Menezes, 2007). This is a strikingly restricted number of species when one considers the numerous river systems draining that region and its broad geographic expanse (approximately 2500 km along the coastal contour). Curimatids known from that region in addition to *Cyphocharax pinnilepis* are *Curimata macrops* from the Rio Parnaíba, *Curimatella lepidura* endemic to the Rio São Francisco and proximate smaller coastal rivers, *Cyphocharax gilbert* which is widely distributed through the Rio São Francisco and coastal drainages in the region from the state of Bahia to the state of São Paulo, *Steindachnerina elegans* from the Rio São Francisco, Rio Pardo, Rio Jequitinhonha, and the coastal rivers in the state of Bahia, and *S. notonota* inhabiting river systems from Pará to Rio Grande do Norte. Despite the overall depauperate curimatid fauna of northeastern Brazil, the Rio de Contas has a comparatively high diversity of species of that family, with *Cyphocharax gilbert*, *C. pinnilepis*, and *Steindachnerina elegans* known from that basin. All three of these species were collected sympatrically at locations where *C. pinnilepis* was captured.

Cyphocharax pinnilepis is readily distinguished from the species of *Curimata*, *Curimatella*, and *Steindachnerina* in the type region by the lack of the generic level synapomorphies for those three genera (Vari, 1989a), together with the key characters detailed by Vari (1992b:35). *Cyphocharax gilbert* is the only congener known to occur in the Atlantic coastal rivers from northeastern Brazil to the state of São Paulo, but that species can be readily distinguished from *C. pinnilepis*. Most obvious among the differences between these species is the pigmentation on the body (the presence of a dark midlateral stripe or blotch on the caudal peduncle and often the basal portions of the caudal fin in individuals of all sizes in *C. gilbert* (Vari, 1992a:figs. 62–66) versus the lack of pigmentation on the caudal peduncle in *C. pinnilepis* other than in specimens under 50 mm SL in which the dark caudal-fin pigmentation is much less prominent than in comparably sized specimens of *C. gilbert*. Similarly there are differences in the degree of scalation on the lobes of the caudal fin of adults (scales absent versus scales present with posteriorly parabolic scale field covering the central portions of the basal one-half of each caudal-fin lobe, respectively).

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LITERATURE CITED

- Eigenmann, C. H., and R. S. Eigenmann. 1889. A revision of the edentulous genera of the Curimatinae. *Annals of the New York Academy of Sciences* 4:409–440.
- Leviton, A. E., R. H. Gibbs, Jr., E. Heal, and C. E. Dawson. 1985. Standards in herpetology and ichthyology: part 1. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia* 1985:802–832.
- Lucinda, P. H. F., and R. P. Vari. 2009. New *Steindachnerina* species (Teleostei: Characiformes: Curimatidae) from the Rio Tocantins drainage. *Copeia* 2009:142–147.
- Menezes, N. A., S. H. Weitzman, O. T. Oyakawa, F. C. T. de Lima, R. M. C. Castro, and M. J. Weitzman. 2007. Peixes de Água doce da Mata Atlântica. Lista preliminar das espécies e comentários sobre conservação de peixes de água doce neotropicais. Museum de Zoologia, Universidade de São Paulo, São Paulo.
- Steindachner, F. 1908. Über zwei neue Sulurioden und zwei *Curimatus*-Arten, sowie über eine varietät von *Ancistrus vittatus* aus dem Amazonasgebiete innerhalb Brasiliens. *Anzeiger der Akademie der Wissenschaften, Wien* 45: 163–168.
- Taylor, W. R., and G. C. Van Dyke. 1985. Revised procedures for staining and clearing small fishes and

- other vertebrates for bone and cartilage study. *Cybium* 9:107–109.
- Vari, R. P.** 1989a. A phylogenetic study of the Neotropical characiform family Curimatidae (Pisces: Ostariophysi). *Smithsonian Contributions to Zoology* 471:1–71.
- Vari, R. P.** 1989b. Systematics of the Neotropical characiform genus *Pseudocurimata* Fernández-Yépez (Pisces, Ostariophysi). *Smithsonian Contributions to Zoology* 490:1–28.
- Vari, R. P.** 1991. Systematics of the Neotropical characiform genus *Steindachnerina* Fowler (Pisces, Ostariophysi). *Smithsonian Contributions to Zoology* 507:1–118.
- Vari, R. P.** 1992a. Systematics of the Neotropical characiform genus *Cyphocharax* Fowler (Pisces, Ostariophysi). *Smithsonian Contributions to Zoology* 529:1–137.
- Vari, R. P.** 1992b. Systematics of the Neotropical characiform genus *Curimatella* Eigenmann and Eigenmann (Pisces, Ostariophysi), with summary comments on the Curimatidae. *Smithsonian Contributions to Zoology* 533:1–48.
- Vari, R. P.** 2003. Family Curimatidae, toothless characiforms, p. 51–64. *In*: Check List of the Freshwater Fishes of South and Central America. R. E. Reis, S. O. Kullander, and C. J. Ferraris, Jr. (eds.). EDIPUCRS, Porto Alegre, Brazil.
- Vari, R. P., and N. A. Menezes.** 2007. Família Curimatidae, p. 19–23. *In*: Catálogo das Espécies de Peixes de Água Doce do Brasil. P. A. Buckup, N. A. Menezes, and M. S. Ghazzi (eds.). Museu Nacional, Universidade Federal do Rio de Janeiro, Série Livros 23.