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A new species of *Microschemobrycon* (Characiformes: Characidae) from Rio Xingu basin, Brazil

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Abstract

A new species of *Microschemobrycon* with a restricted distribution was recently discovered in the Rio Curuá, Rio Xingu basin, Pará, Brazil. *Microschemobrycon cryptogrammus* new species can be promptly distinguished from all congeners by the presence of a rounded, dark, conspicuous caudal-peduncle blotch and by a subjacent dark midlateral stripe visible in life. Additionally, the new species can be distinguished from all its congeners, except *M. elongatus*, by the presence of a longitudinal dark stripe along the lower jaw. The new species can be distinguished from *M. elongatus* by presenting lateral line with 36–38 pored scales, anterior and posterior nostrils coalescend, dark chromatophores concentrated along the ventral margin of the caudal peduncle and by the presence in life of a dark spot at the base of the dorsal-fin origin.

Key words: *Microschemobrycon elongatus*, miniaturization, body transparency, Aphyoditeinae

Resumo

Uma espécie nova de *Microschemobrycon* com distribuição restrita foi recentemente encontrada no Rio Xingu, Pará, Brasil. *Microschemobrycon cryptogrammus* espécie nova pode ser prontamente distinguido de todos os congêneres pela presença de uma conspícua mancha escura arredondada no pedúnculo caudal e por uma faixa horizontal escura subjacente, visível em vida. Adicionalmente, a espécie nova pode ser distinguida de todas as congêneres, exceto *M. elongatus*, pela presença de uma faixa escura longitudinal ao longo da mandíbula inferior. A espécie nova pode ser diferenciada de *M. elongatus* por ter linha lateral com 36–38 escalas perfuradas, narinas anteriores e posteriores justapostas, cromatóforos escuros concentrados ao longo da margem ventral do pedúnculo caudal e pela presença em vida de uma mancha escura na base da origem da nadadeira dorsal.

Palavras-chaves: *Microschemobrycon elongatus*, miniaturização, corpo transparente, Aphyoditeinae

Introduction

Microschemobrycon is a group of small size characids (2.0–4.0 cm SL) widely distributed in the Amazonas, Essequibo and Orinoco river basins (Lima *et al*., 2017). The genus is the largest unit of the Aphyoditeinae (*sensu* Lima *et al*., 2017), a subfamily having a high number of monotypic genera (*e.g. Leptobrycon*, *Parecbasis* Eigenmann, 1914, *Oxybrycon* Géry, 1964 and *Thrissobrycon* Böhlke 1953). *Microschemobrycon* is represented by seven valid species (Lima *et al.,* 2003): *M. callops* Böhlke, occurring in the Orinoco, Negro and Madeira basins; *M. casiquiare* Böhlke inhabiting the Orinoco, Negro, Xingu, Tapajós, Purus and Madeira basins; *M. elongatus* Géry

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distributed in the Xingu, Tapajós and Tocantins basins; *M. geisleri* Géry occurring in the Rio Madeira, Negro, Tapajós and lower Amazon basins; *M. guaporensis* Eigenmann occurring in the Rio Madeira basin; *M. meyburgi* Meinken known only from the Rio Negro basin and *M. melanotus* (Eigenmann) distributed in the Rio Madeira, Purus, Solimões, and Essequibo basins (Géry, 1973; Lima *et al.,* 2003; Lima *et al*., 2013; Ohara *et al*., 2017).

The genus was proposed by Eigenmann (1915) with the description of its type species *Microschemobrycon guaporensis*. Eigenmann (1915) defined the genus as: "General appearance of *Aphyocharax*, the lateral line complete to within four scales of the caudal; three postorbitals, of which the middle one is largest, covering most of the postorbital area; cheeks covered by the third suborbital; maxillary slender, the teeth much crowded, and on less than one-third of its length; teeth narrow, minute, crowded; no pseudotympanum; frontal fontanel moderate; adipose fin moderate; anal base long". However, the definition of the genus has been expanded as additional species were described and incorporated in the genus, including species with complete and incomplete lateral line, as well as, presenting or not a pseudotympanum (Böhlke, 1953). According to Géry (1977: p. 587, key to Aphyoditeina), *Microschemobrycon* could be recognized by the combination of the following characters: terminal mouth (except *M. melanotus*); a single row of numerous feeble tricuspid or conic teeth in jaws (including maxilla); premaxilla with ascending process; "postorbitals" present; lateral line series complete or incomplete and caudal fin scaleless (except *M. casiquiare*).

Recent phylogenetic analyses of the family Characidae, using either only molecular data (Oliveira *et al*., 2011) or total evidence (Mirande, 2018), failed to recover the traditionally defined Aphyoditeinae (*sensu* Géry, 1973, 1977; Mirande, 2010; Lima *et al*., 2017). In the latter phylogenetic hypothesis, *Microschemobrycon* was represented by two species, *M. casiquiare* and *M. melanotus*, and the genus was considered to belong to the subfamily Characinae, as the sister group of the remaining genera of the subfamily. Notwithstanding, the definition of *Microschemobrycon* was not hitherto defined, and a more specific analysis centered on the genus is still needed.

In the absence of a phylogeny-based diagnosis for the genus, we herein describe a new species of Characidae as a member of *Microschemobrycon*, based on the current knowledge concerning the genus and aware that this assignment is a conservative approach in behalf of taxonomic stability. The new species possesses the morphological characters that, in combination, fits the traditional definition of the genus (Böhlke, 1953; Géry, 1973, 1977; Lima *et al*., 2017).

Material and methods

Measurements and counts were taken on the left side of the specimens and followed Fink & Weitzman (1974), with the addition of the following measurements: dorsal-fin base length, anal-fin base length, and distance between pelvic and anal-fin origins. In addition, scale rows ventral to the lateral line were counted from the lateral line to the pelvic-fin origin, rather than from the lateral line to the anal-fin origin. Measurements were made with a digital caliper under a microscope and are presented as percentages of standard length (SL) or head length (HL) for subunits of the head. Vertebral count included the four vertebrae of the Weberian apparatus as separated elements and the terminal centrum counted as a single element. Counts of teeth, cusps, gill rakers along first branchial arch, supraneurals, unbranched anal-in rays, procurrent caudal-fin rays and vertebrae were taken from cleared and stained (c&s) specimens prepared according to Taylor & Van Dyke (1985). Count values are followed by the frequency in parentheses in the description, and the value presented by the holotype is indicated by an asterisk. Nomenclature for bones follows Weitzman (1962) and Mattox & Toledo-Piza (2012). The pseudotympanum was exposed on alcohol-preserved specimen by the removal of overlaying skin and adipose tissue, and its nomenclature (bones and muscles) follows Malabarba (1998). Institutional abbreviations follow Sabaj (2016).

Microschemobrycon cryptogrammus, new species

(Figs. 1–2)

Holotype. MZUSP 123748, 23.6 mm SL, Brazil, Pará State, Altamira, igarapé tributary of Rio Curuá, Rio Xingu basin, 15 km north from Castelo dos Sonhos, 8°10'25"S 55°7'43"W, 08 Aug 2015, W. M. Ohara, M. Pastana & O. Oyakawa.

Paratypes. All from Brazil, Pará State, Altamira, Rio Xingu basin, Rio Curuá drainage. MZUSP 119370, 5, 19.5–21.7 mm SL, same data as holotype. MZUSP 116013, 5, 20.7–22.5 mm SL (2 c&s, 20.9–22.5 mm SL), tributary of igarapé Treze de Maio, 8°39'08"S 55°02'08"W, 5 Nov 2014, W. M. Ohara & J. Bilce. MZUSP 116046, 16, 20.1–23.5 mm SL, igarapé tributary of Rio Curuá, 8 km from Cachoeira da Serra, 8°36'19"S 55°5'28"W, 5 Nov 2014, W. M. Ohara & J. Bilce. MNRJ 34800, 6, 18.0–22.2 mm SL, igarapé tributary of Rio Curuá, 8°10'52"S 55°7'33"W, 30 Sep 2008, M. Britto, J. Gomes, F. Carvalho & L. Fries. MZUSP 119647, 1, 20.7 mm SL, tributary of Rio Curuá, 10 km of Castelo dos Sonhos, 8°21'9"S 55°10'16"W, 07 Aug 2015, W. M. Ohara, M. Pastana & O. Oyakawa.

FIGURE 1. *Microschemobrycon cryptogrammus*, MZUSP 123748, holotype, 23.6 mm SL (A); MZUSP 119647, paratype, 20.4 mm SL (B), both from the tributaries of Rio Curuá drainage, Rio Xingu basin, Pará, Brazil.

Diagnosis. The new species is distinguished from all Aphyoditeinae (*sensu* Lima *et al.*, 2017) by the presence of a unique well-defined, rounded dark caudal-peduncle blotch and by a subjacent dark midlateral stripe visible in live specimens; and from all Characinae (*sensu* Mirande, 2018) by the presence of a single row of perfectly aligned, similarly-sized tricuspid teeth in the premaxilla and dentary. Furthermore, *Microschemobrycon cryptogrammus* can be distinguished from all *Microschemobrycon* species, except *M. elongatus*, by the presence of a longitudinal dark stripe along the lower jaw. The new species can be distinguished from *M. elongatus* by having lateral line with 36–38 pored scales (*vs.* lateral line with 15–19 pored scales); by the presence of anterior and posterior nostrils separated by narrow skin fold (*vs*. nostrils distinctly separated, as illustrated by Géry (1973: 98, Fig. 10); dark chromatophores concentrated along ventral margin of the caudal peduncle (*vs*. pigmentation absent); and by the presence in life of a dark spot at base of dorsal-fin origin (*vs.* absent). Additionally, *M. cryptogrammus* can be distinguished from *M. callops* by the absence of a humeral blotch (*vs*. vertically elongated humeral blotch present) and by presenting a hyaline dorsal fin (*vs.* dorsal fin with a dark crescent-shaped blotch); from *M. casiquiare* by the number of perforated scales in the lateral line (33–38 *vs*. 15–26); from *M. geisleri* by the absence of humeral blotch (*vs*. presence of a rounded humeral blotch); from *M. guaporensis* by the absence of two crescent

shaped brown marks over the distal margin of hypurals (*vs.* presence); from *M. meyburgi* by the presence of 33–38 pored scales in the lateral line (*vs.* 3–5) and tricuspid teeth on jaws (*vs.* unicuspid); and from *M. melanotus* by the absence of dorsal-fin blotch (*vs.* dorsal-fin blotch present) and by presenting a terminal mouth (*vs.* mouth slightly upturned).

Description. Morphometric data of the new species presented in Table 1. Body elongated and compressed; greatest body depth at vertical through dorsal-fin origin. Dorsal profile of head slightly convex from snout to vertical through anterior border of posterior nostril, straight to slightly convex from that point to dorsal-fin origin. Dorsal-fin base slightly convex, descending posteriorly. Dorsal profile from last dorsal-fin ray to adipose-fin base straight to slightly convex, slightly concave from latter point to caudal-fin origin. Ventral profile of head and anterior region of body slightly convex from mouth to genital papilla; straight to slightly concave along anal-fin base. Ventral profile of caudal peduncle straight to slightly concave.

TABLE 1. Morphometric data of *Microschemobrycon cryptogrammus.* Range, mean and standard deviation (SD).

	Holotype	N	Min	Max	Mean	SD
Standard length (mm)	23.6	21	20.1	23.6	21.5	1.0
Percents of Standard Length						
Depth at dorsal-fin origin	24.6	21	23.6	27.7	26.0	1.0
Snout to dorsal-fin origin	50.7	21	50.0	54.1	51.5	1.1
Snout to pectoral-fin origin	26.0	21	26.0	29.8	27.3	0.9
Snout to pelvic-fin origin	42.8	21	42.8	45.8	44.3	0.8
Snout to anal-fin origin	57.0	21	55.8	60.5	59.1	1.2
Caudal-peduncle depth	9.1	21	8.6	10.3	9.4	0.4
Caudal-peduncle length	13.0	21	10.4	14.1	12.3	1.2
Pectoral-fin length	19.2	21	15.3	20.4	18.9	1.3
Pelvic-fin length	14.8	21	13.7	15.9	14.7	0.6
Pelvic-fin origin to anal-fin origin	15.5	21	13.6	15.9	14.9	0.6
Dorsal-fin base length	11.3	21	10.1	13.4	11.9	0.8
Dorsal-fin length	26.2	21	23.6	29.4	27.0	1.2
Dorsal-fin origin to caudal-fin origin	50.6	21	49.7	55.8	52.3	1.4
Anal-fin base length	31.1	21	28.7	32.3	30.7	1.0
Anal-fin length	19.7	21	18.5	22.0	20.8	0.7
Posterior margin of eye to dorsal-fin origin	34.8	21	33.5	37.4	35.5	1.0
Head length	26.5	21	26.3	29.3	27.7	0.8
Percents of Head Length						
Horizontal eye length	36.5	21	35.7	39.8	37.5	1.3
Snout length	34.2	21	27.3	34.5	31.2	2.0
Least interorbital width	31.0	21	28.9	33.8	30.8	1.1
Upper jaw length	35.4	21	31.4	36.1	34.0	1.5

Pseudotympanum present, roughly oval, bordered dorsally by *lateralis superficialis* muscle, antero-ventrally by *obliquus superioris* muscle, postero-ventrally by *obliquus inferioris* muscle, posteriorly by anterior face of second pleural rib, postero-dorsally by *obliquus superioris* muscle.

Mouth terminal, opening at horizontal line through ventral border of eye pupil. Anterior and posterior nostrils separated by narrow skin fold (see similar condition in Géry, 1973; 88, Fig. 4). Maxilla short, posteroventrally angled, posterior terminus falling short from vertical through anterior margin of eye and surpassing ventrally horizontal through ventral margin of eye. Teeth elongated, similar in shape. Premaxilla with 11(2), tricuspid teeth aligned in single row. Maxilla with 5(2) teeth with 1-3 cusps. Dentary with 15–17(2) tricuspid or conical teeth decreasing in size posteriorly.

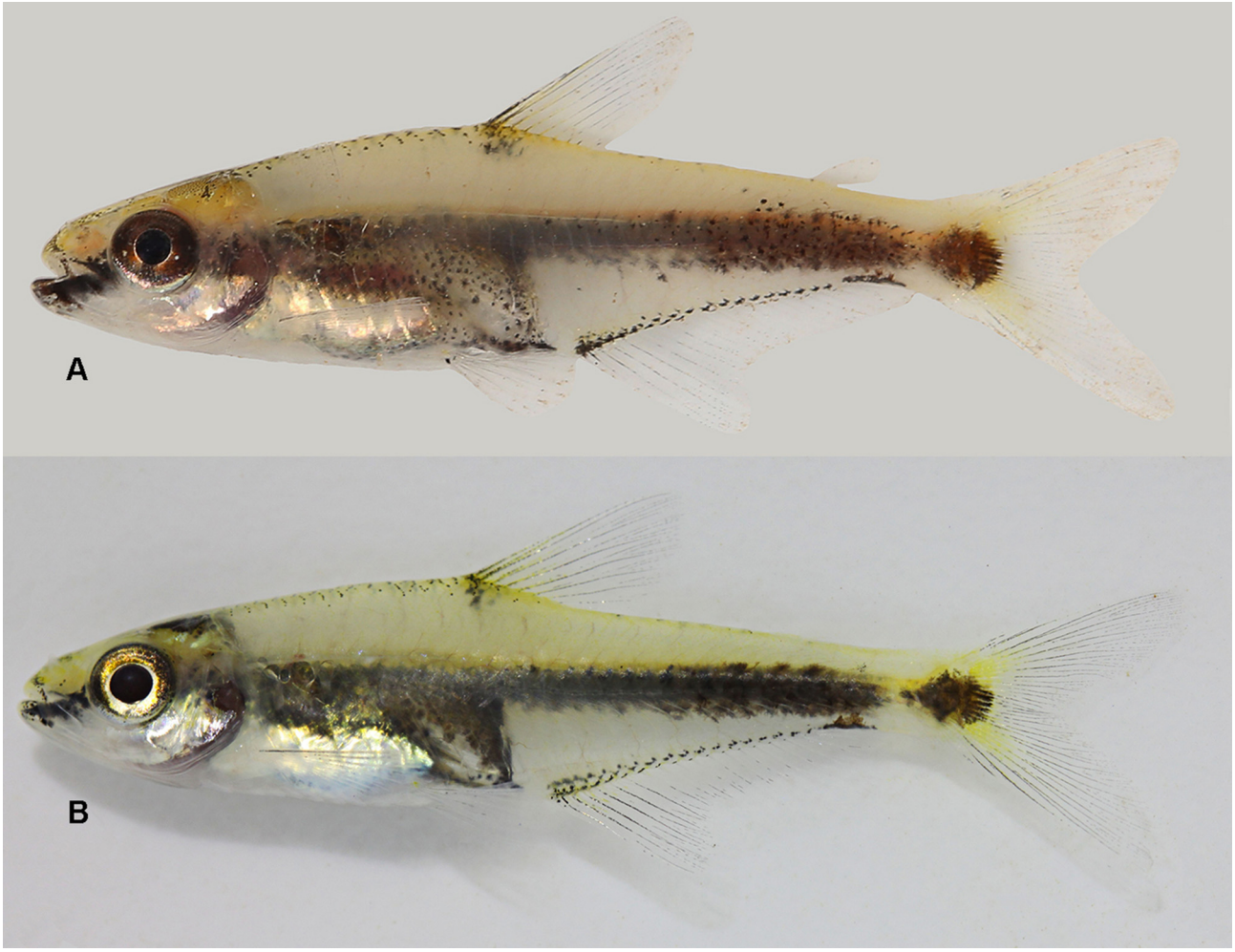

FIGURE 2. Coloration in life of *Microschemobrycon cryptogrammus*, MZUSP 119370, paratype, 19.5 mm SL, igarapé tributary of Rio Curuá (A) and MZUSP 116046, paratype, 23.6 mm SL, tributary of Treze de Maio (B), both from Rio Curuá drainage, Rio Xingu basin, Pará State, Brazil.

Dorsal-fin rays ii,7(1) or ii,8*(18). First unbranched dorsal-fin ray half length of second unbranched ray. First branched ray as long as second unbranched ray, subsequent branched rays gradually decreasing in size posteriorly. Dorsal-fin origin slightly anterior to mid-body standard length. First dorsal-fin pterygiophore located posterior to neural spine of 9th(2) vertebrae. Adipose-fin origin at vertical through base of last three or four anal-fin rays. Unbranched anal-fin rays iv(2); branched anal-fin rays 17(9), 18*(10) or 19(2). First branched anal-fin ray longer, remaining rays decreasing in size posteriorly. Anal-fin with distinct anterior lobe, distal profile concave. Anal-fin origin at vertical through dorsal-fin terminus. Anteriormost anal-fin pterygiophore inserted posterior to haemal spine of 14th(2) vertebrae. Dimorphic males with acute, retrorse hooks on posterior margin and posterior branches of anal-fin rays, posterolaterally arranged on first branched to 3rd–4th branched rays. Pectoral-fin rays i*(19), 9*(7), 10(9) or 11(2). Pectoral-fin rays reaching pelvic-fin origin. Pelvic-fin origin anterior to vertical through dorsal-fin origin. Pelvic-fin rays i,7*(19). Pelvic-fin rays with acute bony hooks in males, from unbranched ray to 5th or 6th branched ray. Caudal fin forked, with lobes similar in size and rounded tips. Principal caudal-fin rays 19*(18). Twelve (2) dorsal procurrent caudal-fin rays and 9(1) or 10(1) ventral procurrent caudal-fin rays.

Scales cycloid. Longitudinal line 36(1), 37(12) or 38*(8). Pored scales on lateral line 33(1), 36(4), 37(11) or 38*(3); predorsal scale series 4(1), 5(1), 7(1), 8(1), 9(1) or 10*(15); scale rows between lateral line to dorsal-fin origin 4*(21); scale rows between lateral line to pelvic-fin origin 3*(20) or 3.5(1); circumpeduncular scale rows 12*(21). Scales sheath over the base of anterior anal-fin rays 3*(15), 4(5) or 5(1).

Total vertebrae 37 (2). Precaudal vertebrae 14(2), caudal vertebrae 23(2). Supraneurals 4(1) to 5 (1) with narrow bony lamellae on upper portion. Branchiostegal rays 4(2). First gill arch with 2(2) rakers on hypobranchial, 7(2) rakers on ceratobranchial, 1(2) raker on intermediate cartilage, and 3(2) rakers on epibranchial.

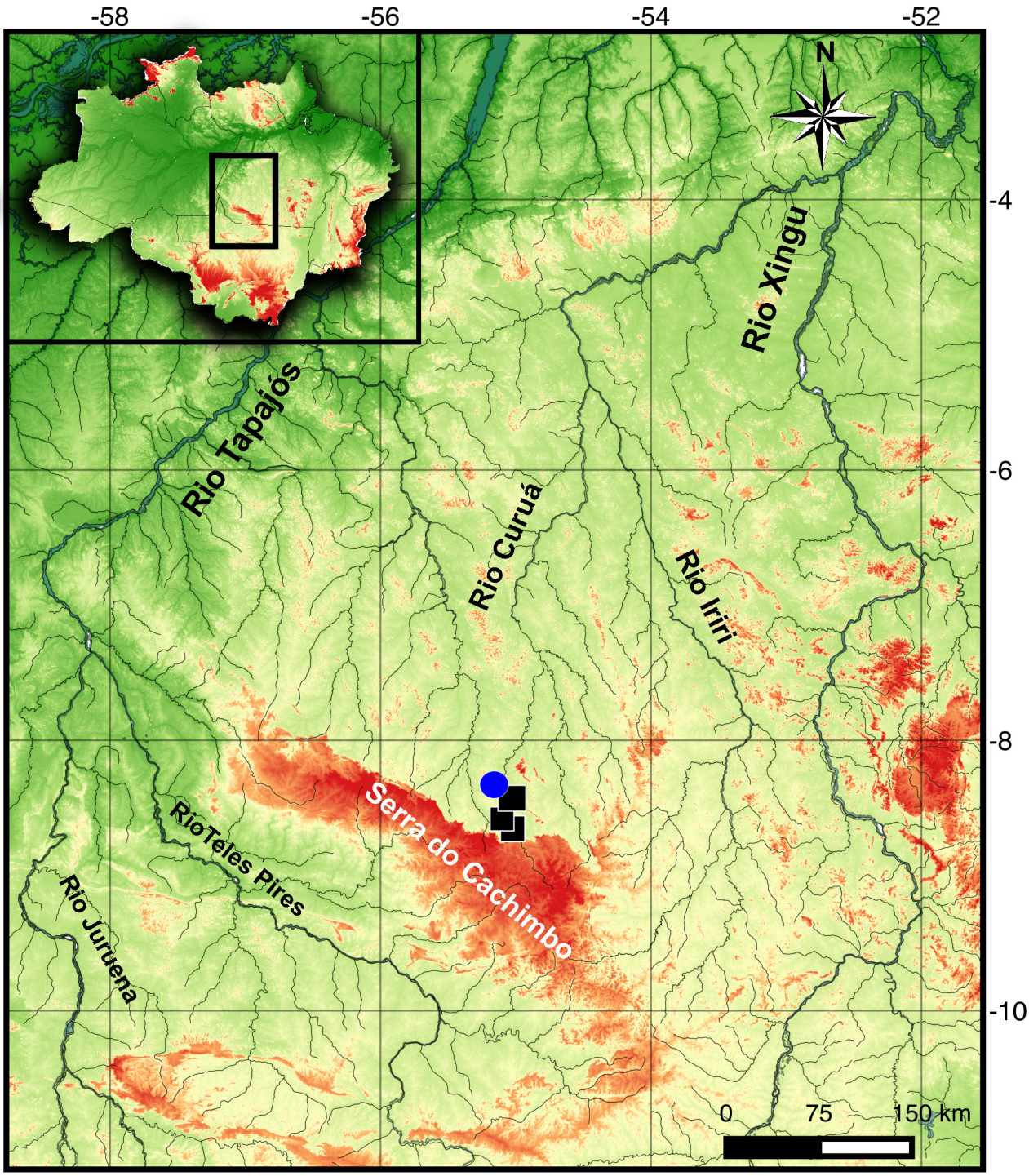

FIGURE 3. Map of central region of Brazil showing the geographic distribution of *Microschemobrycon cryptogrammus*, in the Rio Curuá, Rio Xingu basin, Pará State, Brazil. Type locality = blue dot.

Color in alcohol. Overall background body color beige to light yellow (Fig. 1). Guanine pigmentation absent. Large melanophores scattered on dorsal region of head and predorsal region of body. Dark chromatophores aligned along anterior border of nares and dorsal margin of maxilla. Iris with scattered melanophores, more concentrated over distal edges of eye. Presence of longitudinal dark stripe along upper margin of lower jaw. Humeral blotch absent. Oval, darkened area in humeral region due to presence of pseudotympanum. Dark and diffuse subjacent midlateral stripe on posterior region of body, extending between vertical through mid-length of dorsal-fin base to vertical through anal-fin terminus. Dark midlateral stripe more conspicuous from vertical through mid-length of

anal-fin base to posterior end. Caudal-peduncle blotch rounded, not reaching dorsal and ventral margins of caudal peduncle, slightly surpassing base of middle caudal-fin rays. Dorsal-fin base with dark patch of pigmentation on its anterior margin. Dorsal fin with concentration of melanophores over first unbranched ray and base of second unbranched ray, forming a small patch of dark pigmentation, more conspicuous in life specimens. Anal-fin base with dark line extending along its length, more intensely pigmented anteriorly. Dark line along ventral margin of caudal peduncle. Dorsal, anal, pectoral, pelvic and caudal fins hyaline, with few scattered melanophores along edge of lepidotrichia. Adipose fin hyaline.

Color in life. Overall dark pigmentation as described above. Body mostly translucent, slightly yellow to brown (Fig. 2). Eye almost totally yellow or brown. Yellow pigmentation more intense on dorsal regions of body and base of caudal-fin lobes. Guanine pigmentation on internal tissue lining opercular apparatus and abdominal cavity. Dark pigmentation on base of dorsal-fin origin. Lateral dark stripe composed by internal pigmentation extending from posterior margin of eye, over dorsal region of opercle, continuous along vertebral column to unpigmented band anterior to caudal peduncle. Caudal peduncle blotch conspicuous. Abdominal region with internal dark pigmentation along dorsal and posterior regions.

Sexual dimorphism. Bony hooks were observed on the anal- and pelvic-fin rays of two males (MZUSP 116046, 21.1-23.5 mm SL). In the anal-fin rays, the hooks were distributed from the last unbranched to the first four branched rays. No other sexual dimorphic feature was observed in the species, including sexual dichromatism in life, as well as no gill-gland on the first branchial arch of males (*sensu* Oliveira *et al.,* 2012).

Distribution. *Microschemobrycon cryptogrammus* is so far known only from tributaries of the Rio Curuá, Rio Xingu basin, Pará State, Brazil (Fig. 3).

Etymology. The specific epithet *cryptogrammus* derives from the Greek words *crypto*, hidden and *grammus*, line, alluding the black longitudinal stripes into the body, visible only in live specimens. An adjective.

Habitat and ecological notes. *Microschemobrycon cryptogrammus* is known from four localities, all being clear water streams with swift current, 2–4 m wide, 1–2 m deep and substrate composed mainly by sand and mud, running through disturbed (pastureland) areas, at altitudes ranging from 234–273 m a.s.l. (Fig. 4). The new species was always captured in low abundance, amid aquatic vegetation. Other *Microschemobrycon* species are typically found in sandy beaches, living in small shoals (Lima *et al*., 2017; Ohara *et al*., 2017)

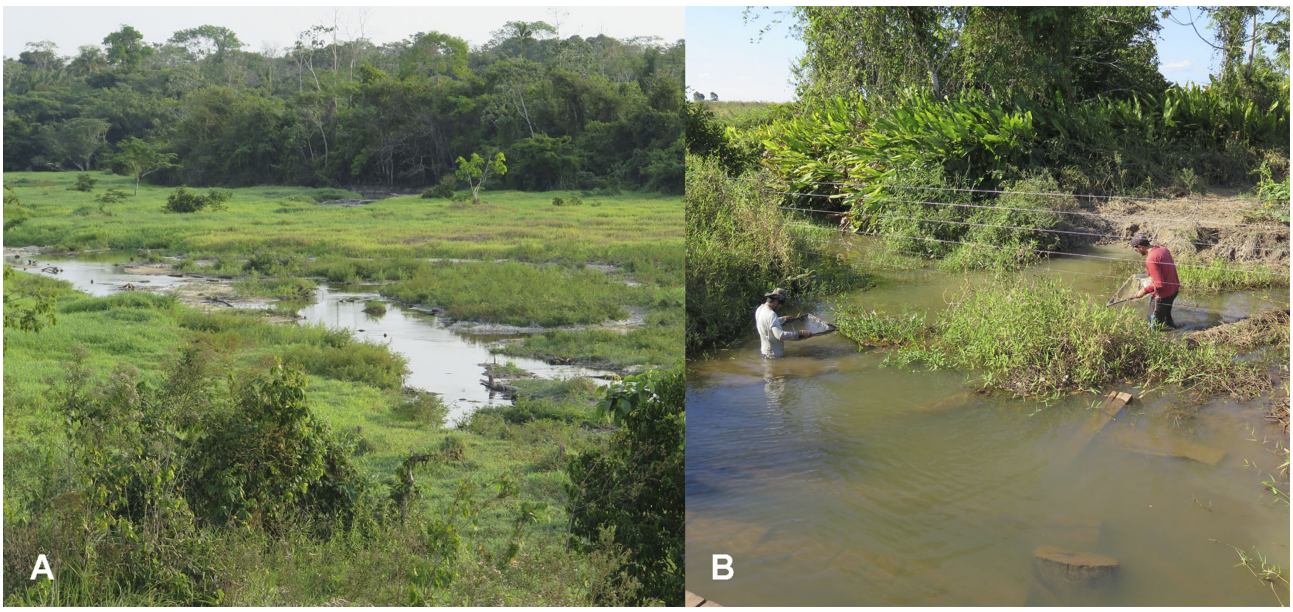

FIGURE 4. Stream inhabited by *Microschemobrycon cryptogrammus*, type-locality, a tributary of Rio Curuá (A) and a tributary of Rio Treze de Maio (B), both belonging to the Rio Xingu basin, Pará State, Brazil.

Discussion

The relationships of the genus *Microschemobrycon* were so far not carefully investigated, and the genus still lacks a diagnosis based on apomorphic characters. Mirande (2010) classified the genus as a member of Aphyoditeinae,

providing synapomorphies for the subfamily and autapomorphies for *Microschemobrycon casiquiare*, the only representative of the genus included in his analysis. Nonetheless, both the molecular-based phylogeny by Oliveira *et al*. (2011) and the total evidence phylogeny by Mirande (2018) did not recovered Aphyoditeinae as a natural unit. Molecular evidence places *M. casiquiare* and *M. melanotus* as a monophyletic clade within Characinae, sister group of the remaining genera of the subfamily. However, considering that only two out of seven valid species of *Microschemobrycon* were so far incorporated in phylogenetic analyses, we consider those results preliminary and that the interrelationships of *Microschemobrycon* still need to be better addressed.

Among its congeners, *M. elongatus* (Fig. 5) is the most similar to *M. cryptogrammus*, by sharing a very elongate body and a longitudinal dark stripe over the lower jaw. Géry (1973: 99) reported for *M. elongatus*: "…teeth are to be described as conical, but remnants of cuspids are to be distinguished at a strong magnification...". Géry (1973) used, among others features, the number of cusps to distinguish *M. elongatus* from *M. casiquiare* (see also Géry, 1977: p598, key to *Microschemobrycon* species). We examined two lots of *M. elongatus* (MZUSP 109759 and MZUSP 91336) from the Rio Suiazinho (the type-locality), and it was found that *M. elongatus* has some tricuspid teeth, although the secondary, more lateral cusps are poorly developed. Thus, the degree of cusps development is indeed useful to distinguish *M. elongatus* from other *Microschemobrycon* species (including *M. cryptogrammus*) that have tricuspid teeth with secondary cups well developed.

FIGURE 5. *Microschemobrycon elongatus*, MZUSP 109759, 26.4 mm SL, Rio Suiazinho, Rio Xingu basin, Mato Grosso, Brazil (A). *Microschemobrycon elongatus* immediately after capture, MZUSP 109758, tributary of the Rio Von Den Steinen, Mato Grosso, Brazil (B), photo by J. C. Nolasco.

Toledo-Piza *et al.* (2014) updated the list of miniature (*sensu* Weitzman & Vari, 1988) Neotropical freshwater fishes to include 213 species. In their work, *Microschemobrycon elongatus* and *M. meyburgi* were listed as miniature species, reaching 25 mm SL and 22 mm SL, respectively. However, we have noticed that some specimens of *M. elongatus* exceeds 26 mm SL (MZUSP 109759, MZUSP 109758), and its inclusion of in the list of miniaturized species must be then reconsidered. The largest individual examined of *M. cryptogrammus* presents 23.6 mm SL. In that sense, the new species is one of the smallest species of the genus and a miniature species.

Among its congeners, only *M. casiquiare* and *M. elongatus* co-occur with *M. cryptogrammus* in the Rio Xingu basin. *M. casiquiare* was described from the São Gabriel rapids in the Rio Negro, Brazil, *M. elongatus* was described by Géry (1973) from the Rio Suiazinho, a right-bank tributary of the upper Rio Xingu basin. More recently, this species was recorded in other localities from middle and upper Rio Xingu (Buckup *et al.,* 2011), Rio Tocantins (MZUSP 91321) and Rio Tapajós (Ohara *et al.,* 2017). However, no other species of *Microschemobrycon* have been recorded from right-bank tributaries of Rio Xingu so far. *Microschemobrycon cryptogrammus* is only found in the upper Rio Curuá, a left-bank tributary of Rio Xingu formed mostly by rivers draining the Serra do Cachimbo, and this region seems to house several species with restricted distribution (*e.g.* Birindelli *et al*., 2009; Netto-Ferreira, 2012; Varella & Sabaj-Pérez, 2014; Garcia-Ayala *et al*., 2017; Oyakawa *et al*., 2018). On the other hand, several species inhabiting right-bank tributaries of the Rio Xingu exhibit a wider geographic distribution not only in the Rio Xingu, but also in other drainages from the Brazilian Shield (see the "Central Brazilian Shield" described by Lima & Ribeiro, 2011: 158-160). The discovery of *Microschemobrycon cryptogrammus* supports the assumption made by previous authors that the upper Rio Curuá presents a fauna of fish highly endemic.

Comparative material examined. All from Brazil, except when noted. *Aphyocharacidium* sp.: ZUEC 13263, 60, 2 c&s (19.2-19.3 mm SL), Acre, Cruzeiro do Sul, Rio Moa, Rio Juruá basin; ZUEC 13273, 55, 14.5-26.4 mm SL, Acre, Cruzeiro do Sul, tributary of Rio Juruá. *Aphyodite grammica*: FMNH, holotype, 24.3 mm SL, Guiana, Konawaruk. MZUSP 29874, 20, 21.9–26.9 mm SL, Rio Negro basin. *Brittanichthys axelrodi*: MCP 14931, 17, 16.3–22.2 mm SL, 3 c&s, Roraima, Boa Vista, Rio Negro basin. *Leptobrycon jatuaranae*: MCP 14936, 17, 20.8–25.1 mm SL, 3 c&s, Amazonas, Rio Negro basin; MZUSP 120210, 13, 26.6–29.7 mm SL, Amazonas, Rio Cuieiras, Rio Negro basin. "*Macropsobrycon*" *xinguensis*: MCP 34546, 26, 18.6–29.1 mm SL, 3 c&s, Mato Grosso, Rio Kaiapá, Rio Tapajós basin. *Microschemobrycon casiquiare*: MZUEL 12014, 4, 23.9–24.5 mm SL, Amazonas, Presidente Figueiredo, Rio Uatumã. *Microschemobrycon elongatus*: MZUSP 109759, 23, 19.0–26.4 mm SL (2 c&s, 24.4–25.1 mm SL), Mato Grosso, Rio Suiazinho, Rio Xingu basin; MZUSP 109758, 15, 20.4–26.5 mm SL, Mato Grosso, Rio Von Den Steinen, Rio Xingu basin; MZUSP 100076, 4, 15.8–19.3 mm SL, Mato Grosso, Rio Teles Pires, Rio Tapajós basin; MZUSP 91336, 4, 19.9–21.8 mm SL, Mato Grosso, Rio Suiazinho, Rio Xingu basin; MZUSP 91321, 30, 22.2-29.9 mm SL, Mato Grosso, Rio Araguaia, Rio Tocantins basin *Microschemobrycon guaporensis*: FMNH 57926, holotype, 29.1 mm SL, Maciel, Rio Guaporé. *Microschemobrycon geisleri*: MZUSP 12131, 5, 23.2–30.4 mm SL, Amazonas, Rio Madeira; MZUSP 122576, 9, 18.6–20.3 mm SL, Amazonas, Rio Aripuanã, Rio Madeira basin. *Oligobrycon microstomus*: FMNH 57913, holotype, 31.0 mm SL, "Jacarehy on Rio Parahyba". *Oxybrycon* sp.: MCP 33105, 8, 13.7–14.9 mm SL, 2 c&s, Venezuela, Titi Lagoon, upper Orinoco basin. *Parecbasis cyclolepis*: FMNH 56677, holotype, 56.3 mm SL, Rio Madeira; MZUSP 26146, 7, 40.3–53.5 mm SL, Peru, Ucayali, río Ucayali. *Thrissobrycon pectinifer*: CAS (SU) 16944, holotype, 26.8 mm SL, Cucuhy, Rio Negro basin; MCP 14932, 12, 26.4–30.2 mm SL, 3 c&s, Rio Arirara, Rio Negro basin.

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