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A new species of *Leporinus* Agassiz, 1829 (Characiformes: Anostomidae) from the rio Tocantins, Brazil

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A new species of *Leporinus* is described based on specimens from the lower rio Tocantins, Pará State, Brazil. The new species is diagnosed by having conspicuous dark spots on center of scales on anterolateral portion of body, 33 or 34 scales in lateral line, 16 scales rows around caudal peduncle, four scale rows between dorsal-fin origin and lateral line and four between lateral line and pelvic-fin origin, and four teeth on premaxilla and four on dentary. The new species is similar to *Leporinus gomesi*, *L. granti*, and *L. nijsseni* for having three prominent dark midlateral blotches, smaller blotches formed by dermal pigment, five of which form an interrupted "X" between head and first midlateral blotch, small dark spots formed by epidermal pigment, terminal mouth with four teeth on premaxilla and four on dentary, and relatively few scales on lateral line (less than 36). In addition, new data is provided for the type specimens of *Leporinus granti* and *L. megalepis* (=*Hypomasticus megalepis*),, and *L. badueli* is confirmed as a junior synonym of *L. granti*.

Uma espécie nova de *Leporinus* é descrita a partir de exemplares do baixo rio Tocantins, estado do Pará, Brasil. A espécie nova é diagnosticada por possuir conspícuos pontos escuros no centro de cada escama da porção anterolateral do corpo, 33 ou 34 escamas na linha lateral, 16 séries de escamas ao redor do pedúnculo caudal, quatro séries de escamas entre a origem da nadadeira dorsal e a linha lateral e quatro entre a linha lateral e a origem da nadadeira pélvica, quatro dentes no pré-maxilar e quatro no dentário. A espécie nova se assemelha a *Leporinus gomesi*, *L. granti* e *L. nijsseni* por apresentar três manchas escuras laterais no corpo, manchas menores no corpo formadas por pigmentos dérmicos dispostas num "X" entre o opérculo e a primeira mancha lateral, pontos escuros formados por pigmentos epidérmicos, boca terminal com quatro dentes no pré-maxilar e quatro no dentário, e relativamente poucas escamas na linha lateral (menos de 36). Além disso, dados novos sobre as séries de exemplares-tipo de *Leporinus granti* e *L. megalepis* (=*Hypomasticus megalepis*) são apresentados, e *L. badueli* é confirmado como um sinônimo júnior de *L. granti*.

Key words: Anostomoidea, *Leporinus badueli*, *Leporinus granti*, Ostariophysi, Taxonomy.

Introduction

The genus *Leporinus* Agassiz, 1829 is one of the most species-rich of the order Characiformes, with approximately 90 valid species (Garavello & Britski, 2003; Eschmeyer & Fricke, 2012). Recent field trips and increased study of specimens deposited in fish collections have revealed a still great number of undescribed species (*e.g.*, Birindelli & Britski, 2009; Feitosa *et al*., 2011), as well as many taxonomic problems to be solved (*e.g*., Britski *et al*., 2011; Britski *et al*., 2012).

Eigenmann (1912) described *Leporinus granti* based on specimens from his collections in Guyana, recognizing it as having many dark blotches over body. The species was latter redescribed by Garavello (1990), based on specimens from Guyana and rio Aripuanã, a tributary of rio Madeira in Brazil. In addition, Garavello (1990) described two similar species occurring with *Leporinus granti*: *L. nijsseni* from Guyana, and *L. gomesi* from rio Aripuanã. Géry *et al*. (1991) redescribed *Leporinus granti* and *L. nijsseni* based on specimens from French Guyana and considered *L. badueli* Puyo, 1948 a junior synonym of *L. granti*. The latter opinion was not followed by Garavello & Britski (2003) and Eschmeyer & Fricke (2012).

During the study of specimens of *Leporinus* at the Museu de Zoologia da Universidade de São Paulo, a new species of *Leporinus* similar to *Leporinus gomesi* in coloration and body shape was discovered. In addition, new information regarding the type series of *Leporinus granti* and *L. megalepis* Günther, 1863 (=*Hypomasticus megalepis*) was recently recovered. The aim of the present contribution is to describe the new species, to present new data on the type specimens of *Leporinus granti*, and *L. megalepis*, as well as to discuss the status of *L. badueli*.

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Material and Methods

Counts and measurements were taken according to Britski & Garavello (1978) and Winterbottom (1980). Measurements were taken to the nearest 0.1 mm using dial calipers. Standard length (SL) is expressed in millimeters and all other measurements are expressed as percents of SL, except subunits of head, which are expressed as percents of head length. All counts were preferably made on the left side of the specimens. Meristic data are given in the description, with the frequency of each count provided between parentheses after the respective count, and an asterisk indicating counts of the holotype. Lateral-line scale counts included the pored scales extending onto base of the median caudal-fin rays; counts of the longitudinal scale rows above lateral line exclude the lateral-line scale row and the middorsal scale row; counts of the longitudinal scale rows below lateral line exclude the lateral-line scale row and include half a scale row when the pelvic-fin origin is immediately behind the middle of a scale. Vertebrae of the Weberian apparatus were counted as four elements and included in the vertebral counts; the fused PU1+U1 of the caudal region was counted as a single element. The pattern of radii was defined on scales immediately above lateral line row and at vertical through dorsal-fin origin.

All examined specimens are alcohol preserved, except when indicated by CS, which stands for cleared and stained specimens according to Taylor & van Dyke (1985). Institutional abbreviations are: ANSP, for Academy of Natural Sciences, Philadelphia; BMNH, for British Museum of Natural History, London; CAS, for California Academy of Sciences, San Francisco; FMNH, for Field Museum of Natural History, Chicago; INPA, for Instituto Nacional de Pesquisas da Amazônia, Manaus; MCZ, for Museum of Comparative Zoology, Cambridge; MNHN, for Muséum National d'Histoire Naturelle, Paris; MZUSP, for Museu de Zoologia, Universidade de São Paulo, São Paulo; NMW, for Naturhistorisches Museum, Vienna.

Results

Leporinus santosi, new species
Fig. 1

Leporinus granti.- Santos & Jégu, 1989: 159, 170, 171, 179, 190, figure 14, plate 3, figure 8 [lower rio Tocantins].

Holotype. MZUSP 110000, 117.5 mm SL, Brazil, Pará, Parauapebas, igarapé do Pojuca, tributary of rio Itacaiúnas, at Caldeirão, approximately 5°52'S 50°32'W, 15 Oct 1983, M. Goulding.

Paratypes. All from Brazil, Pará. ANSP 192959, 1, 96.8 mm SL; INPA 37891, 1, 117.8 mm SL; MZUSP 31482, 1, 121.5 mm SL; MZUSP 32307, 5, 89.4-155.0 mm SL, 1 CS, 112.1 mm SL; collected with the holotype. INPA 1589, 2, 41.1 and 68.9 mm SL, Marabá, igarapé Pucuruizinho, tributary of rio Tocantins, 26 Nov 1981, G. M. Santos. MZUSP 29156, 11, 62.2-78.9 mm SL, Parauapebas, rio Itacaiúnas at cachoeira Carreira Comprida, Caldeirão, approximately 5°52'S 50°32'W, 14 Oct 1983, M. Goulding. MZUSP 42021, 4, 111.5-135.0 mm SL, igarapé do Onze, at km 11 on road Tucuruí-Mato Grosso, 3°51'11"S 49°40'55"W, 22 Sep 1970, Expedição Permanente da Amazônia.

Diagnosis. *Leporinus santosi* is distinguished from all congeners, except for *L. gomesi*, *L. granti*, and *L. nijsseni*, for having three prominent dark midlateral blotches, smaller blotches formed by dermal pigment, five of which form an interrupted "X" between head and first midlateral blotch, small dark spots formed by epidermal pigment, terminal mouth with four teeth on premaxilla and four on dentary, and relatively few scales on lateral line (less than 36). *Leporinus santosi* is further distinguished from all congeners, except *L. gomesi*, by having a conspicuous dark spots on the center of scales on anterolateral portion of the body (Figs. 1a, b and 5a). *Leporinus santosi* is distinguished from *L. gomesi* by having 16 (*vs.* 12) scale rows around the caudal peduncle, and the second midlateral dark blotch rounded and not extended posteriorly to the vertical through the posterior margin of the adipose fin (*vs.* second midlateral dark blotch elongate, extended posteriorly to the vertical through the posterior margin of the adipose fin).

Description. Morphometric data in Table 1. Middle-sized, when compared to congeners; largest examined specimen 155.0 mm SL (MZUSP 32307). Head and body moderately compressed and relatively deep. Dorsal profile convex from snout tip to dorsal-fin origin, somewhat straight along dorsal-fin base, straight and descending slightly from dorsal-fin end to adipose-fin origin, and usually concave from adipose-fin origin to anteriormost procurrent ray of caudal fin. Ventral profile convex from lower jaw to pelvic-fin origin, straight from latter point to anal-fin origin, convex along anal-fin base, and concave from anal-fin end to anteriormost procurrent ray of caudal fin. Greatest body depth at or slightly anterior to dorsal-fin origin.

Mouth terminal, its cleft longitudinally aligned with middle of orbit in specimens up to approximately 60 mm SL, or to ventral margin of eye in larger specimens. Snout rounded, anteriorly blunt. Premaxilla with four (24) incisiform teeth gradually decreasing in size from symphyseal tooth. Dentary with four (24) incisiform teeth also gradually decreasing in size posterolaterally (Fig. 2).

Scales cycloid, with 5 (1) or 7 (2) *radii*. Lateral line complete with 33 (3) or 34* (19) perforated scales, extending from supracleithrum to base of median caudal-fin rays. Longitudinal scale rows between dorsal-fin origin and lateral line 4 (24). Longitudinal scale rows between lateral line and pelvic-fin origin 4 (24). Longitudinal scale rows around caudal peduncle 16 (24). Predorsal scales from tip of supraoccipital spine to dorsal-fin origin 9* (3), 10 (18), or 11 (3).

Dorsal fin ii,10 (24) rays; its origin slightly anterior to middle of standard length and to vertical through pelvic-fin origin; distal margin gently convex. Adipose fin small, teardrop shaped, its origin approximately at vertical through base of

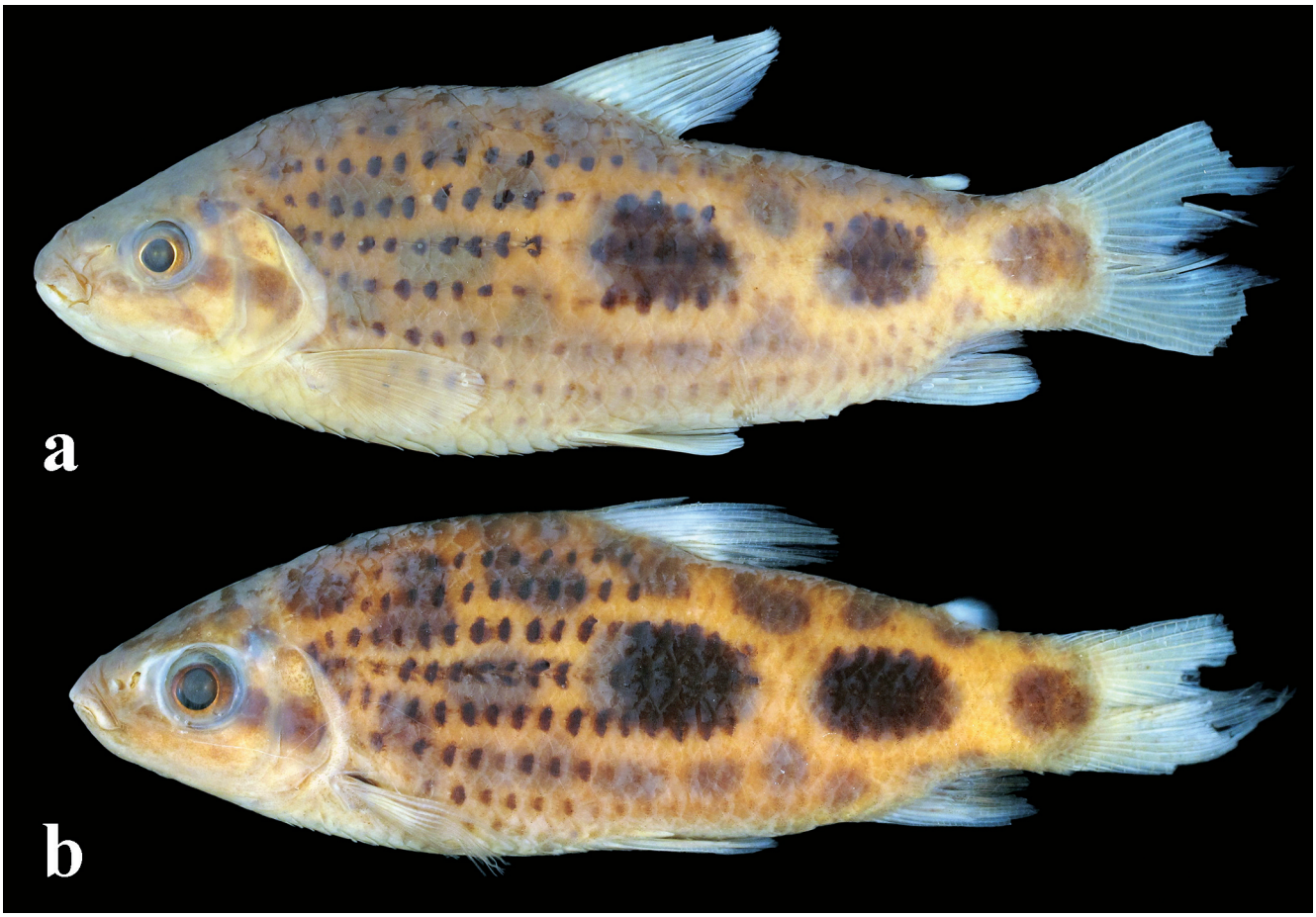

Fig. 1. *Leporinus santosi*: (**a**) holotype, MZUSP 110000, 117.5 mm SL, igarapé do Pojuca, tributary of rio Itacaiúnas, 5°22'S 50°32'W, Parauapebas, Pará, Brazil; (**b**) paratype, 29156, 61.6 mm SL, rio Itacaiúnas at cachoeira Carreira Comprida, 5°52'S 50°32'W, Parauapebas, Pará, Brazil.

last anal-fin ray. Pectoral fin i,12 (7); i,13* (15) or i,14 (2); its tip extending slightly beyond half distance between origins of pectoral and pelvic fin; distal margin rounded. Pelvic fin i,8 (24); distal margin slightly convex. Anal fin ii,8 (24); its origin approximately at vertical through third scale anterior to adipose-fin origin, when adpressed fin almost reaching base of caudal-fin rays; distal margin straight or gently concave. Principal caudal-fin rays i,8,9,i (24). Caudal fin forked, lobes rounded, upper lobe slightly longer than lower lobe. Vertebrae 33 (1), with ribs on vertebrae five through 19.

Coloration. Ground color of head and body light brown, weakly countershaded. Head with one dark oblique stripe from top of snout, through eye, to posteriormost margin of opercle; one dark oblique stripe (sometimes faded) from upper lip, through ventral margin of eye, to ventral corner of preopercle; one dark spot between infraorbital 6 and dorsal margin of opercle. Body with three prominent dark round midlateral blotches (surrounding pale area), first one centered on vertical through base of last rays of dorsal fin, second one centered on vertical through base of anterior anal-fin rays, and third one on posterior half of caudal peduncle. Midlateral blotches decreasing in size posteriorly. Midlateral blotches formed by both dermal and epidermal pigments.

Table 1. Morphometric data for *Leporinus santosi*. SD = Standard Deviation.

	Holotype	n	Mean	Range	SD
Standard length (mm)	117.5	25	96.5	61.6 - 155.0	-
Percents of standard length					
Predorsal distance	50.38	24	50.76	47.37 - 52.94	1.16
Dorsal-fin to adipose-fin	37.91	24	37.47	34.15 - 39.77	1.42
Prepelvic distance	52.43	24	52.23	47.28 - 54.33	1.49
Body depth	33.87	24	33.16	30.33 - 35.46	1.17
Caudal peduncle depth	12.85	24	12.67	11.51 - 13.28	0.40
Caudal peduncle length	11.63	24	11.43	9.59 - 13.02	0.75
Anal-fin lobe length	16.17	24	16.96	14.52 - 18.83	0.90
Head length	26.81	24	26.59	23.91 - 27.99	0.83
Percents of head length					
Preopercle length	76.89	24	75.55	71.89 - 79.10	1.74
Snout length	41.27	24	39.57	35.64 - 42.91	1.99
Head depth	90.57	24	87.23	82.53 - 91.28	2.73
Eye diameter	23.17	24	25.40	21.91 - 30.36	2.73
Bony interorbital	43.49	24	42.82	40.53 - 45.22	1.34

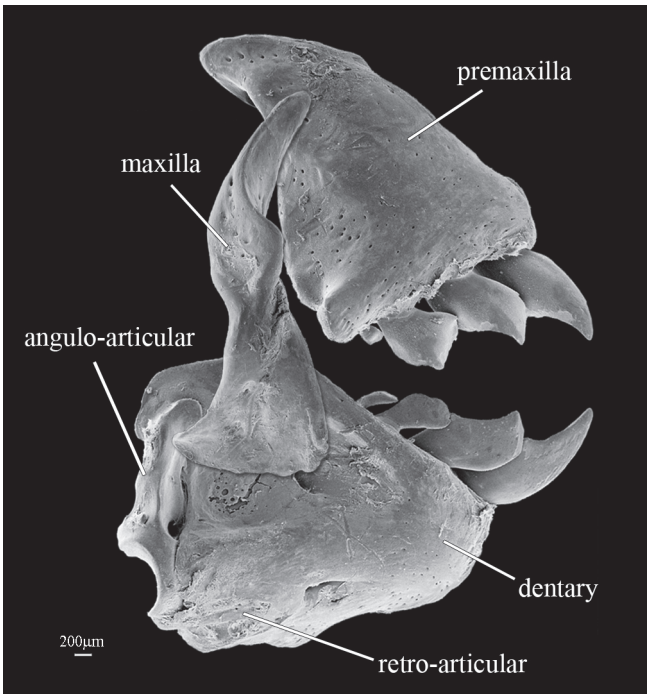

Fig. 2. Upper and lower jaws of *Leporinus santosi*, MZUSP 32307, 121.1 mm SL, in lateral view.

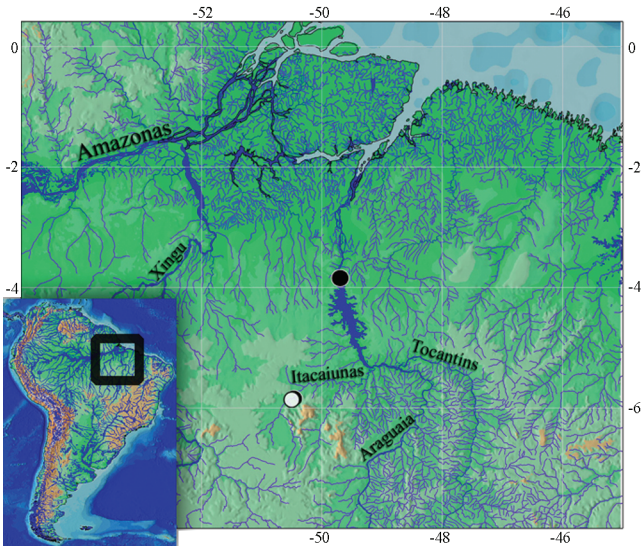

Fig. 3. Distribution of *Leporinus santosi*. White symbol represents the type locality.

Body with many smaller dark round blotches formed by dermal pigment, including five blotches forming interrupted "X" between head and first midlateral blotch. In addition, center of each scale of anterolateral portion of body, between opercle and terminus of first midlateral blotch, with conspicuous dark spot formed by epidermal pigment; dark spots arranged in about eight longitudinal rows. Ventral surfaces of head and belly pale to cream. All fins predominantly hyaline.

Geographic distribution. *Leporinus santosi* is known from a tributary of the rio Tocantins, at the stretch now inundated by the Tucuruí reservoir, and a tributary of the rio Itacaiúnas, a large tributary of the lower rio Tocantins (Fig. 3).

Etymology. Named in honor of Geraldo Mendes dos Santos, a researcher from INPA, for his important contributions to our knowledge of the fish fauna of the lower rio Tocantins, through his studies on the species of Anostomidae (Santos & Jégu, 1989), and on the impacts of the Tucuruí dam (Santos *et al*., 1984; Santos *et al*., 2004). An noun.

Discussion

The new species is similar to *Leporinus granti* (Fig. 4), *L. gomesi* (Fig. 5a), and *L. nijsseni* (Fig. 5b) for having three prominent dark midlateral blotches, smaller blotches formed by dermal pigment, including five forming an interrupted "X" between the head and the first midlateral blotch, and small dark spots formed by epidermal pigment, terminal mouth with four teeth on the premaxilla and usually four on the dentary (sometimes five in some specimens of *L. gomesi*, *L. granti*, and *L. nijsseni*), and relatively few scales in the lateral line (less than 36).

Garavello (1990) described *Leporinus granti* based on specimens from the Essequibo River and the rio Aripuanã (rio Madeira drainage), and described *Leporinus gomesi*, sympatric with *L. granti* in the rio Aripuanã, and *L. nijsseni*, sympatric with *L. granti* in the Essequibo River. Géry *et al*. (1991) and Planquette *et al*. (1996) described *Leporinus granti* and *L. nijsseni* based on specimens from the French Guiana. Although all three species were accurately described and well diagnosed, we do have some comments concerning the type series of *Leporinus granti*, which was not entirely examined by Garavello (1990) and Géry *et al*. (1991).

Leporinus granti was originally described by Eigenmann (1912) based on nine specimens from Maripicru creek, a tributary of Ireng River, Guyana. The type specimens were catalogued in the Carnegie Museum (CM 1851, holotype, 144 mm TL [measurement given by Eigenmann]; CM 1839a, 1 paratype) and Indiana University (IU 12129, 7 paratypes, 108-185 mm TL [measurements given by Eigenmann]) (Eigenmann, 1912: 307). The specimens were later transferred to the other museums, and catalogued as follows: FMNH 53383 [ex. CM 1851], holotype, 110.5 mm SL, FMNH 53373 [ex. CM 1839a], 1 paratype, 142.6 mm SL, CAS 61649 [ex. IU 12129], 3 paratypes, 84.5-124.4 mm SL, MCZ 29929 [ex. IU 12129], 1 paratype, 107.8 mm SL, BMNH 1911.10.31.465 [ex. IU 12129], 1 paratype. Two of the seven paratypes of *Leporinus granti* (IU 12129) are currently lost. The paratype of *Leporinus granti* from the British Museum (BMNH 1911.10.31.465, 102.9 mm SL) actually

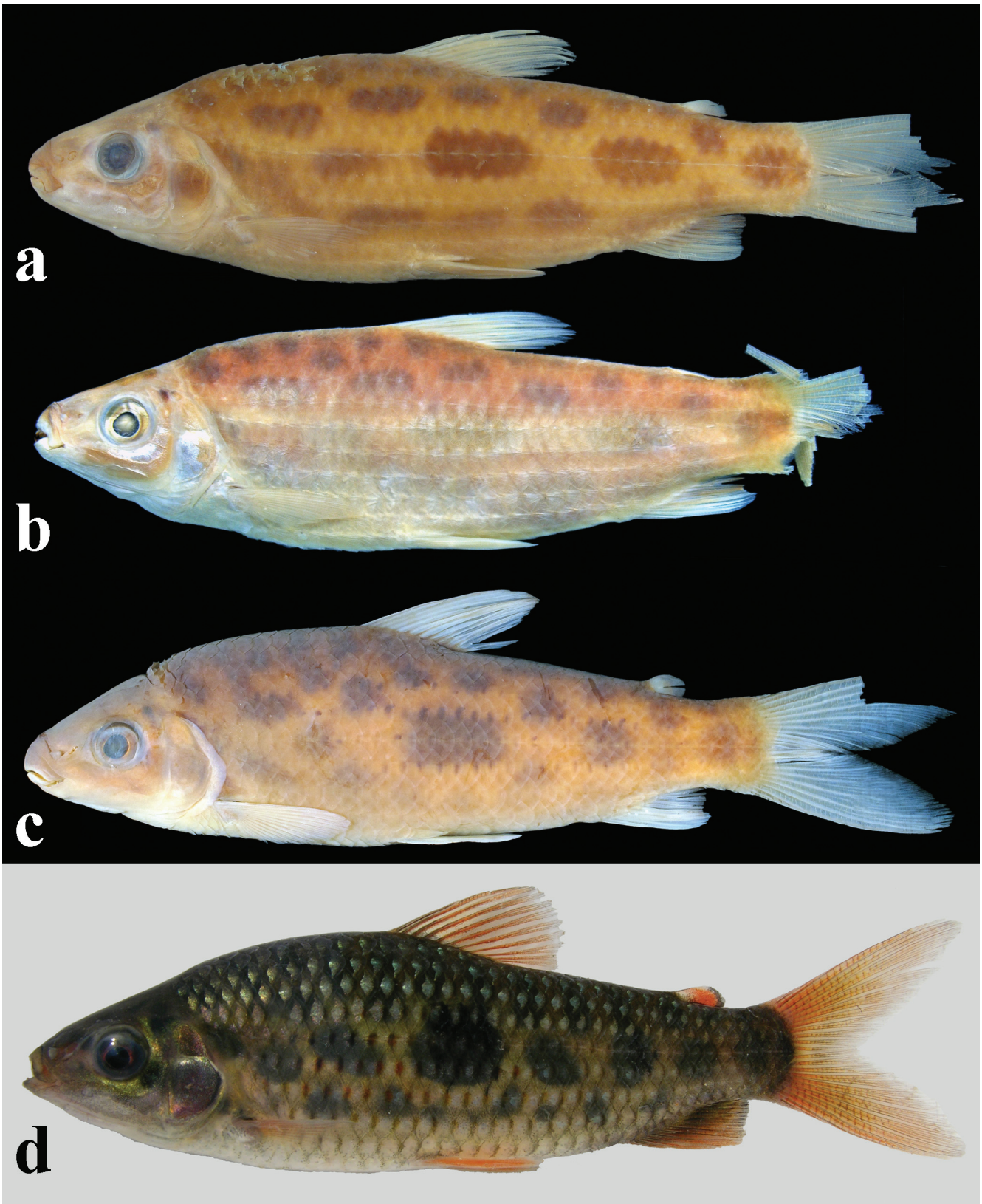

Fig. 4. *Leporinus granti*: (**a**) holotype, FMNH 53383, 110.5 mm SL, Maripicru creek, a tributary of Ireng River, approximately 4°16'S 59°43'W, Potaro-Siparuni, Guyana; (**b**) BMNH 1864.1.21.44, paralectotype of *Leporinus megalepis*, 92.9 mm SL, Essequibo River, Ehrhardt; (**c**) MZUSP 14448, 109.7 mm SL, igarapé do Porto, tributary of rio Aripuanã, at Humboldt, Aripuanã, Mato Grosso, Brazil; (**d**) MZUSP 97562, 65.3 mm SL, pool near rio Jamanxim, 7°51'47"S 55°10'47"W, Novo Progresso, Pará, Brazil. Photo **d** by Mark Sabaj Pérez.

Fig. 5. *Leporinus gomesi* (**a**), MZUSP 14441, paratype, 104.3 mm SL, igarapé da Chapada, tributary of igarapé do Aeroporto, rio Aripuanã drainage, Aripuanã, Mato Grosso, Brazil; *Leporinus nijsseni* (**b**), MZUSP 48506, 138.5 mm SL, Sara creek, Brokopodo, Suriname.

is a specimen of *L. nijsseni*, since it possesses 12 scale rows around caudal peduncle (other diagnostic features of the specimen include 34 scales in lateral line, four scale rows between dorsal-fin origin and lateral line and four between lateral line and pelvic-fin origin).

Similarly, *Leporinus megalepis* (=*Hypomasticus megalepis*) was described based on three syntypes. One of the two paralectotypes of *Leporinus megalepis* (BMNH 1864.1.21.44, 92. mm SL) actually is a specimen of *L. granti*, by having terminal mouth with four teeth on premaxilla (*vs.* subinferior mouth and three teeth on premaxilla). The other diagnostic features of this specimen include 34 scales in lateral line, five scale rows between dorsal-fin origin and lateral line, 4.5 between lateral line and pelvic-fin origin, and 16 around caudal peduncle. The other paralectotype of *Leporinus megalepis* is a specimen of *L. friderici* (Bloch, 1794) by having large size, three midlateral blotches on body, 36 scales in lateral line, terminal mouth, and four teeth on premaxilla and four on dentary (in addition to 16 scale rows on caudal peduncle, four between dorsal-fin origin and lateral line and four between lateral line and pelvic-fin origin). The composite nature of the syntype series of *Leporinus megalepis* was previously noticed by Géry *et al*. (1988), who selected as the lectotype a specimen matching those identified as *Leporinus maculatus* Müller & Troschel, 1844 by Eigenmann (1912). Their decision intended to preserve "la stabilité de la Nomenclature". If they had selected the syntype specimen that belongs to *Leporinus granti*, then *L. granti* would become a junior synonym of *L. megalepis*. On the other hand, if they had selected the specimen of *Leporinus friderici* to be the lectotype, then *L. friderici* would be senior synonym of *L. megalepis*. In both cases, the taxon, which we now commonly recognize as *L. melagepis* would be undescribed. By designating as the lectotype the syntype that belongs to *L. megalepis*, they successfully avoided the need of proposal of a new nominal species. However, due to their decision, *L. badueli* is now considered as a junior synonym of *L. granti*.

Leporinus badueli was described by Puyo (1948) based on two specimens (90 and 105 mm [SL?]) collected in the Mana River, French Guiana, that are currently lost. Based on Puyo's (1948: 81, text-figure) description and illustration, the two type specimens of *Leporinus badueli* have coloration similar to *L. granti* and *L. nijsseni*, 34 or 35 scales in lateral line, five scale

rows between dorsal-fin origin and lateral line, and four rows between lateral line and pelvic-fin origin. The presence of five scale rows between dorsal-fin origin and lateral line is consistent with *Leporinus granti*, and unlike that of *L. nijsseni*. In addition, Planquette *et al*. (1996) and Sidlauskas & Vari (2012) recorded only *Leporinus granti* for the Mana River with *L. nijsseni* restricted in French Guiana to the Oyapoque River. Therefore, we agree with Géry (1977), Géry *et al*. (1988), and Géry *et al*. (1991) in considering *Leporinus badueli* as a junior synonym of *L. granti.*

Material examined. *Leporinus gomesi*. **Brazil.** MZUSP 14436, 151.7 mm SL, holotype, Mato Grosso, Aripuanã, rio Aripuanã, above cachoeira de Dardanelos. MZUSP 14437, 1, 119.4 mm SL, paratype, collected with holotype. MZUSP 14438, 15, 77.8-164.7 mm SL, paratypes, Mato Grosso, Aripuanã, igarapé do Aeroporto. MZUSP 14439, 5, 90.4-151.9 mm SL, paratypes, Mato Grosso, Aripuanã, rio Aripuanã, at Humboldt. MZUSP 14440, 12, 33.0-82.1 mm SL, paratypes, Mato Grosso, Aripuanã, lateral ponds of rio Aripuanã, 10 km above cachoeira de Dardanelos. MZUSP 14441, 5, 74.2-134.4 mm SL, paratypes, Mato Grosso, Aripuanã, igarapé da Chapada, tributary of igarapé do Aeroporto, rio Aripuanã drainage. MZUSP 19295, 1, 72.9 mm SL, Amazonas, Manaus. MZUSP 31428, 1, 94.7 mm SL, and MZUSP 32308, 8, 69.7-112.3 mm SL, 1 CS, 79.5 mm SL, Mato Grosso, Aripuanã, rio Aripuanã, at Humboldt. MZUSP 100503, 2, 72.3 and 81.3 mm SL, Mato Grosso, Aripuanã, rio Aripuanã, at lagoa dos Patos, above cachoeira de Dardanelos, 10°12'33"S 59°27'39"W. *Leporinus granti*. **Brazil.** MZUSP 14448, 1, 109.7 mm SL, and MZUSP 42020, 1, 144.5 mm SL, Mato Grosso, Aripuanã, igarapé do Porto, tributary of rio Aripuanã, at Humboldt. MZUSP 100578, 4, 80.6-125.9 mm SL, Mato Grosso, Aripuanã, rio Aripuanã, below cachoeira de Dardanelos and cachoeira das Andorinhas, 10°10'6"S 59°26'50"W. MZUSP 97562, 2, 60.4 and 65.3 mm SL, Pará, Novo Progresso, pool near rio Jamanxim, 7°51'47"S 55°10'47"W. **French Guyana.** BMNH 1926.3.2.560-561, 1, 89.1 mm SL, fleuve Oiapoque (sant cafesoca). MNHN 1989-0053 (1, 120.0 mm SL), Cayenne, crique Japigny, Arataye basin. **Guyana.** ANSP 167965, 1, 37.5 mm SL, Hacha River, tributary of Cuyuni River. ANSP 176843, 1, 90.5 mm SL, Siparuni River, at Tumble Down creek. BMNH 1864.1.21.44, 1, 92.9 mm SL, paralectotype of *Leporinus megalepis*, Essequibo River. BMNH 1927.7.27.198-201, 3, 55.0 mm SL, Rupununi River at a sandcreek pool. CAS 61649, 3, 84.5-124.4 mm SL, paratypes, same data as holotype. FMNH 53373, 1, 142.6 mm SL, paratype, same data as holotype. FMNH 53383, 1, 110.5 mm SL, holotype, Potaro-Siparuni, Maripicru creek, a tributary of Ireng River, between Wontyke and Karakara, above Karona Falls, approximately 4°16'S 59°43'W. MCZ 29929, 1, 107.6 mm SL, paratype, same data as holotype. **Suriname.** BMNH 1981.6.9.149-150, 2, 82.7 and 99.4 mm SL, Nickerie, stream and sandbanck. MZUSP 48389, 3, 113.3-139.6 mm SL, Marowijne, creek tributary of Tapanahony River, near Stoelmanseiland. *Leporinus nijsseni*. **Brazil.** MZUSP 29171, 1, 121.7 mm SL, Pará, Portel, rio Amapá, at cachoeira Grande, rio Araguari drainage, 2°10'S 51°0'W. MZUSP 66662, 1, 58.7 mm SL, Pará, Portel, rio Amapá, above cachoeira Grande, rio Araguari drainage, approximately 2°10'S 51°0'W. **Suriname.** MZUSP 14442, 2, 41.4 and 45.3 mm SL, paratypes, Brokopondo, Marowijne creek, Afobaka. MZUSP 48506, 2, 138.5 and 145.0 mm SL, Brokopodo, Sara creek. NMW 68314, 2, 67.4 and 74.8 mm SL, no additional data. NMW 68335, 2, 64.1 and 73.3 mm SL, no additional data.

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