

## Two new ornamental loricariid catfishes of *Baryancistrus* from rio Xingu drainage (Siluriformes: Hypostominae)

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Two new species of the hypostomine genus *Baryancistrus* are described from the rio Xingu drainage. *Baryancistrus xanthellus* is distinguished from all other *Baryancistrus* species by the presence of yellow spots along the entire body and conspicuous yellow marks on distal tip of dorsal and caudal fins. *Baryancistrus chrysolomus* is distinguished from its congeners by its uniform dark body coloration and presence of yellow bands on dorsal and caudal fins. Despite the lack of formal description, these species are very popular in the international aquarium trade. We expect that these formal descriptions might contribute to the improvement of Brazilian regulations in the international trade of ornamental loricariids.

Duas espécies novas de hipostomíneos do gênero *Baryancistrus* são descritas da bacia do rio Xingu. *Baryancistrus xanthellus* se diferencia de todas as outras espécies de *Baryancistrus* pela presença de pontos amarelos em todo o corpo e presença de manchas conspícuas amarelas nas pontas das nadadeiras dorsal e caudal. *Baryancistrus chrysolomus* se distingue de seus congêneres pela sua coloração escura uniforme e presença de uma faixa amarela nas nadadeiras dorsal e caudal. Apesar de não estarem formalmente descritos, esses peixes são muito populares no comércio aquarofilista internacional. Esperamos que essas descrições formais contribuam para melhorar a regulamentação brasileira no comércio internacional de loricariídeos ornamentais.

**Key words:** Amazon fishes, Aquarium trade, Belo Monte, Taxonomy.

### Introduction

The loricariid genus *Baryancistrus* Rapp Py-Daniel, 1989 currently comprises four species: *B. niveatus* (Castelnaud, 1855), the type species of the genus described from the rio Araguaia, Brazil, *B. longipinnis* (Kindle, 1895) from rio Tocantins, Brazil, *B. demantoides* Werneke, Sabaj, Lujan & Armbruster, 2005, and *B. beggini* Lujan, Arce & Armbruster, 2009 both from the area of confluence of rios Orinoco and Ventuari in Venezuela and Colombia. This genus is characterized by a heavy and robust head and body, presence of strong odontodes on the cheek plates, numerous teeth, large and parallel disposed maxillae, and almost complete abdominal plating (Rapp Py-Daniel, 1989; Werneke *et al.*, 2005; Lujan *et al.*, 2009). All these features are overwhelmingly present in other loricariids, from which *Baryancistrus* is distinguished by the presence of a hypertrophied membrane posterior to the last branched dorsal-fin ray. This membrane can reach the supporting plate of the adipose fin or not, different from the genera *Oligancistrus*, *Parancistrus*, and

*Spectracanthicus* in which the dorsal fin is completely connected to the adipose fin. Other than that, *Baryancistrus* can be easily misidentified as a *Hemiancistrus*, but the latter lacks the developed membrane (see Werneke *et al.*, 2005 for main differences between *Hemiancistrus* and *Baryancistrus*).

*Baryancistrus* catfishes are very popular in aquarium fish trade due to their very attractive color pattern of clear and bright spots or marks over a dark background. Several undescribed *Baryancistrus* species are still being exported to US, Europe, and Asia and it has been strongly recommended by the Brazilian Environmental Agency (IBAMA) that these species should receive a formal description as soon as possible to avoid misidentifications and inflated prices. The absence of a formal name for these and other loricariid species motivated the adoption of a code system composed by letters and numbers (known as the “L-numbers” of DATZ magazine). In that system, two undescribed *Baryancistrus* species from rio Xingu in Brazil are included in the international aquarium trade: one species variably referred as “golden nugget pleco” (under codes L18 and L85 to juvenile and adult forms,

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respectively) and “Iriri golden nugget pleco” (L177), while the other is referred to as “mango pleco” under code L47. These two catfishes are herein described and some information on their ecology and behavior are provided.

### Material and Methods

Measurements were made with digital calipers to the nearest 0.1 mm. All measurements and counts were taken in the left side, unless the structure was missing or damaged. Counts and measurements follow Armbruster (2003) and Oliveira *et al.* (2010). Counts included: number of plates between the extended dorsal fin membrane and supporting plate of the adipose fin and number of plates in the caudal peduncle. Museum acronyms follow Reis *et al.* (2003).

### Color based differential key of *Baryancistrus* species (for living and preserved specimens):

1. Body uniformly dark or with faint light dots ..... 2
- 1'. Body largely covered by conspicuous yellow or light dots ..... 4
2. Presence of a continuous light band (bright yellow in living specimens) on border of dorsal and caudal fins ..... *Baryancistrus chrysolomus* (rio Xingu)
- 2'. Dorsal and caudal fins without light terminal bands ..... 3
3. Body uniformly dark without any dots (small sized fishes, up to 80.9 mm SL) ..... *Baryancistrus beggini* (rio Orinoco)
- 3'. Body covered with small and inconspicuous light dots of different sizes (but always smaller than pupil): larger on head, body and fin rays, and minute on interradial membranes (large fishes, up to 206.4 mm SL) ..... *Baryancistrus longipinnis* (rio Tocantins)
4. Light dots covering only the anterior portion of body (to dorsal fin), posterior portion of body and fins plain ..... *Baryancistrus demantoides* (rio Orinoco)
- 4'. Light dots covering whole body ..... 5
5. Presence of light band (bright yellow in living specimens) on border of dorsal and caudal fins, broader in juveniles, and reduced to light markings on distal tips of dorsal and caudal in adults ..... *Baryancistrus xanthellus* (rio Xingu)
- 5'. Absence of light band on border of dorsal and caudal fins in juveniles and adults ..... *Baryancistrus niveatus* (rios Araguaia and Tocantins)

### *Baryancistrus xanthellus*, new species

#### Figs. 1 and 2

**Holotype.** INPA 33849, 214.2 mm SL, Brazil, Pará, Senador José Porfirio, rio Xingu in the vicinity of the cachoeira Buraco do Inferno, 03°27'07"S 51°41'53"W, 18 Mar 1997, J. Zuanon.

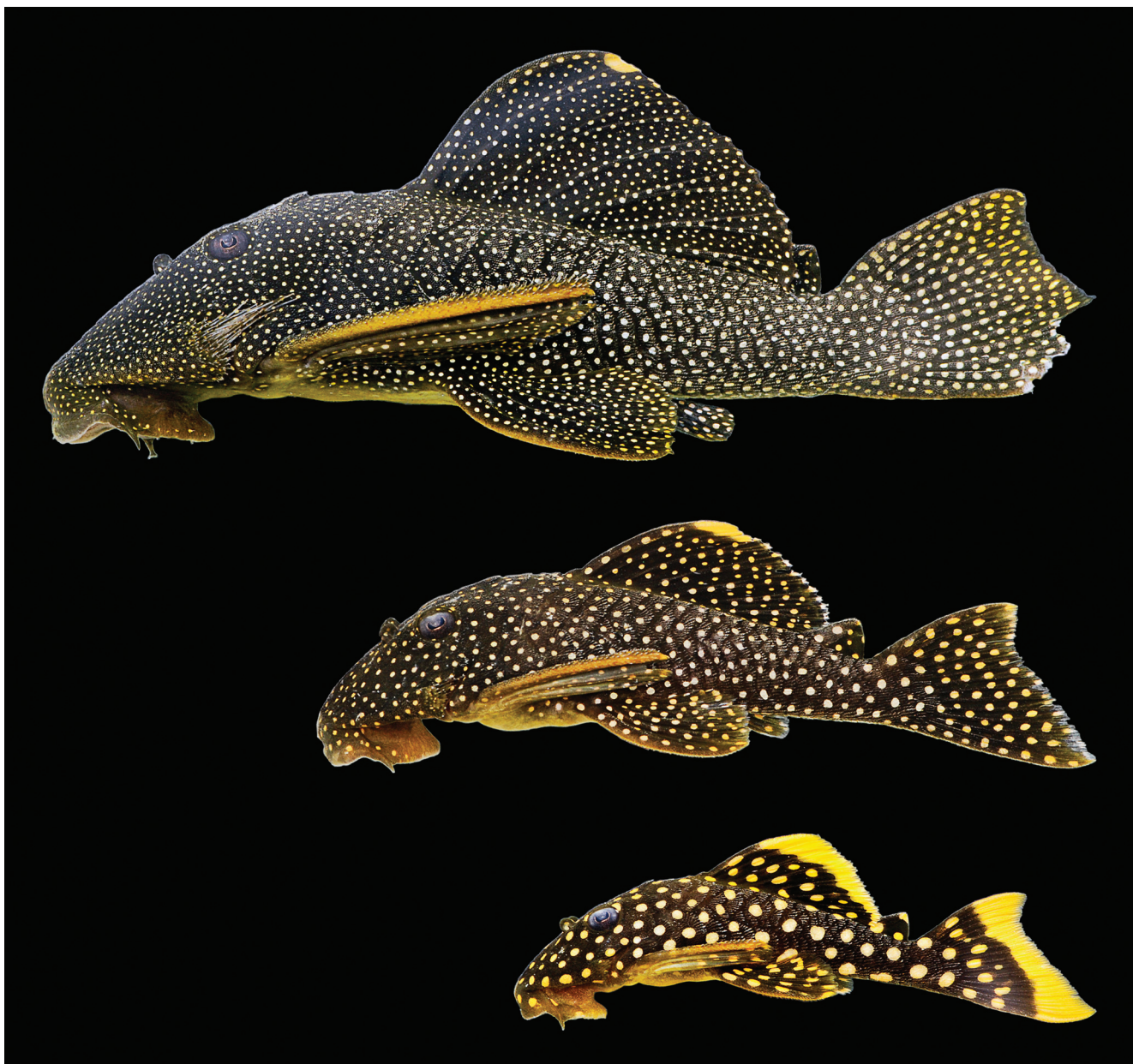
**Paratypes.** Brazil, Pará, rio Xingu: ANSP 191482, 3, 183.8-188.7 mm SL, MCP 45752, 2, 191.0-196.3 mm SL, MNRJ 37863, 2, 186.2-191.5 mm SL, Arroz Cru, 03°25'16"S 51°55'08"W, 1 Oct 1990, L. Rapp Py-Daniel & J. Zuanon. INPA 3942, 7, 78.3-184.8 mm SL (4 not measured), Furo do Tucum Seco, 1 Oct 1990, L.

Rapp Py-Daniel & J. Zuanon. INPA 3955, 27, 48.9-126.2 mm SL, 1 c&s, 82.0 mm SL, (19 not measured), INPA 3963, 3, 110.3-145.1 mm SL (1 not measured), Cachoeira do Kaituká, 03°33'47"S 51°51'20"W, 9 Oct 1990, L. Rapp Py-Daniel & J. Zuanon. INPA 4057, 1, 223.3 mm SL, Ilha de Babaquara, 03°12'43"S 52°12'12"W, 4 Oct 1990, L. Rapp Py-Daniel & J. Zuanon. INPA 4058, 1, 224.0 mm SL, Praia do Pedral, 03°15'16.7"S 52°13'12"W, 7 Oct 1990, L. Rapp Py-Daniel & J. Zuanon. INPA 31414, 9, 49.8-210.2 mm SL (4 not measured), Comunidade do Maia, 03°30'44"S 51°44'43"W, 9 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31423, 1, 48.3 mm SL, Cachoeira do Landi, 03°35'01"S 51°49'21"W, 8 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31473, 6, 51.2-171.8 mm SL, (2 not measured), Arroz Cru, 03°25'20"S 51°57'22"W, 6 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31772, 1, 55.3 mm SL, Ilha do Davi, 03°32'39"S 51°57'29"W, 10 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31799, 2, 57.8-189.3 mm SL, Gorgulho da Rita, 03°20'14"S 52°11'18"W, 7 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 33848, 1, 212.8 mm SL, Cachoeira Buraco do Inferno, 03°27'07"S 51°41'53"W, 17 Mar 1997, J. Zuanon. INPA 33850, 5, 88.4-162.6 mm SL, 1 c&s, 88.4 mm SL, Corredeiras do Arini, 03°24'15"S 51°41'53"W, 6 Sep 1997, J. Zuanon. INPA 33851, 1, 65.1 mm SL, Furo do Ramiro, 03°15'21"S 52°05'06"W, 15 Sep 1997, J. Zuanon. INPA 33852, 1, 175.2 mm SL, Ponta da Ilha da Bela Vista, 03°24'22"S 51°43'03"W, 29 Sep 1996, J. Zuanon. INPA 33941, 1, 110.9 mm SL, Costa Junior, 03°29'28"S 52°19'07"W, 12 Oct 1996, J. Zuanon. MPEG 19132, 2, 171.3-183.0 mm SL, Ilha de Babaquara, 5 Oct 1990, J. Zuanon. MZUSP 106738, 3, 173.3-194.7 mm SL, Ilha de Kaituká, 03°33'47"S 51°51'20"W, 8 Oct 1990, L. Rapp Py-Daniel & J. Zuanon. ZUEC 4485, 2, 46.6-52.5 mm SL, just above Senador José Porfirio, 02°41'7.7"S 52°00'30.9"W, 13 Sep 1997, J. Zuanon. Rio Iriri: INPA 30767, 1, 146.4 mm SL, ROM 88756, 2, 137.2-191.2 mm SL, Ilha do Curapé, 04°06'53"S 53°22'28"W, 17 Aug 2008, H. López-Fernández *et al.* INPA 31081, 2, 184.4-207.0 mm SL, ROM 88757, 1, 172.5 mm SL, Cachoeira Grande do Iriri, 03°51'34"S 52°41'25"W, 23 Aug 2008, H. López-Fernández *et al.* INPA 31095, 2, 176.6-188.6 mm SL, ROM 88755, 2, 103.8-187.5 mm SL, above mouth of rio Novo, 04°28'11"S 53°41'38"W, 21 Aug 2008, H. López-Fernández *et al.* INPA 31169, 1, 140.8 mm SL, ROM 88754, 1, 131.1 mm SL, Cachoeira Grande do Iriri, 03°50'35"S 52°44'03"W, 24 Aug 2008, H. López-Fernández *et al.* INPA 32452, 1, 46.3 mm SL, Barinha, 04°09'05"S 53°23'28"W, 19 Aug 2008, H. López-Fernández *et al.*

**Diagnosis.** *Baryancistrus xanthellus* differs from all its congeners by having a broad light band on dorsal and caudal fin distal borders in juveniles, becoming a small dot on dorsal and caudal-fin tips in adults (vs. conspicuous band at all ages in *B. chrysolomus* and light bands absent in *B. demantoides*, *B. beggini*, *B. longipinnis*, and *B. niveatus*). It can also be distinguished from all congeners except *B. niveatus* and *B. longipinnis* by the presence of light spots on the whole body (vs. the presence of uniform dark coloration in *Baryancistrus beggini* and *B. chrysolomus*; presence of round spots only on the anterior part of the body until the end of dorsal-fin base in *B. demantoides*; presence of inconspicuous dots on the fins and rest of the body dark colored in *B. longipinnis*). *Baryancistrus xanthellus* can be further distinguished from *B. demantoides*, *B. longipinnis*, and *B. niveatus* by having a naked abdomen (vs. partially or completely plated in these



**Fig. 1.** *Baryancistrus xanthellus*, INPA 33849, holotype, 214.2 mm SL in lateral, dorsal, and ventral views (photos RRO). Brazil, Pará, Senador José Porfírio, rio Xingu in the vicinity of the cachoeira Buraco do Inferno.



**Fig. 2.** Lateral view of live specimens of *Baryancistrus xanthellus*, INPA 31473, paratypes: (above) adult, 171.8 mm SL; (middle) subadult, 86.2 mm SL; (below) juvenile, 51.3 mm SL (photos RRO). Brazil, Pará, rio Xingu, Arroz Cru.

three species). *Baryancistrus xanthellus* differs from *B. beggini* by a larger number of mandibular teeth (around 60) on both maxillae versus 34–36 teeth in the premaxillary and 34 teeth in the dentary in *B. beggini*). The presence of bold yellow markings in young *B. xanthellus* is the reason for its popular name in the aquarium trade: “amarelinho” in Portuguese (meaning little yellow).

**Description.** Morphometrics and meristics in Table 1. Medium-size loricariids, bigger specimen examined reached 224.1 mm SL. Body short and robust, deep. Profile from snout to eye strongly sloped, gently convex from eye to insertion of dorsal fin due to prominence of supraoccipital process. Profile

strongly inclined from dorsal-fin insertion to caudal fin. Body deepest at region between supraoccipital and dorsal-fin insertion. Ventral surface flat and straight from snout tip to caudal-fin base. Head and eyes without crest. Anterior lateral plates gently bent; rest of body not keeled. Anterior portion of body half oval in cross section, triangular at caudal peduncle.

Head large and wide; snout round in dorsal view. Eye large and round, iris operculum not visible. Orbit slightly elevated; interorbital area almost completely flat. No ridge between eyes and nares. Supraoccipital process conspicuous, elevated and rounded posteriorly. Supraoccipital limited posteriorly by pair of large quadrangular plates, almost fused.

**Table 1.** Morphometric and meristic data of *Baryancistrus xantheilus* and *Baryancistrus chrysolomus*.

Measurement	<i>Baryancistrus xantheilus</i>					<i>Baryancistrus chrysolomus</i>				
	Holotype	N	Mean	Range	SD	Holotype	N	Mean	Range	SD
Standard length (mm)	214.2	62	-	46.3-224.1	-	219.0	20	-	47.4-219.0	-
				Percents of standard length						
Predorsal length	43.4	62	44.7	40.2-47.8	1.4	41.3	20	42.2	39.6-45.1	1.2
Head length	35.8	62	37.7	35.3-41.0	1.4	33.7	20	36.6	33.6-39.5	1.6
Cleithral width	33.7	62	34.4	31.0-37.5	1.5	34.3	20	34.4	32.9-36.5	0.8
Thorax length	25.0	62	24.3	20.9-27.3	1.3	21.7	20	24.1	21.0-26.2	1.4
Pectoral-spine length	33.7	62	33.0	25.7-38.7	3.3	34.9	20	32.0	28.5-36.1	2.2
Abdominal length	24.3	62	24.6	21.5-27.7	1.4	25.1	20	24.3	20.9-26.7	1.6
Pelvic-spine length	24.2	62	25.9	23.1-29.3	1.4	25.1	20	25.0	23.5-27.0	0.8
Postanal length	21.3	62	27.8	21.3-30.7	1.7	31.1	20	29.5	26.6-31.5	1.1
Anal-fin spine length	10.8	62	10.1	7.6-13.3	0.9	10.6	19	10.6	9.1-12.0	0.7
Dorsal spine length	25.6	62	26.6	22.8-32.1	1.9	26.0	20	27.0	24.0-29.7	1.6
Dorsal-fin base length	40.6	62	40.5	35.4-48.0	2.7	41.2	20	39.3	36.5-43.3	2.0
Dorsal-adipose distance	1.3	62	1.1	0-2.7	0.9	1.6	20	1.7	0.5-4.0	1.1
Caudal peduncle depth	10.6	62	10.7	9.0-12.3	0.8	11.3	20	10.6	9.4-11.9	0.6
Adipose-spine length	7.8	62	7.9	6.4-9.1	0.6	8.3	20	8.2	7.1-9.2	0.6
Adipose-caudal length	21.1	62	22.4	19.5-24.8	0.9	25.2	20	23.5	21.2-26.1	1.1
Body depth at dorsal-fin origin	22.2	62	22.1	17.1-26.8	1.9	21.2	20	20.4	16.6-22.9	1.8
Body width at dorsal-fin origin	31.9	62	31.9	27.7-37.1	2.0	32.4	20	30.6	27.9-34.0	1.7
Body width at anal-fin origin	17.6	62	16.9	12.6-20.5	1.7	18.7	20	15.7	12.4-19.3	2.1
Postdorsal length	22.8	62	23.3	19.1-25.7	1.4	26.0	20	25.5	23.4-27.7	1.2
Anus-anal fin length	3.6	62	4.1	2.9-5.6	0.6	4.5	20	4.1	3.3-5.7	0.6
Body width	36.5	62	36.1	33.3-39.3	1.3	36.3	20	36.3	35.2-37.8	0.8
				Percents of head length						
Orbital diameter	15.4	62	18.4	15.1-23.4	2.3	17.3	20	21.6	17.1-24.9	2.9
Snout length	74.8	62	67.2	60.6-74.8	3.1	64.0	20	61.9	58.5-66.5	2.8
Internares width	13.8	62	13.0	9.4-15.6	1.6	14.5	20	12.3	9.6-15.7	1.6
Interorbital width	37.5	62	36.0	28.0-41.4	3.9	41.8	20	36.7	31.4-45.2	4.1
Head depth	57.6	62	56.3	46.5-66.8	4.3	63.7	20	54.0	47.1-63.7	5.3
Dentary length	21.2	62	19.5	16.7-24.4	1.6	23.2	20	20.6	17.3-24.9	2.3
Premaxillary length	21.3	62	19.3	15.9-22.6	1.4	23.7	20	19.9	16.1-23.7	2.1
Head width	103.9	62	90.5	77.2-103.9	7.2	100.4	20	89.3	79.1-100.4	6.6
Eye-nostril length	16.3	62	14.7	9.1-17.8	2.2	15.5	20	13.2	10.2-17.9	2.3
Interbranchial distance	59.6	62	56.5	51.8-60.9	2.4	58.8	20	57.7	53.6-61.2	2.2
				Counts						
Teeth on premaxilla	60	62		28-72		74	20		14-91	
Teeth on dentary	64	62		25-76		81	20		22-96	
Lateral plates in middle series	24	62		23-24		24	20		24-25	
Plates between anal and caudal	10	62		9-11		10	20		10-11	
Plates between dorsal and adipose	0	62		0-2		0.5	20		0-2	
Plates predorsal	3	62		3		3	20		3	

Predorsal area reduced, with only one pair of small, separated diamond-shaped plates anterior to nuchal plate.

Mouth wide; lips large, covered with small round papillae except on area around maxillae. Maxillary barbel thick and short. Branchial opening moderate, wider in larger specimens. Interbranchial distance approx. 56.5% in head length.

Head and body completely covered by large plates dorsally, except dorsal-fin base. Ventral surface largely unplated from snout to anal fin; in larger specimens, presence of two or three minute round plates close to insertion of pectoral spine or urogenital opening. Twenty-two perforated median plates, 23 lateral plates; four oblong plates on caudal-fin base. All plates marked with lines of odontodes. Numerous hypertrophied odontodes only on evertible cheek plates, well developed in larger specimens with largest odontode reaching posterior end of first lateral plate. Ventral border of opercle with series of strong but short odontodes on probably mature males.

Dorsal fin II,7; spinelet present and dorsal-fin locking mechanism functional. Dorsal fin long and low, reaching

adipose spine on small specimens when adpressed. Dorsal-fin posterior membrane covering four plates immediately behind last dorsal-fin ray, but not reaching preadipose plate. Adipose fin large and with posterior membrane slightly developed. One single plate separating dorsal from preadipose plate. Caudal fin i,14,i, emarginated. Pectoral fin I,6, large, reaching well beyond posterior end of pelvic-fin base when adpressed. Pectoral fin covered by large odontodes on (possibly mature) males. Pelvic fin i,5 reaching posterior end of anal fin base when adpressed. Anal fin i,4, very reduced. All simple first rays covered by numerous short odontodes on their free surface.

Teeth long and deeply cuspidate. Cusps round and similar in larger specimens with vertical divide between cusps; in smaller specimens cusps are largely asymmetrical, with internal cusps larger. Premaxilla and dentary of similar size and disposed in parallel to anterior border of snout. Modal number of premaxillary teeth 32; dentary teeth mode 46 (range of number of mandibular teeth in Table 1). Buccal papilla long and digitiform.

**Color in life.** Overall body color dark brown at dorsum and sides, paler on abdomen. Numerous bright, similar-sized yellow spots over head, body, dorsal, adipose, and caudal fins, and on dorsal surface of pectoral and pelvic fins. Yellow spots almost size of pupil in juveniles, becoming proportionally smaller, more numerous and somewhat paler in adults. Young specimens with wide yellow band on distal third of caudal and dorsal fin; dorsal-fin band larger anteriorly, becoming gradually slender posteriorly. In adults, bands on fins become reduced to spots on anterior distal ends of dorsal and caudal fins (Fig. 2). Considerable variation in density and size of spots.

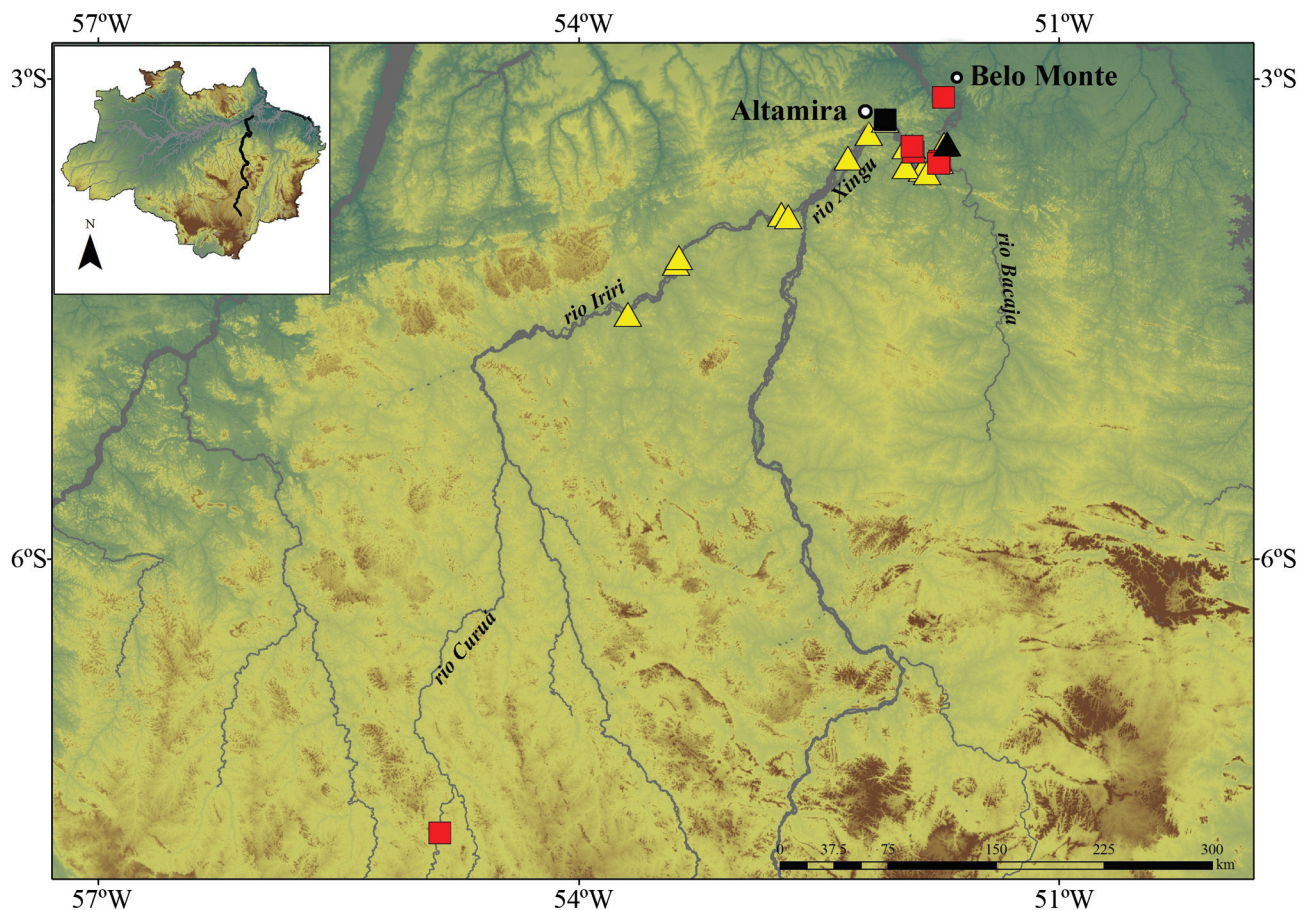
**Color in alcohol.** Similar to pattern described for living specimens but with ground color brown to dark olive and white to cream markings (Fig. 1).

**Distribution.** This species has been recorded from the area called Volta Grande do rio Xingu, an area immediately above Belo Monte falls, and from rio Iriri, the larger tributary of rio Xingu (Figs. 3 and 4a).

**Etymology.** From the Greek *xanthellus*, yellow, in allusion to the bright color of the specimens. A noun in apposition.

**Popular name.** Known in the aquarium trade as “amarelinho” (= little yellow) and “cascudo pepita-de-ouro” (in Portuguese), or L018 and L085; and golden nugget pleco or Iriri golden nugget pleco (in English), or L177.

**Ecological notes.** *Baryancistrus xanthellus* is one of the most common species observed in the rapids of rio Xingu in the area known as “Volta Grande do Xingu” near the town of Altamira, Pará State (Fig. 4a). Young specimens of *B. xanthellus* occur in groups of several individuals under flat rocks at the bottom of shallow rapid stretches. Other loriciid species found syntopically are *Ancistrus* spp., *Oligancistrus punctatissimus*, and an undescribed species of *Oligancistrus*, young individuals of *Baryancistrus* aff. *niveatus*, *Parancistrus nudiventris*, and *Pseudancistrus* sp. Adult specimens occupy larger spaces among and under submerged boulders, together with large specimens of *Baryancistrus* aff. *niveatus*, *Scobinancistrus aureatus*, and *S. cf. pariolispos*, and *Hypostomus* spp. The diet of three examined specimens of *B. xanthellus* was composed mainly of algae, especially diatoms and loose filaments of chlorophytes such as *Spirogyra*, which are commonly found associated with fine sediments and sand grains in the long



**Fig. 3.** Map of lower rio Xingu area, showing the collecting sites of *Baryancistrus xanthellus* (triangles) and *Baryancistrus chrysolomus* (squares). Black solid symbols indicate holotypes localities.



**Fig. 4.** Rio Xingu: **(a)** Cachoeira Buraco do Inferno, type locality of *Baryancistrus xanthellus*, and specimen hidden in crevice in detail and **(b)** Furo do Ramiro, type locality of *B. chrysolomus*, and specimen hidden in crevice in detail (underwater photos Henrique Anatole).

intestines of loricariids (intestinal length up to 16 times the body length; Zuanon, 1999). Occasional bryozoans and chironomid larvae were also found. Underwater observations indicate that the food is scraped from the surface of submerged rocks by gently combing the periphyton cover with the numerous and tightly spaced teeth (JZ, pers. obs.).

***Baryancistrus chrysolomus*, new species**  
**Figs. 5 and 6**

**Holotype.** INPA 33947, 219.0 mm SL, Brazil, Pará, Altamira, rio Xingu at Furo do Ramiro, 03°15'21"S 52°05'06"W, 15 Sep 1997, J. Zuanon.

**Paratypes. Brazil, Pará, rio Xingu:** INPA 28483, 3, 40.3-65.3 mm SL, 1 c&s, 58.4 mm SL, (1 not measured), Furo da Crente, 03°27'30"S 51°54'41"W, 17 Sep 1997, J. Zuanon. INPA 31408, 4, 55.6-92.2 mm SL, Comunidade do Maia, 03°30'44"S 51°44'43"W, 9 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31438, 9, 47.4-89.1 mm SL, 1 c&s, 74.4 mm SL, (3 not measured), Comunidade do Maia, 03°31'42"S 51°45'02"W, 9 Nov 2008, L. Rapp Py-Daniel & R. R. Oliveira. INPA 31800, 3, 53.5 mm SL (2 not measured), Coqueiro, 03°06'54"S 51°43'15"W, 5 Nov 2008, L.

Rapp Py-Daniel & R. R. Oliveira. INPA 33844, 1, 166.2 mm SL, Viracebo do Arroz Cru, 03°25'16"S 51°55'08"W, 7 Oct 1996, J. Zuanon. INPA 33845, 2, 207.6-207.8 mm SL, same data as holotype. INPA 33846, 1, 191.7 mm SL, MPEG 19133, 1, 142.7 mm SL, Furo do Ramiro, 03°15'21"S 52°05'06"W, 12 Sep 1997, J. Zuanon. MZUSP 106739, 1, 184.2 mm SL, Furo do Ramiro, 03°15'21"S 52°05'06"W, 6 Oct 1996, J. Zuanon. ZUEC 4484, 1, 69.5 mm SL, Furo de Ramiro, 03°15'21"S 52°05'06"W, 13 September 1997, J. Zuanon. **Rio Curuá:** MZUSP 97226, 8, 45.5-182.4 mm SL, rio Iriri drainage, 08°19'07"S 55°05'23"W, 22 Oct 2007, J. L. Birindelli *et al.*

**Diagnosis.** *Baryancistrus chrysolomus* can be distinguished from all its congeners, except *B. xanthellus*, by the presence of a broad orange to yellow band along the entire distal border of dorsal and caudal fin (*vs.* all fins without yellow bands). *Baryancistrus chrysolomus* differs from *B. niveatus* and *B. demantoides* by the absence of clear dots on the body (*vs.* presence of clear dots on whole body in *B. niveatus* and in anterior part of the body in *B. demantoides*). *Baryancistrus chrysolomus* can also be distinguished from *B. longipinnis*, *B. demantoides* and *B. niveatus* by having a naked abdomen (*vs.* partially or completely plated in these three species). *Baryancistrus chrysolomus* can be further distinguished from *B. beggini* by the larger number of mandibular teeth (around 70) (*vs.* 34-36 in premaxillary and 34 in dentary in *B. beggini*). *Baryancistrus chrysolomus* differs from *B. xanthellus* by the general body color; in *B. chrysolomus* the body is dark with very faint, almost indistinguishable light marks, *vs.* a conspicuously spotted coloration in *B. xanthellus*. Both young of *B. xanthellus* and *B. chrysolomus* have wide light bands on dorsal and caudal fins, but only *B. chrysolomus* retains the band in adults. Besides, both species can be distinguished by the difference on the rest of the body coloration (spotted in *B. xanthellus vs.* almost plain in *B. chrysolomus*).

**Description.** Morphometrics and meristics in Table 1. Medium-size loricariids; bigger specimen examined reached 219.0 mm SL. Very similar to preceding species. Body short and robust, deep. Profile from snout to eye strongly sloped, gently convex from eye to insertion of dorsal fin due to prominence of supraoccipital process. Profile strongly inclined from dorsal-fin insertion to caudal fin. Body deepest between supraoccipital and dorsal-fin insertion. Ventral surface flat and straight from snout tip to caudal-fin base. Snout with low vertical ridge conspicuously covered by a series of smaller plates. Anterior lateral plates gently bent; low ridge along dorsal fin until base of adipose fin. Anterior portion of body half oval in cross section, triangular at caudal peduncle.

Head large and wide; snout round in dorsal view. Eye large and round, iris operculum present. Orbit not elevated; interorbital area flat. No ridge between eyes and nares. Supraoccipital process not elevated, almost indistinct from rest of bone, round posteriorly and elevated. Supraoccipital limited by a pair of large quadrangular plates tightly connected. Predorsal area reduced, with one pair of separated diamond-shaped plates anterior to nuchal plate.



**Fig. 5.** *Baryancistrus chrysolomus*, INPA 33845, holotype, 219.0 mm SL in lateral, dorsal, and ventral views (photos RRO). Brazil, Pará, Altamira, rio Xingu at Furo do Ramiro.

Mouth wide; lips large with small round papillae except around maxillae. Maxillary barbels slender and short. Branchial opening moderate, wider in larger specimens. Interbranchial distance large approx. 57.7% in head length.

Head and body completely covered by large plates

dorsally, except dorsal-fin base. Ventral surface largely unplated from snout to anal fin or urogenital opening, larger specimens with few patches of odontodes close to pectoral fin insertion. Twenty-five perforated median plates, 24 lateral plates; four to five short oblong plates on caudal-fin base. All





**Fig. 6.** Lateral view of live specimens of *Baryancistrus chrysolomus*, (above) adult, MZUSP 97226, paratype, 127.7 mm SL (photo M. Sabaj-Pérez), Brazil, Pará, rio Curuá, rio Iriri drainage; (below) juvenile, INPA 31408, paratype, 80.2 mm SL (photos RRO), Brazil, Pará, rio Xingu, Comunidade do Maia.

plates strongly sculpted with lines of odontodes more developed posteriorly. Numerous hypertrophied odontodes on evertible cheek plates, well developed in larger specimens. Ventral border of opercle with series of strong but short odontodes.

Dorsal fin II,7; spinelet present and locking mechanism functional. Dorsal fin long and low, reaching adipose spine when adpressed. Dorsal-fin posterior membrane covering next three to four plates, but not reaching preadipose plate. Adipose fin large with posterior membrane well developed. Only one plate separating dorsal fin from preadipose plate. Caudal fin i,14,i, emarginate. Pectoral fin I,6, large, reaching well beyond posterior end of pelvic-fin base when adpressed. Pectoral fin covered by large odontodes in males. Pelvic fin i,5 reaching posterior end of anal fin base when adpressed. Anal fin i,4. All simple first rays covered by numerous short odontodes on their free surface.

Teeth long and deeply cuspidate. Cusps largely asymmetrical; internal cusp larger. Premaxilar and dentary

bones of similar size and disposed parallel to anterior snout border. Maximum of 91 teeth on premaxillary and 96 on dentary. Modal number of premaxillary teeth 30; dentary teeth mode 34 (range of number of mandibulatory teeth in Table 1). Buccal papilla short and digitiform.

**Color in life.** Body dark brown to olive at dorsum and sides, paler ventrally. Very faint pale spots over body, hardly visible on fins. Juveniles with whitish orange band on distal fourth of caudal and dorsal fins, narrower in adults (Fig. 6).

**Color in alcohol.** Similar to pattern of living specimens but opaque brown to dark olive ground color and almost indistinguishable pale marks. Bands on fins creamy (Fig. 5).

**Distribution.** Known from rio Xingu, in the area called Volta Grande do rio Xingu, immediately above Belo Monte falls and below Belo Monte village, and from rio Curuá, rio Iriri, the larger tributary of rio Xingu (Figs. 3 and 4b).

**Etymology.** From the Greek *chryso*, meaning orange or yellow and *loma* meaning border, in allusion to the colored band at the border of the dorsal and caudal fins. A noun in apposition.

**Popular name.** This species is commonly known in the Brazilian aquarium trade as “aba laranja”, (orange border), “cascudo Magnum”, (large pleco), or L047. In English, this fish receives the name of mango pleco.

**Ecological notes.** *Baryancistrus chrysolomus* seems to be much rarer than *B. xanthellus* in the rapid stretches of “Volta Grande” of the rio Xingu (Fig. 4b). Differently from the preceding species, young specimens of *B. xanthellus* occur in marginal areas of the rapids, near the river banks, usually just one or two individuals. The individuals were found under rocks in places with slow to moderate flowing water, usually with sediment accumulation over the rocks and river bottom. Other loriciid species found in the same habitat were *Peckoltia vittata* and young individuals of *Hypostomus* spp. Adult *B. chrysolomus* were collected under large flat rocks settled directly on the river bottom, in places with considerable amounts of fine sediments. The diet of *B. chrysolomus* (only two specimens analyzed) is very similar to that described for *B. xanthellus* and was composed by loose algae (mainly diatoms) and occasional invertebrate larvae associated with fine sediments and sand grains. The combination of the type of food items detected, the presence of fine sediments in the gut, a very long (up to 20 times the body length) and coiled intestine, and tooth number and arrangement, also suggest a periphyton-combing feeding strategy for this species.

### Discussion

*Baryancistrus* species are very conservative in shape, color pattern and overall measurements. All measurements and proportions of *B. xanthellus* and *B. chrysolomus* are largely similar; however, some features might be useful in the differentiation of all these taxa. *Baryancistrus beggini* seems to be a very small *Baryancistrus* species, reaching up to 80 mm SL, in contrast to *B. niveatus*, *B. longipinnis*, *B. xanthellus*, and *B. chrysolomus* that can reach more than 200 mm SL. Dorsal-fin membrane is developed in all *Baryancistrus* species but it reaches the preadipose plate only in *B. beggini* and in young specimens of *B. xanthellus* and *B. chrysolomus*. Abdomen is partially to almost completely plated in large specimens of *Baryancistrus niveatus*, *B. longipinnis*, and *B. demantoides*, with concentration of plates on gular area, pectoral girdle, and around anus. In *B. niveatus* from the rio Tocantins, patches of odontodes were observed in all specimens larger than 96 mm SL. Besides, large specimens of *B. niveatus* show dense concentration of plates even below lower lip. Large specimens of *B. longipinnis*, also from rio Tocantins, despite showing concentration of plates in certain ventral areas (pectoral girdle, sides, around pelvics, and urogenital opening), do not have plates below the lower lip or on the gular area. The largest specimen of *Baryancistrus*

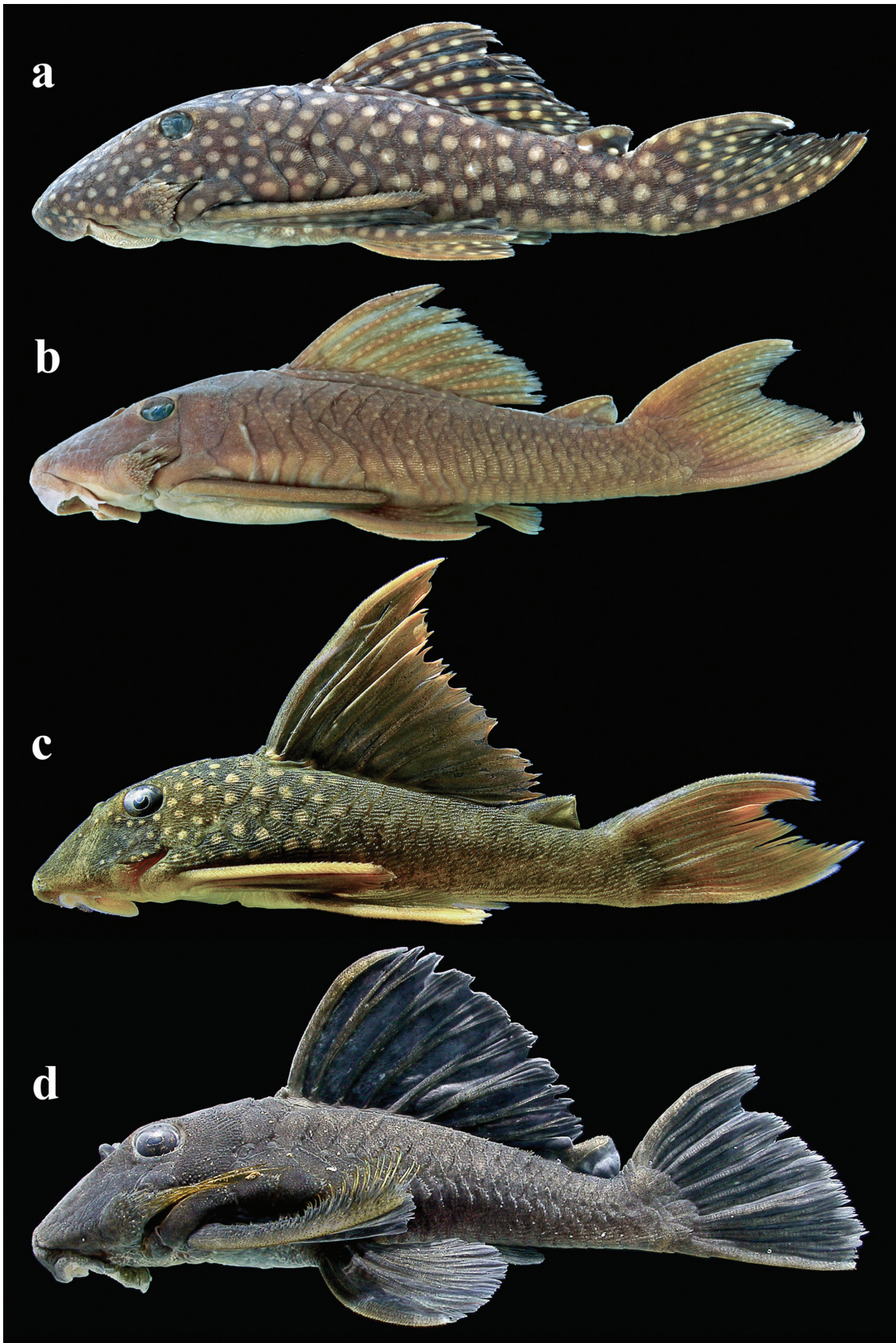
*beggini* reached 80 mm SL and the species is cited as having a naked abdomen. All specimens of *B. chrysolomus* and *B. xanthellus* have the abdomen largely unplated, with larger specimens showing scattered patches of odontodes of few minute plates at pectoral-fin insertion or close to urogenital opening.

*Baryancistrus chrysolomus* seems to have the largest mandibles, carrying up to 90 mandibular teeth. *Baryancistrus xanthellus* has around 70, *B. demantoides* around 50 and *B. beggini* have 34-36 mandibular teeth. Low tooth counts in *B. beggini* might be related to the small size of the fish, since small specimens of *B. chrysolomus* and *B. xanthellus* also have similar counts to *B. beggini*.

Finally, the spotted color pattern seems to be most generalized. *Baryancistrus niveatus*, *B. xanthellus*, *B. longipinnis*, and *B. demantoides* (although partially) have white to yellowish white dots over a darker background. According to Werneke *et al.* (2005), *Baryancistrus demantoides* may have spots on basal portions of membranes and sometimes fins, different from *B. niveatus*, *B. xanthellus*, and *B. longipinnis*. The type of *B. longipinnis* is largely plain, but it was described as having body, rays, and connecting membranes covered with small white spots, less conspicuous on rays and body (Kindle, 1895). Even *B. chrysolomus* has a faint spotted pattern, despite its striking clear band on dorsal and caudal fins. The only exception seems to be *B. beggini* with a plain dark coloration. Among the spotted *Baryancistrus* species, all dots along body and fins of the same individual are of similar sizes, except in *B. demantoides* and *B. longipinnis*. *Baryancistrus demantoides* have smaller dots on head and *B. longipinnis* have conspicuously minute dots on fin membranes, in contrast to larger dots on head, body and fin rays (Fig. 7).

Despite all morphological variation among different populations along the rio Xingu, the dotted-color pattern is quite pervasive. Recently, *B. xanthellus* was successfully bred in aquarium (Leuenberger, 2007) and the hatches have the color pattern cited above.

*Baryancistrus* catfishes are rapids-dwelling fishes found exclusively in fast-flowing waters over rocky bottom. Adult specimens generally occupy wide spaces between or under large rocks and boulders, whereas juveniles are mostly found under flat rocks at the bottom of shallow rapids. Specimens of several *Baryancistrus* examined so far have shown that these fishes are periphyton grazers that feed on loosely attached algae associated to fine detritus (Zuanon, 1999). The new *Baryancistrus* species herein described comprise only two of several other undescribed forms already collected in the high-energy rivers that drain the Central Brazilian and Guiana plateaus. In the Brazilian Amazon, the ecological conditions that allow the occurrence of *Baryancistrus* species are found only in the peripheral portions of the basin, away from the lowlands. The downstream rapids present in most of the rio Amazonas tributaries that delimit the distribution range of *Baryancistrus* species are also targeted for the construction of large hydroelectric power plants in Brazil (Junk & Nunes



**Fig. 7.** Lateral view of preserved specimens of (a) *Baryancistrus niveatus* INPA 6051, 121.5 mm SL; (b) *B. longipinnis* INPA 6329, 144.0 mm SL; (c) *B. demantoides* MCNG 54031, 54.1 mm SL; and (d) *B. beggini* AUM 39227, 66.2 mm SL. Photos (a) and (b) by RRO, (c) and (d) by M. Sabaj-Pérez.

de Mello, 1987). The large-scale habitat modifications that result from river damming represent the biggest threat to the conservation of rheophilic fishes, many of which still undescribed. Conservation efforts directed to the maintenance of pristine river stretches large enough to contain several rapids sections should be aimed, in order to allow the existence of viable populations of the remarkable diversity of fishes present in these aquatic habitats.

**Comparative material.** *Baryancistrus longipinnis*: Holotype: MCZ 29051, 1, Trocera on Tocantins. Non-types: Pará, rio Tocantins: INPA 3225, 1, 102.8 mm SL, Breu Branco, 04°04'04"S 49°38'13"W. INPA 6046, 3, 84.7-172.3 mm SL, Tucuuruí, lake upstream Tucuuruí. INPA 6061, 14, 77.1-172.1 mm SL, 1 c&s, 83.2 mm SL, downstream Tucuuruí, 03°45'58"S 49°40'21"W. INPA 6329, 109, 46.5-206.4 mm SL, Tucuuruí, downstream the dam, 03°45'58"S 49°40'21"W. INPA 11147, 3, 115.9-192.3 mm SL, Itupiranga, Capueranga, 05°10'29.8"S 49°21'54"W. *Baryancistrus niveatus*: Syntypes: MNHN A.9453, 1, 245.5 mm SL, province of Goyaz, rio Araguay. MNHN A.9454, 1, 231.9 mm SL, province of Goyaz, rio Araguay. Non-types: Pará, rio Tocantins: INPA 2988, 18, 40.1-179.8 mm SL, 1 c&s, 66.3 mm SL, pools on river bed below dam. INPA 2989, 1, 202.4 mm SL, Tucuuruí, Jatobal, 04°30'37"S 49°28'49"W. INPA 6051, 182, 52.6-210.2 mm SL, Tucuuruí, downstream dam, 03°45'58"S 49°40'21"W. INPA 6052, 1, 123.7 mm SL, lake upstream Tucuuruí. INPA 20733, 1, 228.5 mm SL, Marabá, 05°24'34"S 49°06'11.1"W.

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