A New Black *Baryancistrus* with Blue Sheen from the Upper Orinoco (Siluriformes: Loricariidae)

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***Baryancistrus beggini*, new species, is described from the upper Río Orinoco and lower portions of its tributaries, the Río Guaviare in Colombia and Río Ventuari in Venezuela. *Baryancistrus beggini* is unique within Hypostominae in having a uniformly dark black to brown base color with a blue sheen in life, and the first three to five plates of the midventral series strongly bent, forming a distinctive keel above the pectoral fins along each side of the body. It is further distinguished by having a naked abdomen, two to three symmetrical and ordered predorsal plate rows including the nuchal plate, and the last dorsal-fin ray adnate with adipose fin via a posterior membrane that extends beyond the preadipose plate up to half the length of the adipose-fin spine.**

Se describe una nueva especie, *Baryancistrus beggini*, del alto Río Orinoco y las partes bajas de sus afluentes: el río Guaviare en Colombia, y el río Ventuari en Venezuela. *Baryancistrus beggini* es la única especie entre los Hypostominae que presenta fondo negro oscuro a marrón sin marcas, con brillo azuloso en ejemplares vivos. Las primeras tres a cinco placas de la serie medioventral están fuertemente dobladas, formando una quilla notable por encima de las aletas pectorales en cada lado del cuerpo. *Baryancistrus beggini* se distingue también por tener el abdomen desnudo, dos o tres hileras de placas predorsales simétricas y ordenadas (incluyendo la placa nucal) y el último radio de la aleta dorsal adherido a la adiposa a través de una membrana que se extiende posteriormente, sobrepasando la placa preadiposa y llegando hasta la mitad de la espina adiposa.

THE Loricariidae contains over 700 species of South and Central American catfishes. In most species, an adipose fin is present as a membrane preceded by a spine and an azygous plate. Usually, this adipose-fin complex is separated from the posterior insertion of the dorsal-fin membrane by several plates; however, three genera within Loricariidae have been partially diagnosed via presence of a posterior dorsal-fin membrane that is expanded to varying degrees toward the adipose fin: *Baryancistrus*, *Parancistrus*, and *Spectracanthicus*, plus a fourth, *Oligancistrus,* that has been determined to be a junior synonym of *Spectracanthicus* (Armbruster, 2004, 2008).

Rapp Py-Daniel (1989) diagnosed *Baryancistrus*, *Parancistrus*, and *Oligancistrus* based on differences in gill opening size, posterior extent of the dorsal-fin membrane, body robustness, snout shape, number and orientation of premaxillary teeth, extent of abdominal plating, and coloration; however, there is considerable overlap in some of these characters, and recent discoveries limit their utility. For example, *Baryancistrus* has the posterior edge of the dorsal-fin membrane separated from the adipose-fin spine by several plates (*B. longipinnis*), or reaching the preadipose plate or one plate anterior (*B. niveatus* and *B. demantoides*). In *Parancistrus* and *Spectracanthicus*, the dorsal-fin membrane is broadly contiguous with the adipose-fin spine. Armbruster (2004, 2008) treated differences in the extent of the dorsal-fin membrane in *Baryancistrus*, *Parancistrus,* and *Spectracanthicus* as variations within a single character state. Armbruster (2008) recovered several genera, including *Baryancistrus* and *Parancistrus*, as basal members of the *Panaque* clade based on lack of odontodes on the opercle, while *Spectracanthicus sensu lato* was recovered as sister to *Acanthicus* plus *Megalancistrus*, *Pseudacanthicus*, and *Leporacanthicus*.

Recent surveys of the upper Orinoco of Venezuela and Colombia have collected a new species of loricariid with dorsal and adipose fins connected, and coloration that is unique within the family: uniformly dark body and fins with a blue sheen. The new species shares characteristics with each of the genera with expanded posterior dorsal-fin membranes; however, the phylogeny of Armbruster (2008) places the species as sister to *Baryancistrus demantoides* plus *B. niveatus*. It has therefore been tentatively concluded that the species is a *Baryancistrus* and is described herein.

MATERIALS AND METHODS

Counts, measurements, and landmarks follow Armbruster (2003) and are reported only for those specimens greater than 40 mm SL. Because the dorsal and adipose fins connect, the posterior insertion of the dorsal fin (landmark 16) and the insertion of the adipose-fin spine (landmark 17) are the same point; thus, dorsal–adipose distance (16–17) and anal–dorsal distance (14–16) were excluded. Institutional abbreviations are as listed at http://www.asih.org/codons.pdf. Specimens were cleared and stained for examination of bone and cartilage following the methods of Taylor and Van Dyke (1985). Names of plate rows follow Schaefer (1997). Dorsal-fin spinelet, first unbranched dorsal-fin ray, first unbranched pectoral-fin ray, first unbranched pelvic-fin ray, first unbranched anal-fin ray, and dorsalmost and ventralmost unbranched caudal-fin rays treated as spines following Armbruster (2003). Fin ray meristics are reported with spines in upper case Roman (I), and branched rays in Arabic numerals. For all materials examined, numbers following catalog numbers are, first, the total number of specimens in the lot, then the range of standard lengths of specimens in the lot, number of specimens measured, locality, date of collection, and collectors.

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Submitted: 19 August 2007. Accepted: 20 July 2008. Associate Editor: C. J. Ferraris.
 DOI: 10.1643/CI-07-187

***Baryancistrus beggini*, new species**
Figure 1, Table 1

Holotype.—MCNG 55351, 80.9 mm SL, Venezuela, Amazonas, Río Orinoco drainage, Río Ventuari, 4°4′32″N, 66°53′34″W, 3 April 2005, N. K. Lujan, M. Arce, E. L. Richmond, M. B. Grant, and T. E. Wesley.

Paratypes.—Venezuela, Amazonas, Río Orinoco drainage: AUM 42210, 134, 12.7–79.8 mm SL, 63 measured, MBUCV 33730, 3, 63.1–82.2 mm SL, 3 measured, same data as holotype; AUM 39227, 9, 32.6–66.2 mm SL, 6 measured, MCNG 55356, 3, 62.3–75.0 mm SL, 3 measured, Río Orinoco, Cucue Amerindian Village 60 km E of San Fernando de Atabapo, 3°58′25″N, 67°9′29″W, 3 April 2004, M. H. Sabaj, N. K. Lujan, D. C. Werneke, and L. S. deSouza; AUM 39908, 4, 66.7–70.3 mm SL, 0 measured, FMNH 117454, 3, 69.7–75.1 mm SL, 0 measured, Río Ventuari, beach across the river from Picua Village, 34 km ENE of Macuruco, 104 km E of San Fernando de Atabapo, 4°6′55″N, 66°45′52″W, 5 April 2004, M. H. Sabaj, N. K. Lujan, D. C. Werneke, L. S. deSouza, and O. Leon; AUM 42145, 5, 52.8–69.4 mm SL, 0 measured, ANSP 182806, 3, 53.1–77.5 mm SL, 0 measured, Río Ventuari, 163 km SE of Samariapo, 4°3′26″N, 66°55′57″W, 1 April 2005, N. K. Lujan, M. Arce, T. E. Wesley, E. L. Richmond, and M. B. Grant; AUM 42108, 1, 48.8 mm SL, 1 measured, Río Orinoco, 50 km E of San Fernando de Atabapo, 3°58′2″N, 67°15′12″W, 3 March 2005, N. K. Lujan, D. C. Werneke, M. H. Sabaj, and M. Arce; AUM 42173, 6, 54.7–76.7 mm SL, 6 measured, Río Orinoco, 60 km E of San Fernando de Atabapo, 3°58′26″N, 67°9′45″W, 3 March 2005, N. K. Lujan, D. C. Werneke, M. H. Sabaj, and M. Arce. Colombia, Río Orinoco drainage: IAvHP 7045, 4, 41.6–66.5 mm SL, 4 measured, Vichada state, Río Orinoco at the mouth of Caño Mataven, 4°32′30″N, 67°51′48″W, 1 February 2004, W. J. Maldonado; ICN 9913, 2, 41.4–44.0 mm SL, 2 measured, Guainía state, Caño Bocón, Inírida, February–May 2004, M. T. Sierra and M. Patiño.

Diagnosis.—*Baryancistrus beggini* can be distinguished from all other *Baryancistrus* by having the last dorsal-fin ray adnate with adipose fin via a posterior membrane that extends beyond the preadipose plate up to half the length of the adipose-fin spine (vs. membrane separated from preadipose plate by up to two plates or stopping at preadipose plate); *B. beggini* is further distinguished from *B. niveatus* and *B. longipinnis* by having a naked abdomen (vs. partially plated), and from *B. demantoides* by having fewer premaxillary teeth (8–36 vs. 34–54).

Baryancistrus beggini is distinguished from all other hypostomines by having a uniformly dark black to brown body, fins, and fin membranes with a blue sheen in life (vs. blue sheen absent), and by having the first three to five plates of the midventral series acutely bent in transverse view, forming a distinctive keel above the pectoral fins along each side of the body (vs. plates obtusely bent and rounded, not forming a keel); *B. beggini* is further distinguished from all other hypostomines except *B. demantoides, B. niveatus, Parancistrus*, and *Spectracanthicus* by having a posterior extension of the dorsal-fin membrane contacting at least the preadipose plate; further distinguished from *Parancistrus* and *Spectracanthicus* by having the pectoral-fin spine terminating approximately coequally with horizontal through anus when adpressed ventral to the pelvic fin (vs. terminating well short of anus, barely posterior to pelvic-fin base); further distinguished from *Parancistrus* by having restricted gill openings (vs. gill openings large), and by not being dorsoventrally flattened; further distinguished from *Spectracanthicus* by having two to three regularly arranged predorsal plates including nuchal plate (vs. four or more erratically arranged predorsal plates including nuchal plate); and further distinguished from *S. murinus* by having hypertrophied cheek odontodes that can evert greater than 75° from the head (vs. cheek plates without hypertrophied odontodes and that are only mildly evertible, approximately 30° or less). Characters variable within *Baryancistrus, Parancistrus*, and *Spectracanthicus* summarized in Table 1.

Description.—Morphometrics presented in Table 2. Largest specimen examined 80.9 mm SL. Body stout. Head sloped up from snout at approximately 40° angle to anterior interorbital region. Dorsal profile from anterior interorbital region nearly straight and sloped up at approximately 30° to origin of dorsal fin. Dorsal profile descending from dorsal-fin origin at approximately 30° to insertion of dorsal procurrent caudal rays then ascending to posterior tip of caudal fin. Body depth greatest at dorsal-fin origin. Ventral profile straight from snout to caudal fin. Caudal peduncle trapezoidal in cross section. Body of most specimens widest at pectoral-fin origin, some specimens equally wide or widest at keel of first and/or second midventral plate; body narrowest at base of caudal fin. Snout rounded in dorsal view.

Eye large (16.5–24.6% orbit diameter/HL, n = 98). Iris operculum present. Supraorbital regions raised. Supraoccipital posteriorly pointed, not raised. Preopercle and opercle without odontodes. Evertible cheek plates supporting hypertrophied odontodes that can be everted perpendicular to head. Cheek odontodes 18–48 (mode 32), longest evertible cheek odontode reaching posteriorly beyond cleithrum. Hypertrophied cheek odontodes relatively weak. Oral disk covered with low, wide papillae. Lower lip wide, upper lip narrow. Maxillary barbel reaching posterolaterally up to one half distance from oral disk to gill opening.

Median plates 20–24 (mode 24). First three to five midventral plates above pectoral fins strongly bent in middle, forming keel; keel accentuated by clusters of slightly enlarged odontodes at posterior plate corners in males. Remainder of plates unkeeled. Five caudal peduncle plate rows. Abdomen naked.

Dorsal fin II,7; dorsal spinelet V-shaped, dorsal-fin locking mechanism present, last ray of dorsal fin reaching approximately middle of adipose spine when adpressed, membranous connection between last dorsal-fin ray and body present and posteriorly developed, reaching past preadipose plate up to half the length of adipose-fin spine. Adipose fin with single preadipose plate and moderately long spine. Caudal fin I,14,I; posterior margin straight, ventral spine longer than dorsal, dorsal procurrent caudal rays three to four, ventral procurrent caudal rays three to four. Pectoral fin I,6; pectoral-fin spine reaching almost to anus when adpressed ventral to pelvic fin. Hypertrophied odontodes present along pectoral-fin spines with length increasing distally. Pelvic fin I,5; pelvic-fin spine extending beyond base of anal fin when adpressed. Anal fin I,4 (one specimen I,3); spine slightly shorter than first branched ray.

Teeth bicuspid with lateral lobe slightly shorter and narrower than medial lobe. Dentary teeth 14–32 (mode 19); premaxillary teeth 8–36 (mode 23).

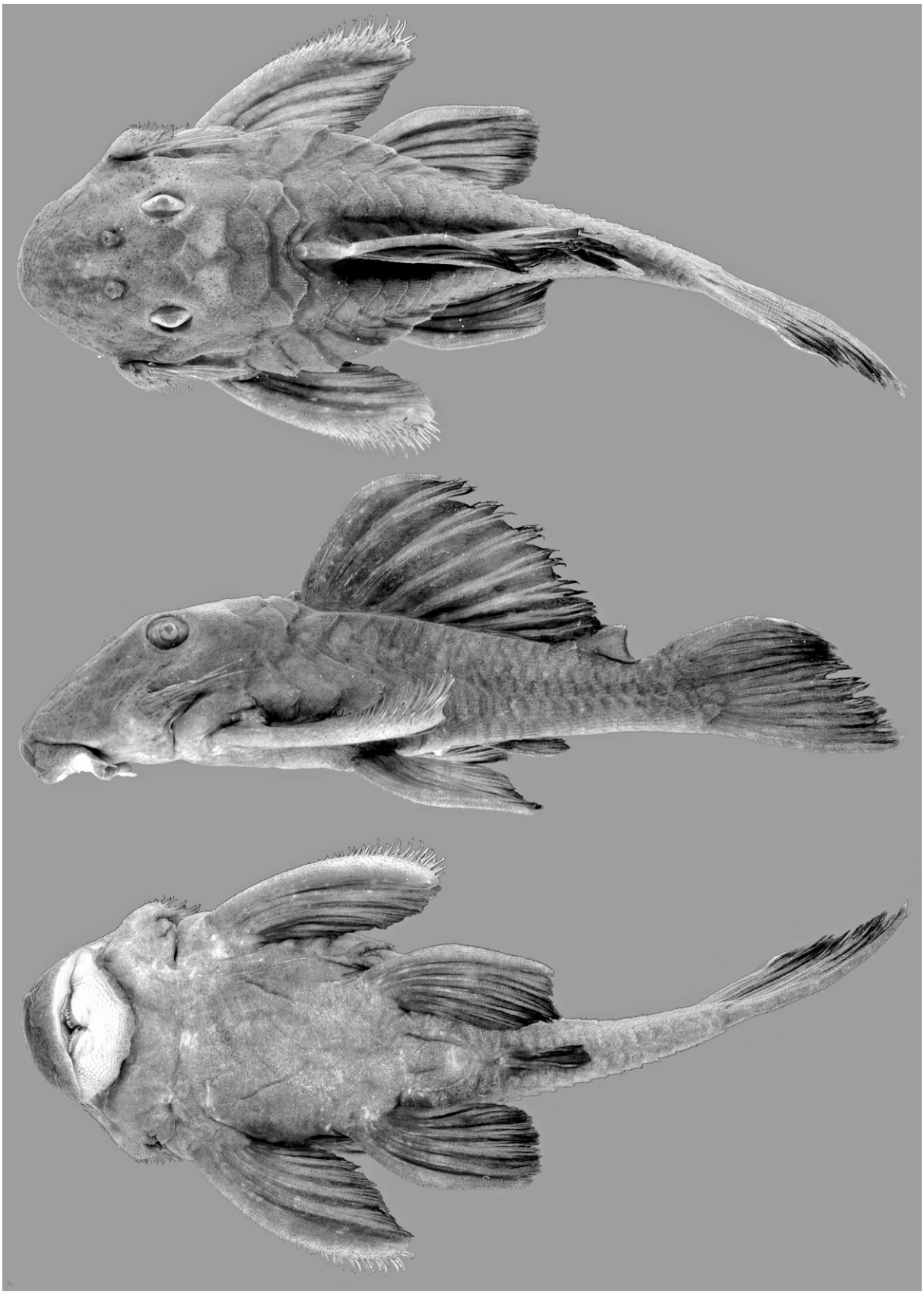

Fig. 1. *Baryancistrus beggini* MCNG 55351, 80.9 mm SL; holotype, dorsal, lateral, and ventral views. Photo by N. K. Lujan.

Table 1. Summary of Characters Variable within *Parancistrus, Spectracanthicus*, and *Baryancistrus*. Data summarized from examination of types, comparative material, Rapp Py-Daniel (1989), Rapp Py-Daniel and Zuanon (2005), and Werneke et al. (2005).

Characteristic	*Parancistrus aurantiacus*	*Parancistrus nudiventris*	*Spectracanthicus murinus*	*Spectracanthicus punctatissimus*	*Baryancistrus beggini*	*Baryancistrus demantoides*	*Baryancistrus longipinnis*	*Baryancistrus niveatus*
posterior extent of dorsal-fin membrane	past preadipose plate up to three quarters length of adipose-fin spine	past preadipose plate up to three quarters length of adipose-fin spine	past preadipose plate up to one quarter length of adipose-fin spine	past preadipose plate up to three quarters length of adipose-fin spine	past preadipose plate up to half length of adipose-fin spine	up to but not past preadipose plate	1 to 2 plate rows removed from preadipose plate	up to but not past preadipose plate
abdomen	plated	naked	naked	naked	naked	naked	partially plated	partially plated
color	uniformly dark, marbled, or with pale blotches	dark base color with light spots over body and fins	dark base color with light spots over body and fins	dark base color with light spots over body and fins	patternless dark gray to black base color with blue sheen	emerald green base color with gold spots on anterior half of body	dark base color with light spots over body and fins	dark gray to black base color with white spots over entire body and fins
teeth per premax. ramus	4–16 (mean 14.2)	6–21 (mean 11.9)	3–6 (mode 5)	few teeth	8–36 (mode 23)	34–54 (mode 43)	50 ($n=1$)	up to 80
first 3 to 5 midventral plates	obtusely bent	obtusely bent	obtusely bent	obtusely bent	acutely bent	obtusely bent	obtusely bent	obtusely bent
posterior extent of ventrally adpressed pectoral spine	barely posterior of pelvic-fin base, well short of anus	barely posterior of pelvic-fin base, well short of anus	barely posterior of pelvic-fin base, well short of anus	barely posterior of pelvic-fin base, well short of anus	almost to anus	between posterior pelvic insertion and anus	between posterior pelvic insertion and anus	?
cheek odontodes	present, highly evertible	present, highly evertible	absent, cheek plate mildly evertible	present, highly evertible	present, highly evertible	present, highly evertible	present, highly evertible	present, highly evertible
predorsal plates including nuchal plate	4 or more, erratic	4 or more, erratic	4 or more, erratic	4 or more, erratic	2–3, symmetrical and ordered	2–3, symmetrical and ordered	2–3, symmetrical and ordered	2–3, symmetrical and ordered

Table 2. Morphometric Data for *Baryancistrus beggini*. 'Landmarks' represent the two points between which measurements were taken (from Armbruster, 2003).

	Landmarks	*n*	Mean	SD	Minimum	Maximum
Standard length (SL)	1–20	98	52.7	11.2	40.1	80.9
As % SL:						
Predorsal length	1–10	98	44.7	1.6	39.2	47.6
Head length (HL)	1–7	98	38.6	1.3	35.4	41.4
Head-dorsal length	7–10	98	6.5	0.9	4.4	9.1
Cleithral width	8–9	98	30.9	4.3	21.3	39.0
Head-pectoral length	1–12	98	29.8	1.6	25.7	33.5
Thorax length	12–13	98	25.3	2.4	17.9	32.2
Pectoral-spine length	12–29	97	34.0	1.9	28.5	37.4
Abdominal length	13–14	98	22.9	1.5	19.3	27.2
Pelvic-spine length	13–30	98	28.9	1.6	24.0	33.7
Postanal length	14–15	98	32.8	1.9	27.8	38.9
Anal-fin spine length	14–31	96	11.0	1.5	6.8	14.4
Dorsal-pectoral depth	10–12	98	29.3	1.4	26.2	32.3
Dorsal spine length	10–11	94	33.2	2.4	24.0	39.0
Dorsal-pelvic depth	10–13	98	25.6	2.2	21.0	31.5
Dorsal-fin base length	10–16	98	41.9	3.1	31.8	47.5
Adipose-spine length	16–17	98	10.2	1.7	6.6	13.6
Adipose-up. caudal depth	17–19	98	15.3	2.0	12.0	25.9
Caudal peduncle depth	15–19	98	13.0	1.6	10.3	17.2
Adipose-lower caudal depth	15–17	98	24.1	1.8	20.9	28.5
Adipose-anal depth	14–17	98	19.3	1.6	15.8	22.4
Pelvic-dorsal depth	13–16	98	36.1	3.2	25.7	42.9
As % HL:						
Head-eye length	5–7	98	30.8	2.7	26.0	40.7
Orbit diameter	4–5	98	21.3	2.1	16.5	24.6
Snout length	1–4	98	62.7	2.5	58.3	72.6
Internares width	2–3	98	12.9	1.5	9.3	17.4
Interorbital width	5–6	98	39.1	6.7	27.7	53.2
Head depth	7–12	98	69.4	2.8	62.4	77.2
Mouth length	1–24	98	48.4	3.6	40.6	57.1
Mouth width	21–22	98	52.0	4.9	40.9	61.2
Barbel length	22–23	97	10.3	2.1	3.8	15.4
Dentary tooth cup length	25–26	97	14.5	2.0	9.7	19.8
Premaxillary tooth cup length	27–28	97	13.8	2.2	9.2	19.0

Color in alcohol.—Adults with head, flanks, and fins nearly uniformly charcoal gray to dark brown; areas between plates slightly darker; some specimens with lighter patches around supraoccipital and on flanks; ventral surfaces tan to almost as dark as dorsum. Thorax and abdominal region cream-colored in juveniles. Fin rays, spines, and membranes darkly pigmented. Tips of hypertrophied odontodes straw-colored.

Color in life.—Adults and juveniles dark gray to black with a turquoise blue sheen on fins and flanks. Blue sheen more intense in some, presumably male, adults (Fig. 2).

Range.—Known from the Río Ventuari and the Río Orinoco at their confluence, and lower portions of the Río Guaviare in Colombia (Fig. 3).

Ecology.—*Baryancistrus beggini* was collected from the interstices of granitic bedrock and boulders that constitute exposed portions of the Guyana Shield. Limited examination of stomach contents indicate that it feeds on periphyton and associated microfauna that are abundant on surfaces and undersides of rocks in this habitat.

Baryancistrus beggini is one of a growing list of ancistrin loricariids that are sympatric across a relatively small region of the upper Orinoco centered on its confluence with the Río Ventuari, including *Acanthicus hystrix, Ancistrus macrophthalmus, Baryancistrus demantoides, Hemiancistrus subviridis, Hemiancistrus guahiborum, Hypancistrus contradens, Hypancistrus debilittera, Hypancistrus furunculus, Hypancistrus lunaorum, Lasiancistrus schomburgkii, Leporacanthicus galaxias, Leporacanthicus triactis, Panaque nigrolineatus, Peckoltia vittata, Pseudancistrus orinoco, Pseudancistrus pectegenitor, Pseudancistrus sidereus, Pseudolithoxus anthrax, Pseudolithoxus dumus,* and *Pseudolithoxus tigris*. Many of these catfishes, along with potamotrygonid stingrays, angelfish (*Pterophyllum altum*), and cardinal and rummy-nose tetras (*Paracheirodon axelrodi* and *Hemmigrammus rhodostomus*), are collected in large numbers from this restricted region and exported to the global trade in ornamental aquarium fishes (pers. obs.).

Etymology.—Patronym honoring Chris Beggin for his financial support of this research, ethical ornamental fish business practices, and influence on the professional development of the first author. *Baryancistrus beggini* is

Fig. 2. Lateral view of a live *Baryancistrus beggini*, AUM 39227. Photo by M. H. Sabaj Pérez.

locally known as 'panaque azul' or simply 'panaque.' In the global aquarium trade, it is referred to variously as L239, blue panaque, or blue-fin panaque.

DISCUSSION

Baryancistrus beggini is the third species to be added to the genus since its erection by Rapp Py-Daniel (1989). Isbrücker (2001) transferred *Hemiancistrus longipinnis* into *Baryancistrus* without comment. *Hemiancistrus longipinnis* shares many of the key characteristics of the genus as diagnosed by Rapp Py-Daniel: small gill openings, an expanded posterior dorsal-fin membrane separated from the adipose-fin spine by several plates, a somewhat robust body with rounded snout, parallel premaxillary tooth rows with many teeth, a partially plated abdomen, and coloration of light spots on a dark background (Table 1). Werneke et al. (2005) described *Baryancistrus demantoides*, which has a posterior expansion of the dorsal-fin membrane reaching the preadipose plate or one plate anterior, a naked abdomen, and light spots restricted to the anterior half of the body (Table 1).

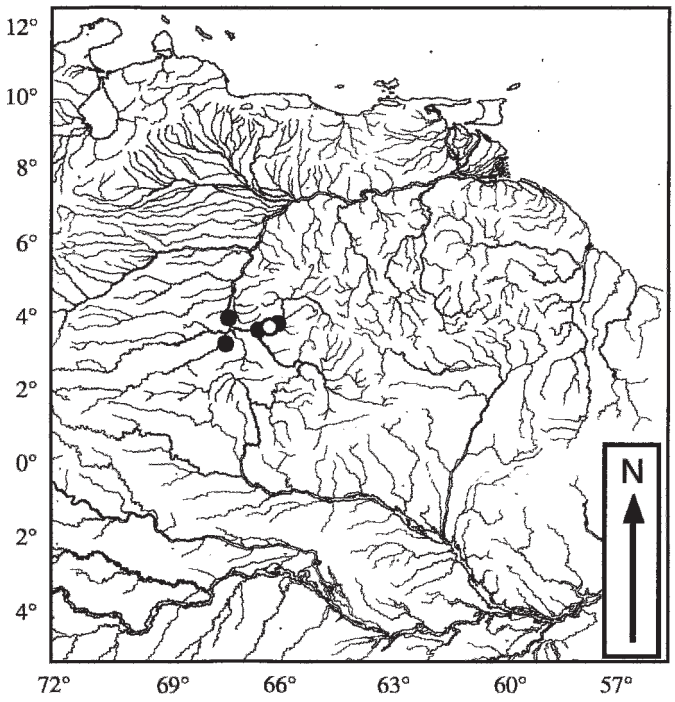

Fig. 3. Localities of *Baryancistrus beggini* (open symbol is type locality).

Problematically, the membranous connection between dorsal and adipose fins in *Baryancistrus beggini* is not identical to that found in other species of *Baryancistrus*. The species also differs in having fewer teeth per ramus, complete lack of light spots, smaller adult body size, and more robust body shape. Phylogenetic evidence for the placement of *B. beggini* as sister to *B. demantoides* and *B. niveatus* is weak, provided by only two characters that are homoplasic within Hypostominae but have not been found together elsewhere (Armbruster, 2008). One of these is the posteriorly expanded dorsal-fin membrane, and the other is a reduction in number of vertebrae between the first normal neural spine behind the dorsal fin and the hypural plate, from 12–15 to eight to 11 in *Baryancistrus beggini*, *B. demantoides*, and *B. niveatus*. The assignment of the new species to *Baryancistrus* must therefore be considered as tentative until such time as a more thorough comparative study of basal genera within the *Panaque* clade can be conducted and several currently undescribed species that might also belong within *Baryancistrus* can be examined.

MATERIAL EXAMINED

Baryancistrus longipinnis. Brazil, Tocantins: MNRJ 19340, 1. *Spectracanthicus punctatissimus*. Brazil, Tocantins: FMNH 95555, 1; MNRJ 19347, 31; MNRJ 19359, 10; MZUSP 34265, 1.

Spectracanthicus murinus. Brazil, Tapajos: MZUSP 34279, 1. Additional material examined listed in Armbruster (2003, 2004), Armbruster and Werneke (2005), and Werneke et al. (2005).

ACKNOWLEDGMENTS

We would like to gratefully acknowledge the assistance of D. Taphorn and O. León in obtaining permits and providing logistical support in Venezuela; D. Werneke, M. Sabaj Pérez, O. Santa Ella, L. deSouza, T. Wesley, D. Brooks, J. Valadez, M. Grant, E. Richmond, R. Betancur, A. Luna, R. Pajua, F. Brito, and L. Camico in collecting specimens; M. Rogers, K. Hartel, P. Buckup, G. Galvis, J. Maldonado, R. Reis, and M. de Pinna in the loan of specimens and logistical support while visiting collections. This project represents part of Planetary Biodiversity Inventory: All Catfish Species (Siluriformes), a five-year grant through the U.S. National Science Foundation to describe all species of catfishes (NSF DEB-0315963) and NSF grant DEB-0107751 to JWA.

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