

***Peckoltia cavatica*, a new loricariid catfish from Guyana and a redescription of *P. braueri* (Eigenmann 1912) (Siluriformes)**

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Abstract

Peckoltia cavatica is described as a new species and *P. braueri* is redescribed. *Peckoltia cavatica* and *P. braueri* differ from all other *Peckoltia* by having distal orange bands on the dorsal and caudal fins when alive and by having the plates and bones of the head and nape outlined in black. *Peckoltia cavatica* is found in the Essequibo River basin, and *P. braueri* is found in the Takutu River basin. The species differ in that *P. cavatica* has weaker dorsal saddles, the plates and bones of the head and nape are completely outlined in black (vs. partially outlined in *P. braueri*), lacks vermiculate lines on the pterotic-supracleithrum, lacks at least one, broken band in the caudal fin, and has wider orange bands.

Key words: Ancistrini, Hypostominae, Neotropics, South America, suckermouth armored catfishes

Introduction

On two recent expeditions to southern Guyana, a team from Auburn University, the Academy of Natural Sciences of Philadelphia, Iwokrama International Centre for Rain Forest Conservation and Development, and the University of Guyana Center for the Study of Biodiversity collected three species of *Peckoltia*. *Peckoltia* currently has 13 species that are found in the Amazon and Orinoco River drainages and in the coastal drainages of the Guyanas (Armbruster, 2003). *Peckoltia braueri* and *P. sabaji* are the only species of *Peckoltia* that have been described from around the Guyana Shield; however, there are many undescribed species (pers. obs.).

Of the species of *Peckoltia* found in Guyana, one was described as *Hemiancistrus braueri* by Eigenmann (1912) based on specimens collected by Richard Schomburgk and originally reported by Müller and Troschel (1849), one was described as *Peckoltia sabaji*

(Armbruster 2003), and the third represents an undescribed species that is described herein as *P. cavatica*. Previously, *P. braueri* was known only from the type that was collected in the Takutu River (Negro River drainage), and that specimen had already lost its color by the time it was described by Eigenmann (1912). *Peckoltia braueri* has also recently been considered a species of *Hemiancistrus* (Cardoso and Lucinda, 2003); however, the color pattern of the fish is more consistent with the species of *Peckoltia*. Currently, *Peckoltia* and *Hemiancistrus* are impossible to distinguish and are likely closely related to one another (Armbruster, 2004). In general, species with dorsal saddles and bands in the fins are referred to *Peckoltia* and those with spots or uniform coloration are referred to *Hemiancistrus*; however, this is not a very adequate situation, and the distinction between *Peckoltia* and *Hemiancistrus* requires much further work. *Peckoltia braueri* is certainly much more similar to *P. vittata* (Steindachner) (the type of *Peckoltia*) than to *H. medians* (Kner) (the type of *Hemiancistrus*). We collected *P. cavatica* from two localities around the Macushi village of Massara, and *P. braueri* in three localities around Lethem. In this manuscript, we redescribe *P. braueri* and describe *P. cavatica* new species.

Methods

Methods follow Armbruster (2003). Institutional abbreviations are as listed in Leviton et al. (1985) with the addition of UG/CSBD for the University of Guyana, Center for the Study of Biological Diversity. Names of skeletal characteristics are as in Schaefer (1987). The following abbreviations are used in the text: D. = distance, Dia. = diameter, Dp. = depth, dr. = drainage, L. = length, W = width.

Peckoltia braueri (Eigenmann 1912)

(Figs. 1–2)

Hemiancistrus braueri Eigenmann 1912:232, Pl. 28 (figs. 1-2). ZMB 3174.

Material Examined: GUYANA, Rupununi (Region 9), Takutu River - Negro River drainage: ANSP 180206, 12, 44.8–91.7 mm SL and AUM 36228, 20, 44.7–96.5, Takutu River ca. 2.75 km W Saint Ignatius, 03.35500°, -059.83077°, 5–6 November 2002, J.W. Armbruster, M.H. Sabaj, D.C. Werneke, C.L. Allison, M.R. Thomas, C.J. Chin, D. Arjoon, and L. Atkinson; ANSP 180207, 2, 39.8–50.6 and AUM 35525, 3, 84.1–66.0, Pirara River, tributary of the Ireng River, 3.5 km NNW Pirara, 03.64870°, -059.68897°, 2 November 2002, J.W. Armbruster, M.H. Sabaj, M.R. Thomas, D.C. Werneke, and D. Arjoon; ANSP 180208, 1, 93.5 and AUM 38882, 2, 77.7–103.0, same locality as ANSP 180206, 1 November 2003, J.W. Armbruster, M.H. Sabaj, M. Hardman, D. Arjoon, N.K. Lujan, and L.S. de Souza; and AUM 37914, 1, not measured, Takutu River at Saint Ignatius, 1.86 km

NNE Lethem, 03.35578°, -059.80518°, 2 November 2003, J.W. Armbruster, M.H. Sabaj, M. Hardman, D. Arjoon, N.K. Lujan, and L.S. de Souza. BRAZIL, Roraima, Rio Negro drainage: MZUSP 33703, 1, 83.6, and MZUSP 34652, 1, 62.0, Rio Branco, Bem Querer rapids, 8 January 1984, M. Goulding; MZUSP 34563, 5, 74.7–82.4. Igarapé do Cujobim, in front of Ilha de Maracá, 13 January 1984, M. Goulding.

Diagnosis: *Peckoltia braueri* can be separated from all other described *Peckoltia* except *P. cavatica* by the presence of an orange band in the dorsal fin and by having thin, wavy, black lines that tend to outline the plates and bones of the head (Figs. 1–2). *Peckoltia braueri* can be separated from *P. cavatica* by having the dorsal saddles better developed (vs. barely visible), by having the head plates and bones not completely outlined in black and with lines intense (vs. having all of the head plates and bones completely outlined in black and with the lines lighter), by having black vermiculations on the pterotic-supracleithrum (vs. no vermiculations), by having at least one, broken band in the caudal fin (vs. no bands in the caudal fin), and by having the marginal orange band of the dorsal and caudal fins not as thick or as intense as in *P. cavatica*. The only other described species of *Peckoltia* similar to *P. braueri* in coloration is *P. vermiculata*, which can be separated by having vermiculations on the dorsal head bones and plates other than the pterotic (vs. coloration confined to the borders between bones and plates in *P. braueri*).

Description. Member of *Peckoltia* as defined by Armbruster (2004). Morphometrics in Table 1. Medium-sized loricariids, largest specimen 103.0 mm SL. Body stout and fairly wide. Head and nape gently sloped to insertion of dorsal fin. Supraoccipital with slight rounded crest, slightly higher than nuchal region. Dorsal profile sloped ventrally to dorsal procurrent caudal-fin spines, then rising rapidly to caudal fin. Ventral profile flat to caudal fin. Supraorbital ridge rounded, continuing to anterolateral corner of anterior nare. Mesethmoid raised slightly above lateral surface of snout to form slight ridge. Head contours smooth. Eyes relatively large.

Keels absent. Inframedian plates bent at their midline above pectoral fin to form ridge. Dorsal plates bent dorsally below dorsal fin to form very slight ridges that converge at adipose fin, dorsal surface flat between ridges. Five rows of plates on caudal peduncle. Abdomen largely naked except region below pectoral girdle that is usually plated in adults, the region laterally between paired fins that is plated, and occasionally plates in anteromedial section of thorax and just anterior to anus. First anal-fin pterygiophore exposed to form a platelike structure. A pair of lateral plates converging at midline between anus and exposed first anal-fin pterygiophore. 24–26 (mode = 25) plates in the median series.

Frontals, infraorbitals, nasals, pterotic-supracleithra, sphenotics, and supraoccipital, supporting odontodes; opercle supporting odontodes in juveniles but not in adults, posterodorsal corner of opercle covered by one or two plates in adults. Odontodes on lateral plates not enlarged to form keels. Hypertrophied cheek odontodes 13–56, longest reaching first inframedian plate in adults. Cheek plates evertible to approximately 90° from head. Odontodes on tip of pectoral-fin spine slightly hypertrophied.

TABLE 1. Selected morphometrics of *Peckoltia braueri* and *P. cavatica*. Landmarks represents the two landmarks the measurement is between (from Armbruster 2003). Measurements are ratios of SL (predorsal l. to pelvic-dorsal l.) or head l. (head-eye l. to premaxillary tooth cup l.).

Landmarks	Measurement	<i>Peckoltia braueri</i> N= 39 (except Dorsal Spine L. = 38)		<i>Peckoltia cavatica</i> N= 25 (except Dentary Tooth Cup L. = 24)	
		Average \pm SD	Range	Average \pm SD	Range
1–20	SL (mm)	76.1 \pm 17.4	39.8 – 103.0	50.3 \pm 12.1	35.8 – 71.8
1–10	Predorsal L.	42.9 \pm 1.2	40.1 – 46.9	45.3 \pm 1.0	43.4 – 46.6
1–7	Head L. (HL)	36.9 \pm 1.4	35.0 – 41.5	39.8 \pm 1.6	37.6 – 46.2
7–10	Head-dorsal L.	6.2 \pm 1.1	4.0 – 8.3	6.2 \pm 1.0	3.9 – 7.6
8–9	Cleithral W.	31.2 \pm 1.3	28.5 – 38.1	30.5 \pm 1.1	28.1 – 32.3
1–12	Head-pectoral L.	26.2 \pm 1.6	24.0 – 30.1	28.3 \pm 1.3	25.1 – 31.4
12–13	Thorax L.	24.5 \pm 1.9	20.3 – 29.7	23.6 \pm 1.3	20.7 – 26.2
12–29	Pectoral-spine L.	32.4 \pm 1.5	28.8 – 35.6	31.9 \pm 1.9	27.0 – 34.5
13–14	Abdominal L.	22.9 \pm 1.1	19.8 – 26.1	21.9 \pm 1.7	17.8 – 24.6
13–30	Pelvic-spine L.	26.8 \pm 1.3	24.5 – 31.6	27.0 \pm 1.1	24.1 – 29.0
14–15	Postanal L.	33.9 \pm 1.4	30.2 – 36.5	34.4 \pm 1.4	31.3 – 36.9
14–31	Anal-fin spine L.	14.3 \pm 1.4	9.5 – 17.6	12.7 \pm 1.2	9.5 – 14.6
10–12	Dorsal-pectoral D.	29.1 \pm 1.2	27.3 – 34.3	30.8 \pm 1.0	28.2 – 32.4
10–11	Dorsal spine L.	34.3 \pm 1.9	30.2 – 37.7	33.4 \pm 3.6	23.0 – 38.5
10–13	Dorsal-pelvic D.	25.6 \pm 1.5	21.3 – 28.7	23.8 \pm 2.4	18.6 – 29.8
10–16	Dorsal-fin base L.	28.9 \pm 1.8	23.9 – 31.9	27.1 \pm 1.7	23.7 – 30.7
16–17	Dorsal-adipose D.	14.9 \pm 1.4	11.0 – 16.7	12.4 \pm 1.3	10.1 – 14.9
17–18	Adipose-spine L.	9.3 \pm 0.8	7.1 – 11.1	10.9 \pm 1.0	9.0 – 12.5
17–19	Dorsal Adipose-caudal D.	17.8 \pm 2.0	13.8 – 21.4	20.4 \pm 1.5	17.5 – 22.5
15–19	Caudal peduncle Dp.	11.8 \pm 1.2	7.6 – 14.2	10.4 \pm 1.5	7.9 – 13.5
15–17	Ventral adipose-caudal D.	23.5 \pm 1.5	20.8 – 27.9	26.4 \pm 1.2	24.6 – 28.5
14–17	Adipose-anal D.	19.5 \pm 1.7	14.4 – 21.9	16.2 \pm 1.3	13.7 – 19.0
14–16	Dorsal-anal D.	16.8 \pm 1.1	14.3 – 19.4	16.4 \pm 1.1	13.7 – 18.3
13–16	Pelvic-dorsal D.	26.6 \pm 2.0	21.5 – 30.4	24.4 \pm 2.5	18.9 – 28.5
5–7	Head-eye L.	37.6 \pm 1.9	33.9 – 42.9	36.1 \pm 2.3	32.5 – 42.0
4–5	Orbit Dia.	21.9 \pm 1.9	19.7 – 27.1	22.2 \pm 0.8	20.5 – 23.7
1–4	Snout L.	58.3 \pm 2.5	49.8 – 62.9	55.3 \pm 3.6	45.7 – 60.4
2–3	Internares W.	14.3 \pm 1.7	10.3 – 17.7	16.6 \pm 2.7	12.0 – 20.8
5–6	Interorbital W.	48.1 \pm 3.1	40.5 – 53.7	39.7 \pm 2.6	31.7 – 43.1
7–12	Head Dp.	71.0 \pm 1.8	67.1 – 75.9	68.8 \pm 2.4	61.8 – 71.8
1–24	Mouth L.	48.4 \pm 2.9	40.9 – 52.9	43.0 \pm 2.8	38.2 – 50.6
21–22	Mouth W.	47.7 \pm 3.9	37.5 – 53.8	40.5 \pm 3.0	34.1 – 45.5
22–23	Barbel L.	16.2 \pm 2.0	9.5 – 20.8	15.0 \pm 2.4	10.5 – 18.4
25–26	Dentary tooth cup L.	14.0 \pm 2.3	9.5 – 18.1	8.3 \pm 1.6	5.4 – 11.4
27–28	Premaxillary tooth cup L.	14.1 \pm 2.2	5.7 – 16.5	7.9 \pm 1.2	5.5 – 10.5

Dorsal fin reaching preadipose plate when adpressed; dorsal-fin spine not elongate, edge of dorsal fin straight. Dorsal-fin spinelet V-shaped, dorsal-fin spine lock functional. Dorsal fin II7 (except for one individual with II6). Adipose fin with one preadipose plate and moderately long spine. Caudal fin emarginate, lower lobe longer than upper, I14I with four to five (mode four) dorsal procurrent caudal-fin rays and three to four (mode four) ventral caudal-fin rays. Anal fin short with unbranched ray weak and approximately same length of first branched ray. Anal fin I4. Pectoral-fin spine reaching slightly behind posterior insertion of pelvic fin when adpressed ventral to pelvic fin. Pectoral fin I6. Pelvic fin reaching to middle of anal-fin when adpressed. Pelvic fin I5.

Dorsal flap of iris present. Flap between anterior and posterior nares short. Lips wide, fairly thin. Upper lip with small, round papillae. Lower lip with medium-sized papillae anteriorly and smaller ones posteriorly. Maxillary barbels short, not reaching gill opening. Buccal papilla represented only by a very small flap. Jaws narrow, dentaries forming angle just slightly greater than 90°, premaxillaries forming a very shallow arc with an overall angle just slightly less than 180°. Teeth with small, moderately narrow cusps, lateral cusp approximately half-length of medial cusp, stalks of teeth long, dentary and premaxillary teeth about equal in length; 13–29 dentary teeth (mode = 20) and 15–29 premaxillary teeth (mode = 20).

Color. Color same for live and preserved specimens except that live specimens have thin, orange bands at edge of dorsal and caudal fins. Background color gray-brown. Dorsal surface with four dark saddles, saddle one below second and third dorsal-fin rays, saddle two below last two dorsal-fin rays and slightly behind dorsal fin, saddle three below adipose fin, and saddle four at end of caudal peduncle. First two saddles combine at lateral line to form dark patch that extends from second saddle almost to pterotic-supracleithrum anteriorly and to ventral margin of inframedian plate row. Head plates and bones and plates of the nuchal region outlined in black with black lines also forming vermiculations on the larger head bones; outlining of plates and bones varying in degree of completeness, but never complete. Dorsal fin spine with large, oblong spots anteriorly, dorsal fin with slight distal orange band in life, and either entirely gray or with two wide, broken dark bands. Caudal-fin spines with oblong spots, caudal fin with one to two wide, broken bands and slightly orange edge to caudal fin in life. Ventral surface lighter than sides, saddle three contiguous with opposite side around ventral surface, but very light on ventral surface and saddle four contiguous with opposite side and dark around caudal peduncle. Pectoral fin mottled and pelvic fin with two wide, dark bands.

Juveniles colored similarly to adults, but dark colors more intense. There is an additional dark patch between saddles two and three in larger juveniles and saddles one and two are generally separate (Fig. 2). The pectoral fin generally has one to two bands. In the smallest individuals, saddles three and four connected ventrally making the body appear mottled.

Sexual dimorphism. Several individuals seem to be in the process of developing hypertrophied odontodes on the body as are found in most male *Peckoltia* during the breeding season.

Range. Collected from three localities around Lethem in the Takutu and Pirara Rivers (Fig. 3). Found in swift riffles among very large boulders. Also known from the main-stem Rio Branco near Caracarai and the Rio Uraricoera drainage of Brazil.

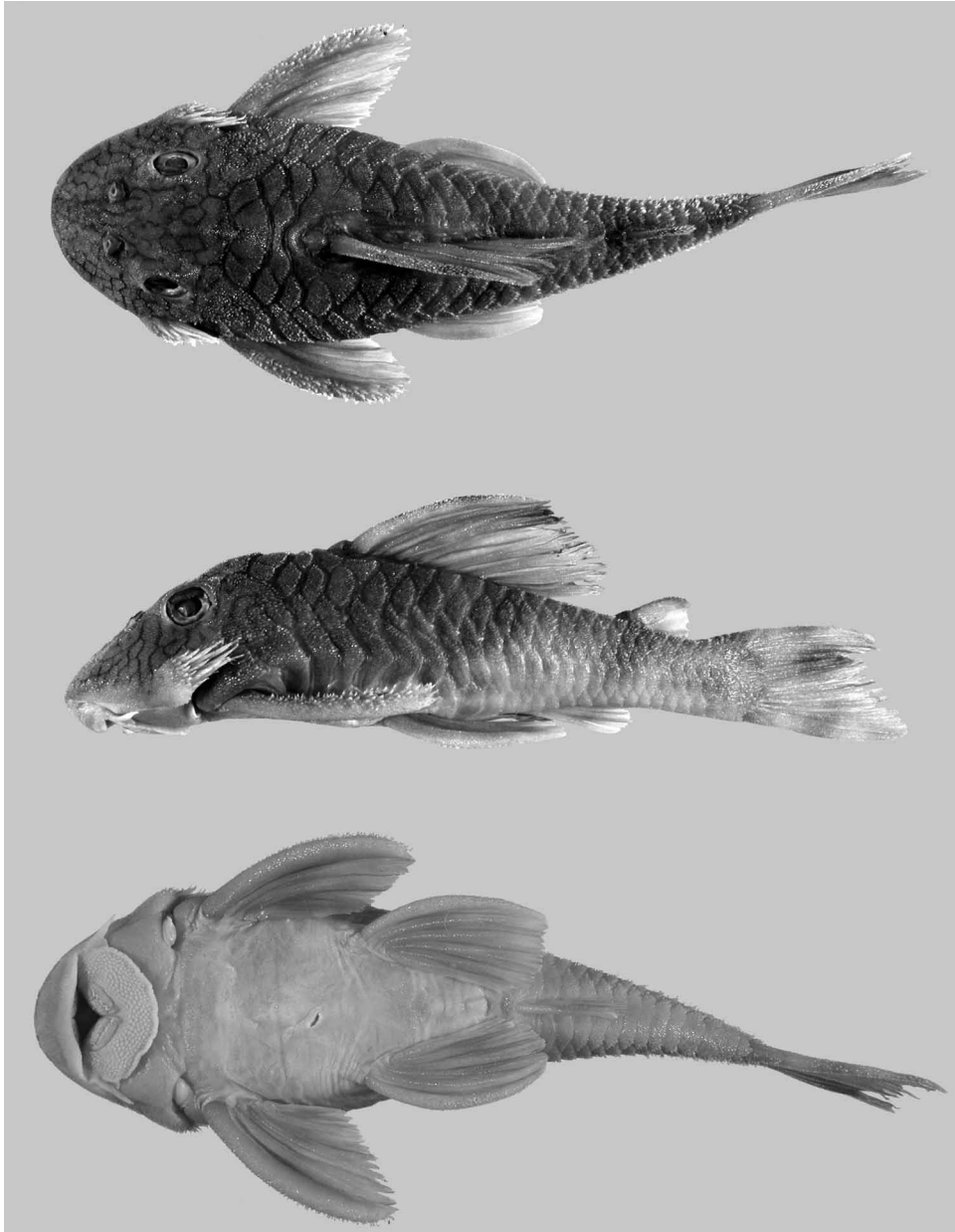


FIGURE 1. Dorsal, lateral, and ventral views of *Peckoltia braueri*, AUM 36228, 95.4 mm SL. Photographs by D. C. Werneke.



FIGURE 2. Photographs of live *Peckoltia braueri* (top), AUM 35525, 66.0 mm SL, and holotype of *P. cavatica* (bottom), UG/CSBD 11043, 71.8 mm SL. Photographs by M. H. Sabaj.

Comments. Despite the fact that the original specimens did not have a locality, Müller and Troschel (1849) state the locality as being in the Takutu, and Eigenmann (1912) fixes the type locality as being in the Takutu. The specimen was already devoid of color by Eigenmann's time (see photo in Eigenmann, 1912) precluding any critical examination of color, which is the most important element in separating *Peckoltia braueri* from other species of *Peckoltia*.

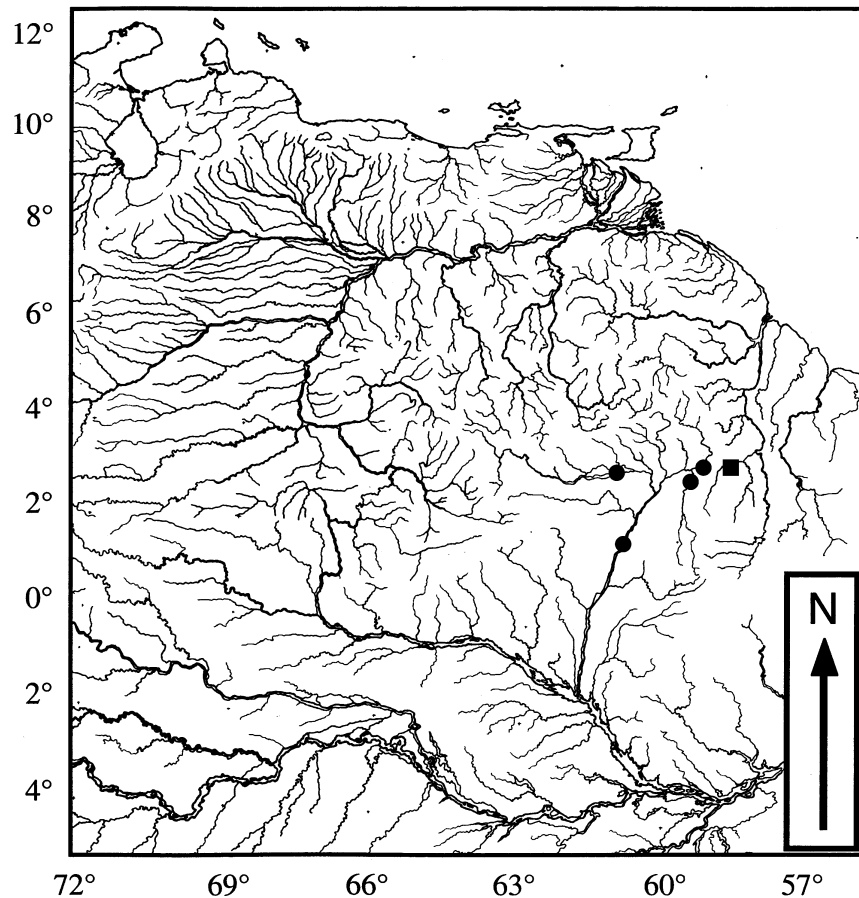


FIGURE 3. Range of *Peckoltia braueri* circles, and *P. cavatica* square. Symbols may represent more than one locality.

***Peckoltia cavatica* new species**

(Figs. 2 and 4)

Holotype: UG/CSBD 11043, 71.8 mm SL, Guyana, Rupununi (Region 9), Rupununi River 3.7 km SSE Massara, 03.86228°, -059.28439°, 27 October 2002, J.W. Armbruster, M.H. Sabaj, D.C. Werneke, C.L. Allison, M.R. Thomas, C.J. Chin, D. Arjoon, S. Mario, and S.M. James.

Paratypes: ANSP 180209, 3 measured, 6 total, 29.8–58.2, AUM 35536, 5 measured, 8 total, 2 CS, 32.8–71.8 mm SL, and UG/CSBD 11045, 2 measured, 4 total, 33.1–55.1 mm SL, Guyana, Rupununi (Region 9), Rupununi River, 4.6 km NW Massara, 03.92603°, -059.28037°, 26 October 2002, J.W. Armbruster, M.H. Sabaj, D.C. Werneke, C.L. Allison, M.R. Thomas, C.J. Chin, D. Arjoon, S.M. James, and S. Mario. ANSP 180210, 3 measured, 10 total, 28.4–52.8 mm SL, AUM 36229, 7 measured, 7 total, 4 CS, 27.5–58.2, and UG/CSBD 11044, 3 measured, 6 total, 32.3–43.4 mm SL, same data as Holotype. USNM

372572, 1 measured, 70.0 mm SL, Guyana, Rupununi (Region 9), Rupununi River, rock area near Massara, 23 November 2001, D. Arjoon.

Diagnosis: *Peckoltia cavatica* can be separated from all other described *Peckoltia* except *P. braueri* by the presence of an orange band in the dorsal fin and by having thin, black lines that outline the plates and bones of the head. *Peckoltia cavatica* can be separated from *P. braueri* as in the *P. cavatica* diagnosis. The only other described species of *Peckoltia* similar to *P. braueri* in coloration is *P. vermiculata*, which can be separated by having vermiculations on the dorsal head bones and plates (vs. coloration confined to the borders between bones and plates in *P. braueri*).

Description. Member of *Peckoltia* as defined by Armbruster (2004). Morphometrics in Table 1. Fairly small loriciariids, largest specimen 71.8 mm SL (likely only juveniles examined). Body stout and fairly wide. Head and nape gently sloped to insertion of dorsal fin. Supraoccipital with slight rounded crest, slightly higher than nuchal region. Dorsal profile sloped ventrally to dorsal procurrent caudal-fin spines, then rising rapidly to caudal fin. Ventral profile flat to ventral procurrent caudal-fin spines and then sloping ventrally to caudal fin. Supraorbital ridge rounded, continuing to anterolateral corner of anterior nare. Mesethmoid raised slightly above lateral surface of snout to form slight ridge. Head contours smooth. Eyes relatively large.

Keels absent. Inframedian plates bent at their midline above pectoral fin to form ridge. Dorsal plates bent dorsally below dorsal fin to form very slight ridges that converge at adipose fin, dorsal surface flat between ridges. Five rows of plates on caudal peduncle. Abdomen almost fully plated in largest specimen available, naked only in small area just posterior to insertion of pectoral-fin spine and in a wide band between insertions of pelvic-fin spines; smaller individuals with various degree of plating. First anal-fin pterygiophore exposed to form a platelike structure. A pair of lateral plates converging at midline between anus and exposed first anal-fin pterygiophore. 25–26 (mode = 26) plates in the median series.

Frontals, infraorbitals, nasals, pterotic-supracleithra, sphenotics, and supraoccipital, supporting odontodes; opercle supporting odontodes in juveniles but not in adults, posterodorsal corner of opercle covered by one or two plates in adults. Odontodes on lateral plates not enlarged to form keels. Hypertrophied cheek odontodes 18–36, longest reaching first inframedian plate in adults. Cheek plates evertible to approximately 90° from head. Odontodes on tip of pectoral-fin spine slightly hypertrophied.

Dorsal fin reaching preadipose plate when adpressed; dorsal-fin spine not elongate, edge of dorsal fin straight. Dorsal-fin spinelet V-shaped, dorsal-fin spine lock functional. Dorsal fin II7. Adipose fin with one preadipose plate and moderately long spine. Caudal fin emarginate, lower lobe longer than upper, I14I with four to five (mode four) dorsal procurrent caudal-fin rays and four ventral caudal-fin rays. Anal fin short with unbranched ray weak and approximately same length of first branched ray. Anal fin I4. Pectoral-fin spine almost reaching anus when adpressed ventral to pelvic fin. Pectoral fin I6. Pelvic fin reaching beyond anal-fin when adpressed. Pelvic fin I5.

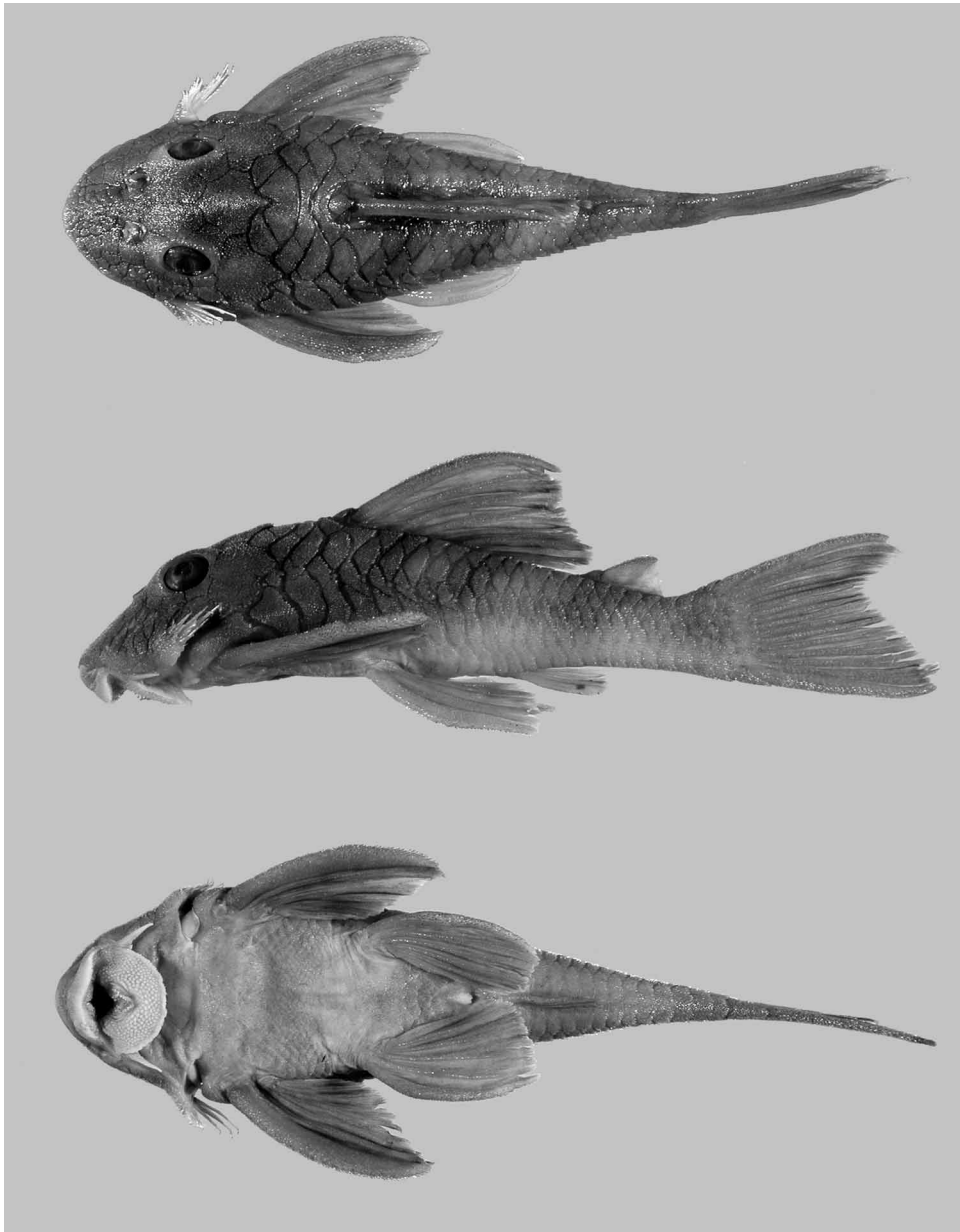


FIGURE 4. Dorsal, lateral, and ventral views of the holotype of *Peckoltia cavatica* UG/CSBD 11043, 71.8 mm SL. Photographs by D. C. Werneke.

Dorsal flap of iris present. Flap between anterior and posterior nares short. Lips wide, fairly thin. Upper lip with small, round papillae. Lower lip with medium-sized papillae anteriorly and smaller ones posteriorly. Maxillary barbels short, not reaching gill opening. Buccal papilla represented only by a very small flap, occasionally absent. Jaws narrow, dentaries forming a very acute angle, premaxillaries forming an angle of 90° to slightly greater than 90° . Teeth with small, moderately narrow cusps, lateral cusp approximately

half-length of medial cusp, stalks of teeth long, dentary and premaxillary teeth about equal in length; 9–15 dentary teeth (mode = 13) and 9–17 premaxillary teeth (mode = 12).

Color. Color same for live and preserved specimens except that live specimens have thick, orange bands at edge of dorsal and caudal fins. Background color gray-brown. Dorsal surface with four faint saddles, first below second and third dorsal-fin rays, second below last two dorsal-fin rays and slightly behind dorsal fin, third below adipose fin, and fourth at end of caudal peduncle. First two saddles combine at lateral line to form dark patch that extends from second saddle almost to pterotic-supracleithrum anteriorly and to ventral margin of inframedian plate row. Head plates and bones and plates of the nuchal region and dorsal, supramedian, and median plate rows to below dorsal fin completely outlined in black. Dorsal fin gray with wide distal orange band in life. Caudal fin spines gray, caudal fin with distal orange band in life. Ventral surface lighter than sides, saddles three and four contiguous across ventral surface in juveniles, but much lighter ventrally, and not contiguous in the largest specimens. Pectoral and pelvic fins gray. Juveniles colored similarly to adults, but dark colors more intense.

Sexual dimorphism. Males of *Peckoltia* generally have hypertrophied odontodes on the lateral plates, but this was not observed in *P. cavatica*.

Range. Collected from two localities around the Macushi village of Massara near Anai in the Rupununi River (Fig. 3). Found in areas with a large number of lateritic rocks. Most specimens were removed from holes in the rocks.

Etymology. From the Latin *cavaticus* meaning born or living in caves. In reference to the fact that most of the specimens were captured from holes in lateritic rocks, and the fact that it is likely that such holes are where this species breeds.

Discussion

During the rainy season, the Rupununi Savanna floods, connecting the Takutu (Amazon) and Rupununi (Essequibo) rivers around the Pirara River and Lake Amuku (Takutu River drainage), providing a potential mechanism for dispersal of fishes between the Amazon and Essequibo basins (Lowe-McConnell; 1964). Perhaps as a consequence of the seasonal connection between the Takutu and Rupununi, nearly all hypostomine loricariids that we collected in the Rupununi River were also found in the Takutu. The only exception is *P. cavatica*, which is replaced by *P. braueri* in the Takutu. Based on the derived presence of orange bands in the dorsal and caudal fins, it is likely that *Peckoltia braueri* and *P. cavatica* are sister species. The divide between the Rupununi and Takutu has been sufficient for the populations represented by *P. braueri* and *P. cavatica* to become distinct despite the fact that *P. braueri* is found in the Pirara River (the main point of contact between the two river basins). The fact that the ancestor of *P. braueri* and *P. cavatica* speciated despite the current connection between the Takutu and Rupununi suggests that patterns of dispersal and isolation between these two basins may be complex, and that the

portal represented by the flooded Rupununi Savanna may not be a dispersal route for all species.

Le Bail et al. (2000) picture a species that they label as *Hemiancistrus aff. braueri*. The specimen pictured is mottled with two full dark bands and one incomplete dark band in the caudal fin, and three dark bands in the dorsal fin, and it doesn't have the head and nape plates outlined in black. The pictured specimen is live, but it does not have the orange band in the dorsal and caudal fins. In coloration, the specimen is much more similar to *Peckoltia vittata*.

Currently, the taxonomy of *Peckoltia* and closely related genera such as *Hemiancistrus* is confused. Isbrücker et al. (2001) pull two genera from *Peckoltia*, *Ancistomus* for *P. snethlagae* (Steindachner, 1911) and *Sophiancistrus* for *P. arenaria* (Fowler, 1940) and *P. ucayalensis* (Eigenmann and Allen, 1942); however, these genera have not been accepted (Fish-Muller, 2003; Armbruster, 2004). Cardoso and Lucinda (2003) provide characteristics that attempt to separate *Peckoltia* and *Hemiancistrus*; however, they conclude that there are no useful characteristics to separate the genera. The confusion of the two genera is clear when examining *P. braueri*, which is considered either *Hemiancistrus* (Cardoso and Lucinda, 2003) or *Peckoltia* (Fisch-Muller, 2003).

In *Peckoltia*, there are several species that are likely to be closely related to *P. vittata* (Steindachner, 1911), the type species. The species that form the *P. vittata* group are *P. braueri*, *P. brevis*, *P. cavatica*, *P. kuhlmanni*, *P. vermiculata*, and *P. vittata*. The *P. vittata* group can be distinguished from all species currently ascribed to *Hemiancistrus* and *Peckoltia* except for *P. arenaria*, *P. bachi*, *P. filicaudata*, *P. oligospila*, and *P. ucayalensis*, by having the dentaries form an approximately 90° angle (vs. 125° or greater) and from all except *P. furcata* by having dark dorsal saddles. Among the *P. vittata* group, *P. kuhlmanni* is likely a synonym of *P. vittata*; however, the only characteristics that currently can be used to separate the species of the *P. vittata* group are color characteristics and the color of the types of *P. kuhlmanni* is gone. Among the remaining species, *P. vittata* can be distinguished by having large, median, dark blotches on the head similar to the dorsal saddles and no spots on the abdomen, *P. braueri* and *P. cavatica* can be separated as above, *P. brevis* has the same head coloration as *P. vittata* but has spots on the abdomen, and *P. vermiculata* has vermiculate lines on the head that do not follow the borders of the head bones and plates. In addition, *P. braueri* tends to have fewer plates on the abdomen, and has large, unplated sections in adults (vs. adults usually with abdomen almost entirely plated); however, there is ontogenetic change in the number of plates on the abdomen, and most juveniles of the *P. vittata* group have few or no plates when juveniles.

Other Specimens Examined

In addition to the specimens examined in Armbruster (2003, 2004), the following specimens were examined:

Peckoltia arenaria, CAS 77323, 1, Holotype, CAS 77324-6, 3, Paratypes; *P. bachi*, AUM 29578, 1; BMNH 1897.12.1.61, 1, Holotype; FMNH 103265, 1; FMNH 103266, 1; INHS 39970, 1; INHS 40010, 1; INHS 44127, 1; LACM 41906-3, 1; MCP 33228, 1; MCP 35511, 2; MNHN A-1968, 1; MNRJ 3963, 1; MZUSP 24611, 1; MZUSP 50506, 1; MZUSP 50507, 1; MZUSP 56113, 1; MZUSP 56282, MZUSP 57950, 1; MZUSP 74235, SIUC 29317, 1; USNM 124885, 1; USNM 329590, 1; *P. brevis*, FMNH 107073, 2; FMNH 107074, 1; FMNH 111511, 1; FMNH 59718, 4; INHS 36873, 1; INHS 43344, 2; MNHN 1988-1084, 1; MNRJ 15619, 2; MZUSP 50395, 1; SIUC 29784, 2; UF100630, 1; USNM 305824, 10; USNM 94680, 1; *P. furcata*, ANSP 68655, 1, Holotype; FMNH 7086, 4; FMNH 97023, 1; LACM 39864-10, 2; SIUC 36691, 1; *P. filicaudata*, MNRJ 969, Holotype; *P. kuhlmanni*, MNRJ 2044, 2, Syntypes; *P. oligospila*, BMNH 1849.11.8, 1, Holotype; MZUSP 23872, 1; MZUSP 53398, 1; *P. snethlagae*, MCP 15151, 2; MZUSP 24267, 2; NMW 48018, 1; NMW 48050, 1, Holotype; *Peckoltia* sp. Cinaruco, FMNH 69924, 1; *Peckoltia* sp. Cuyuni, MCNG 29525, 1; *Peckoltia* sp. Elongate, NMW 47233, 2; *Peckoltia* sp. Llanos, AUM 18946, 4, AUM 22836, 2, MCNG 9721, 1, MCNG 24200, 1, MCNG 37452, 1, MCNG 38972, 1, MCNG 42665, 1, UF 32382, 2, USNM 258213, 1, USNM 258215, 1.; *Peckoltia* sp. Orinoco 1, ANSP 149689, 5; ANSP 160590, 3; ANSP 162167, 1; ANSP 162173, 5; ANSP 162176, 2; ANSP 162177, 5; ANSP 162178, 1; AUM 39239, 3; MCNG 12362, 2; MCNG 20878, 3; MCNG 22521, 3; MCNG 22701, 4; MCNG 22795, 1; MCNG 22867, 7; MCNG 22933, 1; MCNG 25793, 5; MCNG 26074, 1; MCNG 26124, 1; MCNG 37045, 2; MCNG 37063, 1; MCNG 38319, 1; MCNG 47576, 2; MCNG 47577, 1; *Peckoltia* sp. Orinoco 2, AUM 39231, 2; AUM 39244, 6; MCNG 30361, 1; *Peckoltia* sp. Siapa, MCNG 38526, 1; *Peckoltia* sp. spotted, MCZ 62116, 1; NMW 48065, 1; *Peckoltia ucayalensis*, ANSP 68651, 1, Holotype, ANSP 68652-3, 2, Paratypes; *P. vermiculata*, NMW 48056, 1, Syntype; NMW 48059, 1, Syntype; NMW 48064, 1, Syntype; *P. vittata*, AUM 39245, 6; CU 76567, 1; FMNH 59717, 3; MNRJ 20973, 10; MNRJ 20990, 1; MZUSP 3590, 5; MZUSP 23988, 1; MZUSP 23999, 6; MZUSP 24122, 6; MZUSP 34189, 1; MZUSP 34190, 5; MZUSP 61995, 1; MZUSP 75226, 1; NMW 46361, 1; NMW 47228, 2, Syntypes; NMW 48055, 1; NMW 48057, 1; NMW 48058, 1; NMW 48060, 3; NMW 48061, 1; NMW 48062, 1; NMW 48063, 1.

Acknowledgements

This project represents part of Planetary Biodiversity Inventory: All Catfish Species (Siluriformes) — Phase I of an Inventory of the Otophysi, a 5 year grant through the US National Science Foundation to describe all species of catfishes (NSF DEB-0315963). The project was also supported by NSF grant DEB-0107751 to JWA. We would like to thank C.J. Chin, D. Arjoon, C. Bernhard, G. Watkins, and the staff of University of Guyana, Center for the Study of Biological Diversity for help in arranging fieldwork in Guyana. Also special thanks to the I. Ramdass, M. Tammasar, and all of the helpful people at the Guyana

EPA for help in obtaining permits. Collections in Guyana were greatly aided by all of the helpful and enthusiastic support of the Macushi and Wapishana people, the North Rupununi District Development Board, and D. Mackturk and her staff at Karanambo ranch. Collecting was further aided by C. Allison, M. Sabaj, M. Thomas, and D. Werneke. Measurements were aided by K. Popp. Many thanks to all those that helped in loaning specimens and aiding when visiting museums: J. Lundberg, M. Sabaj, B. Saul, J. Williams, S. Jewett, R. Vari, S. Weitzman, K. Hartel, B. Chernoff, M. Rogers, K. Swagel, M. Westneat, D. Catania, B. Eschmeyer, J. Albert, R. Robins, R. Arrindell, S. Schaefer, M. Stiasny, R. Feeney, J. Nielsen, E. Mikschi, H. Wellendorf, M. Retzer, L. Page, O. Crimmen, D. Siebert, M. Jegu, P. Keith, R. Reis, L. Malabarba, P. Buckup, M. de Pinna, and O. Oyakawa. M. Weitzman provided the base map.

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