



Hypostomus rhanthos (Siluriformes: Loricariidae), a new species from southern Venezuela

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Abstract

Hypostomus rhanthos is described for a uniquely pigmented species of loricariid catfish from the upper Río Orinoco of Amazonas, Venezuela. *Hypostomus rhanthos* can be separated from all other *Hypostomus* except *H. micromaculatus* by having its head and dorsal and lateral surfaces of body densely covered in very small spots (greater than 15 spots on the first plate in the dorsal series of specimens less than 100 mm SL vs. less than 10; greater than 30 spots in specimens greater than 100 mm SL vs. less than 15). The new species is distinguished from *H. micromaculatus* by having round spots (vs. longitudinally oval) that are unordered (vs. in longitudinal lines), by having well-developed keels on the lateral plates (vs. keels weak), by the presence of a ridge on the pterotic that is contiguous with the supraorbital ridge (vs. pterotic ridge absent), and by having the abdomen fully plated (vs. partially plated or naked).

Key words: Amazonas, Catfish, Hypostominae, *Hypostomus micromaculatus*, Neotropics, Siluriformes, Taxonomy

Resumen

Se describe *Hypostomus rhanthos* para una especie de loricariido con una pigmentación única de la parte alta del Río Orinoco en Amazonas, Venezuela. *Hypostomus rhanthos* se separa de todos los otros *Hypostomus* excepto *H. micromaculatus* por presentar la cabeza y las superficies dorsal y laterales del cuerpo cubiertas densamente por puntos muy pequeños (más de 15 puntos en la primera placa de la serie dorsal en especímenes con longitud estándar menor a 100 mm vs. menos de 10 puntos; más de 30 puntos en especímenes con longitud estándar mayor a 100 mm vs. menos de 15). La nueva especie se distingue de *H. micromaculatus* por presentar puntos redondeados (vs. longitudinalmente ovoides) dispuestos en desorden (vs. dispuestos en líneas longitudinales), por presentar quillas bien desarrolladas en las placas laterales (vs. quillas incipientes), por la presencia de una cresta en el pterotico que es contigua con la cresta supraorbital (vs. cresta en el pterotico ausente), y por presentar el abdomen completamente cubierto por placas (vs. parcialmente cubierto o desnudo).

Introduction

The genus *Hypostomus* has 138 species currently recognized as valid making it the largest genus in the Loricariidae (suckermouth armored catfishes; Armbruster, 2004). Few of the species are well defined, and a comprehensive review of the genus is lacking. Other than individual species descriptions, the taxonomic reviews that have been done on *Hypostomus* are limited to geographic reviews (Boeseman, 1968; Reis et al., 1990) or to small monophyletic groups such as the *H. unicolor* group (Armbruster and Page, 1996; Armbruster, 1998) and the *H. cochliodon* group (Armbruster, 2003b; Hollanda Carvalho and Weber, 2004).

The type species of *Hypostomus* is *H. plecostomus*, a species from the coastal Guyanas (Boeseman, 1968). It is characterized by dentaries angled just greater than 90° (Armbruster, 2004), viliform teeth, and a generalized morphology consisting of a fairly broad, fairly short body, that is mildly dorsoventrally flattened and brown with dark spots (Boeseman, 1968). There are species of similar morphology in lowlands of most major river basins of tropical South America.

Armbruster (2004) recognized very few subdivisions within *Hypostomus*, recognizing only an *H. emarginatus* group and an *H. cochliodon* group. For the purposes of this paper, *Hypostomus* is recognized in two main groups the *H. emarginatus* group (as defined in Armbruster, 2004) and the *H. plecostomus* group (all the other species). The *H. plecostomus* group additionally has the *H. cochliodon* subgroup as defined in Armbruster (2003b, 2004), Hollanda Carvalho and Weber (2004), and Armbruster and de Souza (2005). Few species of the *H. plecostomus* group (excepting species of the *H. cochliodon* subgroup) have been described from the Orinoco River basin (just *H. argus*) and none from the Negro (Weber, 2003, pers. obs.). In addition, there is a species of *Hypostomus* in the Orinoco that is very similar to *H. robinii* (described from Trinidad, pers. obs.). Some specimens of a *Hypostomus* with extremely small spots have been found in the Orinoco River drainage of southern Venezuela, and Armbruster (2004) referred these specimens to *H. micromaculatus* (a species described from Suriname, Boeseman, 1968). Examination of types of *H. micromaculatus* reveals that the Venezuelan specimens do not belong to this species, and comparison of the specimens to types or original descriptions of all other species of *Hypostomus* reveals that the specimens represent a new species.

Methods

Counts and measurements follow Armbruster (2003a). Specimens were cleared and stained according to the methods of Taylor and Van Dyke (1985). Institutional abbreviations are as in Leviton et al. (1985). Names of skeletal characteristics are as in Schaefer (1987) and of plate rows as in Schaefer (1997). Types of nearly all species of *Hypostomus* have been examined excepting some recently described species, species for which the types are unknown or lost, some species that are considered synonyms of others, and a couple of Boeseman's species from Suriname. For most species for which types have not been examined, the original descriptions provide adequate information on color (the main character used to separate *H. rhantos*). For the few that don't, it is unlikely that the species are similar, and they are not from localities near the range of *H. rhantos*. Given that there are 157 nominal species in *Hypostomus* and thousands of lots of the genus have been examined, the material examined below includes only information for paratypes of *H. micromaculatus* (the only species of *Hypostomus* with a similar color pattern). A list of the species of *Hypostomus* and the types examined can be found at: http://www.auburn.edu/academic/science_math/res_area/loricariid/fish_key/hypostom/hypos.html. The following abbreviations are used in the text: D. = distance, Dia. = diameter, Dp. = depth, dr. = drainage, L. = length, W = width.

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Figs. 1–2 and 3b

Holotype: MCNG 55352, 157.2 mm SL, Venezuela, Amazonas, Río Manapiare-Río Ventuari-Río Orinoco Drainage, Río Parucito at Raudales Salomon, 2.7 km NE of San Juan de Manapiare, 05.34637°, -066.03347°, D.C. Werneke, N.K. Lujan, O. León, 16 April 2004.

Paratypes: 63 specimens. All collections Venezuela, Amazonas, Río Orinoco drainage: ANSP 160774, 11, 76.7–103.5 mm SL, Morichal 26.9 km from Puerto Ayacucho, along Puerto Ayacucho – Caicara highway,



FIGURE 1. *Hypostomus rhanthos*, MCNG 55352, holotype, 157.2 mm SL. Photos by J. W. Armbruster.

B. Chernoff et al., 15 November 1985; ANSP 162365, 2, 134.4–139.0, Backwater of Río Orinoco behind sand playa ca. half hour upstream from Isla Temblador, 03°04'N, 066°28'W, B. Chernoff, et al., 10 March 1987; ANSP 185240, 4, 56.8–124.5, AUM 39273, 3 c & s, 5, 53.5–149.7, MCNG 55353, 5, 52.0–154.5, UF 164255, 2, 54.4–145.5, Same data as holotype; AUM 39308, 1, 124.0, MCNG 55354, 2, 94.7–99.2, RMNH 35500, 1, 99.0, Río Manapiare, tributary of Río Ventuari, 14.5 km NW of San Juan de Manapiare, 05.42863°, -066.13616°, N.K. Lujan, M.H. Sabaj, L.S. de Souza, and D.C. Werneke, 12 April 2004; AUM 39235, 1, 52.9, Río Ventuari, beach across the river from Picua Village, 34 km ENE of Macuruco, 104 km E of San Fernando

de Atabapo, 04. 11534°, -066.76457°, M.H. Sabaj, N.K. Lujan, D.C. Werneke, L.S. de Souza, and O. León, 5 April 2004; AUM 39874, 1, 145.3, Río Ventuari at mouth of Caño Camoni, 145 km NNE of Macurucu, 189 km NE of San Fernando de Atabapo, 05.05588°, -066.32742°, M.H. Sabaj, N.K. Lujan, D.C. Werneke, L.S. de Souza, and O. León, 8 April 2004; AUM 40070, 1, 123.4, Río Manapiare, tributary of Río Ventuari, 20 km NW of San Juan de Manapiare, 05.45272°, -066.17682, D.C. Werneke, N.K. Lujan, and L.S. de Souza, 12 April 2004; AUM 39506, 1, 168.7, Río Ventuari at Raudales Tencua, 56 km ESE of San Juan de Manapiare, 05.04968°, -065.62722, D.C. Werneke, N.K. Lujan, O. León, A. Luna, and R. Pajua, 20–21 April 2004; AUM 39216, 1, 93.1, Río Ventuari, mouth, 3.99528°, -067.04250°, N.K. Lujan and O. León, 15 April 2004; AUM 41496, 1, 147.5, Río Manapiare at mouth of Caño Yutaje, tributary of Río Ventuari, 14 km NW of San Juan de Manapiare, 05.43667°, -066.11261°, M.H. Sabaj, L.S. de Souza, D.C. Werneke, and N.K. Lujan, 11 April 2004; AUM 41418, 1, 164.4, MCNG 55355, 1, 154.5, Río Ventuari, bedrock outcrops, 83 km ENE of Macurucu, 153 km ENE of San Fernando de Atabapo, 04.25346°, -066.34466°, N.K. Lujan, D.C. Werneke, M.H. Sabaj, L.S. de Souza, and O. León, 6 April 2004; AUM 41336, 1, 70.2, Caño Guavialito, tributary of Río Manapiare, tributary of Río Ventuari, near Alto Guaviarito, 17.5 km NW of San Juan de Manapiare, 05.44135°, -066.16294°, L.S. de Souza, D.C. Werneke, N.K. Lujan, and M.H. Sabaj, 13 April 2004; AUM 41440, 1, 66.3, ANSP 185241, 1, 66.9, Caño Guavialito, tributary of Río Manapiare, tributary of Río Ventuari, directly off of Río Manapiare, 17.5 km NW of San Juan de Manapiare, 05.44010°, -066.16175°, M.H. Sabaj, L.S. de Souza, D.C. Werneke, and N.K. Lujan, 13 April 2004; AUM 41496, 1, 147.5, Río Manapiare, tributary of Río Ventuari, at mouth of Cano Yutaje, 14 km NW of San Juan de Manapiare, 05.43667°, -066.11261°, M.H. Sabaj, L.S. de Souza, D.C. Werneke, and N.K. Lujan, 11 April 2004; AUM 42100, 8, 50.6–176.4, Río Orinoco, beach and bedrock outcropping, 50 km E of San Fernando de Atabapo, 03.97029°, -067.25506°, N.K. Lujan, D.C. Werneke, M.H. Sabaj, M. Arce, R. Betancur, and T.E. Wesley, 2 March 2005; AUM 42114, 5, 135.6–159.1, Río Orinoco, 117 km W of La Esmeralda, N.K. Lujan, M. Arce, T.E. Wesley, et al., 03.28998°, -066.60004°, 29 March 2005; AUM 42121, 3, 115.0–126.0, Río Orinoco, 33.9 km E of La Esmeralda, Punto Piaroa, 03.14744°, -065.85381°, N.K. Lujan, M. Arce, T.E. Wesley, et al., 28 March 2005; AUM 42164, 1, 195.8, Río Orinoco, bedrock outcrop, 52.9 km SE of San Antonio, 102 km W of La Esmeralda, 03.10036°, -066.46277°, N.K. Lujan, D.C. Werneke, M.H. Sabaj, O. León, M. Arce, R. Betancur, and T.E. Wesley, 4 March 2005; AUM 42220, 1, 136.7, Río Orinoco, near Puerto Ayacucho on a beach called Playa Bagre, 05.65642°, -067.63103, N.K. Lujan, M. Arce, and T.E. Wesley, 13 April 2005.



FIGURE 2. Photos of a live *Hypostomus rhanthos*, AUM 42114, paratype. Photos by E. Richmond.

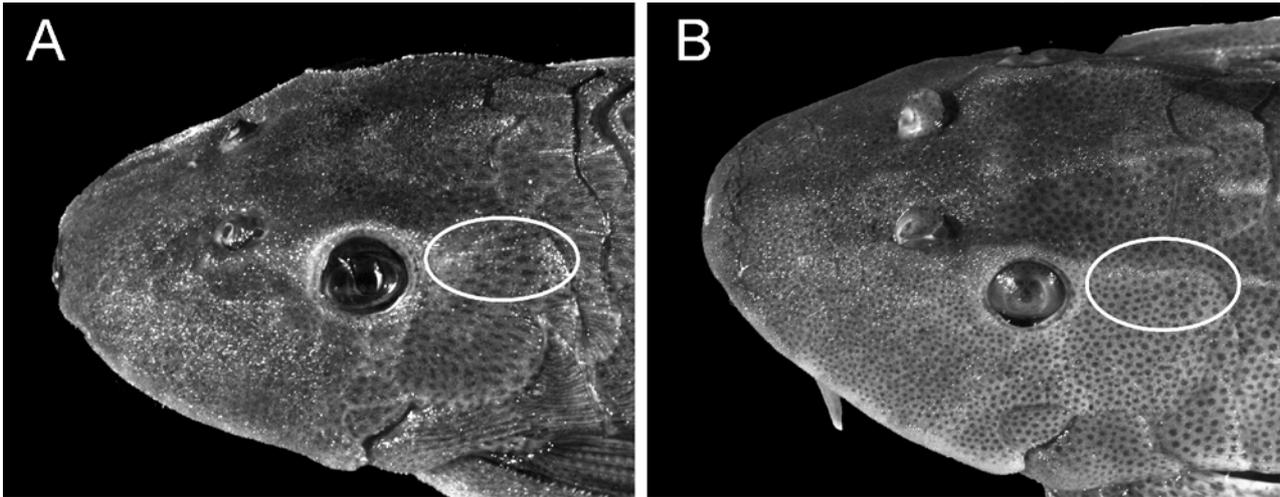


FIGURE 3. Dorsal view of heads of paratypes of A. *Hypostomus micromaculatus*, RMNH 25482, 117.1 mm SL and B. *Hypostomus rhanthos*, AUM 42220, 136.7 mm SL. Ovals indicate area of ridge in A and ridge in B. Photos by J. W. Armbruster.

Diagnosis: *Hypostomus rhanthos* is unique among *Hypostomus* (except for *H. micromaculatus*) by having extremely small spots (see especially Fig. 2). *Hypostomus rhanthos* is a member of the *H. plecostomus* group, but is not a member of the *H. cochliodon* subgroup (Armbruster, 2004). *Hypostomus rhanthos* can be separated from the *H. emarginatus* species group by having a dark brown base color (vs. light tan), by having a small buccal papilla (vs. large), and by lacking hypertrophied odontodes on the lateral plates of nuptial males (vs. hypertrophied odontodes present); and from the *H. cochliodon* species subgroup of the *H. plecostomus* group by having viliform teeth (vs. spoon-shaped). *Hypostomus rhanthos* can be separated from all other members of the *H. plecostomus* group (including species of the *H. cochliodon* subgroup) except *H. micromaculatus* by having extremely small spots (greater than 15 on the first plate in the dorsal series in *H. rhanthos* vs. five or fewer). *Hypostomus rhanthos* can be separated from *H. micromaculatus* by having all of the spots round and evenly distributed (vs. spots longitudinally oval and restricted to rows Figs. 1–2 vs. Fig. 4), keels of lateral plates well-developed (vs. weak), a ridge present on the pterotic that is contiguous with the supraorbital ridge (vs. ridge absent, Fig. 3), and by having a fully plated abdomen (vs. abdomen partially plated or naked). In addition, smaller specimens of *H. rhanthos* have spots on the dorsal fin whereas small specimens of *H. micromaculatus* have the dorsal fin entirely dark.

Description: Morphometric data given in Table 1. Largest specimen 195.8 mm SL. Head and nape forming arch from tip of snout to origin of dorsal fin. Body depth decreasing from origin of dorsal fin to dorsal procurrent caudal spines then increasing to caudal fin. A rounded ridge present from anterodorsal corner of orbit, running ventral to nares, and ending slightly anteroventral of anterior nare. Longitudinal ridge of raised bone and slightly larger odontodes present on pterotic-supracleithrum beginning at posterodorsal corner of orbit and contiguous with supraorbital ridge. Space between orbits concave such that supraorbital ridge higher than medial surface of head. Supraoccipital convex medially with slight crest.

Nares separated by flap of skin held erect in life. Dorsal, middorsal, median and midventral plate rows complete from head to caudal fin, ventral plate row begins at insertion of pelvic fin and continues to caudal fin. Lateral plates with short, median keels with enlarged, dull odontodes. Keels on first two plates of dorsal row and sometimes first three plates forming line from supraoccipital to posterolateral corner of nuchal plate, not confluent with keel on dorsal plate row beginning on fourth plate. Base of caudal fin covered in elongate, roughly triangular plates. Entire ventral surface of head and body (except region around insertion of pelvic fin) covered in small platelets. Platelets on abdomen increase in number with standard length. Head covered in small plates. Frontal, nasal, sphenotic, infraorbitals, opercle, pterotic-supracleithrum, suprapreopercle, and

supraoccipital supporting odontodes. Platelets that cover anteroventral corner of opercle slightly separated from opercle allowing plates to be marginally everted (angle of eversion less than 30°).



FIGURE 4. Dorsal, lateral, and ventral view of paratype of *Hypostomus micromaculatus*, RMNH 25482, 117.1 mm SL. Photos by J. W. Armbruster.

TABLE 1. Selected morphometric features of *Hypostomus rhanthos*. N= 45 for all except dorsal spine length (N=42).

	Average	SD	Range		
SL (mm)	115.7	40.5	52.0	–	195.8
% SL					
Predorsal L.	41.1	1.3	38.8	–	45.2
Head L. (HL)	34.4	2.1	29.9	–	38.6
Head-dorsal L.	6.6	1.5	3.0	–	9.8
Cleithral W.	29.7	1.8	24.9	–	32.2
Head-pectoral L.	28.0	1.2	25.7	–	30.3
Thorax L.	22.1	1.2	17.3	–	24.5
Pectoral-spine L.	33.4	1.7	29.9	–	37.2
Abdominal L.	20.7	2.1	16.6	–	24.7
Pelvic-spine L.	27.0	1.5	22.3	–	30.1
Postanal L.	34.5	1.3	31.0	–	37.1
Anal-fin spine L.	14.0	0.9	12.1	–	16.4
Dorsal-pectoral D.	28.7	0.9	26.3	–	30.7
Dorsal spine L.	33.6	3.2	27.6	–	43.7
Dorsal-pelvic D.	24.1	1.6	20.9	–	27.4
Dorsal-fin base L.	31.5	1.1	28.9	–	34.7
Dorsal-adipose D.	15.0	1.6	12.1	–	20.3
Adipose-spine L.	10.1	1.0	8.0	–	12.0
Adipose-upper caudal D.	14.8	1.4	11.0	–	18.9
Caudal peduncle Dp.	11.9	0.7	10.4	–	13.9
Adipose-lower caudal D.	20.3	1.6	16.8	–	24.0
Adipose-anal D.	20.8	1.1	18.0	–	23.2
Dorsal-anal D.	14.1	1.1	11.2	–	16.9
Pelvic-dorsal D.	25.4	3.1	19.6	–	31.1
% HL					
Head-eye L.	37.9	1.5	34.3	–	41.8
Orbit Diameter	16.7	1.5	14.1	–	21.1
Snout L.	59.9	3.0	54.0	–	64.0
Internares W.	14.4	1.6	11.5	–	18.4
Interorbital W.	41.4	4.5	33.8	–	54.4
Head Dp.	73.9	3.5	64.3	–	83.2
Mouth L.	46.5	2.7	37.9	–	51.9
Mouth W.	46.1	3.3	39.3	–	54.4
Barbel L.	16.0	3.1	7.0	–	22.8
Dentary tooth cup L.	13.5	1.4	11.4	–	16.4
Premaxillary tooth cup L.	14.3	1.5	11.0	–	17.5

Dorsal fin moderately long, usually just barely reaching preadipose plate when depressed, consisting of small, V-shaped spinelet, fairly strong spine, and seven rays. Caudal fin forked, lower lobe longer than upper. Pectoral-fin spine strong, extending posteriorly to pelvic-fin rays when depressed ventral to pelvic fin; cleithrum with exposed process dorsal to pectoral-fin rays that tapers posteriorly to point; pectoral fin inserted on same plane as pelvic fin such that spine, when depressed parallel with body, lies on top of and in contact with

pelvic fin. Pelvic-fin spine thin, flexible, reaches slightly beyond base of anal fin. Anal fin with relatively strong, unbranched first ray supporting odontodes. Adipose fin consisting of single median, unpaired preadipose plate and a stout, strong, pointed spine; adipose-fin membrane not reaching procurrent caudal-fin spines. Dorsal fin II,7, pectoral fin I,6, pelvic fin I,5, anal fin I,4, caudal fin I,14,I. Jaws weakly angled, dentaries forming angle much greater than 90°. Teeth numerous (28–45, mode 31 in premaxilla, 29–45, mode 31, in dentary, N = 48), bicuspid, median cusp moderately long, lateral cusp about one fourth length of median, stalk moderately long. Median plates 24.

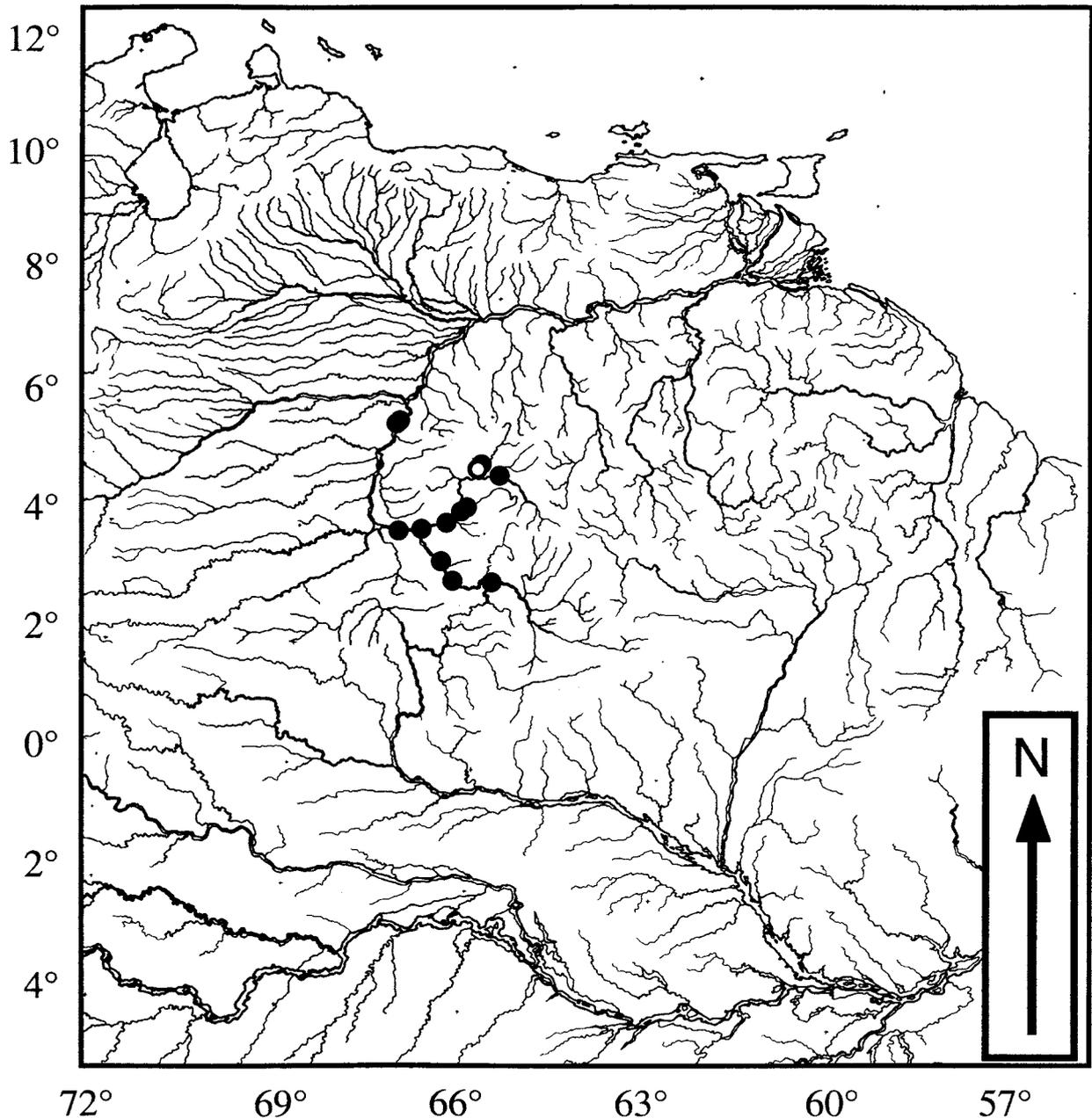


FIGURE 5. Distribution of *Hypostomus rhanthos*, open symbol is type locality. Base map by M. Weitzman.

Coloration: Light gray to tan when alive, becoming tan when preserved. Body densely covered with tiny spots, head spots even smaller than body spots. Spots present on all fins, generally larger than spots on body, evenly distributed on rays, spines, and membranes. Caudal fin membranes light and spotted anteriorly, fading to dark wash posteriorly. Abdomen lighter than sides, with tiny spots. Occasionally with four dorsal saddles,

first below anterior dorsal-fin rays, second below and slightly behind posterior dorsal-fin rays, third below and slightly anterior to adipose-fin spine, and fourth at base of caudal peduncle; all saddles angled anteriorly, saddles one and two combine and continue to base of pelvic fin, third and fourth terminating at middle of mid-ventral plate row. Fin spines usually lighter than rest of body. Spots relatively larger in juveniles. Juveniles with fewer spots distally on all fins, lower half of caudal fin much darker.

Range: Currently known from the Río Ventuari, a tributary of the upper Río Orinoco, and the mainstem upper Orinoco above Puerto Ayacucho to the Río Casiquiare in Amazonas, Venezuela (Fig. 5).

Ecology: *Hypostomus rhantos* was collected in loricariid assemblages with an average of 7.2 loricariid species per site (n=16 sites). Habitats from which *H. rhantos* were collected range from consolidated lateritic rocks in flow, to bedrock cracks in flow, to branches and trunks of trees in slack water.

Etymology: *Rhantos* is Greek for sprinkled, speckled, or spotted and refers to the tiny randomly placed spots of the species.

Discussion: Specimens of *Hypostomus rhantos* were analyzed in Armbruster (2004a) but were incorrectly referred to as *H. micromaculatus*. *Hypostomus rhantos* was found to be the sister to *H. robinii*; however, support for this was very weak (Bremer decay index = 1), and derived from only from two homoplastic characteristics: posteromedial invagination of the fifth ceratobranchial present (character 11 state 1 from Armbruster, 2004) and a reversal to a short levator arcus palatini crest (44-1). This clade was part of a larger clade consisting of the *H. cochliodon* subgroup, *Hypostomus plecostomus*, the potentially undescribed *Hypostomus* similar to *H. robinii* from the Orinoco, and *H. cordovae*, with this clade being supported by a reversal to a wide posterior edge to the posterior process of the coracoid (158-0). This clade is also poorly supported with a Bremer decay index of one. Most of the relationships within *Hypostomus* are poorly resolved and need much further study.

Hypostomus rhantos is most similar in coloration to *H. micromaculatus* from Suriname. In addition to coloration, *H. rhantos* appears taller and wider than *H. micromaculatus*; however, we do not have enough specimens available to provide confident measurements of this. There are no species that have been described or that we have examined between the Upper Orinoco and Suriname with a similar color pattern. Given the vast distance between the two species, it would be unlikely that they would be sister species. They are different in the size of the keels (relatively well-developed in *H. rhantos* and almost absent in *H. micromaculatus*) and the amount of abdominal plating (fully plated in *H. rhantos* and absent or nearly so in *H. micromaculatus*). Although these characteristics change a lot in loricariids, they do suggest when coupled with locality data that the two species may have small spots via convergence.

Paratypes of *Hypostomus micromaculatus* examined: RMNH 25482, 1; RMNH 25484, 2; 25487, 3.

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