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Harttia merevari, a new species of catfish (Siluriformes: Loricariidae) from Venezuela

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Harttia merevari, a new species of loricariid catfish, is described from eight specimens captured in the upper Caura River, Orinoco River basin, Venezuela. The new species is recognized by the following combination of characters: abdomen naked; two or three preanal plates; a bony plate before each branchial opening; seven lateral plates between the pectoral and pelvic fins; maxillary barbel short and attached to the oral disk by a fleshy fold; head dorsal surface and anterior portion of the body light or dark yellow with numerous, round black spots; posterior region of the body light or dark yellow with five black transverse bands, dorsal central area of the two anterior bands diffused. The discovery of this new species extends the distribution of the genus northwest to include the Orinoco River basin on the northern slope of the Guyana shield.

Harttia merevari, uma espécie nova de bagre loricarideo é descrita com base em oito exemplares capturados no alto rio Caura, bacia do rio Orinoco, Venezuela. A espécie nova se distingue pela seguinte combinação de caracteres: abdome nu; duas ou três placas preanais; presença de uma placa óssea anterior a cada abertura branquial; sete placas laterais entre as nadadeiras peitorais e pélvicas; barbilhão maxilar curto e unido ao disco oral por uma dobra carnosa; superfície dorsal da cabeça e região anterior do corpo amarelo escuro ou marrom claro com numerosos pontos negros arredondados, região dorsal e posterior do corpo amarelo escuro ou marrom claro com cinco bandas transversais negras, as duas bandas anteriores com a parte dorso-central difusa. A descoberta desta espécie nova estende a distribuição do gênero ao noroeste incluindo a bacia do rio Orinoco na vertente norte do Escudo das Guianas.

Key Words: Taxonomy, Harttiini, Caura River, Orinoco River basin, Guyana shield, Biogeography.

Introduction

During two expeditions to the Caura River, Bolívar State (IZT UCV-FMNH, 1993 and AquaRAP, 2000), specimens were captured representing a new species of loricariid catfish of the genus *Harttia* Steindachner (1877). *Harttia* belongs to the Harttiini of the Loricariinae (Boeseman, 1971; Isbrücker, 1980) and the type species is *H. loricariformis* (type locality: Paraíba do Sul River, southeastern Brazil). The only known species from Venezuela is *Harttia platystoma* (Günther, 1868), which is restricted to the Cuyuní River basin (Machado-Allison *et al*., 2000).

While placement of species within the Harttiini is relatively unambiguous (*e.g*., Boeseman, 1971, 1976; Isbrücker, 1975, 1980, 2001; Isbrücker & Nijssen, 1979, in Isbrücker, 1979; Oyakawa, 1993; Langeani *et al*., 2001; Rapp Py-Daniel & Oliveira, 2001; and Ferraris, 2003) the recognition of genera and assignment of species to a genus has been controversial (*e.g.*, recognition of *Cteniloricaria* Isbrücker & Nijssen, 1979 or *Quiritixys* Isbrücker *et al.* 2001 as distinct from *Harttia*). We agree with Rapp Py-Daniel & Oliveira (2001) and recognize 21 previously described species of *Harttia* (Table 1).

In this paper *Harttia merevari* is described from the upper Caura River, Bolívar State, Venezuela. The presence of this new species of *Harttia* in the Venezuelan portion of the Guyana Shield elevates the number of *Harttia* species to 22, and increases the northwestern geographic distribution boundary for the genus.

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Materials and Methods

The specimens used in this work are deposited at the following ichthyological collections: Museo de Biología de la Universidad Central de Venezuela, Colección de Peces (MBUCV-V) and Field Museum of Natural History (FMNH). Measurements and counts are those described by Boeseman (1971). The measurements were taken with a digital caliper. Counts, observations, and drawings of external morphology were done using a stereoscopic microscope. Comparisons of external morphology and morphometric and meristic data were carried out using original descriptions plus specimens of *Harttia* from FMNH and specimens of *H. platystoma* and *H. guianensis* deposited at MBUCV.

Harttia merevari, new species

Figs.1-2

Holotype. MBUCV-V-26578, 99.4 mm SL. Venezuela, Bolívar State, Caura River at the top of Salto Pará waterfalls, among rocks on the eastern side of the river, 17 Sep 1993, C. Silvera, F. Provenzano, A. Machado-Allison, B. Chernoff, H. López-Rojas & A. Rojas.

Paratypes. MBUCV-V-30850, 4, (68.4-88.8 mm SL) and FMNH 116484, 3, (66.5-81.2 mm SL). Venezuela, State Bolívar, Caura River, near the top of Salto Pará waterfalls, among rocks on the eastern side of the river, 30 Nov 2000, A. Machado-Allison, F. Provenzano, B. Chernoff, & A. Rojas.

Diagnosis. *Harttia merevari* is distinguished from all congeners by the following combination of external characters: abdomen naked; two or three preanal plates, triangular, rectangular or square in shape; smaller plates, variable in number, arrangement and shape, present anterior to preanal plates, particularly in smaller specimens; broad triangular plate present anterior to each branchial opening; seven lateral (thoracic) plates between the pectoral and pelvic fins; maxillary barbels short, united to oral disk with fleshy flap; dorsal surface of head and anterior portion of body light or dark yellow with numerous black spots; dorsal and posterior portion of body light or dark yellow with five black transverse bands; anterior two bands with a diffused central portion; and caudal fin forked

Description. Morphometric data presented in Table 2. Head and body depressed. In dorsal view, body slender (Fig.1); cleithral width 20.39% SL (4.91 times SL). Snout rounded, contour oval in dorsal view. Supraorbital border raised. Interorbital area and supraoccipital flat. Lip margins undulated slightly. Lip surfaces covered with papillae, except small naked region near dentary. Teeth numerous, 50 or more in each dentary. Teeth very thin and elongate, forked and asymmetric with inner lobe larger and rounded; apex arched toward interior of mouth and yellowish, while rest of tooth whitish. Interior of mouth with only one small elongated papilla on roof of mouth, located midline between premaxillaries and oral valve. Very small maxillary barbel joined to inferior lip by thin fleshy

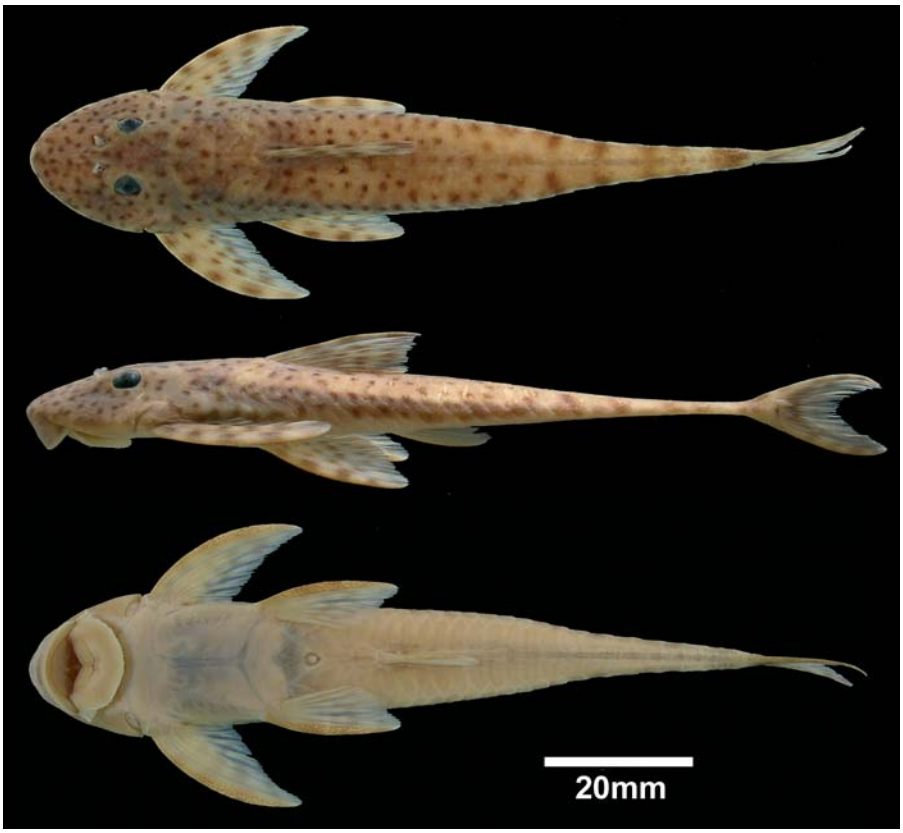

Fig. 1. *Harttia merevari*, MBUCV-V-26578, holotype, 99.4 mm of SL. Dorsal, lateral and ventral views.

Table 1. List of the species of the genus *Harttia*, geographic distribution and abdomen type (1 - a stripe of tiny plates before the pelvic fins; 2 - three to five small plates at the scapular girdle level).

Species	Distribution	Abdomen type
H. carvalhoi Miranda Ribeiro, 1939	S.E. Brazil	naked
H. depressa Rapp-Py Daniel & Oliveira, 2001	N. Brazil	naked
H. dissidens Rapp-Py Daniel & Oliveira, 2001	N. Brazil	covered
H. duriventris Rapp-Py Daniel & Oliveira, 2001	N. Brazil	covered
H. fowleri (Pellegrin, 1908)	French Guyana	covered
H. garavelloi Oyakawa, 1993	S.E. Brazil	naked
H. gracilis Oyakawa, 1993	S.E. Brazil	naked
H. guianensis Rapp-Py Daniel & Oliveira, 2001	French Guyana	naked
H. kronei Miranda Ribeiro, 1908	S.E. Brazil	naked
H. leiopleura Oyakawa, 1993	S. E. Brazil	naked
H. longipinna Langeani, Oyakawa & Montoya-Burgos, 2001	S.E. Brazil	covered
H. loricariformis Steindachner, 1877	S.E. Brazil	naked
H. maculata (Boeseman, 1971)	Suriname and French Guyana	covered
H. merevari Provenzano, Machado-Allison, Chernoff, Willink & Petry, 2005	Venezuela	naked
H. novalimensis Oyakawa, 1993	S.E. Brazil	naked
H. platystoma (Günther, 1868)	Suriname and Venezuela	covered
H. punctata Rapp-Py Daniel & Oliveira, 2001	N. Brazil	partially covered
H. rhombocephala Miranda-Ribeiro, 1939	S.E. Brazil	covered
H. surinamensis Boeseman, 1971	Suriname and French Guyana	covered
H. torrenticola Oyakawa, 1993	S. E. Brazil	naked
H. trombetensis Rapp-Py Daniel & Oliveira, 2001	N. Brazil	naked [1]
H. uatumensis Rapp-Py Daniel & Oliveira, 2001	N. Brazil	naked [2]

flap. Triangular plate anterior to each branchial opening, ornamented with small odontodes. Abdomen naked. Preanal region with two or three well developed plates (Fig. 2). Small specimens with two rectangular or square preanal plates preceded by one to seven small, irregularly shaped plates, in irregular arrangement. Holotype with three well defined preanal plates: middle triangular plate with apex directed to anus; sided by two large and rectangular plates. Each lateral preanal plate preceded by single, small, square plate (Fig. 2) Six or seven plates between pectoral and pelvic fins. 30 or 31 lateral plates. Anterior lateral plates carinate, forming double keel until plate 17 or 18, after which plates unite to form single keel to base of the caudal fin. Dorsal fin I,7 Pectoral fin I,6 Pelvic fin I,5. Anal fin I,5 Caudal fin i,12,i.

Coloration. Dorsal region of head and anterior part of body light or dark yellow with many black spots. Posterior region of body light or dark yellow with five transverse black bands; first two bands with diffused central portion (Fig. 1). Ventral region of head and body whitish. Dorsal, pectoral and pelvic fins with rectangular or square black blotches on rays; interradial membranes hyaline. Dorsal, pectoral and pelvic fin spines with four, five and four black blotches, respectively. Anal fin uniform whitish or yellow. Caudal fin with four black blotches on rays, and two transverse black bands. Anterior transverse band wide and well defined near base of middle rays; posterior band thin and weakly defined. Distal border of caudal fin hyaline

Habitat. *Harttia merevari* was captured very close to the top of Salto Pará (Fig. 3), a 50 m fall that separates the Caura River into upper and lower faunal sections (Chernoff *et al.*, 2003). The specimens were captured on and among relatively large rocks with flat surfaces, very near shore. The water was transparent with flow from fast to very fast. Podostemataceas were growing on the rocks. The depth at the colleting site was 1.5 meters on average.

Etymology. The species-group name, *merevari*, is the Ye-kuana name for the Caura River, and is treated here as a noun in apposition.

Comparisons. The largest known specimen of *H. merevari* is 99.4 mm SL and this specimen as well as all other paratypes, which are smaller, have a naked abdomen. There is no evidence of plate development over the abdomen. The lack of

Table 2. Morphometric data of *Harttia merevari* expressed as percent of SL (n=8).

	Holotype	Maximum	Minimum	Mean	SD
Standard length (mm)	99.38	88.81	66.71		
Head length	22.82	25.10	22.82	23.94	0.77
Head depth	8.91	9.66	8.91	9.18	0.27
Snout length	13.17	14.96	13.17	14.14	0.59
Interorbital width	5.41	6.26	5.37	5.83	0.35
Orbital diameter	4.18	4.64	4.18	4.34	0.16
Predorsal length	31.64	33.90	31.64	32.67	0.80
Postdorsal length	57.21	58.34	56.55	57.21	0.61
Preanal length	48.10	50.04	47.98	48.72	0.73
Postanal length	48.20	50.02	46.74	48.08	1.07
Thoracic length	14.97	15.93	14.97	15.43	0.31
Abdominal length	18.17	18.26	16.73	17.86	0.50
Dorsal fin base	11.64	11.70	10.60	11.08	0.42
Dorsal spine length	21.48	22.36	20.55	21.57	0.75
Pectoral spine length	23.59	23.59	20.51	21.94	0.92
Pelvic spine length	20.57	20.57	17.93	18.96	0.77
Cleithral width	19.87	21.65	19.87	20.39	0.56
Caudal peduncle depth	1.34	1.47	1.29	1.35	0.06

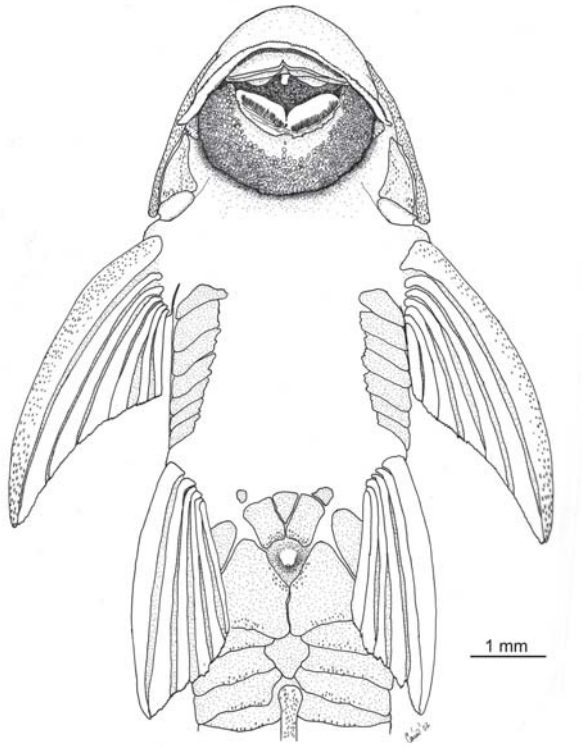

Fig. 2. *Harttia merevari*, MBUCV-V-26578, holotype, 99.4 mm SL. Ventral region showing the shape, relative size and/or arrangement of bony plates in front of the gill opening, between pectoral and pelvic fins, and preanal area.

abdominal plates places *H. merevari* into a group of species of *Harttia* with naked abdomens: *H. carvalhoi*, *H. depressa*, *H. garavelloi*, *H. gracilis*, *H. guianensis*, *H. kronei*, *H. leiopleura*, *H. loricariformis*, *H. novalimensis*, and *H. torrenticola*. *Harttia uatumensis* probably should be considered a member of this group because this species possesses a single small patch of plates over the abdomen. *Harttia carvalhoi*, *H. garavelloi*, *H. kronei*, *H. leiopleura*, and *H. novalimensis* differ from *H. merevari* because each lacks the preanal plates present in the new species (Oyakawa, 1993; Langeani *et al.*, 2001). In juveniles of *H. torrenticola* preanal plates are absent, adults have preanal plates but they are circular in shape, sparse, and reduced in number from 2 to 4 (Oyakawa, 1993). *Harttia gracilis* and *H. loricariformis* have two trapezoidal preanal plates, and 3 or 4 small plates anterior to those (Steindachner, 1877; Oyakawa, 1993). Additionally, *H. leiopleura* and *H. novalimensis* lack a bony plate in front of the gill opening; *H. garavelloi* does not have a maxillary barbel; and *H. leiopleura* does not have lateral plates between the pectoral and pelvic fins (Oyakawa, 1993). The external morphology of *H. merevari* resembles *H. punctata* but differs by the type of abdominal covering (naked *vs*. partially covered, respectively) and other morphometric and meristic measurements. *Harttia depressa*, *H. guianensis*, and *H. uatumensis* have naked abdomens as in *H. merevari* but differ in color pattern, body shape, and morphometric or meristic measurements.

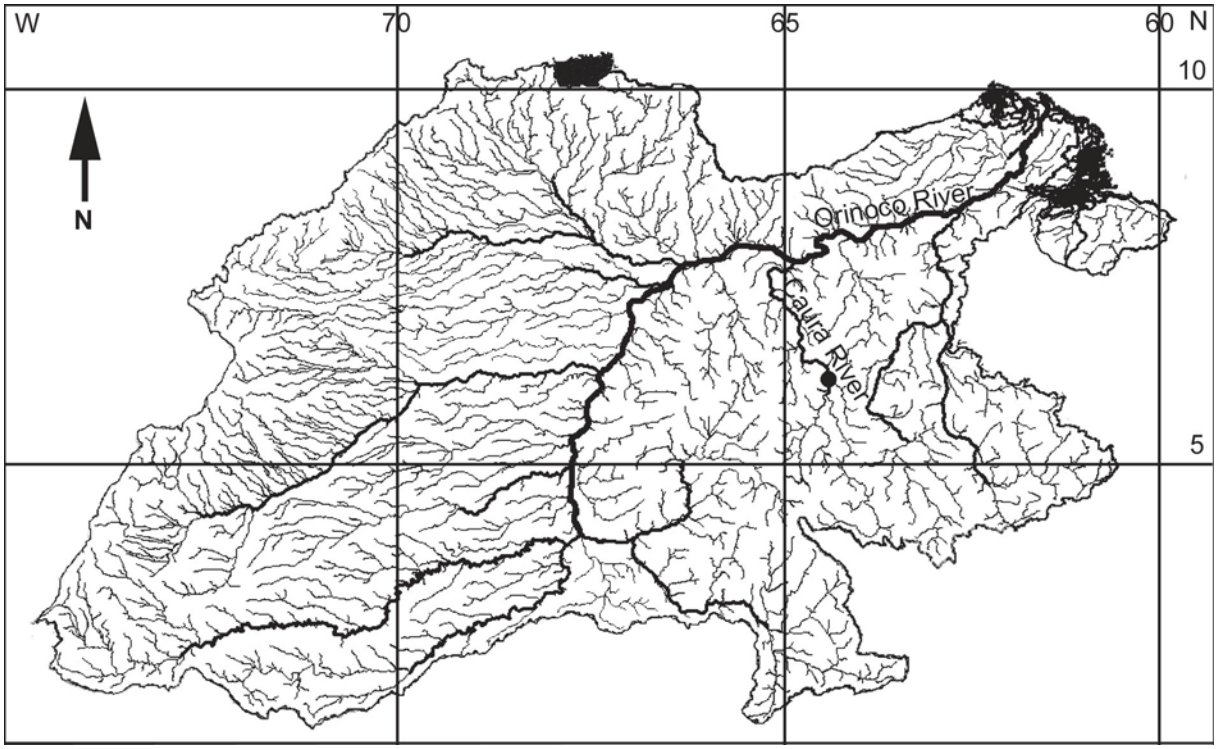

Fig. 3. Map of the Orinoco River drainage showing the type locality (solid circle) of *Harttia merevari*.

Geographic Distribution. *Harttia* species are primarily distributed in the Amazon River basin and southeastern Brazil, but a few including the new species are found in the Guianas and the Orinoco River basin (Table 1). *Harttia merevari* extends the northwestern distribution of the genus to the northwestern slope of the Guyana shield draining into the Orinoco basin, being the first species to be recorded in this area (Fig. 3). If we consider the genus *Cteniloricaria* as a synonym of *Harttia* as proposed by Rapp Py-Daniel & Oliveira (2001), the number of species assigned to *Harttia* reaches 22 species. Along the Guyana Shield, *Harttia* species are found in rivers in Suriname (Suriname River), French Guiana (Approuague and Sinnamary rivers) and Venezuela (Caura River and Cuyuni - Essequibo River drainage) draining the northern slope of the shield, and the Trombetas and Uatumã watersheds draining the southern slope of the Guyana Shield in Brazil (Boeseman, 1971; Machado-Allison *et al*., 2000; Rapp Py-Daniel & Oliveira, 2001) Further south, species have been reported from the Tapajós and Tocantins River basins on the northern slope of the Brazilian Shield (Rapp Py-Daniel & Oliveira, 2001), São Francisco basin, upper Paraná and coastal drainages of southeastern Brazil (Steindachner, 1877; A. Miranda Ribeiro, 1908; P. Miranda Ribeiro, 1939; Oyakawa, 1993; Langeani *et al*., 2001) There is no particular distributional pattern among the species with or without naked abdomens; representatives of both groups are found along the Guyana shield and the southeastern region of Brazil.

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