**Harttia absaberi**, a new species of loricariid catfish (Siluriformes: Loricariidae: Loricariinae) from the upper rio Paraná basin, Brazil

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A new species of *Harttia*, tribe Harttiini, is described from tributaries of upper portions of rio Paraná drainage. The new species, the smallest known species of the genus, attaining up to 74.0 mm of standard length, can be distinguished from its congeners by the combination of the following characters: abdomen completely covered by plates, a single preanal plate, plates of the gular area in broad contact with the canal plate. *Harttia absaberi* is the second species of the genus known from the upper portion of rio Paraná drainage.

**Key words:** Harttiini, Loricarioidea, Neotropical fishes, Ostariophysi, Taxonomy.

**Introduction**


The genus *Harttia* is readily recognized by a set of morphologic features as absence of keels on lateral plates, snout round, large plates surrounding the anal opening (Boeseman, 1971) and abrupt narrowing of caudal peduncle. Additionally *Harttia* can be distinguished from its congeners by the following synapomorphies: basipterygia internal

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antero processes oriented mesially, not contacting each other, point of bifurcation of the infraorbital and supraorbital canals at the border between sphenotic and pterotic-supracleithrum, first ceratobranchial with huge flange, parapophysis of fourth vertebra not contacting transcapular ligament, parietal branch terminal opening on the supraoccipital, preopercle canal straight with three exits (Rapp Py-Daniel, 1997).

With 22 nominal valid species, Harttia exhibits the third higher intragenic diversity within the Loricariinae. Only Rineloricaria Bleeker with 65 species (Vera-Alcaraz et al., 2012) and Farlowella with 25 species (Ferraris, 2007) are more diverse than Harttia. The genus has a broad distribution in South America, ranging from the rio Ribeira de Iguaçu basin (Harttia kroniei Miranda Ribeiro), in São Paulo State, Brazil, to Caura River (Harttia merevari Provenzano, Machado-Allison, Chernoff, Willink & Petry), in the rio Orinoco drainage. Among those 22 species, the majority described in the last two decades, ten were described for the Eastern and Southeastern Brazil, seven for the Amazonian region, and five for the Guianas and Venezuela region.

Despite of many species that have been described in the last 20 years, there are at least 10 other putative new species from North and Southeastern Brazil besides the new species described herein (pers. obs.). Harttia absaberi n. sp. is the second species of Harttia described to the upper rio Paraná basin, with Harttia gracilis Oyakawa, being the first one. At this time in the upper Paraná basin, the subfamily is represented only by 13 species belonging to the following five genera: Farlowella, Loricaria, Loricariichthys Bleeker, Rineloricaria, and Harttia (Ferraris, 2007). Despite being one of the most studied freshwater systems in Brazil, the new species described herein reinforces the suggestions addressed by Langeani et al. (2007) that the diversity of this drainage is indeed underestimated.

Material and Methods

Point-to-point measurements were made with caliper on the left side of specimens whenever possible, and were recorded to the nearest 0.1 mm. Measurements and counts follow Langeani et al. (2001), counts of trunk lateral dermal plates follow Schaefer (1997), osteological terminology follows Schaefer (1987) and Paixão & Toledo-Piza (2009). In the description the numbers between square brackets refer to the modes. Measurements are expressed as percents of standard length (SL) unless those referring to subunits of head, which are expressed as percents of head length (HL). Some specimens (indicated by c&s) were cleared and double stained for bone and cartilage according the method of Taylor & Van Dyke (1985). Institutional abbreviations are: ANSP, Academy of Natural Sciences of Drexel University, Philadelphia, CAS; California Academy of Sciences, San Francisco; DZSJRP, Departamento de Zoologia e Botânica, Universidade Estadual Paulista “Julio de Mesquita Filho”, São José do Rio Preto; INPA, Instituto Nacional de Pesquisa da Amazônia, Manaus; MNRJ, Museu Nacional, Rio de Janeiro; MZUEL, Museu de Zoologia da Universidade Estadual de Londrina, Londrina; MZUSP, Museu de Zoológia da Universidade de São Paulo, São Paulo, and RMNH.PISC, Netherlands Centre for Biodiversity Naturalis (formerly Rijksmuseum van Natuurlijke Historie), Leiden.

Results

Harttia absaberi, new species
Figs. 1-6

Holotype. MZUSP 85805, 60.4 mm SL, Brazil, Mato Grosso do Sul State, Três Lagoas, ribeirão São Mateus, tributary of the rio Sucuriú, rio Paraná basin,23 Sep 2003, O. T. Oyakawa, J. C. Nolasco, J. L. Birindelli & C. N. Kikuchi.

Paratypes. All from Brazil. Rio Paraná basin. Mato Grosso do Sul State. MZUSP 22848, 2, 58.4-63.9 mm SL, Três Lagoas, córrego do Bebedoouro, tributary of the rio Sucuriú, 22º21’5.2”S 51º53’52.9”W, 11-23 Nov 1964, Excursão Departamento de Zoologia. São Paulo State. DZSJRP 2741, 1, 67.6 mm SL, Ipeúna, rio Passa Cinco, Fazenda Palmeira, no date, Equipe Laboratório de Citogenética UFSCar. MZUEL 5007, 2, 66.2-67.4 mm SL, same locality as DZSJRP 2741. MZUSP 58674, 3, 59.2-74.1 mm SL, Ipeúna, rio Passa Cinco, no date, Equipe Laboratório de Citogenética UFSCar. MZUSP 85806, 36, (2 c&s), 44.1-63.9 mm SL, same data as the holotype. MZUSP 87921, 2, 58.1-60.3 mm SL, Itirapina, rio Passa Cinco, 22º22’19’S 47º46’55”W, 19 Jan 2002, E. N. Fragoso.

Diagnosis. Harttia absaberi is distinguished from its congeners, except Harttia rhombocephala Miranda Ribeiro, H. longipinna Langeani, Oyakawa & Montoya-Burgos, H. punctata Rapp Py-Daniel & Oliveira, H. duriventris Rapp Py-Daniel & Oliveira, H. dissidens Rapp Py-Daniel & Oliveira, H. trembutensis Rapp Py-Daniel & Oliveira, H. fowleri (Pellegrin), and H. surinamensis Boeseman, by having the abdomen completely covered by plates. From the above-mentioned species it can be distinguished by having only one preanal plate versus two or three, usually two, in adults specimens. In addition, H. abserberi can be distinguished from the above-mentioned species by possessing the plates of the gular area in broad contact with the canal plate and partially contacting the border of the lower lip. In the gular area of above-mentioned species, a small area remains unplated or naked, and the plates never touch the canal plate. Moreover, H. absaberi can be distinguished from its congeners by having a thin series of small plates on the upper lip versus upper lip completely naked in all other species, except Harttia duriventris, which possess around five small plates on the upper lip.
Description. Measurements and counts of plates in Table 1. Body dorsoventrally depressed and elongated, widest at cleithrum. Dorsal profile moderately convex from tip of snout to end of parieto-supraoccipital, straight to dorsal-fin origin and gently descending to end of caudal peduncle. Ventral profile straight from tip of snout to caudal fin.

Head moderately rounded. Snout tip pointed in dorsal view. Posterior margin of parieto-supraoccipital bordered by four plates. Eye roundish and small. Dorsal flap of iris present. Interorbital region straight. Lateral margin of head in nuptial males covered by numerous and thick odontodes, usually slightly turned posteriorly. Tip of snout with small, oval and naked area extending backward and joined with naked region of anterior area of upper lip. Anterior area of upper lip with thin line of small plates with odontodes. Lips rounded with papillae on edges. Inner surfaces of lips covered by papillae, more numerous and smaller in lower lip. Posterior border of lower lip almost reaching anterior margin of scapular bridge. Premaxilla with 31-58 [33] bicuspid teeth, both cusps with same size, dentary with 29-36 [32] teeth, inner cusp slightly longer than outer. Maxillary barbel reaching up to \( \frac{1}{4} \) of lower lip length, and sometimes joined to lip by small flap of tissue. Infraorbital series with five plates, last one contacting inferior branch of sphenotic. Inferior region of orbit delimited by infraorbitals 3-5. Canal plate roughly rectangular, completely covered by odontodes and bearing section of laterosensory system canal (Fig. 2). Bifurcation of infraorbital and supraorbital canals at middle of sphenotic bone. Parietal branch terminal opening on supraoccipital.

Fig. 1. Harttia absaberi, new species, MZUSP 85805, 60.4 mm SL, holotype, Brazil, Mato Grosso do Sul State, Três Lagoas, ribeirão São Mateus, tributary of the rio Sucuriú, rio Paraná basin. From top to bottom: lateral, dorsal and ventral views.
A new species of Harttia from the upper rio Paraná

Abdominal region between gular area to anus covered by roughly trapezoidal to quadrangular plates, without forming any regular pattern. Plates near gular area extensively contacting canal plate. Plates near anal plate larger than those in gular area. Abdominal scutation varying ontogenetically: specimens up to 30.0 mm SL with scattered small patches of odontodes, more concentrated near urogenital pore, and two small preanal plates, specimens between 31.0 to 33.0 mm SL with same number of preanal plates, with numerous small patches of odontodes, specimens above 35.0 mm SL with abdomen covered by plates only posteriorly to scapular bridge and one preanal plate, specimens larger than 43.0 mm SL with abdomen completely covered by plates and one large preanal plate. Plates of gular area contacting canal plate.

Two series of plates between parieto-supraoccipital and nuchal plate (Fig. 3). First plate of dorsal series located laterally to nuchal plate, last plate contacting first dorsal procurent ray of caudal fin. Mid-dorsal series with 11 plates, first located laterally to first plate of dorsal series. Median series with 27-29 [28], not keeled, plates bearing lateral-line canal. Mid-ventral series with 15 plates, first contacting posterior portion of cleithrum, last laterally to fifteenth plate bearing lateral-line canal. First plate of ventral series just above ventral-fin insertion, last one contacting first ventral procurent ray of caudal fin. Anus surrounded anteriorly by one trapezoidal plate. Lateral abdominal plates between pectoral and pelvic-fin base 6-10 [8]. Three pairs of post-anal plates. Post-anal plate 1, very large and roughly triangular, latero posteriorly to anus, contacting each other at midline via broad suture (Fig. 4). Pairs of post-anal plates 2 and 3 separated by first pterygophore of anal fin.

Dorsal fin I,7, its origin on vertical above pelvic-fin origin. Spinelet half-moon shaped, approximately with same width of base of second dorsal-fin spine. Dorsal-fin spine articulates with pterygophore via specialized chain-link structure (Fig. 5). Tip of last rays of dorsal fin surpassing point of insertion of last ray of anal fin when adpressed. Pectoral fin I,6. Tip of pectoral-fin spine and first two branched rays surpassing insertion of pelvic-fin spine. Odontodes covering partially dorsal region of cleithrum, spine and first three branched rays of pectoral fin. Pelvic fin I,5. Tip of pelvic-fin spine and first three branched rays surpassing insertion of anal-fin spine. Caudal fin I,12,1, with three to five supracaudal plates on its base, median plate bearing lateral line canal. Two procurent rays on base of upper and lower caudal-fin rays. Dorsalmost

Table 1. Morphometrics and counts of plates of type specimens of Harttia absaberi. N = number of specimens, Min = minimum value, Max = maximum value.

<table>
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<td>22</td>
<td>14</td>
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caudal-fin ray with short and thick filament. Anal fin I,5. Tips of first and last basal radials of anal fin lying below hemal spines of vertebrae 14-18, respectively. Hemal spines of vertebrae 14-18 bifid, hemal spines of vertebrae 14, 16, and 18 very large. First anal-fin pterygiophore roughly square shaped and not covered by skin.

**Color in alcohol.** Dorsal region of body dark yellow to light brown, with five transverse dark brown bands, first at origin of dorsal fin, second starting at end of last rays of dorsal fin, followed by third and fourth in middle of caudal peduncle, and fifth at origin of caudal-fin rays. In some specimens, including holotype, anterior and posterior margins of bands more intensely pigmented. Ventral region light brown. All fin rays with dark brown spots, interradial membranes hyaline. Base of anal-fin spine with dark brown spot. Dorsal surface of upper lip ligh brown, snout tip greyish.

**Geographical distribution.** *Harttia absaberi* is currently known from three localities in the upper rio Paraná drainage: rio Passa Cinco, a tributary of the rio Piracicaba, rio Tietê drainage, São Paulo State, and two small creeks tributaries of the rio Sucuriú, at Três Lagoas, Mato Grosso do Sul State (Fig. 6).

**Ecological notes.** The ribeirão São Mateus, where the holotype was collected, is a small creek with sand bottom, clear water and about 1.0-2.0 m width and 0.5 m deep, which drains to the rio Sucuriú. The rio Passa Cinco is a relatively large river about 5.0-10.0 m wide and 1.0-2.0 m deep, with fast flowing clear water with sand in the bottom and stretches with rocks.

**Etymology.** The specific name, *absaberi*, is a patronym that honors Aziz Nacib Ab’Saber, whose contributions represent a landmark in the knowledge of geography, ecology and geomorphology of the Brazilian territory.

**Discussion**

Among all nominal valid species of Eastern and Southeastern Brazil, only *Harttia rhombocephala*, *H. longipinna*, and *H. absaberi* share the presence of numerous small osseous plates completely or almost completely covering the abdominal region. In the Guianas region (including...
A new species of Harttia from the upper rio Paraná

Harttia absaberi has a thin series of bony plates on upper lip and excepting H. duriventris, which has very few and small plates on upper lip, all remaining species of Harttia have the upper lip completely naked. Concerning other Harttiini genera, Cteniloricaria and Harttiella have the upper lip naked.

Harttia absaberi shares with other 10 species the presence of the spinelet, whereas the spinelet is absent in the remaining twelve species. Concerning other Hartiini the spinelet is present in Cteniloricaria and absent in Harttiella.

Another structure related to the dorsal fin that exhibits great variation within the Harttiini as a whole and particularly among the species of Harttia is the type of articulation between the proximal portion of the dorsal-fin spine and the second dorsal-fin pterygiophore. In the majority of the species of Harttia, in Cteniloricaria and Harttiella, the dorsal-fin spine articulates with the second dorsal-fin pterygiophore through a condyle. Only Harttia absaberi, H. fowleri, H. duriventris and H. punctata share the articulation of dorsal-fin spine with the second pterygiophore as a specialized chain-link structure (Schaefer, 1987).

Comparative material. Aposturisoma myriodon: Peru, Portillo, Aguaytia River, MZUSP 15328, 159.0 mm SL, holotype of Aposturisoma myriodon Isbrücker, Britski, Nijssen & Ortega, 1983. Cteniloricaria platystoma: French Guiana, fleuve Maroni, RMNH. PISC 120.887, 1, 152.4 mm SL. Suriname, Marowijne drainage, ANSP 187330, 1, 147.3 mm SL, Lawa Rivier, MZUSP 100139, 1,
60.5 mm SL, Marowijne Rivier. 

**Venezuela**, Orinoco basin, 50.5 km SE of Ciudad Bolivar, MZUSP 109251, 3, 83.0-95.5 mm SL. 

**Farlowella amazona**: 

**Brazil**, Pará, Monte Dourado, rio Jari, MZUSP 103309, 1, 200.0 mm SL. 

**Harttia carvalhoi**: 

**Brazil**, Rio de Janeiro State, Resende, rio Pomba, tributary to rio Pirapitinga, MZUSP 44505, 13, 25.8-71.4 mm SL. 

**Harttia depressa**: 

**Brazil**, Amazonas State, rio Uatumã drainage, rio Pitinga, INPA 3120, 2, 92.0-95.0 mm SL. 

**Harttia dissidentis**: 

**Brazil**, Pará State, Pimental, rio Tapajós, INPA 7046, 10, 95.3-133.2 mm SL. 

**Harttia duriventris**: 

**Brazil**, Pará State, rio Tocantins, igarapé Canoal, INPA 2969, 3, 71.2-86.2 mm SL. 

**Harttia fowlerii**: 

**Brazil**, Amapá State, rio Araguari, INPA 7845, 1, 88.9 mm SL c&s. 

**Harttia garavelloi**: 

**Brazil**, Minas Gerais State, rio Fanado, bridge at Minas Novas, MZUSP 43266, 85.7 mm SL, holotype of **Harttia leiopleura**. 


**Harttia guianensis**: 

**Brazil**, São Paulo State, Iporanga, rio Betari, MNRJ 713A, 1, 96.3 mm SL, Lectotype of **Harttia kornei** Miranda Ribeiro, 1908, designated by Miranda Ribeiro (1953: 400). 

**Brazil**, São Paulo State, Miracatu, creek tributary to rio Bananal, MZUSP 36553, 17, 51.0-82.3 mm SL. 

**Harttia leiopleura**: 

**Brazil**, Minas Gerais State, rio das Velhas basin, small stream tributary to córrego Mutuca, MZUSP 43264, 57.6 mm SL, holotype of **Harttia leiopleura**, Oyakawa, 1993. 

**Harttia longipinnia**: 


**Harttia loricariformis**: 

**Brazil**, Minas Gerais State, Santa Bárbara do Tugúrio, rio Tinguá, tributary to rio Pomba, MZUSP 49263, 23, 32.8-156.4 mm SL. 

**Harttia meravari**: 

**Venezuela**, Bolívar State, rio Caura, MZUSP 103072, 1, 78.9 mm SL, paratype of **Harttia meravari** Provenzano, Machado-Allison, Chernoff, Willink & Petry, 2005. 

**Harttia novolimensis**: 

**Brazil**, Minas Gerais State, small stream tributary of córrego Mutuca, MZUSP 43262, 58.0 mm SL, holotype of **Harttia novolimensis** Oyakawa, 1993. 

**Harttia punctata**: 

**Brazil**, Goiás State, rio Paranã, MZUSP 58676, 14, 87.6-138.4 mm SL. 

**Harttia rhombocephala**: 

**Brazil**, Rio de Janeiro State, rio Farias, small creek tributary of Baía da Guanabara, MNRJ 712, 102.4 mm SL, holotype of **Harttia rhombocephala** Miranda Ribeiro, 1939. 

**Harttia surinamensis**: 

**Suriname**, Brokopondo, Suriname River, RMNH.PISC 106521, 1, 138.1 mm SL. 

**Suriname**, Marowijne drainage, Lawa River, ANSP 187328, 4, 69.0-129.7 mm SL. 

**Harttia torrenticola**: 

**Brazil**, Minas Gerais State, Moeda, Água Limpa, creek tributary of rio Parapoeba, at Serra da Moeda, MZUSP 43283, 77.0 mm SL, holotype of **Harttia torrenticola** Oyakawa, 1993. 

**Harttia trombetensis**: 

**Brazil**, Pará State, Oriximiná, rio Trombetas, INPA 3011, 10, 73.8-131.6 mm SL. 

**Harttia uatumensis**: 

**Brazil**, Amazonas State, Presidente Figueiredo, rio Uatumã, INPA 15659, 2, 73.7-74.4 mm SL. 

**Harttiella crassicauda**: 

**Suriname** Mareoni River, Paramaka creek, tributary of Ijskreek, MZUSP 104502, 9 (2 c&s), 27.6-30.8 mm SL. 

**Lamontichthys filamentosus**: 

**Peru**, Iquitos, rio Amazonas, MZUSP 85803, 2, 150.5-159.0 mm SL. 

**Metaloricaria paucidens**: 

**Suriname**, Marowijne drainage, Lawa River, ANSP 187325, 2, 146.0-222.5 mm SL. 

**Pierosturisoma microps**: 

**Peru**, Iquitos, rio Amazonas, MZUSP 85801, 2, 148.3-168.7 mm SL. 

**Brazil**, Amazonas State, rio Solimões, MZUSP 75366, 1, 158.9 mm SL. 

**Sturisoma rostratum**: 

**Brazil**, Mato Grosso State, rio Araguaia, MZUSP 58540, 6, 135.2-212.0 mm SL. 

**Sturisomatichthys leightoni**: 

**Colombia**, Cauca, Magdalena drainage, rio Cauca, CAS 77228, 4, 51.6-103.9 mm SL. 

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A new species of Harttia from the upper rio Paraná


Literature Cited


Fig. 6. Map of upper portion of rio Paraná basin showing currently known distribution of Harttia absaberi (red diamond in the left = type locality).