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A new species of *Hisonotus* (Siluriformes, Loricariidae, Otothyrini) from the República Oriental del Uruguay

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A new species of *Hisonotus* (Siluriformes, Loricariidae, Otothyrini) from the República Oriental del Uruguay. - *Hisonotus charrua* sp. n. is described from the Río de la Plata and río Uruguay basins in the República Oriental del Uruguay. *Hisonotus charrua* sp. n. is distinguished by the following combination of characters: lateral plates 23-25, posterior margin of pectoral spine smooth, 18 to 24 plates bearing laterosensory canals, snout with an anterior odontode free area, and caudal peduncle depth 10.8-12.3% SL.

Keywords: Freshwaters - Siluriformes - loricarids - Hypoptopomatinae - *Hisonotus* - systematics.

INTRODUCTION

The genus *Hisonotus* Eigenmann & Eigenmann, 1889, is diagnosed by the absence of plates anterior to nostrils and the presence of rostral plates with large odontodes (Schaefer, 1998). Six species of *Hisonotus* have been recorded from río Uruguay basin, rio Jacui, Río de la Plata, and Lagoa dos Patos system. In the República Oriental del Uruguay two species of the genus *Hisonotus* have been found so far from the río Uruguay basin: *H. maculipinnis* and *H. ringueleti* (Aquino, 1997 and Aquino *et al.*, 2001 respectively). The aim of this paper is to describe a new species of *Hisonotus* from the lower río Uruguay and Río de la Plata basins in the República Oriental del Uruguay.

MATERIAL AND METHODS

Specimens were cleared and counterstained following Taylor & Van Dyke (1985). Straight line distances were measured to the nearest 0.1 mm using a digital calliper. Counts include 3 cleared and stained (C&S) specimens, holotype, and 15 paratypes. Values of the holotype are indicated by an asterisk. Vertebrae count includes those ones corresponding to the Weberian apparatus and the caudal complex centrum as one element. Institutional abbreviations are as listed in Leviton *et al.* (1985) with the addition of Asociación Ictiológica, La Plata, Argentina (AI); Facultad de Ciencias,

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Universidad de la República, Montevideo, República Oriental del Uruguay (ZVC-P); and Staatliches Museum für Tierkunde, Dresden, Germany (MTD F).

Comparative material examined (SL in mm): *Hisonotus charrua*: AI 171, 3 ex., 21.0-32.2 (C&S), Río de la Plata basin, arroyo Tropa Vieja (34°44.99'S - 55°50.78'W), Departamento Canelones, Uruguay. *Hisonotus maculipinnis* (Regan, 1912): AI 122, 1 ex., 27.5 (C&S), Argentina, Corrientes province, río Paraná, Ita Ibaté. AI 123, 5 ex., 23.4-27.0, Argentina, Corrientes province, río Paraná basin, Esteros del Iberá, Rincón del Diablo, Laguna Yacaré. *Hisonotus nigricauda* (Boulenger, 1891): AI 178, 6 ex., 30.0-38.0, Brazil, Rio Grande do Sul, São Leopoldo, Rio Jacuí basin, rio dos Sinos, 29°45'S - 51°10'W. *Hisonotus* sp. A, AI 120, 1 ex., 23.3, Argentina, Misiones, río Uruguay basin, arroyo Oveja Negra. *Hisonotus* sp. B: MHNG 2408.025, 10 ex., 17.8-29.0, Paraguay, route 2, arroyo Pirayu. *Hisonotus ringueleti* Aquino, Schaefer & Miquelarena, 2001: AI 179, 1 ex., 36.4, República Oriental del Uruguay, Departamento Artigas, río Uruguay basin, arroyo Lenguazo. *Hypoptopoma inexspectata* (Holmberg, 1893): AI 119, 1 ex., 35.0, Argentina, Corrientes province, río Paraná, Puerto Abra. *Otocinclus flexilis* Cope, 1894: AI 117, 2 ex., 36.0-36.5, Argentina, Entre Ríos province, arroyo Ñancay. *Otocinclus vestitus* Cope, 1872: AI 118, 3 ex., 26.0-30.4, Argentina, Corrientes province, río Paraná, Puerto Abra. *Otocinclus vittatus* Regan, 1904: AI 121, 1 ex. C&S, 27.0, Argentina, Corrientes province, río Paraná, Ita Ibaté. AI 127, 1 ex., 26.2, Argentina, Buenos Aires province, Río de la Plata basin, arroyo El Pescado. *Epactionotus yasi* Almirón, Azpelicueta & Casciotta, 2004: MACN-ict 8649, 1 ex. 32.0, Argentina, Misiones province, río Iguazú basin, arroyo Lobo.

RESULTS

Hisonotus charrua sp. n. Figs 1-5, Tables 1-2

Holotype. ZVC-P 5639, 50.7 mm SL, República Oriental del Uruguay, Departamento Tacuarembó, río Uruguay basin, Cañada de Los Peña (31°39.09'S - 56°12.32'W), coll: P. Laurino, T. Litz, E. Perujo, F. Prieto and H. Salvia, 16 March 2003.

Paratypes. República Oriental del Uruguay: AI 186, 1 ex., 40.5 mm SL, Departamento Artigas, río Uruguay basin, arroyo Catalán Grande, (30°50.66'S - 56°14.50'W), coll: P. Laurino *et al.*, 16 August 2002. AI 173, 1 ex., 52.7 mm SL, Departamento Lavalleja, Río de la Plata basin, arroyo Minas Viejas, (34°26,86'S - 55°12,30'W), coll: E. Lartigau *et al.*, 22 March 2003. AI 174, 1 ex., 35.8 mm SL, Departamento San José, Río de la Plata basin, arroyo Cardoso (34°24.84'S - 56°26.82'W), coll: E. Lartigau *et al.*, 23 March 2003. AI 165, 5 ex., 3 males-2 females, 37.4-50.0 mm SL, Departamento Tacuarembó, río Uruguay basin, Cañada de Los Peña (31°39.09'S - 56°12.32'W), collected with the holotype. AI 170, 5 ex., males, 35.0-44.7 mm SL (1 C&S), Departamento Canelones, Río de la Plata basin, arroyo Tropa Vieja (34°44.99'S - 55°50.78'W), coll: W. Barreiro *et al.*, 19 August 2002. AI 175, 1 ex., 37.2 mm SL, Departamento Canelones, Río de la Plata basin, arroyo Tropa Vieja (34°44.99'S - 55°50.78'W), coll: L. Lartigau *et al.*, 23 March 2003. AI 176, 1 ex., 36.6 mm SL, Departamento Salto, río Uruguay basin, Salto Grande dam, arroyo Aspinillar in Constitución, coll: F. Prieto and J. Reichert, 5 - 7. July 2000. MHNG 2650.51, 6 ex., 29.0-35.0 mm SL; MTD-F 28503-28506, 4 ex., 26.0-28.8 mm SL; AI 172, 6 ex., 32.5-37.0 mm SL; ZVC-P 5644, 6 ex., 24.2-32.0 mm SL; Departamento Canelones, Río de la Plata basin, arroyo Tropa Vieja (34°44.99'S - 55°50.78'W), coll: T. Litz and F. Prieto, 22 October 1999. ZVC-P 5617, 1 ex., 46.0 mm SL, Departamento Montevideo, Cañada del Dragón a 1 km de la desembocadura en el arroyo de las Piedras, coll: F. Teixeira de Melo *et al.*, 30 November 2001.

Diagnosis. Hisonotus charrua sp. n. is diagnosed by the following combination of characters: lateral plates 23-25, posterior margin of pectoral spine smooth, 18 to 24

TABLE 1. Morphometric data of the holotype and 15 paratypes of *Hisonotus charrua* sp. n. SD: standard deviation.

	Holotype	Range	Mean	SD
Standard length [mm]	50.7	29.0-50.7		
Percents of SL				
Predorsal distance	44.8	44.3-50.3	46.4	1.60
Head length	32.5	32.5-38.5	36.3	1.56
Cleithral width	22.1	22.1-25.4	23.8	0.95
Dorsal-fin spine length	24.1	22.3-29.2	25.5	1.74
Trunk length	16.2	13.0-20.0	16.6	1.71
Pectoral-fin spine length	25.6	25.5-29.7	27.6	1.45
First pelvic-fin ray length	14.8	14.8-24.0	19.6	3.30
Abdominal length	20.7	17.6-24.6	21.1	1.59
Caudal peduncle length	33.3	30.4-34.7	33.2	1.18
Caudal peduncle depth	12.2	10.8-12.3	11.4	0.46
Head depth	16.8	14.7-17.9	16.6	0.78
Snout length	15.8	15.8-18.6	17.3	0.78
Horizontal eye diameter	4.7	4.7-5.9	5.3	0.33
Interorbital width	13.6	13.2-15.4	14.4	0.64
Percents of HL				
Head depth	51.5	42.1-51.5	45.8	2.50
Snout length	48.5	46.0-50.0	47.6	1.22
Horizontal eye diameter	14.5	12.9-16.2	14.5	0.95
Interorbital width	41.8	36.0-43.0	39.7	2.02
Cleithral width	67.9	61.2-68.5	65.5	2.10

plates bearing laterosensory canals, snout with an anterior odontode free area, and caudal peduncle depth 10.8-12.3% of SL.

Description. Morphometrics of holotype and 15 paratypes are presented in Table 1. Body elongated, head slightly depressed. Greatest body depth at dorsal-fin origin (Fig. 1). Trunk slightly wider than head. Dorsal profile of head from snout tip to orbital level, slightly concave; slightly convex over supraoccipital. Snout tip rounded in dorsal view (Fig. 2). Rostral median plate with notch. Naked area anterior to anterior nares. Eyes placed laterally, suborbital depth slightly longer than horizontal eye diameter; horizontal diameter as large as nare diameter. Iris diverticulum present, about half of pupil diameter. Three infraorbitals surrounding orbit, fourth infraorbital expanded ventrally. Margins and surface of lips covered with papillae. Maxillary barbels short (Fig. 3), half length of eye diameter. Jaw teeth bifid, tooth slender with major cusp expanded, its tip pointed or truncated, and a minor one rounded. Absence of accessory teeth on premaxilla and dentary. One series of teeth, 11-19 (mode 15) on premaxilla and 10-16 (mode 12) on dentary. Pterotic-supracleithrum bearing large openings. The preopercular sensory canals directed toward pterotic-supracleithrum.

Body covered by dermal plates except the ventral region. Abdominal area with few plates in smaller specimens (less than 30 mm SL), partially covered in medium sized specimens (ca. 32 mm SL), and almost completely covered in specimens over 35 mm SL. Lateral and anterior rostral plates slightly reflected ventrally. Five lateral series of plates on trunk. Plates of dorsal series continuous; mid-dorsal series continuous and

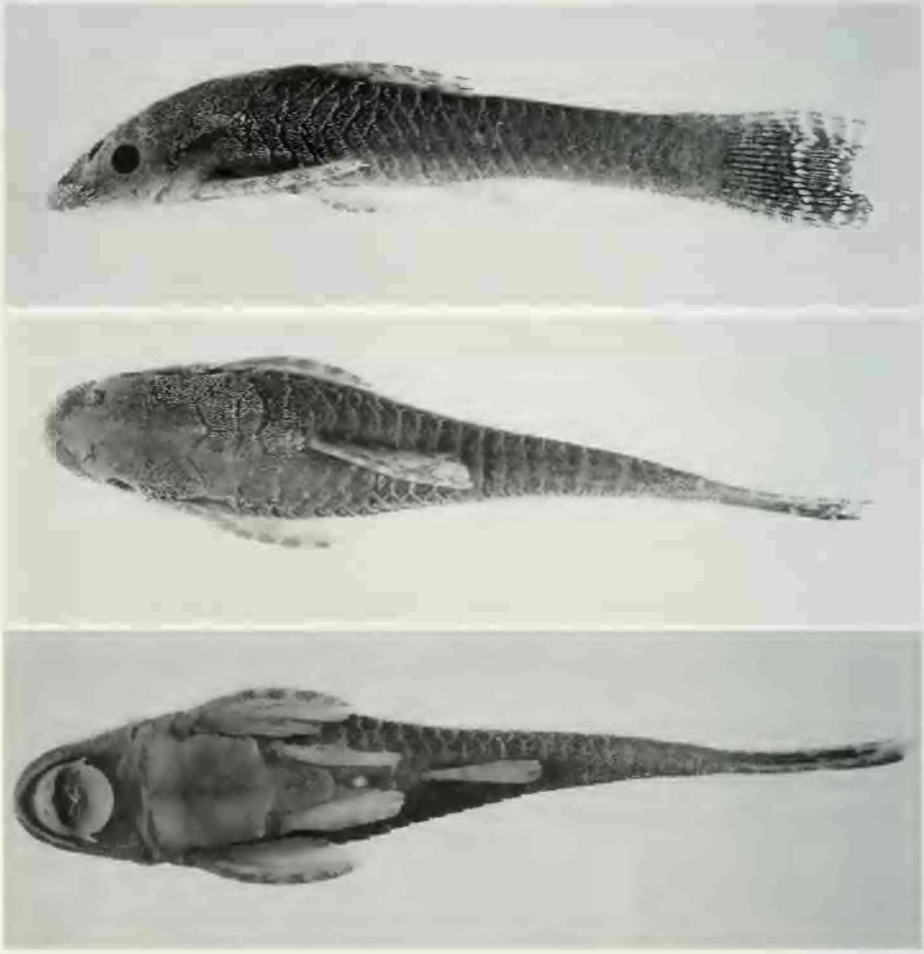

FIG. 1-3

Hisonotus charrua sp. n., holotype, 50.7 mm SL. República Oriental del Uruguay, Departamento Tacuarembó, río Uruguay basin, Cañada de Los Peña. 1, lateral view; 2, dorsal view; 3, ventral view.

incomplete. Median series discontinuous and complete with 23*-25 (mode 24). Mid-ventral series incomplete and continuous; ventral one continuous and complete. Lateral line continuous or discontinuous with one or two gaps, 18*-24 (mode 22), plates bearing lateral-line canals. First two lateral line plates small, the second one placed on rib of sixth vertebra. Anal fin preceded by 3 or 4 pairs of lateral plates. Coracoid and cleithrum exposed ventrally, excluded arrector fossae area. Two or three pairs of predorsal plates.

Odontodes covering head, trunk, and fin rays. Head and trunk odontodes uniformely distributed. Odontodes usually small on body and pelvic spines, large ones on pectoral spine. Tuft of odontodes at posterior supraoccipital tip. Large odontodes along

anterior margin of snout biserially arranged, dorsad and ventrad series separated by a naked area.

Dorsal-fin with one spine and 7 branched rays, its origin posterior to vertical through pelvic-fin origin. Dorsal fin moved posteriorly behind seventh vertebra. First dorsal-fin proximal radial articulated with eighth vertebra. Adipose fin absent. Anal fin with one unbranched and 5 branched rays, its origin posterior to vertical through last dorsal-fin ray insertion. Pectoral fin with one spine without serrae and 6 branched rays, reaching half of pelvic-fin length in males or surpassing that point in females. Pectoral-fin axillary slit present. Pelvic fin with one unbranched and 5 branched rays, surpassing anal-fin origin in males. Presence of fleshy flap on pelvic fin in males. Caudal fin with fourteen branched rays. Total vertebral number 29 (1 ex.). Neural spine of seventh vertebra in contact with nuchal plate.

Color in alcohol: Ground color of dorsolateral body surface brownish, ventral surface of head and trunk pale brown. Narrow light stripe from snout tip to eye. Dorsum of body and upper third of flanks light, this area extending from supraoccipital margin to caudal fin. Pectoral, pelvic, dorsal, and anal fins pale brown with dots forming series of darker bands. Caudal fin dark brown with light scattered dots, and two light vertical bars; first one at about middle fin, second one narrower, placed near distal margin and sometimes less evident. Caudal fin with light area on tip of three or four uppermost rays.

Sexual dimorphism. Pelvic-fin unbranched ray of males longer than that of females (21.4-24.0 vs. 14.8-18.4% SL; 9 females and 7 males). Distal tip of pelvic fins surpassing anal-fin origin in males. Males with flap on first ray of pelvic fin. Genital papilla of males longer, slender and more acute than that of females. Preanal region without median plates in males.

Etymology. the specific epithet *charrúa* is the name of the aborigines that lived in the Uruguayan coast of the Río de la Plata; a noun in apposition.

Distribution. *Hisonotus charrua* sp. n. is known from streams of the Río de la Plata basin, and the lower Uruguay basin in República Oriental del Uruguay (Fig. 4).

Habitat. Cañada de Los Peña, the type locality (Fig. 5), is a small, shallow creek with rocks, loose stones, and gravel bottom with clear rapid-flowing water. A waterfall of about 2 m high separating upper and lower parts of the creek. Grass and other vegetation were present in the margins and also dense fields of *Echinodorus uruguayensis* grew on some areas. In some moments with very low water level, plants densely covered the different areas of the stream. All the other localities have similar habitat conditions. Some environmental variables of four of the five localities are presented in Table 2. Some comments on arroyo Tropa Vieja and the Río Santa Lucía system were published by Lartigau *et al.* (2002) and Prieto *et al.* (2004) respectively.

DISCUSSION

Following Schaefer (1998), the genus *Hisonotus* has been diagnosed by the absence of plates anterior to the nostrils and the presence of robust rostral plates with enlarged odontodes. The genus *Hisonotus* includes 14 species (Aquino *et al.*, 2001 and Britski & Garavello, 2003). Some species were described from the upper río Paraná

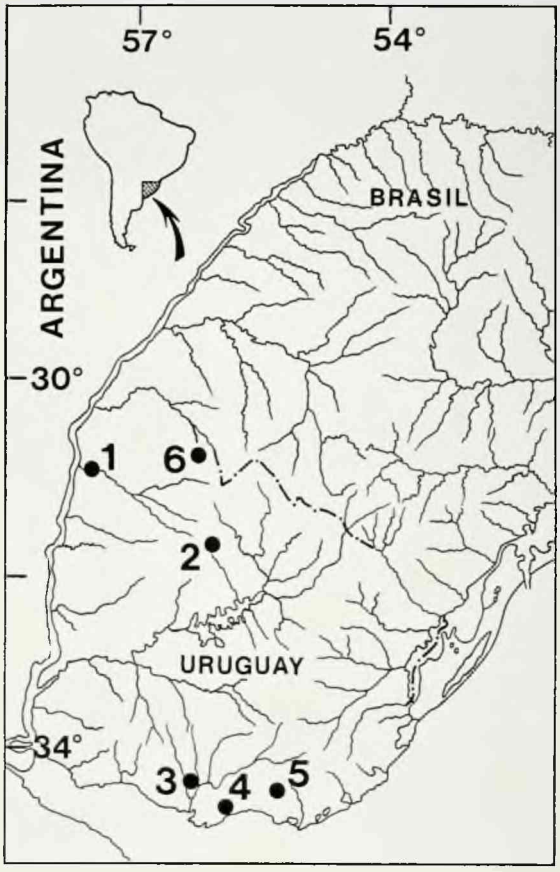

FIG. 4
Geographical distribution of *Hisonotus charrua* sp. n. 1, arroyo Aspinillar; 2, Cañada de los Peña (type locality); 3, arroyo Cardoso; 4, arroyo Tropa Vieja and Cañada del Dragón; 5, arroyo Minas Viejas; and 6, arroyo Catalán Grande.

TABLE 2. Values of environmental variables of the habitat at five localities inhabited by *Hisonotus charrua* sp. n.

	Air temperature(°C)	Water temperature (°C)	pH	Conductivity $\mu S.cm^{-1}$
Cañada de los Peña	16-28	16-25	7.1	170-210
Arroyo Minas Viejas	19.5	16	7.7	340
Arroyo Cardoso	23	22	7.9	480
Arroyo Tropa Vieja	13-21	13.5-22	6.5-6.8	200-220
Arroyo Catalán Grande	18-20	11.5-17	7.2	160-200

basin: *H. insperatus* Britski & Garavello, 2003, *H. depressicauda* (Miranda Ribeiro, 1918), *H. depressinotus* (Miranda Ribeiro, 1918), *H. paulinus* (Regan, 1908), and *H. francirochai* (Ihering, 1928). Some of the species of *Hisonotus* come from Minas

FIG. 5
Cañada de los Peña, type locality of *Hisonotus charrua*.

Gerais, Rio de Janeiro and São Paulo: *H. notatus* Eigenmann & Eigenmann, 1889, was described from Santa Cruz and Juiz de Fora, and *H. leucofrenatus* (Miranda Ribeiro, 1908), was described from Rio Riveira de Iguape Basin and other ones were described from Lagoa dos Patos system: *H. taimensis* (Buckup, 1981), *H. laevior* Cope, 1894, and *H. leptochilus* Cope, 1894. *Hisonotus nigricauda* was described from Rio Grande

do Sul. *Hisonotus maculipinnis* was recorded from "La Plata" without precise locality, *H. ringueleti* from río Uruguay basin, and there is one still undescribed species from the río Paraguay basin (*Hisonotus* sp. B).

Among the species of *Hisonotus* distributed in the Río de la Plata basin, and Lagoa dos Patos system, *H. charrua* sp. n. differs from *H. taimensis*, *H. leptochilus*, and *H. laevior* by the lower number of lateral plates (23-25 vs. 26-31 in *H. taimensis* and 28 plates in *H. leptochilus* and *H. laevior*). *Hisonotus charrua* sp. n. is different from *H. nigricauda, H. maculipinnis*, and *Hisonotus* sp. B in having an odontode free area in the anterior margin of the snout. Also, *H. charrua* sp. n. has deeper body than that of *H. maculipinnis* (17.2-19.7 vs. 16.2-17.9 % SL). *Hisonotus charrua* shares with *H. ringueleti* the odontode free area in the anterior margin of the snout but differs in having the posterior margin of the pectoral spine smooth vs. serrated, lower peduncle depth (10.8-12.3 vs. 13-15% SL), and the stripped caudal fin vs. spotted one.

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