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A new species of *Rineloricaria* (Siluriformes: Loricariidae) from the Paraná and Uruguay River basins, Misiones, Argentina

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Abstract

Rineloricaria misionera is a new species from the Paraná and Uruguay River basins, Misiones, Argentina. The new species is distinguished from all others in the genus by the following combination of characters: anterior abdomen covered by plates, except for the area corresponding to the pectoral girdle, which usually lacks plates, when present in this region, plates are relatively small and few; posterior abdomen with a well-developed preanal plate, bordered anteriorly by a series of 3–5 usually polygonal plates; premaxillary and dentary teeth with asymmetric cusps; uppermost caudal ray not prolonged in a filament; and snout tip with an oval naked area not reaching the last pore of the infraorbital sensory canal.

Key words: Ostariophysi, Loricariidae, *Rineloricaria*, taxonomy, biodiversity, northeastern Argentina

Resumen

Rineloricaria misionera es una especie nueva de las cuencas de los ríos Paraná y Uruguay en Misiones, Argentina. La nueva especie se distingue de todas las otras del género por la siguiente combinación de caracteres: abdomen anteriormente cubierto por placas, excepto en la región correspondiente a la cintura pectoral, que generalmente se encuentra desprovista de ellas, cuando están presentes en esta región, las placas son relativamente pequeñas y escasas; región posterior del abdomen con una placa preanal bien desarrollada bordeada anteriormente por una serie de 3–5 placas usualmente poligonales; dientes premaxilares y del dentario con cúspides asimétricas; radio caudal superior no prolongado en filamento y extremo del hocico con un área desnuda ovalada, que no llega al último poro del canal sensorial infraorbital.

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Introduction

The genus *Rineloricaria* Bleeker, 1862, is probably the most speciose and that for which taxonomy is least resolved among the Loricariinae (Reis & Cardoso, 2001). A comprehensive evaluation of this morphologically diverse and widely distributed group is needed to delimit the recognizable species and more accurately circumscribe their geographic distributions.

In general, *Rineloricaria* species are small and exhibit sexual dimorphism in the form of hypertrophied development of odontodes on the sides of the head and on pectoral fins of males. The wide distributional range, extending from Costa Rica (Ferraris, 2003) to the Río de La Plata in Argentina, coupled with an adaptive capacity enabling many species to exploit the most varied habitats, explain the successful history of *Rineloricaria*. Some species, such as *R. strigilata* (Hensel, 1868), have been caught in highly polluted waterbodies and represent some of the main components of the ichthyological diversity in such habitats (Flores-Lopes *et al.*, 2001).

Isbrücker (2001) relocated several species of *Rineloricaria* to the genus *Hemiloricaria* Bleeker, 1862, based on a few external morphological and sexually dimorphic characters. Ferraris (2003) recognized only *Rineloricaria* as valid comprising more than 45 nominal species.

Eight species of *Rineloricaria* have been reported to occur in Argentina: *R. lima* (Kner, 1854), *R. catamarcensis* (Berg, 1895), *R. microlepidogaster* (Regan, 1904), *R. felipponei* (Fowler, 1943), *R. thrissoceps* (Fowler, 1943), *R. pareiacantha* (Fowler, 1943), *R. parva* (Boulenger, 1895), and *R. lanceolata* (Günther, 1868). The last two species were recognized by López *et al.* (2003) within the genus *Hemiloricaria.* The goal of this study is to diagnose and describe a new species of *Rineloricaria* from the Paraná and Uruguay River basins in Misiones Province, Argentina.

Material and methods

Morphometric variables follow Isbrücker & Nijssen (1978) and were measured with digital calipers (0.01 mm precision). Counts of thoracic plates, fused plates, and measurement of cleithral width were made according to Reis & Pereira (2000); eye diameter was measured according to Isbrücker (1973). Abdominal plate terminology, including the definition of anterior and posterior complexes, follow Reis & Cardoso (2001); according to these authors, the anterior complex of plates comprises two to several longitudinal series of platelets that usually cover the entire abdomen between the thoracic plates, from the pectoral bridge to the posterior complex; the latter includes a well-developed preanal plate, usually bordered anteriorly by three or more polygonal plates. Lateral plates counts follow Schaefer (1997). Osteological observations were made on specimens cleared and stained following procedures in Taylor & Van Dyke (1985).

The terminology for Paraná river sectors follows Neiff (l990). The term "Lower Uruguay" refers to Uruguay river downstream from Moconá Falls (Yucumá, Brazil) (P. Petry *pers. comm.*).

Examined specimens are deposited at the following institutions: Instituto de Limnología "Dr. Raúl A. Ringuelet", Buenos Aires (ILPLA); Museo de La Plata, La Plata (MLP); Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires (MACN-Ict); Museo de Ciencias Naturales "Florentino Ameghino", Santa Fe (MFA-ZV-I); Museu Nacional, Rio de Janeiro (MNRJ); Museu de Zoologia da Universidade de São Paulo, São Paulo (MZUSP); Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre (MCP); Universidade Nacional de Tocantins, Palmas (UNT); Academy of Natural Sciences, Philadelphia (ANSP); Museum of Comparative Zoology, Cambridge (MCZ); Natural History Museum, London (BMNH); and Museum für Naturkunde der Humboldt–Universität, Berlin (ZMB).

Comparative material

Rineloricaria cadeae: ZMB 7430, holotype, 111.0 mm SL, Picada Café, Rio Grande do Sul, Brazil; MFA-ZV-I 831, (1) 72.8 mm SL, arroio Passo dos Carros, Rio Grande do Sul, Brazil, September 1982, R. Reis; MCP 20003, (3) 108.8–110.0 mm SL, arroio Feitoria , rio Jacui, Rio Grande do Sul, Brazil. *Rineloricaria catamarcensis*: MLP 2601, (14) 74.0–110.0 mm SL, río Tercero, Córdoba, Argentina, E. MacDonagh; MLP 3752, (3) 84.0–97.0 mm SL, Los Manantiales, Tucumán, Argentina, Umana; MLP 6050, (3) 82.0–110.0 mm SL, Bialet Nassé, Córdoba, Argentina, A. Peña & C. Tremoulles; ILPLA 1421, (7) 63.4–90.7 mm SL, La Candelaria, Salta, Argentina, March 1997, A. Miquelarena *et al.*; MACN-Ict 3585, Syntype, (1) 91.1 mm SL, arroyo del Tala, Catamarca, Argentina, E. Boman; MACN-Ict 4823, (3) 40.7–75.1 mm SL, San Francisco Molinari, Córdoba, Argentina, November 1961, Siccardi. *Rineloricaria felipponei*: ANSP 70324, holotype, 97.9 mm SL, río Santa Lucía, Canelones Department, Uruguay, March 1934, F. Fellippone. *Rineloricaria hoehnei*: MNRJ 650, holotype, 46.8 mm SL, rio Paraguai, Coxim, Mato Grosso, Brazil. *Rineloricaria lanceolata*: BMNH 1867.6.13.79, holotype, 83.0 mm SL, Xeberos, Upper Amazonas, Perú, Bartlett; ILPLA 1584, (3) 61.5–82.3 mm SL, tributaries of río Coronda, La Capital Department, Santa Fe, Argentina, August 2001, R. Pereira; MACN-Ict 7547, (42) 39.7–82.4 mm SL, río Paraná, Corsa Cué, Corrientes, Argentina, July 1977, J. Fernández Santos; MACN-Ict 6884, (1) 74.4 mm SL, arroyo Santa María, San Javier, Bolivia, November 1975, J. Cranwell; MACN-Ict 6895, (2) 72.4–75.6 mm SL, río Quizer, Santa Cruz, Bolivia, November 1975, J. Cranwell; MCP 28850, (1) 57.0 mm SL, stream on the BR 364 road, tributary of rio Acre, Brazil, August 2001, L. Malabarba *et al*; MCP 28859, (1) 92.3 mm SL, Sena Madureira, Brazil, September 2001, L. Malabarba *et al.*; MCP 28860, (1) 86.2 mm SL, riacho Quinoá, tributary of rio Acre, Brazil, August 2001, L. Malabarba *et al.*; MCP 28862, (1) 77.3 mm SL, Bujarí, Marizinho stream, tributary of rio Atimarí, Brazil, August 2001, L. Malabarba *et al.*; UNT 2950 /2952, (1) 87.7 mm SL; (2) 87.8–88.0 mm SL, riacho dos Potes, Porto Nacional, Tocantins, Brazil, Sep-

tember 2000, Núcleo de Estudos Ambientais. *Rineloricaria latirostris*: BMNH 1899.12.18.6–9, lectotypes, (2) 182.7–233.0 mm SL, paralectotypes, (2) 146.9–222.0 mm SL, rio Mogi–Guaçu, about 25 miles inland from Santos, Brazil. *Rineloricaria longicauda*: MZUSP 15488, paratype, (1) 65.8 mm SL, arroio Sarandi, Pelotas/Jaguarão road, Arroio Grande, Rio Grande do Sul, Brazil; MCP 28082, (5) 116.6–138.8 mm SL, rio dos Sinos, Santa Cristina, Rio Grande do Sul, Brazil, July 2001, V. Bertaco & J. Pezzi. *Rineloricaria microlepidogaster*: BMNH 1884.2.5.41, holotype, 85.2 mm SL, Rio Grande do Sul, Brazil; MCP 25055, (59) 43.3–138.1 mm SL, arroio Santa Fé beside the road from Pinheiro Machado to Piratini, rio Piratini, tributary of rio São Gonçalo, Rio Grande do Sul, Brazil, November 1999, C. Lucena *et al.*; MCP 25741, (4) 37.2–49.7 mm SL, rio Jacui, Rio Grande do Sul, Brazil, April 2000, R. Reis *et al.*; MLP 3193, (5) 37.4–66.1 mm SL, Salto Grande, Entre Ríos, Argentina, E. MacDonagh. *Rineloricaria pareiacantha*: ANSP 67815, holotype, 83.7 mm SL, río Santa Lucía, Canelones Department, Uruguay, March 1934, F. Fellippone. *Rineloricaria parva*: BMNH 1895.5.17.91, lectotype, (1) 87.4 mm SL, Descalvados, Mato Grosso, Brazil (photographs); BMNH 1895.5.17.92–96, paralectotypes, (6) 50.7–99.3 mm SL, same as the lectotype (photographs); MFA-ZV-I 615, (64) 35.4–107.1 mm SL, riacho Santa Fe, La Capital Department, Santa Fe, Argentina, May 1960; MLP 5267, (5) 77.2–113.5 mm SL, Goya, Corrientes, Argentina; MLP 5323, (2) 114.7–121.7 mm SL, río Paraná Miní, Reconquista, Santa Fe, Argentina, Exp. Museo; MLP 8046, (1) 97.7 mm SL, road to La Balsa, Antaquena, Resistencia, Chaco, Argentina, M Galván; MLP 8788, (2) 65.3–83.5 mm SL, riacho Timbó Porá, Formosa, Argentina, R. Menni *et al.*; ILPLA 627, (7) 29.9–66.7 mm SL, laguna Curiyú/Panza de Cabra, Parque Nacional, Chaco, Argentina, July 1996, A. Miquelarena *et al.*; ILPLA 881, (2) 71.1–97.7 mm SL, río Yaguarón, tributary of río Paraná, Balneario Municipal, San Nicolás, Buenos Aires, Argentina, March 1994, M. Wagner *et al.*; ILPLA 1352, (3) 48.6–93.3 mm SL, río Santa Lucía, Corrientes, Argentina, 1983; MACN-Ict 464, (1) 49.7 mm SL, río Uruguay, Concordia, Entre Ríos, Argentina, June–July 1927, A. Pozzi *et al.*; MACN-Ict 4294, (5) 46.3–93.4 mm SL, riacho de Oro, Formosa, Argentina, 1942, Nanni; MACN-Ict 7006, (2) 85.3–96.8 mm SL, arroyo El Cigüeño, Helvecia, Santa Fe, Argentina, Dec 1974, H. Castello; MACN-Ict 7009, (4) 62.0–75.5 mm SL, shallow lake near Corsa Cué, Corrientes, Argentina, November 1975, R. Taberner; MACN-Ict 7011, (2) 91.4–91.7 mm SL, río Guayquiraró, Entre Ríos, Argentina, August 1974, H. Castello; MACN-Ict 8041, (4) 86.0–97.3 mm SL, río San Javier, Santa Fe, Argentina, 1975. *Rineloricaria phoxocephala*: MCZ 8030, lectotype, (1) 144.5 mm SL, Coary, Brazil (photographs). *Rineloricaria quadrensis*: MZUSP 14218, paratype, (1) 142.0 mm SL, Lagoa dos Quadros, Osório, Rio Grande do Sul, Brazil; MCP 21195, paratypes, (3) 113.9–126.8 mm SL, rio Tramandaí, Rio Grande do Sul, Brazil, September 1998, J. Pezzi & Gelain. *Rineloricaria strigilata*: ZMB 7429, holotype, 109.8 mm SL, Santa Cruz, Rio Grande do Sul, Brazil. *Rineloricaria thrissoceps*: ANSP 67796, holotype, 96.3 mm SL, río Santa Lucía, Canelones Department, Uruguay, March 1934, F. Fellippone.

Rineloricaria misionera **new species**
Fig. 1

Loricaria (Rineloricaria) phoxocephala: Ringuelet *et al.*, 1967 (in part): 411 (3 specimens from Pindapoy, Misiones; 69.0–72.0 mm SL)

Holotype. ILPLA 1698, 97.4 mm SL, female, arroyo Cuña–Pirú (27º08'S 54º54'W) Cainguás Department, Misiones Province, Argentina, September 2000, A. Miquelarena *et al.*

FIGURE 1. *Rineloricaria misionera* sp. n., ILPLA 1698. Holotype, female, 97.4 mm SL.

Paratypes. ARGENTINA: ILPLA 1064, (1) 51.1 mm SL, May 1997, R. Filiberto & N. Perelmuter; ILPLA 1065 (2 cleared and stained) 89.6–90.2 mm SL, July 1998, R. Filiberto *et al.*; ILPLA 1190, (7) 36.9–92.1 mm SL, September 2000, A. Miquelarena *et al*; ILPLA 1210, (1) 59.6 mm SL, September 1997, F. de Durana & H. Oñatibia; ILPLA

1684, (1) 79.9 mm SL, March 2000, R. Filiberto *et al*., same locality as holotype; ILPLA 1189, (2) 35.2–55.1 mm SL, March 2000, H. Povedano; ILPLA 1191, (6) 43.6–84.8 mm SL, arroyo Tateto (27º10'S 54º57'W) Cainguás Department, Misiones Province, September 2000, A. Miquelarena *et al*.; ILPLA 1336, (1) 86.7 mm SL, San Pedro (26º39'S 54º08'W) San Pedro Department, Misiones Province, November 1972, A. Acosta; ILPLA 1546, (2) 57.8–59.2 mm SL, Salto Horacio and arroyo Pepirí Miní at the end of Provincial Road 21 (27ºS 54ºW) San Pedro Department, Misiones Province, January 2001, R. Filiberto *et al*.; ILPLA 1551, (1) 70.0 mm SL, arroyo Santa Ana, on National Road 12 (27º23'S 55º36'W) Santa Ana Department, Misiones Province, January 2001, R. Filiberto *et al.*; ILPLA 1681, (2) 52.5–85.8 mm SL and MCP 35793, (3) 66.6–84.3mm SL, arroyo Liso (27º06'S 54º59'W), Cuña-Pirú valley, Cainguás Department, Misiones Province, March 2000, H. Povedano; MLP 3368, (1) 72.0 mm SL and MLP 3370, (2) 69.0–70.0 mm SL, Pindapoy (27º45'S 55º48'W) Apóstoles Department, Misiones Province.

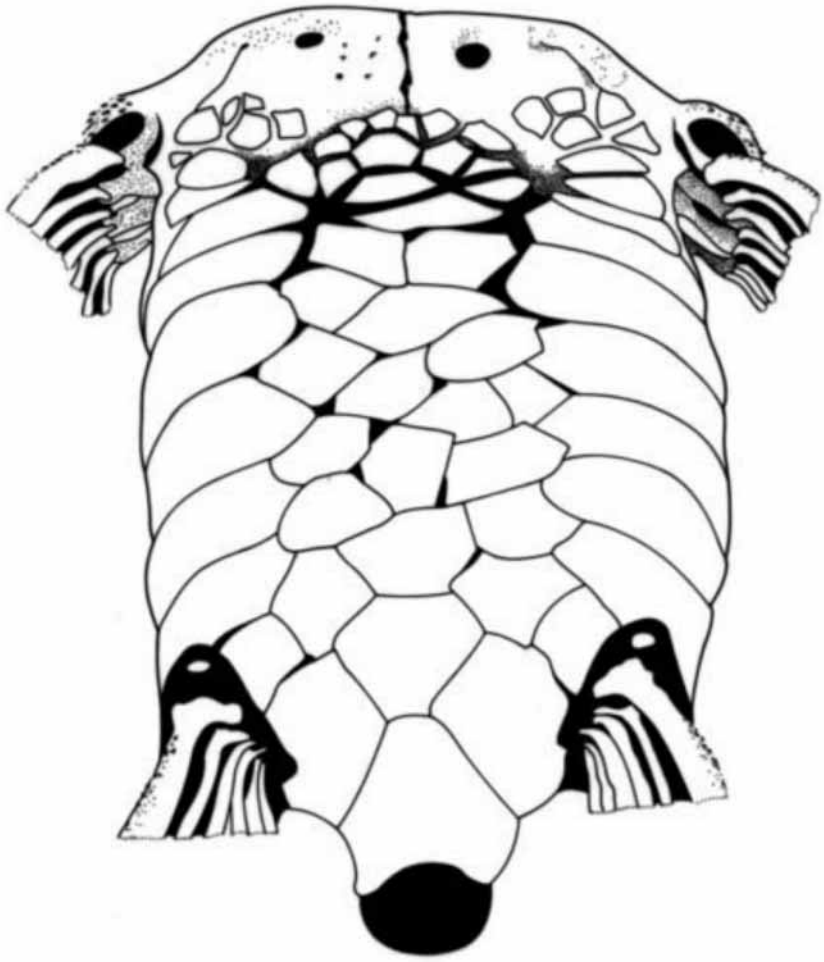

FIGURE 2. *Rineloricaria misionera* sp. n. ILPLA 1065. Paratype, female, 90.2 mm SL. Detail of the anterior abdominal plate complex.

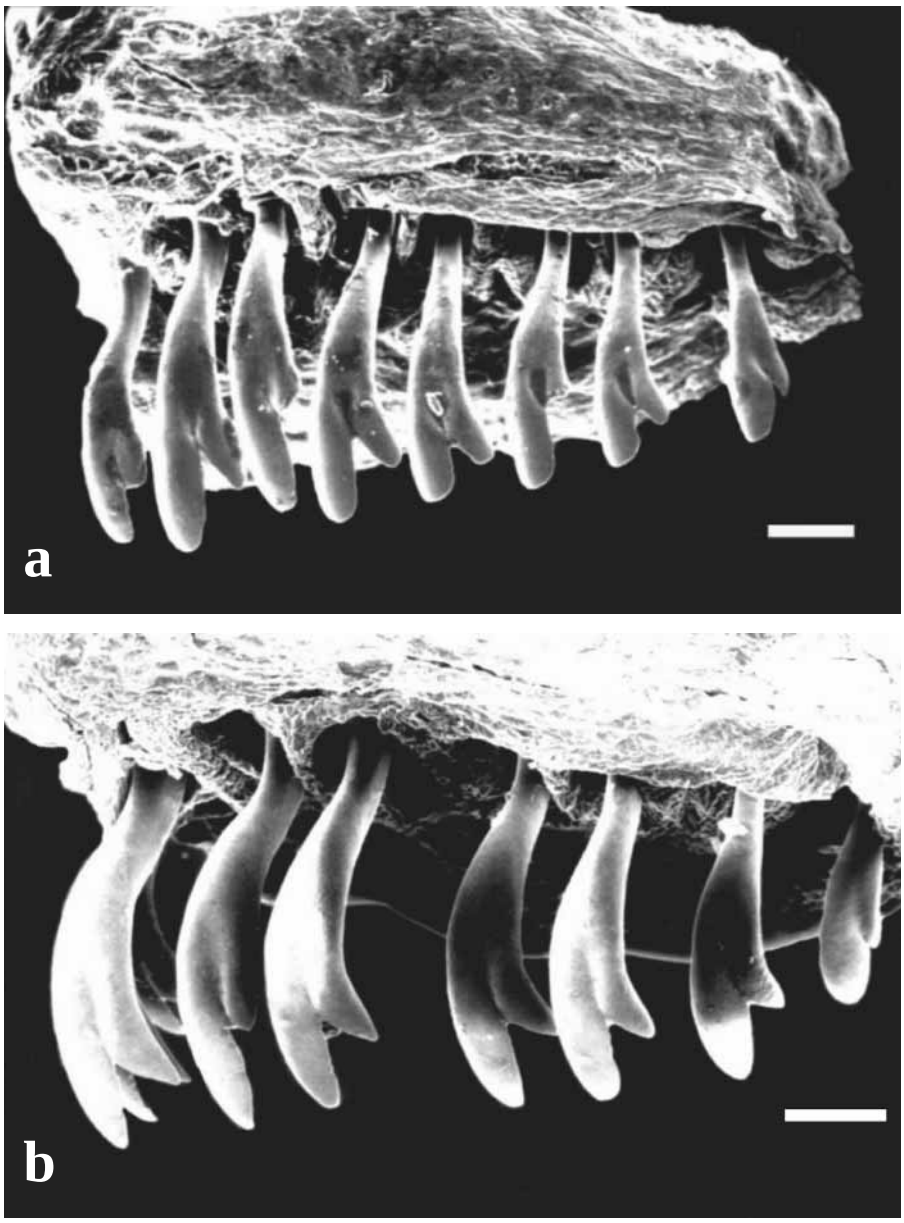

FIGURE 3. Microphotography of premaxillary teeth of *Rineloricaria misionera* sp. n. a) male, ILPLA 1191, paratype, 84.3 mm SL. b) female, ILPLA 1681, paratype, 85.8 mm SL. Scale 150 µm.

Diagnosis: The new species differs from all other *Rineloricaria* species by its unique pattern of abdominal plates: anterior abdominal region covered by plates, except for the pectoral girdle, which generally lacks plates. When present in this region, the plates are relatively small, few, well-defined and grouped as shown in Figure 2. The posterior plates of this complex are arranged in one or two regular series. The posterior abdominal com-

plex comprises a well-developed preanal plate, bordered anteriorly by a series of 3–5 usually polygonal plates. In addition, the following combination of characters permits the differentiation of this species: premaxillary and dentary teeth with unequal-sized cusps (Fig. 3 a; b); upper caudal ray barely longer than the lower ray (not prolonged as a filament), and snout tip with an oval naked area not reaching the last pore of the infraorbital sensory canal.

Among the species that partially lack abdominal plates, *R. latirostris* (Boulenger, 1900) is most similar to *R. misionera*. However, this species differs from *R. misionera* in the following characters: wider caudal peduncle (4.0–4.5 vs. 2.9–3.9 % SL); smaller orbital diameter (17.0–19.5 vs. 19.6–26.2 % HL); and margin of caudal fin truncated vs. concave.

Description: Morphometrics in Table 1. Head and body strongly depressed. Trunk and caudal peduncle ventrally flattened and becoming more compressed caudally. Dorsal profile of body straight or slightly concave at snout level; convex at eye level, straight or somewhat convex to dorsal fin, straight from dorsal fin to penultimate plate of caudal peduncle. Upper edge of orbit slightly raised. Well-developed triangular postorbital notch.

Outline of head triangular in dorsal view, with straight or convex sides. Odontodes small, densely arranged in lines covering head, trunk, and fin rays. Tip of snout with oval area of naked skin. In all examined individuals (n= 30), area between naked area on snout tip and upper lip with odontodes, except for three juvenile specimens. Naked skin area not reaching anterior pore of infraorbital branch of sensory canal. Lower lip bearing very short digitiform papillae on its outer edge shallow median notch present. Maxillary barbel shorter than eye diameter. Rostral border poorly developed. Premaxilla with 4–10 (mean= 6.7, n=32) bilobed teeth in functional series. Dentary with 4–9 (mean= 6.3, n=32) bilobed teeth in functional series. All teeth with uneven cusps. Five to 10 (mean= 7.5) thoracic plates between origin of pectoral and pelvic fins (except in one individual with four plates on right side and another with eleven plates on left side). Posterior abdominal plate complex formed by one preanal plate anteriorly, surrounded by 3 to 5 plates, usually polygonal, although sometimes irregularly shaped. Anterior abdominal region with plates, except on pectoral girdle skeleton. When present on pectoral girdle, these plates are relatively small, few, and well-defined. Lateral plates ranging from 26 to 29 (mean= 27.5) with well-developed keels formed by hypertrophied odontodes, coalesced in last 8 to 13 (mean= 11.1) plates. Supraoccipital and predorsal plates with low ridges.

Posterior margin of dorsal fin straight or slightly convex, with first unbranched ray and/or second or third branched rays longest. Tip of dorsal fin, when depressed, reaches third or fourth plate posterior to fin insertion. Posterior margin of pectoral fin straight or slightly convex longer first ray reaching to or slightly beyond level of pelvic fin origin. Posterior margin of pelvic fin rounded; third and fourth rays longest, reaching to or falling short of anal fin origin. Posterior margin of anal fin rounded, with longer second and/or third fin rays. Tip of anal fin, when depressed, reaches fifth plate posterior to fin insertion;

three ventral plates along its base. Posterior margin of caudal fin concave; upper unbranched ray slightly longer than lower, not extended as filament.

TABLE 1: Morphometric characters for holotype and paratypes of *Rineloricaria misionera*. SD: standard deviation.

	Holotype	N	Low	High	Mean	SD
Standard length (mm)	97.4	33	35.9	97.4	65.5	18.52
Percents of standard length						
Predorsal length	36.2	33	31.9	36.2	33.7	1.15
Postanal length	44.1	33	44.1	53.1	49.2	1.88
Dorsal spine length	18.9	33	18.0	21.9	19.8	1.00
Anal spine length	17.8	33	12.1	18.5	16.3	1.31
Pectoral spine length	18.7	33	13.4	18.8	16.9	1.13
Pelvic spine length	15.3	33	12.6	17.5	14.8	1.12
Upper caudal spine length	17.8	31	12.2	17.8	15.1	1.48
Lower caudal spine length	15.6	31	11.3	16.0	13.3	1.08
Head length	23.9	33	21.3	25.7	23.0	1.05
Thoracic length	17.9	33	12.5	17.9	14.8	1.30
Abdominal length	19.2	33	14.4	19.2	16.8	1.20
Cleitral width	21.4	33	15.7	21.4	18.1	1.27
Body depth	11.7	33	8.7	13.7	10.2	1.23
Caudal peduncle depth	2.2	33	1.4	2.2	1.7	0.16
Caudal peduncle width	3.8	33	2.9	3.9	3.4	0.24
Percents of head length						
Snout length	48.4	33	44.3	53.6	47.8	2.07
Head depth	47.6	33	34.0	56.5	42.0	4.78
Interorbital width	25.6	33	19.9	30.1	26.0	2.00
Eye diameter	13.1	33	11.4	17.9	14.3	1.37
Maximum orbital diameter	24.4	33	19.6	26.2	23.4	1.74
Rostral border length	8.4	32	3.6	8.4	6.3	1.29

Color in alcohol: Background color of dorsal surface of head and body tan with six transverse black bands; first or anteriormost crossing supraoccipital process, second at dorsal fin base, and third through fifth variable in position between dorsal and caudal fins. Ventral surface light brown or yellowish. Sides of head frequently with dots or vermiculate black spots. Pectoral, pelvic, dorsal, and anal fins with round black spots arranged in rows. Caudal fin with conspicuous dark spot on its base and numerous dots near distal margin forming a black stripe. Ventral snout, upper lip, and barbels with black pigmentation.

Sexual dimorphism: Males have hypertrophied odontodes on the sides of head, especially on the opercular area, and on the dorsal surface of branched pectoral-fin rays. Pectoral spine (or leading unbranched pectoral ray) is hypertrophied and the anterodorsal odontodes are markedly enlarged. Cusps of premaxillary teeth have smoothly rounded edges in males, whereas females have sharper, less rounded cusps (Fig. 3 a b, respectively).

Habitat: Small streams having swift current over rocky and sandy bottoms (Fig. 4). Individuals seek shelter between rocks, gravel, and crevices during the day, and are active mainly during the night.

FIGURE 4. Type locality of *Rineloricaria misionera* sp. n., arroyo Cuña-Pirú, Misiones Province, Argentina.

Etymology: The specific name, *misionera*, refers to Misiones, the Argentinian Province containing the type-locality.

Distribution: Paraná and Uruguay River basins in Misiones Province, Argentina (Fig. 5).

Discussion

The partial or total absence of plates on the abdomen has only been described for three species of *Rineloricaria*: *R. latirostris*, from a tributary of the upper Paraná River in Brazil, *R. aequalicuspis* Reis & Cardoso, 2001, and *R. maquinensis* Reis & Cardoso, 2001, the last two species described from southeastern Brazil. Among these species, *R. misionera* appears more closely related to *R. latirostris* based on similarities in the anterior abdomi-

nal plate complex. However, the new species differs from *R. latirostris* in several characters: narrower caudal peduncle (2.9–3.9 vs. 4.0–4.5 % SL); greater orbital diameter (19.6–26.2 vs. 17.0–19.5 % HL), greater number of plates in the anterior abdominal complex (20–45 vs. 13–23), and posterior margin of the caudal fin (concave vs. truncate). In addition, odontode development surrounding the area of naked skin on the snout of *R. misionera* is less pronounced than the broad, caramel-colored odontodes in *R. latirostris*.

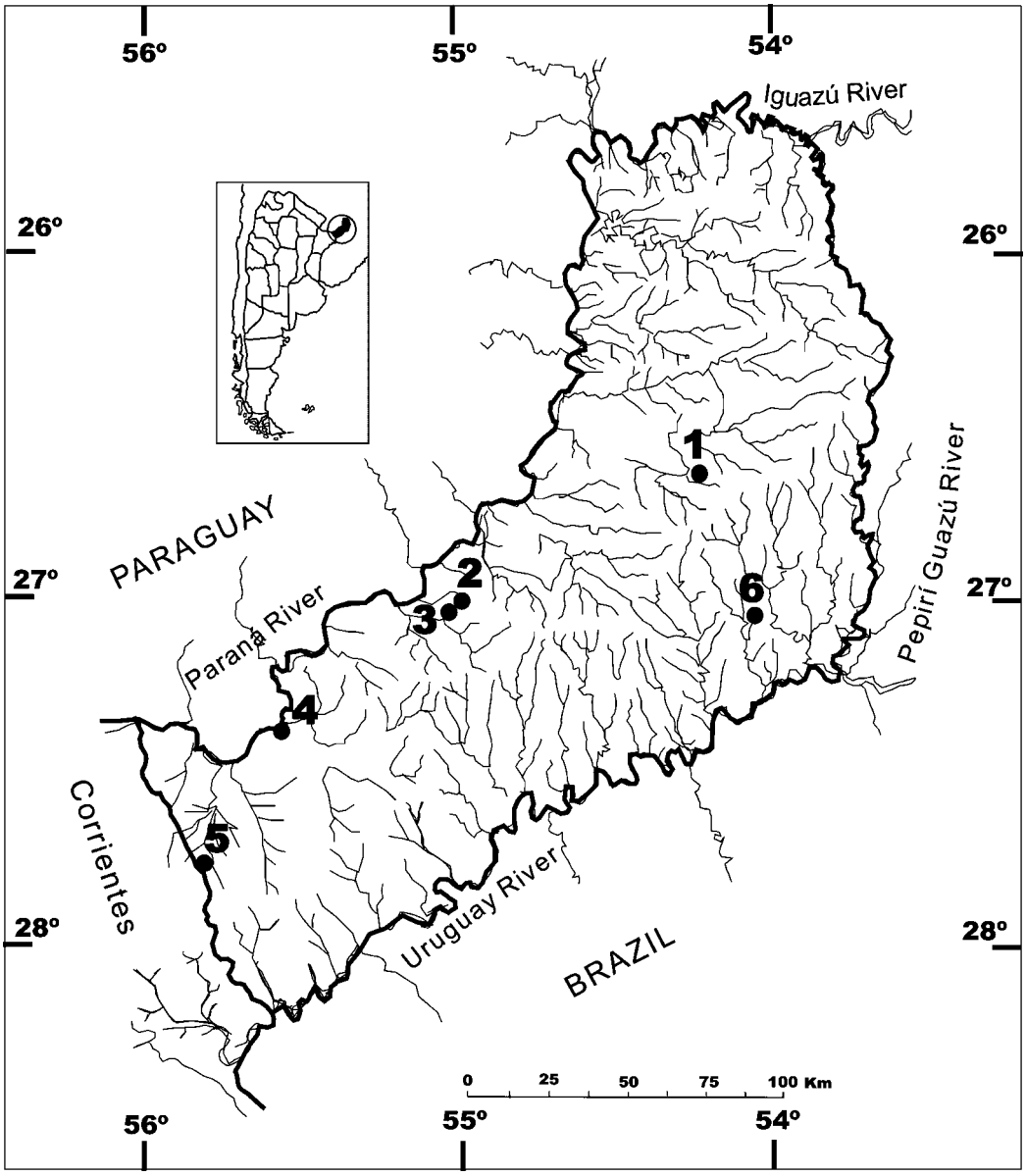

FIGURE 5. Geographic distribution of *Rineloricaria misionera*, Misiones Province, Argentina. 1: San Pedro, 2: arroyo Cuña-Pirú, 3: arroyo Tateto, 4: arroyo Santa Ana, 5: Pindapoy, 6: arroyo Pepirí Miní.

Tooth morphology differentiates *R. misionera* from *R. aequalicuspis*, with the former having asymmetrical cusps and the latter with symmetrical cusps. Differences in the development of plates in the anterior abdominal region further distinguish these two species: *R. misionera* always has 20–45 plates in this area, whereas in *R. aequalicuspis* this area is either naked or has up to 25 plates.

Rineloricaria misionera differs from *R. maquinensis* in having plates on the anterior abdomen, greater predorsal distance (31.9–36.2 vs. 28.2–31.5 % SL), shorter postanal distance (44.1–53.1 vs. 55.5–62.5 % SL), posterior margin of caudal fin concave vs. truncate, and, sexually dimorphic teeth.

Rineloricaria misionera differs from all other species recorded in Argentina *(R. lima, R. catamarcensis, R. microlepidogaster, R. felipponei, R. thrissoceps, R. pareiacantha, R. parva* and *R. lanceolata*) in having the anterior abdominal area only partially covered by plates.

Rineloricaria catamarcensis, a species occurring in central and northwestern Argentina, resembles *R. misionera* in some morphometrical characters. However, *R. misionera* is distinguished from *R. catamarcensis*, in addition to the aforementioned characters, in having the upper caudal ray not prolonged as a filament, and densely distributed silk-like body odontodes vs. sparsely distributed, coarse or hispid-like odontodes. In addition, these species occur in different habitats: while *R. catamarcensis* occurs in small streams to large rivers with muddy or sandy bottoms, *R. misionera* inhabits fast-flowing streams with rocky and sandy bottoms.

The distributional range of three *Rineloricaria* species, *R. lanceolata, R. microlepidogaster* and *R. parva*, is similar to that of *R. misionera*. *Rineloricaria parva*, distributed in Upper and Lower Paraná and Lower Uruguay basins in Argentina, differs from *R. misionera* in having more fused plates (12–16 vs. 8–13), shorter head (16.7–21.2 vs. 21.3–25.7 % SL), shorter abdominal length (11.4–15.4 vs. 14.4–19.2 % SL), shorter cleithral width (11.5–16.6 vs. 15.7–21.4 % SL), less deep caudal peduncle (1.0–1.6 vs. 1.4–2.2 % SL) and upper and lower caudal rays prolonged as filaments.

Rineloricaria lanceolata, reported for Upper and Lower Paraná basins, differs from *R. misionera* in having more fused lateral plates (13–8 vs. 8–13), shorter abdominal length (12.2–14.4 vs.14.4–19.2 % SL), upper and lower caudal rays prolonged as filaments, dissimilar color pattern and different sexual dimorphism (Isbrücker, 1973).

Rineloricaria misionera differs from *R. microlepidogaster*, distributed in the Lower Uruguay basin, in having well-developed orbital notch and shorter pectoral fin (tip reaching or barely exceeding pelvic fin origin).

Rineloricaria felipponei, *R. pareiacantha* and *R. thrissoceps* have only been nominally cited by de Buen (1950) for Río de La Plata. *Rineloricaria lima* was cited for Río de La Plata by Van Der Stigchel (1947). This author redescribed the species based on two female specimens (one from Caracas, Venezuela, and one from Río de La Plata) and one male specimen from Rio de Janeiro (Brasil). Subsequently several authors (Ringuelet *et al.*,

1967; López, 1970; Cordini, 1977; Cordiviola de Yuan, 1992; Liotta *et al*., 1995/96; López *et al.*, 1996; del Barco, 1997; Almirón *et al*., 2000, Nieva *et al*, 2001; López *et al*., 2003; Monasterio de Gonzo, 2003; Menni, 2004) reported the species for diverse basins in Argentina. The presence of these species in Argentina could not be confirmed from the revision of type specimens, materials from ichthyological collections and field-collected specimens.

The Province of Misiones along with the Yungas cloudforest, is one of the areas of highest biodiversity in Argentina (Bertonatti & Corcuera, 2000). From an ichthyofaunistic standpoint, it is part of the Paranoplatensean Province (Ringuelet, 1975) and the Misioneran ecoregion (López *et al.*, 2002). During the last seven years, increased sampling efforts of interior streams within this territory has led to the discovery of new taxa in the orders Characiformes, Silurifomes, and Perciformes. For example, in Cuña–Pirú Creek seven new species, including *R. misionera*, have been recorded in the last three years within the genera *Astyanax*, *Bryconamericus*, *Gymnogeophagus*, *Rhamdella*, *Rineloricaria* and *Crenicichla* (Miquelarena *et al*., 2002).

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