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NEW RECORDS OF *Paravandellia oxyptera* MIRANDA RIBEIRO 1912 (VANDELLIINAE, SILURIFORMES) IN ARGENTINA

*Nuevos registros de Paravandellia oxyptera Miranda Ribeiro 1912
(Vandelliinae, Siluriformes) en Argentina*

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Abstract. *Paravandellia oxyptera* Miranda-Ribeiro, 1912, a species of miniature catfish belonging to the subfamily Vandelliinae, is recorded for the first time from the Colastiné River (31°37'9.87" S, 60°34'43.37" W at 14 m elevation), near Laguna Setubal, in the locality of San José del Rincón, Santa Fe Province, Argentina. The specimens were collected using hand nets and seine nets, and represent the first known records of the species for this province. Osteological data from the examined material are also provided.

Keywords. Trichomycteridae, Parana-Plata basin, Santa Fe, Sud America, osteology, distribution

Resumen. *Paravandellia oxyptera* Miranda-Ribeiro, 1912, una especie de bagre miniatura perteneciente a la subfamilia Vandelliinae, es registrado por primera vez en el río Colastiné (31°37'9.87" S, 60°34'43.37" W a 14 m altura), cerca de la Laguna Setubal, en la localidad de San José del Rincón, provincia de Santa Fe, Argentina. Los ejemplares fueron capturados con redes de mano y arrastre, y constituyen los primeros registros conocidos de la especie para dicha provincia. Se incluyen además datos osteológicos del material examinado.

Palabras clave. Trichomycteridae, Cuenca Paraná-Plata, Santa Fe, Sud América, osteología, distribución

INTRODUCTION

Vandelliinae are known as “candirú”, comprise one of the few exclusively hematophagous Gnathostomata, along with the vampire bats (Chiroptera: Phyllostomidae) (Dagosta and de Pinna 2021). Vandellines adults feed only on blood, usually entering through the gill cavity of larger fishes and with some accidental records of penetration through the natural openings of man (Gudger 1930a, 1930b, Zuanon and Sazima 2004a, 2004b, 2005). In these cases, surgical intervention is necessary to remove them (Spotte 2002). Vandellines have nocturnal habits and are distributed in the main basins of South America, such as Amazonas, Orinoco, Essequibo (AOE), La Plata River (de Pinna 1998, Dagosta and de Pinna 2021). Vandelliinae belongs to the Trichomycteridae family that is widely distributed in

South America, comprising nine subfamilies and among them Vandelliinae, which includes four genera (*Paracanthopoma* [13 spp], *Paravandellia* [7 spp], *Plectrochilus* [3 spp], and *Vandellia* [3 spp]) and probably a fifth new genus with four species to be described (Baskin 1973, Schmidt 1993, de Pinna 1998, Fernandez and Schaefer 2009, Fernandez 2017, Henschel et al., 2021a, 2021b, 2024, de Pinna and Dagosta 2022). The only representative of the vandellines recorded so far in Argentina corresponds to *P. oxyptera* Miranda Ribeiro 1912 in the Paraná-Paraguay-Uruguay system (Menni 2004; Liotta 2005; López et al., 2005; Fernandez 2012, Almirón et al., 2015; de Pinna and Dagosta 2022; Terán et al., 2022, Rosso and Cousseau, 2024). This study reports four new records of *Paravandellia oxyptera* from the Paraná river basin in Argentina (Figure 1) and provides additional osteological data.

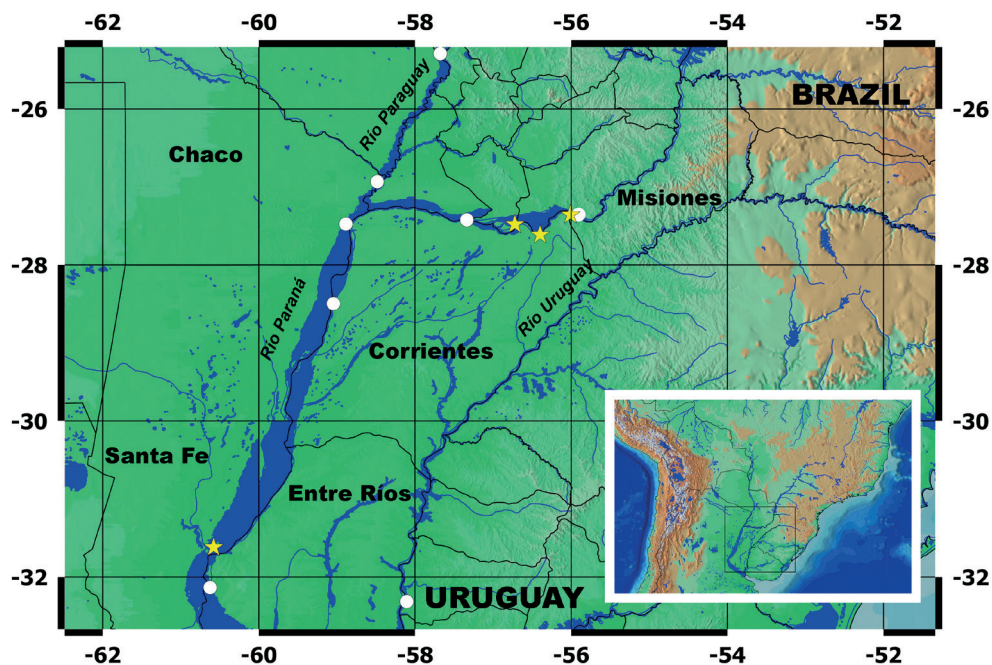


Figure 1 - Map showing the known distribution of *Paravandellia oxyptera* in Argentina, with the new record indicated by a yellow star and previously published localities by white circles.

MATERIAL AND METHODS

The thirteen fishes were caught using dip nets 60 cm long and 40 cm wide, and nylon beach seines 3 m length and 1 m high (2 mm mesh opening screen). A cleared and counterstained specimen (CS) for osteological study was prepared following the procedure of Taylor and Van Dyke (1985) and osteological nomenclature follows de Pinna and Dagosta (2022). Vertebral counts follow Schaefer and Fernandez (2009), and the terminology for laterosensory canals follows Arratia and Huaquin (1985). In fin-ray counts, the anterior unbranched and unsegmented rays are represented by lower case Roman numerals, unbranched segmented rays by upper case Roman numerals, while branched segmented rays by Arabic numerals. Morphological data for the described *Paravandellia* species were taken from Henschel et al. (2021b, 2024). Institutional abbreviations are as listed in Sabaj (2020).

Material comparative examined. *Pseudostegophilus maculatus* FACEN 53, 1 specimen, MLP-ICT 7644, 2 specimens. *Homodiaetus anisitsi* MLP-ICT 6324, 2 specimens, MLP-ICT 10335, 2 specimens. *Tridentopsis cahuali* MLP-ICT 8764, 3 paratypes, MLP-ICT 8854, 1 specimen.

RESULTS

***Paravandellia oxyptera* Miranda Ribeiro 1912** (Figures 2-3)

Material examined. FACEN 37, 4 specimens, 14.8-19.3 mm SL, Río Colastiné, near Laguna Setubal, San José Del Rincón, Departamento Capital, Province Santa Fe, Argentina, 31°37'9.87"S 60°34'43.37"W, 14 m elevation, 18 November 1997, coll. L. Fernandez. FACEN 54, 4 specimens,

1 CS, 22.6-25.2 mm SL. Río Paraná, Puerto Valle locality, Departamento Lavalle, Province Corrientes, Argentina, 27°36'44.90"S 56°23'53.36"S, 89 m elevation, 11 September 1996, coll. J. Bechara and L. Fernandez. FACEN 209, 2 specimens, 16.8-18.1 mm SL, Elevadores Yacyreta, Departamento Ituzzaingó, Corrientes, Argentina, 27°28'48.99"S 56°43'16.73"S, 74 m elevation, 12 September 1996, coll. J. Bechara and L. Fernandez. FACEN 210, 2 specimens, 20.7-22.1 mm SL, Nemesio Parma, Departamento Capital, Misiones, Argentina, 27°21'22.67"S 56°0'33.0"S, 81 m elevation, 21 September 1996, coll. A. Roa and L. Fernandez.

Identification. *Paravandellia oxyptera* is distinguished from *P. alleyni*, *P. oscarleoni*, *P. vampyra* by the unique combination the following characters: the branchiostegal membrane fused (vs. free), the scalpeloid teeth 2-3 (vs. 4), the vertebrae number 42-46 (vs. 38-42). *Paravandellia oxyptera*, it can be further distinguished from *P. brooksi*, *P. luna*, and *P. phaneronema*, by additionally differs from *P. brooksi* by the possession of teeth on median premaxilla 13 (vs. 21-22), the first proximal dorsal-fin pterygiophore inserting anterior to neural spine of vertebra 25 (vs. 27), the vertebrae number 44 (vs. 42), the dorsal-fin ray principal total 8 (vs. 11), the interopercle odontoids 14 (vs. 18-21); from *P. luna* by the teeth on median premaxillae 13 (vs. 20), the first proximal anal-fin pterygiophore inserting anterior to haemal spine of vertebra 26 (vs. 29-30), the dentary teeth 6 (vs. 4), the first proximal dorsal-fin pterygiophore inserting anterior to neural spine of vertebra 25 (vs. 26-28); from *P. phaneronema*, by the vertebrae number 44 (vs. 43), the dentary teeth 6 (vs. 2-3), the medial teeth 13 (vs. 15), the first proximal dorsal-fin pterygiophore inserting anterior to neural spine of vertebra 25 (vs. 22).

External morphology. Head shape triangular in dorsal view and eyes conspicuous (Figure 3). Mouth ventral. Nasal barbel absent



Figure 2 - *Paravandellia oxyptera*, FACEN 37, Río Colastiné, San José del Rincón, Santa Fe, Argentina, showing the axillary gland and its conspicuous pore. Scale bar: 5 mm.

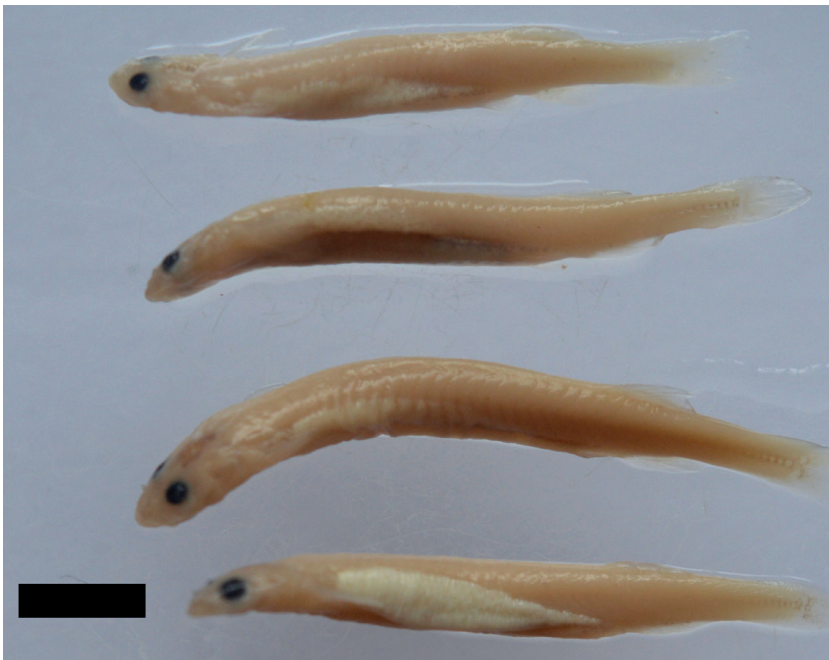


Figure 3 - *Paravandellia oxyptera*, FACEN 54, Río Paraná, Puerto Valle locality, Departamento Lavalle, Province Corrientes, Argentina. Scale bar: 5 mm.

and maxillary developed. Submaxillary barbel reduced. Axillary gland well-developed with evident pore (Figure 3). Dorsal profile of body convex and ventral concave. Caudal peduncle compressed (Figure 2). Caudal-fin margin slightly forked. Lateral-line canal short, with three pores, extending from posterior margin of opercle to just above axillary gland pore. Papillae on body not visible. Body transparent with posterior vertebrae visible through body wall (Figure 2). Some specimens with gut distended by coagulated blood, with numerous deposits of iridescent fat deposits on posterior half of gut (Figure 2). In lateral view, gray band of pigment extending from pectoral-fin origin to base of pelvic-fin (Figure 2). Ventral trunk pigment anterior to anus obscured by dark gut contents by coagulated blood. Head pale whitish, with brain visible through skull foramen and transparent skin. Barbels unpigmented and fins hyaline.

Osteology. Mesethmoid concave anterior margin, with cornua oriented posteriorly. Cranial fontanel wide. Sesamoid supra-orbital bone and antorbital absent. Autopalatine with fenestre wide and conspicuous proximal process posteriorly directed, contacted to ethmoid lateral. Sphenotic, prootic, and pterosphenotic fused to each other. Median premaxilla approximately trapezoidal, having 13 teeth arranged in two rows, outer row with 7 teeth, inner row with 6. Parasphenoid small and compact. Vomer absent. Anterior portion of Weberian complex fused to basi-occipital-exoccipital. Weberian capsule with constricted opening at lateral end of short tubule. Premaxilla anteriorly forked. Maxilla thin and tooth-less. Dentary with 6 medially curved teeth arranged in two rows. Dentaries not meeting at the middle. Hyomandibula broad, contacted to sphenotic-prootic-pterosphenoid. Preopercle slightly rectangular. Opercular

patch of odontodes 9. Interopercular patch of odontodes 13. Four branchiostegal rays, thin and the lateralmost ray not aligned with the other. Parurhoyal well developed, with long posterolateral process. Anterior ceratohyal elongated. Dorsal hypohyal and interhyal absent. Pectoral-fin rays I,5. First unbranched pectoral-fin ray not extended as filament. Pelvic-fin I,4. Dorsal-fin rays 14 (vi,I,7). Dorsal fin with eight pterygiophores. Dorsal-fin first pterygiophore anterior to 24th vertebra neural spine. Anal-fin rays 11 (iv,I,6). Anal fin with six pterygiophores. First anal-fin pterygiophore anterior to 26th vertebra haemal spine. Caudal-fin rays 13 (5+1+7). Dorsal procurrent caudal-fin rays 14 and ventral procurrent caudal-fin rays 13. Hypural 3 not fused to hypurals 4 and 5. Parhypural and hypurals 1 and 2 fused. Neural arch of compound centrum incomplete. Uroneural robust. Vertebrae 43. Rib one.

Additional comments. Some specimens were observed free-swimming (Figure 2), while others were found inside the gill cavity of their host, with blood-filled guts (Figure 3). The species is psammophilic and is typically captured at night along the margins. When removed from the water, *Paravandellia oxyptera* secretes abundant adhesive mucus, which enables it to adhere firmly to the fingers, possibly as a defense mechanism. Although they have not sporting value, it is known that when aquaculture cages were placed in the Yacyreta Dam, Pacú species (*Piaractus mesopotamicus* Holmberg 1887) were parasitized by the candirú (Bechara, pers. comm.). *Paravandellia oxyptera* is considered “Least Concern” by IUCN and is mentioned from Argentina (Chaco, Corrientes, Formosa, Misiones), Brazil (Rio Grande do Sul, São Paulo, Goiás, Mato Grosso, Mato Grosso do Sul, Santa Catarina, Minas Gerais, Paraná, Rondônia), and Paraguay (Brejão 2023).

DISCUSSION

Paravandellia oxyptera is the only species of Vandelliinae in the Paraná-Paraguay-Uruguay basin (Dagosta and de Pinna 2021, Brejão 2023, Dagosta et al. 2024: Fig. 23L, Henschel et al. 2024). *Paravandellia oxyptera* is considered synonymy with four species: *Branchioica bertonii* Eigenmann 1917 from Río Paraguay (Asunción), *Parabranchioica teaguei* Devincenzi and Vaz Ferreira 1939 from Río Uruguay (Paysandú), *Pleurophysus hydrostaticus* Miranda Ribeiro 1918 from Río Claro (São Paulo, Brazil), and *Vandellia hematophaga* Guimaraes 1935 from Río Tietê (Salto, Brazil) (Fricke et al. 2025). Thus, *Paravandellia oxyptera* is currently the only species of Vandelliinae recorded in the Paraná-Plata basin of Argentina, and this report represents the first record for Santa Fe Province. Further taxonomic research focused on *Paravandellia* will likely reveal additional diversity and improve our understanding of the group's phylogenetic relationships and biogeographic patterns. Ongoing collaborative research on *P. oxyptera* from Argentina is being conducted by one of the authors (G.C.).

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