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A common but poorly described species of the genus *Pimelodella* (Siluriformes: Heptapteridae) from southeastern South America

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We redescribe *Pimelodella straminea*, a species widely distributed in endorheic (Salí-Dulce, Primero, and Quinto rivers), and exorheic (Paraná-La Plata and Uruguay rivers) basins of Argentina and Brazil. We analyzed the populations of *P. straminea* using an iterative taxonomy analysis, which combines a molecular phylogeny based on two mitochondrial genes (COI and CytB), multivariate morphometrics, and coloration patterns. We found a low genetic differentiation of the populations and an overlap of morphometric traits, indicating a single evolutionary unit. We provide comprehensive morphometric, meristic, osteological and molecular data of *P. straminea*, that is suggested as a senior synonym of *P. australis*, *P. garbei*, and *P. laticeps*.

Keywords: Endorheic basin, Iterative taxonomy, Meristic, Multivariate analysis, Osteology.

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Redescribimos a *Pimelodella straminea*, una especie ampliamente distribuida en cuencas endorreicas (ríos Salí-Dulce, Primero y Quinto) y exorreicas (ríos Paraná-La Plata y Uruguay) de Argentina y Brasil. Analizamos las poblaciones de *P. straminea* usando un análisis de taxonomía iterativa, que combina una filogenia molecular basada en dos genes mitocondriales (COI y CytB), la morfometría multivariada y coloración. Nosotros encontramos una baja diferenciación genética de las poblaciones y un solapamiento de los rasgos morfométricos, indicando una misma unidad evolutiva. Proporcionamos datos morfométricos, merísticos, osteológicos y moleculares completos de *P. straminea*, y la sugerimos como sinónimo senior de *P. australis*, *P. garbei* y *P. laticeps*.

Palabras clave: Análisis multivariado, Cuenca endorreica, Merística, Osteología, Taxonomía iterativa.

INTRODUCTION

Heptapteridae is a family of catfish endemic to the Neotropical region and is composed of approximately 251 valid species (Fricke *et al*., 2026). The heptapterids stand out as one of the most important components of the Neotropical ichthyofauna, being widely distributed in the cis- and trans-Andean drainages of America, from northern Mexico to central Argentina (Bockmann, Guazzelli, 2003; Cortés-Hernández *et al*., 2023b). The family is estimated to have undergone a remarkable diversification event during the Paleogene into Early Paleocene and Eocene, approximately 60–50 million years ago (Sullivan *et al*., 2013). Currently, 24 genera are recognized as valid, which are divided into two subfamilies: Heptapterinae and Rhamdiinae (Faustino-Fuster *et al*., 2021; Silva *et al*., 2021; Slobodian, Bockmann, 2025). The latter stands out for its greater diversity, harboring five genera and 129 species (Fricke *et al*., 2026).

Pimelodella Eigenmann & Eigenmann, 1888, is the most species-rich genus of Rhamdiinae, with 85 valid species (Fricke *et al*., 2026) and is widely distributed in the Neotropics from southeastern Costa Rica to northern Argentina (Slobodian *et al*., 2017, 2021; Slobodian, Pastana, 2018; Cortés-Hernández *et al*., 2020; Cortés-Hernández *et al*., 2023a). However, the taxonomy of the genus is problematic: as no phylogenetic diagnosis has been presented to date to recognize *Pimelodella*, descriptions of most species are imprecise, and putatively wide distributions have been defined for some species, probably resulting in erroneous records (Slobodian *et al*., 2017, 2021; Slobodian, Pastana, 2018; Cortés-Hernández *et al*., 2023a).

Eighteen nominal species of *Pimelodella* are described from the drainages of the Paraguay, Uruguay, Paraná-La Plata Rivers (Valenciennes, 1835; Steindachner, 1877; Eigenmann, Eigenmann, 1888; Regan, 1903; Eigenmann, Ward, 1907; Miranda-Ribeiro, 1907; Eigenmann, 1910; Miranda-Ribeiro, 1914; Eigenmann, 1917; Miranda-Ribeiro, 1918; Güntert, 1942; van der Stigchel, 1964; Pierre, Slobodian, 2024), of which only five species are listed for Argentina (Mirande, Koerber, 2020): *P. gracilis* (Valenciennes, 1835) (La Plata, Paraná and Paraguay rivers); *P. griffini* Eigenmann, 1917 (Paraguay River); *P. laticeps* Eigenmann, 1917 (Paraguay River); *P. mucosa* Eigenmann & Ward, 1907 (Paraguay River); and *P. taenioptera* Miranda-Ribeiro, 1914 (Paraguay

River). However, there is a lack of knowledge about the true taxonomic identity of the species of the genus for the country, despite the efforts of Castello (1969), Ruíz-Díaz *et al*. (2008), Aguilera, Azpelicueta (2015) and Valenzuela *et al*. (2023) in documenting and extending the geographic distribution of some species of *Pimelodella*.

Among the Argentinian species, *Pimelodella laticeps* was described by Eigenmann (1917) and differentiated from the Brazilian subspecies *P. laticeps australis* by subtle morphological characteristics, such as the length of the maxillary barbels, and the coloration pattern. However, Bockmann, Guazzelli (2003) elevated *P. australis* to the category of species and proposed *P. garbei* Miranda Ribeiro, 1918 as its junior synonym based on the unpublished results of Guazzelli (1997), without recognizing the marked morphological similarity exhibited between *P. australis* and *P. laticeps*. Up to this date, the specific delimitation of both species is supported mainly by the criteria of geographical distribution, restricting *P. laticeps* to the drainages of the Argentine territory and *P. australis* for the Uruguay River basin in Brazil and Uruguay (*e.g*., Fowler, 1915; Ringuelet *et al*., 1967; Malabarba, 1989).

Pimelodella straminea (Cope, 1894) has an even more troublesome and unstable taxonomic history. Originally described as *Rhamdella straminea* for Rio Grande do Sul, Brazil, it has been interpreted as a junior synonym of *R. eriarcha* (Malabarba 1989; Bockmann, Guazzelli, 2003), or *Rhamdia quelen* (Lucena, Silva, 1991), or even as a valid species of *Rhamdia* (Fowler, 1951). It was from the phylogenetic analysis of the genus *Rhamdella* that it was shown that *R. straminea* could be a species of the genera *Pimelodella* or *Rhamdia* (Bockmann, Miquelarena, 2008). More recently, Slobodian (2017) in an unpublished thesis, confirmed *P. straminea* as a member of the *Pimelodella* genus and, furthermore, suggested it might be a senior synonym of *P. australis* (distinguishable from *P. laticeps* based on the coloration pattern of the dorsal fin), but the examination of more comparative material was needed in order to take taxonomic decisions. Thus, despite some recent efforts, the species *P. australis*, *P. laticeps* and *P. straminea* are currently recognized as valid, but their delimitation relies mostly on geographic distribution or coloration details and need a revisionary work.

As part of a taxonomic review of *Pimelodella* species from the eastern flanks of the Andes in Argentina, we found specimens that could be assigned to *P. straminea*, a species known only from the type material until now. In this study, we re-describe *P. straminea,* providing relevant morphometric, meristic, and molecular data that complement the existing taxonomic information on this species. We also argue that *P. straminea* is a senior synonym of *P. australis* and *P. laticeps*, and that *P. straminea* is broadly distributed in Southern South America, from Northern Paraguay to mid-Argentina, present also in Uruguayan and Brazilian streams.

MATERIAL AND METHODS

Morphology and meristic. Methods and terminology for measurements follow Slobodian *et al*. (2017). Measurements were obtained using a digital caliper on the left side of specimens whenever possible and were expressed proportionally to standard length (SL), except for subunits of the head, which are presented as proportions of head length (HL). Meristics and relative position of fins follow Bockmann, Castro (2010). The number of specimens for each count is presented in parentheses. Cleared and stained specimens (c&s) were prepared according to Taylor, Van Dyke (1985). Numbers of branchiostegal rays, gill rakers on first gill arch, vertebrae, ribs, and insertion and number of supporting elements of dorsal and anal fins were determined only in c&s or x-rayed specimens. Osteological and cephalic laterosensory pores nomenclature follows Bockmann, Miquelarena (2008), with modifications of Slobodian, Pastana (2018). Vertebral counts include five vertebrae associated with the Weberian complex, and the compound caudal centrum (PU1+U1) was counted as one element (Lundberg, Baskin, 1969).

Osteological data of *P. australis*, *P. laticeps*, and *P. straminea* were assessed through x-ray images of their type-materials, available at the Primary Type Fish Specimens website at the Field Museum of Natural History, Chicago (https://collections-zoology.fieldmuseum.org/) and the Academy of Natural Sciences, Philadelphia (https://clade.ansp.org/ichthyology/FTIP/search.php?mode=search&tbl=Species&contains=*&Submit=Search). As exploratory method of the morphometric measurements, a principal component analysis (PCA) was carried out. But before that, the missing data were imputed using the Random Forest algorithm in the missRanger v. 2.6.0 package (Mayer, 2024), and subsequently the data were log-transformed. To evaluate if the ordering obtained of the PCA is dominated solely by the size or whether it also incorporates shape information we use shear method (Humphries *et al*., 1981), transforming component 1 ('PCA 1' = PCA 1 + PCA 2) to include the shape information of the components 1 and 2. Subsequently, we evaluated the agreement between the classification of individuals into three classes along the original component and the transformed component. All morphometric analyses were conducted in software RStudio (R Development Core Team, 2025). The geographic distribution map was prepared using QGIS v. 3.28. Institutional abbreviations follow Sabaj (2025).

DNA extraction and sequencing. DNA was extracted from tissues preserved in 95% EtOH, which are deposited in the Ichthyological Collection of Fundación Miguel Lillo (CI-FML), Laboratório de Biologia e Genética de Peixes, Universidade Estadual Paulista, Botucatu, Brazil (LBP), and the Ichthyological Collection of Museo de Historia Natural Unillanos (MHNU-I). We sequenced subunit I of the mitochondrial Cytochrome Oxidase gene (COI) using primers proposed by Ward *et al*. (2005): FishF1 5'-TCA ACC AAC CAC AAA GAC ATT GGC AC-3', FishR1 5'-TAG ACT TCT GGG TGG CC AAA GAA TCA-3', and Cytochrome B gene (CytB) using primers proposed by Palumbi *et al*. (1991): GLUDG-L 5'-TGA CTT GAA RAA CCA YCG TTG-3', CB3-H 5'-GGC AAA TAG GAA RTA TCA TTC-3'. The reaction volumes, denaturation, nesting and extension cycles for the COI gene of the Colombian specimens follow a Cortés-Hernández *et al*. (2023b). For Brazilian specimens amplifications were performed in a total volume of 10µL, with 1µL of 10x buffer (10 mM Tris-HCl+1.5 mM MgCl2), 0.5µL dNTPs (2.0 mM each), 0.4µL MgCl2 (50 nM), 0.1µL Platinum Taq Polymerase (Invitrogen), 0.3µL of each primer (0.01mM), 6.4µL of distilled water and 1µL of template DNA (Slobodian, 2017). The initial denaturation step was conducted at 95°C for 5 min, followed by 35 cycles of denaturation at 94°C for 30 s, annealing at 56°C for 30 s, extension at 72°C for 45 s, and final extension at 72°C for 5 min. For the mitochondrial CytB gene, the same amplification volumes were used as for the COI gene. The initial denaturation step was performed at 95°C for 30s, followed by 35 cycles of denaturation at 94°C for 30 s, annealing at 48°C for 60 s, extension at 72°C for 90 s, and final extension at 72°C for 5 min (modified from Palumbi *et al*., 1991). The final PCR product was electrophoresed at 1.0 % and 1.5 % agarose gel. Purification and sequencing of both forward and reverse strands were performed by the Korean company Macrogen (http://www.macrogen.com) and an automatic sequencer ABI 3730XL in Laboratories of Analytical Biology at the National Museum of Natural History, Smithsonian Institution.

Sequence alignment and analysis. The obtained electropherograms were individually inspected and assembled in contigs of forward and reverse sequences using Geneious Prime v. 2025.2.1 (www.geneious.com). Comparative sequences available in the GenBank and BOLDSYSTEMS repository were obtained from Pereira *et al*. (2011), Rosso *et al*. (2012), Pereira *et al*. (2013), Reis *et al*. (2014), Díaz *et al*. (2016), Berbel-Filho *et al*. (2018), Jennings *et al*. (2019), Angrizani *et al*. (2020), Faustino-Fuster *et al*. (2021) and Papa *et al*. (2021). The catalog numbers, voucher numbers and locality of all terminals are summarized in Tab. **S1**. Sequence alignments were performed for each gene using the MuscleV5 algorithm with default parameters (Edgar, 2004). For sequence concatenation, translation of the consensus sequences (frame 1), and removal of stop codons, Geneious Prime v. 2024.0.4 was used. The substitution saturation index was estimated in DAMBE v. 7.3.32 (Xia, 2018).

RAxML plugin v. 8 (Stamatakis, 2014) was used to construct a gene tree by maximum-likelihood (ML) inference with 1000 bootstrap replicates, using the GTR CAT model. Additionally, a phylogenetic analysis was conducted under the maximum parsimony criterion (MP) in TNT v. 1.6 (Goloboff, Morales, 2023), using extended implied weighting across a broad range of concavity constants K values (Goloboff, 1993, 2014; Goloboff *et al*., 2008). The analyses were performed using a traditional heuristic search on 100 multiples randomly generated sequences, with the *mult* command. Clade support was estimated using symmetric resampling with 1000 replicates and the other default parameters; the results were expressed as GC values (Goloboff *et al*., 2003).

To calculate genetic distances between the *Pimelodella* lineages, a second matrix was constructed by subsampling the first matrix, where only species for which the COI gene was included. The nucleotide substitution model was selected, and the genetic distances were calculate using MEGA v. 11.0 (Tamura *et al*., 2021).

RESULTS

Pimelodella straminea (Cope, 1894)

(Figs. 1–3; Tab. 1)

Rhamdella straminea Cope, 1894:93–94 (original description; "Rio Grande do Sul"; syntypes: ANSP 21581–84; ANSP 21604). —Fowler, 1915:213 (taxonomic treatment; specifying the locality; inclusion of ANSP 23216 in type series). —Böhkle, 1984:142 (type catalog). —Malabarba, 1989:143 (taxonomic treatment, junior-synonym of *R. eriarcha*). —Bockmann, Guazzelli, 2003:422 (taxonomic treatment, junior-synonym of *R. eriarcha*). —Ferraris, 2007:196 (taxonomic treatment, junior-synonym of *R. eriarcha*). —Bockmann, Miquelarena, 2008:45–47 (taxonomic treatment, in *Rhamdia* or *Pimelodella*, but not *Rhamdella*).

Rhamdia straminea. —Eigenmann, 1910:387 (taxonomic treatment, used the genus *Rhamdia*, but treated under *Rhamdella*). —Gosline, 1945:38 (taxonomic treatment). —Fowler, 1951:578 (taxonomic treatment). —Burgess, 1989:279 (taxonomic treatment). —Lucena, Silva, 1991:38 (taxonomic treatment).

Pimelodella laticeps australis Eigenmann, 1917:231, 233, 243–244 (original description; "Uruguayana", State of Rio Grande do Sul, Brazil; holotype: FMNH 57962 (formerly CM 6950)). —Henn, 1928:77 (type catalog). —Gosline, 1945:44 (taxonomic list, distribution). —Fowler, 1951:544–545 (taxonomic list). —Ibarra, Stewart, 1987:66 (type catalog). —Malabarba, 1989:141–142 (taxonomic list). —Burgess, 1989:280 (taxonomic list).

Pimelodella australis. —Guazzelli, 1997:14–31 (taxonomic review of coastal south and southeastern Brazilian species). —Bockmann, 1998:114, 370–372 (systematic treatment in Heptapteridae phylogeny). —Bockmann, Guazzelli, 2003:417 (taxonomic checklist). —Guazzelli, 2003:14–16, 240 (phylogenetic relationships among *Pimelodella*). —Ferraris, 2007:189 (taxonomic checklist). —Volcan *et al*., 2012:81 (taxonomic list). —Litz, Koerber, 2014:20 (taxonomic list). —Bertaco *et al*., 2016:417 (taxonomic list). —Nión *et al*., 2016:33 (taxonomic list) —Slobodian *et al*., 2017:95 (taxonomic treatment). —Giora, Wingert, 2023:94 (taxonomic list). —Loureiro *et al*., 2023:128 (taxonomic list).

Pimelodella laticeps Eigenmann, 1917:243, fig. 2, pl. XXX, fig. 2, pl. XXXV, fig. 9 (original description; "Sapucay, Paraguay"; holotype: FMNH 57969 (formerly CM 6957a)). —Henn, 1928:77 (type catalog). —Gosline, 1945:44 (taxonomic list). —Fowler, 1951:545, fig. 559 (*in partim*) (taxonomic list). —López *et al*., 1981: unnum. pages (taxonomic list). —López *et al*., 1982:7–09 (taxonomic list). — Ibarra, Stewart, 1987:66 (type catalog). —Burgess, 1989:280 (taxonomic list). —Bockmann, Guazzelli, 2003:419 (taxonomic treatment). —López *et al*., 2003:62 (taxonomic list). —Ferraris, 2007:192 (taxonomic treatment). —Litz, Koerber, 2014:21 (taxonomic list). —Mirande, Koerber, 2015:34 (taxonomic list). —Koerber *et al*., 2017:51 (taxonomic list). —Slobodian *et al*., 2017:96 (taxonomic treatment *Pimelodella* species). —Pierre, Slobodian, 2024:15 (taxonomic treatment of Pantanal *Pimelodella* species).

Pimelodela garbei (sic) Miranda Ribeiro, 1918:639–640 (original description; "Itaqui– Rio Grande do Sul", Brazil; lectotype: MNRJ 923A, designated by Miranda Ribeiro (1953:403); misspelling of genus name).

Pimelodella garbei. —Gosline, 1945:45 (emendation of originally-assigned genus name; taxonomic list). —Miranda Ribeiro, 1953:403 (lectotype designation). —Britski, 1969:205 (type catalog). —Burgess, 1989:280 (taxonomic treatment). —Guazzelli, 1997:14, 136 (suggested synonymy to *P. australis*). —Bockmann, Guazzelli, 2003:418 (synonym of *P. australis*). — Litz, Koerber, 2014:20 (synonym of *P. australis*). —Ferraris, 2007:189 (synonym of *P. australis*).

Pimelodella portalegrensis. —Silfvergrip, Paepke, 1997:172 (*nomen nudum*, not published; name in label by E. Ahl; formerly *Pimelodella lateristriga* ZMB 7437 and ZMB 25128 (last one reassigned to ZMB 32030, but latter number the same for the holotype of *P. conquetaensis*)).

Diagnosis. *Pimelodella straminea* is easily distinguished from all other *Pimelodella* species by having a well-defined, dense concentration of dark chromatophores in the area between the dorsal and adipose fins (*vs.* such pigmentation pattern absent). *Pimelodella straminea* is also distinguished from all *Pimelodella* species, except *P. humeralis*, by having a large dusky blotch extending from operculum to the second branched ray of dorsal fin. *Pimelodella straminea* is distinguished from *P. humeralis* by having a greater cleithral width (16.6–21.2 *vs*. 14.0–16.0% of SL), shorter maxillary barbel (44.6–75.3 *vs*. 93.4–122.1% of SL), tip of the maxillary barbel reaching between pelvic-fin origin and one third of the base of the anal fin (*vs*. reaching between the anterior and posterior limits of caudal-fin), wider interdorsal distance (9.2–19.4 *vs*. 3.2–5.7% of SL), shorter adipose fin (15.0–31.6 *vs*. 41.8–45.3% of SL), greater preadipose length (58.7–68.5 *vs*. 49.1–53.2% of SL), fewer total vertebrae (38–41 *vs*. 47–49), medium brown midlateral stripe wide, not well delimited, extending from snout to caudal-fin origin (*vs*. dark midlateral stripe well delimited, narrow, extending from region posterior to humeral blotch to caudal-fin insertion), dorsal fin brown, except by a hyaline stripe near its base (*vs*. dorsal fin dark with two hyaline stripes, one near its base and the other almost at its half), presence of pigmentation in the interdorsal space (*vs*. absence), and adipose-fin base darkly pigmented in all its extension (*vs*. absence).

Furthermore, *P. straminea* can be distinguished from other *Pimelodella* species by the following exclusive character combination: maxillary barbel reaching between pelvic-fin origin and one third of the base of the anal fin; posterior margin of pectoral-fin spine bearing 6–11 retrorse dentations, extending along its basal three-quarters; these dentations are moderate to large; adipose fin slightly more than three and half to four times in SL; 38–41 total vertebrae; medium brown midlateral stripe wide, not well delimited, extending from snout to caudal-fin origin; dorsal fin brown, except by a hyaline stripe near its base, which does not encompass the unbranched ray; space between dorsal and adipose fins with a dense dark concentration of chromatophores, forming a seal; adipose-fin base darkly pigmented in all its extension; and dark oblique spot, extending from operculum to the second branched ray of dorsal fin.

Description. Morphometric data summarized in Tab. 1. Body moderately deep and short, deeper at dorsal-fin origin. Body dorsal profile convex from snout to dorsal-fin origin, dorsal-fin base convex, concave from posterior end of dorsal fin to adipose-fin origin, adipose-fin base straight and downward, concave along caudal peduncle. Body ventral profile straight to slightly convex from jaw tip to pelvic-fin origin, slightly concave between pelvic fin and anal-fin origin, anal-fin base straight and upward, concave along caudal peduncle (Figs. 1–2).

Pseudotympanum large, oval, dorsal to posterior process of cleithrum, reaching the straight line of 6th (3) or 7th (2*) vertebrae. Cleithrum posterior process triangular, short, dorsal border slightly concave. Anus and urogenital papilla adjacent. Urogenital papilla tubular, triangular, short. Anus between verticals through adpressed pelvic fin half and last third; urogenital papilla between verticals through adpressed pelvic fin second third and terminus.

Head conical. Mouth subterminal, upper jaw slightly more pronounced than lower jaw. Premaxilla with four or five rows of villiform teeth and dentary with three or four rows of similar teeth. Anterior naris tubular. Posterior naris rounded, slightly closer to anterior ocular margin than to anterior naris, anteromedially bordered by a fleshy margin. Nares disposed in a trapezoidal arrangement. Barbels thin, elliptical in cross-section. Maxillary barbel extending between pelvic-fin origin and anal-fin base first third. Outer mental barbel slightly surpassing pectoral-fin insertion, when stretched parallel to main body axis. Inner mental barbel reaching sutures of the pectoral girdle, when stretched parallel to main body axis. Eye placed dorsolaterally, slightly elliptical, its greatest diameter along horizontal axis. Eye limits well-defined by free orbital rim. Supraoccipital process subrectangular in shape and long, usually reaching anterior nuchal plate (if not reaching, a short gap, less than 20% supraoccipital process length). Branchiostegal membranes almost entirely free, united to isthmus only at medial apex,

TABLE 1 | Morphometric and meristic data for *Pimelodella straminea*. *Pimelodella australis* (holotype and 6 paratypes); *P. garbei* (lectotype and 3 paralectotypes); *P. laticeps* (holotype and paratype); *P. straminea* (4 syntypes). n = Number of specimens; SD = Standard deviation.

	P. australis		*P. garbei*		*P. laticeps*		*P. straminea*				
	Holotype	Range	Lectotype	Range	Holotype	Paratype	Syntypes	Mean	n	Range	SD
Standard length (mm)	61.0	39.9-70.8	62.6	50.3-54.3	49.0	72.7	41.2-54.7	64.0	31	31.3-106.1	-
Percentage of standard length											
Body depth	22.0	18.6-22.9	22.0	19.8-23.2	19.8	18.9	14.3-17.9	19.9	31	17.0-22.8	1.4
Cleithral width	19.8	18.4-21.2	19.3	19.6-20.7	19.6	19.2	16.6-18.7	18.7	31	17.3-20.4	0.9
Predorsal length	37.1	35.4-37.9	33.5	33.0-37.9	36.9	37.2	34.9-35.8	35.4	31	33.3-38.3	1.2
Dorsal-fin base	14.1	13.3-14.8	13.7	13.3-15.7	14.2	14.7	15.0-28.0	14.8	31	13.3-16.1	0.8
Dorsal-fin spine length	14.7	15.4-18.5	15.0	13.1-17.5	16.5	13.5	15.4-19.7	14.2	29	11.6-18.0	1.5
Length of first branched ray of dorsal-fin	21.5	19.4-21.9	19.1	19.5-19.7	19.6	18.3	17.5-21.4	18.7	30	15.8-22.1	1.5
Dorsal fin to adipose fin	11.5	11.4-16.4	10.2	11.2-16.7	14.0	19.4	11.8-17.8	13.1	31	9.2-16.1	1.8
Preadipose length	62.2	60.7-63.3	61.4	60.9-65.0	64.4	66.4	58.7-65.6	62.5	31	59.3-68.5	2.2
Adipose-fin base	15.0	24.9-30.6	28.3	26.4-31.6	25.7	24.5	24.7-26.8	27.8	31	23.2-31.0	2.0
Adipose-fin depth	4.3	3.7-5.0	2.2	1.9-5.0	5.4	4.2	2.4-3.2	4.8	31	3.9-5.9	0.4
Caudal-peduncle length posterior to adipose-fin	11.2	10.5-12.3	10.6	10.6-12.7	11.1	10.4	10.0-12.6	12.5	31	10.9-14.5	0.8
Caudal-peduncle length posterior to anal-fin terminus	18.5	15.5-18.5	-	-	16.4	16.6	-	18.1	31	15.9-20.7	1.0
Caudal-peduncle depth	9.4	8.1-9.0	9.3	9.6-10.2	9.7	8.6	6.8-8.7	8.6	31	7.5-9.5	0.5
Upper caudal lobe length	26.1	23.3-29.0	-	-	27.5	24.1	20.5	25.8	30	22.9-30.5	1.7
Lower caudal lobe length	24.8	22.0-28.4	-	17.1-18.5	25.8	23.9	23.4	24.4	30	20.4-30.9	1.9
Preanal length	70.3	67.0-71.2	67.4	68.9-71.7	67.2	71.0	66.1-70.2	68.0	31	65.9-71.3	1.3
Anal-fin base	15.0	13.8-18.0	14.7	12.3-16.5	14.9	14.3	13.1-15.4	14.4	31	11.6-16.8	1.0
Prepelvic length	49.6	44.4-49.2	49.6	46.9-52.6	50.1	48.8	45.9-47.4	48.1	31	45.6-51.6	1.5
Prepectoral length	25.9	23.3-26.5	25.6	22.1-24.1	25.0	22.9	22.7-26.3	23.9	31	21.4-26.3	1.1
Pectoral-fin spine length	20.6	17.5-22.2	19.0	17.3-22.3	19.6	18.0	18.5-20.9	16.8	31	13.1-21.1	1.5
Length of first branched ray of pectoral-fin	21.3	18.5-21.6	18.0	17.0-19.6	22.2	17.7	-	19.6	29	16.9-23.0	1.6
Snout to anus distance	55.8	55.0-56.0	54.1	56.5-57.9	56.3	53.5	-	55.1	31	52.8-57.6	1.3
Anus to urogenital papilla distance	4.8	3.8-4.9	4.4	5.2-6.2	8.6	4.6	-	3.9	31	2.1-5.7	0.9
Maxilar barbel length	63.7	44.6-71.3	50.9	56.2-60.4	54.3	50.6	55.4-62.5	56.9	30	45.4-75.3	7.0
Outer barbel length	26.6	17.2-26.9	18.3	16.0-25.5	21.8	23.3	17.4-20.6	23.7	31	16.5-29.7	2.8
Inner barbel length	12.0	9.7-14.1	10.3	11.1-14.1	12.3	13.7	8.2-9.9	12.7	31	10.0-15.5	1.3
Head length (measured just in gill membranes)	-	-	-	-	-	-	-	24.8	31	22.2-27.8	1.1
Head length (from tip of snout to distal point of supraoccipital process)	32.3	30.9-33.9	32.3	31.9-32.7	32.1	32.9	31.2-31.9	31.2	31	29.3-35.1	1.2
Percentage of head length											
Head width	57.4	54.1-61.3	62.3	54.6-66.2	61.3	56.1	49.8-60.4	54.6	31	49.3-64.6	3.3
Head depth	54.2	48.5-54.2	54.5	52.9-54.8	57.6	46.3	44.2-60.3	48.1	31	41.6-56.1	3.4
Snout length	29.4	29.6-31.4	31.9	27.1-30.2	30.7	28.0	28.2-31.7	30.0	31	27.7-35.7	1.6
Orbital diameter	18.7	16.9-22.2	18.3	18.3-21.7	17.9	15.3	21.3-24.4	17.2	31	14.9-18.9	1.0
Mouth width	29.7	27.6-33.9	32.1	23.8-37.8	33.7	24.7	27.7-28.7	28.1	31	24.5-31.7	1.5
Interorbital width	21.3	19.7-22.7	21.6	20.8-24.8	20.2	20.2	18.8-20.2	20.7	31	18.7-24.9	1.5
Internostril distance	16.1	14.3-17.7	15.8	13.0-16.9	14.8	14.1	17.0-17.7	12.0	31	9.2-13.8	0.9
Anterior internarial width	14.1	12.1-15.0	11.6	13.9-23.2	14.6	10.8	14.6-15.4	12.1	31	10.9-13.7	0.7
Posterior internarial width	16.6	15.7-17.0	19.0	12.5-17.9	17.8	15.0	15.4-16.3	14.8	31	12.8-17.9	1.2

TABLE 1 | (Continued)

	P. australis		*P. garbei*		*P. laticeps*		*P. straminea*				
	Holotype	Range	Lectotype	Range	Holotype	Paratype	Syntypes	Mean	n	Range	SD
Counts											
Branchiostegal rays	7	-	6	-	6	-	6			6	
Gill rakers on first ceratobranchial	-	-	-	-	-	-	-			6	
Gill rakers on first epibranchial	-	-	-	-	-	-	-			1-2	
Total number of vertebrae	39	39-41	39	39	40	39-40	40-41			38-39	
Insertion / termination of the dorsal fin	5/10-11	5/10-11	5/10-11	5/10-11	5/9-10	5/10-11	5/10			5/10-11	
Insertion / termination of the adipose fin	21/35	18-21/31-34	19/34	21-22/32-33	22/32	20/35	-			19-21/32-34	
Insertion / termination of the anal fin	21/28-29	20-24/27-30	21/28-29	21/27	21/28	22/29	21/29			21-23/27-29	
Dorsal-fin rays	I.6	I.6	I.6	I.6	I.7	I.6	I.6			I.6	
Pectoral-fin rays	I.8	I.7-8	I.7	I.7-8	I.7	I.8-9	-			I.7-8	
Pelvic-fin rays	i.5	i.5	i.5	i.5	i.5	i.5	i.5			i.5	
Anal-fin rays	r3.iii.8	r2-3.ii-iii.7-9	r2.iii.7	r2.ii.8	r2.i.10	r3.ii-iii.8-9	-			r2-3.iv-v.8	
Principal rays of caudal-fin	i.7-8.i	i.7-8.i	i.7-8.i	i.7-8.i	i.7-8.i	i.7-8.i	i.7-8.i			i.7-8.i	

not joined to each other anteriorly. Branchiostegal rays six (6). Gill rakers on first gill arch 7(7), 8(12) or 9(12); 5(2) or 6(3) gill rakers on ceratobranchial anterior margin, one (2) or two (3) on epibranchial (verified in seven c&s specimen).

Dorsal-fin triangular, distal margin slightly convex, short (first branched dorsal-fin ray four and half to five and half times in SL), adpressed terminus reaching between verticals through adpressed pelvic fin first sixth and last fifth. Dorsal fin with spinelet, spine, and five (1), six (29*) or seven (1) branched rays, originating approximately dorsal to posterior end of pseudotympanum. Spinelet large with wide base, slightly rounded distal tip. Dorsal-fin spine straight, slender, pungent, shorter than first branched ray (11.6–19.7 *vs.* 15.8–22.1% of SL, respectively), slightly curved towards distal end. Dorsal spine anterior and posterior margin smooth. Anteriormost dorsal-fin pterygiophore inserted posterior to vertebrae 4 neural spine of complex vertebra; posteriormost dorsal-fin pterygiophore located anterior to vertebra 10(2) or 11(13*) neural spine.

Pectoral-fin with distal margin slightly convex, consisting in one unbranched and seven (12), eight (18*), or rarely nine (1) branched rays. First pectoral-fin ray curved with basal portion ossified, forming a spine, distal tip flexible, segmented. Pectoral-fin spine anterior margin with small straight dentations from basal portion to distal third, plus 3 or 5 distal serrations; pectoral-fin spine posterior margin with 6–11 retrorse dentations, extending along its basal two-thirds or three-quarters (Fig. 3); dentations moderate to large (depth half the spine shaft depth).

Pelvic fin with distal margin convex. Pelvic-fin origin at vertical through dorsal-fin terminus or slightly posterior. Adpressed pelvic fin tip surpassing vertical through adipose-fin origin, not exceeding base first fourth. Pelvic-fin rays i,5(31); first ray distinctly shorter than second and third rays (first and second branched rays, respectively).

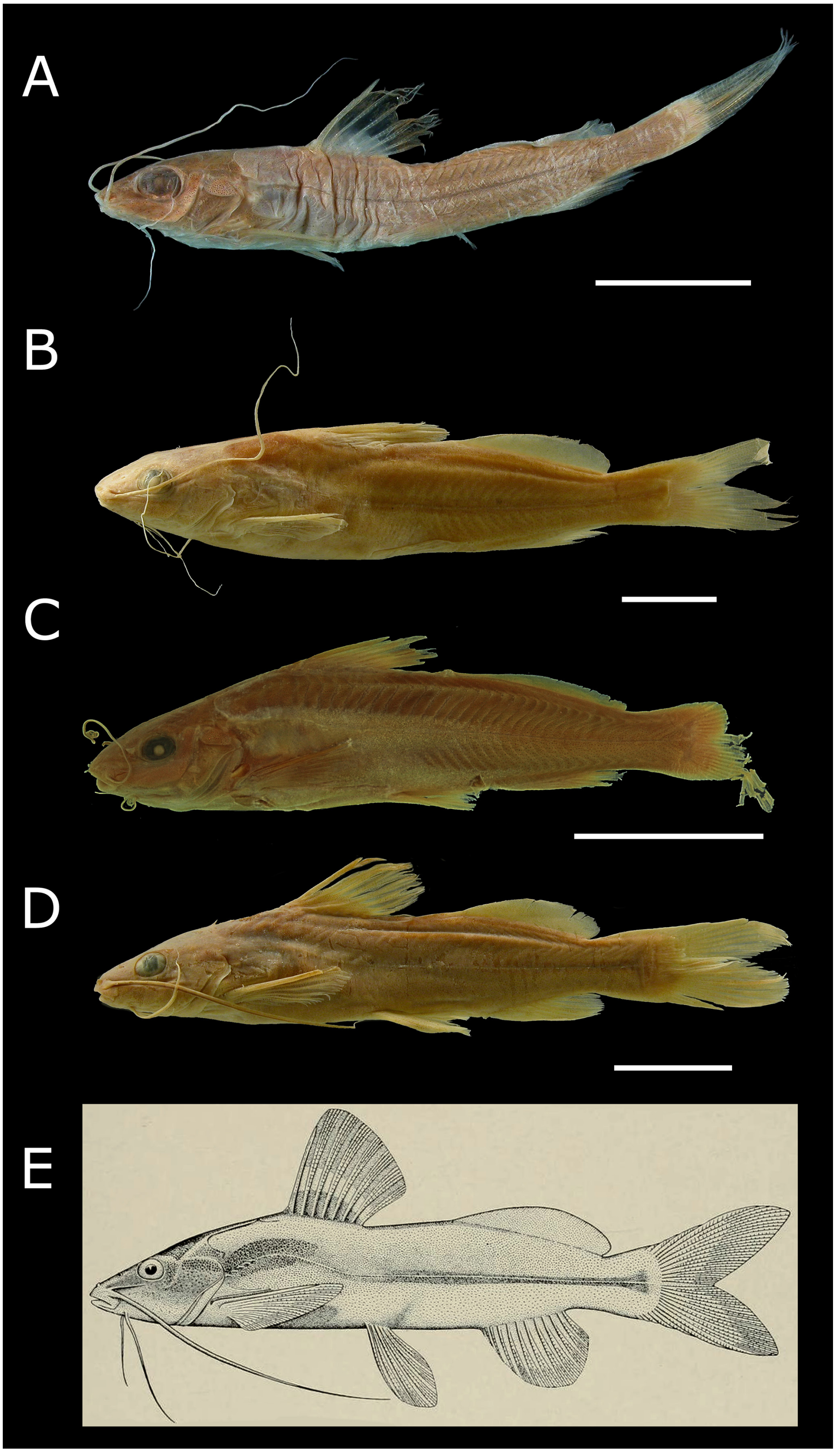

FIGURE 1 | Left lateral view of *Pimelodella straminea*. **A.** ANSP 21581, lectotype, 41.2 mm SL. **B.** *P. australis*, junior synonym of *P. straminea*, FMNH 57962, holotype, 76.7 mm SL, photograph by M. Littmann, FMNH Division of Fishes. **C.** *P. garbei*, junior synonym of *P. straminea*, MNRJ 923A, lectotype, 62.6 mm SL. **D.** *P. laticeps*, junior synonym of *P. straminea*, FMNH 57969, holotype, 48.2 mm SL, photograph by M. Littmann, FMNH Division of Fishes. **E.** Illustration of holotype of *P. laticeps* from Eigenmann (1917). Scale bar = 1 cm.

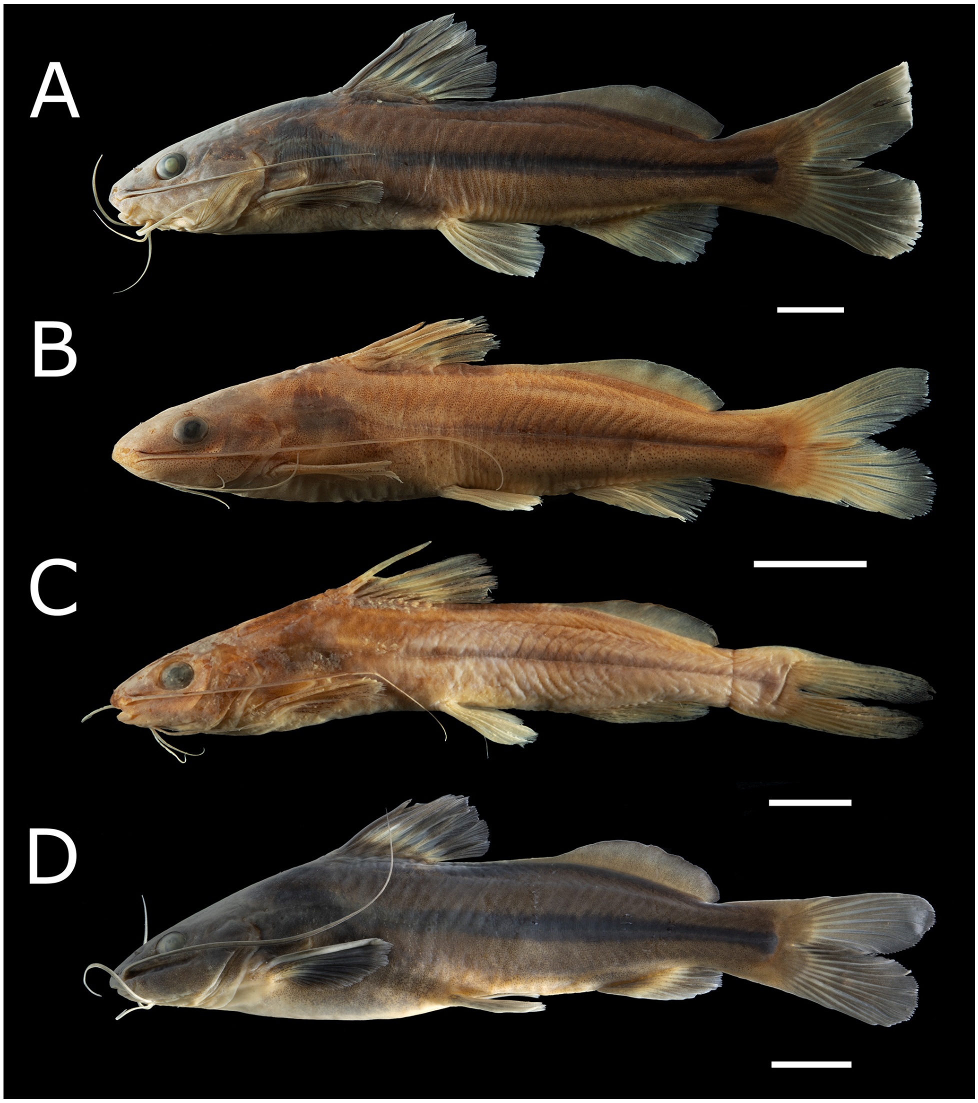

FIGURE 2 | Left lateral view of comparative material of *Pimelodella straminea*. **A.** CI-FML 7974, 105.72 mm SL, Argentina, Tucumán, Marapa River, 27°38'09.36"S 65°44'39.55"W. **B.** CI-FML 1260, 62.7 mm SL, Argentina, Salta, Clavizán River, 26°01'S 65°23'W. **C.** CI-FML 6193, 75.5 mm SL, Argentina, Buenos Aires, Chascomús, Paraná-La Plata basin, 35°35'23.5"S 58°01'29.3"W. **D.** MACN-ict 12850, 87.7 mm SL, Argentina, Buenos Aires, Partido de coronel Rosales, Sauce grande River, 38°52'54.5"S 61°35'59.0"W.

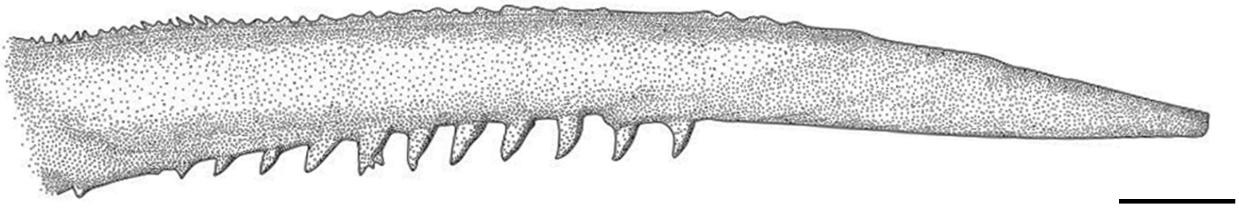

FIGURE 3 | Ventral view of pectoral-fin spine of *Pimelodella straminea* (left side), CI-FML 7997, 67.7 mm SL. Scale bar = 1 mm.

Anal-fin margin rounded, with iv or v,7(2), 8(20), 9(8) or 10(1) branched rays. Two or three anteriormost anal-fin rays embedded in a thick skin fold. Anal-fin origin between verticals through adipose-fin base anterior fourth to middle. Anal-fin adpressed terminus between verticals through adipose-fin base 90 and 95%. Anteriormost anal-fin pterygiophore tip inserted immediately posterior to vertebra haemal spine 20(1), 21(9), 22(3) or 23(2). Posteriormost anal-fin pterygiophore tip inserted immediately anterior to vertebra haemal spine 27(1), 28(2), 29(9), or 30(4).

Adipose-fin short (23.2–31.0% of SL), slightly more than three and half to four times in SL, forming ascending curve in lateral profile with deepest point approximately at vertical through anal-fin terminus. Adipose-fin posterior limit as a rounded, free lobe. Adipose fin origin posterior to mid-length of trunk, approximately at vertical through vertebral centrum 19(3), 20(2), 21(3), or 22(4). Adipose-fin terminus at vertical through vertebral centrum 32(2), 33(3), 34(5), 35(2) or 36(1).

Caudal-fin deeply forked, dorsal caudal-fin lobe slightly longer than ventral lobe, both lobes with rounded tips. Dorsal lobe with one unbranched and six (3*), seven (26), or eight (1) branched principal rays. Ventral lobe with one unbranched and six (1*), seven (3), eight (27) or nine (1) branched principal rays. Seven rays articulated to dorsal caudal-fin plate (five to hypurals 3+4 and two to hypural 5), and seven (5), eight (2) or nine (1) rays articulated to ventral caudal-fin plate (five or six to hypurals 1+2 and two to parhypural). Parhypural not fused to hypurals 1 and 2. Hypurals 1 and 2 completely fused into single caudal plate. Hypurals 3 and 4 completely fused. Hypural 5 free. Middle caudal-fin ray of dorsal lobe not articulated to caudal plate. Total vertebrae 38(2), 39(9), 40(6*), rarely 41(2). Ribs eight (11*), nine (5), rarely ten (1).

Laterosensory system with non-dendritic branches and simple pores. Supraorbital canal(s) with seven branches: s1, s2, s3, s4, s6 (epiphyseal), s7, and s8 (parietal). Branch s1 located anteromedial to anterior nare. Branch s2 at dorsolateral of short membranous tube on internarial space (slightly closer to anterior nare), complex with the second infraorbital branch (s2 + i2). Branches s3 and s4 emerging from canal segment passing through nasal bone, at vertical anterior to the sutures between the mesethmoid and frontal bones. Contralateral epiphyseal branches of supraorbital canal (s6) not fused, anterior to epiphyseal bar, at posterior margin of anterior fontanel. Branches s7 and s8 emerging at the posterior portion of frontal bone. Supraorbital and infraorbital (i) canals connected posterior to the anterior nare in complex branch s2+i2, and at the sphenotic. Branch i1 located posterior to anterior nare, slightly close to the maxillary barbel. Branch i3 lateral to posterior nare. Branch i4 adjacent to ventral margin of eye, at vertical through anterior ocular margin. Branch i5 just ventral to eye, at end of posteroventrally directed membranous tube. Branch i6 placed posterior to eye, at end of posteriorly directed membranous tube. Preoperculomandibular canal (pm) with 11 sensory branches and pores, emerging from canal associated to the dentary, at dentary-preopercle contact, and at the preopercle. Last preopercular branch complex with first postotic branch, opening in a po1+pm11 pore. Postotic canal (po) with three sensory branches opening in pores. Branch po2 emerging from a posteriorly directed membranous tube, dorsally to dorsal corner of branchial opening. Branch po3 at end of posteriorly directed membranous tube, dorsal to lateral line canal of trunk, and dorsal to pectoral-fin base. Lateral line canal of trunk long, with a pronounced dorsal curvature bordering the pseudotympanum, extending to basal third of interradial membrane between medial caudal-fin rays.

Coloration in alcohol. Background body coloration yellowish. Ventral region of head and body lighter. Dorsal surface of head with dense concentration of dark brown chromatophores, extending from snout tip to base of the supraoccipital process. Dorsal surface of maxillary barbel darker than ventral surface. Mental barbels yellow. Supraoccipital process with dark paired lateral stripes, which delimit its extension until its connection with the nuchal plate, and another paired dorsolateral stripe near dorsal-fin base. Dorsal-fin base darkly pigmented, from spine to posteriormost interradial membrane. Hyaline stripe distal to dorsal-fin base extending until less than half dorsal-fin extension, but not encompassing dorsal-fin spine. Distal half of dorsal fin dusky. Space between dorsal and adipose fins with a dense dark concentration of chromatophores, forming a dark saddle. Adipose-fin base darkly pigmented throughout its entire extension. Dark oblique spot, extending from operculum to vertical line through the second branched ray of dorsal fin; completely covering the pseudotympanum. Brown midlateral stripe wide, originating at snout, diffusely coalescent with pseudotympanum spot anteriorly, but well-defined posterior to vertical line through half dorsal-fin base. This stripe runs posteriorly until caudal-fin base. Pectoral, adipose, anal, and pelvic fins mostly with sparse dark brown chromatophores distributed along fin rays. Ventral lobe of caudal-fin slightly dark, pigmented only along fin-rays (Figs. 1–2).

Geographical distribution. *Pimelodella straminea* was described from Rio Grande do Sul State, Brazil, probably rio Jacuí, in Laguna dos Patos system. The species present a wide geographical distribution, occurring in several water bodies in Southern South America, from Northern Paraguay to mid-Argentina, present also in Uruguayan and Brazilian streams. Thus, the species occur in the main channel or tributaries of the Salado, Salí-Dulce, Primero, San Juan, Tercero, Cuarto, Quinto, lower Paraná, Sauce Grande, Sauce Chico, Quequén Grande, Laguna dos Patos, and Uruguay river basins (Fig. 4). The examined material identified as *P. straminea* and analyzed in the present study is listed in **S2**.

Morphometric analysis. The morphometric variation of the *Pimelodella* species examined from the PCA shows four distinct groupings, the first grouping composed of type specimens of *P. straminea* + *P. laticeps* + *P. australis* + *P. garbei* greatly superimposed, and the remaining comparative material, attributed to *P. straminea,* partly superimposed in this grouping. The second, third, and fourth groupings were composed of the specimens of *P. gracilis*, *P. mucosa*, and *P. longibarbata* (Fig. 5A). When the analysis was repeated using the transformed components ('PCA 1'), a highly concordant scatter plot was obtained (isomorphic) to the pattern observed in the original analysis (Figs. 5A, B). When comparing the classification of individuals in three classes along of the first original component (size) and the transformed component (size + shape), a high stability of the method was evident, where approximately 84% of the individuals remained in the same class, showing a consistent ordering by size even after the incorporation of shape (Tab. 2).

The first component explained 80.9% of the variance, while the second explained 8.1% showing a cumulative variance of 89.0%. The variables of the rotation matrix with the highest value for PCA 1 were maxillary barbel length, outer barbel length, and inner barbel length. These measures clearly discriminate *P. gracilis* and *P. mucosa* from

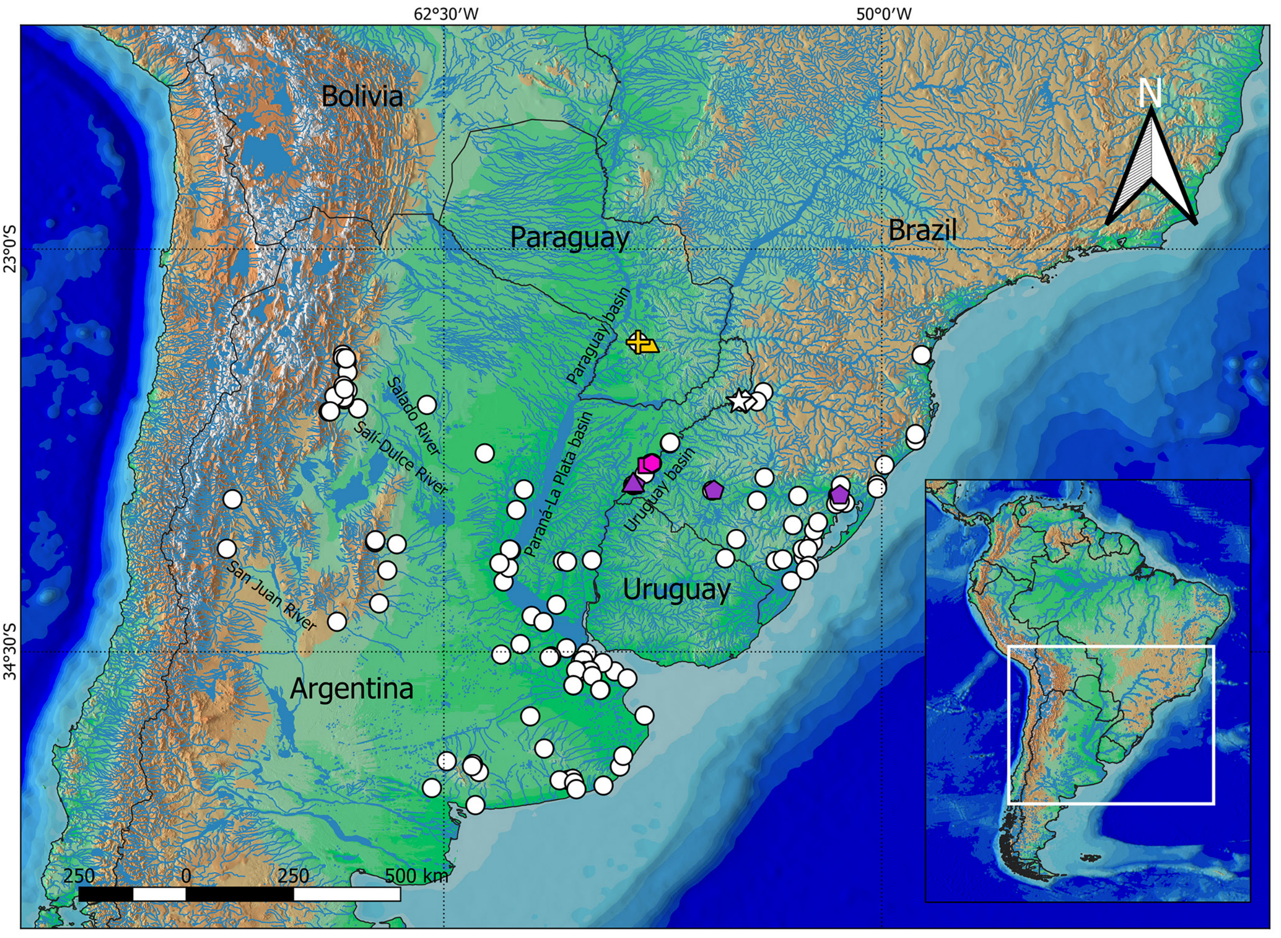

FIGURE 4 | Distribution map of *Pimelodella straminea*: lectotype (white star), paralectotypes (white diamond) and additional material examined (white circles). Junior synonyms of *P. straminea*: *P. australis*, holotype (purple triangle) and paratypes (purple pentagons); *P. garbei*, lectotype (pink hexagon) and paralectotypes (pink square); *P. laticeps*, paratypes (yellow cross) and non-types (yellow trapezoid).

P. straminea in PCA 1. For PCA 2, the highest values were interdorsal length, caudal peduncle length posterior to the anal fin, anal-fin length, maxillary barbel length, caudal peduncle length posterior to the adipose fin, and outer barbel length, clearly separating to *P. longibarbata* and *P. straminea* (Tab. **S3**). Thus, *P. straminea* and its junior-synonyms herein proposed are separate from the other species analyzed in PCA 1 and 2.

Phylogenetic analysis. The concatenated dataset included a total of 171 terminals and 1,499 bp, 164 sequences of COI (656 bp; 272 variable sites and 258 parsimony informative) and 78 sequences of CYTB (843 bp; 404 variable sites and 379 parsimony informative). The Iss.c values were greater than Iss values, indicating the absence of saturation in all three datasets. According to the Akaike Information Criterion, the most suitable nucleotide substitution model for the COI dataset was T92+G+I with AICc = 5932.9. The overall mean of genetic distances for species of *Pimelodella* analyzed was 0.10 ± 0.01. Interspecific genetic distances ranged from 1.6% to 13.3% (Tab. 3). Intraspecific variation in *P. straminea* was from 0.004 ± 0.002.

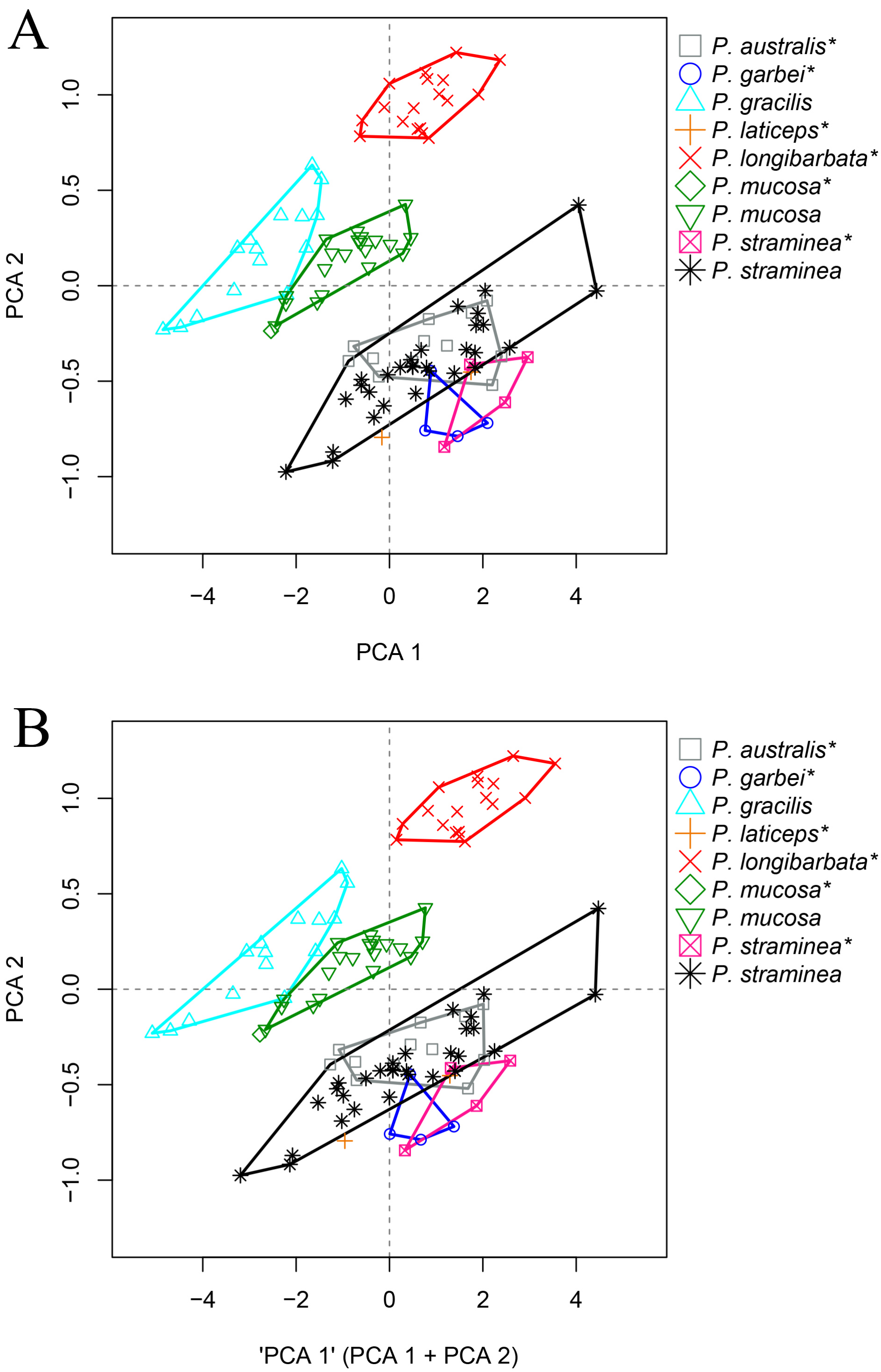

FIGURE 5 | **A.** Scatter plot of principal component analysis (PCA 1 and PCA 2). **B.** Scatter plot of sheared components I and II ('PCA 1'). *Pimelodella straminea* (black asterisk), its junior synonyms *P. australis* (gray squares), *P. garbei* (blue circles), *P. laticeps* (orange cross), *P. mucosa* (green inverted triangle and diamond), *P. longibarbata* (red x) and *P. gracilis* (cyan triangle). Asterisk refers to the type material.

TABLE 2 | Cross-validation matrix showing the classification of individuals into three classes (low, medium, and high) along the original first principal component and the transformed component. Individuals who maintain stability in bold.

	'PCA 1' transformed (size + shape)		
Original PCA 1 (size)	Low	Medium	High
Low	**15**	2	0
Medium	2	**52**	10
High	0	2	**23**

TABLE 3 | Genetic distances among species of *Pimelodella* (standard error estimates in bold), based on T92+G model.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Pimelodella* sp. (Orinoco River)		**0.016**	**0.015**	**0.015**	**0.015**	**0.018**	**0.016**	**0.017**	**0.017**	**0.023**	**0.015**	**0.014**	**0.017**	**0.016**	**0.019**
2	*Pimelodella* sp. (Barama River)	0.107		**0.015**	**0.005**	**0.017**	**0.019**	**0.017**	**0.016**	**0.016**	**0.020**	**0.015**	**0.013**	**0.017**	**0.014**	**0.018**
3	*P. modesta*	0.098	0.107		**0.016**	**0.018**	**0.016**	**0.016**	**0.017**	**0.016**	**0.022**	**0.017**	**0.015**	**0.016**	**0.016**	**0.017**
4	*P. metae*	0.106	0.016	0.116		**0.016**	**0.017**	**0.016**	**0.016**	**0.016**	**0.020**	**0.015**	**0.013**	**0.017**	**0.014**	**0.017**
5	*P.* cf. *eutaenia*	0.098	0.115	0.123	0.112		**0.015**	**0.015**	**0.016**	**0.010**	**0.020**	**0.006**	**0.016**	**0.015**	**0.018**	**0.017**
6	*P. straminea*	0.122	0.133	0.100	0.117	0.101		**0.013**	**0.016**	**0.015**	**0.018**	**0.015**	**0.017**	**0.017**	**0.017**	**0.016**
7	*P. lateristriga*	0.107	0.125	0.110	0.120	0.100	0.073		**0.016**	**0.014**	**0.019**	**0.014**	**0.016**	**0.018**	**0.017**	**0.017**
8	*P. gracilis*	0.119	0.115	0.119	0.110	0.111	0.101	0.112		**0.017**	**0.010**	**0.015**	**0.014**	**0.018**	**0.015**	**0.008**
9	*P. floridablancaensis*	0.109	0.110	0.105	0.107	0.056	0.099	0.095	0.123		**0.021**	**0.009**	**0.016**	**0.014**	**0.017**	**0.017**
10	*Pimelodella* sp. (Piranhas River)	0.131	0.118	0.130	0.115	0.116	0.100	0.110	0.049	0.121		**0.019**	**0.016**	**0.020**	**0.018**	**0.009**
11	*P. chagresi*	0.111	0.113	0.122	0.110	0.035	0.109	0.102	0.114	0.057	0.122		**0.015**	**0.015**	**0.016**	**0.016**
12	*P. bockmanni*	0.089	0.084	0.091	0.086	0.108	0.113	0.111	0.096	0.106	0.090	0.111		**0.016**	**0.007**	**0.014**
13	*P. avanhandavae*	0.115	0.113	0.110	0.115	0.099	0.113	0.125	0.134	0.088	0.127	0.108	0.101		**0.018**	**0.016**
14	*P.* aff. *cristata* (Maroni River)	0.105	0.092	0.103	0.090	0.121	0.116	0.123	0.107	0.115	0.103	0.118	0.029	0.121		**0.015**
15	*P. meeki*	0.120	0.120	0.109	0.114	0.115	0.098	0.114	0.036	0.114	0.033	0.116	0.083	0.109	0.094	

Analyses under the parsimony criterion were done on a broad range of extended implied weighting parameters (values of K) (Goloboff, 1993; 2014). As their result were stable concerning the relationships of the group of interest, we chose a K = 12, which weights moderately against the homoplasy. For the analyzed dataset, under this value of K, an averagely homoplastic character has approximately 80% of the weight of a character with no homoplasy. Under K = 12 we found more than 10,000 most parsimonious trees (fit = 178.53684; length = 4766 steps), mostly due to the presence of multiple terminals with exactly the same data. Its strict consensus with support values expressed as GC-values (Goloboff *et al*., 2003), is presented in Fig 6.

Pimelodella straminea was recovered as the sister species of *P. lateristriga* (Lichtenstein, 1823), both forming a clade with relatively high support (98% in ML and GC = 91 in MP). The 12 specimens of *P. straminea* coming from the endorheic (Salí-Dulce) and exorheic basins (San Juan, Paraná-La Plata, and Uruguay rivers) of Argentina and Brazil did form reciprocally monophyletic groups in both analyses, supported by a 100% in ML (Fig. 7) and GC = 94 in MP (Fig. 6).

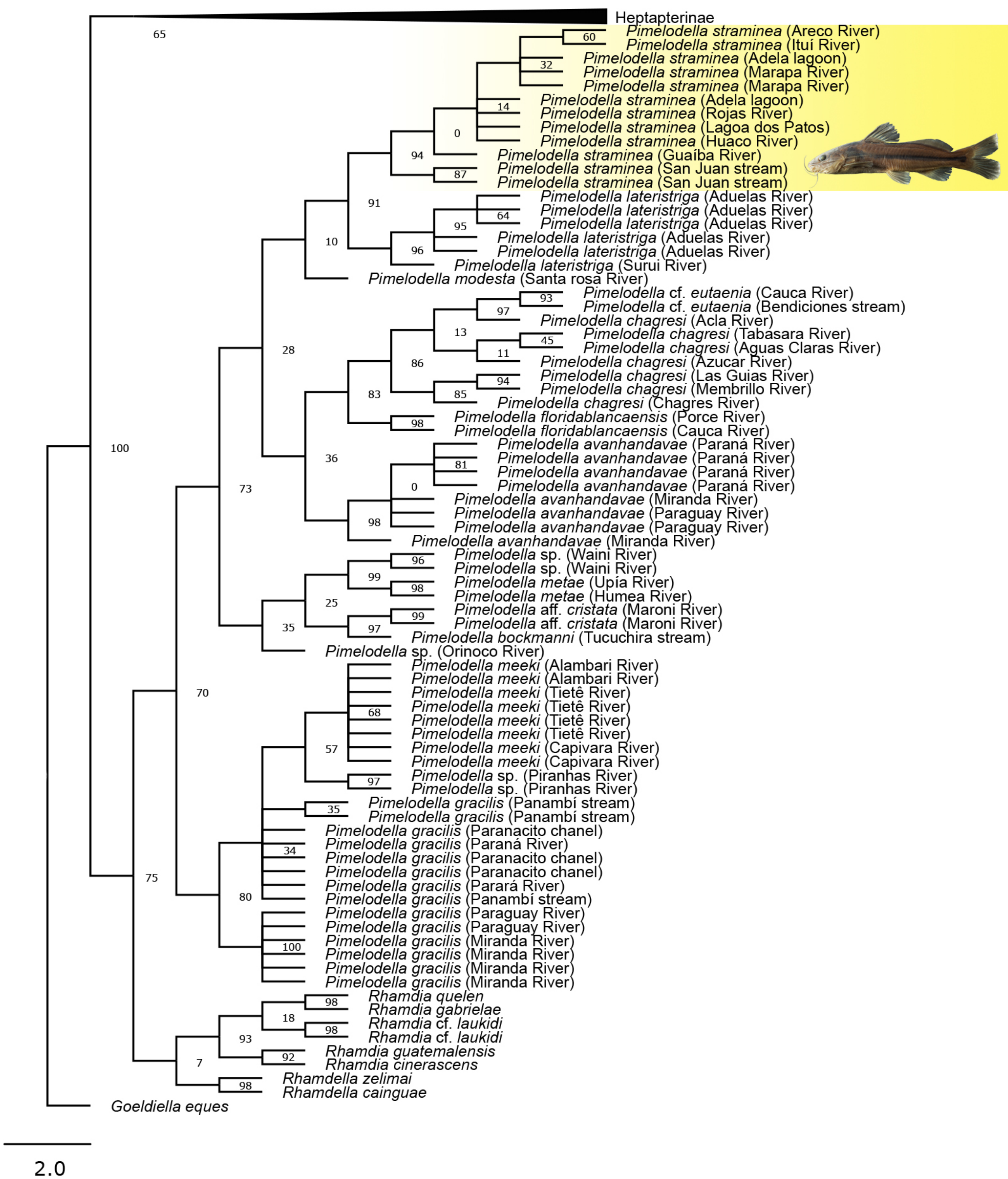

FIGURE 6 | Maximum parsimony tree of *Pimelodella straminea* clade (yellow) based on the Cytochrome Oxidase subunit I and Cytochrome B genes. Numbers near nodes represent GC support values.

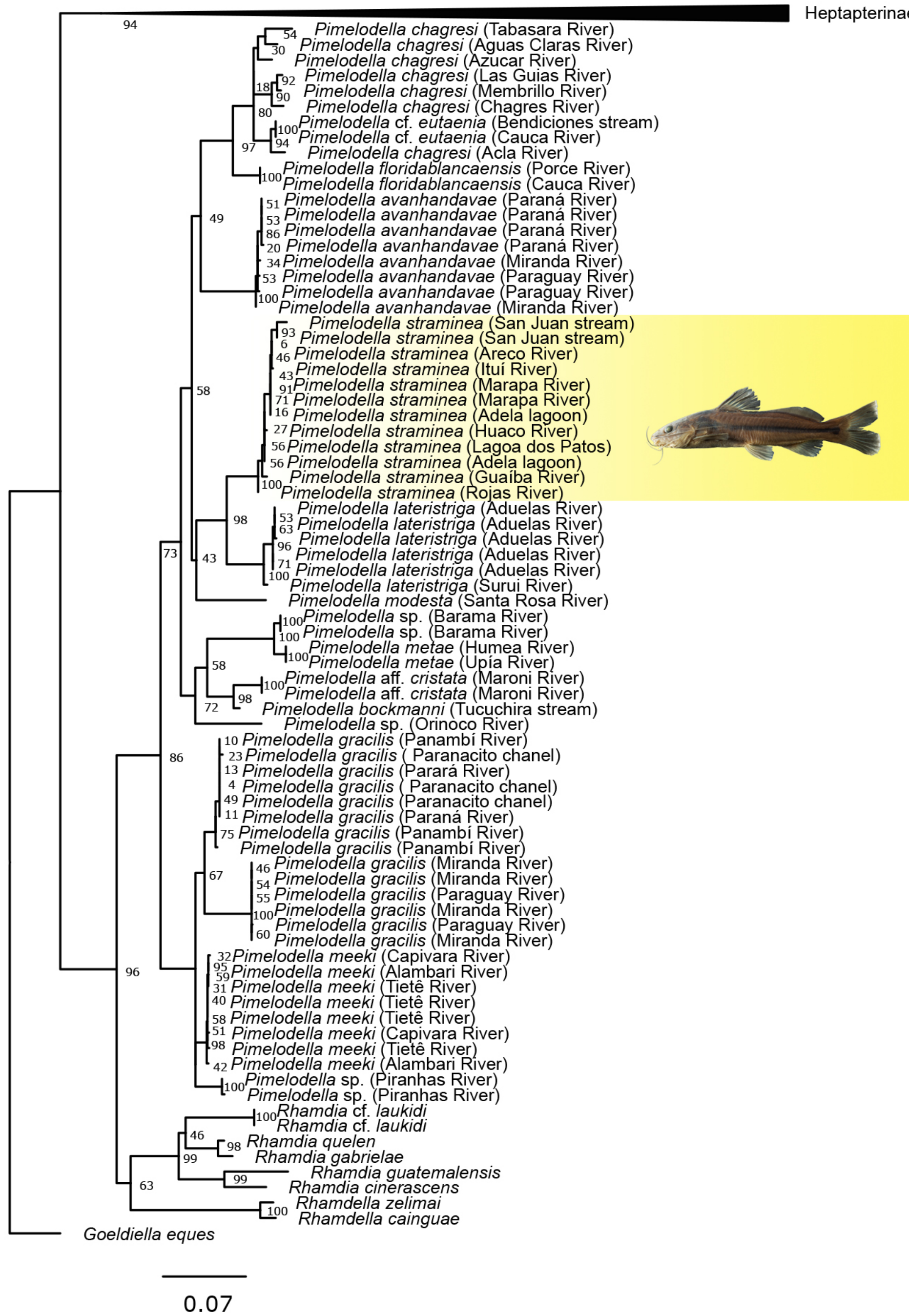

FIGURE 7 | Maximum likelihood tree of *Pimelodella straminea* clade (yellow). Numbers near nodes represent bootstrap support values.

Material examined. *Pimelodella straminea*. Type series of *P. straminea*: ANSP 21581, lectotype (xr), 41.2 mm SL; ANSP 21583, paralectotype (xr), 44.0 mm SL; ANSP 21584, paralectotype (xr), 44.9 mm SL; ANSP 21604, paralectotype (xr), 54.7 mm SL, Brazil, Rio Grande do Sul, Laguna dos Patos system, countryside, near the mountains, 27°21'13"S 54°01'27"W. Type series of *P. autralis*: Brazil: FMNH 57962, holotype (xr), 76.7 mm SL, Uruguaiana, Uruguay River, 29°44'33.2"S 57°05'39.9"W. FMNH 57963, 21 paratypes, 40.5–70.8 mm SL, collected with the holotype. FMNH 57964, 16 paratypes, 39.9–63.1 mm SL, Cacequy, Ibicuhy River, into the Uruguay River, 29°53'50.8"S 54°50'28.8"W. FMNH 57965, 2 paratypes, 43.6–44.5 mm SL, Cachoeira, Jacuhy River, into Lagoa de Patos. FMNH 57966, 4 paratypes, 43.2–48.9 mm SL, Porto Alegre, Guahyba River in front of town, 30°01'49.9"S 51°14'55.7"W. Type series of *P. garbei*: MNRJ 923A, lectotype (xr), 62.6 mm SL, MNRJ 923, 10 paralectotypes, 47.0–59.3 mm SL, Itaqui, rio Uruguai, 29°06'58.6"S 56°33'28.7"W. MZUSP 1057, paralectotype, 52.4 mm SL; MZUSP 5280, paralectotype, 43.1 mm SL; MZUSP 5281, paralectotype, 44.6 mm SL; MZUSP 5282, paralectotype, 44.9 mm SL; MZUSP 5283, paralectotype, 47.8 mm SL; MZUSP 5284, paralectotype, 49.5 mm SL; MZUSP 5285, paralectotype, 49.3 mm SL; MZUSP 5286, paralectotype (xr), 50.3 mm SL; MZUSP 5287, paralectotype, 47.2 mm SL; MZUSP 5288, paralectotype, 48.9 mm SL; MZUSP 5289, paralectotype, 51.6 mm SL; MZUSP 5290, paralectotype, 50.8 mm SL; MZUSP 5291, paralectotype, 49.8 mm SL; MZUSP 5292, paralectotype (xr), 54.3 mm SL; MZUSP 5293, paralectotype, 57.3 mm SL; MZUSP 5494, paralectotype, 56.8 mm SL; MZUSP 5296, paralectotype, 56.5 mm SL; MZUSP 5298, paralectotype, 56.7 mm SL, Brazil, Rio Grande do Sul, Itaqui, Uruguai River, 29°8'0.0"S 56°36'0.0"W. Type series of *P. laticeps*: FMNH 57969, holotype (xr), 49.0 mm SL; FMNH 57970, 3 paratypes (xr), 61.5–72.7 mm SL, Paraguay, Paraguay basin, Sapucaí, 25°39'25"S 56°57'18"W.

DISCUSSION

Pimelodella straminea and its junior synonyms have a troubled taxonomic history. Cope (1894) described this species as *Rhamdella straminea* for Rio Grande do Sul, Brazil. Despite the absence of a more specified locality for this species, Cope (1894:84) indicated the specimens were collected by Mr. H. H. Smith in the interior, near the mountains. According to Fowler (1915), the type locality was the Jacuhy River (= Yacuí River), Rio Grande do Sul, Brazil, although Cope (1894) did not indicate, and specimens at the ANSP lack the original author labels with this information. Nevertheless, Cope (1894:107) reports that his work added seventeen new species to the Jacuhy River, suggesting that *Rhamdella straminea*, one of the new species described, was also from this river.

Eigenmann (1910) transferred *Rhamdella straminea* to *Rhamdia* genus, without providing justification for this decision, and was followed by Gosline (1945), Fowler (1951), and Burgess (1989). Fowler (1915:213), besides indicating the collecting locality of *Rhamdella straminea* to "Rio Jacuhy", in Rio Grande do Sul State, adds ANSP 23216 as identical to the remaining material examined by Cope. Böhlke (1984:142) included this last in the list of types of *R. straminea*. Malabarba (1989:143) included *Rhamdella straminea* in the synonymy of *R. eriarcha*, arguing that the species from the Lagoa dos

Patos system are probably synonyms, as only one species of *Rhamdella* occurs in that locality. This decision was followed by Bockmann, Guazzelli (2003). Lucena, Silva (1991) followed Fowler (1951) and placed *Rhamdella straminea* under *Rhamdia* again, but Silfvergrip (1996) did not include *R. straminea* in his *Rhamdia* revision.

Bockmann, Miquelarena (2008), in their phylogenetic analysis of *Rhamdella*, argued that due to the presence of long maxillary barbels and difficult in delimiting the limit of the posterior fontanel, *R. straminea* should be placed in *Pimelodella* or *Rhamdia*, but not *Rhamdella*. Slobodian *et al*. (2017), in their examination of *P. humeralis* material, recognized *R. straminea* as a species of *Pimelodella*; however, they did not provide further information about that decision. Slobodian (2017), in her unpublished thesis, mentioned that *Rhamdella straminea* would be in fact a *Pimelodella*, due to the presence of the genus diagnostic characteristics (like posterior fontanel long, and supraoccipital process reaching the prenuchal plate), with the exception of ANSP 23216, added by Fowler (1915) to the type-material list, which is a *Rhamdia* specimen. Also, Slobodian (2017) mentioned *P. straminea* as probably a senior synonym of *P. australis*, but would not indicate synonyms before more comparative material of the Lagoa dos Patos system was examined. Thus, up until this work *Pimelodella straminea* was recognized as a valid species a priori, but only known from its type-material, meanwhile a more thoroughly comparison with *P. australis* was needed.

On the other hand, Eigenmann (1917:243) described *P. laticeps* for Sapucay, Paraguay based on a holotype and three paratypes from the same locality; and a new subspecies called *P. laticeps australis* for Uruguaiana, Rio Grande do Sul, Brazil, based on a holotype and 19 paratypes, despite including also specimens from Ibicuhy river (FMNH 57964, formerly CM 6952), Jacuhy river (FMNH 57965, formerly CM 6953), and non-specified localities in Porto Alegre (FMNH 57966, formerly CM 6954) and Rio Grande do Sul State (IUM 4876, not found), Brazil, stablishing the species for Uruguay and Lagoa dos Patos basins. According to Eigenmann (1917:244), *P. australis* could be distinguished from *P. laticeps* by having longer maxillary barbel (*i.e*., maxillary barbel extending between middle part or end of anal-fin base in *P. australis vs*. reaching tip of depressed dorsal fin or slightly beyond it in *P. laticeps*), and being lighter in color, with the dorsal stripe interrupted at the dorsal plate and at posterior limit of dorsal-fin, besides a supraoccipital process lighter than the area bordering it. Both Guazzelli (1997) and Bockmann (1998) proposed elevating *Pimelodella laticeps australis* to the species rank as *P. australis,* which was formally published in Bockmann, Guazzelli (2003).

Miranda Ribeiro (1918) described *P. garbei* based on 36 specimens collected from Itaquí, Rio Grande do Sul, Brazil, probably in the Uruguay River. Posteriorly, Miranda Ribeiro (1953) designated the lectotype and paralectotypes from the type series. In her dissertation, Guazzelli (1997) suggested *P. garbei* was a junior synonym of *P. australis*, an act formally published by Bockmann, Guazzelli (2003). Finally, *Pimelodella portalegrensis* was used by E. Ahl on the label of specimens ZMB 7437 and ZMB 25128, previously identified as *P. lateristriga*. Silfvergrip, Paepke (1997:172) in their Catalogue of types from the Zoological Museum of Berlin, indicated that this species was never formally described, and was a *nomen nudum*. They also indicated that ZMB 25128 was reassigned to ZMB 32030, but the latter number is identical to that used for the holotype of *Pimelodella conquetaensis* Ahl, 1925 (Silfvergrip, Paepke, 1997:166, 172).

Traditionally, *P. straminea* specimens deposited in biological collections have been assigned different names based on their hydrogeographic distribution. The specimens from the Paraguay, Paraná, and La Plata river basins were identified under the name "*P. laticeps*" (*e.g.*, list of fish species of Ringuelet *et al*., 1967; López *et al*., 1981, 1982, 2003; Litz, Koerber, 2014; Mirande, Koeber, 2015; Koeber *et al*., 2017). In contrast, individuals from the Uruguay River basin and the Laguna dos Patos system were recognized as "*P. australis*" (*e.g*., Fowler, 1915; Malabarba, 1989; Volcan *et al*., 2012; Litz, Koerber 2014; Bertaco *et al*., 2016; Nión *et al*., 2016). However, *P. straminea* was known only from the type material, and the name was not used in scientific collections.

When examining the type series of the aforementioned species and specimens deposited in the ichthyological collections of Argentina and Brazil, we found morphological similarity between specimens assigned to both *P. australis* (and its junior synonym, *P. garbei*) and *P. laticeps*, consistent with the description of *P. straminea*. Morphometric measurements and genetic sequences allowed us to demonstrate an overlap in morphometric traits (Fig. 5) and genetic nesting for the different populations of "*P. australis*" and "*P. laticeps*" from endorheic (Salí-Dulce) and exorheic (San Juan, Paraná-La Plata and Uruguay rivers) basins of both countries (Figs. 6; Tab. **S1**). Thus, we propose *P. australis*, *P. laticeps*, and reiterate *P. garbei* as junior synonyms of *P. straminea*, which has temporal priority over the other species, according to Article 23.1 of the International Code of Zoological Nomenclature (ICZN, 1999). We also hereby designate ANSP 21581 as the lectotype of *P. straminea*, and ANSP 21582–84 and 21604 as paralectotypes. The specimen of ANSP 23216 should not be included on the type-material list, as it apparently was not examined by Cope (1894), who explicitly cites five specimens, and corresponds to a *Rhamdia* specimen.

We conclude that the lack of rigorous taxonomic studies for the recognition of *Pimelodella* species has led to numerous specimens being indeterminate at the species level or misidentified (*e.g.*, Aguilera, Azpelicueta, 2015; Pierre, Slobodian, 2024). To such an extent that some authors have suggested that the distribution of *P. straminea* for the Andean Cuyan biogeographic province (Arratia *et al*., 1983; López *et al*., 2008), is due to introduction processes that could be linked to attempts by fishermen to increase the food supply for ichthyophagous species of sporting interest (García *et al*., 2018; Valenzuela *et al*., 2024). However, we consider that the presence of *P. straminea* in rivers such as the Sali-Dulce, Primero, San Juan, Quinto, Sauce Grande, Sauce Chico and Quequén Grande, is a natural distribution pattern, consistent with that observed in *Psalidodon eigenmanniorum* (Cope, 1894), *Cheirodon interruptus* (Jenyns, 1842), *Jenynsia obscura* (Weyenbergh, 1877), *Oligosarcus jenynsii* (Günther, 1864), and *Trichomycterus corduvensis* Weyenbergh, 1877, which are shared between the Andean Cuyan, Pampean, and Great Rivers provinces (Arratia *et al*., 1983; López *et al*., 2008; Acosta *et al*., 2013), supporting the clear relationships of the Parano-Platense fauna (Arratia *et al*., 1983; López *et al*., 2008). In conclusion, we argue that the confusion regarding the available names for *Pimelodella* species from southern South America stems from a poorly described species (*Pimelodella straminea*), combined with the absence of large-scale revisionary works based on substantial comparative material. We reiterate that the examination of numerous comparative specimens is essential for resolving the taxonomic problems associated with broadly distributed species, such as many within *Pimelodella*.

Comparative material examined. *Pimelodella gracilis*. **Argentina: Paraná-La Plata basin:** MNHN A-9284, syntype (xr), 170.1 mm SL, "Corrientes dans le Parana et les autres rivières au-dessus de 28° de latitud sud", 28°00'47"S 58°49'52"W. MACN-ict 2471, 1, 92.8 mm SL, Entre Rios, Paraná Guazú River (long stretch), *ca*. 33°54'30.1"S 58°52'59.7"W, Feb 1940, Sr. A. Nani & F. Gneri. MACN-ict 2644, 1, 82.8 mm SL, Santa Fe, Rosario, Paraná River, M.A.N estación de piscicultura de Rosario, *ca*. 32°54'40.9"S 60°40'29.9"W. MACN-ict-3074, 5, 63.0–94.6 mm SL, Santa Fe, Rosario, Paraná River, *ca*. 32°54'42.7"S 60°40'10.3"W, Sr. S. Siciliano. MACN-ict 3114, 9, 40.7–96.8 mm SL, Entre Rios, Victoria, Charigüe stream (old Paraná), 32°56'10"S 60°36'07"W, 1942, Sr. S. Siciliano. MACN-ict 3153, 3, 79.4–90.1 mm SL, Santa Fe, Island surrounding the city of Santa Fe, Jul 1937, A. Nani & E. Balech. MACN-ict 3229, 8, 58.4–105.1 mm SL, Santa Fe, Rosario, Paraná River, *ca*. 32°54'42.7"S 60°40'10.3"W, Mar 1944, S. Siciliano. MACN-ict 4633, 1, 88.3 mm SL, Corrientes, estero Santa Lucia Manantiales, 27°42'03.0"S 57°30'00.1"W, Jul 1959, I. Apostol. MACN-ict 5240, 4, 58.5–85.3 mm SL, Entre Rios, Gualeyán River, aprox. 32°58'20.3"S 58°30'57.3"W, 20 Jan 1964, R. López. MACN-ict 6042, 1, 68.7 mm SL, Buenos Aires, de La Plata River (Obras Sanitarias de la Nación – O.S.N), 34°32'50.6"S 58°25'33.0"W, 7 Sep 1966, R. López & H. Castello. MACN-ict 6374, 5, 97.9–121.2 mm SL, Entre Rios, Paraná Guazú River, *ca*. 33°54'30.1"S 58°52'59.7"W, 13 May 1969, E. Grancelli. MACN-ict 6724, 1, 78.8 mm SL, Entre Rios, Naucas stream, Apr 1974, F. Santos & Castelli. MACN-ict 6775, 11, 44.5–74.4 mm SL, Santa Fe, Colastiné River, *ca*. 31°37'03.8"S 60°33'07.3"W, 15 Aug 1930, A. Carcelles & Zotta. MACN-ict 7092, 9, 67.0–105.6 mm SL, Santa Fe, Helvecia, San Javier River, 31°06'09.2"S 60°04'55.5"W, Dec 1974, H. Castello. MACN-ict 7369, 4, 62.1–88.7 mm SL, Corrientes, Itati, Corza-Cué, Paraná River, *ca*. 27°20'28.9"S 57°55'49.3"W, 20 Jul 1977, F. Santos. MACN-ict 8256, 2, 79.7–93.6 mm SL, Buenos Aires, de La Plata River (Obras Sanitarias de la Nación – O.S.N), 34°32'50.6"S 58°25'33.0"W, 22 Dec 1964 to 16 Jan 1965, R. López & H. Castello. MACN-ict 8263, 2, 46.8–49.7 mm SL, Misiones, Yabebiri River, aprox. 27°17'04.9"S 55°31'59.1"W, 27 Jan 1982, H. Castello. MACN-ict 8267, 1, 84.9 mm SL, Buenos Aires, de la Plata River, port of Buenos Aires, *ca*. 34°35'26.2"S 58°21'28.5"W, 29 Dec 1985, F. Fraga. MACN-ict 9569, 1, 91.4 mm SL, Entre Rios, Victoria, Paraná River, 32°37'22.2"S 60°09'26.5"W, 20 Feb 2010, J. Casciotta *et al*. MACN-ict 9576, 1, 93.9 mm SL, Entre Rios, Victoria, Paraná River, 32°37'22.2"S 60°09'26.5"W, 20 Feb 2010, J. Casciotta *et al*. MACN-ict 9632, 1, 109.6 mm SL, Entre Rios, Victoria, Paraná River, 32°37'22.2"S 60°09'26.5"W, 20 Feb 2010, J. Casciotta *et al*. MACN-ict 9633, 1, 163.9 mm SL, Corrientes, Ituzaingo, Paraná River, 27°35'18.6"S 56°41'28.4"W, 23 Nov 2009, Casciotta *et al*. MACN-ict 10895, 2, 36.8–41.1 mm SL, Corrientes, Bella Vista, Paraná River, 28°30'30.1"S 59°03'07.6"W, 4 Nov 1995, G. López & Bentos. MACN-ict 11491, 1, 154.3 mm SL, Entre Rios, La Paz, 30°44'26.0"S 59°38'40.0"W, Feb 1997, M. Drioli. MACN-ict 12690, 1, 100.4 mm SL, Misiones, Iguazu Falls, Parque Nacional Iguazú, Iguazú River in Puerto Macuco, 25°38'30"S 54°27'59.4"W, 3 Mar 2017, A. Almirón *et al*. MLP-Ict 2246, 3, 99.4–105.1 mm SL, Buenos Aires, San Pedro, Paraná River, aprox. 33°40'23.9"S 59°38'55.7"W, 28 Mar 1937, Palavicini, Ex M.L.P nº 1-x-37-24. MLP-Ict 4417, 3, 82.2–87.5 mm SL, Buenos Aires, San Pedro, Paraná River, 33°40'23.9"S 59°38'55.7"W, 9 Nov 1946, F. Risso, Ex MLP nº 17-xi-96-46-45. MLP-Ict 5154, 1, 94.7 mm SL, Buenos Aires, San Nicolas, Paso del Tonelero, 33°24'59.4"S 60°05'33.2"W, 22 Sep 1948, E. Mac. Donagh, Ex MLP nº 1-ix-48-18. MLP-Ict 5266, 27, 59.9–93.3 mm SL, Corrientes, Goya, 29°08'38.2"S 59°15'59.9"W, Exp. Museo (M. Galvan & E. Martin), 13 Dec 1949, Ex MLP nº 2-i-49-13. MLP-Ict 5271, 1, 79.9 mm SL, Buenos Aires, Isla Rebechi, Paraná Mini, 34°11'35.0"S 58°29'15.1"W, 13 Dec 1948, Exp. Museo (M. Galvan & E. martin), Ex MLP nº 2-I-49-16. MLP-Ict 5302, 2, 74.4–78.1 mm SL, Corrientes, Goya, 29°08'38.2"S 59°15'59.9"W, 15 Dec 1948, Exp. Museo (M. Galvan & E. martin), Ex MLP nº 1-ii-49-4. MLP-Ict 5470, 1, 116.9 mm SL, Buenos Aires, San Nicolas, 10 Apr 1949, R. Aramburu, Ex MLP nº 2-vi-49-2. MLP-Ict 6778, 9, 31.7–88.5 mm SL, Santa Fe, Setúbal lagoon, 31°35'00.2"S 60°36'59.2"W, 15 Jul 1960, M. Galvan & E. Martin, Ex MLP nº 11-vii-60-8. MLP-Ict 8050, 1, 75.1 mm SL, Chaco, Resistencia, Negro River, Nautical field, 27°28'04.2"S 58°53'49.2"W, 5 Dic 1966, M. Galván, Ex MLP nº 6-VI-68-3.

MLP-Ict 9149, 5, 78.3–100.8 mm SL, Santa Fe, Reconquista, Paraná Mini, 34°11'35.0"S 58°29'15.1"W, Jul 1948, Ex MLP nº 1-ii-49-37. MLP-Ict 9305, 1, 91.0 mm SL, Corrientes, Paraná River, 27°28'12.3"S 58°51'35.8"W, Jul 1997, A. D. Chambrier. MLP-Ict 9311, 1, 73.2 mm SL, Entre Rios, Ibicuycito, 33°50'06.0"S 58°52'36.7"W, R. Castillo, Ex MLP nº 1-xi-43-50. MLP-Ict 9312, 41, 34.4–88.3 mm SL, Santa Fe, South of San Jose del Rincon, Colorado stream, 14 Jul 1960, M. Galván and E. Martin, Ex MLP nº 10-vii-60-36. MLP-Ict 9551, 18, 64.7–89.8 mm SL, Corrientes, Carrizal stream, Bella vista, 6 Nov 1985, A. Almirón & J. Casciotta. MLP-Ict 9552, 3, 50.3–83.0 mm SL, Corrientes, Carrizal stream, Bella vista, R. Menni & H. López. MLP-Ict 9553, 3, 75.2–85.1 mm SL, Corrientes, Carrizal stream, Bella vista, 3 Nov 1985, A. Almiron & J. Casciotta. MLP-Ict 9554, 2, 60.0–61.1 mm SL, Corrientes, Carrizal stream, Bella vista, Jul 1981, C. Darrieo, M. Martinez & G. Soave. MLP-Ict 9560, 4, 46.0–51.8 mm SL, Corrientes, Santa Lucia River, Paso Naranjito, 28°20'04.6"S 58°27'35.9"W, 4 Feb 1976, Curso Zoología de Vertebrados. MLP-Ict 9561, 10, 48.4–59.6 mm SL, Corrientes, Santa Lucia River, Nov 1983, A. Almiron & J. Casciotta. MLP-Ict 10546, 22, 63.2–100.5 mm SL, Entre Rios, Balneario de Villaguay, Villaguay stream, 31°51'56.2"S 59°00'09.3"W, 6 Nov 2004, A. Miquelarena, L. Protogino, J. Mantinian & E. Etcheverry. MLP-Ict 10568, 39, 54.7–92.0 mm SL, Entre Rios, Villaguay, Gualeguay River and balsa San Justo, 31°54'48"S 59°05'59.8"W, 24 Oct 2008, A. Miquelarena, L. Protogino, J. Mantinian & E. Etcheverry. MLP-Ict 10589, 4, 92.6–112.3 mm SL, Entre Rios, Villaguay, Bergara stream, under the railway bridge, 31°56'S 58°59'W, 23 Oct 2008, A. Miquelarena, L. Protogino, J. Mantinian & E. Etcheverry. MLP-Ict 10604, 3, 52.7–71.8 mm SL, Entre Rios, Villaguay, Gualeguay River, golf course, 31°51'32.4"S 59°07'40.7"W, 24 Oct 2008, A. Miquelarena, L. Protogino, J. Mantinian & E. Etcheverry. MLP-Ict 10636, 12, 40.1–85.6 mm SL, Entre Rios, Tala, NN stream on Provincial Route 6, 27 Oct 2008, A. Miquelarena, L. Protogino, J. Mantinian, E. Etcheverry & J. Arias. MLP-Ict 11940, 1, 78.0 mm SL, Corrientes, Ita Ibaté, Tillita stream, tributary of Paraná River, 26 Mar 2010. MLP-Ict 11941, 12, 55.4–94.4 mm SL, Corrientes, Ita Ibaté, 27°25'43.4"S 57°20'17.4"W, 22 to 23 Mar 2009. **Uruguay basin:** MACN-ict 6429, 1, 81.3 mm SL, Entre Rios, outlet of the Gualeguaychú River with the Uruguay River, 33°04'14.1"S 58°26'25.5"W, 13 Oct 1972, R. Barbetti. MLP-Ict 4888, 7, 42.4–72.8 mm SL, Entre Rios, Gualeguaychú River, 14 to 15 Jul 1947, R. A. Ringuelet, E. Rizzo, M. Galvan & C. Danori, Ex MLP nº 6-vi-47-22. **Brazil: Paraná River basin:** MZUSP 2250, 1, 108.3 mm SL, São Paulo, Piracicaba, Piracicaba River, 22°41'21.6"S 47°41'12.6"W. MZUSP 22153, 1, 121.7 mm SL, São Paulo, Piracicaba, 22°41'0.0"S 47°51'0.0"W. MZUSP 82381, 1, 117.2 mm SL, São Paulo, Porto Cabral, Parana River´, 22°15'0.0"S 52°30'0.0"W. **Paraguay River basin:** MZUSP 23195, 1, 189.7 mm SL, Mato Grosso, Taquari River, about 150 km from Coxim county, 18°13'0.0"S 55°10'0.0"W. MZUSP 24856, 2, 106.1–115.7 mm SL, Mato Grosso, Cuiabá, Cuiaba River, *ca*. 500 m below the bridge, 15°37'0.0"S 56°6'0.0"W. MZUSP 27728, 3, 135.1–202.7 mm SL, Mato Grosso do Sul, Coxim, Taquari River, 18°30'0.0"S 54°45'0.0"W. MZUSP 28571, 2, 78.1–86.3 mm SL, Mato Grosso do Sul, Coxim, Taquari River, near Coxim county, 18°30'0.0"S 54°45'0.0"W. MZUSP 38033, 7, 59.9–71.1 mm SL, Mato Grosso do Sul, Corumba, Paraguai River, Morrinhos, 19°0'0.0"S 57°39'0.0"W. MZUSP 87788, 1, 148 mm SL, Mato Grosso, Sepotuba River, Salto Maciel Tangará da Serra, 15°55'59.0"S 57°39'0.0"W. **Uruguay basin:** FMNH 57948, 1 c&s, 111.9 mm SL, Uruguaiana, 29°44'56.8"S 57°05'45.6"W. **Paraguay:** MACN-ict 7276, 3, 84.0–84.6 mm SL, Itapúa, Hohenau 1, Club de Caza y Pesca de Hohenau, Paraná River, 27°08'51.5"S 55°34'03.8"W, 14 Nov 1981, H. P. Castello. MACN-ict-7720, 7, 63.4–81.7 mm SL, Itapúa, Hohenau 1, Club de Caza y Pesca de Hohenau, Paraná River, 27°08'51.5"S 55°34'03.8"W, 14 Nov 1981, H. P. Castello. MACN-ict 7721, 5, 100.7–147.2 mm SL, Itapúa, Hohenau 1, Club de Caza y Pesca de Hohenau, Paraná River, 27°08'51.5"S 55°34'03.8"W, 14 Nov 1981, H. P. Castello. MACN-ict 7985, 2, 69.9–71.8 mm SL, Itapúa, Encarnación, Pacú Cuá, Paraná River, 27°23'40.5"S 55°49'37.6"W, 15 Nov 1981, H. P. Castello. MLP-Ict 7559, 5, 42.7–55.7 mm SL, Formosa, Sep 1962, A. Arriguti, Ex MLP nº 8-ix-62-14. MLP-Ict 11874, 1, 61.9 mm SL, Alto Paraguay, km 1249, Bahia Negra, 20°13'33.4"S 58°10'11.0"W, 24 Oct 1992, H. López, H. Calandra & C. Darrieu. USNM 232282, xr, 64.4–76.4 mm SL, lago Ypacarai, 63 km W of Military Base at San Bernardino, 25°21'00.9"S 57°17'06.8"W. USNM 232283, xr, 91.2 mm SL, Alto Parana Dept., Puerto Bemone on Paraná River, 24°52'32.9"S 54°25'34.4"W. **Uruguay: Uruguay River basin:** ANSP 203154, 15, 60.7–109.7 mm SL, Nuevo Berlin, Uruguay River, Río de La Plata drainage, 32°58'33.3"S 58°04'00.8"W. ANSP 203155, 1, 72.9 mm SL, Uruguay River, Río de La Plata drainage, 34°47'35.5"S 56°26'56.6"W. ANSP 203156, 1, 57.3 mm SL, Uruguay, Uruguay River, Río de La Plata drainage, 34°47'35.5"S 56°26'56.6"W.

Pimelodella mucosa. **Paraguay: Paraguay basin:** CAS 63720, holotype (xr), 97.4 mm SL, Río Paraguay, Bahia Negra on west bank, 20°13'47"S 58°09'54"W. CI-FML 7976 (Ex 6194), 1, 91.7 mm SL, 1 c&s, 77.9 mm SL, Alto Paraguay, Bahía Negra, Negro River, 19°57'43.8"S 58°12'06.5"W, Nov 2002, G. Aguilera & J. M. Mirande. **Argentina:** CI-FML 458, 25, 60.5–101.3 mm SL, 2 c&s, 67.9–85.5 mm SL, Formosa, La Salada lagoon, 24°41'48.8"S 59°50'27.3"W, 21 Sep 1951, S. A. Pierotti. CI-FML 2023, 10, 60.9–98.1 mm SL, Formosa, esteros Oca lagoon, 26°13'20.6"S 58°10'28.4"W, 16 Nov 1951, S. A. Pierotti. CI-FML 7166, 1, 60.7 mm SL, Formosa, Ingles stream, 25°44'52.2"S 57°50'23.4"W, 19 Oct 1950, Pierotti & Budin. CI-FML 7168, 3, 66.5–83.3 mm SL, Formosa, López lagoon, 24 Nov 1951, Pierotti. CI-FML 7169, 3, 67.1–71.5 mm SL, Formosa, Paraguay River, 26°09'14.0"S 58°07'19.7"W, 24 Nov 1951, Pierotti. MACN-ict 9941, 5, 38.7–93.1 mm SL, Formosa, Parque Nacional Pilcomayo, Blanca lagoon, 25°10'16.0"S 58°07'53.0"W, 16 Feb 2007, C. Baigún, F. Brancolini & P. Minotti. MACN-ict 9969, 4, 52.4–64.9 mm SL, Formosa, Parque Nacional Pilcomayo, Blanca lagoon, 25°10'16.0"S 58°07'53.0"W, 10 Oct 2007, C. Baigún, F. Brancolini & P. Minotti. MACN-ict 12704, 2, 72.6–104.1 mm SL, Formosa, La Buena Fe, Bañado La Estrella, 23°56'25.8"S 60°57'31.4"W, 29 Apr 2013, P. Firpo Lacoste. MLP-Ict 7559, 2, 57.8–60.6 mm SL, Formosa, Sep 1962, A. Arriguti, Ex MLP nº 8-ix-62-14. MLP-Ict 9555, 1, 61.3 mm SL, Formosa, Sep 1962, A. Arriguti.

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AUTHORS' CONTRIBUTION

Miguel Ángel Cortés-Hernández: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Writing-original draft, Writing-review and editing.
Veronica Slobodian: Conceptualization, Data curation, Resources, Validation, Writing-review and editing.
Edna Judith Márquez-Fernández: Data curation, Methodology, Software, Writing-review and editing.
Gastón Aguilera: Conceptualization, Funding acquisition, Supervision, Writing-review and editing.
Juan Marcos Mirande: Conceptualization, Formal analysis, Software, Supervision, Writing-review and editing.

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ETHICAL STATEMENT

This research was conducted exclusively with specimens previously deposited in museum collections. Consequently, it was not necessary to submit the study for evaluation or obtain approval from Animal Use Ethics Committees.

DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article.

AI STATEMENT

The authors did not use any AI-assisted technologies in the creation of this manuscript or its figures.

COMPETING INTERESTS

The authors declare no competing interests.

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