



Description of two new species of *Bujurquina* (Teleostei: Cichlidae) from the Bolivian Amazon

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Two new species of *Bujurquina* are described from the Bolivian Amazon basin. The first new species inhabits the Beni River drainage and is distinguished from its congeners in the combination of the following characters: longer snout, deeper head, body and caudal peduncle, shorter pectoral fin, more scales in the E1 series, discontinuous longitudinal band, bars 5 and 6 not fused, preopercular spot and coloration pattern on flank scales absent. The second new species inhabits the Mamoré and Iténez river drainages, and differs from its congeners in the combination of the following characteristics: longer and deeper head, longer snout and pectoral fin, deeper caudal peduncle, fewer scales in the E1 series and lower lateral line, preopercular spot absent, bars 6 and 7 separated from longitudinal band and discontinuous longitudinal band. An identification key for species reported from Bolivia and complementary morphological data for *B. oenolaemus* and *B. vittata* are presented.

Keywords: Andean foothills, Cichliformes, Identification key, Morphometry, Upper Madeira drainage.



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Se describen dos especies nuevas de *Bujurquina* para la cuenca Amazónica de Bolivia. La primera nueva especie habita la cuenca del Río Beni y se distingue de sus congéneres en la combinación de los siguientes caracteres: hocico más largo, cabeza, cuerpo y pedúnculo caudal más bajos, aleta pectoral más corta, mayor número de escamas en la serie E1, banda longitudinal discontinua, barras 5 y 6 no fusionadas, mancha preopercular y patrón de coloración en las escamas de los flancos ausentes. La segunda nueva especie habita las cuencas de los ríos Mamoré e Iténez, y se diferencia de sus congéneres en la combinación de las siguientes características: cabeza más larga y alta, hocico y aleta pectoral más largos, pedúnculo caudal más alto, menor número de escamas de la serie E1 y de la línea lateral inferior, ausencia de la mancha preopercular, barras 6 y 7 separadas de la banda longitudinal y banda longitudinal discontinua. Se presenta una clave de identificación de las especies de Bolivia y datos morfológicos complementarios de *B. oenolaemus* y *B. vittata*.

Palabras clave: Cichliformes, Clave de identificación, Cuenca del Río Madera, Morfometría, Piedemonte de los Andes.

INTRODUCTION

Bujurquina Kullander, 1986 is distinguished morphologically from similar genera by the presence of a uniserial predorsal scale pattern, a dorsal notch in the ceratohyal for the hyoid artery, accessory lateral line scales between caudal-fin rays D1 and D2, an oblique lateral band running from the opercular cleft toward the end of the soft dorsal fin, and a headband across the nape that is usually attached to the lateral band (Kullander, 1986). It is phylogenetically considered a monophyletic group, which alongside *Andinoacara* Musilová, Říčan & Novák, 2009 and *Tahuantinsuyoa* Kullander, 1986, comprises the BAT clade, within the Tribe Cichlasomatini of the subfamily Cichlinae (Ilves *et al.*, 2018).

Currently, *Bujurquina* comprises 18 valid species, 15 of them distributed in the western portion of the Amazon basin: *B. apoparuana* Kullander, 1986; *B. cordemadi* Kullander, 1986; *B. eurhinus* Kullander, 1986; *B. hophrys* Kullander, 1986; *B. huallagae* Kullander, 1986; *B. labiosa* Kullander, 1986; *B. megalospilus* Kullander, 1986; *B. moriorum* Kullander, 1986; *B. ortegai* Kullander, 1986; *B. pardus* Arbour, Barriga Salazar & López-Fernández, 2014; *B. peregrinabunda* Kullander, 1986; and *B. robusta* Kullander, 1986; *B. syspilus* (Cope, 1872); *B. tambopatae* Kullander, 1986; *B. zamorensis* (Regan, 1905). *Bujurquina mariae* (Eigenmann, 1922), *B. oenolaemus* Kullander, 1987 and *B. vittata* (Heckel, 1840) occur in the main channels and tributaries of the Orinoco, Paraguay, and Paraná rivers (Kullander, 1986; Fricke *et al.*, 2022). Besides, several undescribed forms still require revision in other drainages of Peru, Ecuador, Venezuela and Brazil (Arbour *et al.*, 2014).

Several checklists of fishes from Bolivia reported *B. cordemadi*, *B. eurhinus*, and *B. vittata* inhabiting the lowlands of the Amazon and La Plata basins (Pouilly *et al.*, 2010; Carvajal-Vallejos, Zeballos Fernández, 2011; Carvajal-Vallejos *et al.*, 2014; Sarmiento *et al.*, 2014; Careaga *et al.*, 2020; Hablützel, Huanto, 2020; Fricke *et al.*, 2022). In addition, *B. oenolaemus* is considered endemic to the Río Aguas Calientes (Río Paraguay drainage),

in the southern portion of the Santa Cruz Department (Kullander, 1987; Careaga *et al.*, 2020; Hablützel, Huanto, 2020). However, the taxonomy of Bolivian species of this genus can still be considered in construction, with clear morphological differentiation of the species based on the original descriptions still difficult.

Recent field collections and examination of material deposited in Bolivian museums revealed undescribed species of *Bujurquina* inhabiting foothills and lowlands of the Beni and Mamoré river drainages, which are main tributaries of the upper Madeira watershed in the Amazon. In this article, two new species of *Bujurquina* are described, together with a review of Bolivian species of the genus and a resulting key of identification.

MATERIAL AND METHODS

Morphological characters were obtained from 81 adult specimens (> 50 mm SL) of *Bujurquina* deposited in three scientific fish collections: UMSS-Museo d'Orbigny (Universidad Mayor de San Simón, Cochabamba, Bolivia), CIRA (Centro de Investigación de Recursos Acuáticos, Trinidad, Beni, Bolivia), and CBF (Colección Boliviana de Fauna, La Paz, Bolivia).

The morphological variables corresponded to those proposed by Kullander (1980a,b, 1986), except for two additional characters: pre-anal length (from the tip of the snout to the origin of the anal fin; point-to-point measurement) and length of the first ventral spine, were added (Fig. 1). The meristic variables were the number of scales in the E1 line; number of predorsal and circumpeduncular scales; number of upper and lower lateral line scales; number of spines and soft dorsal rays; number of spiny and soft anal rays. Counts indicated by an asterisk belong to the holotype.

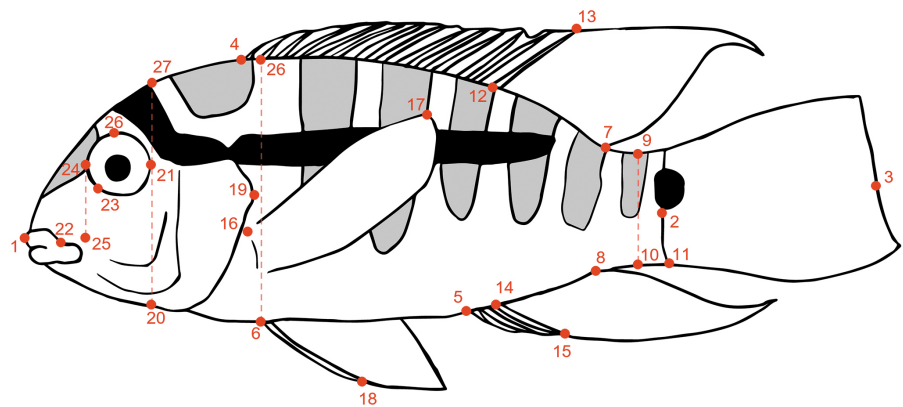


FIGURE 1 | Morphometric variables: Standard length (SL, between points 1–2), total length (TL, points 1–3), body depth (BD, points 6–26), predorsal length (PDL, points 1–4), preanal length (PAL, points 1–5), preventral length (PVL, points 1–6), dorsal-fin base length (DB, points 4–7), anal-fin base length (AB, points 5–8), caudal peduncle depth (CPD, points 9–10), caudal peduncle length (CPL, points 8–11), dorsal spine length (DS, points 12–13), anal spine length (AS, points 14–15), ventral spine length (VSL, points 6–18), pectoral-fin length (PL, points 16–17), head length (HL, points 1–19), head depth (HD, points 20–27), head width (HW, distance between points 21, both sides), postorbital length (POL, points 19–21), orbital diameter (OD, points 21–24), snout length (SNL, points 1–25), preorbital depth (POD, points 22–23), interorbital width (IW, distance between points 26, both flanks). The dashed lines indicate that the points are aligned with each other at a perpendicular angle to the horizontal axis of the specimen.

Coloration variables (Fig. 2) were suborbital band (absence *vs.* presence), nape band (absence *vs.* presence), interorbital band (absence *vs.* presence), preopercular spot (absence *vs.* presence), caudal spot (absence *vs.* presence), opercular spot–longitudinal band (united *vs.* separated), buccal spots (presence *vs.* absence), bar 6–longitudinal band (united *vs.* separate), bar 7–longitudinal band (united *vs.* separate), bar 7 (single *vs.* bifurcated bar), bar 7–dorsal fin (united *vs.* separate), bars 5–6 (united *vs.* separate), longitudinal band (continuous *vs.* discontinuous) and longitudinal band–caudal peduncle (posterior branch of longitudinal band ends at dorsal fin *vs.* caudal peduncle). Available photographs from Kullander (1981, 1986, 1987) and Arbour *et al.* (2014) were examined to consider coloration variation.

Descriptions and publications used for comparison were Heckel (1840), Regan (1905), Eigenmann, Kennedy (1903), Eigenmann (1922), Kullander (1981, 1986, 1987), Arbour *et al.* (2014), Hablützel, Huanto (2020). For the development of the diagnoses and the identification key for Bolivia, our results and the previously cited literature were combined. Diagnostic variables were corroborated using ImageJ software (Schneider *et al.*, 2012). The procedure consisted in obtaining morphometric data of holotypes from photographs available in descriptions (Arbour *et al.*, 2014; Kullander, 1981, 1986, 1987). The specimens examined in this study were also subjected to the same procedure for comparisons with different holotypes under equal conditions.

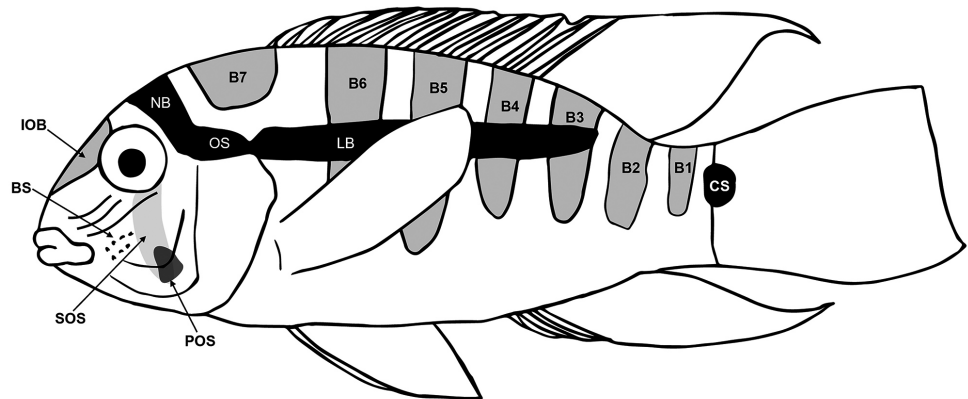


FIGURE 2 | Diagnostic coloration characters in *Bujurquina*. Longitudinal band (LB), caudal spot (CS), lateral bars 1–7 (B1–B7), nape band (NB), interorbital band (IOB), preopercular spot (POS), opercular spot (OS), suborbital stripe (SOS), buccal spots (BS).

RESULTS

Bujurquina beniensis, new species

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(Figs. 3–4; Tab. 1)

Holotype. UMSS 18501, 1, 91.1 mm SL, Bolivia, La Paz Department, Sud Yungas Province, Amazon basin, Río Beni drainage, Nuevo Tunari community's stream, 15°20'58.93"S 67°10'40.59"W, 19 Dec 2011, E. de la Barra, F. Aguilar & R. Calamani.

Paratypes. All from Amazon basin, Río Beni drainage, Bolivia. UMSS 10142, 2, 61.5–70.8 mm SL, La Paz Department, Caranavi Province, Río San Andrés, 15°49'53.52"S 67°34'21.48"W, 7 Nov 2009, J. Zubieta, E. de la Barra, E. Campos & R. Calamani. UMSS 12047, 6, 50.8–82.9 mm SL, La Paz Department, Sud Yungas Province, Río Charobamba, 15°24'44.05"S 67°20'02.52"W, 20 Dec 11, E. de la Barra, F. Aguilar & R. Calamani. UMSS 12064, 8, 52.3–92.2 mm SL, La Paz Department, Sud Yungas Province, Nuevo Tunari community's stream, 15°20'58.93"S 67°10'40.59"W, 19 Dec 2011, E. de la Barra, F. Aguilar & R. Calamani. UMSS 12080, 3, 50.5–92.1 mm SL, La Paz Department, Sud Yungas Province, Nuevo Tunari community's stream, 15°20'58.93"S 67°10'40.59"W, 19 Dec 2011, E. de la Barra, F. Aguilar & R. Calamani. CBF-15092, 1, 52.7 mm SL, La Paz Department, Abel Iturralde Province, Río Madidi, 13°38'07.22"S 68°44'38.83"W, 31 Oct 2015, G. Miranda & J. Molina. CBF-15090, 1, 51.6 mm SL, La Paz Department, Franz Tamayo Province, Río Hondo, 14°38'40.31"S 67°47'34.51"W, 5 May 2016, G. Miranda & J. Molina. CBF-15091, 2, 52.5–54.5 mm SL, La Paz Department, Franz Tamayo Province, Río Quendeque, 15°00'41.39"S 67°46'18.88"W, 12 Oct 2018, G. Miranda & O. Ayala.



FIGURE 3 | *Bujurquina beniensis*, holotype, UMSS 18501, 91.1 mm SL, Bolivia, La Paz Department, Nuevo Tunari community's stream, a tributary of the Río Beni.

Diagnosis. *Bujurquina beniensis* differs from its congeners registered in Bolivia in the following: from *B. mabelae* in caudal peduncle depth (14.2–15.9 *vs.* 15.9–18.7% SL), pectoral-fin length (26.2–32.0 *vs.* 32.7–42.5% SL), head depth (27.7–31.0 *vs.* 31.2–36.1% SL), and nape band (distinctive *vs.* faint); from *B. cordemadi* in caudal peduncle depth (14.2–15.9 *vs.* 16.9–17.3% SL; Kullander, 1986), number of scales in the E1 series (24–26 *vs.* 23; Kullander, 1986), bars 5 and 6 (separated *vs.* fused; Kullander, 1986); from *B. eurhinus* in snout length (11.7–16.1 *vs.* 7.8–10.4% SL; Kullander, 1986); from *B. oenolaemus* in head length (33.7–37.4 *vs.* 38.6–40.9% SL; ranges resulting from combination of Kullander, 1987 and measurements obtained in present study), predorsal length (40.9–45.4 *vs.* 45.4–46.0% SL; measurements obtained in present study), prepelvic length (38.0–43.6 *vs.* 44.5–50.5% SL; measurements obtained in present study), number of scales in the E1 series (24–26 *vs.* 21–23; ranges in scale count resulting from combination of Kullander, 1987 and present study), number of scales in the lower lateral line (8–11 *vs.* 6–7; ranges in scale count resulting from combination of Kullander, 1987 and present study) and nape band (distinctive *vs.* faint; coloration difference determined from the combination of observations of Kullander, 1987 and those obtained in present study); from *B. vittata* in body depth (36.4–41.1 *vs.* 45.8–48.2% SL; ranges resulting from combination of Eigenmann, Kennedy, 1903 and measurements obtained in present study), pectoral-fin length (26.2–32.0 *vs.* 35.5–41.2% SL; ranges resulting from combination of Hablützel, Huanto, 2020; and measurements obtained in present study). Furthermore, *B. beniensis* differs from other species of the genus as follows: from *B. apoparuana* in snout length (11.7–16.1 *vs.* 5.4–10.1% SL; Kullander, 1986), preopercular spot (absence *vs.* presence; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. hophrys* in snout length (11.7–16.1 *vs.* 6.3–11.5% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. huallaqae* in snout length (11.7–16.1 *vs.* 7.2–9.9% SL; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. labiosa* in snout length (11.7–16.1 *vs.* 10.3% SL; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. mariae* in body depth (36.4–41.1 *vs.* 41.7–42.9% SL; Eigenmann, 1922), number of scales on the lower lateral line (8–11 *vs.* 12; Eigenmann, 1922); from *B. megalospilus* in caudal peduncle depth (14.2–15.9 *vs.* 16.7–19.3% SL; Kullander, 1986), number of scales in the E1 series (24–26 *vs.* 23; Kullander, 1986); from *B. moriorum* in snout length (11.7–16.1 *vs.* 5.5–10.7% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. ortegai* in pectoral-fin length (26.2–32.0 *vs.* 32.7–34.4% SL; Kullander, 1986); from *B. pardus* in coloration pattern of flank scales' distal edges (absent *vs.* present; Arbour *et al.*, 2014); from *B. peregrinabunda* in snout length (11.7–16.1 *vs.* 5.8–8.4% SL; Kullander, 1986), body depth (36.4–41.1 *vs.* 41.4–45.4% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. robusta* in snout length (11.7–16.1 *vs.* 7.4–10.6% SL; Kullander, 1986), caudal peduncle depth (14.2–15.9 *vs.* 16.3–17.8% SL; Kullander, 1986); from *B. sypilus* in body depth (36.4–41.1 *vs.* 42.9–48.1% SL; Kullander, 1986), pectoral-fin length (26.2–32.0 *vs.* 37.6–39.9% SL; Kullander, 1986); from *B. tambopatae* in snout length (11.7–16.1 *vs.* 7.7–10.0% SL; Kullander, 1986), number of scales in the E1 series (24–26 *vs.* 22–23; Kullander, 1986); from *B. zamorensis* in head length (33.7–37.4 *vs.* 33.3% SL; Regan, 1905), number of scales in the E1 series (24–26 *vs.* 27; Regan, 1905).

TABLE 1 | Morphometry of Bolivian *Bujurquina* species. Measurements are presented as percentages of SL, except SL (mm). N = number of specimens; SD = Standard deviation.

	<i>B. bentensis</i>					<i>B. mabelae</i>					<i>B. cf. cordemadi</i>					<i>B. oenolaemus</i>					<i>B. vittata</i>				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Standard length	23	50.5	92.2	67.2	-	47	50.1	71.2	58.1	-	3	56.3	73.2	62.2	-	3	53.2	66.4	58.0	-	5	53.8	65.6	58.4	-
Total length	22	130.8	136.7	133.4	1.3	47	130.4	143.3	135.7	2.9	3	139.4	141.7	140.4	1.2	2	130.8	131.0	130.9	0.2	5	128.5	137.3	132.8	4.0
Body depth	23	36.4	41.1	38.4	1.2	47	39.0	45.8	42.2	1.6	3	42.8	43.5	43.1	0.4	3	40.2	44.7	41.7	2.6	5	45.8	48.2	46.7	1.2
Predorsal length	23	40.9	45.4	42.6	1.2	47	42.1	48.0	44.9	1.2	3	43.4	43.9	43.7	0.3	3	45.4	46.0	45.7	0.3	5	44.6	47.4	45.6	1.1
Preanal length	22	67.4	71.9	70.1	1.3	47	69.1	77.9	72.5	1.6	3	72.2	74.0	72.9	0.9	3	73.4	81.0	77.4	3.8	5	69.4	74.5	72.8	2.1
Prepelvic length	23	38.0	43.6	40.0	1.3	47	38.1	44.9	41.8	1.5	3	40.0	40.5	40.2	0.3	3	44.5	50.5	47.9	3.1	5	40.7	43.7	41.9	1.1
Dorsal-fin base length	23	50.8	56.0	53.6	1.4	47	51.9	59.4	55.9	1.7	3	56.6	60.0	58.1	1.8	3	49.6	51.8	50.4	1.2	5	55.8	60.1	58.0	1.6
Anal-fin base length	23	17.5	20.0	18.7	0.7	47	17.0	20.8	19.0	0.9	3	17.9	20.1	19.0	1.1	3	16.8	17.8	17.3	0.5	5	17.4	20.3	19.0	1.2
Caudal peduncle depth	23	14.2	15.9	15.1	0.5	47	15.9	18.7	17.5	0.7	3	17.1	17.8	17.3	0.4	3	15.4	15.9	15.7	0.2	5	16.8	18.4	17.5	0.6
Caudal peduncle length	23	11.0	15.2	13.4	1.1	47	9.0	13.5	11.0	1.0	3	11.0	11.6	11.4	0.3	3	11.1	12.5	11.6	0.8	5	9.9	12.2	11.2	0.9
Last dorsal-fin spine length	23	12.1	15.6	13.8	0.9	47	13.2	18.3	15.2	1.2	2	16.3	16.5	16.4	0.1	3	13.8	15.7	15.0	1.0	5	14.2	16.7	15.1	1.0
Last anal-fin spine length	23	11.3	14.6	12.8	1.0	47	12.1	16.1	14.3	0.9	3	14.0	15.6	14.8	0.8	3	13.3	13.5	13.4	0.1	5	13.6	15.5	14.3	0.8
Pelvic-fin spine length	23	12.3	15.3	13.7	0.9	47	13.0	17.6	14.9	1.1	3	15.5	16.4	16.1	0.5	3	12.0	14.2	13.5	1.3	5	13.2	16.5	14.5	1.3
Pectoral-fin length	23	26.2	32.0	29.1	1.5	47	32.7	42.5	37.4	2.2	3	34.1	35.7	35.0	0.9	3	28.6	31.0	29.8	1.2	5	35.5	41.2	37.8	2.2
Head length	23	33.7	37.4	35.8	0.9	47	37.1	40.2	38.6	0.8	3	36.7	37.0	36.8	0.2	3	39.8	40.9	40.2	0.6	5	36.9	37.7	37.4	0.3
Head depth	22	27.7	31.0	29.8	0.8	46	31.2	36.1	33.3	1.2	3	32.7	34.1	33.3	0.7	3	34.5	37.6	35.8	1.6	5	36.1	40.6	37.4	1.9
Head width	23	16.2	18.7	17.3	0.6	47	17.4	22.0	19.5	1.0	3	19.0	19.4	19.2	0.2	3	17.9	18.9	18.4	0.5	5	20.4	22.7	21.2	0.9
Postorbital length	23	13.3	15.1	14.3	0.5	47	14.8	17.7	16.4	0.7	3	15.7	16.0	15.8	0.2	3	14.8	15.7	15.4	0.5	5	15.4	16.5	15.9	0.4
Preorbital depth	23	6.4	9.5	7.8	0.9	47	6.1	9.7	7.9	0.8	3	8.0	9.1	8.4	0.6	3	9.1	10.3	9.7	0.6	5	8.1	9.2	8.5	0.4
Orbital diameter	23	8.3	11.6	10.3	0.8	47	10.4	13.2	11.6	0.7	3	10.4	12.0	11.4	0.9	3	11.5	11.8	11.7	0.2	5	11.6	12.8	12.1	0.5
Snout length	23	11.7	16.1	13.8	1.1	47	8.9	16.7	13.8	1.8	3	11.9	14.0	12.6	1.2	3	13.8	15.2	14.5	0.7	5	12.0	13.3	12.8	0.5
Interorbital width	23	9.9	13.5	11.5	1.0	47	11.7	15.2	13.3	0.8	3	11.6	12.3	11.9	0.4	3	10.2	12.0	10.9	1.0	5	12.2	15.3	13.4	1.3

Description. Measurements summarized in Tab. 1. No apparent sexual dimorphism. Head slightly wider ventrally than dorsally. Body moderately elongated, lateral profile more convex dorsally than ventrally. Dorsal profile of head ascending, straight from tip of snout to posterior margin of orbit, convex to insertion of dorsal fin; dorsal-fin base ascending, convex to about 4th dorsal-fin spine, descending convex to end of soft dorsal fin. Dorsal and ventral caudal peduncle profile straight to caudal-fin base. Ventral profile of head descending, slightly convex from lower lip to isthmus, slightly concave at isthmus, convex to insertion of pelvic fin, straight to insertion of anal fin, ascending anal fin slightly convex. Jaws isognathous, thick lips. Mouth small, maxilla does not reach vertical line from anterior margin of orbit.

E1 24(4), 25*(9) or 26(9); scales between upper lateral line and dorsal fin 3.5 anteriorly, 1.5 posteriorly. Scales on upper lateral line 14(1), 15*(12) or 16(8), on lower lateral line 8(1), 9(9), 10*(11) or 11(1) with 0 to 3 scales continuing on caudal fin. Two rows of scales between lateral lines. Circumpeduncular scale rows 15*(3) or 16(20). Predorsal scales 7(4), 8*(17) or 9(2).

Dorsal fin XII,10(2), XII,11(1), XIII,9(1), XIII,10(1), XIII,11(1), XIV,9(3), XIV,10*(13) or XIV,11(1); anal fin III,7(6) or III,8*(17). Dorsal spines increasing in length from 1st to 4th. Remaining dorsal spines about equally sized. Lappets of dorsal-fin spines pointed or slightly rounded in shaped. Soft dorsal fin slightly expanded, pointed, usually reaching one-third to one-half of caudal-fin length (fourth and fifth longest rays). Anal fin pointed, with third and fourth longest rays, reaching one-third to one-half of caudal-fin length. Caudal fin truncated, symmetrical, with dorsal and ventral rays that may form prolonged filaments. Pectoral fin short (26.2–32.0% SL), not reaching insertion of anal fin, with fourth and fifth longest rays. Pelvic fin triangular, first ray elongated as filament, reaching first spines of anal fin.

Teeth in outer hemiseries conical, unicuspid, progressively smaller posteriorly. Three rows of smaller teeth behind. Dentary hemiseries with conical, recurved, and unicuspid teeth, three to four rows of smaller teeth behind. Nine external rakers in first-gill arch. Vertebrae 12+12, three of the 12 caudal vertebrae contained in the caudal peduncle.

Coloration in alcohol. Background color brownish yellow, darker dorsally. Chest, suboperculum, and interoperculum with pale coloration. Dorsally darker operculum. No dark spot on inside of pectoral axilla. Broad, straight, diffuse, or marked brown suborbital stripe, with extension towards anterior arm of preoperculum. Distinctive dark nape band. No preopercular spot. Broad brownish-gray interorbital band, with extension between orbits and nostrils. Mouth spots in large specimens. Iridescent green spots in live specimens on preoperculum and operculum (Fig. 4). Lateral bars faint but distinct, darker dorsally, reaching ventrally to lower edge of caudal peduncle level. Bars 1 to 3 straight, bars 4 to 6 curved above lateral band, bar 6 continuous or discontinuous with lateral band. Wide bar 7, around origin of dorsal fin, continuous or discontinuous with lateral band. Dark lateral band extending below upper lateral line to end of dorsal fin along upper edge of caudal peduncle. Lateral band continuous anteriorly with dark spot on operculum connecting with nape band. Lateral band discontinuous posteriorly between lateral bars, especially between bars 4–5 and 5–6. Mediolateral spot on bar 5 blackish, often larger than other spots in lateral band. In addition, horizontal rows of iridescent green spots on flanks of live specimens (Fig. 4). Dorsal-fin lobes grayish with

whitish edges. Dorsal fin with grayish background, without spots in spiny portion and with hyaline spots in last five membranes of soft portion. Anal fin grayish with dark lower edge and hyaline spots in rows on last two membranes. Caudal fin grayish with dark margins and some dark spots at its base. Pelvic fin grayish with white anterior border. In live specimens, fin rays with yellowish color. Small, vertically elongated, dark caudal spot above lower lateral line, without clear border. No coloration pattern on flank scales.

Geographical distribution. *Bujurquina beniensis* is known from localities in the Río Beni drainage, a main tributary of the Río Madeira, Amazon basin (Fig. 5).

Ecological notes. This species inhabits streams and whitewater riverbanks in the foothills of the Río Beni drainage (Fig. 6).

Etymology. The species name refers to the Río Beni, the only drainage in the Bolivian Amazon where the species has been found. An adjective.

Conservation status. *Bujurquina beniensis* was collected from different tributaries of the Río Beni drainage, corresponding to an Extent of Occurrence (EOO) of approximately 8,900 km². No specific threats were detected, this species can be classified as Least Concern (LC) according to the International Union for Conservation of Nature (IUCN) categories and criteria (IUCN Standards and Petitions Subcommittee, 2022).



FIGURE 4 | *Bujurquina beniensis*, paratype, CBF-15090, 51.6 mm SL, Río Hondo, tributary of the Río Beni drainage.

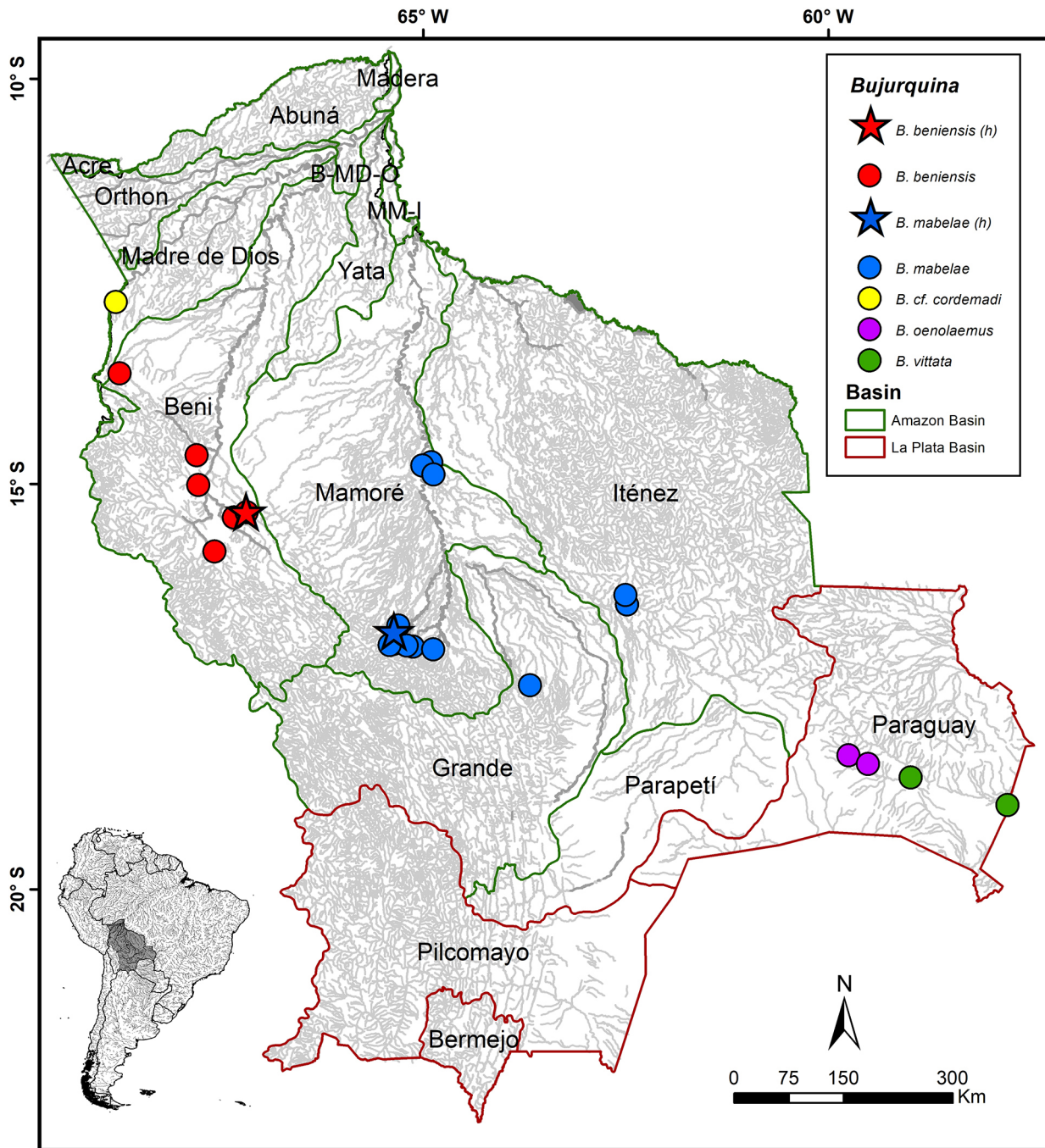


FIGURE 5 | Geographic distribution of *Bujurquina beniensis* (red circles), *B. mabelae* (blue circles), *B. cf. cordemadi* (yellow circle), *B. oenolaemus* (purple circles), and *B. vittata* (green circles); star represents type localities. The delimitation and naming of the basins and drainages correspond to those proposed in Carvajal-Vallejos *et al.* (2014).



FIGURE 6 | Habitat where the paratype CBF-15090 of *Bujurquina beniensis* was collected in the Río Hondo, a tributary of the Río Beni drainage.

Bujurquina mabelae, new species

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(Figs. 7–8; Tab. 1)

Holotype. UMSS 18502, 1, 63.9 mm SL, Bolivia, Cochabamba Department, Chapare Province, Amazon basin, Río Mamoré drainage, Río San Pedro, 16° 48'47.72"S 65° 21'33.63"W, 9 Aug 2006, J. Zubieta, R. Bigorne & N. Moya.

Paratypes. All from Amazon basin, Bolivia. UMSS 789, 12, 50.9–68.7 mm SL, Santa Cruz Department, Ñuflo de Chávez Province, Río Iténez drainage, Río Quizer, 16° 29'07.60"S 62° 29'04.00"W, 19 Oct 2005, F. Carvajal-Vallejos, C. Zawadzki, E. de la Barra, A. Argote & D. Gonzales. UMSS 922, 2, 57.9–60.0 mm SL, Santa Cruz Department, Ichilo Province, Río Mamoré drainage, Río Surutú, 17° 29'02.20"S 63° 40'49.50"W, 17 Oct 2005, F. Carvajal-Vallejos, C. Zawadzki, E. de la Barra, A. Argote & D. Gonzales. UMSS 3794, 1, 64.5 mm SL, Cochabamba Department, Chapare Province, Río Mamoré drainage, Río San Pedro, 16° 48'47.72"S 65° 21'33.63"W, 9 Aug 2006, J. Zubieta, R. Bigorne & N. Moya. UMSS 12351, 5, 50.1–57.2 mm SL, Cochabamba Department, Carrasco Province, Río Mamoré drainage, Río Leticia, 17° 00'19.73"S 65° 07'35.11"W, 5 Jun 2003, J. Zubieta, C. Ibañes & R. Bigorne. UMSS 12365, 2, 56.4–70.4 mm SL, Cochabamba Department, Chapare Province, Río Mamoré drainage, Río Chipiriri, 16° 44'42.64"S 65° 18'14.68"W, 4 Oct 2002, F. Carvajal-Vallejos. UMSS 12380, 2, 50.4–50.6 mm SL, Cochabamba Department, Tiraque Province, Río Mamoré drainage, Río

Ibuelo, 16°58'22.96"S 65°21'53.83"W, 6 May 2003, L. Córdova, J. Camacho & M. Maldonado. UMSS 12383, 2, 58.0–67.1 mm SL, Santa Cruz Department, Ñuflo de Chávez Province, Río Iténez drainage, Río Quizerna, 16°22'07.74"S 62°30'15.91"W, 4 Sep 2003, L. Córdova & M. Maldonado. UMSS 12427, 1, 50.1 mm SL, Cochabamba Department, Carrasco Province, Río Mamoré drainage, Río Ivirgarzama, 17°02'18.75"S 64°52'32.14"W, 13 Sep 2002, F. Carvajal-Vallejos, C. Zawadzki, E. de la Barra, A. Argote & D. Gonzales. UMSS 16641, 1, 53.6 mm SL, Cochabamba Department, Carrasco Province, Río Mamoré drainage, Río Eñe, 16°59'37.41"S 65°12'09.33"W, 25 Sep 2004, F. Carvajal-Vallejos. UMSS 17210, 2, 50.7–70.5 mm SL, Santa Cruz Department, Ñuflo de Chávez Province, Río Iténez drainage, arroyo San Miguelito, 16°22'10.75"S 62°30'16.35"W, 1 Jun 2006, M. Jégu. UMSS 17211, 8, 50.3–71.2 mm SL, Santa Cruz Department, Ñuflo de Chávez Province, Río Iténez drainage, Río Quizer, 16°29'07.60"S 62°29'04.00"W, 2 Jun 2006, M. Jégu. UMSS 17212, 1, 54.1 mm SL, Cochabamba Department, Carrasco Province, Río Mamoré drainage, Río Eñe, 16°59'37.41"S 65°12'09.33"W, 25 Sep 2004, F. Carvajal-Vallejos. UMSS 17218, 1, 55.0 mm SL, Cochabamba Department, Carrasco Province, Río Mamoré drainage, Río Eñe, 16°59'37.41"S 65°12'09.33"W, 25 Sep 2004, F. Carvajal-Vallejos. UMSS 17219, 1, 54.0 mm SL, Santa Cruz Department, Ñuflo de Chávez Province, Río Iténez drainage, arroyo San Miguelito, 16°22'10.75"S 62°30'16.35"W, 1 Jun 2006, M. Jégu. UMSS 17348, 1, 63.1 mm SL, Cochabamba Department, Chapare Province, Río Mamoré drainage, Río Chapare, 16°59'05.67"S 65°24'45.35"W, 10 Sep 2003, J. Zubieta, C. Ibañes & R. Bigorne. CIRA 2147, 1, 62.7 mm SL, Beni Department, Cercado Province, Río Mamoré drainage, Río Mocovi, 14°43'60.00"S 64°54'00.00"W, 1 Sep 2009, T. Yunoki. CIRA 2280, 1, 69.9 mm SL, Beni Department, Cercado Province, Río Mamoré drainage, Río Mamoré, Laguna Río Viejo, 14°46'21.11"S 65°00'36.11"W, 1 Feb 2008, T. Yunoki. CIRA 3185, 2, 64.7–66.6 mm SL, Beni Department, Cercado Province, Río Mamoré drainage, Laguna Suárez, 14°53'01.63"S 64°52'20.99"W, 10 Nov 2011, T. Yunoki.



FIGURE 7 | *Bujurquina mabelae*, holotype, UMSS 18502, 64.5 mm SL, Bolivia, Cochabamba, Río San Pedro, a tributary of the Río Mamoré drainage.

Diagnosis. *Bujurquina mabelae* differs from its congeners registered in Bolivia in the following: from *B. beniensis* in caudal peduncle depth (15.9–18.7 *vs.* 14.2–15.9% SL), pectoral-fin length (32.7–42.5 *vs.* 26.2–32.0% SL), head depth (31.2–36.1 *vs.* 27.7–31.0% SL), and nape band (faint *vs.* distinctive); from *B. cordemadi* in head length (37.1–40.2 *vs.* 33.3–35.3% SL; Kullander, 1986), snout length (8.9–16.7 *vs.* 6.6–7.4% SL; Kullander, 1986); from *B. eurhinus* in head length (37.1–40.2 *vs.* 31.2–35.8% SL; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986); from *B. oenolaemus* on pectoral-fin length (32.7–42.5 *vs.* 28.6–32.2% SL; ranges resulting from combination of Kullander, 1987 and measurements obtained in present study), bar 6-longitudinal band (separate *vs.* fused; differentiation resulting from combination of Kullander, 1987 and present study); from *B. vittata* in body depth (39.0–45.8 *vs.* 45.8–48.2% SL; ranges resulting from combination of Eigenmann, Kennedy, 1903 and measurements obtained in present study), head depth (31.2–36.1 *vs.* 36.1–40.6% SL; measurements obtained in present study). Furthermore, *B. mabelae* differs from other species of the genus as follows: from *B. apoparuana* in head length (37.1–40.2 *vs.* 32.8–36.8% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), bar 6-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. hophrys* in head length (37.1–40.2 *vs.* 32.9–36.1% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. huallagae* in head length (37.1–40.2 *vs.* 31.8–35.2% SL; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. labiosa* in pectoral-fin length (32.7–42.5 *vs.* 28.5% SL; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. mariae* in head length (37.1–40.2 *vs.* 33.3–35.7% SL; Eigenmann, 1922), number of scales in the E1 series (23–25 *vs.* 26; Eigenmann, 1922), number of lower line scales (6–10 *vs.* 12; Eigenmann, 1922); *B. megalospilus* in head length (37.1–40.2 *vs.* 33.4–36.9% SL; Kullander, 1986) and snout length (8.9–16.7 *vs.* 5.3–7.9; Kullander, 1986); from *B. moriorum* in head length (37.1–40.2 *vs.* 33.8–36.9% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), bar 6-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. ortegai* in head length (37.1–40.2 *vs.* 32.9–34.1% SL; Kullander, 1986), bar 6-longitudinal band (separate *vs.* fused; Kullander, 1986); from *B. pardus* in pectoral-fin length (32.7–42.5 *vs.* 28.5–31.8% SL; Arbour *et al.*, 2014), bar 7-band longitudinal (separate *vs.* fused; Arbour *et al.*, 2014); from *B. peregrinabunda* in head length (37.1–40.2 *vs.* 31.4–33.5% SL; Kullander, 1986), snout length (8.9–16.7 *vs.* 5.8–8.4% SL; Kullander, 1986), preopercular spot (absent *vs.* present; Kullander, 1986), bar 7-longitudinal band (separate *vs.* fused; Kullander, 1986), bar 6-longitudinal band (separate *vs.* fused; Kullander, 1986), longitudinal band (discontinuous *vs.* continuous; Kullander, 1986); from *B. robusta* in head length (37.1–40.2 *vs.* 32.1–35.0% SL; Kullander, 1986), bar 6-longitudinal band (separate *vs.* united; Kullander, 1986); from *B. syspilus* in snout length (8.9–16.7 *vs.* 6.9–8.5% SL; Kullander, 1986); from *B. tambopatae* in head length (37.1–40.2 *vs.* 32.6–36.0% SL; Kullander, 1986), bar 7-longitudinal band (separated *vs.* united; Kullander, 1986),

bar 6-longitudinal band (separated *vs.* united; Kullander, 1986); from *B. zamorensis* in head length (37.1–40.2 *vs.* 33.3% SL; Regan, 1905), body depth (39.0–45.8 *vs.* 37.5% SL; Regan, 1905), pectoral-fin length (32.7–42.5 *vs.* 26.7% SL; Regan, 1905), number of scales in the E1 series (23–25 *vs.* 27; Regan, 1905).

Description. Measurements summarized in Tab. 1. No apparent sexual dimorphism. Head slightly wider ventrally than dorsally. Body deeper than *B. beniensis*, lateral profile more convex dorsally than ventrally. Dorsal profile of head ascending, straight from tip of snout to posterior margin of orbit, straight with minor upward slope to insertion of dorsal fin; dorsal-fin base ascending, convex to about 5th dorsal-fin spine, descending convex to end of soft dorsal fin. Dorsal and ventral caudal peduncle profile straight to caudal-fin base. Ventral profile of head descending, slightly convex from lower lip to insertion of pelvic fin, straight to insertion of anal fin, ascending anal fin slightly convex. Jaws isognathous, thin lips. Small mouth, maxilla does not reach vertical line from anterior margin of orbit.

E1 23(5), 24(32) or 25*(10); scales between upper lateral line and dorsal fin 3.5 anteriorly, 1.5 posteriorly. Scales on upper lateral line 14(2), 15*(19), 16(22) or 17(3), and on lower lateral line 6(4), 7(13), 8*(23), 9(6) or 10(1) with 0 to 3 scales continuing onto caudal fin. Two rows of scales between lateral lines. Circumpeduncular scale rows 15(6) or 16*(41). Predorsal scales 7(4), 8*(37) or 9(4).

Dorsal fin XIII,10(3), XIV,8(1), XIV,9(30), XIV,10*(12) or XV,9(1); anal fin II,7(1), III,6(3), III,7(33) or III,8*(9). Dorsal spines increasing in length from 1st to 4th. Remaining dorsal spines relatively equal in size. Lappets of dorsal-fin spines pointed or slightly rounded. Dorsal fin soft, slightly expanded, pointed, usually reaching one-third to one-half of caudal-fin length (fifth and sixth longest rays). Anal fin pointed, with third and fourth longest rays, reaching one-third of caudal-fin length. Caudal fin truncated, symmetrical. Pectoral fin long (32.7–42.5% SL), reaching insertion of anal fin, with fourth and fifth longest rays. Pelvic fin triangular, first ray elongated as filament, reaching first spines of anal fin.

Teeth in outer hemiseries conical, unicuspid, progressively smaller posteriorly. Three rows of smaller teeth behind. Dentary hemiseries with conical, recurved, unicuspid teeth, three to four rows of smaller teeth posteriorly. Eight external rakers in first-gill arch. Vertebrae 11+12, two of the 12 caudal vertebrae contained in the caudal peduncle.

Coloration in alcohol. Background color brownish yellow, darker dorsally. Chest, suboperculum, and interoperculum with pale coloration. Operculum dorsally darker. Suborbital stripe straight and broad, diffuse or marked brown, with extension towards anterior arm of preoperculum. Faint nape band. No preopercular spot. Broad brownish-gray interorbital band, between orbits and nostrils. Absence of stripes or buccal spots. Live specimens with iridescent green spots on preoperculum and operculum. Lateral bars faint but distinct, darker dorsally, with ventral extension to lower edge of caudal peduncle level. Bars 1 to 3 straight, bars 4 to 6 curved above lateral band, bar 6 discontinuous with lateral band. Bar 7 broad, around origin of dorsal fin, discontinuous with lateral band. Dark lateral band extending below upper lateral line to end of dorsal fin along upper edge of caudal peduncle. Lateral band continues anteriorly with dorsal spot of operculum and nape band. Lateral band discontinuous posteriorly between lateral bars,

especially between bars 4–5. Mediolateral spot on bar 5 blackish, often larger than other spots on lateral band. Live specimens with iridescent green spots in horizontal rows on flanks. Gray lobes in dorsal fin with whitish edges. In live specimens, orange coloration above whitish border on dorsal-fin end. Grayish dorsal fin with row of hyaline spots on its upper part. Spiny dorsal fin immaculate in most specimens, but some with dark spots at base of fin. Soft part of dorsal fin with hyaline spots on its last five membranes. Grayish anal fin with dark lower edge and hyaline spots in rows on last three membranes. Caudal fin grayish immaculate with some dark spots at its base. Pelvic fin grayish with whitish anterior border. Small, vertically elongated, dark caudal spot above lower lateral line, without clear border. No coloration pattern on flank scales (Fig. 8).

Geographical distribution. *Bujurquina mabelae* is known from different localities in the Río Iténez and Río Mamoré drainages (Fig. 5). These drainages are important tributaries of the Río Madeira, which flows to the Amazon basin.

Ecological notes. This species inhabits streams and riverbanks of white and clear water in the headwaters (*i.e.*, piedmont; Fig. 9) of the Río Mamoré and Río Iténez drainages. In addition, records of this species have been obtained in lagoons of fluvial and tectonic origin in the middle of the Río Mamoré drainage.

Etymology. The species is named in honor of Mabel Maldonado Maldonado for her valuable contributions to the studies of fish ecology and aquatic environments, and continued support to systematics studies of fishes in Bolivia. A noun in a genitive case.

Conservation status. *Bujurquina mabelae* is distributed in different tributaries of the Río Iténez and Río Mamoré drainages, with an Extent of Occurrence (EOO) of approximately 54,500 km². Since no specific threats are detected, this species can be classified as Least Concern (LC) according to the International Union for Conservation of Nature (IUCN) categories and criteria (IUCN Standards and Petitions Subcommittee, 2022).



FIGURE 8 | *Bujurquina mabelae*, paratype, UMSS 17218, 55.0 mm SL, Río Eñe, tributary of the Río Chapare, Río Mamoré drainage.



FIGURE 9 | Habitat where the paratype UMSS 17218 of *Bujurquina mabelae* was collected in the Río Eñe, a tributary of the Río Chapare, Río Mamoré drainage.

Key to the species of *Bujurquina* from Bolivia

- 1a. Pectoral fin short ($\leq 32.2\%$ SL); buccal spots present, particularly in large specimens 2
- 1b. Pectoral fin long ($\geq 32.5\%$ SL); buccal spots absent 3
- 2a. Head length 33.7–37.4% SL; head depth 27.7–31.0% SL; predorsal length 40.9–45.4% SL; prepelvic length 38.0–43.6% SL; number of scales of E1 24–26; number of scales of inferior lateral line 8–11; distinctive nape band..... *B. beniensis* (Amazon basin, Río Beni drainage)
- 2b. Head length 38.6–40.9% SL; head depth 34.5–37.6% SL; predorsal length 45.4–46.0% SL; prepelvic length 44.5–50.5% SL; number of scales of E1 21–23; number of scales of inferior lateral line 6–7; faint nape band *B. oenolaemus* (La Plata basin, Río Paraguay drainage)
- 3a. Body depth $\leq 45.8\%$ SL; head depth $\leq 36.1\%$ SL; vertical bars 5 and 6 may be fused 4
- 3b. Body depth $\geq 45.8\%$ SL; head depth $\geq 36.1\%$ SL; vertical bars 5 and 6 not fused *B. vittata* (La Plata basin, Río Paraguay drainage)
- 4a. Head length 33.3–37.0% SL; distinctive nape band; lateral band undivided or divided with short discontinuation between bars 4 and 5; no dark spots on spiny dorsal fin..... *B. cf. cordemadi* (Amazon basin, Río Madre de Dios drainage)
- 4b. Head length 37.1–40.2% SL; faint nape band; lateral band divided with large discontinuation between bars 4 and 5; dark spots on spiny dorsal fin may be present *B. mabelae* (Amazon basin, Río Mamoré and Río Iténez drainages)

DISCUSSION

Considering that all specimens of *Bujurquina beniensis* were collected from the foothills of the Río Beni drainage, we suggest this species has a restricted and limited distribution (endemism). Moreover, it was the only species present in this drainage, as *B. cordemadi* and *B. vittata*, both species previously listed (Pouilly *et al.*, 2010; Carvajal-Vallejos *et al.*, 2014), were not recorded during the taxonomic review.

Bujurquina mabelae has a restricted and exclusive distribution in the Río Mamoré and Río Iténez drainages. *Bujurquina vittata*, the species previously listed for both drainages (Pouilly *et al.*, 2010; Carvajal-Vallejos, Zeballos Fernández, 2011; Carvajal-Vallejos *et al.*, 2014), was not recorded during the taxonomic review. It is important to note that these two species are very similar morphologically, which may be evidence of the historical connections between the Paraguay, Mamoré, and Iténez drainages (Carvalho, Albert, 2011).

Although *B. eurhinus* has been cited for the Río Acre and Río Orthon drainages (García Cabrera, Caderón Vaca, 2006; Añez *et al.*, 2010; Carvajal-Vallejos *et al.*, 2014), we cannot confirm its record for Bolivia. The record made by García Cabrera, Caderón Vaca (2006), requires a review due to the fact that the photograph published by these authors differs from the description of *B. eurhinus* in head length (36.8 *vs.* 31.2–35.8% SL), pectoral-fin length (35.5 *vs.* 27.1–34.0% SL), and in the connection of the bar 7-longitudinal band (absent *vs.* present); based on morphometric values obtained using ImageJ (Schneider *et al.*, 2012).

In addition to the records for Bolivia, Kullander (1987) described *B. oenolaemus*, for the upper Río Paraguay drainage, recorded only for the type locality, the Río Aguas Calientes, Santa Cruz, Bolivia (Careaga *et al.*, 2020; Hablützel, Huanto, 2020). All reviewed specimens from this locality match the description of *B. oenolaemus*. The examined material from the upper Río Paraguay drainage, excluding the Aguas Calientes locality, matches the description of *B. vittata*. This last species is only present in the Río Paraguay drainage, coinciding with the lists published by Careaga *et al.* (2020) and Hablützel, Huanto (2020). New morphological data of *B. oenolaemus* and *B. vittata* are presented in Tab. 1.

Specimens from the Río Madre de Dios drainage did not correspond to any of the species already described and could be differentiated from the two new species (Fig. 10). The number of examined specimens was small, and they were identified as *B. cf. cordemadi*.

Using ImageJ, we noticed that some variables in the descriptions published by Kullander (1986, 1987) differed from our measurements, which raises doubts about their reliability for comparison and as diagnostic characters. Snout length values were doubtful for *B. apoparuana*, *B. cordemadi*, *B. labiosa*, *B. megalospilus*, *B. oenolaemus*, *B. robusta*, and *B. tambopatae*. Head length values were doubtful for *B. cordemadi*, *B. labiosa*, *B. megalospilus*, *B. peregrinabunda*, *B. robusta*, and *B. tambopatae*. The orbital diameter value was doubtful for *B. megalospilus*. Pectoral-fin length values were doubtful for *B. moriorum*, *B. peregrinabunda*, and *B. syspilus*. It is important to note that the discrepancies found could be artificial due to distortion caused by a parallax effect in the photographs (by S. O. Kullander) which were not specifically taken for digital morphometrics. Verification of these values in holotypes is required to learn about interspecific morphological limits with more certainty. On the other hand,

coloration variables considered diagnostic within *Bujurquina* may be difficult to observe in preserved specimens (e.g., fin coloration patterns) or doubtful (e.g., union of bars 5 and 6, a diagnostic character for *B. cordemadi*, present in some specimens of *B. mabelae*). Therefore, we have considered all possible coloration variables, keeping only the persistent ones. Finally, having additional morphological data for each of these species would be important, particularly for *B. mariae*, *B. vittata*, and *B. zamorensis*, since their descriptions are short and lack photographs.

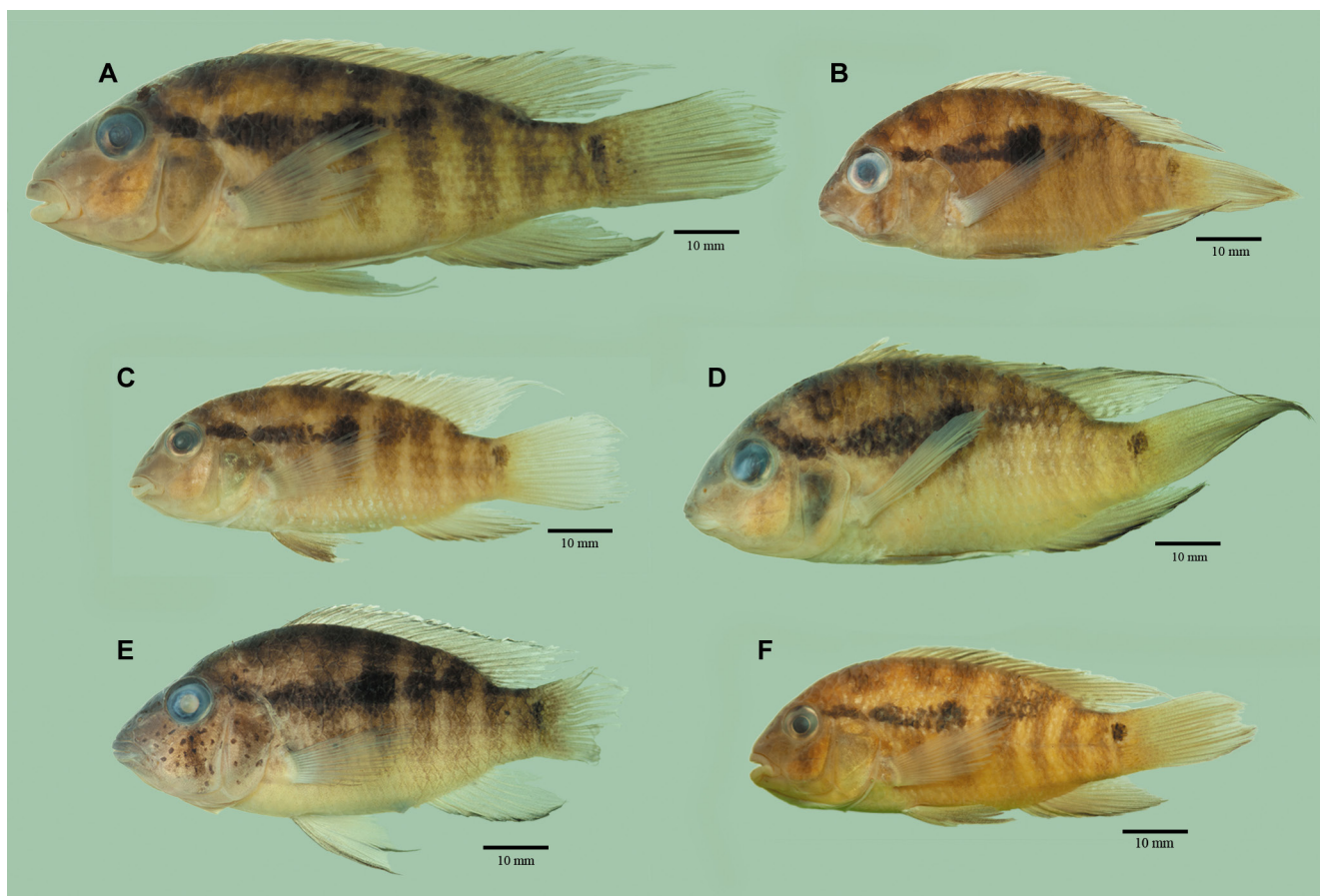


FIGURE 10 | *Bujurquina* species from Bolivia. **A.** *Bujurquina beniensis*, paratype, UMSS 12080.1, 92.1 mm SL, La Paz, Nuevo Tunari community's stream, tributary of Río Beni. **B.** *Bujurquina vittata*, UMSS 12445, 54.7 mm SL, Santa Cruz, Laguna Cáceres, Río Paraguay drainage. **C.** *Bujurquina mabelae*, paratype, UMSS 12383.2, 58.0 mm SL, Río Quizerna, tributary of Río Iténez drainage. **D.** *Bujurquina* cf. *cordemadi*, CBF-15093, Río Heath, tributary of Río Madre de Dios drainage. **E.** *Bujurquina oenolaemus*, UMSS 18503, 66.4 mm SL, Río Aguas Calientes, tributary of Río Paraguay drainage. **F.** *Bujurquina mabelae*, paratype, UMSS 922.2, 57.9 mm SL, Cochabamba, Río Surutú, tributary of Río Grande drainage, Río Mamoré drainage.

Comparative material examined. Bolivia: *Bujurquina* cf. *cordemadi*: CBF-15093, 3, 56.3–73.2 mm SL, La Paz Department, Abel Iturralde Province, Amazon basin, Río Madre de Dios drainage, Río Heath, 12°45'23.04"S 68°47'20.00"W, 10 Jul 2017, G. Miranda & J. Molina. *Bujurquina oenolaemus*: UMSS 18503, 1, 66.4 mm SL, Santa Cruz Department, Chiquitos Province, La Plata basin, Río Paraguay drainage, Río Aguas Calientes, 18°27'10.80"S 59°30'46.43"W, 6 Sep 2020, L. Córdova, A. Echeverría & P. Van Damme. CIRA 1512, 2, 54.4–53.2 mm SL, Santa Cruz Department, Chiquitos Province, La Plata basin, Río Paraguay drainage, Río Aguas Calientes, 18°20'04.69"S 59°45'01.37"W, 12 Jan 2007, R. Guggenbühl, A. Oberleutner & K. Schräml. *Bujurquina vittata*: UMSS 12445, 1, 54.7 mm SL, Santa Cruz Department, Germán Busch Province, La Plata basin, Río Paraguay drainage, Laguna Cáceres, 18°57'30.99"S 57°47'34.55"W, 1 May 2006, C. Navia. UMSS 18504, 2, 53.8–65.6 mm SL, Santa Cruz Department, Chiquitos Province, La Plata basin, Río Paraguay drainage, Río Tucavaca, 18°37'17.58"S 58°59'13.69"W, 2 Sep 2020, L. Córdova, A. Echeverría & P. Van Damme. UMSS 18638, 2, 58.4–59.4 mm SL, Santa Cruz Department, Chiquitos Province, La Plata basin, Río Paraguay drainage, Río Tucavaca, 18°37'17.58"S 58°59'13.69"W, 2 Sep 2020, L. Córdova, A. Echeverría & P. Van Damme.

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