

***Bryconamericus uporas* sp. n. (Characiformes, Characidae), a new species from the río Uruguay basin, in Argentina**

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***Bryconamericus uporas* sp. n. (Characiformes, Characidae), a new species from the río Uruguay basin, in Argentina.** - A new species of the genus *Bryconamericus* is described from río Uruguay basin in Misiones, Argentina. *Bryconamericus uporas* is distinguished by the following combination of characters: low body depth (28.9-32.2 in % of SL); all teeth of upper jaw broadest distally; premaxillary teeth of the inner series with seven cusps; premaxillary teeth of the outer row with five cusps, and maxillary teeth with five or seven cusps. Also, the new species has 18-20 branched anal-fin rays, large subcircular black humeral spot, wide black lateral band, light violet upper half of flank, and lower half silvery. The new species was collected in the headwaters of the arroyos Once Vueltas, Toro, Fortaleza, and Yabotí-Miní. Those streams were born in the sierras, having rocky and sandy bottom, with clear and rapid water.

Key-words: Characiformes - Characidae - *Bryconamericus* - Argentina - Misiones - Uruguay basin.

INTRODUCTION

Seven species of the characiform genus *Bryconamericus* are known from southern South America. This genus includes about 40 species (Malabarba & Kindell, 1995), living in freshwaters from Central America (Eigenmann, 1927; Géry, 1977) to the south of Buenos Aires Province in Argentina (Menni *et al.*, 1988; Casciotta *et al.*, 1999).

Most of these species have been known since the beginning of the last century (Evermann & Kendall, 1906; Eigenmann *et al.*, 1907; Fowler, 1940). However, increasing efforts in studies of characiform fishes have resulted in recent discoveries of new species (Malabarba & Kindell, 1995; Azpelicueta & Almirón, 2001). The purpose of this paper is to describe a new species of the genus from the río Uruguay basin, in Argentina.

MATERIAL AND METHODS

Measurements are straight line distances taken with calliper. Standard length (SL) was measured from tip of snout to hypural joint, head length includes the opercular flap, caudal peduncle length is taken from last anal-fin ray to hypural joint. Specimens were cleared and stained (C&S) for cartilage and bone following Taylor & Van Dyke (1985).

The specimens examined belong to Academy of Natural Sciences of Philadelphia, USA (ANSP), Fundación Miguel Lillo, Tucumán, Argentina (FML), Muséum d'histoire naturelle, Genève, Switzerland (MHNG), and Facultad de Ciencias Naturales y Museo, La Plata, Argentina (MLP).

Comparative material examined. *Bryconamericus agna* Azpelicueta & Almirón, 2001: FML 3700, holotype, 61.5 mm SL, Argentina, Misiones, arroyo Tabay, Paraná basin. ANSP 177871, 4 ex., 50.4-57.3 mm SL, collecting data as holotype. MHNG 2611.46, 4 ex., 54.3-60.0 mm SL, collecting data as holotype.

Bryconamericus iheringi (Boulenger, 1887): MLP 9073, 110 ex., 39.9-44.3, Argentina, Buenos Aires, Sierra de la Ventana. MLP 9103, 15 ex., 34.8-49.2, Argentina, Buenos Aires, Berisso, Los Talas (man-made ponds connected to Río de la Plata).

Bryconamericus exodon Eigenmann, 1907: MLP 18-IX-80-1, 2 ex., 39.0-43.5 mm SL, Argentina, Buenos Aires, Río de la Plata in Punta Lara.

Bryconamericus thomasi Fowler, 1940: FML 1969, 94 ex. (5 measured, 2 males and 3 females), 40.3-55.4 mm SL, Argentina, Salta, río Piedras.

Bryconamericus uporas sp. n. (non type): MLP uncat, 4 ex., 26.7-49.4 mm SL, Argentina, Misiones, arroyo Toro. MLP uncat, 3 ex., 42.9-45.0 mm SL, Argentina, Misiones, Arroyo Yabotí-Mini.

RESULTS

Bryconamericus uporas sp. n.

Figs 1-8, table 1

Holotype. MLP 9568, male, 51.5 mm SL, Argentina, Misiones, Municipio Leandro N. Alem, arroyo Once Vueltas (27° 38' S - 55° 12' W), Uruguay basin. Coll. J. Casciotta, A. Almirón & M. Donato, February-2001.

Paratypes. MLP9583, 14 ex., 43.4-51.0 mm SL, collected with the holotype. MHNG 2619.23, 5 ex., 41.0-47.8 mm SL, Argentina, Misiones, arroyo Fortaleza (26° 45' S - 54° 10' W), coll. J. Casciotta, A. Cione & M. Donato, April-2000.

Diagnosis. *Bryconamericus uporas* is distinguished from other species of the genus by the following combination of characters: low body (28.9-32.2 % of SL); premaxillary and maxillary teeth with distal portion broader than the base; teeth of premaxillary inner row heptacuspoid and those of outer row pentacuspoid; 18-20 branched anal-fin rays; large subcircular black humeral spot, and wide black lateral band. The new species has the upper half of flank light violet and the lower half silvery.

Description. Morphometrics of holotype and 14 paratypes are presented in table 1. Body moderately elongate (Fig. 1). Greatest body depth approximately at dorsal-fin origin. Dorsal profile of body distinctly convex from upper lip to dorsal-fin origin, almost straight from dorsal-fin base to caudal peduncle. Ventral profile of body slightly convex from mouth to anal-fin origin, straight from anal-fin origin to caudal peduncle. Dorsal and ventral profiles of caudal peduncle concave. Body laterally compressed between pectoral and anal fins.

TABLE I

Morphometrics of the holotype and 14 paratypes of *Bryconamericus uporas* sp. n. Standard length is expressed in mm. SD: standard deviation.

	Holotype	Range	mean	SD
Standard length	51.5	43.4-51.5		
<i>Percentage of SL</i>				
Body depth	30.7	28.9-32.2	30.4	0.984
Head length	27.1	24.6-27.1	25.9	0.763
Predorsal length	46.6	46.6-50.5	48.6	1.261
Preventral length	41.3	41.3-46.4	43.9	1.403
Preanal length	57.9	55.0-60.9	59.0	1.513
Dorsal-fin base	13.2	12.7-14.1	13.3	0.488
Anal-fin base	29.9	25.5-29.9	27.4	1.122
Pelvic-fin length	13.0	12.5-15.1	14.1	0.754
Pectoral-fin length	21.9	20.2-22.4	21.4	0.632
Caudal peduncle depth	10.7	10.4-11.7	11.0	0.375
Caudal peduncle length	16.9	14.9-17.7	16.4	0.958
Distance between pectoral and pelvic fin origins	19.4	19.4-22.5	21.3	0.763
Distance between pelvic and anal fin origins	15.9	13.7-18.0	15.9	0.969
<i>Percentage of head length</i>				
Interorbital width	28.6	28.6-34.2	30.9	1.747
Head depth	75.0	75.0-86.3	80.7	2.889
Orbital diameter	35.7	35.7-43.0	39.2	1.818
Snout length	20.0	18.1-21.2	19.6	1.018
Premaxillary+maxillary length	33.5	33.5-41.9	37.4	2.340
Maxillary length	25.0	20.8-27.3	23.9	2.150
<i>Percentage of pectoral-pelvic fin origins</i>				
Pectoral length	113.0	95.3-113.0	100.0	4.242

Dorsal-fin origin nearer snout tip than base of caudal-fin rays, dorsal-fin origin behind vertical through last pelvic-fin ray insertion. Adipose fin present. Tip of pectoral fin reaching or not pelvic-fin origin. Tip of pelvic fin never reaching anal-fin origin.

Dorsal fin with ii,8 rays; posterior margin of dorsal fin straight, second unbranched and first branched dorsal-fin rays of same length. Holotype (largest specimen) with small and few (about 3) hooks on two first branched dorsal-fin rays.

Anal fin with iv,18-20 rays (3 ex.= 18, 7 ex.= 19, 5 ex.= 20), some males with few small hooks on first branched rays. Most of specimens with last unbranched and first six branched rays forming an anterior lobe.

Pectoral fin with i,10-12 rays (2 ex.= 10, 7 ex.= 11, 6 ex.= 12), posterior pectoral-fin margin straight. Scattered hooks on dorsal surface.

Pelvic fin with i,7 rays, with small hooks on ventral surface.



FIG. 1

Bryconamericus uporas sp. n., holotype, MLP 9568, 51.5 mm SL.

Caudal fin with one unbranched and 9 branched rays on upper lobe; one unbranched and 8 branched rays on lower lobe. Lower caudal lobe scarcely longer and more rounded.

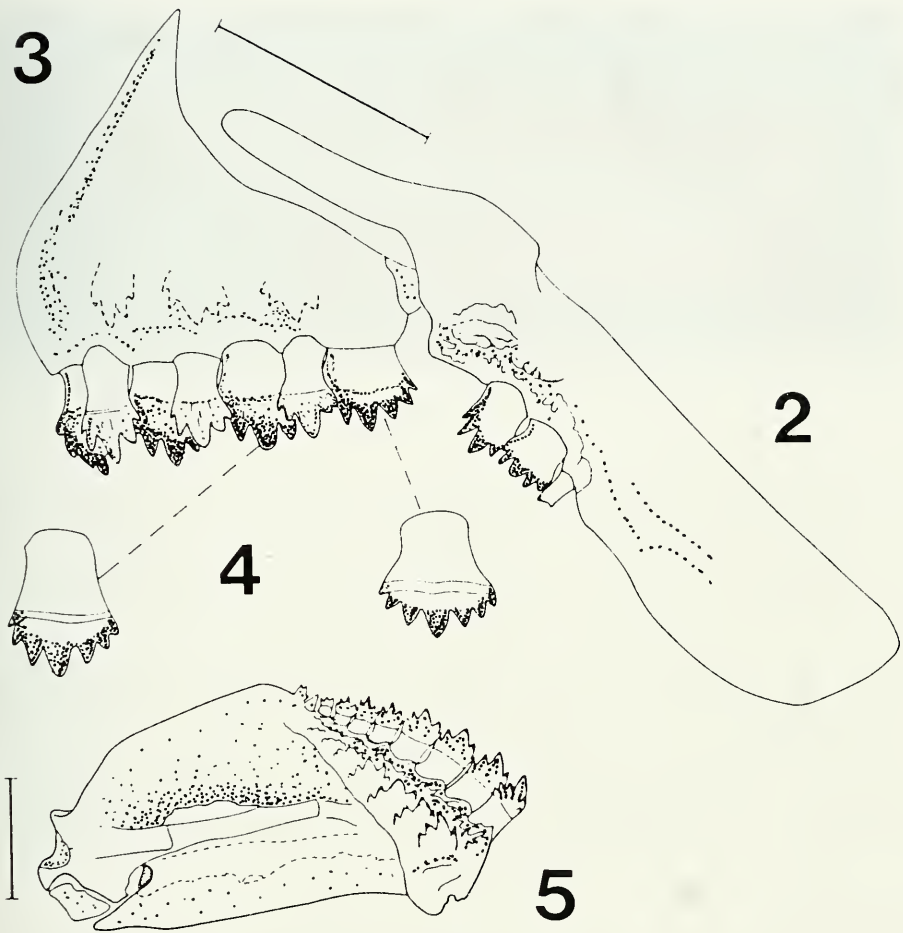
Dorsal profile of head gently convex, concave over supraoccipital. Snout rounded, upper jaw distinctly longer than lower jaw. Mouth placed at level of lower orbital margin. Maxilla surpassing anterior orbital margin. Maxilla with ascending process long, lateral process laminar. Usually 3 teeth, with 5 or 7 cusps; sometimes, a fourth posterior small tooth conic or bicuspid (Fig. 2). Premaxilla bearing two series of teeth, wider distally, compressed anteroposteriorly, with stronger median cusp (Fig. 3). Usually, outer series with 3 aligned teeth, all pentacuspoid (1 ex. with 4 teeth, 2 ex. with 2). Inner series of premaxillary teeth consisting of 4 teeth, with 7 cusps. Symphyseal tooth narrower; third and fourth teeth broadest (Fig. 4). Dentary bearing 7-10 teeth, first four anterior teeth large; last ones very small. Symphyseal tooth broad. Distal area of each tooth compressed anteroposteriorly. Usually 5 cusps in large teeth, remaining teeth with 3 cusps (Fig. 5).

Eyes large. Postero-ventral edge of third infraorbital not in contact, but very close, with sensory tube of preopercle.

Scales cycloid. Lateral series with 37-40 perforated scales (2 ex.= 37, 4 ex., including holotype= 38, 7 ex.= 39, 2 ex.= 40). Five scales between dorsal-fin origin and lateral line, 4-5 scales between lateral line and anal-fin origin. Fourteen scales around caudal peduncle. Eleven to fourteen scales not forming a regular median series between supraoccipital process and dorsal-fin origin in most specimens. Nine to eleven scales in one row, covering proximal portion of eight to ten first anal-fin rays.

Coloration upon capture: Upper half of flank light violet; lower half silvery (Fig. 6).

Coloration in alcohol preserved specimens: Ground color pale yellow, with upper area of flanks darker; margin of scales with dark chromatophores forming a reticular pattern. Lower half of flanks with small isolated chromatophores, some of them concentrated over anal-fin and other ones following myosepta. Dorsum of head and snout with black chromatophores. Scattered chromatophores on opercular area,



FIGS 2-5

Bryconamericus uporas sp. n., 44.5 mm SL. 2, lateral view of left maxilla; 3, lateral view of left premaxilla; 4, detail of third and fourth teeth of inner premaxillary series, lingual view; 5, medial view of left lower jaw. Scale bar: 1 mm.

cheek, and maxilla. Ventral region of head, and vent whitish. A large subcircular black humeral spot, sometimes ventrally elongate, placed behind third or fourth scales of longitudinal series. Next 2 or 3 scales lacking chromatophores. A wide dark lateral band 2 or 3 scales deep extended on middle flank, connected to a caudal spot. Usually, lateral band extending over medial caudal-fin rays. Posterior margin of eye with a silvery half-moon shaped spot. Dorsal fin with chromatophores, especially concentrated on distal half; dorsal-fin rays with chromatophores on their margins. Anal fin with chromatophores, those of distal area very small, larger chromatophores placed on basal region. Adipose with small scattered chromatophores. Caudal fin with



FIG. 6

Bryconamericus uporas sp. n., upon capture, arroyo Once Vueltas, Misiones, Argentina.

chromatophores, specially concentrated on ray margins and close to distal edges. Pectoral and pelvic fins hyaline, with small chromatophores on their surfaces.

Etymology. The specific name *uporas* is a guaraní word meaning an animal-shaped ghost of the water, who care streams, ponds, falls, and swamps.

Distribution. This species is known from headwaters of the arroyos Once Vueltas, Toro, Fortaleza, and Yabotí-Mini, río Uruguay basin, Province of Misiones, Argentina (Fig. 7). The depth of the streams was irregular, about 80 cm (average); the substrate was formed by sand and stones; the course had small falls and pools, and clear water without vegetation (Fig. 8). The temperature of the water was 24-25 °C. Many specimens were observed moving upstream over small falls and falling in pools during the day, in February.

DISCUSSION

The traditional definition of the genus *Bryconamericus* done by Eigenmann (1927) included the species with four teeth in the inner row of the premaxilla, maxilla with few teeth along its anterior border, second suborbital expanded covering lower limb of the preopercle, a single series in the dentary, and absence of scales over the caudal-fin lobes and of a pouch scale on the base of the caudal fin in males. The validity of those characters were subsequently discussed by some authors (Malabarba & Malabarba, 1994) but a phylogenetic definition of the genus is still pendant and Eigenmann's definition is still in use for the generic placement of the new species.

Géry (1977) identified two groups of *Bryconamericus*, *B. diaphanus*-group and *B. peruanus*-group. These groups are artificial, however Géry (1977) is the only available paper presenting an overview of the genus. *Bryconamericus uporas* may be included within the *B. diaphanus*-group because it has 15 to 25 anal-fin rays and 4-6 transverse scales above the lateral line. However, the shape of premaxillary and maxillary teeth of *B. uporas* differs from that present in the species included in that group.

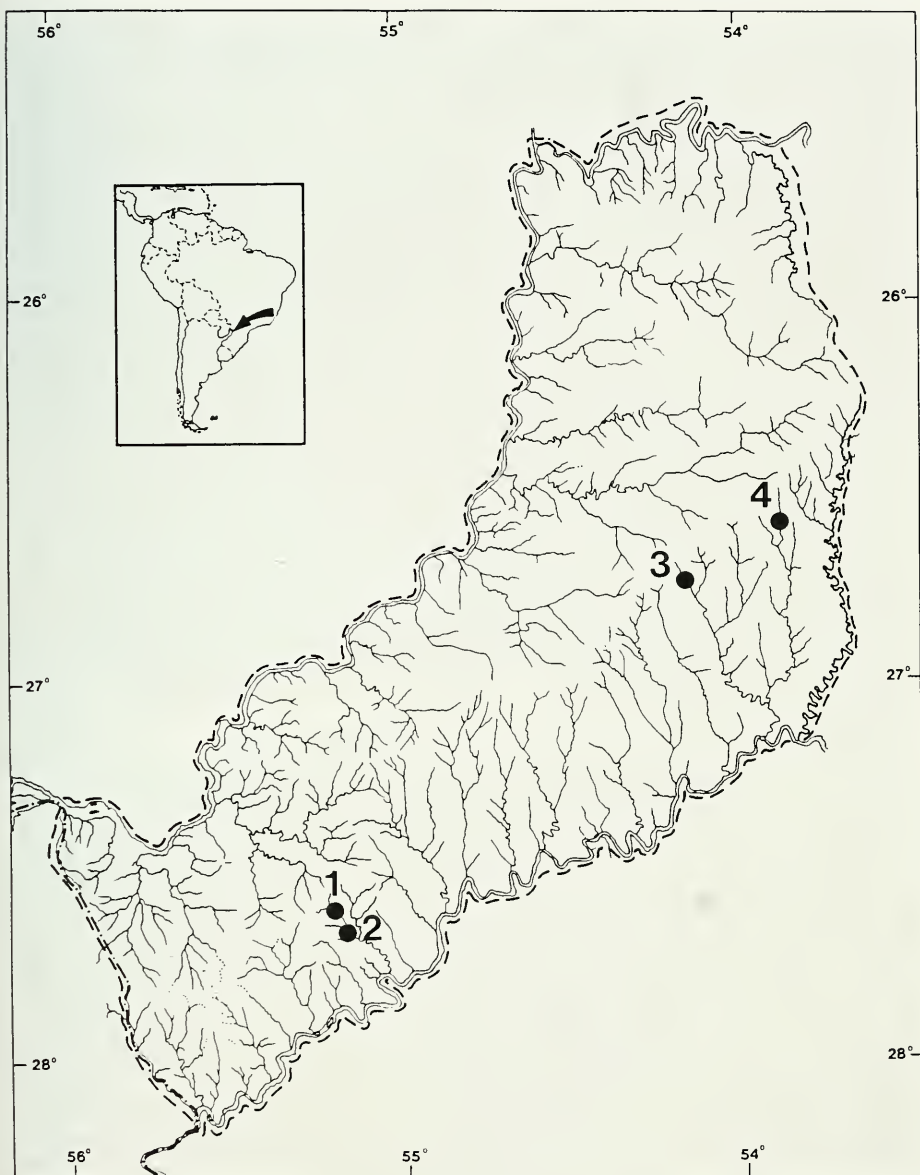


FIG. 7

Map showing the left tributaries of río Paraná and right tributaries of río Uruguay, Misiones, Argentina, with the geographical distribution of *Bryconamericus uporas* sp. n.: 1, arroyo Once Vueltas (type locality); 2, arroyo Toro; 3, arroyo Fortaleza; 4, arroyo Yabotí-Mini.

The following species of *Bryconamericus* were described from southern South America: *B. iheringi*, *B. eigenmanni*, *B. lambari*, *B. thomasi*, *B. exodon*, *B. stramineus* (a junior synonym of *B. exodon*?), *B. sylvicola*, and *B. agna*.



FIG. 8
Habitat of *Bryconamericus uporas* sp. n., arroyo Fortaleza, Misiones, Argentina.

Bryconamericus uporas differs from *B. exodon* in having an aligned outer row of premaxillary teeth and deeper body (28.9-32.2 vs. 22.9-26.8 % in SL). Also a wide black lateral band is present in *B. uporas*, whereas a wide silvery band occurs in *B. exodon*. From *B. eigenmanni*, *B. uporas* is easily distinguished by the higher number of branched anal-fin rays (18-20 vs. 15-17), lack of a dot on upper half of dorsal fin, and several morphometric characters such as longer caudal peduncle (14.9-17.7 vs. 18.0-23.0) and shorter distance between origins of pelvic and anal fins (13.7-18.0 vs. 16.0-25.8). *Bryconamericus uporas* differs from *B. iheringi* by lower body depth (28.9-32.2 vs. 33.7-38.1 % in SL), and the shorter predorsal distance (46.6-50.5 vs. 55.5-56.8 % in SL). The wide dark lateral band present in *B. uporas* distinguishes this species from *B. iheringi*, *B. sylvicola*, and *B. lambari*, but a similar band occurs in *B. agna* and *B. thomasi*. The later species has a peculiar deeper caudal peduncle (15.6-17.4 vs. 10.4-11.0 % in SL in *B. uporas*). The lower body and number of branched anal-fin rays differ *B. uporas* from *B. sylvicola* (28.9-32.2 vs. 36.1-40.7 % in SL); (19-22 vs. 22-25). Also *B. uporas* has a wide black lateral band vs. a very narrow band. *Bryconamericus uporas* differs from *B. agna* in having lower body (28.9-32.2 vs. 34.1-39.8 % in SL), longer caudal peduncle length (14.9-17.7 vs. 10.9-11.8 % in SL) and higher number of dentary teeth (7-10 vs. 6-7).

Among the species described from southern South America, it is possible to find some species with a large geographical distribution while others have a very restricted geographical distribution. *Bryconamericus iheringi* and *B. exodon* occur in a wide geographical area, living in different types of environments of the Río de la Plata basin and Laguna dos Patos system. The two species occur in large and small rivers, and the former also inhabits shallow and deep ponds. Besides, *B. iheringi* represents the southernmost record of the genus in the río Sauce Grande drainage (38° 45' S), in the south of Buenos Aires Province (Casciotta *et al.*, 1999).

Among the species with restricted distribution, *B. eigenmanni* lives in endorheic basins of the ríos Primero and Pichanas, Province of Córdoba, Central Argentina (Miquelarena & Aquino, 1999). *Bryconamericus thomasi* occurs in the upper basin of the río Bermejo, río Pasaje-Juramento-Salado, and río Lipeo, Provinces of Salta and Jujuy in Argentina, and Departamento Tarija in Bolivia (Miquelarena & Aquino, 1995). *Bryconamericus lambari* inhabits in tributaries of Laguna dos Patos system, in Brasil (Malabarba & Kindel, 1995). *Bryconamericus sylvicola* (Braga, 1998) lives only in arroyo Urugua-í above the falls. *Bryconamericus agna* is only known from the type locality in the arroyo Tabay, río Paraná basin (Azpelicueta & Almirón, 2001). All those species live in streams and small rivers, with sandy and rocky bottom, shallow (0.5 m) or deep (2 m) pools, and current water. *Bryconamericus uporas* belongs to that group of species with restricted distribution, being present in headwaters of different streams which flow into the río Uruguay in Misiones Province.

IDENTIFICATION KEY FOR SPECIES OF *BRYCONAMERICUS* FROM SOUTHERN SOUTH AMERICA

- 1 Premaxillary teeth of the outer row not aligned *B. exodon*
 - Premaxillary teeth of the outer row aligned 2
 2 Wide lateral band 3
 - Narrow lateral band 5
 3 First four dentary teeth with similar size followed by other ones much smaller 4
 - Six or seven dentary teeth decreasing in size anteroposteriorly *B. agna*
 4 Premaxillary and maxillary teeth expanded distally *B. uporas* sp.n.
 - Premaxillary and maxillary teeth not expanded distally *B. thomasi*
 5 Caudal peduncle length 18-23 % of SL, dorsal fin brownish . . . *B. eigenmanni*
 - Caudal peduncle length 11-18 % of SL, dorsal fin hyaline or with a dark distal area 6
 6 Body depth 24.6-29.8 % of SL *B. lambari*
 - Body depth 31.5-40.7 % of SL 7
 7 Anal-fin base 19.5-25.7 % of SL *B. iheringi*
 - Anal fin-base 28.0-33.7 % of SL *B. sylvicola*

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