

Bryconops imitator, a new species from the Río Caura basin of Venezuela (Teleostei: Characiformes)

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Bryconops imitator, new species, is apparently an Orinocan endemic inhabiting the Caura River and tributaries. It belongs to the subgenus *Creatochanes* based upon apomorphies of the jaws, infraorbital bones and structure of gill rakers. However, some of the attributes are intermediate between members of this clade and the ones observed in species of the subgenus *Bryconops*. Within *Creatochanes*, *B. colaroja*, *B. colanegra*, *B. melanurus* and *B. imitator* are the only species to lack both well-developed caudal fin ocellus and humeral mark. These four species are distinguishable based upon coloration, meristic and morphometric features, and the structure of their gill rakers. *Bryconops imitator* is most similar to *B. colaroja*, from the Essequibo-Cuyuni basin.

Bryconops imitator, especie nueva, es aparentemente una especie endémica de la Cuenca del Río Orinoco que habita en el Río Caura y sus tributarios. Esta especie pertenece al subgénero *Creatochanes* basado en las apomorfías de los huesos de las mandíbulas, infraorbitales y estructura de las branquias. Sin embargo, algunos de los atributos son intermedios entre miembros de este clado y los observados en especies del subgénero *Bryconops*. Dentro *Creatochanes*, *B. colaroja*, *B. colanegra*, *B. melanurus* y *B. imitator* son las únicas especies que carecen de un ocelo caudal y una marca humeral bien desarrolladas. Estas cuatro especies son reconocibles basados en coloración, merística, morfometría y la estructura de las branquias. *Bryconops imitator* es muy parecida a *B. colaroja* que vive en la Cuenca del Essequibo-Cuyuní.

Introduction

While collecting in the Río Caura of Venezuela (Fig. 1) we came across numerous specimens that appeared to be *Bryconops colaroja*, thought to be endemic to the Río Cuyuní (Chernoff & Machado-Allison, 1999). *Bryconops colaroja* is distinctive

among its congeners and many tetras by possessing an emerald green-silver body with a carmine red caudal fin. Upon close examination, however, we determined that the form from the Río Caura represents an undescribed species, differing from *B. colaroja* in meristics, body shape, osteology of the jaws, denticulation of the gill rakers

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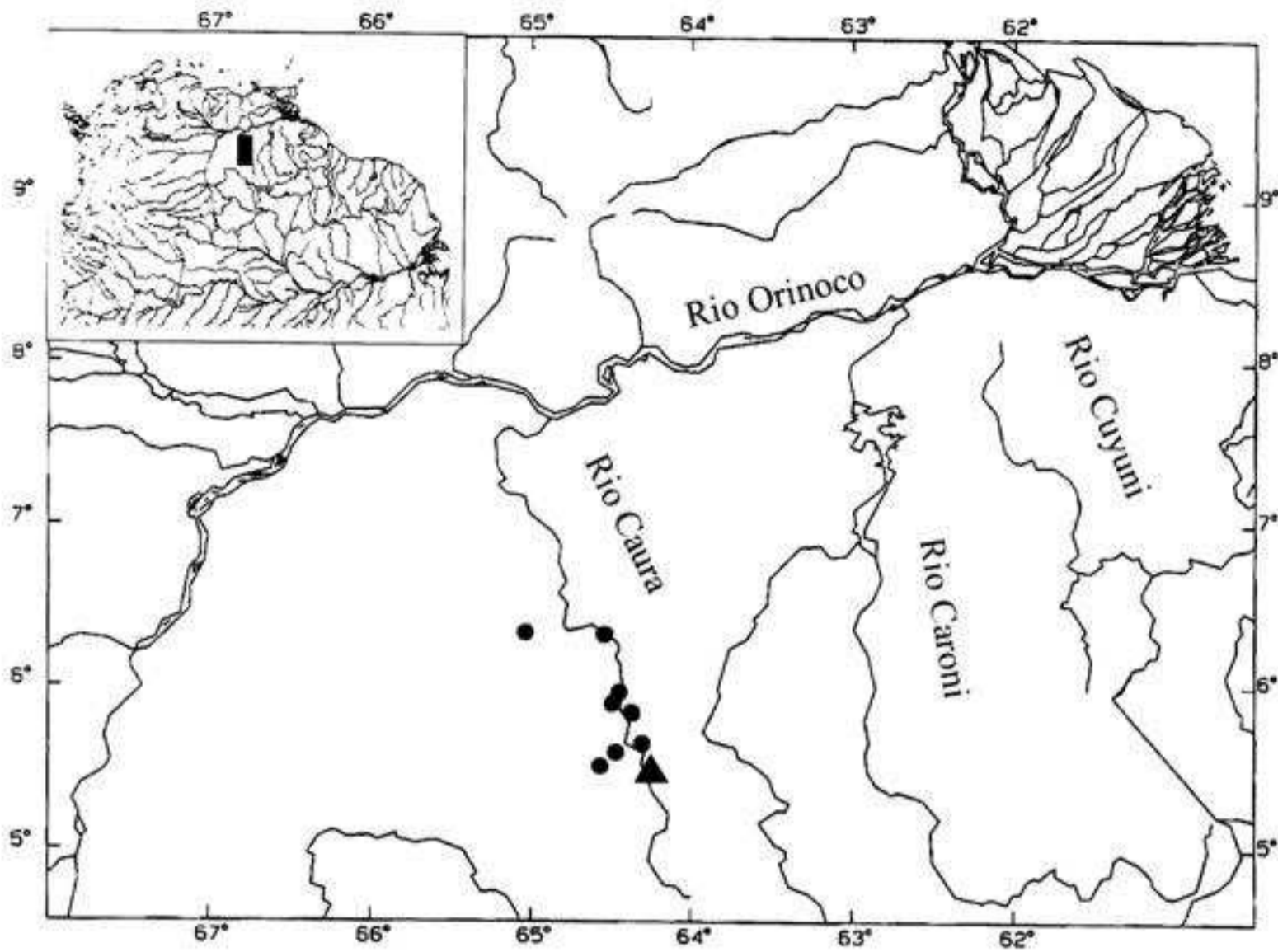


Fig. 1. Distribution map of south-central Venezuela showing known distribution of *Bryconops imitator* in Río Caura Basin. ▲ type locality; ● other localities. Inset map of northern South America showing Río Caura Basin (■).

and subtle aspects of the color pattern.

The Río Caura has a diverse ichthyofauna (ca. 300 species) with relatively few endemics (<10%) but with interesting biogeographic distributions. The Río Caura drains a relatively narrow segment of the southern Guyana Shield bordered to the south and west by the Uainama, Maigualida, Uasadi and Aribana mountain ranges. The Río Caura has been recognized as having two important biogeographic relationships: i) to the upper Río Orinoco – Río Negro (Chernoff et al., 1991); and ii) to the lower Río Orinoco – Llanos (Machado-Allison et al., 1999, 2002). Less emphasized, however, has been the relationships of the Río Caura to the Río Cuyuní-Essequibo River drainage despite geological evidence (Rincón & Estanga, 1996) and ichthyological evidence (Machado-Allison et al., 2002). Should the new species turn out to be the sister-group to *B. colaroja*, as suggested by the shape of the maxilla, the form of the second infraorbital, the denticulation of the gill rakers (Chernoff & Machado-Allison, 1999) and the color pattern, then the *B. imitator* – *B. colaroja* relationship would provide additional support for past connections of the Río Caura and Río Cuyuní-Essequibo river basins.

The purpose of this paper is to describe the new species of *Bryconops* and compare it with *B. colaroja* and other species included in the subgenus *Cretochanes*.

Methods

Thirty-three morphometric and 22 meristic traits were enumerated according to definitions in Fink & Weitzman (1974), Chernoff & Machado-Allison (1990) and Machado-Allison et al. (1996). The circumdorsal scales are the number of horizontal rows intersecting a vertical line or ring just anterior to the tip of the pectoral fin; the count begins with the row of pored lateral-line scales on the left side, proceeds dorsally and finishes with the row of pored lateral-line scales on the right side. Lateral predorsal scales are the horizontal rows just lateral to the mid-dorsal row anterior to the dorsal fin; the rows are numbered in reference to their distance from the mid-dorsal row. For example, the first lateral predorsal scale row is the row alongside the mid-dorsal scales; the second is just ventral to the first, etc. Values of meristic traits of the holotype are indicated by asterisks. Comparative material of *B. colaroja*, *B. colanegra* and *B. melanurus* is listed in Chernoff & Machado-Allison (1999).

Two dimensional coordinates of 14 landmarks were obtained by optically digitizing images of the specimens on a flat-screen monitor (pitch = 0.21) using TPSDIG version 1.20 (Rohlf, 1998). Landmark positions were identified by inserting 0000 insect pins into the specimens. The images were captured using an HP CS-195 flatbed scanner with

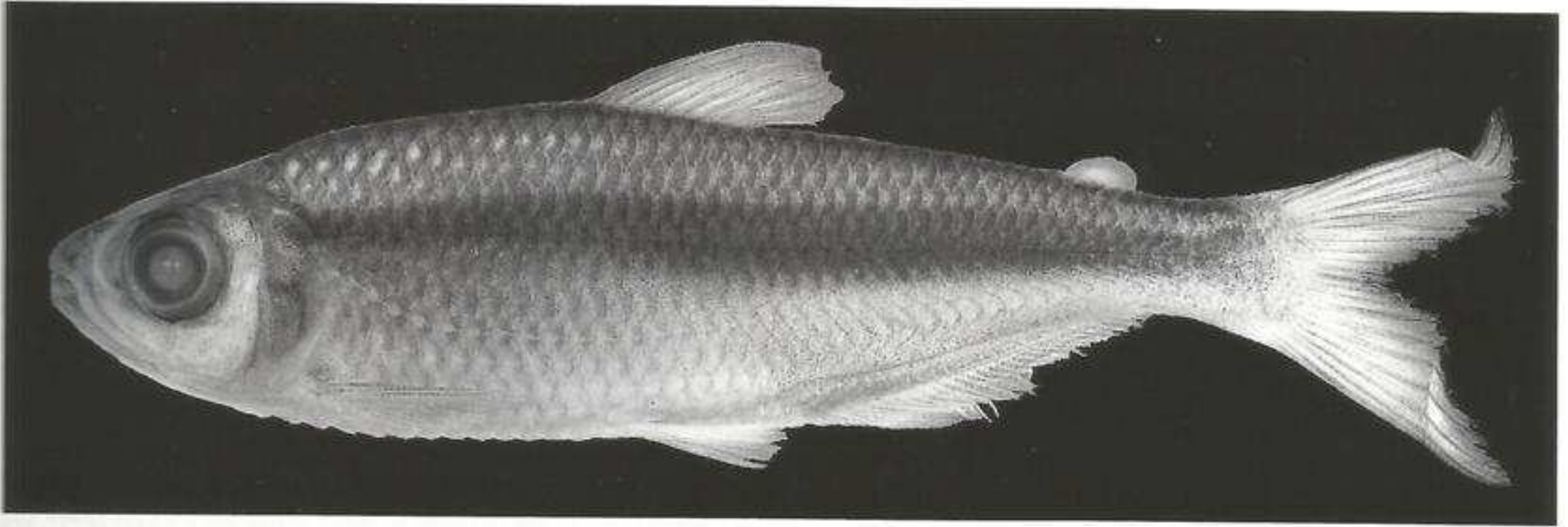


Fig. 2. *Bryconops imitator*, holotype, MBUCV-V-29605, 75 mm SL; Venezuela: Bolívar: Río Caura at Raudal Cejiato.

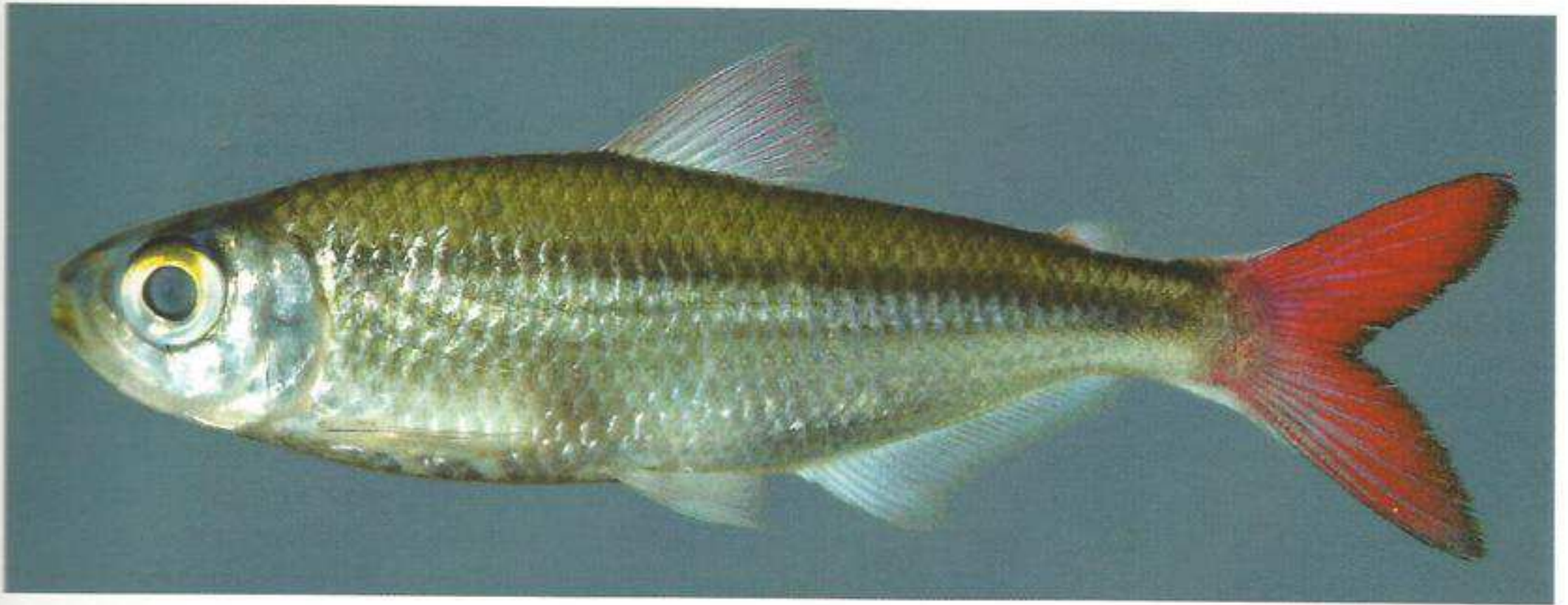


Fig. 3. *Bryconops imitator*, paratype, FMNH 109358, 65 mm SL; Venezuela: Bolívar: Río Caura at Raudal Cejiato.

a resolution of 1200 dpi, noninterpolated. The error of the scanner, <0.002 mm, was estimated from multiple scans of fine graph paper. Twenty-eight measurements (Table 1) were calculated as distances among 14 landmarks (Chernoff & Machado-Allison, 1999). Least depth of the caudal peduncle and length of the dorsal, anal, pectoral and pelvic fins were measured with Helios digital needle-point calipers to the nearest 0.1 mm.

The shapes of *B. imitator* and *B. colaroja* were compared from their landmark configurations using relative warp analysis (see Rohlf, 1993). In order to remove the effect of scaling, rotation and orientation, specimens of both species were aligned to their joint consensus configuration using procrustes analysis. Alpha was set to zero. Because relative warps are the principal components of the partial warps, specimens are not identified to group a priori. Subsequent scatter of relative warp scores on their eigenvectors allows potential group structure to be evaluated. Defor-

mation grids of landmark configurations show differences in shape between the species. All of these analyses were performed with TPSRELW, version 1.18 (Rohlf, 1999). Based upon the relative warp results and standard principal components analysis a few diagnostic, traditional inter-landmark measurements were scattered against standard length. Differences between species were analyzed using analysis of covariance, ANCOVA, performed on Statistica, version 5.5.

Bryconops imitator Chernoff & Machado-Allison, new species
(Figs. 2-3)

Holotype. MBUCV-V-29605, 75.6 mm SL; Venezuela: Bolívar: Río Caura, small branch of Río Caura at Raudal Cejiato, $5^{\circ}33'28''\text{N}$ $64^{\circ}18'49''\text{W}$; A. Machado-Allison, B. Chernoff, F. Provenzano, 28 Nov 2000.

Paratypes. All localities in Venezuela, Estado Bolívar, Río Caura Basin. FMNH 109358, 10, 33.5-65.5 mm SL; MBUCV-V-29606, 7, 51.0-69.0 mm SL; captured with holotype. – FMNH 109359, 1, 26.8 mm SL; small stream 200 m above mouth in Río Caura at Raudal Cejiato, 5°33'28"N 64°18'49"W; F. Provenzano et al., 28 Nov 2000. – FMNH 109357, 3, 22.5-53.0 mm SL; MBUCV-V-29607, 3, 19.0-47.8 mm SL; Río Caura, beach in Raudal Cejiato, 5°33'28"N 64°18'49"W; A. Rojas et al., 28 Nov 2000. – FMNH 109355, 1, 23.5 mm SL; Río Erebató, protected area within rocks, 5°33'59"N 64°28'43"W; B. Chernoff et al., 27 Nov 2000. – FMNH 109352, 3, 21.2-43.0 mm SL; MBUCV-V-29608, 2, 24.5-31.5 mm SL; Río Caura, Playa Sua-

Table 1. Descriptive measurements of *Bryconops imitator*, n=33. Standard length given in mm, all other values expressed in percent standard length.

	holotype	mean	range
Standard length	75.6	51.0	25.9-75.6
Snout-occiput	22.8	24.4	21.2-27.9
Snout-dorsal fin	46.8	47.5	46.0-49.8
Snout-anal fin	63.5	64.1	62.3-66.1
Snout-pectoral fin	24.5	26.0	23.9-27.8
Snout-pelvic fin	47.6	48.9	46.6-51.3
Head length	23.3	25.2	21.9-28.0
Postorbital head length	9.2	9.2	8.0-10.9
Orbital diameter	10.8	11.8	10.2-12.9
Snout length	3.9	4.5	3.2- 6.3
Upper jaw length	12.6	13.7	12.4-15.0
Body depth	28.5	27.4	22.6-30.0
Interdorsal length	26.7	25.7	23.6-27.4
Caudal peduncle length	13.7	13.8	12.2-15.3
Caudal peduncle depth	8.9	8.8	7.7- 9.7
Dorsal fin base	12.4	13.2	11.7-14.8
Anal fin base	26.7	25.8	24.1-27.3
Dorsal fin length	20.1	20.7	17.6-22.5
Anal fin length	12.2	14.6	12.2-17.4
Pectoral fin length	18.9	18.9	16.3-20.7
Pelvic fin length	15.5	15.1	13.1-16.4
Additional truss elements			
Maxilla-ant. orbital	10.0	10.5	9.5-12.7
Maxilla-post. orbital	9.8	9.8	7.9-10.9
Maxilla-pelvic fin	36.5	36.7	34.8-39.1
Pectoral-pelvic	24.0	23.7	22.4-25.3
Dorsal orig.-pectoral	34.7	33.2	30.6-35.4
Dorsal orig.-anal origin	33.2	31.4	27.3-34.1
Dorsal term.-pelvic fin	28.5	28.2	25.5-30.8
Dorsal term.-anal orig.	26.4	24.9	21.6-27.2
Dorsal term.-anal term.	34.4	32.7	30.2-34.4
Adipose-anal origin	30.3	29.4	27.5-31.0
Adipose-anal term.	12.8	12.3	11.1-13.3
Adipose-hypural base	18.7	17.6	16.1-19.0

jiditu on Río Cacaro, 5°29'52"N 64°34'46"W; A. Machado-Allison et al., 26 Nov 2000. – FMNH 109356, 1, 37.0 mm SL; Río Erebató, rapids, 5°52'44"N 64°29'34"W; F. Provenzano et al., 27 Nov 2000. – FMNH 109353, 3, 19.0-30.0 mm SL; MBUCV-V-29609, 3, 19.0-20.5 mm SL; Raudal Los Perros (Suna Soodi), island and rapids in Río Erebató, 5°54'05"N 64°29'25"W; B. Chernoff et al., 27 Nov 2000. – FMNH 109362, 12, 17.0-62.1 mm SL; MBUCV-V-29610, 12, 17.5-65.2 mm SL; Raudal Dimoshi-Soodi in Río Tawadu, 6°19'38"N 65°02'52"W; A. Machado-Allison et al., 5 Dec 2000. – FMNH 109360, 2, 30.5-39.2 mm SL; MBUCV-V-29611, 2, 32.2-37.0 mm SL; Río Caura, backwaters of Isla Pauji, 5°49'41"N 64°24'18"W; A. Machado-Allison and B. Chernoff, 29 Nov 2000.

Additional material (non-types). FMNH 109361, 2, 20.0-21.0 mm SL; Río Caura, beach across from El Playón, 6°19'31"N 64°31'37"W; A. Machado-Allison et al., 3 Dec 2000. – FMNH 109354, 4, 17.0-21.0 mm SL; MBUCV-V-29612, 4, 16.0-20.5 mm SL; Río Erebató, island at Raudal Perro, 5°54'11"N 64°29'27"W; A. Machado-Allison et al., 27 Nov 2000.

Diagnosis. A species of *Bryconops*, subgenus *Cretochanes*, distinguished from all other congeners, except *B. colaroja*, by its red caudal fin and greenish-silver body. Further distinguished from all other *Cretochanes*, including *B. colaroja*, by the following combination of characters: posterior extension of maxilla not reaching vertical through articulation between second and third infraorbital; third infraorbital not contacting preopercle ventrally or at angle; circumdorsal scales 17-19; humeral mark absent; caudal fin ocellus absent; anal fin pigment dense but restricted to margins of fin rays, not forming band; precaudal vertebrae 18-19, rarely 20; anal fin originating under 18-19th centrum, rarely 20th; dorsal fin originating above 10th rarely 11th centrum; cheeks lacking conspicuous blotch of pigment; caudal-fin lobes equal in length.

Description. Morphometric data are given in Table 1. Moderate to small size; known from specimens less than 80 mm SL. Overall shape with convex dorsum and slightly rounded belly, tapering to relatively deep caudal peduncle 7.7-9.7% SL. Dorsal-fin origin over pelvic fin, anterior to mid-body; predorsal length 46.0-49.8% SL.

Head 21.9-28.0% SL; posterior margin of opercle sinusoidal. Border between second and third infraorbital with naked ventral area; third in-

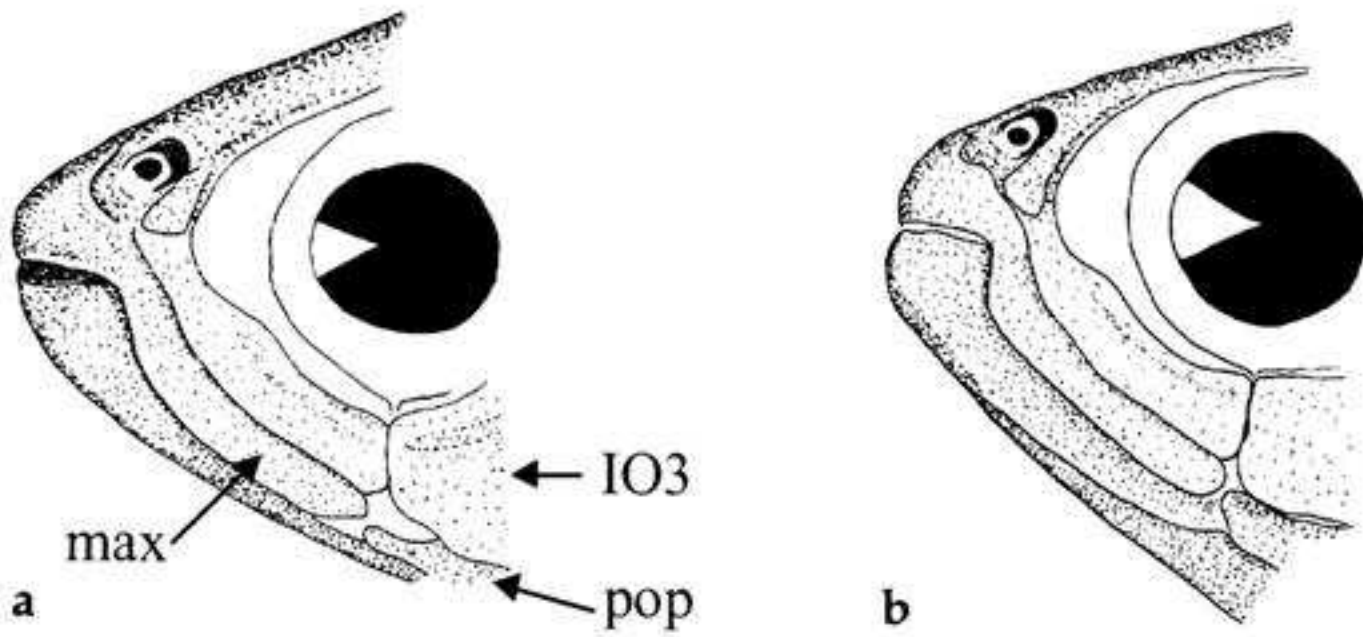


Fig. 4. Semidiagrammatic drawing of anterior head of *Bryconops imitator* (a) and *B. colaroja* (b) showing extension of and anteroventral shape of maxilla, and naked area between third infraorbital and preopercle. Abbreviations: IO3, infraorbital 3; max, maxilla; pop, preopercle.

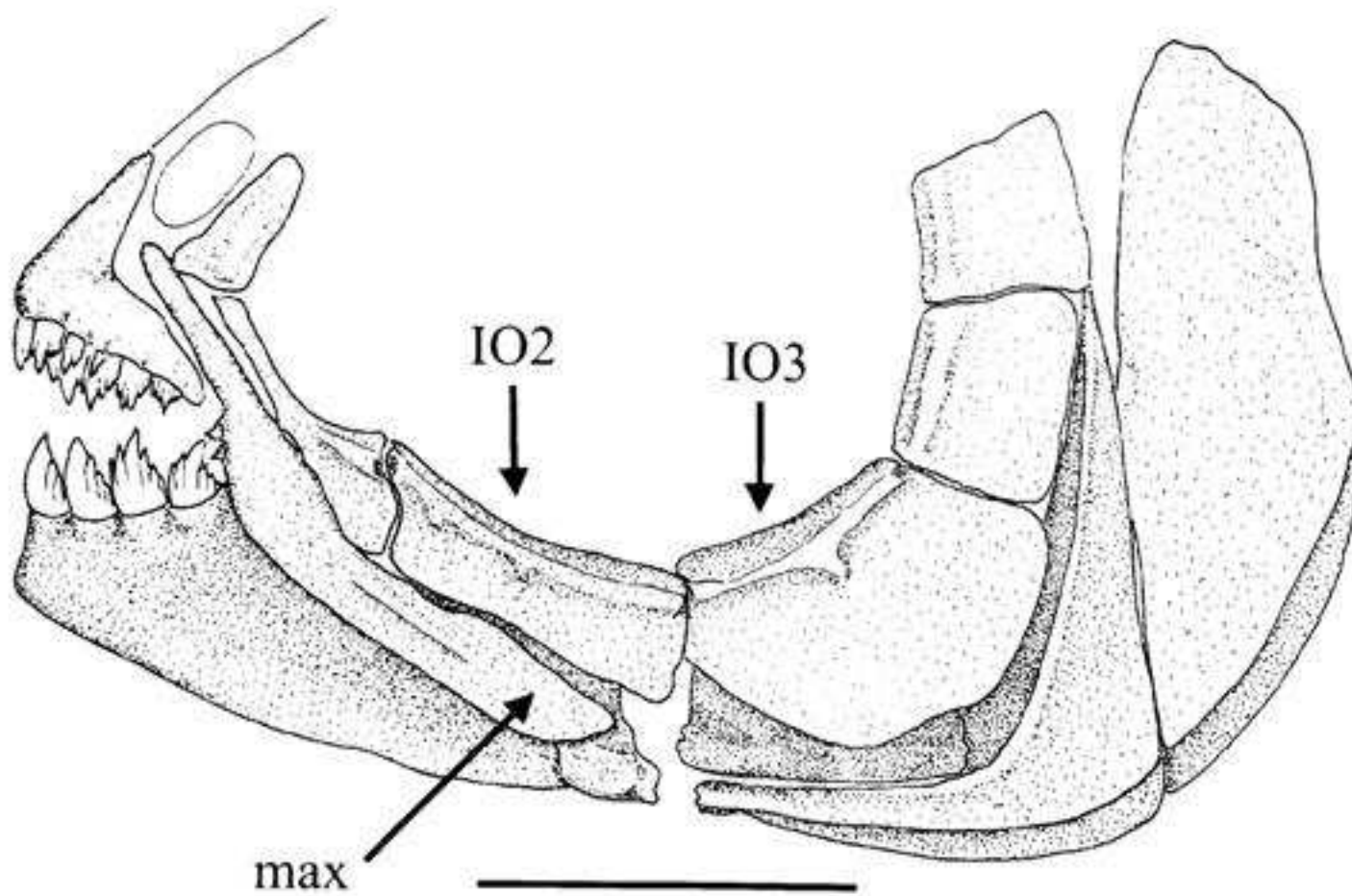


Fig. 5. *Bryconops imitator*, FMNH 109358, 63 mm SL; lateral view of jaw and infraorbital series. Scale bar 5 mm. Abbreviations: IO2, infraorbital 2; IO3, infraorbital 3; max, maxilla.

fraorbital moderately developed not contacting preopercle ventrally or at angle (Figs. 2-3). Eye large, 10.2-12.9% SL, positioned within anterior 60% of head. Snout bullet-shaped; mouth terminal, opening just ventral to horizontal diameter through orbit. Maxilla not reaching posterior margin of second infraorbital. Anteroventral margin of maxilla not strongly recurved (Figs. 4-5). Outer two rows of premaxillary teeth small, not prominent, with 2-5 teeth bearing 3-5 cusps. Inner premaxillary teeth uniformly five with 5-7 cusps; teeth basically symmetric, exposed portions wider than high with concave outer surface. Maxilla with 1-2 small teeth with 3-5 cusps. Dentary with 4-5 large teeth bearing 5-7 cusps, higher than wide, not symmetric, posterolateral edge prominent, cusps recurved posterolaterally; smaller dentary teeth 4-5.

Dorsal fin with straight to slightly convex

distal margin; first or second branched ray longest. Posterior base of dorsal fin separated from anterior base of adipose fin by 14-15 scales arranged irregularly. Adipose fin with convex dorsal margin (anterior if elevated) and straight ventral margin (posterior if elevated). Lobes of caudal fin equal, upper lobe rounded; lower lobe pointed. Distal margin of anal fin straight in juveniles, slightly falcate in adults; fin height greater than half length of fin base. Pelvic fin not reaching anal-fin origin; distal margin rounded. Distal margin of pectoral fin pointed, slightly falcate; not reaching pelvic-fin insertion.

Widths of scales on sides of body above lateral line and below horizontal row along dorsal fin greater than or equal to length; anterior margins almost circular to wavy with a central notch; rounded posterior margin; circuli present on anterior two-thirds of scale; posterior field lacking

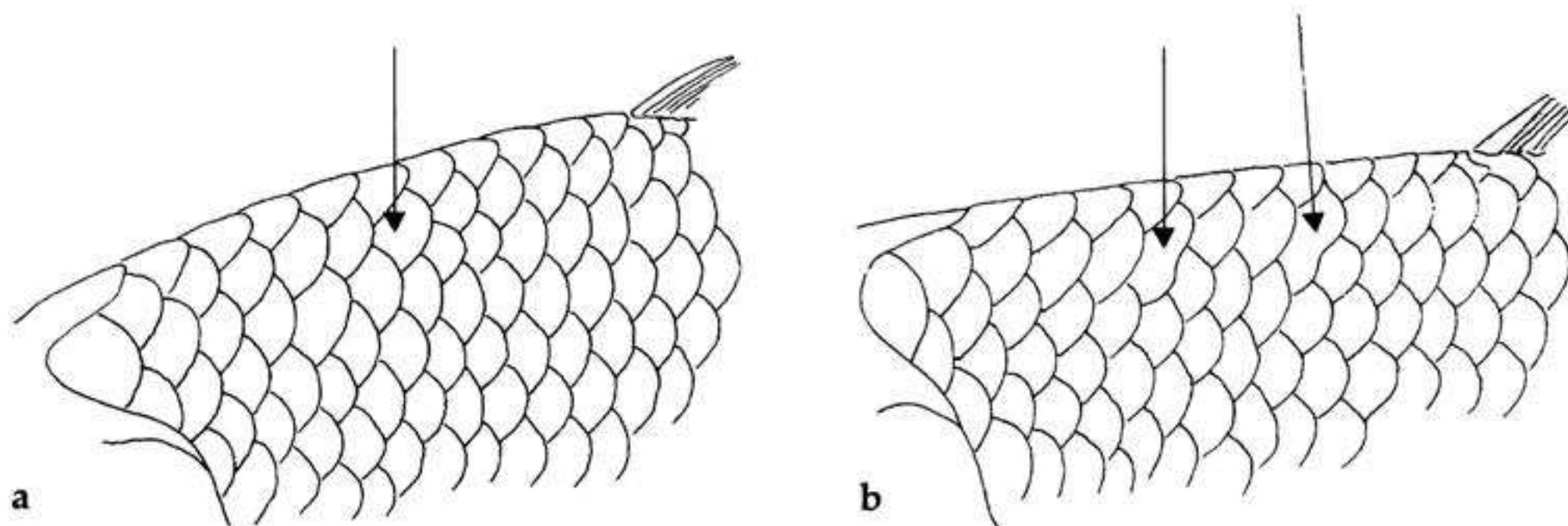


Fig. 6. Lateral view of the lateral predorsal series of scales: **a**, *Bryconops imitator*; **b**, *B. colaroja*. Arrows indicate where scale rows split.

circuli, possessing 2-3 centrally located, almost parallel, striae. Scale row just lateral to mid-dorsal row becoming two rows posterior to 6th transversal row (Fig. 6).

Dorsal fin rays: unbranched 2*(42); branched 9*(42); total 11*(42). Anal-fin rays: unbranched 4*(42); branched 22(1), 23(12), 24(19), 25(9), 26*(1); total 26(1), 27(12), 28(19), 29(9), 30*(1). Pectoral fin rays: 12*(15), 13(27). Scales: predorsal row 10(1), 11*(41); lateral line 43(3), 44(13), 45*(15), 46(8), 47(2); rows above lateral line 8*(41); rows below lateral line 5*(41); circumdorsal series 17*(36), 19(2), 19(1). Gill rakers: upper 6(9), 7*(29), 8(4); lower 9(1), 10*(17), 11(29), 12(3); total 16(7), 17*(13), 18(16), 19(6). Vertebrae: precaudal 18(19), 19*(17), 20(1); caudal 22*(19), 23(16), 24(2); total 40(3), 41*(29), 42(5). Centrum of origin of: dorsal fin 9(1), 10*(33), 11(3); anal fin 18(19), 19*(17), 20(1). Premaxillary teeth outer 4*(19), 5(21), 6(2); inner 5*(42). Maxillary teeth 1(12), 2*(29), 3(1). Large teeth on dentary 4(13), 5*(29).

Pigmentation (Fig. 2). Overall moderately dusky species in preservation, countershaded above and below lateral stripe. Lateral stripe originating just behind head; somewhat prominent in preservation, increasing in depth (three to four scale rows) and intensity just posterior to vertical through dorsal-fin origin, ending at caudal peduncle in oblong-shaped dark area. Lateral line canal outlined with pigment. Below lateral line, anterior to pelvic-fin insertion, melanophores may extend ventrally onto one scale row, rarely two. Above lateral stripe, scales dusky, appearing crosshatched. A dark stripe on dorsum extending from supraoccipital region posteriorly to procurrent caudal fin rays. Posterior to anus and ventral to lateral line, scales peppered with small

melanophores forming longitudinal series of crescents or chevrons extending to anal-fin terminus. A thin dusky stripe extends along base of anal fin. Caudal peduncle more darkly pigmented laterally and dorsally than ventrally.

Top of head almost uniformly pigmented. Ovate area about symphyseal opening lighter. Ethmoid area dark. A prominent pigment streak extending laterally on maxilla in form of moustache. Premaxilla lighter, uniformly flecked with small melanophores. Dorsal portion of lower lip darkly pigmented, dusky towards gular region. Pigment streaks on lower edge of dentary extending below eye. Orbit outlined with melanophores forming dark wide band dorsally. Infraorbital and cheek areas largely devoid of pigment, with few scattered flecks. Opercle densely covered by melanophores.

Dorsal and pectoral fins with pigment flecked along rays, fin membranes clear. Anal fin with diffuse stripe formed by large melanophores in proximal half of fin membranes. Caudal fin with melanophores along rays proximally; pigmentation becoming darker posteriorly forming a prominent black marginal band.

Coloration (Fig. 3). In bright sunlight, based upon reflectance, overall color of body and head emerald green. Silver lateral stripe extending from opercle to base of adipose fin. Lateral and ventral scales reflecting silvery patterns. Dorsal portion of iris golden yellow, ventral and lateral areas silver. Cheek and opercular region silver. Dorsal fin light carmine red with pale oval area just above base of middle rays. Ventral lobe of caudal fin with less pigmented areas forming whitish stripes. Adipose fin suffused with carmine red. Caudal fin brilliant carmine to vermilion red with

blackened rays extending to blackened marginal band. Red pigmentation extending anteriorly, covering base of procurrent rays and ultimate portion of caudal peduncle. Anal, pelvic and pectoral fins lacking color; appearance generally dusky.

Comparisons. Currently we recognize nine species, including *B. imitator*, in the subgenus *Cretochanes*. *Bryconops imitator* exhibits the synapomorphies listed by Chernoff & Machado-Allison (1999) for the monophyletic subgenus *Cretochanes*. Based upon the extensive, derived denticulation of the gill-rakers (Chernoff & Machado-Allison, 1999), *B. imitator* belongs in a clade containing *B. colaroja* (Cuyuni-Essequibo basin), *B. colanegra* (Caroni basin), and *B. melanurus* (Oyapock-Guyana) (Machado-Allison et al., 1993; Chernoff et al., 1994; Chernoff & Machado-Allison, 1999).

Chernoff & Machado-Allison (1999) presented extensive comparisons to distinguish among *B. melanurus*, *B. colaroja*, and *B. colanegra*. Because *B. imitator* shares a unique and striking color pattern with *B. colaroja*, we focus upon the differences between these two species.

Bryconops imitator differs osteologically from *B. colaroja*. In *B. imitator* the maxilla does not quite reach the articulation of the second and third infraorbital bones (Figs. 4a, 5). In *B. colaroja* the maxilla reaches the articulation. Furthermore, the anteroventral section of the maxilla is not as sharply curved as in *B. colaroja*. In *B. imitator*, the third infraorbital is free from the preopercle at either the angle or along the ventral arm (Fig. 5). In *B. colaroja* the third infraorbital contacts the preopercle at the angle and along much of the ventral arm. Although there is a small triangular area exposed between the second and third infraorbital of *B. colaroja*, this is much larger in *B. imitator*.

The gill rakers of *B. imitator*, *B. melanurus*, *B. colanegra*, and *B. colaroja*, are ossified almost to their tips and the denticulations extend almost to the tips (Fig. 7). Nonetheless, there is a difference in the degree of denticulation such that *B. imitator* has the least densely denticulated gill rakers of the group (Fig. 7).

There is also an important difference in squamation just lateral to the mid-dorsal scale row. In *B. imitator* the first lateral predorsal row splits only once at the sixth scale posterior to the occiput. Thus, at the seventh scale a new row is

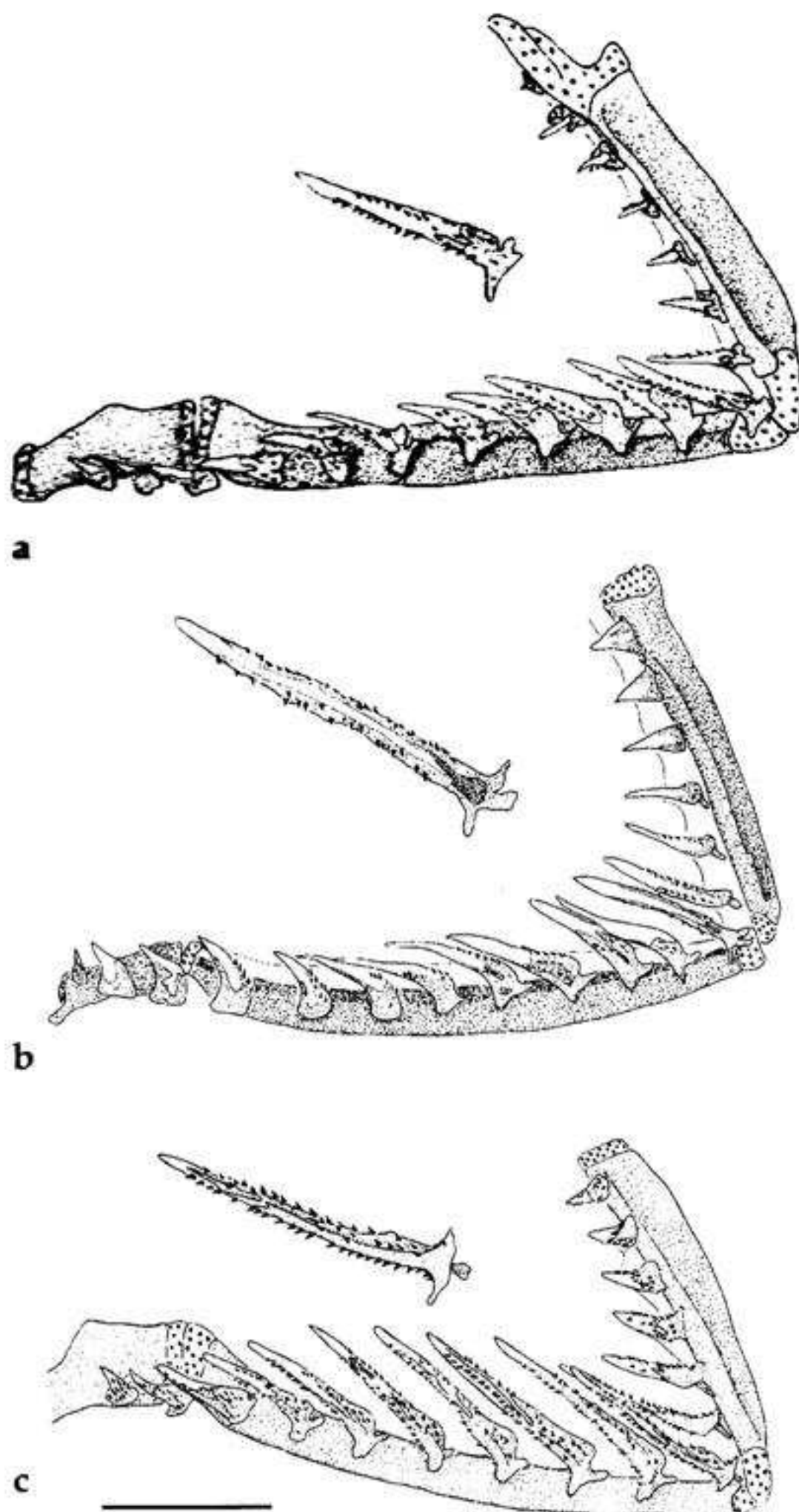


Fig. 7. Lateral view of first branchial arch of: a, *Bryconops imitator*, FMNH 109358; b, *B. colaroja*, FMNH 106509; and c, *B. colanegra*, FMNH 106511. Expanded drawings of gill rakers at junction of ceratobranchial and epi-branchial elements are inset. Scale bar for entire arch 10 mm. Inset raker lengths: a, 16.9 mm; b, 26.3 mm; c, 25.0 mm.

formed, the second row deflects ventrally to accommodate the new row (Fig. 6a). Scales of the first lateral predorsal row of *B. colaroja* are larger than those found in *B. imitator*. More importantly, the first lateral row splits twice with two new rows originating after the 5th and after the 8th scales (Fig. 6b). This difference in squamation is apparent in the smallest specimens of both species. The counts of circumdorsal scales completely differentiate the two species as follows (* signifies holotype): *B. imitator* 17(36*), 18(2), 19(1);

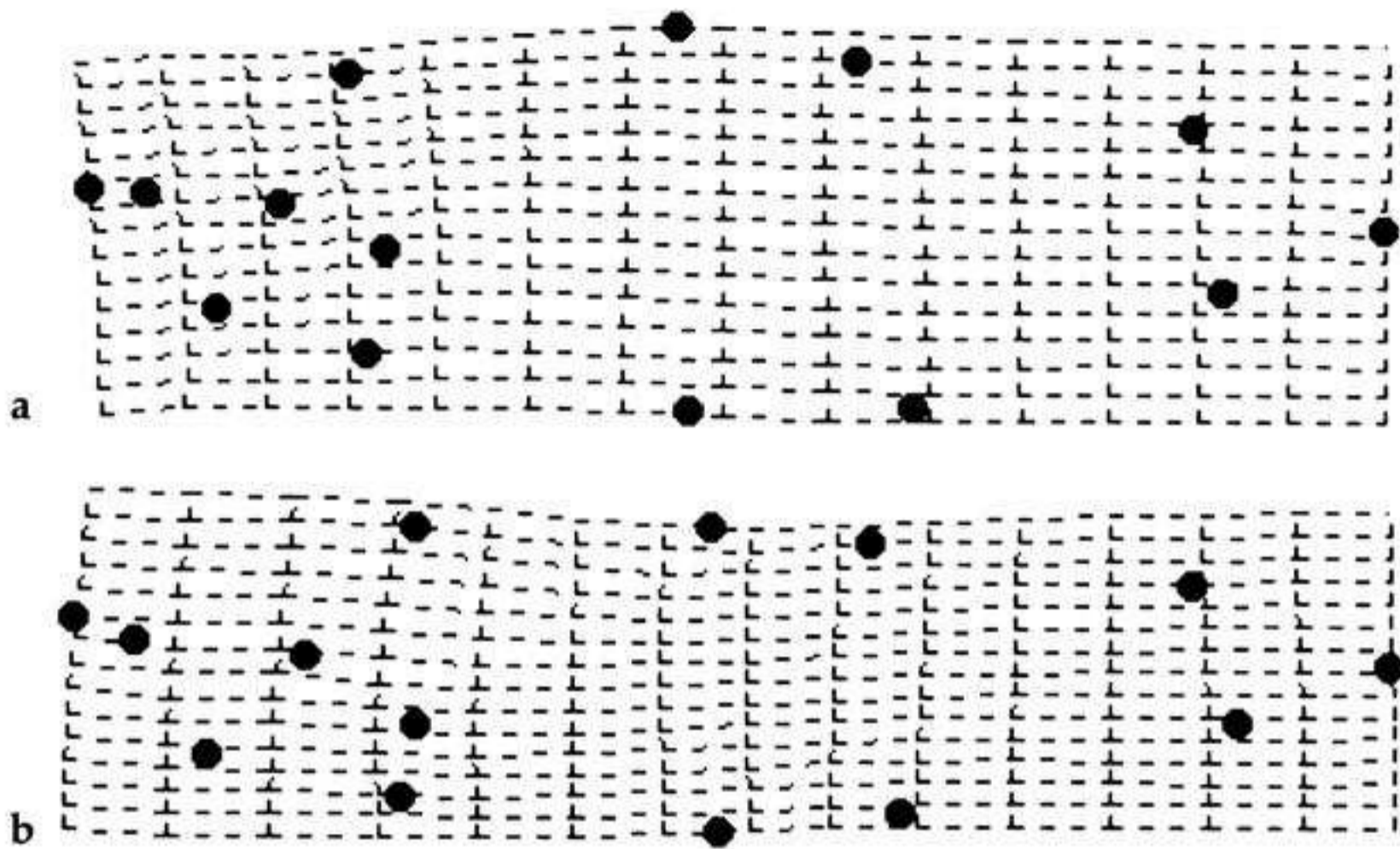


Fig. 8. Relative warp analysis of (a) *Bryconops imitator*, $n=33$, and (b) *B. colaroja*, $n=89$. Grid deformations shown at extremes of first relative warp.

B. colaroja 14(7), 15(61*), 16(15). The difference occurs because the count is taken after the new row originates in *B. imitator* but before the second row splits in *B. colaroja*.

The two species also differ in body shape. The predorsal region of *B. imitator* is more highly arched than that of *B. colaroja* (Fig. 6). The former species also has a more attenuate caudal peduncle. These differences as well as the distance between the pectoral and pelvic fins can be seen in the grid deformation of the first relative warp (Fig. 8). The first warp explains, 37.1% of the

shape variance and was not found to be correlated with centroid size or SL ($P>0.2$). The plot of relative warps scores (Fig. 9) shows that the two species are completely distinguished on the first relative warp. Though several outliers of *B. colaroja* approach the cluster with *B. imitator*, no overlap was noted.

Based upon the relative warp analysis we discovered two linear distances that when scattered against SL, distinguish the two species (Fig. 10). Although the back is more highly arched in *B. imitator*, there is a slight compression along the

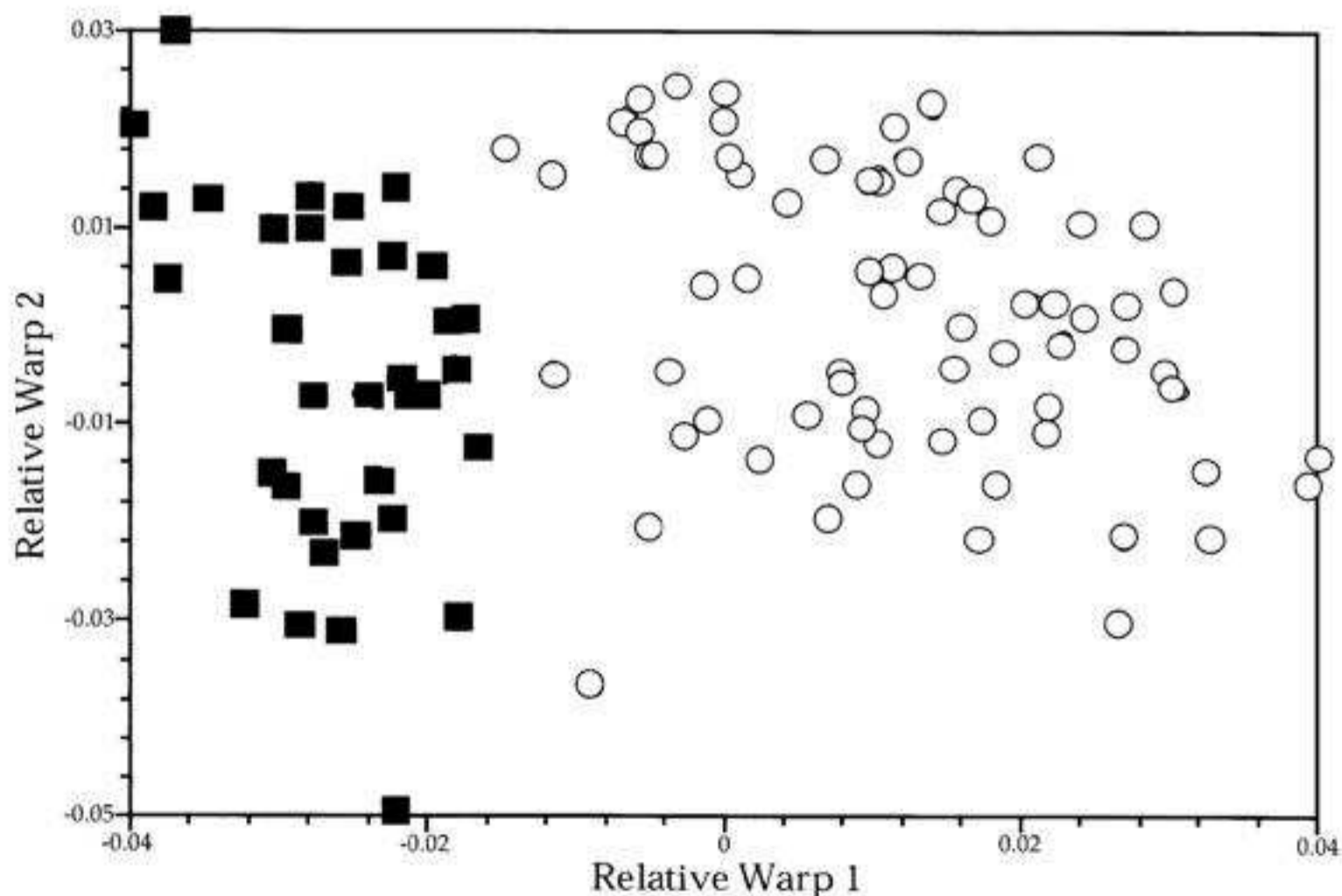


Fig. 9. Scatter plot of scores on first two relative warps. ■, *Bryconops imitator*, $n=33$; ○, *B. colaroja*, $n=89$.

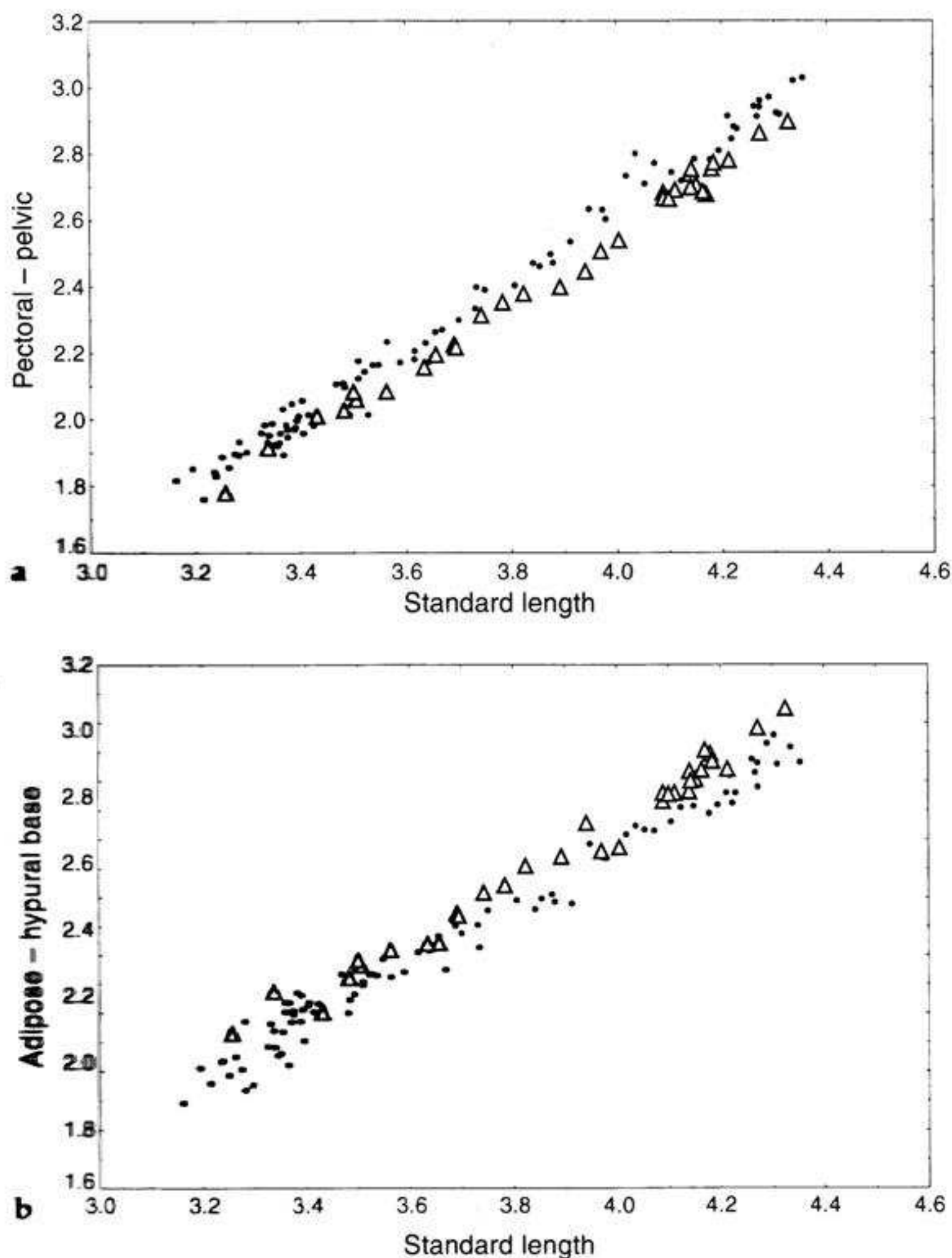


Fig. 10. **a**, Scatter plot of log pectoral-pelvic distance versus log SL; **b**, log adipose-hypural base distance versus log SL for *Bryconops imitator*, $n=33$ (Δ) and *B. colaroja*, $n=89$ (\bullet). Each symbol represents at least one individual.

belly that reduces the linear distance between the **pectoral and pelvic fins** (Fig. 10a). The **relative attenuation of the posterior portion of the body of *B. imitator* is measured most clearly in the distance between the adipose fin and the hypural base** (Fig. 10b). ANCOVA's for each of these measures indicated **significant differences** ($P < 0.00001$) **between the species. In each case we failed to reject** ($P > 0.3$) **null hypotheses of homogeneity of variances and slopes. Therefore, the results indicate significant differences in the dimensions of these traits independent of size.**

Distribution. This species is known only from the basin of the Río Caura, Bolívar State, Vene-

zuela. Specifically it was collected in tributaries and main channels of the Caura, Erebató and Nichare rivers.

Habitat. *Bryconops imitator* is found in larger river habitats in swift current, in rapids among dense stands of the rooted vascular Podostemonaceae, as well as in small streams with current. It also occurs in small streams, rapids, bays and backwaters over sand, gravel and rocky bottoms.

Etymology. The species-group name *imitator*, is taken from the Latin meaning imitator or mimic, in reference to the similarity in appearance of *B. colaroja*. A noun in apposition.

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