



Ancistrus falconensis n. sp. and *A. gymnorhynchus* Kner (Siluriformes: Loricariidae) from central Venezuelan Caribbean coastal streams

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Abstract

A new species, *Ancistrus falconensis*, is described from the Hueque and Ricoa Rivers, small, isolated Caribbean drainages of northwest Falcón state, (Western Caribbean Zoogeographic Province) Venezuela and compared with *A. gymnorhynchus* Kner 1854 which occurs in adjacent drainages to the south. Adults of *Ancistrus falconensis* usually have small light spots on the abdomen in preserved specimens whereas *A. gymnorhynchus* almost always has the abdomen uniformly gray). They are further distinguished by the following ratios in specimens greater than 60 mm SL: mouth width/pectoral spine length (0.661–0.915 vs. 0.480–0.669, (two specimens of 88 overlap), dentary tooth cup length/pectoral spine length (0.207–0.264 vs. 0.143–0.198), and premaxillary tooth cup length/pectoral spine length (0.146–0.215 vs. 0.215–0.318). Falcón state is arid in the area of the type locality of *A. falconensis*, and water resources face increasing demands for urban, agricultural and industrial uses. Deforestation, river channelization and water diversion heavily impact most coastal streams, causing accelerating habitat loss and degradation. Thus, this new species must be considered vulnerable to extinction.

Key words: Teleostei, Ancistrini, Venezuela, taxonomy, arid coastal drainage, Western Caribbean Province, endangered species, fish

Resumen

Una nueva especie, *Ancistrus falconensis*, es descrita para los ríos Hueque y Ricoa, pequeñas, aisladas cuencas caribeñas del noreste del estado Falcón (provincia zoogeográfica Caribe Occidental), Venezuela, y fue comparada con *A. gymnorhynchus* Kner 1854, que ocurre en las cuencas adyacentes al sur. Los adultos de *Ancistrus falconensis* pueden ser separados de *A. gymnorhynchus* porque los especímenes preservados usualmente demuestran puntos pequeños y claros en el abdomen (vs. abdomen casi siempre uniformemente gris en los adultos de *A. gymnorhynchus*) y por las siguientes proporciones en especímenes mayores a 60 mm SL: anchura de la boca/longitud de la espina pectoral (0,207–0,274 vs. 0,143–0,198; de 88 especímenes dos sobrepasaron este intervalo), en el dentario la relación longitud de la placa dentífera/longitud espina pectoral (0,207–0,264 vs. 0,143–0,198) y en el premaxilar la relación placa dentífera/ longitud espina pectoral (0,146–0,215 vs. 0,215–0,318). El estado Falcón es árido en las vertientes donde está la localidad tipo de *A. falconensis*, donde los ambientes acuáticos de corrientes permanentes son escasos y el agua está sujeta a una intensa demanda para usos urbano, agrícola e industrial. La deforestación y otros impactos, como el dragado de los ríos y la pérdida acelerada del hábitat acuático, son intensos en los ríos costeros de la región, por lo que esta nueva especie debe ser considerada en condición de vulnerable.

Palabras clave: Teleostei, Ancistrini, Venezuela, taxonomía, cuencas costeras áridas, provincia Caribe Occidental, especies amenazadas, pez

Introduction

Species of the loricariid genus *Ancistrus* Kner, 1854, (type species: *Hypostomus cirrhosus* Valenciennes, 1836), now number about 73 based on Fisch Muller in Reis *et al.* (2003), Eschmeyer (2009), and recent descriptions. They are easily recognized by the presence of soft, often branched tentacles that sprout from the tissue of their soft fleshy snouts (Armbruster 2004, 2008). These are most conspicuous in adult males, but also present in smaller size and numbers in most females. Small juveniles that lack tentacles might be confused with *Chaetostoma*, that share the characteristic of a soft fleshy snout but without tentacles, but species of *Chaetostoma* have eight or more dorsal-fin rays (vs. seven) and five rows of plates on the caudal peduncle (vs. three). *Ancistrus* species range from Panama to southern South America (Argentina, Bolivia). They have a large altitudinal distribution as well, and occur in mountain highland and lowland streams. Alpha level taxonomy is still not well studied and remains unresolved. Even when regional keys exist (Schultz 1944), they don't usually work; thus, true species diversity goes undocumented and species identification is nearly impossible.

We have recently made considerable collecting efforts along the Caribbean coast of Venezuela, as part of a general inventory and freshwater fish monitoring program to promote the conservation of coastal streams of western Venezuela and their ichthyofaunas (project 001-DAG-2005; CDCHT-UCLA). It produced a wealth of new material from this previously poorly sampled region that is now available in the Colección Regional de Peces (CPUCLA) and the Museo de Ciencias Naturales Guanare (MCNG). This ample fish sampling coverage has made possible the localization and definition of the Western Caribbean province and subprovinces within the region (Rodríguez Olarte *et al.* 2009). It has also allowed us to determine the conservation status of many populations of freshwater fish species using various methods to determine the biological integrity of streams by evaluating and ranking local fish communities (Rodríguez-Olarte *et al.* 2006b). Those results demonstrate that a large part of the regional fish fauna is at risk, mainly because of direct negative impacts to streams such as dredging.

Several new species have been discovered as a result of an ongoing review of the species of *Ancistrus* from rivers of northern South America that drain into the Caribbean by DCT, sponsored by the All Catfish Species Inventory. The first of these is described herein. *Ancistrus gymnorhynchus* has been described four times, first by Kner in 1854 who had only one female, then by Lütken (1874) as *Hypostomus karstenii*, by Regan as *Xenocara rothschildi* (1905) and finally as *Lasiancistrus nationi* by Fernández-Yépez (1972); see Armbruster (2005). The holotype was redescribed by Steindachner in 1917. The material available to those authors was quite limited, and the descriptions inadequate. This redescription is based on abundant material and includes mature males and females, as well as photographs of the holotype as well as live and recently preserved individuals that permits an evaluation of color patterns. We have additionally found differences between the specimens from the Hueque and Ricoa rivers and those to the south representing *A. gymnorhynchus*. We describe the Hueque/Ricoa species as new.

Methods

Names of plate rows follow Schaefer (1997). The following abbreviations are used in the text: D. = distance, Dia. = diameter, Dp. = depth, dr. = drainage, L. = length, premax. = premaxillary, W = width, masl = meters above sea level. Synonymies are based on specimens examined in Fisch-Muller in Reis *et al.* (2003). Names and references were checked with the online Catalog of Fishes (Eschmeyer 2009). Counts and measurements follow Armbruster (2003) with the addition of the enumeration of the plates bordering the dorsal-fin base which include the dorsal plates that abut the dorsal-fin base on one side from beside the nuchal plate to the last dorsal-fin ray and a count of the plates from the last dorsal-fin ray base to the preadipose plate (but not including it). Measurements are point to point and are usually expressed as percents of Standard Length (SL) or Head Length (HL) unless otherwise noted. Principal Components Analysis was performed on log transformed measurements with barbel length excluded (this character is not informative because males' tentacles gradually develop as they grow, females have very small or no tentacles) using JMP ver. 5.0.1a (SAS

Institute, Inc., 2002). The sex of specimens was determined by considering the relative width of the naked margin of the snout. Institutional abbreviations are as listed at <http://www.asih.org/codons.pdf> with the addition of the Colección Regional de Peces (CPUCLA), Barquisimeto, Venezuela.

***Ancistrus gymnorhynchus* Kner, 1854**

Figures 1 and 2. Table 1.

Ancistrus gymnorhynchus Kner, 1854:275. Type locality: Puerto Cabello [Venezuela, approximately 10° 28' N, 68° 00' W]. Holotype: NMW 43495. Originally as *Anc. gymnorhynchus*. Steindachner 1917:93, pl. 9, figs. 7–8, redescription of holotype. Schultz 1944:305 synonymy with *Xenocara rothschildi*. Mago L. 1970: (list). Fisch Muller in Reis *et al.* (2003:376), summary of status. Lasso *et al.* 2004a:131 (list of Orinoco Basin species). Lasso *et al.* 2004b:172; Rodríguez-Olarte *et al.* 2009:75 (list).

Hypostomus karstenii Lütken (ex Kröyer), 1874: 204. Not available, name published in the synonymy of *Chaetostomus gymnorhynchus* (Kner, 1854).

Xenocara rothschildi Regan, 1905: 242. Type locality: San Esteban, near Puerto Cabello, Venezuela. Syntypes: BMNH 1904.11.9.27–31 (5).

Lasiancistrus nationi Fernández-Yépez 1972:23, Pl. 23 Type locality: Río Yaracuy drainage, Venezuela: Holotype and paratypes were lost along with most of the personal collection of AFY. Lasso *et al.* 2004b:174 (list).

Ancistrus nationi Rodríguez-Olarte *et al.* 2006a:110 (list), Rodríguez-Olarte *et al.* 2007: 43 (list).

Diagnosis. *Ancistrus gymnorhynchus* differs from Venezuelan congeners in having an unspotted color pattern of gray, brown or tan. Although it does have a black spot or dark area at the base of the first dorsal-fin membrane, it lacks either dark or light spots on the remainder of that and all other fins, as well as the dorsum, sides and abdomen (we have observed light colored spots in a few individuals of only one population of *A. gymnorhynchus*, from near Totoremo, middle Tocuyo River) in preserved specimens. A few live specimens have been observed with faint light spots on the dorsum, but these disappear upon preservation. Within its known range of distribution, it might occur with *Ancistrus triradiatus*, which has rows of black spots on the dorsal and caudal fins. *Ancistrus martini* occurs in the Maracaibo Basin to the west of the range of *A. gymnorhynchus* and is easily distinguished by having rows of dark spots on the dorsal and caudal fins, and a dark abdomen with large bold white spots or vermiculations. *Ancistrus brevifilis* occurs in the Tuy River drainage just to the east of *A. gymnorhynchus*, and is distinguished by dark fins with light colored spots. See the diagnosis of *A. falconensis* n. sp. described below for morphological differences.

Description. Morphometrics are given in Table 1. Head and body robust but relatively narrow, greatest body depth near dorsal-fin origin. Greatest width of body between opercles and pectoral-fin origins, then narrowing progressively to end of caudal peduncle. Dorsal profile of head and body convex from tip of snout tip to dorsal-fin origin, from there, nearly straight and sloping gradually down to dorsal procurrent caudal-fin rays, then angled dorsally ~45° to caudal fin. Ventral profile convex from tip of snout to below pectoral-fin insertions, abdomen slightly concave to pelvic-fin insertions, from there, straight and sloping gently up towards caudal fin. Caudal peduncle deep and robust. Snout broadly rounded with large broad naked margin in males, less developed in females and juveniles. As in all species of *Ancistrus* the tentacles are better developed in males (Figure 1) and present in all areas defined by Sabaj *et al.* (1999): cheek, posterior and anterior margins, anteromedial and posteromedial regions of the unplated snout. Tentacles absent in females, or if present much smaller and only along posterior and anterior snout margins. Eye moderate, dorsal margin of orbit not elevated, interorbital area slightly concave.

Hypertrophied cheek odontodes eight to 17 (mode 12), stout with tips hooked anteriorly, strongly evertible, the longest reaching beyond pectoral fin insertion, bases encased in thick fleshy sheaths. Oral disk slightly ovate, wider than long. Lips covered with minute papillae, larger near mouth. Lower lip moderate in size, not reaching pectoral girdle, its border covered with very small papillae. Maxillary barbel short, slightly longer than buccal papilla. Dentary tooth row curved, slightly narrower than premaxillary tooth row. Teeth unevenly bifid, medial cusp much larger and spatulate, lateral cusp minute and pointed, usually not reaching more than half length of medial cusp, but equal in worn teeth.



FIGURE 1. *Ancistrus gymnorhynchus* Kner 1854, Venezuela, Yaracuy, Quebrada Guáquira, at Hacienda Guaquira, Marroquina sector, Yaracuy River dr., 119 masl.

Exposed part of opercle roughly triangular and bearing short stout odontodes. Three to five dermal plates present in postopercular area. Supraoccipital with margins between surrounding bones and plates usually clearly visible. Nuchal plate small and curved posterolaterally. Five series of lateral plates anteriorly, mid-dorsal and mid-ventral plate series end on caudal peduncle. Mid-dorsal plates 10(1), 14(2), 15(8), 16(17), 17(19), 18(17), 19(2); median plates 21(5), 22(38), 23(23); mid-ventral plates 16(8), 17(35), 18(22), 19(1);

plates bordering dorsal-fin base 6(39), 7(26), 8(1); plates between dorsal and adipose fins 6(23), 7(43); preadipose plates: 1(63), 2(3). Mid-dorsal and mid-ventral plate series ending at point near vertical through adipose-fin origin. Last plate in median series slightly smaller than penultimate plate, base of caudal fin with about four small platelets after main series, then about eight roughly triangular platelets covering bases of caudal-fin rays. Tiny odontodes present on body plates, largest on posterior margins of plates. All fin spines with small odontodes, more developed in pectoral-fin spine of males. All fin rays with tiny odontodes on rays. Abdomen entirely devoid of plates; no exposed platelets anterior to anal-fin spine.

Dorsal-fin origin situated slightly anterior to vertical through pelvic-fin insertion. Dorsal fin short, tip of adpressed fin falling just short of single median preadipose plate. Adipose fin with stout spine and well-developed adnate membrane that adheres to plate just anterior to first procurrent caudal-fin ray. Pectoral spine long and slender, extending to middle of pelvic spine. Anal fin well developed, short; first anal-fin pterygiophore covered by skin. Caudal fin with straight oblique posterior margin, spines and first dorsal and ventral rays slightly longer than others, base not visible as plate-like structure. Ventral caudal-fin ray extends posteriorly following horizontal profile of caudal peduncle, not angled downward. Fin-ray formulae (N=66): dorsal i,7; pectoral i,6; pelvic i,5; anal i,4; caudal i,14,i. Caudal procurrent spines: dorsal: 5(64), 4(2) ventral: 3(45), 4(20), 5(1).

Color in alcohol. Body gray, brown or tan, without dark or light spots; some plates outlined with lighter or darker tones. Ventral portions of head, abdomen and caudal peduncle usually paler, not spotted. The one observed exception is in two specimens from Totoremo, in the middle Tocuyo River drainage, where we observed light spots on the abdomen. In nearby localities of the same tributary no spots were observed. Morphologically these two specimens grouped with *A. gymnorhynchus* in the PCA analysis. Dorsal fin usually with black pigment at base of first membrane. Caudal fin sometimes very dark gray. A few specimens have numerous inconspicuous pale spots on rays of paired fins upon close inspection. Lips cream color or light gray to whitish.

Distribution. (Figure 2.) South America: central Venezuela: coastal rivers of Falcón, Lara, Yaracuy and Carabobo States. An all brown color morph (vs. gray) has been found in the Chirgua River and tributaries (upper Pao River drainage) in Cojedes state. This is the only population known from the Orinoco River Basin.

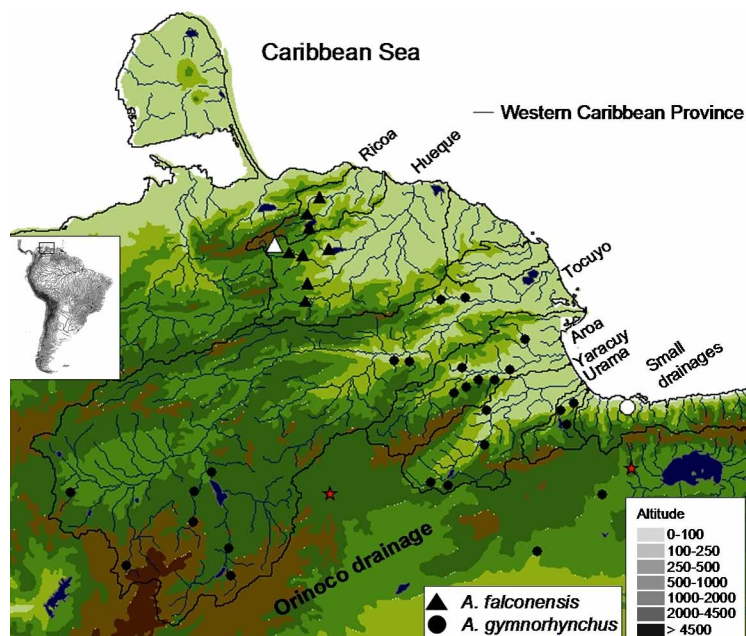


FIGURE 2. Collecting localities of *Ancistrus gymnorhynchus* (circles) and *Ancistrus falconensis* (triangles). White symbols indicate type localities. Red stars indicate major cities.

Specimens examined. We examined photographs of the holotype of *Ancistrus gymnorhynchus* NMW 43495.

TABLE 1. Morphometric features of *Ancistrus falconensis* (N = 23) and *A. gymnorhynchus* (N = 68 except internares W., N = 67).

Landmark	Measurement	<i>A. falconensis</i>				<i>A. gymnorhynchus</i>			
		Avg.	SD	Min.	Max.	Avg.	SD	Min	Max
1–20	SL (mm)	81.9		21.8	161.2	84.1		41.2	161.2
	%SL								
1–10	Predorsal L.	48.2	1.5	46.1	51.8	46.7	1.9	42.7	50.9
1–7	Head L. (HL)	38.8	1.8	35.2	41.8	37.0	1.8	33.5	41.4
7–10	Head-dorsal L.	10.1	1.2	7.8	12.4	10.1	1.0	8.2	12.5
8–9	Cleithral W.	31.3	1.0	28.5	32.6	31.0	1.1	28.6	34.0
1–12	Head-pectoral L.	29.2	1.6	27.2	32.4	28.1	1.7	25.4	32.1
12–13	Thorax L.	24.2	1.4	21.5	26.7	24.5	1.8	20.5	28.5
12–29	Pectoral-fin spine L.	29.4	1.4	26.3	31.8	32.5	2.2	27.9	40.2
13–14	Abdominal L.	22.8	1.0	20.9	24.4	22.8	1.1	19.9	25.1
13–30	Pelvic-fin spine L.	24.6	1.4	21.9	27.6	25.9	1.5	22.6	29.7
14–15	Postanal L.	30.8	1.2	29.0	33.3	31.6	1.4	28.5	34.9
14–31	Anal-fin spine L.	9.5	1.3	7.2	12.0	10.0	0.9	7.9	11.8
10–12	Dorsal-pectoral D.	28.7	1.3	26.0	30.8	28.2	1.2	25.6	30.6
10–11	Dorsal-fin spine L.	28.1	2.0	24.7	31.8	29.4	2.0	24.5	34.4
10–13	Dorsal-pelvic D.	21.6	1.3	19.3	25.0	20.5	1.7	16.8	25.2
10–16	Dorsal-fin base L.	23.7	1.6	20.5	26.2	23.2	1.2	20.5	26.6
16–17	Dorsal-adipose D.	17.7	0.9	16.1	19.5	18.3	1.3	13.6	22.8
17–18	Adipose-spine L.	6.4	0.9	4.6	8.0	7.6	0.9	5.5	10.3
17–19	Adipose-up. caudal D.	12.6	2.0	10.2	19.1	13.0	1.4	9.5	15.8
15–19	Caudal peduncle Dp.	11.9	0.9	9.3	13.7	11.5	0.9	9.0	13.0
15–17	Adipose-low. caudal D.	19.5	0.9	17.8	20.9	19.7	0.9	18.0	21.8
14–17	Adipose-anal D.	21.0	1.1	19.2	23.3	20.4	1.0	17.0	23.0
14–16	Dorsal-anal D.	15.5	0.6	14.0	16.5	15.2	0.7	13.1	17.0
13–16	Pelvic-dorsal D.	25.3	1.2	21.6	27.5	24.3	1.9	20.6	28.7
	%HL								
5–7	Head-eye L.	39.1	1.6	36.6	41.8	40.0	1.8	35.6	46.6
4–5	Orbit Dia.	15.0	2.0	12.6	19.3	16.2	2.0	11.0	20.9
1–4	Snout L.	60.5	2.4	56.2	64.9	59.6	2.7	54.1	66.2
2–3	Internares W.	19.3	1.0	17.0	21.0	20.1	1.2	17.7	23.6
5–6	Interorbital W.	53.9	2.7	48.0	58.2	55.4	2.7	49.3	61.9
7–12	Head Dp.	60.4	3.3	55.5	66.5	62.6	3.0	55.5	69.1
1–24	Mouth L.	51.3	3.6	43.4	58.1	47.4	3.5	37.9	55.7
21–22	Mouth W.	58.0	4.0	50.1	66.4	50.7	3.4	43.5	58.1
22–23	Barbel L.	4.5	1.0	2.6	7.3	4.6	1.6	2.1	9.2
25–26	Dentary tooth cup L.	17.8	1.5	14.1	20.8	15.4	1.2	13.3	18.5
27–28	Premax. tooth cup L.	18.8	2.0	15.0	22.1	16.0	1.6	12.6	20.1

The following lots include specimens of *Ancistrus gymnorhynchus* that were counted and measured for Table 1: (All from Venezuela) INHS: 28865, 2, Lara, Río Curarigua at bridge, (Puente Torres), 6 January 1993, D. Taphorn, L. Page, K. Cummings, C. Mayer, P. Ceas, J. Armbruster, C. Laird and M. Sabaj; 28906, 3, Yaracuy, tributary of Río Yaracuy, East of Marin, 7 January 1993, D. Taphorn, L. Page, K. Cummings, C. Mayer, P. Ceas, J. Armbruster, C. Laird and M.H. Sabaj; 28921, 5, Carabobo, Río Capa, Canoabo, 10° 18' N, 68° 17' W, 7 January 1993, D. Taphorn, L. Page, K. Cummings, C. Mayer, P. Ceas, J. Armbruster, C. Laird and M. Sabaj; 34951, 1, Falcón, Río Aroa, Palma Sola, 10° 35' 58" N, 68° 33' 03" W, 21 January 1995, D. Taphorn, L. Page, K. Cummings, C. Mayer, P. Ceas and J. Armbruster; 60097, 4, Yaracuy, Río Tupe, ca. 12 km N of Aroa on highway 3, 10° 30.31' N, 68° 52.55' W, 31 December 1990, D. Taphorn, L. Page, P. Ceas and M. Retzer; 60122, 4, Yaracuy, Río Guarataro, Carabobo, 10° 34' N, 68° 44' W, 30 December 1990, D. Taphorn, L. Page, P. Ceas and M. Retzer. CPUCLA: 442, 1, Yaracuy, río Guarataro, Aroa, Sector Guaratarito, 15 km SE of Carabobo, Yumare-Aroa highway, 05 July 2002, D. Rodríguez-O, J. Coronel, A. Amaro, E. Lucena, J. Lopéz, A. Pichardo; 1018, 1, Yaracuy, Río Carabobo-Aroa, upstream of Barlovento, Aroa-Carabobo highway, 15 January 2004, D. Rodríguez-Olarte, A. Amaro; 1741, 4, Carabobo, río Alpargatón-Urama, Urama-Moron highway, Sector Alpargaton, 2 km from the entrance of the sand extraction plant, 20 April 2006, D. Rodríguez-O, A. Amaro, H. Agudelo; 1870, 1, Falcón, río Totoremo-Tocuyo, Totoremo village, 10 November 2006, D. Rodríguez-Olarte, A. Amaro, J. L. Coronel, H. Rivera, H. Agudelo; 1871, 1, Falcón, río Cararapa-Tocuyo, Cararapa village, 10 November 2006, D. Rodríguez-Olarte, D. Rodríguez-Olarte, D. Taphorn, A. Amaro, J. L. Coronel, H. Agudelo and H. Rivera; 1872, 2, Carabobo, río Alpargatón-Urama, Urama-Moron highway, Sector Alpargaton, 2 km from entrance to sand extraction plant, 01 November 2006, D. Rodríguez-Olarte, D. Taphorn, A. Amaro, J. L. Coronel, H. Agudelo and H. Rivera; 1873, 2, Yaracuy, Quebrada Guáquira, Cerro Zapatero, 07 November 2006; D. Rodríguez-Olarte, D. Taphorn, A. Amaro, J. L. Coronel, H. Agudelo and H. Rivera; MCNG 14257, 80, Cojedes, Río Chirgua, between Tinaquillo and Campo Carabobo, 09° 58' 20"N, 68° 12' 40"W, 4 August 1985, D. Taphorn *et al.*; 15289, 15, Carabobo, Río Chirgua, tributary of Río Pao, 10° 08' 30"N, 68° 11' 30"W, 19 October 1985, D. Taphorn *et al.*; 24543, 9, Carabobo, Río Chirguita at the bridge, 23 December 1990, M. Retzer *et al.*; 24660, 9, Carabobo, Río Capa in Canoabo (tributary of Río Urama). 10° 18' 00"N, 68° 17' 00"W, 30 December 1990, D. Taphorn *et al.*; 24661, 2, Yaracuy, Creek in Guayabito, at the bridge, 10° 28' 00"N, 68° 39' 00"W, 31 December 1990, D. Taphorn *et al.*; 24694, 4, Yaracuy, Río Tupe, N of Aroa, 01° 30' 31"N, 68° 52' 55"W, 31 December 1990, D. Taphorn *et al.*; 24713, 7, Yaracuy, Río Guarataro between Aroa and Yumare, at bridge, 10° 34' 00"N, 68° 44' 00"W, D. Taphorn *et al.*, 27620, 3, Yaracuy, Río Yurubí near entrance to Guayabito 10° 29' 08"N, 68° 39' 40"W, 7 January 1993; 27625, 5, Carabobo, 10° 18' 49"N, 68° 16' 55"W, Creek in Canoabo, 7 January 1993; 32117, 4, Yaracuy, Caripial Creek, Aroa dr., at bridge SE of Yumare 10° 33' 42"N, 68° 37' 37"W, 21 January 1995 D. Taphorn *et al.*; 32120, 3, Falcon, Creek called "El 26" or Minapo, Aroa dr., north of Palma Sola 10° 36' 48"N, 68° 33' 46"W, 21 January 1995, D. Taphorn *et al.*; 52073, 3, Yaracuy, Río Carabobo, sector Barlovento, 15 January 2004, D. Rodríguez *et al.*; 54572, 16, Carabobo, El Samán en el río Alpargatón, 10° 15' 13"N, 68° 15' 45"E, 21 October 2005, D. Taphorn *et al.*; 54593, 13, Yaracuy, Stream on Hacienda Guáquira, 21 October 2005, D. Taphorn *et al.*; 54614, 7, Yaracuy, Sarare Creek, 1 km from Hacienda Corozal, 23 October 2005, D. Taphorn *et al.*

The following material examined was not measured but was used for the distribution map: MCNG 14068, 2, Yaracuy, Quebrada Cupa, near Aroa, 10° 29' 50"N, 68° 52' 20"W, 7 July 1985, D. Taphorn *et al.*; 25079, 4, Lara, creek at bridge SE of Goajira near Las Palmas, 11 January 1991, D. Taphorn *et al.*; 25090, 1, Lara, Río Tocuyo at bridge (Puente Torres), old highway, 12 January 1991, D. Taphorn *et al.*; 27590, 1, Lara, Río Curarigua at bridge on highway 12, between Carora and Barquisimeto, 10° 04' 07"N, 69° 56' 19"W, 6 January 1993, D. Taphorn *et al.*; 27609, 1, Yaracuy, Río Yurubí near Guayabito, 10° 29' 08"N, 68° 39' 40"W, 1 July 1993, D. Taphorn *et al.*; 49643, 3, Yaracuy, Río Crucito, Marin-Yumare Hwy., 10° 33' 39"N, 68° 37' 37"E, 4 February 2001, D. Rodríguez O. *et al.*; 49657, 1, Yaracuy, Río Tesorero, sector Santa Rosa, 4 February 2002, D. Rodríguez O. *et al.*; 52088, 1, Yaracuy, Río Crucito, 1 km from Guayabito bridge, 16 March 2004, D. Rodríguez O. *et al.*; 55731, 14, Yaracuy, Río Urama, Urama – Moron Hwy., sector Alpargaton, 11 November 2006, D. Rodríguez O. *et al.*

Ancistrus falconensis, new species

Figures 2 and 3. Table 1.

Holotype. MCNG 56067 118.8 mm SL (ex MCNG 54543) Falcón, El Hueque River, 11°09'41.4" N, 69° 33' 24.9" W, at bridge on highway from Churuguara to Coro, 19 October 2005. D. Taphorn, D. Rodríguez Olarte, J. Coronel, A. Amaro and H. Rivera.

Paratypes. All from Venezuela, Falcón state. Collected with holotype: MCNG 54543 (9) ANSP 189316 (2), AUM 50301, (2) ROM 84518, (2). CPUCLA 1638, 3, Churuguara-Coro highway at bridge 5 km below Hueque River cataracts at swim park, 11° 09' 41.1" N, 69° 33' 24.8" W, D. Rodríguez-O, A. Amaro, H. Agudelo 18 March 2006; 1890, 5, Hueque River at San Francisco swim park bridge, 24 October 2006, D. Rodríguez-Olarte, D. Taphorn, A. Amaro, J. L. Coronel, H. Agudelo and H. Rivera; 1891, 1, Falcón, Hueque River, near Colombia village, 27 October 2006, D. Rodríguez-Olarte, D. Taphorn, A. Amaro, J. L. Coronel, H. Agudelo and H. Rivera. MCNG 54538, 3, New main highway from Churuguara to Coro, San Pablo bridge, 19 October 2005, D. Rodríguez, D. Taphorn, J. Coronel, A. Amaro, H. Rivera; 54552 12, Hueque River in Quebracho, 19 October 2005, D. Rodríguez, D. Taphorn, J. Coronel, A. Amaro, H. Rivera.

Non types. CPUCLA 1126, 3, and MCNG 50457, 1, Tucurere dr., Aurarima River, Santa Lucia Sector, 10°34'08"N, 68°30'14"W, 23 March 2004, D. Rodríguez-O, A. Amaro, J. Coronel, L. Jara, H. Rivera.

Diagnosis. *Ancistrus falconensis* is distinguished from *A. martini*, the species occupying adjacent river drainages to the west of its range in the lake Maracaibo Basin (but separated by an expanse of arid coastal desert where no species of *Ancistrus* have been found) by color pattern: *A. falconensis* lacks distinct, light rounded spots on nose, tentacles and sides of the body (vs. present) and lacks dark spots on the spines and rays of all fins (vs. present).

Ancistrus falconensis can be separated from *A. gymnorhynchus*, the species in adjacent watersheds to the south of its range by almost always having light spots on the abdomen of adults (vs. abdomen almost always uniformly gray in adults) and by the following ratios in specimens greater than 60 mm SL: mouth W./pectoral spine L. (0.66–0.92 vs. 0.48–0.67, two specimens overlap), dentary tooth cup L./pectoral spine L. (0.21–0.26 vs. 0.14–0.220), and premaxillary tooth cup L./pectoral spine L. (0.15–0.22 vs. 0.22–0.32). *Ancistrus falconensis* can be distinguished from *A. triradiatus*, which is present in adjacent drainages to the south, but uncommon, by color pattern: *A. falconensis* lacks rows of dark spots on the dorsal, caudal, pectoral and pelvic fins (vs. present) and *A. falconensis* has small white spots on the abdomen (vs. absent).

Description. Morphometrics are given in Table 1. Head and body robust, greatest body depth at or just anterior to nuchal plate. Dorsal profile of head and body convex from tip of snout to dorsal-fin origin, from there, nearly straight and sloping gradually down to preadipose plates where it angles slightly upwards. From posterior base of adipose spine slightly concave then straight to dorsal procurrent caudal-fin rays, where it angles dorsally ~40° to caudal fin. Ventral profile convex from behind mouth to below pectoral-fin insertions, abdomen slightly concave to anal-fin origin, then straight and sloping gently up towards caudal fin. Greatest width of body at opercular region, then narrowing progressively to end of caudal peduncle. Caudal peduncle deep and robust. Snout broadly rounded with large broad naked margin in males, less developed in females and juveniles. Tentacles well developed in mature males, present in all the regions defined by Sabaj *et al.* (1999) (cheek, posterior and anterior margin, antero-medial and postero-medial areas of unplate snout). Females with no or very few tentacles even in larger specimens. Eye moderate to large in appearance, dorsal margin of orbit not elevated, interorbital area slightly concave.

Hypertrophied cheek odontodes nine to 16 (mode 12), stout with tips hooked anteriorly, strongly evertible, the longest reaching to pectoral fin insertion, bases fleshy and thick. Oral disk ovate, wider than long. Lips covered with minute papillae, larger near centers of each lip, smaller near mouth and near margins. Lower lip moderate in size, not reaching pectoral girdle, its border covered with very small papillae. Maxillary barbel and buccal papilla very short. Dentary tooth row slightly curved, about equal with premaxillary tooth row. Teeth unevenly bifid, medial cusp much larger and spatulate, lateral cusp smaller, pointed, sometimes equal in length to main cusp in worn teeth but usually one third its length.



FIGURE 3. Holotype of *Ancistrus falconensis* n. sp. MCNG 56067.

Exposed part of opercle roughly an elongate triangular and bearing short stout odontodes. Mid-dorsal plates 14(1) 15(1) 16(3), 17(5), 18(13), median plates 21(2), 22(14), 23(7); mid-ventral plates 16(1), 17(4), 18(15), 19(1), 20(2); plates bordering dorsal-fin base 7(21), 8(2); plates between dorsal and adipose fins 6(10), 7(13); preadipose plates: 1(23). Supraoccipital with margins between surrounding bones and plates usually clearly visible. Nuchal plate small and curved posterolaterally. Five series of lateral plates. Mid-dorsal plate series ending at vertical through preadipose plate, mid-ventral series ending at vertical through adipose-fin spine. Last plate in median series only slightly smaller than penultimate plate, base of caudal fin with three

or four small platelets after main series, then about eight roughly triangular platelets covering bases of caudal-fin rays. Tiny odontodes present on body plates, largest on posterior margins of plates. All fin spines with minute odontodes, more developed on pectoral-fin spine of males. All fin rays with tiny odontodes on rays. Abdomen entirely devoid of plates; no exposed platelets anterior to anal-fin spine nor near pectoral-fin insertions. Dorsal-fin origin situated slightly anterior to vertical through pelvic-fin insertion. Tip of adpressed dorsal fin reaching preadipose plate. Adipose fin with stout spine and well-developed adnate membrane that adheres to plate just anterior to first procurrent caudal-fin ray. Pectoral spine extending to anterior third on pelvic-fin spine. Anal fin well developed, short; first anal-fin pterygiophore covered by skin. Caudal fin with oblique posterior margin, spines and first dorsal and ventral rays slightly longer than others. Ventral caudal-fin spine extends posteriorly following horizontal profile of caudal peduncle in preserved specimens. Fin-ray formulae (N=22): dorsal i,7; pectoral i,6; pelvic i,5; anal I,3 (1), i,4(21); caudal i,14,i. Caudal procurrent rays: dorsal: 3(1), 4(2), 5(19); ventral: 3(13), 4(8), 5(1).

Color in alcohol. Body base color gray, brown or tan. Dorsal part of head and body with small, rounded light spots in life, seldom retained, except in recently preserved material. Abdomen in specimens over 60 mm SL with small round light spots, usually retained in preserved material. Ventral part of head and caudal peduncle usually paler, not spotted. Dorsal fin usually with black pigment at base of first membrane, often forming vertically elongate spot. Caudal fin gray with light dorsal and ventral tips on spine and rays. Some specimens with numerous small and inconspicuous paler spots on rays of paired fins. Lips cream color or light gray to whitish.

Distribution. Venezuela, Falcón state, Hueque and Ricoa river drainages (Figure 2). This species occupies upland streams, usually with clear water and rocky substrates.

Etymology. Named for the Venezuelan state of Falcón, where the type locality is found.

Discussion

Principal components analysis revealed complete separation of *Ancistrus falconensis* and *A. gymnorhynchus*, mostly along principal component 2 (PC2); figure 4 indicates the two strongest loading characters along PC2 and PC3. To determine more discreet morphometric differences, biplots of all characters against standard length were made, characters with opposite patterns in these biplots and having opposite effects in the PCA were plotted against one another and the three best characteristics to separate the two species were found in plots of mouth measurements against pectoral-spine length (Fig. 5). These plots indicate that *A. falconensis* has relatively shorter pectoral-fin spines and a relatively wider mouth and jaws. Although there is overlap in smaller specimens, specimens greater than 60 mm SL can routinely be placed into species. The two species are very similar in appearance, but there are clear morphometric differences that when coupled with the fact that *A. falconensis* usually has light spots on the abdomen in preserved specimens and *A. gymnorhynchus* almost never does makes it clear that the two species are different.

As noted above, this new species' distribution is bordered to the west by *Ancistrus martini* in the Lake Maracaibo Basin, and by *A. triradiatus* and *A. gymnorhynchus* to the immediate south in the Tocuyo, Aroa and Yaracuy drainages. *Ancistrus brevifilis* is found further east in the coastal drainage of the Tuy River. We attempt no phylogenetic analysis at this time and so offer no theory as to possible relationships of this new species but it is most similar in general appearance to *A. gymnorhynchus*. The watersheds that drain eastern Falcón state where this new species is found, are part of the Western Caribbean zoogeographical province (Rodríguez-Olarte *et al.*, 2009). Species richness in this province is correlated with a north-south climate gradient. Higher species richness and endemism is found in the more humid drainages in the south (Aroa, Yaracuy). In the more arid northern drainages, such as the Hueque and Ricoa rivers and much of the rest of Falcón state to the west, the fish fauna is depauperate, and dominated by tolerant species such as *Hoplias malabaricus* and *Rhamdia guatemalensis*, except in the piedmont region, where water can persist throughout the year. We have observed that human intervention is intense in almost every drainage of the province, deforestation is extensive, water extraction from streams for urban, agricultural and industrial uses is

common, and channels are frequently dredged to control flooding. Many rivers have been dammed to form reservoirs. Standard sampling with electrofishing gear in the rivers where *Ancistrus falconensis* occurs suggests that this species has low to moderate abundance, and is more common in the piedmont region, even though that is where impacts are often most intense. The general situation of the entire region's fish fauna is alarming, and considering the small geographical range of *A. falconensis*, this species should be considered as vulnerable to extinction.

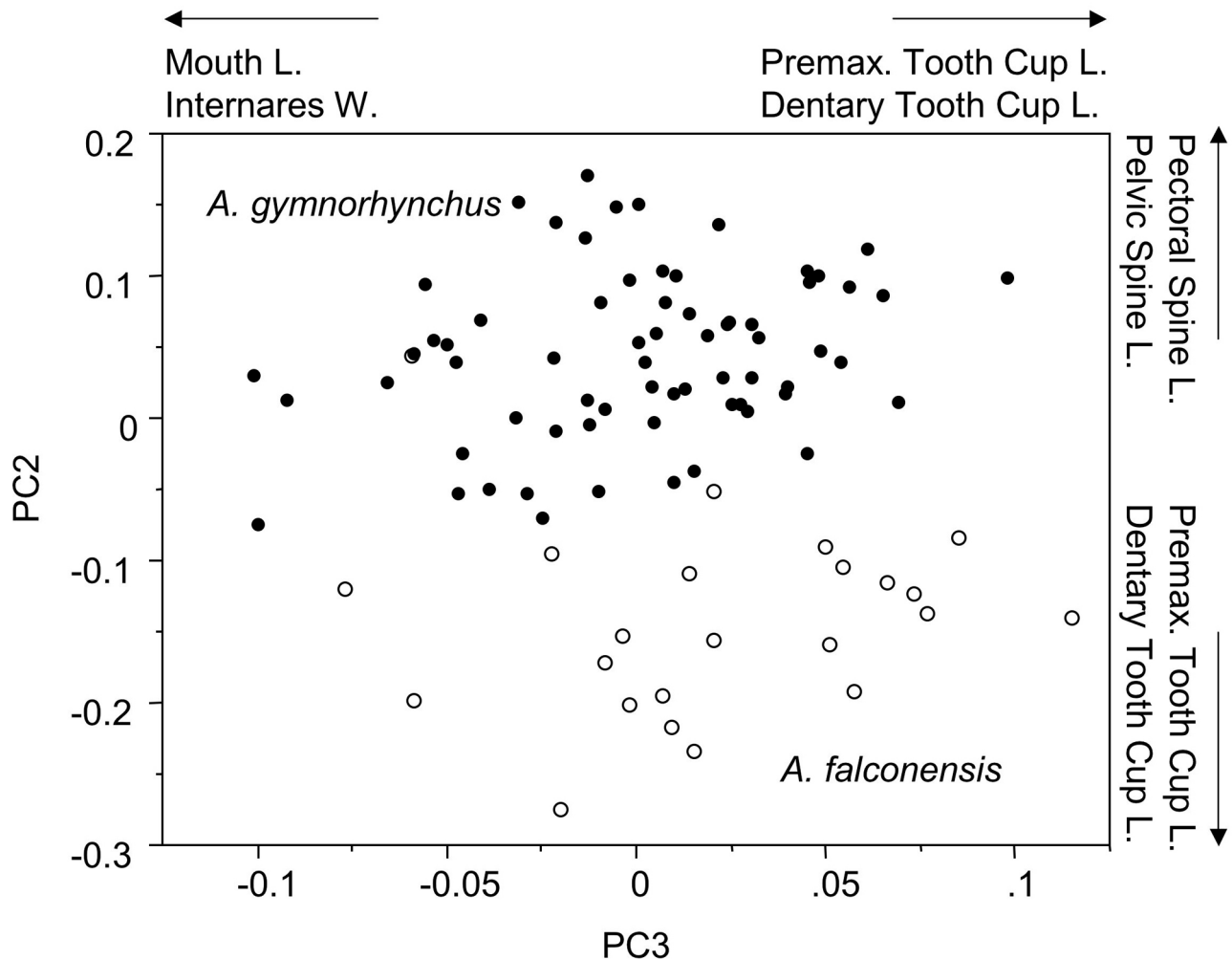


FIGURE 4. Principal component analysis comparing *Ancistrus falconensis* n. sp. and *A. gymnorhynchus*. PC2 and PC3 are Principal Component axes two and three.

Comparative material examined. (Complete information available from first author as Excel file).

A. brevifilis CAS 64610, 2; FMNH 84621, 7; MCNG 14095, 1; 14304, 3; *A. caucanus* ICN 3153, 1; MPUJ 3023, 7; *A. centrolepis* CIUA 227, 4; FMNH 59477, 2; MNH 76217, 2; GCRL 15276, 2; IAvHP 22, 1; 6633, 1; 6967, 1; 6970, 1; 7323, 1; 7324, 1; 7325, 1; 7326, 1; 7327, 8; ICN 104, 8; 189, 2; 1632, 2; IMCN-PEC 1262, 1; 1264, 1; 1430, 2; 1445, 2; 567, 1; 1600, 3; 1707, 1; 2008, 1; 2009, 1; 2025, 1; 2095, 1; 3943, 1; 4063, 1; *A. centrolepis* (type of *A. melas*) FMNH 58339 1; *A. chagresi* AUM 32114 11; FMNH 29238, 1; 29240, 1; 29248, 1; 29252, 1; 29253, 1; 29254, 1; 29255, 1; 29256, 1; 84606, 1; UF 144728, 2; *A. damasceni* AUM 20580, 1; 20700, 1; *A. dolichopterus* FMNH 59715, 2; *A. leucostictus* AUM 35623, 2; 35625, 3; 38182, 1; 38821, 5; 44511, 10; INHS 49273, 1; USMN 372570, 1; 372570, 1; FMNH 53086, 1; 53144, 3; 53556, 1; 7412, 1; *A. lineolatus* ICN 14991, 1; 14993, 1; *A. lithurgicus* AUM 45300, 1; FMNH 53091, 1; 53092, 3; USNM 66104, 1; *A. macrophthalmus* AUM 42133, 2; 42203, 6; 42217, 1; 6722, 1; FMNH 101046, 3; 69930, 1; MCNG 12361, 1; *A. maracasae* INHS 40105, 1; MCNG 8202, 2; 8260, 1; *A. martini* AUM 22183, 1; FMNH 42000, 1; IAvHP 3088, 1; 09816, 1; INHS 35367, 3; 60004, 2; 60351, 1;

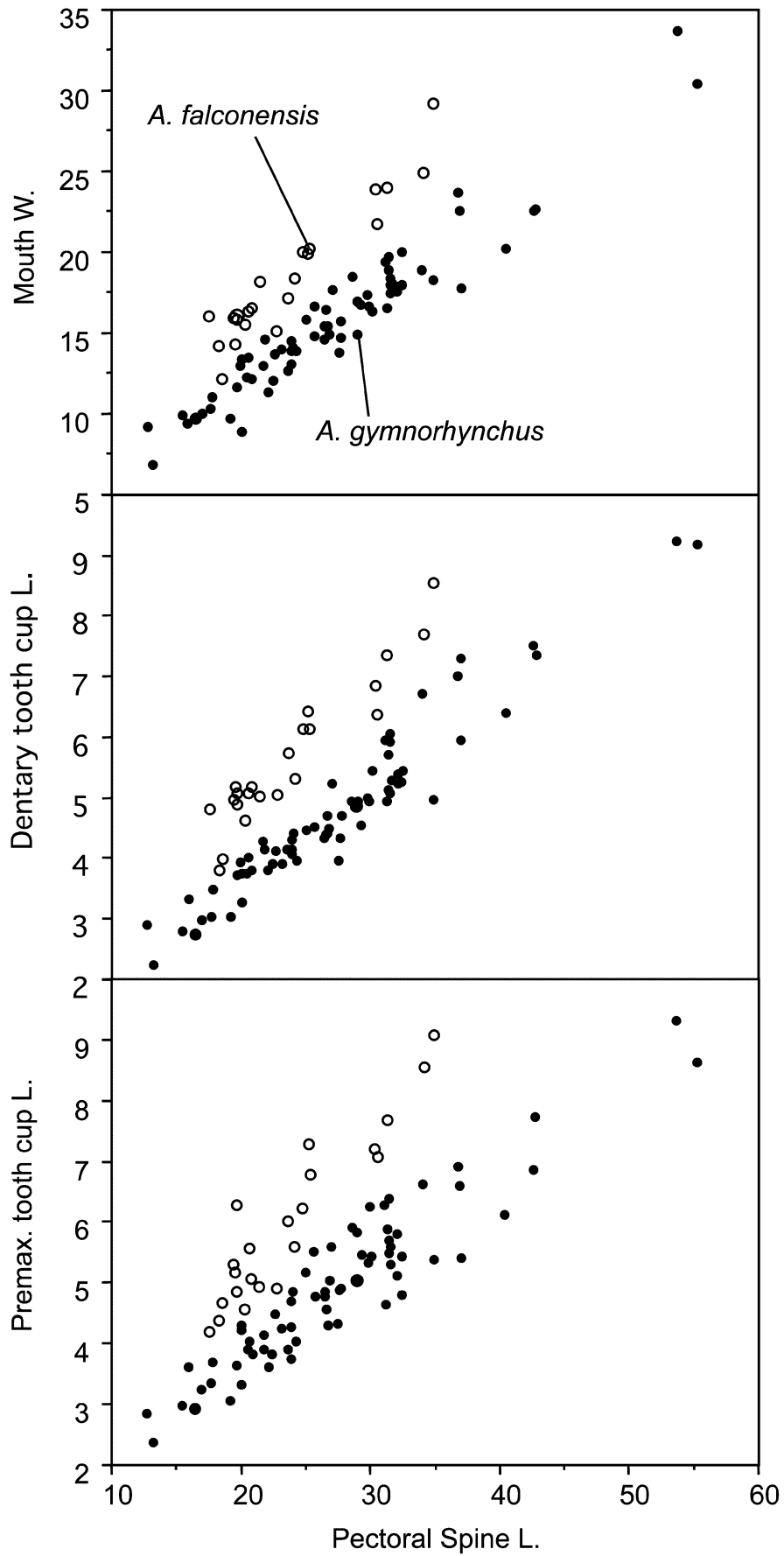


FIGURE 5. Biplots of selected morphological characters showing differences between *Ancistrus gymnorhynchus* and *Ancistrus falconensis* n. sp.

MBLUZ 3428, 1; 490, 1; 582, 2; MBLUZ 830, 1; MCNG 24816, 5; 24969, 1; 25097, 2; 32339, 5; 33544, 2; 33550, 1; MPUJ 2503, 2; USNM 120094, 1; USNM 121064, 1; *A. martini* (types of *A. bodenhameri*) USNM 121066, 1; 121067, 2; *A. nudiceps* AUM 44666, 1; 44701, 5; *A. pirareta* USNM 307765, 1; *A. piriformis* USNM 307766, 1; *A. ranunculus* USNM 331162, 1; *A. sp.* FMNH 53093, 1; *A. sp.* Aro ANSP 171089, 1; *A. sp.* Atabapo AUM 42134, 1; *A. sp.* black dots AUM 40189, 4; *A. sp.* Caqueta1 IAvHP 1718, 1; 1720, 1; *A. sp.* Caqueta2 1719, 1; *A. sp.* Caroni AUM 36554, 3; 36663, 4; FMNH 45709, 1; MCNG 18472, 2; *A. sp.* Caroni alto AUM 36467, 1; MCNG 48095, 5; *A. sp.* Casiquiare AUM 43665, 4; MCNG 53811, 1; *A. sp.* Caura FMNH 110066, 1; 110069, 1; MCNG 12071, 1; 20877, 2; 23201, 2; UF 78052, 1; *A. sp.* Cinaruco MCNG 39521, 1; *A. sp.* circled spots AUM 35631, 7; 35633, 9; 35634, 6; 37989, 3; FMNH 53090, 1; 69963, 1; *A. sp.* Cuyuni AUM 36609, 3; INHS 31566, 1; INHS 31582, 1; INHS 31732, 1; MCNG 1068, 1; 10488, 1; 16040, 1; *A. sp.* Guanipa INHS 31469, 1; MCNG 29118, 2; *A. sp.* Limon MCNG 4606, 3; 4629, 4; *A. sp.* llanos belly dots INHS 31411, 1; MCNG 11648, 3; 5568, 5; *A. sp.* Magdalena CZUT-IC 2083, 2; IAvHP 10473, 2; 10476, 1; 10481, 1; *A. sp.* Manamo AUM 39884, 9; MCNG 16860, 1; *A. sp.* Napo AUM 28226, 1; 28336, 16; 28607, 2; *A. sp.* net AUM 22297, 1; 22312, 1; 37910, 2; 38094, 2; MCNG 18355, 2; 18498, 1; 18585, 1; UF 33653, 1; UF 80451, 1; 80499, 1; , MCNG 42795, 1; UF 80716, 1; *A. sp.* Paria 11092, 1; 16973, 3; 17021, 3; 17032, 1; 17045, 2; 19452, 3; 28970, 1; 29187, 1; 29754, 1; 48466, 1; *A. sp.* plain AUM 22336, 1; *A. sp.* robust AUM 39271, 5; 39306, 9; 39477, 1; 40578, 2; 41324, 2; 41494, 2; 42176, 1; 42972, 2; 43572, 2; 43868, 1; FMNH 103490, 1; INHS 61554, 3; MCNG 38168, 1; MCNG 50038, 3; UF 77841, 1; *A. sp.* San Juan, INHS 31447, 1; MCNG 16780, 3; *A. sp.* Takuku AUM 35628, 1; *A. sp.* Turmero FMNH 35342, 2; 35357, 1; *A. sp.* *Ventuari* AUM 39876, 1; MCNG 2664, 5; MCNG 41745, 4; MCNG 7854, 1; *A. sp.* white spots, AUM 35629, 2; 35630, 1; 38820, 2; 45092, 1; *A. spinosus* FMNH 8942, 1; INHS 36094, 2; *A. triradiatus*, AUM 5691, 2; 22190, 1; 22243, 1; 22631, 6; 22750, 1; CAS 60165, 2; FMNH 58558, 1; 58568, 2; 94777, 1; IAvHP 2220, 1; 5129, 1; 5140, 1; 5141, 3; 8532, 1; 8533, 3; 9488, 1; 9489, 1; ICN 1173, 4; 1190, 2; 1192, 4; 1469, 1; 3461, 1; INHS 27675, 1; 27764, 1; 27991, 2; 30006, 1; 31835, 1; 31858, 2; 34732, 1; 36333, 1; 36334, 1; 55361, 2; 55532, 1; 61274, 1; 61322, 1; 61353, 1; MCNG 5280, 1; 6033, 1; 6151, 2; 6618, 2; 7139, 2; 9618, 2; 9976, 1; 11653, 1; 11721, 2; 11787, 1; 13994, 6; 15010, 1; 15352, 5; 17513, 1; 17672, 1; 25079, 1; 26793, 1; 28904, 5; 32851, 1; 33807, 5; 41858, 4; 51925, 1; UF 26019, 2; 33478, 1; 33480, 1; 33481, 1; 33482, 1; 33483, 1; 33569, 2; 33908, 2.

Acknowledgements

In particular we thank Ahyran Amaro, Henry Agudelo and Jorge Coronel for sharing information about the fishes of the Ricoa, Hueque, Tocuyo, Aroa and Yaracuy river drainages, which conformed the study area of their masters theses. We thank the All Catfish Species Inventory (NSF-DEB 0315963) for grants to DCT and JWA. We also thank the CDCHT-UCLA for grant to DRO (doctoral project 001-DAG-2005) that funded the fieldwork that produced the abundant material of both species treated here. We are grateful to the following collection managers for the loan and preparation of specimens: Keyla Marchetto, MCNG; David Werneke, AUM; Mark Sabaj Perez, ANSP, Ahyran Amaro at UCLA. We also thank Nathan Lujan for help with the photographs, and for providing several useful references. We are grateful to Sonia Fisch-Muller for sharing the results of her dissertation research. We thank Shane Linder for sharing information in personal communications and via planet catfish web site (2008). We thank INAPESCA for provided the scientific collecting permits. We thank Dr. Helmut Wellendorf, Naturhistorisches Museum Wien for photographs of the holotype of *A. gymnorhynchus*.

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