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Species of *Ancistrus* (Siluriformes, Loricariidae) from Ecuador, with the description of a new species from the Amazon River Basin

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Abstract

To elucidate the species of the genus *Ancistrus* that inhabit freshwater systems of Ecuador, cataloged lots of the Fish Collection, Museo de la Escuela Politécnica Nacional (MEPN), in Quito, were analyzed. Four species were identified: *Ancistrus alga* (Cope, 1872), *A. malacops* (Cope, 1872), *A. clementinae* Rendahl, 1937, and a new species that herein is described. *Ancistrus clementinae* inhabits aquatic systems of the Pacific slope, mostly in the Guayas River drainage. The other three species live in freshwater systems that drain to the Amazon River Basin. *Ancistrus alga* inhabit the northern and central portions of eastern Ecuador. *Ancistrus malacops* has a broad distribution from north to south, but is absent from the Santiago River. Both species occasionally live in sympatry. The new species is restricted to the Santiago River, in Morona-Santiago province. Each species has unique external morphological features and/or a coloration pattern that allow unambiguous identification, at least of males. This paper provides a description of the new species, and a re-description and images of the other three.

Key words: catfishes, Neotropical freshwater Fishes, taxonomy, systematics, South America

Resumen

Para dilucidar las especies del género *Ancistrus* que habitan los sistemas de agua dulce del Ecuador, se analizaron los lotes catalogados de la Colección de Peces, Museo de la Escuela Politécnica Nacional (MEPN), en Quito. Se identificaron cuatro especies: *Ancistrus alga* (Cope, 1872), *A. malacops* (Cope, 1872), *A. clementinae* Rendahl, 1937, y una nueva especie que aquí se describe. *Ancistrus clementinae* habita en sistemas acuáticos de la vertiente del Pacífico, principalmente en el drenaje del río Guayas. Las otras tres especies viven en sistemas de agua dulce que drenan a la cuenca del río Amazonas. *Ancistrus alga* habita la zona norte y central del oriente de Ecuador. *Ancistrus malacops* tiene una amplia distribución de norte a sur, pero está ausente del río Santiago. Ambas especies ocasionalmente viven en simpatría. La nueva especie está restringida al río Santiago, en la provincia de Morona-Santiago. Cada una de las especies posee características morfológicas externas y/o un patrón de coloración que permiten su identificación sin ambigüedades, al menos en los ejemplares machos. En este trabajo se presenta la descripción de la nueva especie y la re-descripción y figuras de las otras tres.

Palabras clave: Corronchos, Peces dulceacuícolas Neotropicales, Taxonomía, Sistemática, Sur América

Introduction

Among all other Loricariidae, species of *Ancistrus* can be recognized by the presence of soft, fleshy, often branched tentacles that sprout from their naked snouts. These are most conspicuous in adult males, but also present in females, in which they are located on a narrow naked strip at the snout edge, in reduced number, with smaller sizes, and often unbranched. Also, *Ancistrus* species usually have seven dorsal-fin rays and three rows of plates on the caudal peduncle (Armbruster, 2004, 2008; Taphorn, *et al.* 2010, 2013; Lujan, *et al.* 2015a). The genus *Ancistrus*

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contains more than 60 valid species (Isbrücker, 2001, 2002; Fisch-Muller, 2003; Ferraris, 2007; Fricke, *et al.* 2018), making it one of the most diverse within the family Loricariidae. Also, because the genus includes species that live in aquatic systems from both trans– and cis–Andean regions, from Panamá to Argentina (Taphorn, *et al.* 2010, 2013; Lujan, *et al.* 2015a; Fricke, *et al*. 2018), it may be the loricariid genus with the most widespread geographic distribution. The genus was created by Kner (1854), and Bleeker (1862) established *Ancistrus cirrhosus* (Valenciennes, 1836) as the type species (Isbrücker, 1980). The type locality of *A. cirrhosus* is considered doubtful, but Fisch-Muller (2003) proposed the Paraná River Basin, in Argentina, as the type locality. There are 82 specific names available in the genus *Ancistrus*, of which 21 are synonyms (Fricke, *et al.* 2018). The extraordinary richness of species, the brief and overlapping original old descriptions, the lack of reliable illustrations of several species, and the wide geographic distribution, determine that the taxonomy and systematic of the genus are complex. In some cases, identity of species is facilitated with the use of the known geographical distribution of each species (Taphorn, *et al.* 2013).

The specimens analyzed from Ecuador, inhabit two geographical regions. The trans–Andean region, specifically the Pacific slope, and the cis–Andean region, specifically the piedmont rivers that drain into the Amazon River. Trans–Andean and Caribbean Sea drainages have 21 described species; 12 are recognized as valid (Eigenmann, 1920; Fowler, 1946; Taphorn, *et al.* 2010, 2013; Fricke, *et al.* 2018). In the Andean piedmont rivers draining to the Amazon River, there are 20 specific names available (Cuvier & Valenciennes, 1840; Günther, 1869; Cope, 1872; Steindachner, 1876, 1915; Regan, 1904, 1912; Myers, 1928; Pearson, 1924; Fowler, 1943, 1945; Isbrücker, *et al.* 2001; Fricke, *et al.* 2018), of which three names are considered synonymous, and the name *A. greeni* (Isbrücker, 2001) in Isbrücker, *et al.* (2001), is proposed as an alternative name for *A. maculatus* (Regan, 1904), a name previously used by Steindachner (1881).

According to the latest list of species of the family Loricariidae, two species of *Ancistrus* were originally described from Ecuador (Fricke, *et al.* 2018). Chronologically, the first is *Ancistrus occidentalis* (Regan, 1904), whose type locality is Canelos, in the Amazon River Basin of eastern Ecuador; and the second species is *Ancistrus clementinae* Rendahl, 1937 whose type locality is the Clementina River, northwestern Babahoyo, Pacific versant. But historically, there are five more species of *Ancistrus* that were originally described from Ecuador. Cope (1872) described five species originally assigned to *Chaetostomus*, *C. alga*, *C. malacops*, *C. variolus*, *C. tectirostris* and *C. sericeus* from the Ambyiacu (Ampiyacu?) River. In that article, this locality is indicated as eastern Ecuador. Descriptions of the five species are very brief, and apparently some comments seem to be related to his observations on snout cover differences between males and females, but the original illustrations allow species identification.

The taxonomic status of the five species described by Cope (1872) has changed with time. Regan (1904) placed *C. alga*, *C. malacops* and *C. tectirostris* in the synonymy of *Xenocara hoplogenys* (Günther, 1864), *C. variolus* in the synonymy of *X. cirrhosa* (Valenciennes, 1836) and pointed that probably *C. sericeus* belongs to the genus *Chaetostoma*. The type locality of *A. hoplogenys* is the River Capin, Para state, Brazil. The genus *Xenocara* was considered a synonym of the genus *Ancistrus* (Eigenmann 1910). Fowler (1915) considered *Ancistrus alga* a valid species, closely related to *A. hoplogenys*. He placed *C. malacops* and *C. tectirostris* in its synonymy. At the same time, he maintained *C. variolus* as a synonym of *Ancistrus cirrhosus* (Valenciennes, 1836) and confirmed *C. sericeus* as a species of *Chaetostoma*. The species *C. sericeus* was considered as *Chaetostoma* by many authors (Isbrücker, 1980, 2001, 2002; Fisch-Muller, 2003; Salcedo, 2006; Ferraris, 2007). But recently, Lujan, *et al.* (2015b) transferred the species *Chaetostomus sericeus* to the genus *Ancistrus*. Therefore, now the five species of Cope (1872) belong to the genus *Ancistrus* (Fricke, *et al.* 2018). *Ancistrus alga* and *A. tectirostris* continue as synonyms of *A. hoplogenys*. *Ancistrus malacops*, *A. variolus* and *A. sericeus* are considered valid species (Fisch-Muller, 2003; Salcedo, 2006; Ferraris, 2007; Lujan, *et al.* 2015b; Fricke, *et al.* 2018).

This article provide the analysis of the lots with specimens included in the genus *Ancistrus*, cataloged and deposited at the Museo de la Escuela Politécnica Nacional (MEPN), to establish the precise identity and the geographic distribution of the species that inhabit Ecuador.

Materials and methods

Specimens analyzed are deposited in the Fish Collection of the Museo de la Escuela Politécnica Nacional (MEPN)

Quito, Ecuador. Observations, measurements and counts were performed using a Zeiss, Stemi 1000 stereomicroscope and Truper digital calipers. Measurements and counts were those proposed by Boeseman (1968). Measurements were taken on left side, and are expressed as percentage of standard length, or in the proportions commonly used in old original descriptions for adequate compare. For comparisons and identifications, figures, morphometric and meristic data specified in original descriptions and in available literature were used. Also, available images of type specimens from ACSI image database (Morris, *et al.* 2006) were used. The specimens of *Ancistrus* from Ecuador were compared, mostly, with species whose type localities are neighboring the geographical region studied. Institutional abbreviations follow Sabaj (2016).

Results

The analysis of cataloged lots of the Family Loricariidae at the Fish Collection, Museo Escuela Politécnica Nacional (MEPN), revealed that specimens of the genus *Ancistrus* are common, abundant and geographically widespread in Ecuador, particularly in the eastern portion of the country. Over 300 lots were found in the collection, mostly from the provinces of Sucumbíos, Napo, Orellana, Pastaza and Morona-Santiago.

Four species were identified for Ecuador. *Ancistrus clementinae* Rendahl, 1937, described for the Clementina River, Pacific slope, NW Babahoyo, Los Rios. The other three species come from eastern region of Ecuador (Amazon River Basin). *Ancistrus alga* (Cope, 1872), described from the Ambyiacu (Ampiyacu?) River, Peru (eastern Ecuador originally), *A. malacops* (Cope, 1872), with the same type locality. The third species is new, and inhabits the Santiago River, in the Morona-Santiago province. The new species does not match any described species from the Andean piedmont rivers region that drain to the Amazon River, but is similar to *A. malacops*. Female specimens of both species are practically indistinguishable, but males show a different morphological shape.

Ancistrus shuar new species

Tables 1, 5 Figures 1, 2, 3, 4, 11

Holotype. MEPN-17984, 116.6 mm SL, male, Ecuador, Morona-Santiago province, Kushapukus River, tributary of the Santiago River, 5 km W the military post “Santiago”, approx. 03°02’13”S 78°01’55”W, R. Barriga S., P. Arguello, E. Calvache & F. Cugushi, 11 November 2015, RBS15-17.

Paratypes. All from Ecuador, Morona-Santiago province, Santiago River basin. MEPN-17983, 2, females, 70.6–93.1 mm SL., Yananas River, at the bridge on Patuca-Mora road, approx. 03°01’56”S 77°59’07”W, R. Barriga S., P. Arguello, E. Calvache & F. Cugushi, 09 November 2015, RBS15-10. MEPN-17985, 1, male, 116.3 mm SL, at the junction of Yakamás River with the Santiago River, approx. 02°59’54”S 77°51’09”W, R. Barriga S., P. Arguello, E. Calvache & F. Cugushi, 11 November 2015, RBS15-16. MECN-DP-1637, 1, male, 96.5 mm SL, Río Pan Kints, SE Embarcadero (Yaupi), approx. 02°54’26.88”S 77°54’2.42”W, F. Anaguano, 27 December 2009. MECN-DP-1631, 5, 38.5–52.6mm SL, Río Pan Kints, SE Embarcadero (Yaupi), approx. 02°54’26.88”S 77°54’2.42”W, F. Anaguano, 27 December 2009.

Diagnosis. *Ancistrus shuar* can be distinguished from all other species that inhabit Andean piedmont rivers draining into the Amazon River, except *A. malacops* by its mandibular ramus length values, which fits 2.5–3.1 times in the interorbital width. In *A. bufonius*, *A. marcapatae*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. megalostomus*, *A. occloi*, and *A. greeni* the mandibular ramus length fits fewer than 2.0 times in the interorbital width. In *A. latifrons* and *A. alga* the mandibular ramus length fits more than 3.1 times in the interorbital width. It further differs, except from *A. bufonius*, by its interorbital width, which fits 2.3–2.5 in the head length. In *A. latifrons*, *A. alga*, *A. megalostomus*, *A. lineolatus*, and *A. tamboensis* it fits fewer than 2.1 times in head length. In *A. malacops*, *A. jelskii*, *A. marcapatae*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. occloi*, and *A. greeni* it fits more than 2.4 times in head length. Additionally, *A. shuar* has a moderate eye diameter that fits 5.3–7.1 times in head length. The species *A. bufonius*, *A. jelskii*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. occloi* and *A. greeni* have small or very small eyes, with eye diameter fitting more than 7.0 times in head length. The values reported for *A. lineolatus* and *A. tamboensis* are 5.0 times in head length. The species *A. latifrons*, *A. alga*, *A. malacops*, *A. marcapatae* and *A. megalostomus* have eye diameter values similar to that of *A. shuar* (5.3–7.1 times

in head length). The three adult males available of *A. shuar* have a reduced size of the soft and fleshy tentacles on snout when compared with images and original figures of adult males from other species or with specimens of the other two species from eastern Ecuador. Furthermore, *A. shuar* is distinguishable from *A. alga*, by its smaller cleithral and interorbital width, 30.3%–32.5% SL *vs.*34.3%–36.2% SL, and 14.4%–17.0% SL *vs.*17.5%–20.5% SL, respectively. *Ancistrus shuar* resembles *A. malacops*, females of both species are practically indistinguishable, but males of *A. shuar* can be differentiated from males of *A. malacops* having a more robust body and head, higher values of cleithral width, and interorbital width; 30.7%–32.5% SL *vs.*27.8%–30.2% SL, and 15.4%–17.0% SL *vs.* 13.5%–15.7% SL, respectively (Table 5).

Description. Morphometric data given in Tables 1 and 5. Body robust, depressed anteriorly, progressively compressed posteriorly. Caudal peduncle compressed, deep and robust. Dorsal profile of body from tip of snout through dorsal-fin origin gently convex, then gradually descending straight to caudal-fin origin. Ventral profile of body flat and straight or slightly concave. Ventral surface of head and belly naked until anal-fin origin. Urogenital papilla not visible, in some mature males opening is partially visible just posterior to anus (Fig. 1).

Head massive, wide and depressed. Snout partially naked with or without fleshy cylindrical tentacles branched or not, its contour semicircular. In males naked area is wider but does not reach nares or orbits. Females have only a narrow naked band on snout edge. Nostrils juxtaposed and closer to eyes than to tip of snout. Eyes in dorsal lateral position, orbits not raised and without odontodes. Interorbital space broad and flat. Supraoccipital flat without ridges, posterior border straight and truncate. Movable hypertrophied cheek odontodes well developed, specimens can have 10–12. Size of these odontodes variable in each specimen, the longest odontode nearly extends to pectoral-fin origin independently of size of specimen. Anteriorly, bases of movable hypertrophied odontodes have covering of plates. Opercular bone has exposed surface easy visible externally, its lateral margin carries odontodes.

Mouth oval or rounded. Upper lip narrow, usually covering premaxilla and only external surface is visible, edge is almost horizontal and with very minute undulations. Internal surface papillose. Lower lip broad, its border with very minute undulations. Lower lip surface papillose. Papillae smaller near border of lip increasing in size near lower jaws. Papillae of anterior lip have similar size to those near lower jaws. Maxillary barbels not present in the holotype, in male paratypes short and free, and in females paratypes very short leaving only tip free. Upper and lower jaws of similar length. Hemimandibles straight, sometimes placed horizontally or forming an open *V* between them. Teeth numerous and minute. Between 30–45 teeth in each hemimandible. Premaxillary and dentary teeth of same size. Teeth incisor type, asymmetrically bifid, medial cusp longer and wider than lateral cusp. Medial cusp rounded or straight truncated, lateral cusp pointed. Tooth apex curved toward interior of mouth. Tooth apex yellowish, stalk whitish. Premaxillary and dentary without posterior papillae or ornamentation.

Lateral line plates 24–25. Post-anal plates 11–12. Inter-dorsal plates six or seven, just in front of the spine of adipose-fin there are two plates with keels. The dorsal-fin origin is anterior to vertical passing through pelvic-fin origin. Dorsal-fin with one spine, followed by seven branched rays; when depressed their tips do not reach adipose-fin origin. Adipose-fin well developed and always present. Spine of adipose fin is wide, and a little bit curved toward the distal end. Pectoral-fin with one spine, and six branched rays. When depressed, pectoral-fin spine reaches posterior to first third, (females) or half, (males) of pelvic-fin spine length. Spine of pectoral-fin is a bit shorter than first branched ray. Distal region of pectoral-fin spine with enlarged odontodes and small fleshy prominence. Pelvic-fin with one spine and five branched rays; its posterior margin surpassed anal-fin base when depressed. Anal-fin with one flexible spine and four branched rays. Caudal-fin rays i,14,i. Posterior border of caudal-fin obliquely truncate.

Sexual dimorphism. On snout, adult males have wide naked dorsolateral area. Naked area reaches anterior region of eyes and nares. Over this area, soft and fleshy tentacles are found, small, with few or no branches (Fig. 1). Tentacles are arranged in the following pattern: On the snout margin tentacles are disposed in a line along edge. Those at center are larger and may have branched tips. From tip of the snout, a dorsomedial row of four tentacles runs backward reaching to just anterior to nares. These tentacles are conical, and some may have branched tips. Just anterior to nares, line of tentacles bifurcates with three on each side or become wider with six tentacles oriented transversely (Fig. 1). Females with very narrow naked band at anterior edge of snout and a row of small and conical fleshy tentacles; the two central tentacles slightly longer (Figs. 2, 3).

Color. Head and body brown to black or dark grey with evident or diffuse white to whitish dots. Belly is lighter with white to whitish, faded dots. All fins brown or black with dots or irregular bands, whitish, spaced over rays

FIGURE 1. *Ancistrus shuar*, MEPN 17984, 116.7 mm SL, male, holotype. From top to bottom, lateral, dorsal, and ventral view.

FIGURE 2. Females of *Ancistrus* species, lateral view. From top to bottom: *A. shuar*, MEPN 17983, 93.9 mm SL. *A. alga*, MEPN 15169, 160.9 mm SL. *A. clementinae*, MEPN 5996, 100.1 mm SL. and *A. malacops*, MEPN 7804, 93.4 mm SL.

and/or interradial membrane. When dots are on rays only, the interradial membrane is translucent. The border of dorsal and caudal-fin is black. Dorsal-fin with a black spot between bases of the spine and the first branched ray. Tips of dorsal and ventral principal caudal-fin rays whitish or orange (Figs. 1, 2). In live specimen head and body yellowish brown or yellowish green with well-defined whitish or orange dots. Dorsal, pectoral and pelvic fins have same color of body; spines have transverse brown or dark bands, and the branched rays with whitish or orange dots or bands, interradial membranes translucent or with irregular whitish dots. Caudal-fin has transverse dark or brown bands and/or whitish dots on branched rays (Fig. 4).

TABLE 1. Morphometric data of *Ancistrus shuar*. Measurements are expressed as percentage of standard length. N=5

Character	Holotype	Average	STD	Min.	Max.
SL (mm)	116.7			71.3	116.7
Head length	37.7	37.1	1.3	35.5	38.3
Predorsal length	46.7	46.6	1.1	45.2	48.0
Postdorsal length	36.1	35.6	1.1	34.1	36.8
Interdorsal length	19.7	19.6	0.7	18.5	20.1
Preanal length	68.7	68.7	1.0	67.6	69.9
Postanal length	30.1	29.9	0.8	29.2	31.2
Thoracic length	23.7	24.5	1.8	22.4	27.1
Abdominal length	21.4	21.8	0.9	21.1	23.3
Dorsal fin base	23.5	23.0	0.4	22.5	23.5
Dorsal spine length	27.3	26.1	1.3	24.3	27.3
Pectoral spine length	28.9	31.6	1.8	28.9	33.6
Pelvic spine length	19.8	23.5	2.3	19.8	25.5
Cleithral width	31.0	31.2	0.9	30.3	32.5
Caudal peduncle depth	13.2	13.0	0.5	12.5	13.8
Head depth	20.4	19.7	1.7	16.9	21.4
Snout length	22.5	22.2	1.1	20.8	23.3
Interorbital width	15.6	15.4	1.0	14.4	17.0
Orbital diameter	5.5	5.8	0.5	5.4	6.7
Mandibular ramus length	5.0	5.5	0.4	5.0	5.9

Geographical distribution. *Ancistrus shuar* is represented at the MEPN by four specimens in three cataloged lots. The specimens were caught in the Santiago River of Morona-Santiago province (Fig. 8).

Etymology. Dedicated to ancient and brave Shuar, indigenous group that live in the Morona-Santiago province. It is considered a noun in apposition.

Ancistrus alga (Cope, 1872)

Tables 2, 5 Figures 2, 3, 5

Chaetostomus alga Cope, 1872. Proceedings of the Academy of Natural Sciences of Philadelphia, v. 23:287, Pl. 15 (fig. 3). Ambyiacu (Ampiyacu?) River, Peru. Syntypes: ANSP 16461-62 (2).

Chaetostomus tectirostris Cope, 1872. Proceedings of the Academy of Natural Sciences of Philadelphia v. 23:288, Pl. 15 (fig. 2). Ambyiacu (Ampiyacu?) River, Peru. Syntypes: ANSP 8298 (1), 8300 (1).

Ancistrus alga Isbrücker, 1980:66. Ortega & Vari, 1986:16. Burgess, 1989:436. Isbrücker, 2001:25, 26. Isbrücker, 2002:11.

Ancistrus tectirostris Isbrücker, 1980:73. Ortega & Vari, 1986:16. Burgess, 1989:437. Isbrücker, 2001:25, 26. Isbrücker, 2002:12.

Material examined. All from Ecuador. **Orellana province**: MEPN-460, 1, 110.1 mm SL, Quebrada Cotoyacu, 01°00’31”S 75°26’12”W, R. Barriga & K. Galacatos, 15 June 1996. MEPN-829, 1, 119.0 mm SL, Quebrada

Tambococha, 00°57’34”S 75°26’26”W, R. Barriga & K. Galacatos, 26 February 1996. MEPN-1308, 5, 60.0–125.8 mm SL, Tributario norteño del río Tiputini, a unas 1.5 horas en canoa motorizada, aguas arriba de la boca en el río Napo, 00°44’53”S 75°47’41”W, D. Stewart, R. Barriga & M. Ibarra, 28 October 1981. MEPN-2544, 7, 105.4–148.1 mm SL, Río Gabarón afluente del río Nashiño, pozo OBE, bloque 31, 01°12’04”S 75°48’48”W, R. Barriga, 08 March 1998. MEPN-14853, 1, 115.1 mm SL, Laguna Muyuna, km 12.5 de Chiroisla en el río Tiputini, 00°42’35”S 75º55’54”W, R. Barriga & José Pinargote, 20 June 2006. **Pastaza province**: MEPN-10348, 1, 76.9 mm SL, Pavacachi, Río Curaray, 01°34’33”S 76°21’24”W, G. Herrera, March 1963. **Sucumbíos province**: MEPN-2273, 1, 109.9 mm SL, Río Aguarico, tributario norteño del río Yanayacu at Puerto Loja, 00°53’00”S 75°13’42”W, R. Barriga & D. Stewart, 24 May 1998. MEPN-13896, 1, 131.4 mm SL, Laguna Imuya, junto al río Lagartococha, campamento Transturi, 00°36’07”S 75°14’27”W, R. Barriga & E. Medina, 01 May 1993. MEPN-15169, 2, 112.14–160.9 mm SL, Canal de la laguna Zancudococha, 00°35’00”S, 75°30’00”W, R. Barriga, 30 October 1994.

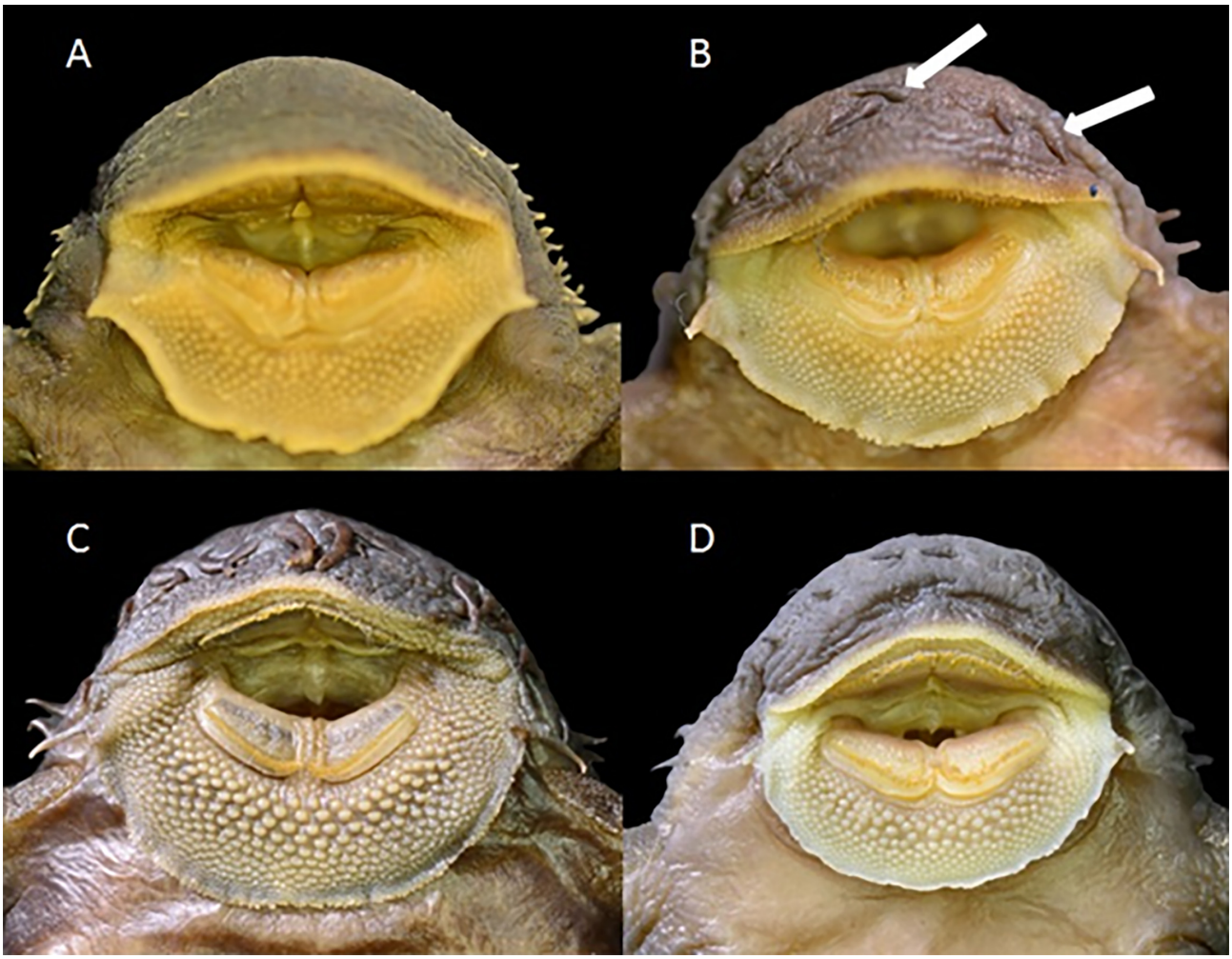

FIGURE 3. Ventral view of the head of females to show the presence (arrows) or absence of soft, fleshy tentacles on snout. A) *A. clementinae*, MEPN 5996, 100.1 mm SL. B) *A. malacops*, MEPN 7804, 93.4 mm SL. C) *A. alga*, MEPN 15169, 160.9 mm SL, D) *A. shuar*, MEPN 17983, 93.9 mm SL.

Diagnosis. *Ancistrus alga* can be distinguished from other species that inhabit Amazonian Andean piedmont rivers, except *A. latifrons* and *A. malacops*, by its mandibular ramus length which fits 3.1–4.0 times in the interorbital width. In *A. bufonius*, *A. marcapatae*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. megalostomus*, *A. occloi*, *A. greeni* and *A. shuar* the mandibular ramus length fits fewer than 3.0 times in the interorbital width. It differs further except from *A. latifrons*, *A. megalostomus* and *A. shuar* by its interorbital width which fits 1.8–2.3 times in head length. In *A. bufonius*, *A. malacops*, *A. jelskii*, *A. marcapatae*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. occloi* and *A. greeni*, interorbital width fits more than 2.35 times in head length. In *A. lineolatus* and *A. tamboensis*, it fits less than 1.7 times in head length. *Ancistrus alga* can be distinguished from *A. latifrons* and *A.*

hoplogenys (last one according the image available at ACSI image database) by the color pattern, its body and fins are dark brown or black with very small white dots *vs.* uniform black, and uniform brown yellowish, respectively. The shape of caudal fin of *A. alga* is lunate *vs.* oblique truncate in *A. hoplogenys*. Among the species caught in eastern Ecuador (*A. malacops* and *A. shuar*), it is easily recognized by having a massive head and anterior region of the body; cleithral width 34.3%–36.2% SL *vs.* 27.9–31.8% SL in *A. malacops* and 30.3%–32.5% SL in *A. shuar*. Interorbital width 17.5%–20.5% SL *vs.* 13.4%–16.4% SL in *A. malacops* and 14.4%–17.0% SL in *A. shuar*. In males, the values are higher, cleithral width 35.3%–36.2% SL *vs.* 27.8%–30.2% SL in *A. malacops* and 30.7%–32.5% SL in *A. shuar*. Interorbital width 20.1%–20.5% SL *vs.* 13.5%–15.7% SL in *A. malacops* and 15.4%–17.0% SL in *A. shuar* (Table 5). Also, the color pattern of *A. alga*, black or dark brown with very minute white dots on body and fins is distinctive when compared with other species (Figs. 2, 5).

FIGURE 4. *Ancistrus shuar,* MECN-DP-1637*,* 96.5 mm SL, male, paratype when alive (Photo courtesy Jorge Brito).

Description. Morphometric data given in Tables 2 and 5. Body robust, depressed anteriorly and progressively become compressed posteriorly. Caudal peduncle compressed, deep and, robust. Dorsal profile of body from tip of snout through dorsal-fin origin gently convex, then descending in straight line to adipose-fin origin. From this point to caudal-fin origin straight and horizontal. Ventral profile of body flat and straight or slightly concave. Ventral surface of head and belly naked until anal-fin origin. Urogenital papilla is not usually visible, in some mature males opening is partially visible just posterior to anus (Figs. 2, 5).

Head massive, very wide and depressed. In dorsal and lateral view, this species shows a massive head compared with the other two species. Snout partially naked with or without fleshy cylindrical tentacles branched or not, its contour semicircular. In males, naked area wider but does not reach nares or orbits. Females have only a narrow naked strip on snout border. Nostrils juxtaposed and closer to eyes than tip of snout. Eyes in dorsolateral position, orbits not raised and without odontodes. Interorbital space is broad and flat. Supraoccipital flat without ridges, posterior border straight and truncate. Movable hypertrophied cheek odontodes well developed, specimens can have from eight to twelve. The size of these odontodes also is variable in each specimen, the longest odontode nearly extends to pectoral-fin origin independently of size of specimen. Anteriorly, base of movable hypertrophied odontodes has covering plates. Opercular bone has an exposed surface easily visible externally, its lateral margin carries odontodes (Figs. 2, 5).

FIGURE 5. *Ancistrus alga*, MEPN 14853, 115.1 mm SL, male. From top to bottom, lateral, dorsal, and ventral view.

TABLE 2. Morphometric data of *Ancistrus alga*. Measurements are expressed as percentage of standard length. N=11

Character	Average	STD	Min.	Max.
SL (mm)			60.7	160.9
Head length	39.4	2.3	36.3	43.9
Predorsal length	48.7	2.3	45.7	52.9
Postdorsal length	31.6	1.2	29.5	33.4
Interdorsal length	16.8	0.8	15.2	18.2
Preanal length	70.2	0.8	68.9	71.2
Postanal length	28.4	1.0	26.7	30.0
Thoracic length	24.0	0.9	22.4	25.8
Abdominal length	21.8	0.8	20.4	22.8
Dorsal fin base	25.2	1.1	23.1	26.6
Dorsal spine length	31.5	1.1	29.8	33.4
Pectoral spine length	35.3	1.9	31.9	38.9
Pelvic spine length	26.8	1.2	24.4	28.3
Cleithral width	35.3	0.6	34.3	36.2
Caudal peduncle depth	10.9	0.3	10.0	11.2
Head depth	21.2	1.5	18.8	24.5
Snout length	23.5	1.6	21.9	26.4
Interorbital width	19.7	0.9	17.5	20.5
Orbital diameter	6.1	0.4	5.4	7.0
Mandibular ramus length	5.5	0.3	5.1	6.0

Mouth oval or rounded. Upper lip narrow, usually cover premaxilla and only external surface is visible, edge is almost horizontal and with very minute undulations. The internal surface papillose. Lower lip broad, its border with very minute undulations. Lower lip surface papillose. Papillae smaller near border of lip increasing in size near lower jaws. Papillae of anterior lip have similar size from those near lower jaws. Maxillary barbels evident and free. Upper and lower jaws with similar length. The hemimandibles are straight, placed horizontally or forming a *V* between them. Teeth numerous and minute. Between 65 to 80 teeth in each hemimandible. Premaxillary and dentary teeth with same size. Teeth incisor type, asymmetrically bifid, medial cusp longer and wider than lateral cusp. Medial cusp rounded or straight truncated, lateral cusp pointed. Tooth apex curved toward interior of mouth. Tooth apex yellowish, stalk whitish. Premaxillary and dentary without posterior papillae or ornamentation.

Lateral line plates 23–24. Post-anal plates 11–12. Six plates between dorsal-fin and adipose-fin, all plates without keels. Origin dorsal-fin is anterior to vertical passing through pelvic-fin origin. Dorsal-fin with one spine, followed by seven branched rays; when depressed reaching adipose-fin origin. Adipose-fin well developed and always present. Spine of adipose-fin wide, and curved. Pectoral-fin with one spine, and six branched rays. When depressed, spine of pectoral-fin reaches half, (females and males) of pelvic-fin spine length. Spine and first branched ray of pectoral-fin with same length. Distal region of pectoral-fin spine with enlarged odontodes, more developed in males, and a small fleshy prominence. Pelvic-fin with one spine and five branched rays; its posterior margin surpassed anal-fin base when depressed. Anal-fin with one flexible spine and four branched rays. Caudal-fin rays i,14,i. Posterior border of caudal-fin concave.

Sexual dimorphism. Adult males have a wide naked area on snout, with developed (long) and branched fleshy tentacles. Tentacles are arranged in the following pattern: Along snout edge a row of tentacles, long and conical are present, those at snout tip are longest and branched. Dorsal midline with two or three tentacles very long, branched or not. Anterior the nares, the dorsal midline row of tentacles split in three or two tentacles on each side. The tentacles near midline can show ramifications, while the laterals are just conical. On each side of head, from snout edge to near eyes, another row of three or four, conical tentacles is present, passing in front of cheek odontodes (Fig. 5). Some cataloged lots have adult males with small or very small fleshy tentacles. Females possess a narrow

naked anterior stripe on snout, as in females of the other species analyzed. On the naked strip, a single row of small, conical fleshy tentacles is present, from one side to the other side. The two central tentacles a bit longer, and occasionally, conical tentacles have bifid or branched tip (Figs. 2, 3).

Color. Head, and dorsolateral body surface dark brown to black with very small dots, white or whitish, sometimes faded or difficult to observe. Belly slightly paler than sides of the body; with very small dots, white or whitish, generally more evident. All fins uniform black, with minute white dots spaced on interradial membranes. In juveniles, the dots on dorsal-fin membrane are relatively larger. Dorsal-fin with black spot between bases of spine and the first branched ray (Figs. 2, 5).

Geographical distribution. The species inhabits the northeastern part of the country, in Sucumbíos and Orellana provinces, in systems that drain to the Napo River. There is one sample (juvenile) that comes from the Curaray River, in Pastaza province; apparently this locality may be the southern limit. On the other hand, there are no samples from the Napo province, these results seems to indicate that the species has a preference for low altitudes in the drainages (Fig. 8).

Ancistrus clementinae Rendahl, 1937

Table 3 Figures 2, 3, 6

Ancistrus clementinae Rendahl, 1937. Arkiv för Zoologi v. 29, häfte 3, A. no. 11:4, fig. 2. Río Clementina system, northwest of Babahoyo, Ecuador. Holotype (unique): NRM 10369.

Material examined. All from Ecuador. **Azuay province**: MEPN-5984, 1, 99.4 mm SL, Río Siete, afluente del Río Fermín, Brazo del Pulga Guerrero, 03°01'47"S 79°43'00"W, R. Barriga, M. Guerrero, R. Jácome, 25 August 2007. MEPN-5996, 10, 72.7–106.3 mm SL, Río Siete, afluente del Río Fermín, Brazo del Pulga Guerrero, 03°01'47"S 79°43'00"W, R. Barriga, M. Guerrero, R. Jácome, 25 August 2007. MEPN-5997, 2, 90.3–95.3 mm SL, Río Siete, afluente del Río Fermín, Brazo del Pulga Guerrero, 03°01'47"S 79°43'00"W, R. Barriga, M. Guerrero, R. Jácome, 25 August 2007. **Los Ríos province**: MEPN-11420, 22, 42.5–65.6 mm SL, Cuenca río Caluma, río La Clara cerca al puente, 01°38'11"S 79°15'33"W, N. Lujan, D. Taphorn, R. Barriga, 26 August 2012. **Guayas province**: MEPN-9833, 1, 57.1 mm SL, Río Bucay, 3 km aguas abajo de Naranjal, 02°41'19"S 79°38'58"W, R. Barriga, 22 September1992. MEPN-9837, 1, 91.0 mm SL, Río Canayacu a 7 km al Sur de Naranjal, Cooperativa La Nueva Unión, 02°43'24"S 79°39'53"W, R. Barriga, 24 September 1992.

Diagnosis. *Ancistrus clementinae* can be distinguished from species inhabiting the trans–Andean region and Ecuador by the arrangement of the soft, fleshy tentacles on the snout. Females don't have small, conical, fleshy tentacles, on the ventral and central region of snout *vs.* presence of small conical tentacles on the ventral and central region of the snout, in females of trans–Andean and Ecuador species. Males have evident fleshy tentacles along the dorsal midline of the snout, two backward divergent rows of flat branched tentacles *vs.* single row of cylindrical and branched tentacles, along dorsal midline of the snout, in males, in the same condition, in species of trans–Andean region and Ecuador. Among the species found in Ecuador, *A. clementinae* have 18–22 movable cheek odontodes *vs.* 10 to 12, in the other three analyzed species. Additionally, this species has shorter dorsal fin and pectoral fin spines, 18.7%–25.8% SL *vs.* 24.3%–27.3% SL in *A. shuar*, 29.8%–33.4% SL in *A. alga* and 24.4%–32.4% SL in *A. malacops*; 19.5%–26.7% SL *vs.* 28.9%–33.6% SL in *A. shuar*, 31.9%–38.9% SL in *A. alga* and 28.5%–38.7% SL in *A. malacops*, respectively.

Description. Morphometric data given in Table 3. This species reaches smaller size than other three. Body depressed anteriorly, progressively compressed posteriorly. Caudal peduncle compressed, deep, robust. Dorsal profile of body convex from tip of snout through dorsal-fin origin. Descending straight from last point to adipose-fin origin, then straight and horizontal to caudal-fin. Ventral profile of body flat and straight or slightly concave. Ventral surface of head and belly naked until anal-fin origin. Urogenital papilla not usually visible, in some mature males opening is partially visible just posterior to anus (Figs. 2, 6).

Head moderately wide and depressed. Snout partially naked with or without fleshy cylindrical tentacles branched or not, its contour semicircular. In adult males, naked area is wider, reaches nares and orbits. Females and juveniles have only a narrow naked strip on snout border, fleshy tentacles are very small and located laterally only. Nostrils juxtaposed and closer to eyes than tip of snout. Eyes in dorso-lateral position, orbits not raised and without odontodes. Interorbital space broad and flat or gently conv, Supraoccipital flat without ridges, posterior border

straight and truncate. Movable hypertrophied cheek odontodes well developed, specimens can have from 18–22. Odontodes size variable in each specimen, longest odontode, in mature males, reaches pectoral-fin origin. Anteriorly, bases of movable hypertrophied odontodes are ventrally covered with plates. Opercular bone has small exposed surface visible externally, its lateral margin carries few odontodes.

FIGURE 6. *Ancistrus clementinae*, MEPN 5996, 94.6 mm SL, male. From top to bottom, lateral, dorsal, and ventral view.

FIGURE 7. *Ancistrus malacops*, MEPN 14705, 117.8 mm SL, male. From top to bottom, lateral, dorsal and ventral view.

Mouth rounded or oval. Upper lip narrow, usually covering premaxillary and only external surface is visible, its edge is almost horizontal, and with very small papillae, its internal surface papillose. Lower lip broad, its border smooth or with very small papillae, its surface with papillae that are smaller near border of lip but increase in size near lower jaws. Papillae of anterior lip have similar size to those near lower jaws. Maxillary barbels very short, inconspicuous, only tip is free. Upper jaw a little longer than lower. The upper jaws are straight, and placed horizontally. Lower jaws form an open *V* between them. Teeth numerous and minute. Between 40–50 teeth in upper jaw and between 35–45 teeth in lower jaw. Premaxillary and dentary teeth of same size. Teeth incisor type, asymmetrically bifid, medial cusp longer and wider than lateral cusp. Medial cusp rounded or straight truncated, lateral cusp pointed. Tooth apex curved toward interior of mouth. Tooth apex yellowish, stalk whitish. Premaxillary and dentary without posterior papillae or ornamentation.

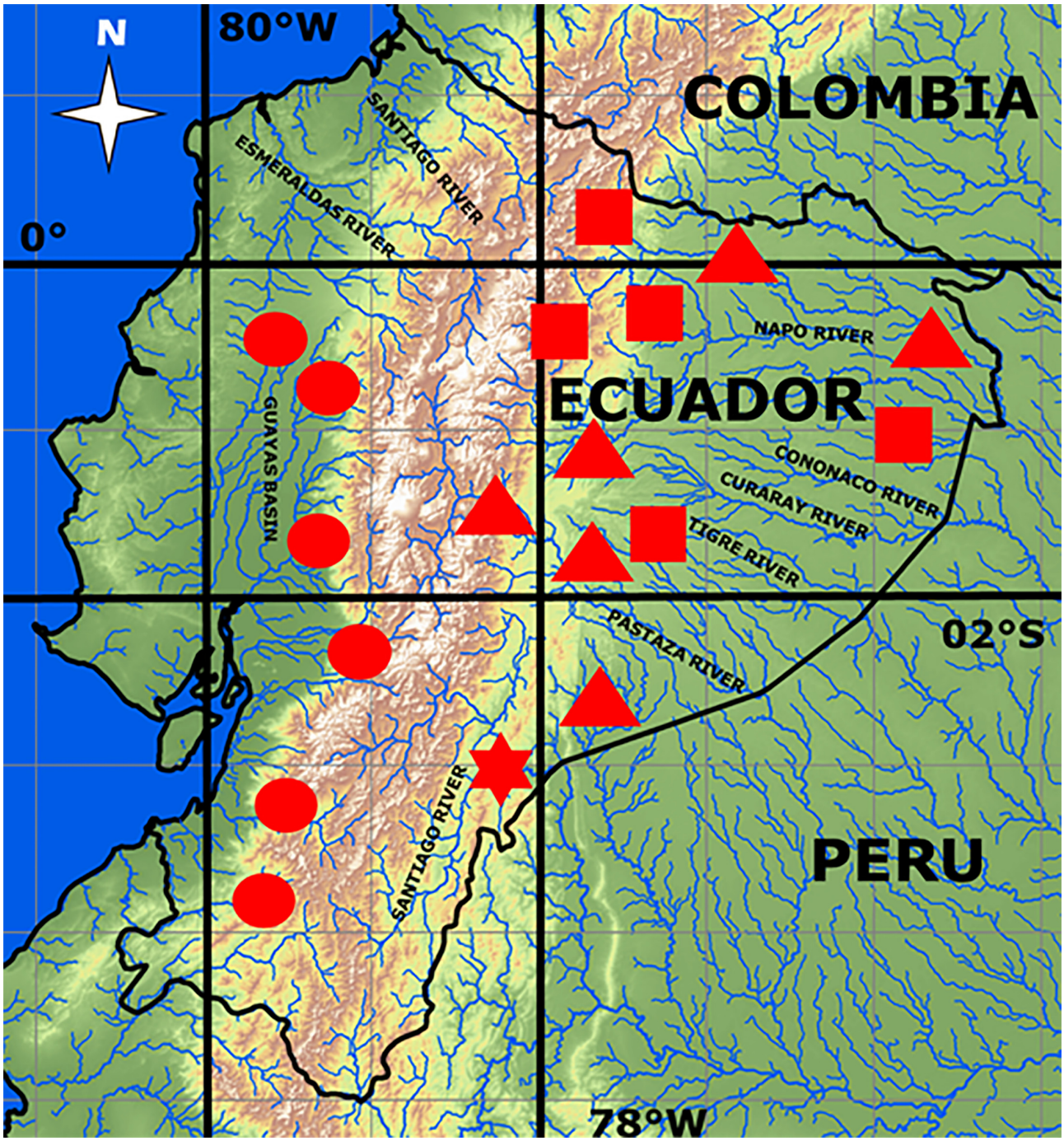

FIGURE 8. Map of Ecuador showing the geographical distribution of the species. *A. shuar*, star. *A. alga*, square. *A. clementinae*, circle. *A. malacops*, triangle. Symbols may represent more than one lot.

TABLE 3. Morphometric data of *Ancistrus clementinae*. Measurements are expressed as percentage of standard length. N=9

Character	Average	STD	Min.	Max.
SL (mm)			62.5	110.8
Head length	36.9	1.1	34.7	38.4
Predorsal length	46.9	0.7	45.8	48.2
Postdorsal length	37.3	1.5	35.2	39.8
Interdorsal length	19.3	1.5	17.0	21.7
Preanal length	67.6	1.8	64.8	70.8
Postanal length	31.0	1.3	28.7	33.0
Thoracic length	23.4	1.3	21.1	25.6
Abdominal length	21.1	1.2	20.1	23.8
Dorsal fin base	19.8	0.8	18.6	20.9
Dorsal spine length	23.9	2.2	18.7	25.8
Pectoral spine length	23.7	2.3	19.5	26.7
Pelvic spine length	21.5	2.1	18.5	23.7
Cleithral width	27.9	1.6	25.4	30.2
Caudal peduncle depth	11.9	0.7	10.3	12.7
Head depth	19.6	1.2	17.7	20.9
Snout length	21.5	1.4	19.8	24.6
Interorbital width	14.3	0.6	13.1	15.2
Orbital diameter	5.5	0.5	4.9	6.5
Mandibular ramus length	4.7	0.5	4.2	5.8

Lateral line plates 24–25. Post-anal plates 12–13. Inter-dorsal plates seven or eight, the plate just in front of the adipose-fin spine has small keel, and seems to be an isolated plate, different from the anterior plates. Dorsal-fin origin anterior to vertical passing through pelvic-fin origin. Dorsal-fin with one spine, followed by seven branched rays; when depressed does not reaches adipose-fin origin. Adipose fin always present, but the membrane scarcely or not developed. Adipose-fin spine straight. Pectoral-fin with one spine, and six branched rays. Pectoral-fin spine almost reaches pelvic-fin origin when depressed. The spine is shorter than first three branched rays. Distal region of pectoral-fin spine with fleshy tip, and with enlarged odontodes, more developed in males. Pelvic-fin with one spine and five branched rays; its posterior margin surpass anal-fin base when depressed. Anal-fin with one flexible spine and four branched rays. Distal margin of caudal-fin truncate and a bit oblique, but in some specimens rounded. The lower spine is a bit longer than upper spine, or of same length; caudal-fin rays i,14,i.

Sexual dimorphism. Adult males of *A. clementinae* have dorsolateral naked area on snout. Tentacles are arranged as follows: Snout edge with three or four rows of small conical tentacles. Tip of the snout, with a patch of tentacles, some of them bifid or branched. Starting at the tip of snout, a dorsal midline of two or three conical and bifid or branched tentacles runs backward. This row quickly splits into two new rows of flat branched tentacles, ending in front of the nostrils. Lateral to the rows of tentacles, the naked area of the snout have papillae and/or conical tentacles, small or very small, randomly arranged. Just in front of each nostril a slightly longer, flat, branched tentacle is found (Fig. 6). Also in this species, some samples have males without or with only small (vestigial), soft, fleshy tentacles on dorsal midline of snout. Females have the similar narrow naked strip on snout border, but they do not have the usually small fleshy conical tentacles on the border. Some females have a very small conical tentacles just in front of movable cheek odontodes (Figs. 2, 3).

Color. Head, and dorsolateral surface of body varies from light to dark brown or black with irregular scattered, pale or whitish areas, sometimes perceived as white or cream, rounded blotches. Some specimens have dark brown or black, irregular transverse bands on dorsolateral surface of the body. Belly is whitish or cream and uniform, but some specimens have a vermiculated dark pattern. Color pattern in all fins, except the anal-fin with four to six, dark

blotches or dots on rays, occasionally forming horizontal or transverse stripes; interradial membrane is translucent, and the distal border of fins white. Anal-fin with two dark blotches or dots on rays (Figs. 2, 6).

Geographical distribution. *Ancistrus clementinae* is found in the Pacific versant of Ecuador, mostly in drainages that flow to the Guayas River Basin (Fig. 8).

Ancistrus malacops (Cope, 1872)

Tables 4, 5, Figures 2, 3, 7, 10, 11

Chaetostomus malacops Cope, 1872. Proceedings of the Academy of Natural Sciences of Philadelphia, v. 23:287, Pl. 15 (fig. 3). Ambyiacu (Ampiyacu?) River, Peru. Syntypes: ANSP 8299 (2, disintegrated).

Xenocara occidentalis Regan, 1904. Transactions of the Zoological Society of London v. 17, pt 3, no. 1: 257, Pl. 14, fig. 5. Canelos, eastern Ecuador. Syntypes: (7) BMNH 1880.12.8.69-74 (6).

Ancistrus lineolatus Fowler, 1943. Proceedings of the Academy of Natural Sciences of Philadelphia v. 95: 255, figs. 44-47. Río Orteguasa, Florencia, Caquetá, Colombia. Holotype (unique): ANSP 70517.

Ancistrus malacops Isbrücker, 1980:70. Ortega & Vari, 1986:16. Burgess, 1989:437. Isbrücker, 2001:25, 26. Isbrücker, 2002:12. Fisch-Muller, 2003:377. Ferraris, 2007:222. Barriga S., 2012:113.

Ancistrus occidentalis Isbrücker, 1980:71, Burgess, 1989:437, Isbrücker, 2001:25, 32, Isbrücker, 2002:12, Fisch-Muller, 2003:377, Ferraris, 2007:223.

Material examined. All from Ecuador. **Morona-Santiago province**: MEPN-10535, 6, 73.8–144.5 mm SL, Río Chiguaza, camino a Huamboya, 01°59’17”S 77°56’44”W, S. Rampon, August 1956. MEPN-17986, 1, 77.7 mm SL, Río Shaime en la vía Santiago-Méndez, afluente del río Morona, 02°56’54”S 77°46’51”W, R. Barriga, P. Arguello, E. Calvache, F. Cugushi, 12 November 2015. MEPN-17987, 7, 45.8–86.0 mm SL, Río Wawaimi entre Pto. Morona y río Shaime, afluente del río Morona, 02°56’02”S 77°44’37”W, R. Barriga, P. Arguello, E. Calvache, F. Cugushi, 13 November 2015. **Napo province**: MEPN-8182, 5, 80.2–113.6 mm SL, Río Chililin, 12 km E de la carretera vía Auca, km 57, 00°48’54”S 76°47’57”W, R. Barriga, 25 May 1996. MEPN-9000, 2, 51.5–84.5 mm SL, Río Apayacu, a 2 km de la Estación Jatun Sacha, Ahuano, 00°04’43”S 77°46’59”W, R. Barriga, B. Bohger, G. Tapuy, 23 April 1999. MEPN-9139, 1 „ 108.3 mm SL, Río Sardinas a 6 km W de la Estación Biológica Jatun Sacha, Ahuano, 01°04’43”S 77°39’59”W, R. Barriga, B. Bohger, G. Tapuy, 23 April 1999. MEPN-9140, 3, 95.2–126.0 mm SL, Río Apayacu a 2 km de la Estación Jatun Sacha, Ahuano, 00°04’43”S 77°46’59”W, R. Barriga, B. Bohger, G. Tapuy, 23 April 1999. MEPN-9141, 1, 138.5 mm SL, Río Pillisyacu 6 km al Noreste de Jatun Sacha, Ahuano, 01°05’57”S 77°36’15”W, R. Barriga, B. Bohger, G. Tapuy, 23 April 1999. MEPN-11716, 8, 96.3–140.0 mm SL, Río Suno, junto a Caimitoyacu, 00°27’30”S 77°37’52”W, R. Barriga, 09 September 1996. MEPN-11730, 7, 60.0–111.8 mm SL, Río Burroyacu afluente del río Huataraco, 00°42’39”S 77°26’22”W, R. Barriga, 13 September 1996. **Orellana province**: MEPN-2384, 4, 93.6–108.7 mm SL, Estero sin nombre, 20 km al W del Pueblo Edén, afluente Río Cariyuturi, 00°34’35”S 76°06’56”W, R. Barriga, L. Salazar, D. Stewart, 28 February 2003. MEPN-10249, 26, 35.0–85.7 mm SL, Estero Sunka a 20 minutos 1/2 km del Pozo de Petróleo Sunka. Afluente del Río Tivacuno, 00°40’48”S76°43’29”W, R. Barriga, J. Tivirán, 02 December 1988. MEPN-10322, 9, 84.5–148.1 mm SL, Río Cotapino, Alto Napo, 00°44’21”S 77°31’36”W, M. Olalla, August 1966. MEPN-11556, 1, 108.9 mm SL, Río Chambira, afluente del río Tiputini, 00°37’51”S 76°30’59”W, R. Barriga, J. Silva, 19 May 2008. MEPN-11648, 4, 45.8–80.1 mm SL, Río sin nombre afluente del río Cononaco, 00°58’56”S 76°59’18”W, J. Quilindaña, 12 July 2000. MEPN-14858, 2, 75.6–87.0 mm SL, Río Huarmiyuturi, cerca al Helipuerto, 00°34’12”S 76°04’19”W, R. Barriga, 23 April 2009. **Pastaza province**: MEPN-4476, 2, 92.8–101.9 mm SL, Canelos, río Bobonaza, 01°36’01”S 77°45’22”W, M. Olalla, April 1983 (Type locality of *A. occidentalis*). MEPN-4652, 2, 72.0–90.4 mm SL, Río Avispa, a 1500 m al W del pozo abandonado Manatí, 02°02’38”S 76°30’21”W, R. Barriga, A. Cartagena, A. Gavilánez, 09 May 1989. MEPN-15405, 6, 92.5–114.9 mm SL, Bajos del Río Bobonaza, sitio equidistante entre Montalvo y Chicherota, 02°22’18”S 76°39’12”W, 17 February 1975. **Sucumbíos province**: MEPN-4719, 1, 85.2 mm SL, Río Pushino, km 27 vía Lumbaqui-Puerto Coca, 4 km antes del pozo Rubí No. 2, 00°02’41”S 77°10’05”W, R. Barriga, L. Guatatoca, R. Chimbo, 05 May 1997. MEPN-9272, 3, 81.5–100.8 mm SL, Río Ere, a 10 m de la casa de Ignacio Aguirre, 00°08’15”N 76°45’18”W, R. Barriga, A. Lusitante, 03 May 1995. MEPN-10696, 3, 57.9–76.8 mm SL, Quebrada Yamanunka, km 16, drenaje pantano–charca, 00°18’00”S 76°39’41”W, R. Barriga, M. Cortez, 13 December 2010. MEPN-10699, 1, 73.2 mm SL, Quebrada sin nombre en la Cooperativa 28 de Marzo, 00°02’17”S 76°39’15”W, R. Barriga, M. Cortez, J. Revelo, 14 December 2010. MEPN-

15633, 2, 66.5–80.6 mm SL, Río sin nombre afluente del río Pañayacu, 00°24'46"S 76°04'22"W, R. Barriga, H. Machoa, 24 February 2010.

Diagnosis. *Ancistrus malacops* differs from species inhabiting Amazonian Andean piedmont rivers, except *A. latifrons*, *A. alga* and *A. shuar* by the length of the mandibular ramus which fits 2.4–3.8 times in the interorbital width. In *A. bufonius*, *A. marcapatae*, *A. montanus*, *A. heterorhynchus*, *A. boliviana*, *A. megalostomus*, *A. occloi* and *A. greeni*, the reported mandibular ramus fits fewer than 2.0 times in the interorbital width. It further differs from *A. latifrons*, *A. alga*, *A. megalostomus*, *A. lineolatus* and *A. tamboensis*, by its interorbital width in head length, 2.3–2.8 *vs.* fewer than 2.3 times. In *A. montanus* and *A. heterorhynchus* the interorbital width fits 3.0 times in the head length. The species *A. bufonius*, *A. jelskii*, *A. marcapatae*, *A. boliviana*, *A. occloi*, *A. greeni*, and *A. shuar* have similar values of interorbital width. Among the species caught in eastern Ecuador, it is easily distinguished from *A. alga* by its color pattern, and shape of body and head. Values of cleithral width and interorbital width are 27.9%–31.8% SL *vs.* 34.3%–36.2% SL, and 13.4%–16.3% SL *vs.* 17.5%–20.5% SL, respectively. The differences with *A. shuar* are moderate or, in females, near none. But there is a tendency to have a more slender body and head. Values of cleithral width and interorbital width are 27.9%–31.8% SL *vs.*30.3%–32.5% SL, and 13.4%–16.3% SL *vs.*14.4%–17.0% SL, respectively. Males of *A. malacops* are even more different in cleithral width 27.8%–30.2% SL *vs.*30.7%–32.5% SL in *A. shuar* and 35.3%–36.2% SL in *A. alga*; and interorbital width 13.5%–15.7% SL *vs.*15.4%–17.0% SL in *A. shuar* and 20.1%–20.5% SL in *A. alga* (Table 5).

Description. Morphometric data given in Tables 4 and 5. Body depressed anteriorly and, progressively become compressed posteriorly. Caudal peduncle compressed, deep and, robust. Dorsal profile of body convex from tip of snout through dorsal-fin origin. From there descending straight to adipose-fin origin, then straight and horizontal to caudal-fin origin. Ventral profile of body flat and straight or slightly concave. Ventral surface of head and belly naked until anal-fin origin. Urogenital papilla is not visible, in some mature males opening partially visible just posterior to anus (Figs. 2, 7).

Head moderately wide and depressed. Snout partially naked with or without fleshy cylindrical tentacles branched or not, its contour semicircular. In adult males, naked area is wider, and closer to nares or orbits. Females and juveniles have only narrow naked strip on snout border. Nostrils juxtaposed and closer to eyes than tip of snout. Eyes in dorsal lateral position, orbits not raised and without odontodes. Interorbital space is broad and flat or gently conv, Supraoccipital flat without ridges, posterior border straight and truncate. Movable hypertrophied cheek odontodes well developed, specimens can have 10–12. Size of these odontodes also is variable in each specimen, the longest odontode almost reaches to pectoral-fin origin independently of size of specimen. Anteriorly, base of movable hypertrophied odontodes are covered by plates. Opercular bone has an exposed surface easy visible externally, its lateral margin carries odontodes.

Mouth rounded or oval. Upper lip narrow, usually covering premaxilla and only external surface visible, its edge is almost horizontal, and with papillae very small. The internal surface papillose. Lower lip broad, its border with very minute undulations. Lower lip surface papillose. Papillae smaller near border of lip increasing in size near lower jaws. Papillae of anterior lip have similar size from those near lower jaws. Maxillary barbels short and free. Upper jaw larger than lower. Upper jaws straight and placed horizontally. Lower jaws forming a *V* between them. Teeth numerous and minute. Between 60-70 teeth in upper jaw and between 40-50 teeth in lower jaw. Premaxillary and dentary teeth of same size. Teeth incisor type, asymmetrically bifid, medial cusp longer and wider than lateral cusp. Medial cusp rounded or straight truncated, lateral cusp pointed. Tooth apex curved toward interior of mouth. Tooth apex yellowish, stalk whitish. Premaxillary and dentary without posterior papillae or ornamentation.

Lateral line plates 23–24. Post-anal plates 12–13. Inter-dorsal plates seven or eight, just in front of the spine of adipose-fin there is one plate with keel. Dorsal-fin origin is anterior to vertical through pelvic-fin origin. Dorsal-fin with one spine, followed by seven branched rays; when depressed their tips very close or reaching the adipose-fin origin. Adipose-fin always present and developed, but membrane is scarce. Adipose-fin spine wide and straight. Pectoral-fin with one spine, and six branched rays. Pectoral-fin spine reaches or surpasses half pelvic-fin spine length when depressed, and is longer than longest branched ray. Distal region of pectoral-fin spine with a fleshy tip, and, enlarged odontodes more developed in males. Pelvic-fin with one spine and five branched rays; its posterior margin surpasses anal-fin base when depressed. Anal-fin with one flexible spine and four branched rays. Distal margin of caudal-fin oblique truncate; lower spine longer than upper; caudal-fin rays i,14,i.

FIGURE 9. *Chaetostomus hoplogenys*, BMNH 1864.1.21.85, Syntype, SL, not reported. From top to bottom dorsal, left lateral, ventral views. Photographed by: Claudio Zawadzki. Catalog of Fishes gives data for syntypes as BMNH 1849.11.8.89-91 (3).

Sexual dimorphism. Adult males exhibit a wide naked area on snout. Tentacles are arranged in the following pattern: Snout edge with conical tentacles bordering, those near and at the tip are longest and branched. On dorsal midline, three to five tentacles, very long, and with many branches are present. Posteriorly, dorsal midline row split into two rows, oriented to the nostrils, with two or four tentacles branched each. Laterally to midline row, and anteriorly to rows close to nostrils, no tentacles are found, only a wrinkled and naked surface. On each side, in front of cheek odontodes, a row of three to five conical tentacles, runs from the snout edge to near eyes (Fig. 7). In some cases one branched tentacle is present just in front of cheek odontodes. In some lots, we noticed that some adult males have small or very small fleshy tentacles. Females of *A. malacops* have a similar condition on snout tentacles to that observed in females of *A. shuar* (Figs. 2, 3).

Color. Head, and dorsolateral surface of the body varies from light to dark brown with whitish rounded blotches, evident or vanished, occasionally, rounded blotches may be blackish. Abdominal surface is lighter brown, uniform or with a great number of white or whitish dots. All fins with alternate combination of bands, blotches or dots, whitish or blackish, over rays and interradial membrane. Caudal-fin with a whitish or orange spot on its dorsal and ventral tips (Figs.2, 7).

Geographical distribution. *Ancistrus malacops* inhabits the eastern versant of Ecuador, from Sucumbíos province to Morona-Santiago province, except the Santiago River basin, apparently, the Morona River is the southern limit of the species (Fig. 8).

TABLE 4. Morphometric data of *Ancistrus malacops*. Measurements are expressed as percentage of standard length. N=27

Character	Average	STD	Min.	Max.
SL (mm)			51.4	148.1
Head length	36.1	1.8	32.4	39.9
Predorsal length	46.5	1.6	43.6	50.4
Postdorsal length	35.4	1.6	32.6	39.8
Interdorsal length	19.0	1.3	15.8	21.4
Preanal length	68.1	1.5	65.2	71.7
Postanal length	30.6	1.5	27.5	33.3
Thoracic length	24.8	1.7	22.0	28.0
Abdominal length	21.8	0.9	20.4	24.3
Dorsal fin base	22.9	1.1	20.7	25.5
Dorsal spine length	28.1	2.2	24.4	32.4
Pectoral spine length	33.5	2.7	28.5	38.7
Pelvic spine length	25.1	1.6	20.7	27.4
Cleithral width	29.5	1.0	27.9	31.8
Caudal peduncle depth	12.0	0.7	10.9	13.6
Head depth	19.1	1.4	16.1	22.7
Snout length	21.1	1.7	18.2	24.3
Interorbital width	14.8	0.8	13.4	16.3
Orbital diameter	6.2	0.6	5.0	7.3
Mandibular ramus length	5.1	0.4	4.2	5.8

Discussion

Determining the valid species name for specimens of *Ancistrus* is a difficult task. In some cases, various names have been proposed which may represent different stages of development or different sexes. Sometimes, the situation becomes critical, several old original descriptions are brief and do not provide diagnostic characters, or the types are in bad condition, deteriorated or missing, and there are no illustrations, and/or appropriate

photographic records. In many cases, known and corroborate geographic distribution of species of *Ancistrus* can help in appropriate identification (Taphorn, *et al.* 2013). In our analysis we only compare our specimens with the descriptions and figures of species that inhabit waters near or in the surrounding geographical area of study, or with species previously considered synonyms.

The specimens of *Ancistrus* living on the Pacific slope of Ecuador, were identified as *A. clementinae*. External morphological characters are diagnostic and unequivocal, and it is the only species described from trans–Andean region of Ecuador. Another species inhabits the Pacific slope of Colombia, *A. centrolepis*, but, among other differences, that species has a unique distinctive character: Strong keels on the lateral body plates (Taphorn, *et al.* 2013). The specimens coming from the Guayas River system, at the MEPN, match unequivocally with *A. clementinae*, but two lots coming from southern localities show some differences. New specimens are necessary to make an appropriate analysis. *Ancistrus clementinae* is a species endemic to Ecuador, specifically from the Pacific slope, as pointed by Barriga (2012). The Pacific region of Ecuador is affected by anthropic changes of various kinds (mining, farms of aquatic organisms, agriculture development, etc.), so it is very important to establish programs for fish species conservation.

From the Andean piedmont rivers draining to the Amazon River, the species identification is more difficult. The first group of specimens were identified as *Ancistrus alga* (Cope, 1872). Characters that may be useful to distinguish *A. alga* from other species in the area, are its massive head and distinctive color pattern, uniform black or dark brown with very minute white dots on body and fins. The original description of *A. alga* is very brief, but the illustration provided by Cope (1882: pl. XV, fig. 3) matches well with the specimens at the MEPN. The illustration corresponds to a mature male, with a massive head, and a peculiar coloration pattern, a dark base color with very minute white dots. *Ancistrus alga* was placed and maintained as a synonym of *A. hoplogenys* (Regan, 1904; Fisch-Muller, 2003; Ferraris, 2007). The original description of *Ancistrus hoplogenys* indicated the Capin River, in Para state, Brazil as the type locality. The Capim (misspelled Capin) River is located in northeastern Brazil, Para State, and drains to Tocantins River, very near its mouth in the Atlantic Ocean, and is very far from the Andean piedmont. The original description of *Ancistrus hoplogenys* seems to have made using female or immature male specimens, according to the description of the snout reported by Günther (1864). The length of these specimens was between 10 and 13 cm. At this length, males usually show fleshy developed tentacles on the snout. No critical differences are detected between the original description and the analyzed specimens, except, the head which is described as very depressed *vs.* massive head in our specimens, and belly with minute whitish dots *vs.* minute white dots on body and fins in our specimens. There is no original illustration of types of *Ancistrus hoplogenys*. At the ACSI images database (Morris, *et al.* 2006) there is an image of one syntype, BMNH 1864.1.21.85 (Fig. 9). The specimen illustrated is very different from our specimens (compare Fig. 5 *vs.* Fig. 9). Many differences are observed, but among the most striking is the shape of the caudal fin (truncate *vs.* lunate). But, there are some reservations about the photographed syntype identity because the catalog numbers provided do not match. Until the discrepancy of the catalog numbers is corrected, we accept the photo as a syntype of *A. hoplogenys*. Based on our analysis, it is unlikely that *A. alga* will be synonymous with *A. hoplogenys*. On the other hand, specimens of *A. alga*, at MEPN, are restricted to rivers in the north and central portions of eastern Ecuador. According to Ray & Armbruster (2016) the genus *Aphanotorulus* has different species in the upper, middle and lower portions of the Amazon River, *Aphanotorulus horridus* occurs near the Andes, while *A. emarginatus* is common in the middle and lower parts of the river. Therefore, we consider the appropriate and valid name for one of the species inhabiting the north and central areas of eastern Ecuador is *Ancistrus alga* (Cope, 1882).

Fowler (1915) indicated that *Ancistrus tectirostris* is a synonym of *A. alga*, our analysis agree with this conclusion. Despite the brief description, the illustration of Cope (1882, pl. XV, fig 2), corresponds to a female specimen that greatly resembles *A. alga*. Also, the ratios of the head, and eyes, seem to support this conclusion. The image of the syntype, ANSP 8298, 118 mm SL, at ACSI image database (Morris, *et al.* 2006) corroborates this conclusion.

A second group of specimens from eastern Ecuador were identified as *A. malacops* (Cope, 1872). The original description of *A. malacops* is brief, but has a relatively good illustration (Cope, 1872, pl. V, fig. 2), apparently the illustrated specimen is a female or a male without developed tentacles. No tentacles are visible or reported, but apparently the naked area of snout is wide (*"The lores are naked to near the nares"* Cope, 1872:287). The pectoral-fin spine seems to be well developed and the color pattern described, and observed on the figure is similar to some specimens at the MEPN. The type locality of *A. malacops* is the Ambyiacu (Ampiyacu?) River, near Pebas, Peru.

On the other hand, the name *Ancistrus occidentalis* (Regan, 1904) has been used more frequently for the second species collected in eastern Ecuador. This species was described from Canelos, a town located on the banks of the Bobonaza River, a tributary of Pastaza River, eastern Ecuador. The morphometric data and figures of *A. occidentalis* reported by Regan (1904) also agree well with our specimens. *Ancistrus malacops* and *A. occidentalis* came from rivers that drain to the Amazon River, upper and middle portions, and the type localities are not near one another, but Cope (1872) indicates that: *"the Ambyiacu River is at some distance east of the Napo"*. The similarity of the original descriptions and figures determine that *A. occidentalis* (Regan, 1904) could be considered a synonym of *A. malacops* (Cope, 1872). According to the rule of priority, the older valid name prevails. The specimens of *A. malacops* at MEPN show a high variability in color pattern. On the other hand, *A. malacops* has the highest frequency and abundance, according to the lots found in the collection, and in some case lots of *A. malacops* and *A. alga* were captured together in some localities. This observation may support the possibility that Cope (1872) had received specimens of both species coming from the Ambiyacu (Ampiyacu?) River. Also, *A. malacops* specimens were compared with other original figures and descriptions. Fowler (1943) described *Ancistrus lineolatus* from the Hacha River, Caquetá River system, Colombia. Our analysis indicate that this species matches with the specimens identified as *A. malacops*. The color photo of the type specimen at the ACSI image database (Morris, *et al.* 2006) supports this conclusion. Therefore, we suggest that *A. lineolatus* Fowler 1943 could be synonym of *A. malacops* (Cope, 1872).

The third, and new species from eastern Ecuador, *Ancistrus shuar*, has a geographical distribution restricted to the Santiago River, (Morona-Santiago province) in southeastern Ecuador. Comparison of original descriptions, and morphometric data (especially those species coming from upper Amazon River tributaries, in Peru) determines that they don't match. It may be that environmental conditions in the Santiago River, especially physicochemical water conditions, may prevent dispersal movements in some fish species, or perhaps some time ago the river was isolated by geological barriers. Whatever the cause, the fact is that isolation of the population in the Santiago River probably led to speciation.

TABLE 5. Comparative morphometric data for the males of three species. Measurements are expressed as percentage of standard length.

	A. malacops				*A. shuar*				*A. alga*			
Character	Average	STD	Min.	Max.	Average	STD	Min.	Max.	Average	STD	Min.	Max.
SL (mm)			92.0	148.1			96.6	116.7			115.1	160.9
Head length	37.3	1.2	35.9	39.9	38.1	0.3	37.7	38.3	41.7	1.9	39.4	43.9
Predorsal length	46.9	1.3	44.3	48.4	47.4	0.7	46.7	48.0	51.2	1.6	49.2	52.9
Postdorsal length	34.7	1.5	32.7	37.1	35.0	1.0	34.1	36.1	30.5	0.9	29.5	31.7
Interdorsal length	18.7	1.0	17.8	21.0	19.4	0.9	18.5	20.1	16.5	0.9	15.2	17.3
Preanal length	68.7	0.9	67.4	69.6	69.4	0.6	68.7	69.9	70.7	0.3	70.3	70.8
Postanal length	30.0	1.2	27.5	32.2	29.5	0.5	29.2	30.1	27.6	0.6	26.7	27.9
Thoracic length	23.5	1.4	22.0	26.6	23.4	1.0	22.4	24.3	23.6	1.0	22.4	24.9
Abdominal length	21.7	0.8	20.9	23.0	22.0	1.1	21.3	23.3	21.5	0.8	20.9	22.6
Dorsal fin base	22.9	1.0	21.6	24.4	23.1	0.5	22.5	23.5	25.4	1.1	23.9	26.5
Dorsal spine length	28.4	2.0	24.6	30.4	27.0	0.2	26.9	27.3	31.6	1.2	30.8	33.4
Pectoral spine length	34.1	2.1	31.8	37.6	31.7	2.5	28.9	33.6	36.1	3.1	31.9	38.9
Pelvic spine length	24.9	2.1	20.7	27.4	22.7	2.8	19.8	25.4	27.5	1.0	26.0	28.3
Cleithral width	28.9	0.8	27.8	30.2	31.4	1.0	30.7	32.5	35.7	0.4	35.3	36.2
Caudal peduncle depth	12.3	0.8	11.1	13.6	13.3	0.5	12.8	13.8	11.0	0.2	10.8	11.2
Head depth	19.6	0.9	18.3	20.8	20.6	0.8	19.8	21.4	22.7	1.2	21.8	24.5
Snout length	22.6	1.1	20.8	24.3	23.0	0.4	22.5	23.3	25.1	1.1	23.7	26.4
Interorbital width	14.9	0.8	13.5	15.7	16.0	0.9	15.4	17.0	20.4	0.2	20.1	20.5
Orbital diameter	5.7	0.6	5.0	7.0	5.5	0.1	5.4	5.6	5.8	0.4	5.4	6.2
Mandibular ramus length	5.2	0.4	4.2	5.6	5.4	0.4	5.0	5.9	5.6	0.3	5.2	6.0

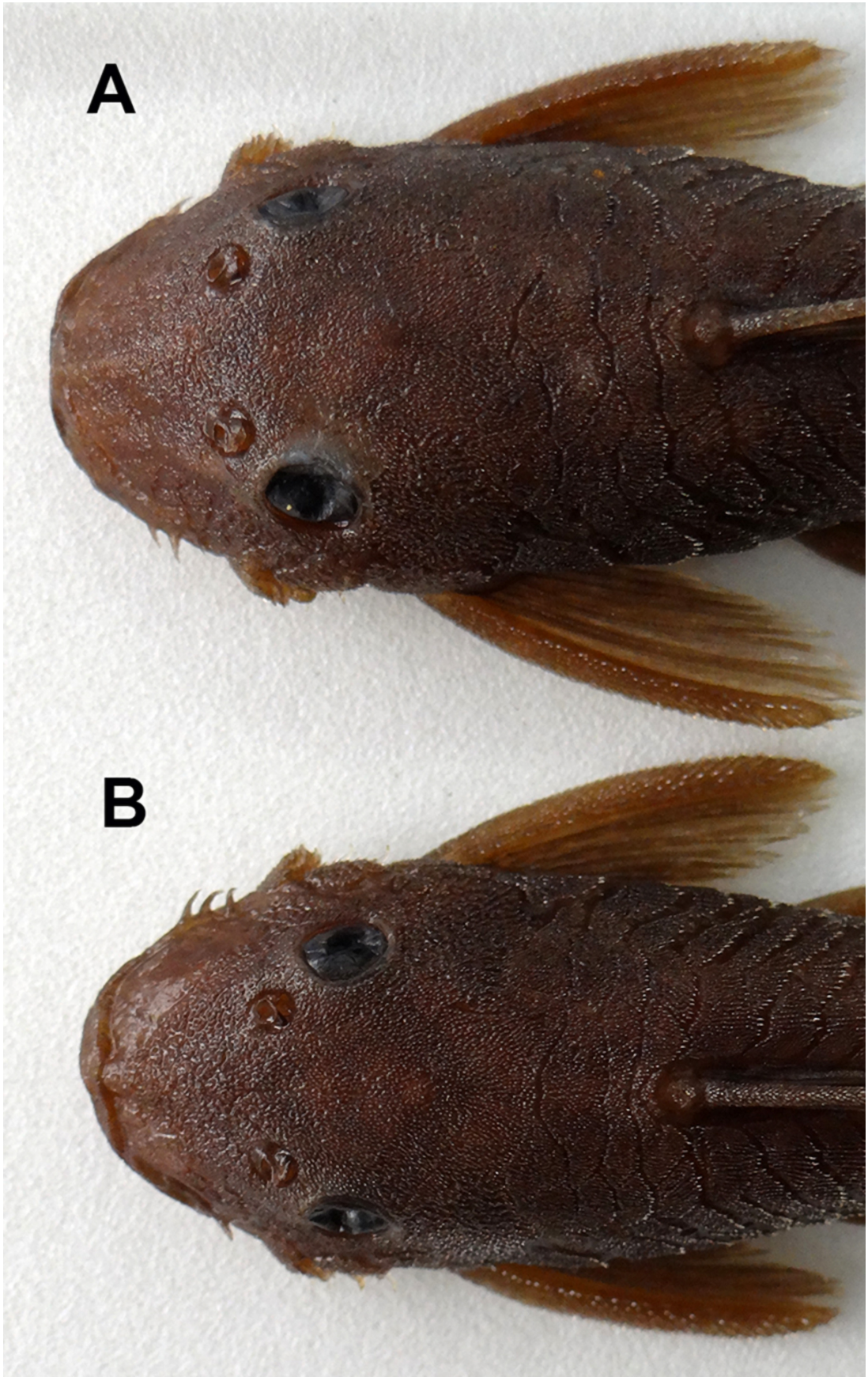

FIGURE 10. *Ancistrus malacops* juveniles, head close-up, dorsal view, showing the difference in naked surface on snout, between sexes, and the similar arrangement of soft, fleshy tentacles on edge. MEPN 10249, A) Female, 47.3 mm SL. B) Male, 46.3 mm SL.

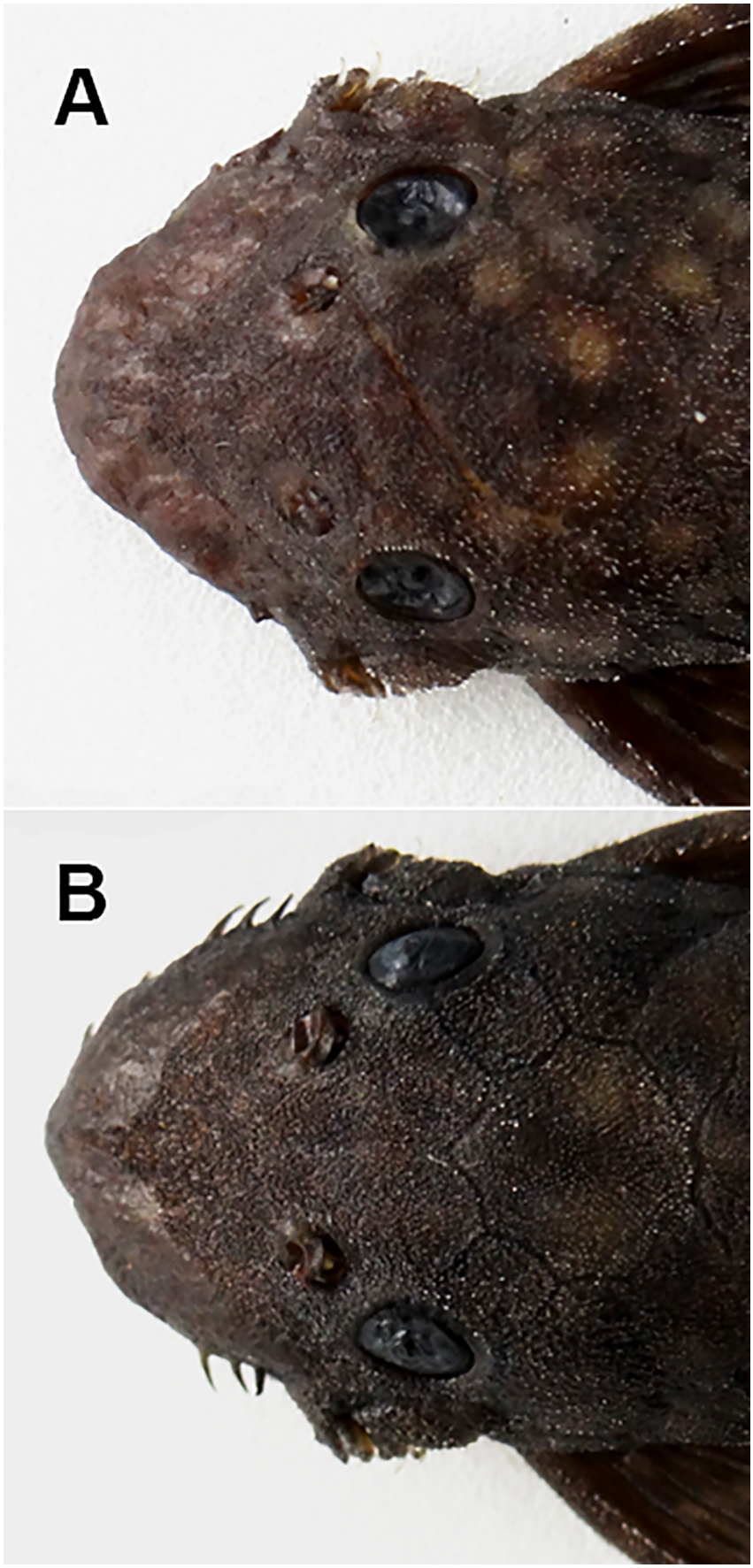

FIGURE 11. Head close-up, dorsal view, male juveniles showing the difference in soft, fleshy tentacles. A) *Ancistrus shuar*, MECN-DP-1631, 50.85 mm SL. B) *Ancistrus malacops*, MEPN 17987, 45.8 mm SL.

During the analysis performed some figures and original descriptions of species caught our attention. Eigenmann & Eigenmann (1889) designate the variety *Ancistrus cirrhosus dubius*, usually accepted as *Ancistrus dubius*, whose specimens come from two localities in Brazil, Gurupá and Tabatinga. Gurupá is located at Pará state, near Marajó Island, very distant from Andes, the other Tabatinga is closer, but may be with a limited influence of Andean rivers characteristics. The original description is limited to few characters indicated in the key included. According to the key *A. dubius* has the caudal fin lunate, dorsal fin I,7 *vs.* I,8 in *A. cirrhosus*, and color pattern consisting of: Body dark brown and back with two darker cross-bands; head irregularly marbled. At the ACSI images database a photo of paratype, MCZ 7983 is found (Morris, *et al.* 2006). Specimen is a juvenile female (70 mm SL) without color, but on belly dissipated (vanished) white dots can be observed. The available photo at ACSI seems to be similar to *A. malacops*, pectoral-fin "spine" looks elongated, unfortunately caudal-fin is damaged and avoid appropriate compare, but Eigenmann & Eigenmann (1889) explicitly indicated a lunate caudal fin. The caudal fin lunate is present in *A. alga*, but the color pattern reported is very different. According the few morphological characters and distance between the localities it seems appropriate indicate that *A. dubius* is a different species to those reported in this work. However, comparisons with newly captured specimens are need to establish the taxonomic status of *A. dubius*.

Steindachner (1915) described *Ancistrus bolivianus*. Plate IX, figs. 5-6, shows a specimen with a series of remarkable characteristics. The lateral view (Plate IX, fig. 5), show plates with keels in front of adipose-fin, snout edge seems naked, and a vertical row of three tentacles is present, in front of cheek odontodes. The dorsal view of the head (Plate IX, fig. 6) shows the snout with plates on the midline until the tip, although Steindachner (op. cit.) indicates that the edge of the snout is naked, at least in juveniles. Also, the dorsolateral area of the snout, shows the row of three fleshy tentacles, but emerging from plates; and more anteriorly, one strange, tentacle is present, also emerging from plates. These last three features may be drawing mistakes. In both views, the shape of movable cheek odontodes are quite different to that commonly observed in species of *Ancistrus*. Finally, no mention about fleshy tentacles surrounding snout edge. It would be interesting to examine newly caught specimens of this species to determine accurately its generic status.

Pearson (1924) indicates in the original description of *Ancistrus megalostomus* that the mandibular ramus length is almost equal to the interorbital width, and also pointed that the snout is broad, blunt, and naked, but there is no mention of the fleshy tentacles. Also, the figures (on the photocopy in our hands) are not good, but clearly resemble a species of *Chaetostoma*. Commonly, ratios between length of mandibular ramus and interorbital width equal or greater than one are typical for species of the *Chaetostoma* (Perez & Provenzano 1996; Armbruster 2004; Lujan *et al.* 2015a)

The two other species described by Cope, 1872 were *Chaetostomus sericeus* and *C. variolus*. Lujan, *et al.* (2015b) included *C. sericeus* in the genus *Ancistrus* and *C. variolus* is considered *Ancistrus*, habitually (Isbrücker, 1980, 2001, 2002; Fisch-Muller, 2003; Ferraris, 2007, Fricke, *et al.* 2018). Both species have a very brief original descriptions, no original illustrations are offered, type specimens sizes indicate they are juveniles (Cope, 1872), and they are in very bad conditions (see images at ACSI database, Morris, *et al.* 2006), making its taxonomic status difficult to determine.

Species of the genus *Ancistrus* have a noteworthy sexual dimorphism. This sexual dimorphism has been reported previously for adult specimens (Eigenmann & Eigenmann, 1889; Sabaj, *et al.* 1999; Taphorn, *et al.* 2010, 2013). Our observations on distribution patterns of fleshy tentacles, displayed by adult males, coincide with Sabaj, *et al.* (1999). Furthermore, we found that differences between sexes appear at early life stages, but only related to the amount of naked surface on snout. Juveniles with at least 50.0 mm SL, of the four analyzed species, show the sexually dimorphic difference on the amount of naked surface (Figs. 10, 11). On the other hand, in some cataloged lots of *A. alga*, *A. clementinae* and *A. malacops* there are adult males with small and less-branched dorsal fleshy tentacles, together with males having dorsal tentacles fully developed. According with Sabaj, *et al.* (1999) these differences are related with different reproductive stage or condition, but in some cases no relationship exists. Available adult males of *A. shuar* have small and less-branched dorsal fleshy tentacles. Samples of *A. shuar* where caught in November and December, during the same months as when specimens of the other three species from Ecuador, have large and branched dorsal, fleshy tentacles. Juveniles of *A. shuar* and *A. malacops* are present in November and December, this may indicate is a period of reproduction and parental care. Thus, it is expected that tentacles may be more developed, in these months. But males of *A. shuar* do not show this condition. Finally, when male juveniles are compared, we noticed that *A. malacops* has more numerous and larger fleshy tentacles (Fig. 11).

Thus, small and less-branched dorsal, fleshy tentacles, on adult males, could be a diagnostic character for *A. shuar*, however to confirm this conclusion more adult male samples are required.

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