A new *Corydoras* Lacépède, 1803 (Siluriformes: Callichthyidae) from the rio Araguaia basin, Brazil, with comments about *Corydoras araguaiaensis* Sands, 1990

Luiz Fernando Caserta Tencatt¹ and Marcelo Ribeiro de Britto²

A new species of *Corydoras* is described from the rio Araguaia basin, Goiás, Brazil. The new species can be distinguished from its congeners by presenting the following features: infraorbital 1 with very large ventral laminar expansion; infraorbital 2 contacting compound pterotic; flanks densely covered by irregular black spots; and ventral surface of trunk densely covered by coalescent relatively well-developed platelets. It is also discussed the possibility that *C. araguaiaensis* comprehends a complex of species.

Uma espécie nova de *Corydoras* é descrita da bacia do rio Araguaia, Goiás, Brasil. A espécie nova pode ser distinguida de suas congêneres por apresentar as seguintes características: infraorbital 1 com expansão laminar ventral muito grande; infraorbital 2 em contato com o pterótico composto; flancos densamente cobertos por manchas pretas irregulares e superfície ventral do tronco densamente coberta por plaquetas coalescentes relativamente bem desenvolvidas. Discute-se também a possibilidade de *C. araguaiaensis* compreender um complexo de espécies.

**Keywords:** C65, Corydoradinae, *Corydoras* sp. “Guaraná”, Goiás State, Taxonomy.

**Introduction**

The Callichthyidae armored catfishes are easily diagnosed from other Siluriformes by the presence of two longitudinal series of dermal plates on flanks (Eigenmann & Eigenmann, 1890; Reis, 1998). The family currently comprises more than 200 species, including *Corydoras* Lacépède, 1803, the most species-rich genus of Siluriformes, with more than 170 valid species (Reis, 2003; Eschmeyer, 2015). Since the 1940’s, many efforts to understand the taxonomy and phylogenetic relationships of the species of *Corydoras* have been made (e.g., Gosline, 1940; Nijssen, 1970; Nijssen & Isbrücker, 1980; Britto, 2003; Alexandrou *et al.*, 2011), however, the knowledge of interrelations among *Corydoras* species is still poorly known (Britto *et al.*, 2007).

Currently, only three species of *Corydoras* are recorded from the rio Araguaia basin: *C. araguaiaensis* Sands, 1990, *C. cochui* Myers & Weitzman, 1954, and *C. maculifer* Nijssen & Isbrücker, 1971 (Eschmeyer, 2015). Alexandrou *et al.* (2011) studied the community structure of mimic lineages of *Corydoras* propitiated by ecological and phylogenetic aspects, showing relations and patterns between Müllerian co-mimics of certain regions. In that work, *C. araguaiaensis* is proposed as member of a mimetic group along with *C. maculifer* and an undescribed species coded as C122 (see more details about the “C-number” system and its species in Fuller & Evers, 2005: 280). The most obvious way to recognize each mimetic morphotype is the snout morphology. There are at least three conspicuous types of snouts, the typical long snout pattern, present in the species of the lineage 1, as *C. maculifer*, the straight or intermediate long snout pattern, present in the species of the lineage 8, as *C. cochui*, and the short snout pattern, present in the species of the lineages 4, 5, 6, 7, and 9, as *C. araguaiaensis*.

Generally, the mimetic pairs or groups are composed by one representative of each snout pattern (see Alexandrou *et al.*, 2011: 3, fig. 2). However, since the short snout pattern is present in conspicuously different lineages, it is possible that two or more short-snouted species may also present homoplastic color patterns, as the observed for *Corydoras guapore* Knaack, 1961, from the lineage 4, and *C. caudimaculatus* Rössel, 1961, from the lineage 9, both from

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A new Corydoras from the rio Araguaia basin

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Results

Corydoras eversi, new species

Material and Methods

Measurements were obtained using digital calipers to the nearest tenth of millimeter. Morphometric and meristic data were taken following Reis (1997) with modifications of Tencatt et al. (2013). Morphometrics are reported as percentages of standard length (SL) and head length (HL). Homology of barbels follows Britto & Lima (2003). Some specimens were cleared and stained (c&s) according to the protocol of Taylor & Van Dyke (1985). Osteological terminology was based on Reis (1998), except for the use of parieto-supraoccipital instead of supraoccipital (Arratia & Gayet, 1995), compound pterotic instead of pterotic-supracleithrum (Aquino & Schaefer, 2002), and scapulocoracoid instead of coracoid (Lundberg, 1970). Nomenclature of latero-sensory canals and preopercular pores are according to Schaefer & Aquino (2000) and Schaefer (1988), respectively. The supra-preopercle sensu Huysentruyt & Adriaens (2005) will be treated here as a part of the hyomandibula according to Vera-Alcaraz (2013). Vertebral counts followed Britto et al. (2009).


In the description, numbers between brackets represent the total number of specimens with those counts. Numbers with an asterisk refer to the counts of the holotype. Institutional abbreviations are: Asociación Ictiológica de La Plata (AI), La Plata; Academy of Natural Sciences of Drexel University (ANSP), Philadelphia; Natural History Museum (BMNH), London; Laboratório de Biologia de Peixes da Universidade Estadual Paulista “Júlio de Mesquita Filho” (LBPs), Botucatu; Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul (MCP), Porto Alegre; Museum of Comparative Zoology (MCZ), Harvard University, Cambridge; Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Rio de Janeiro; Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo; Naturhistoriska Riksmuseet (NRM), Stockholm; Coleção Ictiológica do Núcleo de Pesquisas em Limnologia, Ictiologia e Aquicultura da Universidade Estadual de Maringá (NUP), Maringá; Royal Ontario Museum (ROM), Toronto; National Museum of Natural History, Smithsonian Institution (USNM), Washington, D.C. Coleção Zoológica de Referência da Universidade Federal de Mato Grosso do Sul (ZUFMS-PIS), Campo Grande.

Paratypes. MZUSP 117333, 6, 23.4-35.8 mm SL; NUP 17309, 5, 24.8-42.9 mm SL; NUP 17310, 3 c&s, 42.5-45.3 mm SL; ZUFMS-PIS 4062, 5, 32.2-39.2 mm SL, same data as holotype.

Paratypes. MZUSP 117333, 6, 23.4-35.8 mm SL; NUP 17309, 5, 24.8-42.9 mm SL; NUP 17310, 3 c&s, 42.5-45.3 mm SL; ZUFMS-PIS 4062, 5, 32.2-39.2 mm SL, same data as holotype.

Holotype. MNRJ 43195, 44.5 mm SL, Brazil, Goiás, Montes Claros de Goiás, unnamed stream tributary to the rio Araguaia, 15°53′10″S 51°41′34″W, 21 Mar 1998, H.-G. Evers & P.V. da Silva.

Diagnosis. Corydoras eversi can be distinguished from its congeners, with exception of C. aeneus (Gill, 1858), C. britskii (Nijssen & Isbrücker, 1983), C. diffuviatilis Britto & Castro, 2002, C. eques Steinachner, 1876, C. garbei Ihering, 1911, C. melanotaenia, C. multiradiatus, C. rabauti, C. splendens (Castelnau, 1855), and C. zygatus Eigenmann & Allen, 1942, by the presence of infraorbital 1 with very large ventral laminar expansion (vs. poorly-, or moderately-developed ventral expansion); and infraorbital 2 contacting compound pterotic (vs. not contacting). The new species can be distinguished from C. aeneus, C. britskii, C. diffuviatilis, C. eques, C. garbei, C. melanotaenia, C. multiradiatus, C. rabauti, C. splendens, and C. zygatus by presenting flanks densely covered by irregular black spots (vs. background color of flanks orange yellow with dorsolateral body plates entirely or almost entirely blackened in C. aeneus, C. britskii, C. melanotaenia, C. multiradiatus, C. rabauti, C. splendens, and C. zygatus; background color of flanks orange yellow with flanks almost entirely blackened in C. eques; midline of flank with a longitudinal series of large rounded blotches, remaining areas with black spots in C. diffuviatilis and C. garbei); and ventral surface of trunk densely covered by coalescent relatively well-developed platelets (vs. ventral surface of trunk naked; or covered by sparse and relatively small platelets).
Fig. 1. *Corydoras eversi*, holotype, MNRJ 43195, 44.5 mm SL, Brazil, Goiás, Montes Claros de Goiás, unnamed stream tributary to the rio Araguaia, 15°53'10"S 51°41'34"W. Dorsal (top), lateral (middle) and ventral (bottom) views. Photo by Celso Ikedo.
Description. Morphometric data presented in Table 1. Head compressed with convex dorsal profile; triangular in dorsal view. Snout short and rounded. Head profile convex from tip of snout to anterior nares; ascending nearly straight from this point to tip of posterior process of parieto-supraoccipital; region just posterior to eye slightly concave in some specimens. Profile slightly convex along dorsal-fin base. Postdorsal-fin body profile nearly straight to adipose-fin spine; concave from this point to caudal-fin base. Ventral profile of body slightly convex from isthmus to pelvic girdle. Profile nearly straight from pelvic girdle to base of first anal-fin ray; concave until caudal-fin base. Body roughly elliptical in cross section at pectoral girdle, gradually becoming more compressed toward caudal fin.

Eye rounded, located dorso-laterally on head; orbit delimited dorsally by lateral ethmoid, frontal and sphenotic, ventrally by infraorbitals. Anterior and posterior nares close to each other, only separated by flap of skin. Anterior naris tubular. Posterior naris relatively distant to anterodorsal margin of orbit, separated from it by distance equal to twice of naris diameter. Mouth small, subterminal, width nearly equal to bony orbit diameter. Maxillary barbel moderate in size, not reaching anteroventral limit of gill opening. Outer mental barbel slightly larger than maxillary barbel. Inner mental barbel fleshy, with base close to its counterpart. Small rounded papillae covering entire surface of all barbels, upper and lower lips, and isthmus.

Table 1. Morphometric data of holotype and 19 paratypes of Corydoras eversi. SD = standard deviation.

<table>
<thead>
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<th>Measure</th>
<th>Holotype</th>
<th>Low-High</th>
<th>Mean±SD</th>
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<tr>
<td>Standard length (mm)</td>
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<td>23.4-45.3</td>
<td>-</td>
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<td>77.7-87.2</td>
<td>82.7±2.0</td>
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<td>Preadipose distance</td>
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<td>84.9-98.8</td>
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<td>Length of dorsal spine</td>
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<td>Length of pectoral spine</td>
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<td>25.2-32.8</td>
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<tr>
<td>Length of dorsal-fin base</td>
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<td>16.8-20.1</td>
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<td>Dorsal to adipose distance</td>
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<td>Length of maxillary barbel</td>
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Table of Percents of Standard Length

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<th>Measure</th>
<th>Holotype</th>
<th>Low-High</th>
<th>Mean±SD</th>
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<td>Horizontal orbit diameter</td>
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<td>Snout length</td>
<td>35.0</td>
<td>31.5-38.0</td>
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<tr>
<td>Least internarial distance</td>
<td>18.8</td>
<td>14.0-18.8</td>
<td>16.2±1.5</td>
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Mesethmoid short; anterior tip poorly developed, smaller than 50% of bone length (see Britto, 2003: 123, character 1, state 1; fig. 1B); posterior portion relatively narrow, partially exposed and bearing minute odontodes. Nasal slender, curved laterally, with inner margin laminar; mesial border contacting frontal and mesethmoid. Frontal elongated, narrow, with width slightly smaller than half of entire length; anterior projection short, size smaller than nasal length. Frontal fontanel large, oval; posterior tip extension slightly entering anterior margin of parieto-supraoccipital. Parieto-supraoccipital wide, posterior process long and contacting nuchal plate; region of contact between posterior process and nuchal plate covered by thick layer of skin.

Two laminar infraorbitals with minute odontodes; infraorbital 1 large, ventral laminar expansion well developed; anterior portion with well-developed expansion (Fig. 2a); infraorbital 2 small, slender; with posterior laminar expansion well developed; posteroventral margin contacting posterodorsal ridge of hyomandibula, dorsal tip contacting sphenotic and compound pterotic (Fig. 2c). Posteroentral ridge of hyomandibula close to its articulation with opercle oblong; exposed, relatively thick; dorsal ridge of hyomandibula between compound pterotic and opercle exposed; exposed areas bearing small odontodes. Interopercle entirely or almost entirely covered by thick layer of skin, somewhat triangular, anterior projection well-developed. Preopercle relatively thick, elongated, minute odontodes sparse on external surface. Opercle conspicuously elongated dorso-ventrally, width smaller than half of its length; free margin smoothly convex, without serrations and covered by small odontodes. Anteroventral portion of cleithrum and posterolateral portion of scapulocoracoid exposed; minute odontodes sparse on exposed areas. Vertebral count 20 (2), 21 (1); ribs 6 (3), first pair conspicuously large; complex vertebra compact in shape. Neural and haemal spines with expanded in distal tips.

Four branchiostegal rays decreasing in size posteriorly. Hypobranchial 2 somewhat triangular, tip ossified and directed towards anterior portion, posterior margin cartilaginous; ossified portion well developed, about twice size of cartilaginous portion. Five ceratobranchials with expansions increasing posteriorly; ceratobranchial 1 with small process on anterior margin of mesial portion; ceratobranchial 3 notched on postero-lateral margin; ceratobranchial 5 toothed on postero-dorsal surface, 37 to 46 (3) teeth aligned in one row. Four epibranchials with similar size; epibranchial 2 slightly larger than others, with small pointed process on laminar expansion of posterior margin; epibranchial 3 with curved mesially uncinate process on laminar expansion of posterior margin. Two wide pharyngobranchials (3 and 4), pharyngobranchial 3 with irregular laminar expansion on posterior margin. Upper tooth plate oval; 34 to 43 (3) teeth aligned in two rows on postero-ventral surface.
Fig. 2. Lateral view of the head of c&s specimens of (a, c) *Corydoras eversi*, paratype, NUP 17310, 42.5 mm SL, showing the well-developed ventral expansion of the infraorbital 1 and the platelets on the snout (a) and infraorbital 2 in contact with compound pterotic (c); and (b, d) *Corydoras araguaiaensis*, MZUSP 87155, 31.8 mm SL, showing the moderately-developed ventral expansion of the infraorbital 1 (b) and infraorbital 2 not in contact with compound pterotic (d). The dotted lines in (c) and (d) represent the suture between sphenotic and compound pterotic. Abbreviations: io1: infraorbital 1, io2: infraorbital 2, sph: sphenotic, cpt: compound pterotic. Scale bar = 1.0 mm.
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Lateral-line canal entering neurocranium through compound pterotic, splitting into two branches before entering sphenotic: pterotic branch with a single pore; preoperculomandibular branch conspicuously reduced, with a single pore opening close to postotic main canal. Sensory canal continuing through compound pterotic, entering sphenotic as temporal canal, which splits into two branches: one branch giving rise to infraorbital canal, other branch entering frontal through supraorbital canal, both with single pore. Supraorbital canal not branched, running through nasal bone. Epiphyseal pore opening at supraorbital main canal. Nasal canal with three openings, first on posterior edge, second on posterolateral portion and third on anterior edge. Infraorbital canal running through entire second infraorbital, extending to infraorbital 1 and opening into two or three pores. Preoperculomandibular branch giving rise to preoperculo-mandibular canal, which runs through entire preopercle with three openings, leading to pores 3, 4, and 5, respectively.

Dorsal fin triangular, located just posterior to second dorsolateral body plate. Dorsal-fin rays II,7 (1), II,8* (19), posterior margin of dorsal-fin spine with five to 14 very reduced serrations directed towards tip of spine; serrations absent proximally. Nuchal plate moderately developed; exposed, with minute odontodes; spinelet short; spine moderately developed, adpressed distal tip reaching to or slightly surpassing origin of last dorsal-fin branched ray; anterior margin with small odontodes. Pectoral fin triangular, its origin just posterior to gill opening. Pectoral-fin rays I,7 (10), I,8* (10); posterior margin of pectoral spine with 23 to 32 small serrations along its entire length; serrations directed towards tip of spine (Fig. 3). Pelvic fin oblong, located just below first ventrolateral body plate, and at vertical through first branched dorsal-fin ray. Pelvic-fin rays i,5. Adipose fin roughly triangular, separated from base of last dorsal-fin ray by generally seven dorsolateral body plates. Anal fin triangular, located just posterior to 12th ventrolateral body plates, and at vertical through anterior margin of adipose-fin spine. Anal-fin rays ii,5 (6), ii,6* (13). Caudal-fin rays i,7;i (1), i,11,i* (1), i,12,i (18), generally four dorsal and ventral procurrent rays; bilobed, dorsal lobe generally slightly larger than ventral lobe.

Three or four laterosensory canals on trunk; first ossicle tubular, second ossicle laminar, third and fourth lateral-line canals, if present, encased in third and fourth dorsolateral body plates, respectively. Body plates with minute odontodes scattered over exposed area, a conspicuous line of odontodes confined on posterior margins; dorsolateral body plates 21 (2), 22 (9), 23* (9); ventrolateral body plates 18 (1), 19 (8), 20 (10), 21* (1); dorsolateral body plates along dorsal-fin base 5* (6), 6 (14); dorsolateral body plates between adipose- and caudal-fin 6 (10), 7* (9), 8 (1); preadipose platelets 2 (3), 3 (16), 4* (1); small platelets covering base of caudal-fin rays; small platelets disposed dorsally and ventrally between junctions of lateral plates on posterior portion of caudal peduncle. Anterior margin of orbit, above lateral ethmoid, snout, region surrounding ventral margin of preopercle, and upper lip covered with relatively large platelets bearing odontodes (Fig. 2a). Ventral surface of trunk covered by coalescent relatively well-developed platelets (Fig. 4); region between pelvic and anal fins with platelets in some specimens.

**Fig. 3.** Right pectoral spine (11.4 mm long) of *Corydoras eversi*, paratype, NUP 17310, 45.3 mm SL, showing the serrations on posterior margin.

**Fig. 4.** Ventral surface of the trunk of *Corydoras eversi*, paratype, NUP 17310, 44.4 mm SL, showing the relatively large coalescent platelets covering the area between pectoral and pelvic girdles. Scale bar = 1.0 mm.

**Color in alcohol.** Overall color of body in Fig. 1. Ground color of body brownish yellow, with top of head and snout dark brown. Ventral margin of orbit, above infraorbital 1, blackened. Maxillary barbel and anterior portion of outer mental barbel covered by black chromatophores. Dorsal and lateral portion of body, with exception of small region of ventrolateral body plates surrounding pelvic fin, densely covered by irregular black spots; spots arranged longitudinally on flanks, forming irregular stripes. Ventral region of body close to pectoral-fin spine origin with black spots in some specimens. Ground color of fins grayish brown. All fins covered by irregular black spots; pectoral, pelvic, anal, and caudal fins with black spots diffuse or absent in some specimens. Caudal fin generally with scattered spots, not forming transversal black bars; with faded spots arranged in up to six transversal slender black bars in few specimens.

**Color in life.** Very similar to preserved specimens but with ground color of body intense orange; body covered by greenish yellow iridescent coloration (Fig. 5).
Sexual dimorphism. Presence of lanceolate genital papilla in males, which occurs in all Corydoradinae (see Nijssen & Isbrücker, 1980; Britto, 2003). The males of the new species present first and second branched dorsal-fin rays slightly larger than in females. Additionally, the males of *Corydoras eversi* present pointed oblong pelvic fin, while in females the pelvic fin is rounded. In *Corydoras* females, the rounded pelvic fin is generally used to make a ventral pouch to hold the eggs during spawning (H.-G. Evers pers. comm.).

Distribution. *Corydoras eversi* is known from its type locality, an unnamed stream tributary to the rio Araguaia (Fig. 6).

Ecological notes. The specimens examined herein were captured in a clear water stream, with sandy ground and fast flowing. After capture the specimens are light orange. This color remains in aquarium when the water conditions are adequate to its biological aspects. In the type locality of the new species no other congener were observed in syntopy (H.-G. Evers pers. comm.).

Etymology. *Corydoras eversi* is named in honor of Hans-Georg Evers, a dear friend and great enthusiast in the fishkeeping hobby, especially in the breeding of *Corydoras* species. Hans collected the specimens of *C. eversi* that apparently originated all the stock present in the hobby until the present day and also the specimens used herein for the description.
trip has been performed in the region since 1998. Therefore, the current situation of the type locality is unknown and, with the available data, it is not possible to determine if any of the aforementioned potential threats has directly affected the new species. Additionally, it is very possible that the new species may be further spread than the type locality region, potentially occurring in other creeks and streams of the region. Thus, it seems like the most appropriate conservation status according to the International Union for Conservation of Nature (IUCN) categories and criteria (IUCN Standards and Petitions Subcommittee, 2014), is Least Concern (LC).

Remarks. Corydoras eversi is known by exporters and in the fishkeeping hobby as Corydoras sp. “Guaraná” due to the intense and shiny orange pigmentation displayed by live specimens, which is very similar to the Brazilian lemonade. Evers (1998) coded the new species as C65, according to the “C-number” system proposed by Evers (1993).

Discussion

The new species present a color pattern similar to C. albolineatus Knaack, 2004, C. apiaka Espindola, Spencer, Rocha & Britto, 2014, C. araguaiaensis, C. haraldschultzi Knaack, 1962, C. maculifer, C. multimaculatus Steindachner, 1907, C. polystictus Regan, 1912, and C. xinguensis Nijsen, 1972. Corydoras eversi can be clearly diagnosed from C. haraldschultzi and C. maculifer by the presence of short mesethmoid (vs. long) and serrations on posterior margin of pectoral spine directed towards the tip of the spine (vs. directed towards pectoral-spine origin). From C. albolineatus, C. apiaka, C. araguaiaensis and C. polystictus, the new species can be distinguished by the presence of infraorbital 2 in contact with compound pterotic (vs. not in contact (Fig. 2d)). The new species differs from C. multimaculatus and C. xinguensis by the presence of ventral lamellar expansion of infraorbital 1 well developed (vs. moderately developed) and ventral surface of the trunk densely covered by coalescent relatively well developed platelets (vs. covered by sparse relatively small platelets).

Corydoras eversi presents osteological pattern similar to the species from clade IX sensu Britto (2003). The presence of a well-developed ventral laminal expansion in the infraorbital 1 corresponds to the state 3 of character 15 of Britto’s (2003) phylogeny, a synapomorphy of the species located in clade IX. This clade is composed of species previously allocated in Brochis Cope, 1871, in addition to C. aeneus, C. eques, C. rabauti, and C. zygius. Corydoras melanotaenia also appeared correlated with the aforementioned species in the phylogenetic hypothesis conducted by Alexandrou et al. (2011). As presented in the diagnosis, the species mentioned above can be promptly distinguished from C. eversi by their peculiar general color pattern, with uniform background color and dark dorsal region, clearly different from the densely spotted pattern of the new species. Additionally, C. cuppenamensis, C. diffluviatilis, C. garbei, and C. lymnades also present a well-developed ventral laminal expansion in the first infraorbital. The new species can be clearly distinguished from these species by the presence of ventral surface of trunk densely covered by relatively large coalescent platelets (vs. ventral surface of trunk naked; or covered by sparse and relatively small platelets).

The presence of relatively well-developed coalescent platelets in the ventral surface of the trunk of Corydoras eversi (Fig. 4) is an uncommon condition only displayed by few congeners, such as C. araguaiaensis, C. esperanzae, C. evelynae, C. fowleri Böhlke, 1950, C. julii Steindachner, 1906, C. leopards, C. orphnopterus, C. schwartzi, and C. trilineatus Cope, 1872. The new species can be distinguished from C. evelynae, C. orphnopterus, and C. schwartzi by the absence of a concentration of a transversal black stripe (“mask”) across the eye (vs. presence). Corydoras eversi differs from C. julii, C. leopards, and C. trilineatus by the absence of a conspicuous longitudinal black midlateral stripe bordered dorsally and ventrally by an unpigmented area (vs. presence). From C. araguaiaensis, the new species differs by the presence of infraorbital 1 with ventral lamellar expansion well developed (Fig. 2a) (vs. moderately developed (Fig. 2b)) and relatively large platelets bearing odontodes on snout (vs. plates generally absent; when present, plates are scarce and restrict to the anterior margin of orbit, above lateral ethmoid). From C. fowleri, it can be distinguished by having short and rounded snout (vs. long and conspicuously pointed). Finally, C. eversi can be distinguished from C. esperanzae by the presence of black spots on the body (vs. absence).

Despite the great general resemblance between Corydoras eversi and C. araguaiaensis, both species present clearly different morphology, mainly in osteological features, as mentioned above. However, even the similar color pattern presents some conspicuous differences. The spots are smaller and more numerous in the new species (Fig. 1) whereas C. araguaiaensis presents larger and less numerous spots (Fig. 7). The caudal-fin color pattern is diffuse in C. eversi, with faded spots (Fig. 1), forming diffuse conspicuously slender transversal black bars only in few specimens, contrary to C. araguaiaensis which presents conspicuous and thicker transversal black bars on caudal fin (Fig. 7).

Evers (1993) proposed a coding system for the Corydoradinae to avoid the creation of nomina nuda by using trade names. Some potentially new species from the rio Araguaia basin with similar color pattern to Corydoras araguaiaensis were coded in this system, including C. eversi. Additionally, a species from the rio Cristalino basin, Mato Grosso State, very similar to C. araguaiaensis but with larger spots and more intense black pigmentation on anterior portion of dorsal fin, was considered new and coded as C45 (Fig. 8). Initially, C45 appears to be easily
distinguished from *C. araguaiaensis* by its color pattern, but after a deep analysis the general morphology proved to be very similar, with mixed morphotypes, making all the aforementioned potential diagnostic features present some degree of overlap. By this reason, a clear diagnosis between *C. araguaiaensis* and C45 was not possible and they were treated herein as a single taxon. However, since the original description of *C. araguaiaensis* lacks many important information, mainly skeletal, beyond the existence of two different morphotypes, the possibility that *C. araguaiaensis* comprehends a complex of species is reasonable. A complete revisionary study of *C. araguaiaensis*, including a molecular approach, is needed to elucidate its taxonomic status.

**Comparative material examined.** *Corydoras acutus*: Peru: Unknown department. MNRJ 3985, 2, 47.1-54.8 mm SL, Sansho-Caño. *Corydoras adolfoi*: Brazil: Amazonas. LBP 6863, 2, 27.5-31.7 mm SL, igarapé Puranga. LBP 6871, 2, 32.2-32.5 mm SL, unnamed igarapé. *Corydoras aeneus*: Trinidad-Tobago: Unknown department. USNM 1116, lectotype of *Hoplosoma aeneum* Gill, 1858, 38.2 mm SL, Island of Trinidad, West Indies. *Corydoras ambiguus*: Peru: Loreto. MCP 26178, 1, 42.5 mm SL, rio Pacaya; MCP 26209, 10 of 19, 25.0-33.3 mm SL, Caño Yarina. Ucayali. MZUSP 26053, 2, 41.8-47.2 mm SL, Iamiriacocha. *Corydoras approuaguensis*: French Guyana: Cayenne. MZUSP 27895-6, 2, 43.0-46.1 mm SL, paratypes of *Corydoras approuaguensis* Nijssen & Isbrücker, 1983, rio Approuague. *Corydoras araguaiaensis*: Brazil: Mato Grosso. MCP 40230, 2, 35.3-44.2 mm SL, rio Paciguara;

Fig. 7. *Corydoras araguaiaensis*, MZUSP 87155, 45.8 mm SL, showing the general color pattern of the species in lateral view. Photo by Celso Ikedo.

Fig. 8. Uncatalogued aquarium specimen of *Corydoras araguaiaensis* attributed to C45, showing the general color pattern of the species in lateral view. Photo by Hans-Georg Evers.
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References


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