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A new species of *Corydoras* (Siluriformes: Callichthyidae) from the rio Madre de Dios basin, Peruvian Amazon, with comments on *Corydoras aeneus* identity

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A new species of *Corydoras* is described from tributaries to the rio Araza, an affluent of the rio Inambari, itself a tributary to the rio Madre de Dios, rio Madeira basin in the Peruvian Amazon. The new species can be distinguished from its congeners by the following features: (I) absence of contact between the posterior process of the parieto-supraoccipital and the nuchal plate, (II) a single, large conspicuous dark brown or black blotch on anterodorsal portion of flank; blotch somewhat rounded to roughly diamond shaped, and (III) absence of dark blotches on fins. General comments on the identity of *Corydoras aeneus* are also provided.

Keywords: Corydoradinae, *Corydoras* sp. CW16, Osteology, Rio Madeira basin, Taxonomy.

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Uma espécie nova de *Corydoras* é descrita de tributários do rio Araza, um afluente do rio Inambari, por sua vez um tributário do rio Madre de Dios, bacia do rio Madeira na Amazônia peruana. A espécie nova pode ser distinguida de suas congêneres pelas seguintes características: (I) ausência de contato entre o processo posterior do parieto-supraoccipital e a placa nucal, (II) uma única e conspícua mancha marrom escura a preta na porção anterodorsal do flanco; mancha algo arredondada a aproximadamente em forma de diamante, e (III) ausência de manchas escuras nas nadadeiras. Comentários gerais sobre a identidade de *Corydoras aeneus* são também fornecidos.

Palavras-chave: Bacia do rio Madeira, Corydoradinae, *Corydoras* sp. CW16, Osteologia, Taxonomia.

INTRODUCTION

The Callichthyidae armored catfishes can be promptly distinguished from the remaining Siluriformes by having two longitudinal series of dermal plates on the flanks (Reis, 1998, 2003). The family currently harbors more than 220 valid species, from which about 180 are included in *Corydoras* Lacépède, 1803 (Fricke *et al*., 2023), which makes it the most species-rich genus of the family and also of Siluriformes (Tencatt *et al*., 2022a). Although a series of efforts have been made to elucidate the taxonomy (*e.g*., Eigenmann, Eigenmann, 1890; Ellis, 1913; Gosline, 1940; Nijssen, 1970; Nijssen, Isbrücker, 1967, 1980a, 1983, 1986) and phylogenetic relationships (*e.g*., Britto, 2003; Alexandrou *et al*., 2011) of *Corydoras*, large knowledge gaps in these fields still remain (Britto *et al*., 2007; Tencatt, Ohara, 2016a).

In spite of *Corydoras* being widely distributed within cis-Andean South America, more than the half of its representatives occur in the Amazon basin (Britto, 2003; Tencatt, Ohara, 2016b). The rio Madeira basin, one of the most iconic tributary of the rio Amazonas basin, holds the world's richest fish fauna (Torrente-Vilara *et al*., 2013; Jézéquel *et al*., 2020), currently harboring 45 species of *Corydoras*, which represents about one quarter of the total species of the genus (Ohara *et al*., 2016; Tencatt, Evers, 2016; Tencatt, Ohara, 2016a,b; Tencatt *et al*., 2021). As widely known, the Corydoradinae are extremely appreciated in the aquarium hobby, which led to the capture and discovery of many putative new species within the trade (see Tencatt, Evers, 2016; Tencatt *et al*., 2022a). Considering the extensive creation of trade names generated by the high demand of this group, the "C-number" code-system was created in 1993, which was later replaced by the "CW-number" coding in 2006, in order to prevent the creation of *nomina nuda* through the use of commercial names (Evers, 1993; and see *Corydoras* World website).

One of the coded species recorded for the rio Madeira basin is CW16, a species with very peculiar general color and morphological patterns, both essentially shared with *Corydoras aeneus* (Gill, 1858) and its relatives, which compose the Corydoradinae lineage 7 *sensu* Alexandrou *et al.* (2011). The analysis of material from the rio Araza basin, a bigger affluent of the rio Inambari, itself a tributary to the rio Madre de Dios, rio

Madeira basin in Peru revealed the presence of specimens fitting *Corydoras* sp. CW16 morphological and color patterns, and allowed its confirmation as an undescribed species, which is formally described herein.

MATERIAL AND METHODS

Measurements were obtained using digital calipers to the nearest tenth of millimeter. Morphometric and meristic data were taken following Tencatt *et al.* (2022b) and Reis (1997), respectively. Morphometrics are reported as proportions of standard length (SL) or head length (HL). Terminology of barbels follows Britto, Lima (2003). For the osteological analysis, 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), pterotic-extrascapular instead of pterotic-supracleithrum (Slobodian, Pastana, 2018), and scapulocoracoid instead of coracoid (Lundberg, 1970).

Additionally, the ischiac process of the basipterygium is further divided into a dorsal and a ventral process following Huysentruyt, Adriaens (2005). Nomenclature of the laterosensory canals and preopercular pores are according to Schaefer, Aquino (2000) and Schaefer (1988), respectively. The supra-preopercle *sensu* Huysentruyt, Adriaens (2005) was treated here as a part of the hyomandibula according to Vera-Alcaraz (2013). To determine the development degree of the anterior laminar expansion of infraorbital 1 in relation to the nasal capsule, the specimen was positioned to maintain the largest diameter of the nasal capsule horizontally. The width of frontal bone was obtained at the same point as the least interorbital width. Vertebral counts include only free centra, with the compound caudal centrum (preural 1+ ural 1) counted as a single element. The last two dorsal-fin rays were counted as distinct elements. Pharyngeal teeth were counted in both sides of the branchial arches. Terminology regarding initial development follows Nakatani *et al.* (2001); the size of specimens in initial development is exceptionally expressed in total length (TL).

In the description, numbers in parentheses represent the total number of specimens with those counts. Numbers with an asterisk refer to the counts of the holotype. Comparative data of *Corydoras gladysae* Calviño & Alonso, 2010, *C. latus* Pearson, 1924, *C. nanus* Nijssen & Isbrücker, 1967, and *C. petracinii* Calviño & Alonso, 2010 were obtained from their original descriptions and/or high-resolution photographs of type specimens available from Morris *et al.* (2006). Institutional abbreviations follow Sabaj (2020), except for CITL, Coleção Ictiológica de Três Lagoas, Três Lagoas, Mato Grosso do Sul, Brazil. This study was based on museum specimens, and no collecting permit was necessary. The conservation status of the new species was suggested using the categories and criteria of the International Union for Conservation of Nature guidelines (IUCN Standards and Petitions Subcommittee, 2022). The Extent of Occurrence was estimated through the software GeoCAT (Geospatial Conservation Assessment Tool; http://geocat.kew.org).

RESULTS

Corydoras maclurei, new species

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(Figs. 1–9; Tab. 1)

Holotype. MUSM 70671, 37.0 mm SL, Peru, Cusco Region, Quispicanchi Province, Camanti District, small stream tributary to the rio Araza, a bigger affluent of the rio Inambari, itself a tributary to the rio Madre de Dios, rio Madeira basin, 13°16'18"S 70°46'33"W, 23 Sep 2016, H.-G. Evers, L. Peck & J. Christian.

Paratypes. CITL 430, 10 of 13, 21.7–41.1 mm SL, 3 c&s of 13, 38.2–47.8 mm SL; CPUFMT 7890, 3, 36.7–38.1 mm SL; MNRJ 53756, 4, 33.8–35.1 mm SL; MZUSP 127620, 3, 35.0–40.9 mm SL; NUP 24254, 3, 34.6–40.3 mm SL, all collected with the holotype.

Diagnosis. *Corydoras maclurei* can be distinguished from its congeners, except for *C. difluviatilis* Britto & Castro, 2002, *C. flaveolus* Ihering, 1911, *C. gladysae*, *C. gracilis* Nijssen & Isbrücker, 1976, *C. hastatus* Eigenmann & Eigenmann, 1888, *C. hephaestus* Ohara, Tencatt & Britto, 2016, *C. latus*, *C. melanotaenia* Regan, 1912, *C. micracanthus* Regan, 1912, *C. nanus*, *C. petracinii*, *C pygmaeus* Knaack, 1966, and *C. undulatus* Regan, 1912, by the absence of contact between the posterior process of the parieto-supraoccipital and the nuchal plate (*vs.* bones in contact). The new species can be distinguished from *C. difluviatilis*, *C. flaveolus*, *C. gladysae*, *C. gracilis*, *C. hastatus*, *C. hephaestus*, *C. latus*, *C. melanotaenia*, *C. micracanthus*, *C. nanus*, *C. petracinii*, *C pygmaeus*, and *C. undulatus* by having just a single, large conspicuous dark brown or black blotch on anterodorsal portion of flank; blotch somewhat rounded to roughly diamond shaped (*vs.* flank covered by numerous dark markings, variably with a distinct longitudinal series of blotches along flank midline in *C. difluviatilis*; covered by numerous dark markings, with a distinct longitudinal series of blotches along flank midline in *C. flaveolus*, *C. gladysae*, *C. micracanthus*, and *C. petracinii*; dorsal portion of flank with a long, arched, continuous dark stripe, which runs parallel to body dorsal profile, extending at least from corner of mouth region to posterior portion of caudal peduncle, dorsally and ventrally bordered by scarcely spotted regions, which often form longitudinal brownish yellow longitudinal bands; ventrolateral body plates with small dark brown or black blotches, variably aligned in longitudinal rows in *C. gracilis*; midline of flank with a slender dark longitudinal stripe, which may be absent or diffuse in some individuals; ventral margin of flank, just posterior to pelvic fin, with a small spot or dark longitudinal stripe, which generally becomes gradually diffuse posteriorly; stripe/spot variably diffuse; posterior portion of caudal peduncle with large, conspicuous dark blotch; midline longitudinal stripe, when present, variably fused to peduncular blotch in *C. hastatus*; a single, extremely large dark patch, typically almost entirely covering flank in *C. hephaestus*; ventral portion of dorsolateral body plates and dorsal portion of ventrolateral body plates with a longitudinal row of brownish yellow small roundish areas, more evident

FIGURE 1 | *Corydoras maclurei*, holotype, MUSM 70671, 37.0 mm SL, Camanti District, Quispicanchi Province, Cusco Region, Peru, small stream tributary to the rio Araza, a bigger affluent of the rio Inambari, itself a tributary to the rio Madre de Dios, rio Madeira basin.

on flank anterior half; remaining areas of dorsolateral body plates with conspicuous concentration of dark brown or black chromatophores, more evident on flank anterior half; dorsal half of ventrolateral body plates, except for small brownish yellow roundish areas, with conspicuous concentration of dark brown or black chromatophores in *C. latus*; wide, longitudinal dark stripe almost entirely covering dorsal and middle portion of flank in *C. melanotaenia*; dorsal portion of flank with a long, continuous, regular, longitudinal dark brown or black stripe, which runs in parallel to body dorsal profile,

extending at least from dorsal-fin base anterior portion to caudal peduncle posterior portion; dorsally and ventrally bordered by scarcely spotted regions, which often form longitudinal brownish yellow longitudinal bands; ventral portion of dorsolateral body plates and dorsal portion of ventrolateral body plates with a series of longitudinally aligned dark brown or black spots, which merge at dorsal-fin region and form a stripe, that can range from narrow to broad; ventrolateral body plates with dark brown or black blotches, generally longitudinally aligned in *C. nanus*; dorsal half of dorsolateral body plates densely covered by dark brown or black chromatophores; midline of flank with a longitudinal dark stripe, extending from corner of mouth region to posterior portion of caudal peduncle, dorsally and ventrally bordered by pale regions; ventral margin of flank, just posterior to pelvic fin, with a dark longitudinal stripe; posterior portion of caudal peduncle with moderate-sized, horizontally ellipsoid to roughly diamond shaped conspicuous dark blotch; midline longitudinal stripe fused to peduncular blotch; anterior portion of flank on region between midline and ventral stripes variably with longitudinally aligned dark spots in *C. pygmaeus*; with relatively large dark brown or black markings, forming a marbled or somewhat anastomosed pattern at least on anterior portion of flank; blotches variably forming up to three irregular and/or intermittent longitudinal bands; first band, if present, along dorsolateral body plates, second, if present, along midline of flank, and third, if present, along ventrolateral body plates; third band variably more regular and continuous in *C. undulatus*). *Corydoras maclurei* can be additionally distinguished from *C. difluviatilis*, *C. flaveolus*, *C. gladysae*, *C. gracilis*, *C. hastatus*, *C. micracanthus*, *C. nanus*, *C. petracinii*, and *C. pygmaeus* by the absence of dark blotches on fins (*vs.* at least one of the fins with conspicuous dark blotches).

Description. Morphometric data in Tab. 1. Head laterally compressed with convex dorsal profile, roughly triangular in dorsal view. Snout typically moderately developed, rounded; variably short and/or smoothly pointed. Head profile convex from tip of snout to anterior nares, ascending nearly straight or slightly convex from this point to dorsal-fin origin; region of anterior portion of parieto-supraoccipital and/or region between posterior process of parieto-supraoccipital and nuchal variably slightly concave. Profile slightly convex along dorsal-fin base. Postdorsal-fin body profile slightly concave to nearly straight to adipose-fin spine, concave from this point to caudal-fin base. Ventral profile of body nearly straight or slightly convex from isthmus to pectoral girdle, and slightly convex from this point until pelvic girdle. Profile nearly straight or slightly convex from pelvic girdle to base of first anal-fin ray, ascending concave until caudal-fin base. Body roughly elliptical in cross section at pectoral girdle, gradually becoming more compressed toward caudal fin.

Eye rounded, located dorsolaterally on head. Orbit delimited anteriorly by lateral ethmoid, anterodorsally by frontal, posterodorsally by sphenotic, posteroventrally by infraorbital 2, and anteroventrally by infraorbital 1 (Fig. 2). Anterior and posterior nares close to each other, only separated by flap of skin. Anterior naris tubular. Posterior naris close to anterodorsal margin of orbit, separated from it by distance similar to naris diameter. Mouth small, subterminal, width similar to bony orbit diameter. Maxillary barbel moderate in size, almost reaching or reaching anteroventral limit of gill opening. Outer mental barbel slightly longer than maxillary barbel. Inner mental barbel fleshy, base of each counterpart slightly separated from each other. Small rounded papillae covering entire surface of all barbels, upper and lower lips, snout and isthmus.

TABLE 1 | Morphometric data of the holotype and 19 paratypes of *Corydoras maclurei*. SD = Standard deviation.

	Holotype	Low–High	Mean±SD
Standard length (mm)	37.0	22.8–41.1	36.2±3.9
Percentage of standard length			
Depth of body	35.4	30.7–35.4	33.4±1.4
Predorsal distance	52.2	47.3–54.6	51.1±2.0
Prepelvic distance	48.4	43.3–51.4	46.9±2.0
Preanal distance	83.8	77.9–84.7	81.5±1.8
Preadipose distance	90.5	81.8–91.7	88.3±2.2
Length of dorsal spine	14.6	12.3–17.9	15.2±1.6
Length of pectoral spine	24.9	18.0–26.9	22.9±2.5
Length of adipose–fin spine	10.3	7.1–10.4	9.2±1.1
Depth of caudal peduncle	15.4	15.1–17.3	15.9±0.5
Length of dorsal–fin base	18.1	11.5–18.1	16.2±1.4
Dorsal to adipose distance	28.1	25.9–31.9	28.4±1.7
Maximum cleithral width	26.2	24.2–29.3	26.1±1.3
Head length	42.7	32.0–52.6	40.6±3.7
Length of maxillary barbel	15.7	5.7–15.7	11.1±3.0
Percentage of head length			
Head depth	72.2	58.3–100.0	77.1±7.6
Least interorbital distance	33.5	26.0–46.4	34.0±3.8
Horizontal orbit diameter	17.1	13.0–20.5	17.8±2.0
Snout length	36.7	28.6–46.4	35.9±3.4
Least internarial distance	16.5	13.0–19.6	16.7±1.7

Mesethmoid short to moderate in size, with anterior tip poorly developed, slightly smaller than 50% of bone length (see Britto, 2003:123, character 1, state 1; fig. 1B); posterior portion wide, partially exposed and bearing small odontodes. Nasal capsule delimited posteriorly and dorsally by frontal, anteriorly by mesethmoid, and ventrally and posteriorly by lateral ethmoid. Nasal relatively wide, laterally curved, inner margin with moderately-developed laminar expansion contacting only frontal; close but not directly in contact with mesethmoid; outer margin with poorly-developed laminar expansion (Figs. 2A, 3). Lateral ethmoid relatively slender in lateral view, slightly expanded anteriorly, with anterodorsal expansion relatively distant from nasal, and anterior margin contacting posterior portion of mesethmoid (Fig. 2B). Frontal elongated, narrow, width less than half of entire length; anterior projection short, size smaller than nasal length (Fig. 3). Frontal fontanel large, slender, and somewhat ellipsoid; posterior tip extension slightly surpassing anterior margin of parieto-supraoccipital (Fig. 3). Sphenotic somewhat trapezoid, contacting parieto-supraoccipital dorsally, pterotic-extrascapular posteriorly, second infraorbital posteroventrally and frontal anteriorly (Fig. 2A). Pterotic-extrascapular roughly pipe-shaped, with posteriormost portion contacting first lateral-line ossicle, posteroventral margin contacting cleithrum, and anteroventral margin contacting opercle and infraorbital 2; posterior expansion almost

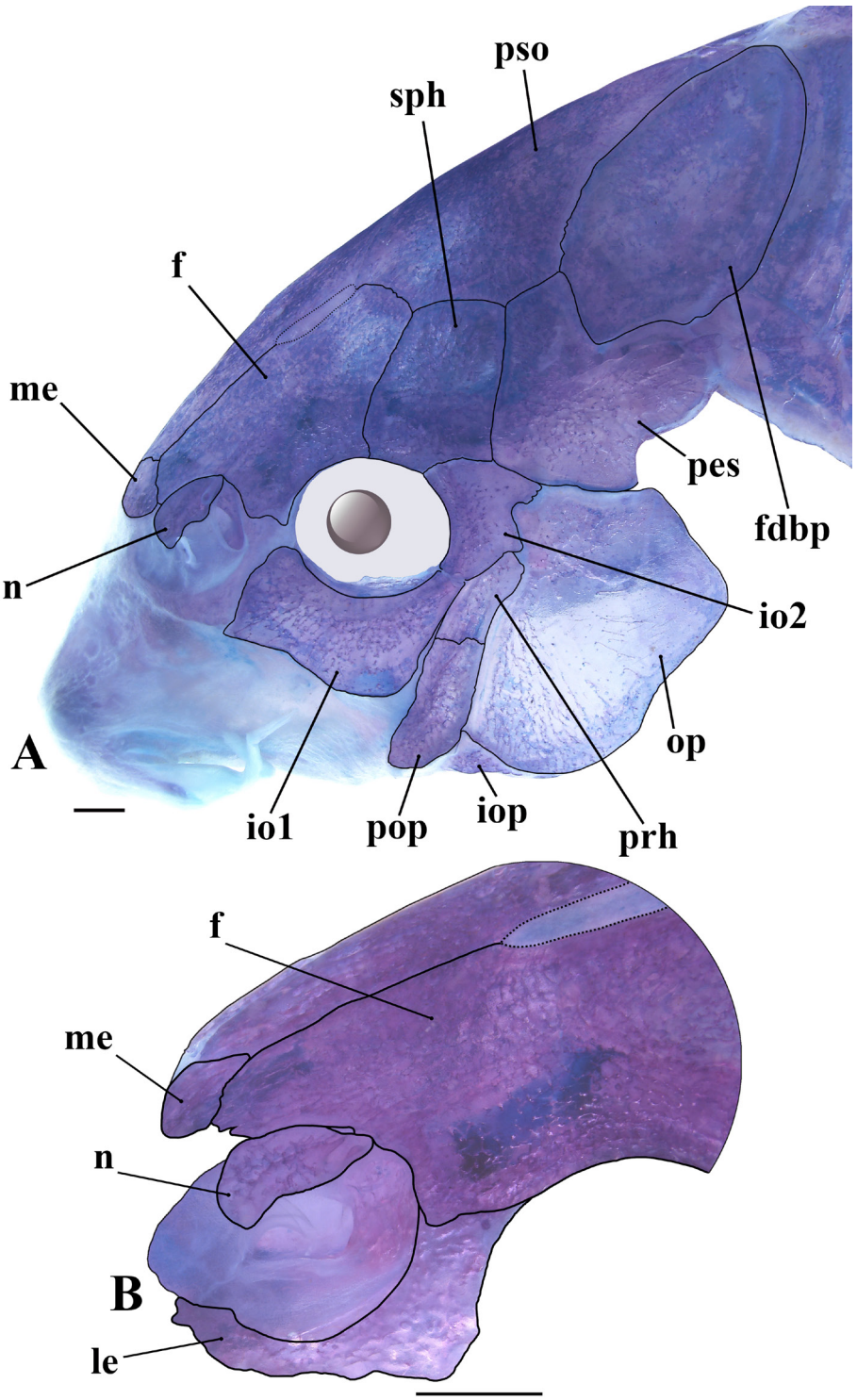

FIGURE 2 | Head osteological pattern in c&s paratypes of *Corydoras maclurei*, showing (**A**) general morphology in lateral view (CITL 430, 47.8 mm SL), with (**B**) the detail of the lateral ethmoid morphology (CITL 430, 38.2 mm SL). Abbreviations: f: frontal, fdbp: first dorsolateral body plate, io1–2: infraorbital 1 and 2, iop: interopercle, le: lateral ethmoid, n: nasal, me: mesethmoid, op: opercle, pes: pterotic-extrascapular, pop: preopercle, prh: posterodorsal ridge of hyomandibula, pso: parieto-supraoccipital, sph: sphenotic. Scale bar = 1 mm.

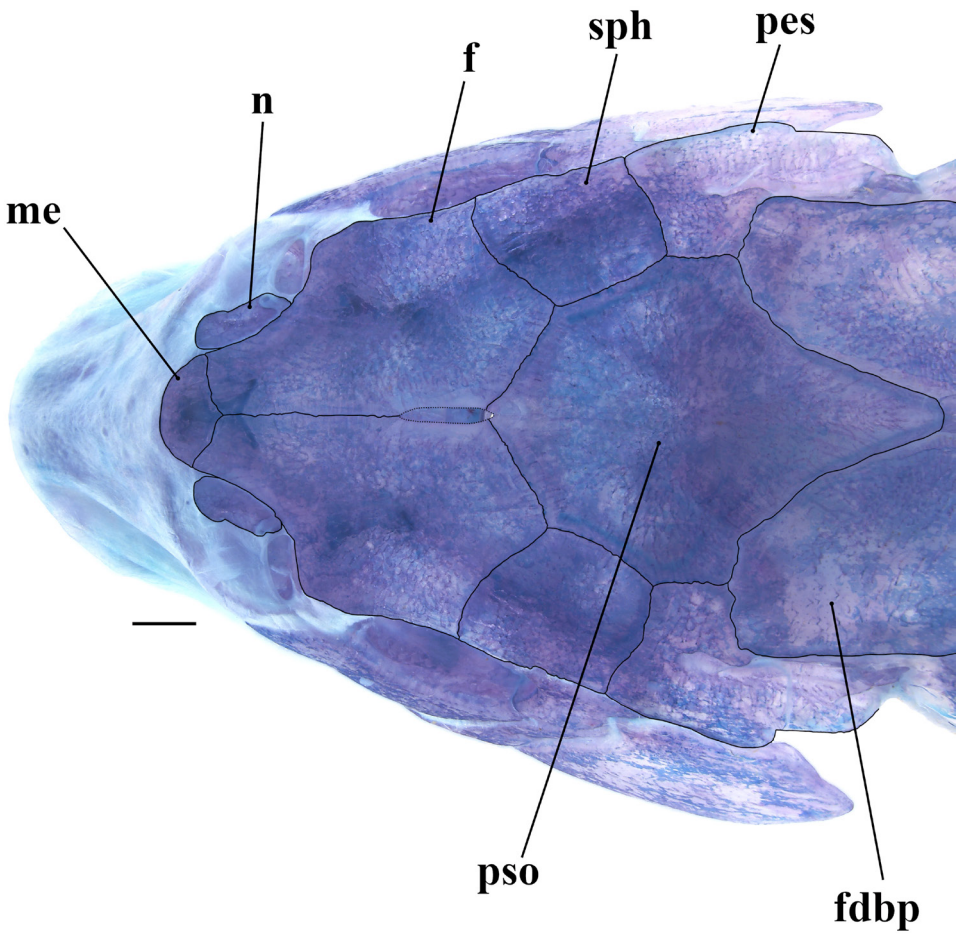

FIGURE 3 | Dorsal view of the head of a c&s paratype of *Corydoras maclurei*, CITL 430, 47.8 mm SL. Abbreviations: f: frontal, fdbp: first dorsolateral body plate, n: nasal, me: mesethmoid, pes: pterotic-extrascapular, pso: parieto-supraoccipital, sph: sphenotic. Scale bar = 1 mm.

entirely covering lateral opening of swimbladder capsule, leaving slender area on its dorsal margin covered only by thick layer of skin. Parieto-supraoccipital wide, posterior process long, not contacting nuchal plate; nearly contacting in some specimens; region between posterior process and nuchal plate covered by thick layer of skin; variably with small- to moderate-sized platelets (Fig. 4).

Two laminar infraorbitals with minute odontodes. Infraorbital 1 large, ventral laminar expansion well developed (Figs. 2A, 5A); some specimens with moderately-developed expansion; anterior portion with well-developed laminar expansion, surpassing middle of nasal capsule; inner laminar expansion moderately developed (Fig. 5B). Infraorbital 2 small, relatively wide, with posterior laminar expansion strongly well developed (Figs. 2A, 5A); posteroventral margin contacting posterodorsal ridge of hyomandibula, posterior margin contacting opercle, and posterodorsal edge contacting sphenotic and pterotic-extrascapular (Fig. 2A); posterior margin with roughly triangular process on its middle portion; process smoothly curved downwards (Fig. 5A), with tip just above dorsal edge of posterodorsal ridge of hyomandibula (Fig. 2A); inner laminar expansion

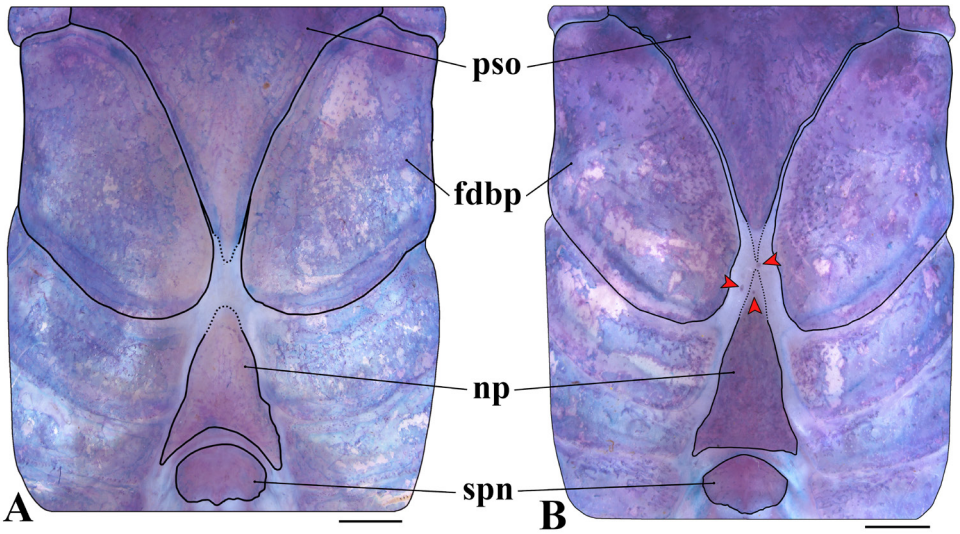

FIGURE 4 | Predorsal region of trunk in c&s paratypes of *Corydoras maclurei*, showing the variation in the distance between the posterior process of the parieto-supraoccipital and the nuchal plate, which ranges from (**A**) clearly separated from each other (CITL 430, 45.6 mm SL) to (**B**) separated but nearly contacting (CITL 430, 38.2 mm SL). Abbreviations: fdbp: first dorsolateral body plate, np: nuchal plate, pso: parieto-supraoccipital, spn: spinelet. Dotted lines indicate the limits of the tip of the posterior process of the parieto-supraoccipital and anterior tip of the nuchal plate. Red arrows indicate the small platelets between parieto-supraoccipital and nuchal plate. Scale bar = 1 mm.

moderately developed (Fig. 5B). Posterodorsal ridge of hyomandibula close to its articulation with opercle slender, exposed, and bearing small odontodes (Figs. 2A, 5C). Dorsal ridge of hyomandibula between pterotic-extrascapular and opercle typically covered by posterodorsal edge of infraorbital 2; variably covered by thick layer of skin. Interopercle partially covered by thick layer of skin, with posterior portion exposed and bearing odontodes; subtriangular, anterior projection ranging from moderately to well developed (Figs. 2A, 5C). Preopercle elongated, relatively slender; minute odontodes on external surface (Figs. 2A, 5C). Opercle dorsoventrally elongated; relatively compact in shape, with width larger than half of its entire length; free margin convex, without serrations and covered by small odontodes (Figs. 2A, 5C).

Four branchiostegal rays decreasing in size posteriorly. Hypobranchial 1 deep; hypobranchial 2 somewhat triangular, tip ossified and directed towards anterior portion, posterior margin cartilaginous; ossified portion well developed, its size about twice cartilaginous portion. Five ceratobranchials with expansions increasing posteriorly; ceratobranchial 1 with strongly reduced to small process on anterior margin of mesial portion; ceratobranchial 3 with continuous laminar expansion on postero-lateral margin; laminar expansion variably notched; ceratobranchial 5 toothed on posterodorsal surface, with 32 to 39 (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 mesially-curved uncinate process on laminar expansion of posterior margin; uncinate process variably roughly triangular. Two wide pharyngobranchials (3 and 4); pharyngobranchial 3 with relatively large

triangular laminar expansion on posterior margin; laminar expansion variably notched. Upper tooth plate roughly oval, 41 to 49 (3) teeth aligned in two rows on posteroventral surface; rows closely aligned.

Lateral-line canal reaching cephalic laterosensory system through pterotic–extrascapular, branching twice before reaching sphenotic: pterotic branch, with single pore, preoperculomandibular branch conspicuously reduced, with single pore opening at postotic main canal; postotic main canal widens just posterior to pterotic branch. Sensory canal continuing through pterotic–extrascapular, reaching sphenotic as temporal canal, which splits into two branches: one branch giving rise to infraorbital canal, other branch connecting to frontal through supraorbital canal, both with single pore. Supraorbital canal branched, running through nasal bone. Epiphyseal branch conspicuously reduced; pore opening close to supraorbital main canal, directed towards frontal fontanel. Nasal canal with three openings, first on posterior edge, second on posterolateral portion and typically fused with first pore, and third on anterior edge. Infraorbital canal running through entire infraorbital 2, extending to infraorbital 1

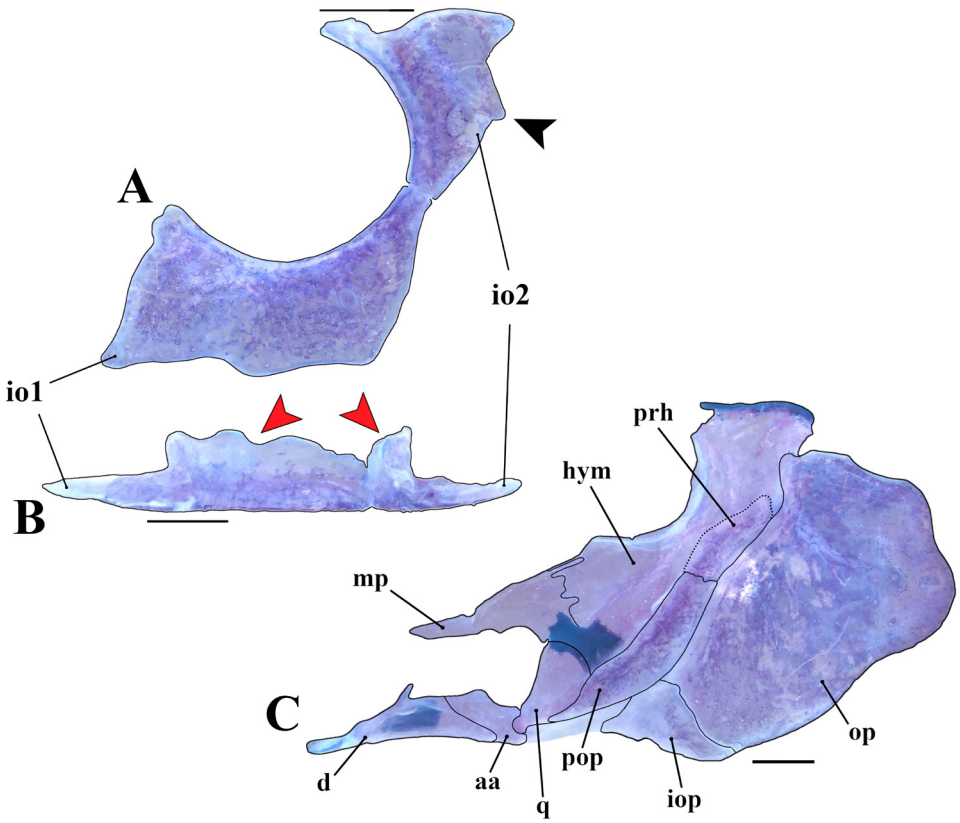

FIGURE 5 | Infraorbital series in lateral (**A**) and dorsal (**B**) views, and (**C**) suspensorium plus operculum in lateral view of a c&s paratype of *Corydoras maclurei* (CITL 430, 38.2 mm SL). Abbreviations: aa: angulo-articular, d: dentary, hym: hyomandibula, io1–2: infraorbital 1 and 2, iop: interopercle, mp: metapterygoid, op: opercle, pop: preopercle, prh: posterodorsal ridge of hyomandibula, q: quadrate. Black arrow indicates the roughly triangular process on middle portion of posterior margin of infraorbital 2, and red arrows indicate inner laminar expansion of both infraorbitals. Scale bar = 1 mm.

and typically opening into two 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 subtriangular, located just posterior to second or third dorsolateral body plate. Dorsal-fin rays II,5 (1), II,7 (2), II,8* (17), posterior margin of dorsal-fin spine with seven to 14 strongly reduced to poorly-developed serrations; most serrations directed towards tip of spine; some serrations variably perpendicularly directed; serrations absent close to origin of spine; small odontodes on anterior and lateral surfaces of spine (Fig. 6A). Nuchal plate moderately developed, almost entirely exposed, with minute odontodes. Spinelet short; spine ranging from moderately developed, with adpressed distal tip surpassing middle portion of dorsal-fin base, to well developed, with adpressed distal tip slightly surpassing posterior origin of dorsal-fin base. Pectoral fin roughly triangular, its origin just posterior to gill opening. Pectoral-fin I,5 (1), I,8 (15), I,9* (4), posterior margin of pectoral spine with 20 to 27 poorly- to moderately-developed serrations along almost its entire length, absent close to origin of spine; most serrations directed towards tip of spine; some serrations perpendicularly directed and/or bifid; variably with some trifid and/or fused serrations; small odontodes on anterior, dorsal and ventral surfaces of spine (Fig. 6B). Anteroventral portion of cleithrum exposed; posterolateral portion of scapulocoracoid moderately developed, exposed, with anterior portion slightly expanded anteriorly, not in contact with anteroventral portion of cleithrum; exposed areas bearing small odontodes. Opening of axillary gland *sensu* Kiehl *et al.* (2006) located just posterior to pectoral-fin spine base.

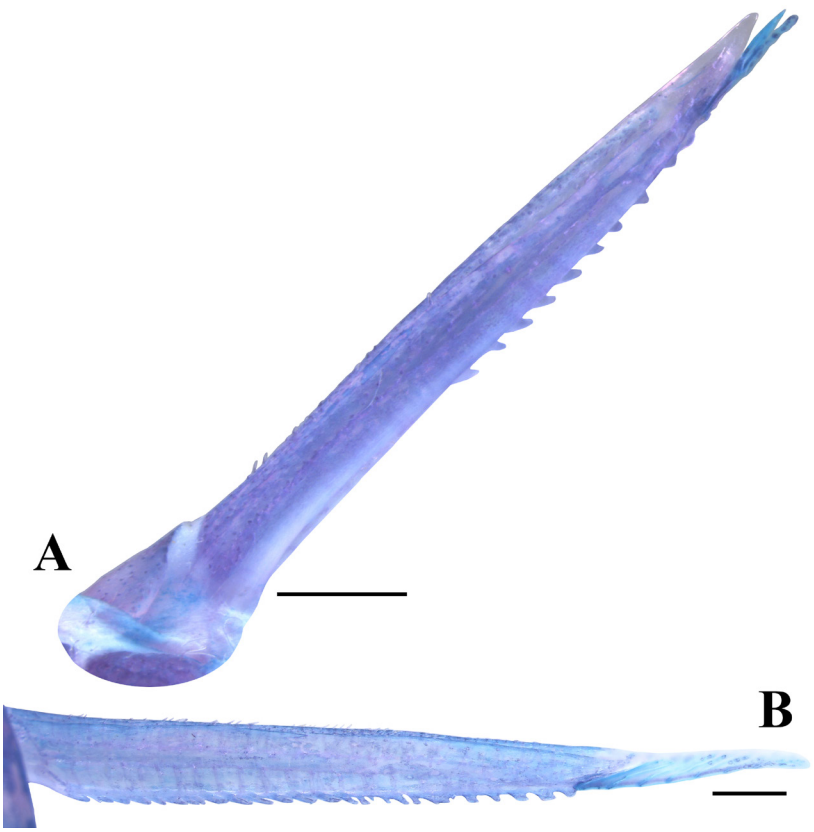

FIGURE 6 | Lateral view of (**A**) the dorsal-fin spine (38.2 mm SL) and dorsal view of (**B**) the right pectoral-fin spine (47.8 mm SL), showing the serration patterns in c&s paratypes of *Corydoras maclurei* (CITL 430). Scale bars = 1 mm.

Pelvic fin oblong, located just below second or third ventrolateral body plate, and at vertical through first or second branched dorsal-fin ray. Pelvic-fin rays i,4,i (2), i,5* (18). Anterior internal process of basipterygium well developed and ranging from slightly to conspicuously laterally expanded, with obliquely placed dorsal lamina, converging mesially towards anterior edge of process; anterior internal process conspicuously narrow in specimen CITL 430, 45.6 mm SL, apparently due to malformation; anterior external process laminar, moderately developed, ranging from not to slightly expanded posteriorly; dorsal ischiac process well developed, with anterior laminar expansion poorly to moderately expanded anteriorly, and posterior laminar expansion conspicuously expanded posteriorly; anterior and posterior laminar expansions of ischiac process roughly triangular; ventral ischiac process clearly smaller than dorsal process, roughly triangular, slightly bent anteriorly (Figs. 7A, B). Adipose fin roughly triangular, separated from base of last dorsal-fin ray by eight or nine dorsolateral body plates. Anal fin subtriangular, located just posterior to 12th or 13th ventrolateral body plates, and at vertical through region of preadipose platelets. Anal-fin rays ii,4,i (1), ii,5,i (2), ii,6 (16), ii,7* (1). Caudal fin bilobed, with dorsal and ventral lobes similar in size or dorsal lobe slightly larger than ventral lobe. Caudal-fin rays i,7,i (1), i,12,i* (18), i,13,i (1), with generally five dorsal and ventral procurrent rays; small cartilage between upper principal and procurrent caudal-fin rays (presumably opisthural cartilage (Monod, 1968; McDowall, 1999)) (Fig. 7C).

Two or three laterosensory canals on trunk; first ossicle tubular, second ossicle laminar, both bearing small odontodes; third, if present, encased in third dorsolateral body plate. Body plates with minute odontodes scattered over exposed area, with conspicuous line of odontodes confined to posterior margins. Dorsolateral body plates 23 (1), 24 (4), 25* (15); first dorsolateral body plate typically not contacting its counterpart dorsally; nearly contacting in some specimens, counterparts externally separated by conspicuously narrow portion of thick skin layer; first and second dorsolateral body plates contacting their counterparts in single specimen (CITL 430, 34.8 mm SL), apparently due to malformation. Ventrolateral body plates 21 (5), 22* (14), 23 (1). Dorsolateral body plates along dorsal-fin base 5 (2), 6* (18). Dorsolateral body plates between adipose- and caudal-fin 6 (3), 7* (14), 8 (3). Preadipose platelets 4 (4), 5* (11), 6 (4), 7 (1). Ventral surface of trunk between posteroventral margin of cleithrum and pelvic-fin origin laterally delimited only by first ventrolateral body plate or by first and second ventrolateral body plates; ventral portion of first ventrolateral body plate slightly expanded anteriorly. 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 region of junction between frontal and lateral ethmoid, region just anterior to nasal bone, and region below infraorbital 1 variably with small-sized, sparse platelets bearing odontodes. Ventral surface of trunk with scarce small-sized irregular platelets bearing odontodes, more concentrated anteriorly; absence of platelets in some specimens.

Vertebral count 23 (3); ribs 6 (1), 7 (1); first pair conspicuously large, its middle portion closely connected to first ventrolateral body plate; its tip not connected to anterior external process of basipterygium; nearly contacting in some specimens. Parapophysis of complex vertebra moderately or well developed.

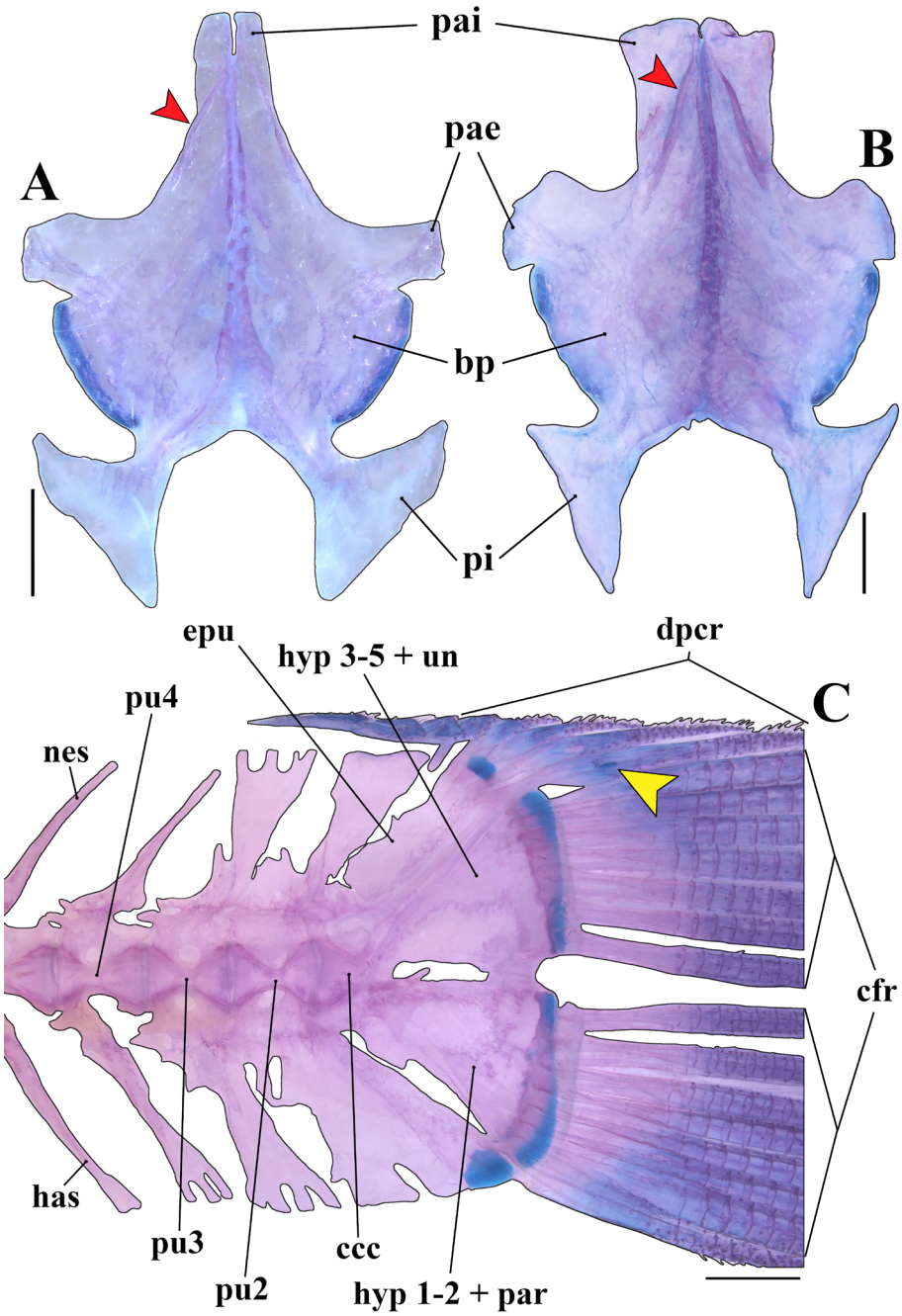

FIGURE 7 | Pelvic girdle and caudal skeleton in c&s paratypes of *Corydoras maclurei* (CITL 430). **A.** Anterior internal process of basipterygium slightly laterally expanded, and anterior external process not expanded posteriorly (38.2 mm SL); **B.** Anterior internal process of basipterygium conspicuously laterally expanded, and anterior external process slightly expanded posteriorly (47.8 mm SL); **C**. General morphology of caudal skeleton, showing the small cartilage (yellow arrow) between upper principal and procurrent caudal-fin rays (38.2 mm SL). Abbreviations: bp: basipterygium, ccc: compound caudal centrum, cfr: caudal-fin principal rays, dpcr: dorsal procurrent rays, epu: epural, has: haemal spine, hyp 1–5: hypurals 1 to 5, nes: neural spine, pae: anterior external process, pai: anterior internal process, par: parhypural, pi: dorsal ischiac process, pu 2–4: preural centra 2 to 4, un: uroneural. Red arrows in **A** and **B** indicate the dorsal lamina on anterior internal process of basipterygium. Scale bars = 1 mm.

Color in alcohol. Overall color of body in Fig. 1. Ground color of body pale- to brownish yellow or beige, with top of head dark brown. Dorsal and lateral surface of head, and lateral surface of cleithrum covered by dark brown or black chromatophores, not forming blotches; posterior margin of cleithrum with conspicuous concentration of dark brown or black chromatophores, forming thin dark line, which is more evident on dorsal half of cleithrum. Border of pores of laterosensory canals typically with conspicuous concentration of dark brown or black chromatophores. Anterodorsal portion of flank, just below anterior portion of dorsal-fin base, with large, conspicuous dark brown or black blotch, ranging from somewhat rounded to roughly diamond shaped. Remaining portions of dorso- and ventrolateral body plates covered by dark brown or black chromatophores, not forming blotches; ventral portion of ventrolateral body plates, especially on region around pelvic-fin origin, devoid of or with sparse chromatophores. Posterior margin of body plates with conspicuous concentration of dark brown or black chromatophores, forming thin dark lines, typically more evident on dorsal portion of dorsolateral body plates, azygous precaudal and preadipose plates, and on dorsolateral body plates below dorsal-fin base. Dorsal and adipose fins entirely covered by numerous brown or black chromatophores, not forming blotches. Pectoral, pelvic, anal and caudal fins with conspicuous concentrations of brown or black chromatophores on rays, not forming blotches; membranes typically devoid of or with sparse chromatophores.

Color in life. Similar to color pattern of preserved specimens, but with ground color of body typically brownish orange (Fig. 8A); variably greyish orange or reddish orange (Figs. 9A, B). Dorsal fin reddish orange in some specimens (Fig. 9C). Body covered by greenish yellow iridescent coloration, with anterior portion of first dorsolateral body plate typically with orange or yellow bright patch. (Figs. 9D, E).

Sexual dimorphism. As well-documented in Corydoradinae (see Britto, 2003; Nijssen, Isbrücker, 1980b; Spadella *et al*., 2017), male specimens of *C. maclurei* present a genital papilla, which is lanceolate or somewhat tubular in shape.

Geographical distribution. *Corydoras maclurei* is currently known from tributaries to the rio Araza, an affluent of the rio Inambari, itself a tributary to the rio Madre de Dios, rio Madeira basin, Camanti District, Quispicanchi Province, Cusco Region, Peru (Fig. 10).

Ecological notes. *Corydoras maclurei* was captured in clearwater creeks and smaller rivers tributaries to the rio Madre de Dios drainage around the town of Quince Mil (Fig. 8B). The habitats are mostly very shallow, raising their water levels only after stronger rainfalls, which return to normal levels after a few hours. The water temperatures measured by HGE lay between 22.3 to 24.9°C during the daytime at different times of the year (June, September). During the night, the air temperatures fall significantly and so do the water temperatures. On June 17th, 2015 at 8 pm the water temperature at the type locality was 18.5 °C. The conductivity lies between 53 µS/cm with a pH at 6.0 (June 17, 2015) and 29 µS/cm with a pH of 7.0 (September 22, 2016). In these sites, the crystal-clear water flows over a bed of pebbles, rocks and boulders, with smaller

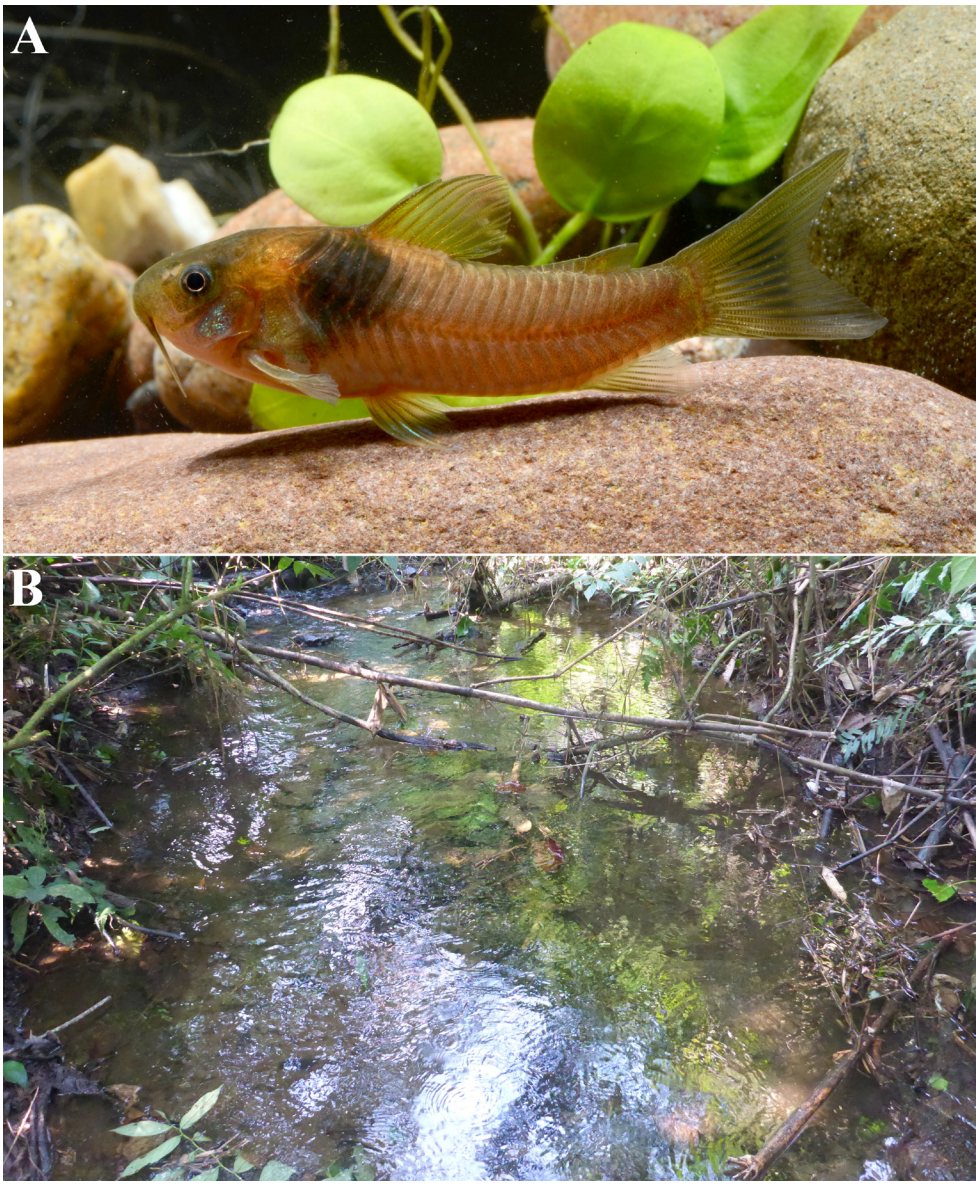

FIGURE 8 | Uncatalogued aquarium specimen of *Corydoras maclurei* (**A**) showing its typical color pattern in life (lateral view), collected in its type-locality (**B**), a small stream tributary to the rio Araza, rio Madre de Dios basin, rio Madeira basin in Peru.

areas of fine sand. Especially in the very small and narrow creeks, there is also a dense leaf litter covering the ground. During the day, single specimens of *C. maclurei* could be observed resting between the rocks and quickly hiding under the leaves in case of danger. Night collecting efforts could not be performed as the dense vegetation and rough terrain make collecting fish extremely difficult at this time of day. Even after extensive collecting activities, for several hours, only a few specimens of *C. maclurei* were captured, suggesting that the new species is naturally not very abundant in the aforementioned biotopes, while the syntopic *Corydoras weitzmani* Nijssen, 1971 can be observed in pairs or small groups foraging along the river edges.

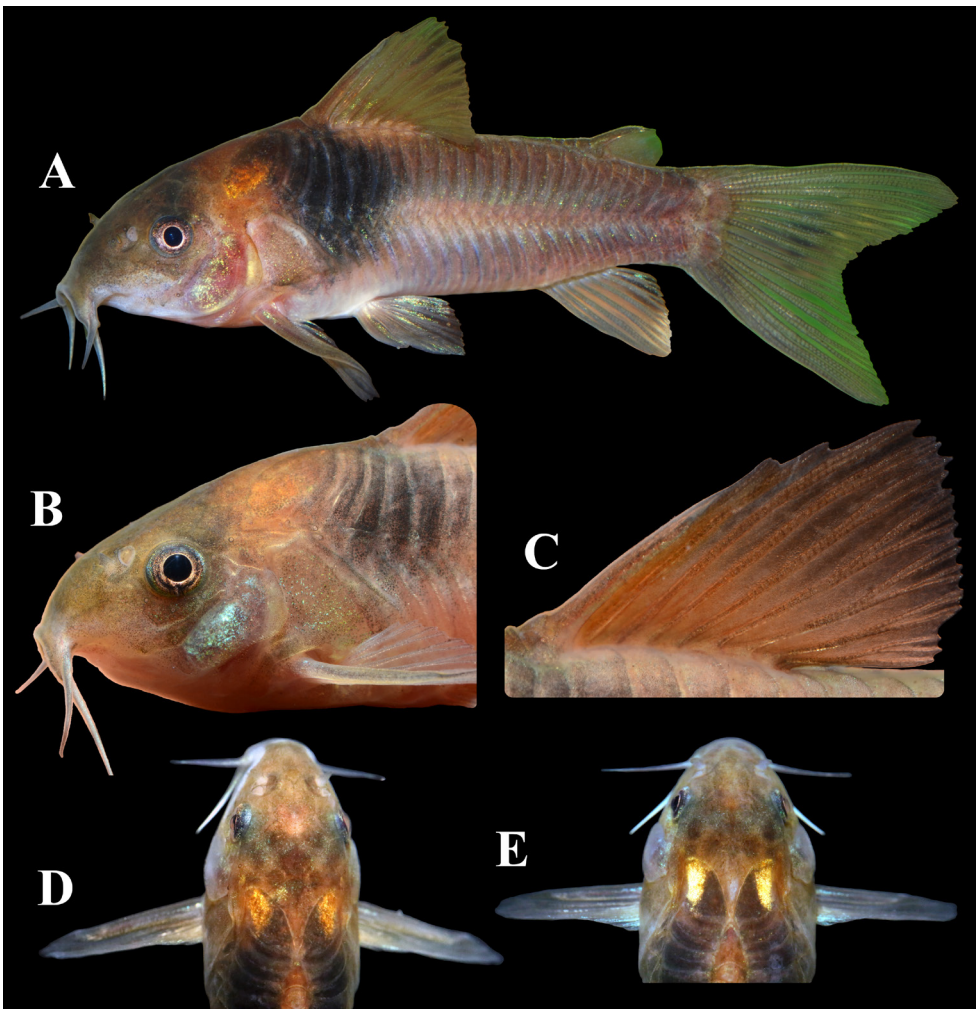

FIGURE 9 | Uncatalogued aquarium specimens of *Corydoras maclurei* (not measured) showing variations of the color pattern in life: specimens can variably present greyish orange (**A**) or reddish orange (**B**) ground color of body. In **C**, the detail of a conspicuously reddish orange dorsal fin. Anterior portion of first dorsolateral body plate typically with orange (**D**) or yellow (**E**) bright patch. Photographs (**D**) and (**E**) by Ian Fuller.

Etymology. *Corydoras maclurei* is named in honor of Robert "Rob" McLure, dear friend and renowned Corydoradinae breeder. Rob has been the main English-language reviewer of the first author's publications, in addition to providing valuable information and live photos of several species of Corydoradinae. A genitive noun.

Conservation status. Even with the extensive survey efforts throughout the region, *C. maclurei* was exclusively found in some of the small streams draining to the rio Araza around Quince Mil, a small Peruvian community. With the currently available data, the Extent of Occurrence of *C. maclurei* was roughly estimated to be 5 km^2. All habitats in the vicinity of Quince Mil are vulnerable due to human activities, especially illegal goldmining and road building (see Lujan *et al*., 2013), increasing problems in the whole rio Inambari basin (Hans -G. Evers, 2016, pers. obs.). Additionally, the new species

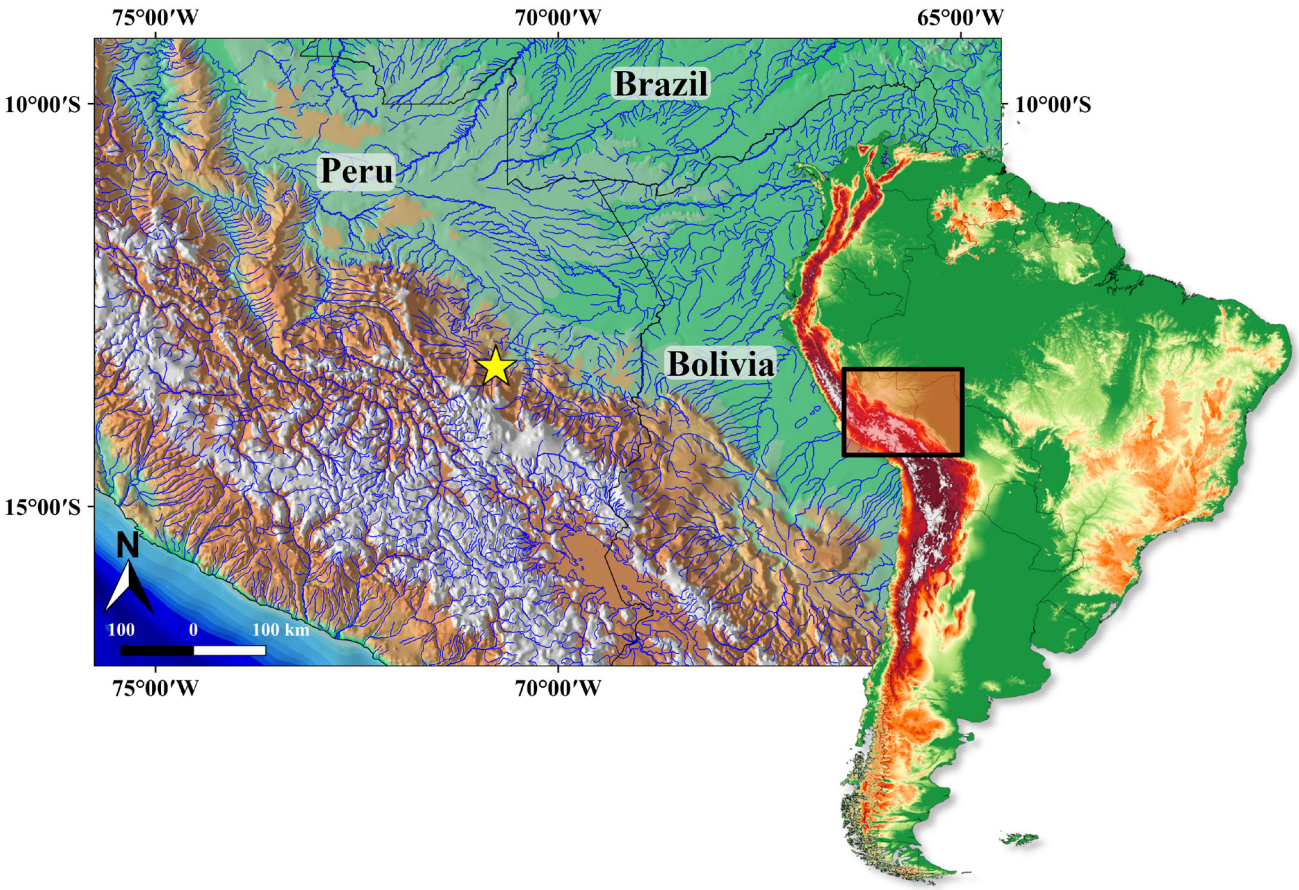

FIGURE 10 | Map showing the geographical distribution of *Corydoras maclurei* (yellow star). The symbol represents more than one locality.

is desirable in the aquarium hobby, making some fishermen from the Cusco area to perform regular collecting efforts in the Quince Mil area, where they even use rotenone to collect both *C. maclurei* and *C. weitzmani*, mostly at night (Hans -G. Evers, 2022, pers. obs.). Considering that the new species seems to occur in low abundance, it is possible that its populations are being overfished, which is aggravated by its restricted geographic distribution and the collecting method applied by the local fishermen (*i.e.*, rotenone). Therefore, according to the International Union for Conservation of Nature (IUCN) categories and criteria (IUCN Standards and Petitions Subcommittee, 2022), *Corydoras maclurei* can be classified as Near Threatened (NT), approximating the Critically Endangered (CR) category by criterion B1b(iii).

Remarks. *Corydoras maclurei* has been bred under aquarium conditions by one of the authors (HGE), who documented its ontogenetic development from 8 to 28 mm LT, showing general changes in external morphology and color pattern (Fig. 11). Specimen with 8.0 mm TL in yolk-sac stage (Fig. 11A); head slightly depressed, with short and conspicuously rounded snout; barbels moderate in size and with well-developed papillae, which will gradually become less developed along individual's growth; eye large; median fin fold present, extending from postcephalic region to genital opening;

fin rays indistinct, with pectoral fin fold oblong; body plates absent; body covered by dark-brown or black chromatophores; body covered by greenish yellow iridescent coloration.

Specimen with 12.0 mm TL in final flexion stage (Fig. 11B); dorsal- and caudal-fin rays distinct, but fins not detached from fin fold; pectoral-fin rays distinct; anal, pelvic and adipose fins not distinct; caudal-fin asymmetrical, dorsal portion distinctly longer than ventral; hypural plates visible by transparency; conspicuous, oblique dark stripe from anteroventral margin of orbit to upper lip lateral area. Specimen with 16.0 mm TL in early post-flexion stage (Fig. 11C) displays more pronounced snout; reduction of median fold, with dorsal, anal and caudal fins partially detached; pectoral fin slightly more developed; pelvic- and anal-fin rays distinct; adipose fin indistinct; beginning of formation of lateral body plates; slightly more pigmented body, with diffuse dark patches. Juvenile specimens with 21.0 and 28.0 mm TL (Figs. 11D, E), respectively, are strongly similar to each other, except for except for gradual development of lateral body plates and fin spines, and conspicuous dark patch on anterodorsal portion of flank in larger specimen; snout slightly more pronounced; median fold absorbed, with distinct adipose, caudal and anal fins.

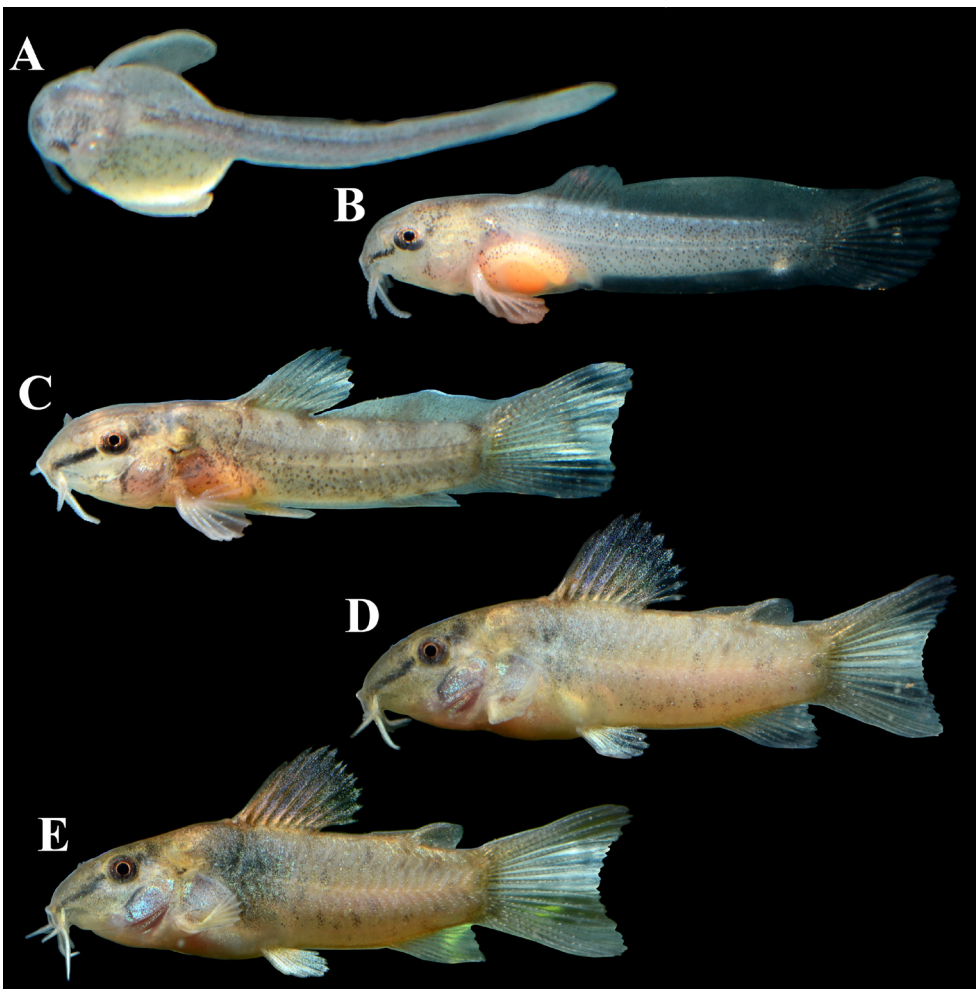

FIGURE 11 | Ontogenetic series of *Corydoras maclurei* (bred under aquarium conditions) showing general changes in external morphology and color pattern in specimens with 8.0 mm TL (**A**), 12.0 mm TL (**B**), 16.0 mm TL (**C**), 21.0 mm TL (**D**), and 28.0 mm TL (**E**).

DISCUSSION

Corydoras maclurei presents both general morphological and color patterns typical to the species within lineage 7 *sensu* Alexandrou *et al.* (2011), which harbors *C. aeneus*, *C. eques* Steindachner, 1876, *C. melanotaenia*, *C. rabauti* LaMonte, 1941, and *C. zygatus* Eigenmann & Allen, 1942. The species from this group can be distinguished from remaining congeners by having the following features: (I) mesethmoid ranging from short to moderate in size (*vs.* conspicuously short, large or extremely large in size); (II) posterior margin of pectoral-fin spine with all or nearly all serrations directed towards the tip of the spine or perpendicularly directed (*vs.* mostly directed towards the origin of spine, variably with some serrations perpendicularly directed or directed towards tip of spine); (III) posterior laminar expansion of infraorbital 2 conspicuously well developed, in contact with pterotic-extrascapular (*vs.* ranging from strongly reduced to relatively well developed, typically not in contact with pterotic-extrascapular); and (IV) ground color of body in shades of orange or yellow, with only a single, large dark patch on flanks; all fins devoid of dark spots (*vs.* ground color of body pale yellow, brownish yellow or greyish yellow, typically with small dark spots at least in some part of the body). In addition to the aforementioned species, such color and morphological patterns can also be observed in *C. hephaestus*, suggesting that this species possibly composes this group.

Considering overall color and morphological patterns, the most similar congeners to *C. maclurei* are *C. hephaestus* and *C. melanotaenia* (Fig. 12). The new species can be distinguished from both species by details in color pattern (see Diagnosis section). Additionally, *C. maclurei* can be distinguished from *C. hephaestus* by having comparatively smaller ventral laminar expansion of infraorbital 1 (*vs.* larger ventral laminar expansion, see Ohara *et al.* (2016:544, fig. 3)), posterior margin of dorsal-fin spine with seven to 14 serrations (*vs.* posterior margin of dorsal spine smooth, lacking serrations), and posterior margin of pectoral-fin spine with more serrations (20 to 27 *vs.* nine to 14). Although additional differences between *C. maclurei* and *C. melanotaenia* are more subtle, the new species can be distinguished from *C. melanotaenia* by having a comparatively more rounded snout (*vs.* more pointed), and ground color of body in life in shades of orange (*vs.* ground color of body, especially fins, intensely yellow).

Regarding the remaining lineage 7 species, *C. maclurei* can be promptly distinguished from *C. eques*, *C. rabauti*, and *C. zygatus* by having a single, large conspicuous dark brown or black blotch on anterodorsal portion of flank, with remaining areas of the flanks clearly paler; blotch somewhat rounded to roughly diamond shaped (*vs.* extremely large dark patch almost entirely covering flanks in *C. eques*; dark stripe running in parallel to the dorsal profile of the body, extending from the region just anterior to dorsal fin to caudal-fin base). The new species can be further distinguished from the three aforementioned congeners by having posterolateral portion of scapulocoracoid moderately developed, poorly expanded medially, with counterparts conspicuously distant in ventral surface of trunk (*vs.* posterolateral portion of scapulocoracoid strongly well developed, conspicuously expanded medially, with counterparts contacting in ventral surface of trunk).

The last valid species within lineage 7 is *C. aeneus* (Fig. 13), which surely presents one of the most complex taxonomic problems among the Corydoradinae. Although this species was described from Trinidad Island, West Indies, several populations throughout South

FIGURE 12 | Uncatalogued specimens (not measured) of (**A**) *Corydoras hephaestus* and (**B**) *C. melanotaenia* photographed alive in lateral view, showing general color and morphological patterns. Photograph (**A**) by Fernando Dagosta and (**B**) by Robert McLure.

America are still attributed to *C. aeneus*. However, both morphological (LFCT, pers. obs.) and molecular (see Alexandrou *et al*., 2011: suppl. fig. 2) data suggest that *C. aeneus* represents a species complex. Currently, four nominal species are considered synonyms of *C. aeneus*, namely *C. macrosteus* Regan, 1912, described from the rio Piracicaba, upper rio Paraná basin, *C. microps* Eigenmann & Kennedy, 1903, from a partially dried laguna near rio Branco, Mato Grosso (which quite possibly refers to a tributary of the upper rio Paraguay basin), *C. schultzei* Holly, 1940, said to be from the rio Amazonas basin, and *C. venezuelanus* Ihering, 1911, from the rio Cabriales, rio Pao basin.

The phylogenetic hypothesis of Alexandrou *et al.* (2011) suggests that at least three of the four synonyms may be valid (the exception being *C. microps*, as no specimen from the rio Paraguay basin was included in the analysis), and also supports the presence of some undescribed species. Through the analysis of the type specimens of *C. aeneus* (USNM 1116, USNM 92819, and USNM 205649; Fig. 13) it was possible to observe an uncommon feature within Corydoradinae: posterior margin of pectoral-fin spine with all or nearly all serrations perpendicularly directed, which is only shared with *C. armatus* (Günther, 1868), *C. osteocarus* Böhlke, 1951, and *C. paleatus* (Jenyns, 1842) (LFCT, pers. obs.). Interestingly, this peculiar feature is not found in all populations attributed to *C. aeneus*. Additionally, the relatively large maximum size of the type specimens (about 50.0 mm SL), conspicuously well-developed laminar expansions of both infraorbital 1

and 2, and a relatively well-developed pectoral spine are also useful to differ the typical *C. aeneus* from some populations attributed to it.

Although preliminary analyzes seem promising for elucidating the taxonomic status of *C. aeneus*, a solid resolution of its identity can only be accomplished through an extensive taxonomic revision. In any case, even considering the morphological variation in populations attributed to *C. aeneus*, the absence of contact between posterior process of the parieto-supraoccipital and nuchal plate plus serration pattern of pectoral spine are useful to distinguish the new species from *C. aeneus*. Nevertheless, it is important to point out that one of the paralectotypes (USNM 92819; Fig. 13C), presents a conspicuous malformation on predorsal region (also affecting the dorsal fin), which clearly caused the absence of contact between the posterior process of the parieto-supraoccipital and the nuchal plate in this specimen.

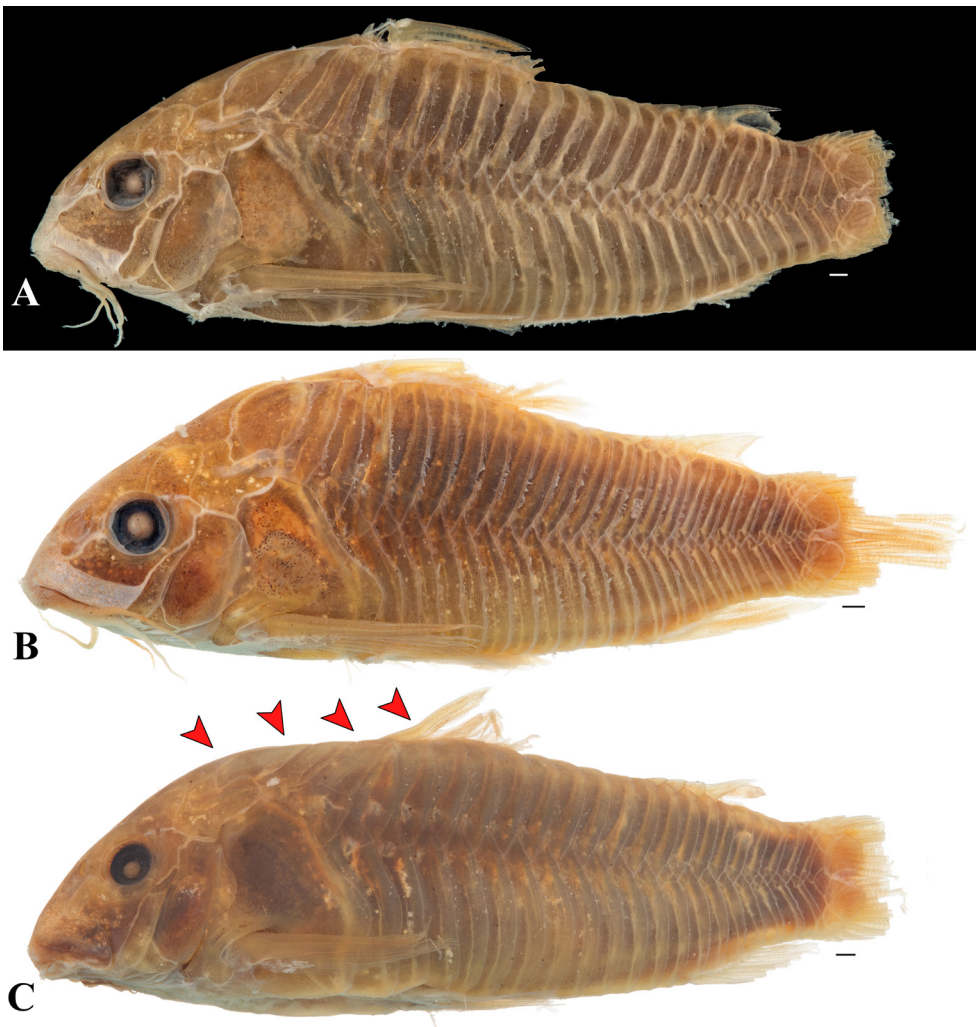

FIGURE 13 | Type specimens of *Corydoras aeneus*, showing the lectotype (**A**, USNM 1116) and paralectotypes (**B**, **C**, USNM 205649 and USNM 92819, respectively) of *Hoplosoma aeneum*. Red arrows in **C** indicates the area affected by a malformation on predorsal region of body. Photographs by Sandra Raredon. Scale bar = 1 mm.

Comparative material examined. Comparative material examined. *Corydoras acutus*: ANSP 113928, 1, 43.0 mm SL; MNRJ 3985, 2, 47.1–54.8 mm SL; USNM 305324, 10, 13.6–40.8 mm SL. *Corydoras adolfoi* Burgess, 1982: MZUSP 26641, holotype, 32.5 mm SL. *Corydoras aeneus*: USNM 1116, lectotype of *Hoplosoma aeneum* Gill, 1858, 38.2 mm SL; USNM 92819, 1, 49.5 mm SL, paralectotype; USNM 205649, 3, 32.7–44.9 mm SL, paralectotypes. *Corydoras amapaensis* Nijssen, 1972: USNM 205865, 1, 46.0 mm SL, paratype. *Corydoras ambiacus* Cope, 1872: ANSP 8291, holotype 40.4 mm SL; MZUSP 26053, 2, 41.8–47.2 mm SL. *Corydoras amphibelus* Cope, 1872: ANSP 8290, holotype, 26.4 mm SL. *Corydoras approuaguensis* Nijssen & Isbrücker, 1983: MZUSP 27895-6, 2, 43.0–46.1 mm SL, paratypes. *Corydoras araguaiaensis* Sands, 1990: MZUSP 87155, 33 4, 24.9–46.7 mm SL, 2 c&s, 27.6–31.8 mm SL. *Corydoras arcuatus* Elwin, 1938: BMNH 1939.3.3.1, holotype, 43.3 mm SL. *Corydoras areio* Knaack, 2000: ZUFMS 1314, 15, 34.4–41.9 mm SL, 2 c&s, 38.1–38.7 mm SL. *Corydoras armatus*: BMNH 1867.6.13.51, lectotype of *Callichthys armatus* Günther, 1868, 42.1 mm SL. *Corydoras atropersonatus* Weitzman & Nijssen, 1970: USNM 204359, holotype, 37.1 mm SL. *Corydoras aurofrenatus*: NUP 16191, 33, 20.1–53.8 mm SL, 2 c&s, 38.2–41.6 mm SL. *Corydoras benattii* Espíndola, Tencatt, Pupo, Villa-Verde & Britto, 2018: MZUSP 121671, holotype, 25.4 mm SL. *Corydoras bethanae* Bentley, Grant & Tencatt, 2021: MUSM 69403, holotype , 51.2 mm SL. *Corydoras bifasciatus* Nijssen, 1972: MZUSP 38976, 16, 23.6–30.0 mm SL, paratypes. *Corydoras blochi* Nijssen, 1971: MZUSP 8580, 3, 31.0–42.6 mm SL, paratypes. *Corydoras boehlkei* Nijssen & Isbrücker, 1982: ANSP 148097, holotype, 23.6 mm SL. *Corydoras bondi*: ROM 66202, 134, 7, 33.8–39.9 mm SL, 3 c&s, 36.7–38.6 mm SL. *Corydoras brevirostris*: LBP 3080, 10, 23.8–27.7 mm SL, 3 c&s, 25.8–27.9 mm SL. *Corydoras britskii*: ZUFMS-PIS 862, 12, 72.0–78.0 mm SL. *Corydoras brittoi* Tencatt & Ohara, 2016: MNRJ 43316, holotype, 38.1 mm SL. *Corydoras burgessi* Axelrod, 1987: USNM 288461, 2, 43.7–44.8 mm SL, paratypes. *Corydoras carlae*: NUP 711, 1, 47.9 mm SL; NUP 4425, 1 c&s, 45.0 mm SL. *Corydoras condiscipulus* Nijssen & Isbrücker, 1980: MZUSP 38957, 7, 34.1–40.3 mm SL, paratypes. *Corydoras coppenamensis* Nijssen, 1970: USNM 202129, 5, 33.0–35.8 mm SL, paratypes. *Corydoras coriatae* Burgess, 1997: USNM 343866, 2, 53.2–57.1 mm SL, paratypes. *Corydoras crimmeni* Grant, 1997: MZUSP 52490, holotype, 36.1 mm SL. *Corydoras davidsandsi* Black, 1987: MZUSP 110066, 40 4, 36.0–41.9 mm SL, 2 c&s specimens, 40.9–42.1 mm SL. *Corydoras desana* Lima & Sazima, 2017: ANSP 200804, 2, 29.5–43.4 mm SL, paratypes. *Corydoras difluviatilis*: MZUSP 75268, holotype, 39.8 mm SL. *Corydoras diphyes*: ANSP 169756, 2, 40.7–43.1 mm SL. *Corydoras ehrhardti*: NUP 11255, 15, 36.5–46.8 mm SL. *Corydoras elegans* Steindachner, 1876: USNM 216716, 10, 36.3–43.3 mm SL, paralectotypes. *Corydoras ephippifer*: MZUSP 31605, 2, 44.9–49.1 mm SL. *Corydoras eques*: MCZ 8204, 4 of 12, 37.6–44.4 mm SL, paratypes. *Corydoras eversi* Tencatt & Britto, 2016: MNRJ 43195, holotype, 44.5 mm SL. *Corydoras filamentosus* Nijssen & Isbrücker, 1983: USNM 225536, holotype, 30.2 mm SL. *Corydoras flaveolus*: MZUSP 424, holotype, 33.4 mm SL. *Corydoras fowleri* Böhlke, 1950: LBP 12462, 9, 44.3–59.9 mm SL, 1 c&s, 50.4 mm SL. *Corydoras fuller*: MUSM 69317, holotype, 55.1 mm SL. *Corydoras garbei* Ihering, 1911: MNRJ 18089, 14, 19.2–25.3 mm SL, 2 c&s, 25.9–27.4 mm SL. *Corydoras geoffroy* Lacepède, 1803: USNM 204222, 2, 54.5–55.4 mm SL, paratypes of *Corydoras octocirrus* Nijssen, 1970. *Corydoras gossei* Nijssen, 1972: MZUSP 38977, 6, 48.4–53.4 mm SL, paratypes. *Corydoras gracilis*: USNM 216074, 1, 19.2 mm SL, paratype. *Corydoras granti* Tencatt, Lima & Britto, 2019: MNRJ 51193, holotype, 48.4 mm SL. *Corydoras griseus* Holly, 1940: MZUSP 108896, 13, 4, 31.5–36.2 mm SL, 2 c&s, 30.6–34.5 mm SL. *Corydoras gryphus* Tencatt, Britto & Pavanelli, 2014: MNRJ 40770, holotype, 32.3 mm SL; NUP 14676, 3 c&s, 27.7–32.4 mm SL, paratypes. *Corydoras guapore* Knaack, 1961: ZUFMS-PIS 4000, 5, 26.9–33.6 mm SL, 2 c&s, 28.8–29.2 mm SL. *Corydoras guianensis* Nijssen, 1970: USNM 204218, 2, 26.0–32.0 mm SL, paratypes. *Corydoras hastatus*: NUP 6862, 116, 13.1–20.7 mm SL. *Corydoras hephaestus*: MZUSP 119087, holotype, 22.6 mm SL. *Corydoras heteromorphus* Nijssen, 1970: USNM 204224, 2, 37.0–42.7 mm SL, paratypes. *Corydoras hypnos* Tencatt, Ohara, Sousa & Britto, 2022: MNRJ 53288, holotype, 31.7 mm SL. *Corydoras incolicana* Burgess, 1993: MZUSP 45717, holotype, 47.6 mm SL. *Corydoras julii*: NUP 16225, 1, 46.8 mm SL. *Corydoras kanei* Grant, 1997: MZUSP 52489, holotype, 36.6 mm

SL. *Corydoras knaacki* Tencatt & Evers, 2016: MUSM 52730, holotype, 35.6 mm SL. *Corydoras lacrimostigmata* Tencatt, Britto & Pavanelli, 2014: MNRJ 40725, holotype, 31.8 mm SL; NUP 14657, 3 c&s, 30.9–34.5 mm SL, paratypes. *Corydoras leopardus* Myers, 1933: USNM 93305, lectotype, 38.7 mm SL. *Corydoras longipinnis* Knaack, 2007: AI 221, holotype, 59.5 mm SL; NUP 14440, 2 c&s, 29.9–33.4 mm SL. *Corydoras loretoensis* Nijssen & Isbrücker, 1986: ANSP 121620, 32, 17.3–32.7 mm SL, paratypes. *Corydoras loxozonus* Nijssen & Isbrücker, 1983: ANSP 150170, holotype, 34.6 mm SL. *Corydoras lymnades* Tencatt, Vera-Alcaraz, Britto & Pavanelli, 2013: MNRJ 15765, 6, 15.8–17.7 mm SL, 2 c&s, 18.1–18.4 mm SL; MNRJ 40186, holotype, 29.7 mm SL. *Corydoras maculifer* Nijssen & Isbrücker, 1971: NUP 8970, 2, 42.0–46.0 mm SL. *Corydoras melanistius* Regan, 1912: BMNH 1864.1.21.86, lectotype, 35.0 mm SL. *Corydoras melanotaenia*: BMNH 1909.7.23.41, lectotype, 38.3 mm SL; BMNH 1909.7.23.42, 1, 30.1 mm SL, paralectotype. *Corydoras micracanthus*: BMNH 1897.1.27.8, lectotype, 33.7 mm SL. *Corydoras multimaculatus* Steindachner, 1907: MCP 29025, 2, 20.1–25.4 mm SL. *Corydoras napoensis* Nijssen & Isbrücker, 1986: USNM 270358, 2, 26.7–28.3 mm SL, paratypes. *Corydoras nattereri* Steindachner, 1876: MZUSP 110255, 31 4, 32.0–32.8 mm SL, 2 c&s, 32.3–34.4 mm SL. *Corydoras oiapoquensis* Nijssen, 1972: USNM 205868, 2, 25.9–35.0 mm SL, paratypes. *Corydoras ornatos* Nijssen & Isbrücker, 1976: USNM 216075, 1, 37.8 mm SL, paratype. *Corydoras orphnopterus* Weitzman & Nijssen, 1970: USNM 204361, holotype, 55.9 mm SL. *Corydoras osteocarus*: USNM 157367, 1, 25.1 mm SL, paratype. *Corydoras ourastigma* Nijssen, 1972: MZUSP 38950, 1, 23.0 mm SL, paratype. *Corydoras paleatus*: BMNH 1917.7.14.18, lectotype of *Callichthys paleatus* Jenyns, 1842, 30.0 mm SL; NRM 54230, 1, 53.5 mm SL. *Corydoras panda* Nijssen & Isbrücker, 1971: BMNH 1969.7.15.8, holotype, 38.9 mm SL; ROM 55815, 6, 26.5–39.7 mm SL. *Corydoras pantanalensis* Knaack, 2001: NUP 10188, 1 c&s, 46.4 mm SL; NUP 12593, 21, 38.7–51.2 mm SL. *Corydoras parallelus* Burgess, 1993: MZUSP 45716, holotype, 47.4 mm SL. *Corydoras pastazensis* Weitzman, 1963: USNM 177216, holotype, 46.2 mm SL. *Corydoras pavanelliae* Tencatt & Ohara, 2016: MNRJ 43317, holotype, 45.1 mm SL. *Corydoras pinheiroi* Dinkelmeyer, 1995: MZUSP 48099, holotype, 54.3 mm SL. *Corydoras polystictus* Regan, 1912: BMNH 1895.5.17.62, lectotype, 27.5 mm SL. *Corydoras psamathos* Tencatt, Ohara, Sousa & Britto, 2022: MNRJ 53289, holotype, 29.4 mm SL. *Corydoras potaroensis* Myers, 1927: ROM 61526, 3 of 15, 35.0–44.8 mm SL, 2 c&s, 32.6–35.1 mm SL. *Corydoras punctatus*: ZMB 3149, lectotype, 41.7 mm SL. *Corydoras pygmaeus*: ANSP 200357, 1, 16.1 mm SL. *Corydoras robineae* Burgess, 1983: MZUSP 27175, holotype, 33.7 mm SL. *Corydoras sarareensis* Dinkelmeyer, 1995: MZUSP 48100, holotype, 40.9 mm SL. *Corydoras septentrionalis* Gosline, 1940: USNM 130634, 1, 42.3 mm SL, paratype; ZMA 112.288, 2, 37.8–46.3 mm SL, paratypes. *Corydoras seussi* Dinkelmeyer, 1996: MZUSP 49323, 10, 44.3–54.0 mm SL, paratypes. *Corydoras similis* Hieronimus, 1991: LBP 10648, 7, 21.4–34.3 mm SL. *Corydoras simulatus* Weitzman & Nijssen, 1970: USNM 197615, holotype, 49.1 mm SL. *Corydoras spilurus* Norman, 1926: BMNH 1926.3.2.738, lectotype, 43.3 mm SL. *Corydoras splendens*: NUP 12990, 1, 43.7 mm SL; NUP 10195, 1 c&s, 54.6 mm SL. *Corydoras stenocephalus*: MNRJ 3625, 3, 31.2–62.3 mm SL. *Corydoras surinamensis* Nijssen, 1970: USNM 204223, 2, 29.1–34.3 mm SL, paratypes. *Corydoras thanatos* Tencatt, Ohara, Sousa & Britto, 2022: MNRJ 53287, holotype, 33.2 mm SL. *Corydoras treitlii* Steindachner, 1906: NUP 16224, 3, 21.5–45.6 mm SL. *Corydoras trilineatus* Cope, 1872: ANSP 8294, lectotype, 31.8 mm SL; MZUSP 30857, 25, 3, 40.9–44.1 mm SL, 2 c&s, 44.2–43.8 mm SL. *Corydoras tukano* Britto & Lima, 2003: MZUSP 82100, holotype, 40.9 mm SL. *Corydoras undulatus*: BMNH 1912.7.10.5, holotype, 41.8 mm SL. *Corydoras urucu* Britto, Wosiacki & Montag, 2009: MNRJ 32446, 4, 25.9–27.3 mm SL, paratypes. *Corydoras virginiae* Burgess, 1993: USNM 326186, 3, 31.6–33.5 mm SL, paratypes. *Corydoras weitzmani*: USNM 206018, 1, 38.5 mm SL, paratype. *Corydoras xinguensis* Nijssen, 1972: USNM 205870, 1, 27.9 mm SL, paratype. *Corydoras zawadzkii* Tencatt & Ohara, 2016: MNRJ 45565, holotype, 48.7 mm SL; NUP 17824, 1 c&s, 39.9 mm SL, paratype. *Corydoras zygatus*: MZUSP 30858, 4 of 15, 41.7–47.3 mm SL.

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Luiz Fernando Caserta Tencatt: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing-original draft, Writing-review and editing.

Vandergleison de Carvalho Gomes: Data curation, Investigation, Methodology, Validation, Visualization, Writing-original draft, Writing-review and editing.

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The author declares no competing interests.

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