

## *Cichlasoma zarskei*, a new cichlid fish from northern Brazil (Teleostei: Labroidei: Cichlidae)

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### > Abstract

*Cichlasoma zarskei* sp.n. is herein described from the rio Maranhão basin, northern Brazil. The new species differs from all its congeners, except *C. orientale*, by having a conspicuous posterior band of the longitudinal stripe and dorsal, anal and caudal fins faintly dotted. It is also distinguished from its congeners by the presence of the following character states: triserial predorsal squamation, four anal-fin spines, reduction of the squamation between dorsal and anal-fins rays, forâmen between infraorbital plate 3+4 and plate 5 smaller, deeper entopterygoid, premaxilla with teeth on its entire dentigerous surface, caudal-fin base spot not ocellated, fewer pleural ribs, more scales on E1 series, shorter last dorsal-fin spine, shorter last anal-fin spine, longer snout, wider head and shorter lower jaw. A new diagnosis for *C. orientale*, without overlapping character states, is herein presented.

### > Resumo

*Cichlasoma zarskei* sp.n. é aqui descrita para a bacia do rio Maranhão, norte do Brasil. A nova espécie difere de todos seus congêneres, exceto *C. orientale*, por possuir banda posterior da faixa longitudinal conspícua e nadadeiras dorsal, anal e caudal com poucas pintas. Ela também difere de seus congêneres pela presença dos seguintes estados de caracteres: escamação predorsal trisserial, quatro espinhos na nadadeira anal, redução da escamação entre raios das nadadeiras dorsal e anal, forâmen entre placas infraorbitais 3+4 e placa 5 menor, ectopterygóide mais alto, pré-maxila com dentes em toda sua superfície dentígera, nadadeira caudal não ocelada, menos costelas pleurais, mais escamas na série E1, último espinho da nadadeira dorsal menor, último espinho da nadadeira anal menor, focinho mais comprido, cabeça mais larga e menor mandíbula inferior. Uma nova diagnose para *C. orientale*, sem estados de caracteres que se sobreponham, é aqui apresentada.

### > Key words

Cichlasomatini, Cichlinae, new species, systematics, South American cichlids, taxonomy.

## Introduction

*Cichlasoma* SWAINSON, 1839 is a Neotropical cichlid fish genus, member of the tribe Cichlasomatini (KULLANDER, 1998; SMITH *et al.*, 2008), subfamily Cichlinae (SMITH *et al.*, 2008). It is a medium sized cichlid fish genus, with the maximum length varying between 74.3 mm SL in *C. paranaense* KULLANDER, 1983 and 135.0 mm SL in *C. orientale* KULLANDER, 1983 (KULLANDER, 1983).

Since the taxonomic revision of *Cichlasoma* proposed by KULLANDER (1983), the genus comprises 12

valid species: *Cichlasoma amazonarum* KULLANDER, 1983, from the Ucayali-Solimões-Amazonas river system, in Peru, Brazil and Colombia; *C. araguaiense* KULLANDER, 1983, from the Araguaia-Tocantins river drainage, central Brazil; *C. bimaculatum* (LINNAEUS, 1758), the type species, from the upper rio Branco drainage, Amazonas basin, in Brazil, rio Cuyui, in Venezuela, and isolated river basins of western French Guiana, Surinam and Guyana; *C. boliviense* KULLANDER, 1983, from the rio Madeira drainage,

Amazonas basin, in Bolivia and Peru; *C. dimerus* (HECKEL, 1840), from the Paraguay-Paraná river basin, in southern Brazil, northeastern Argentina and eastern Paraguay; *C. orientale*, from isolated coastal river basins of northeastern Brazil; *C. orinocense* KULLANDER, 1983, from the rio Orinoco basin, in Venezuela and Colombia; *C. paranaense*, from the upper rio Paraná drainage, southern Brazil; *C. portoalegrense* (HENSEL, 1840); from the coastal basins of southern Brazil; *C. pusillum* KULLANDER, 1983, from the upper rio Paraná and rio Uruguay drainages, southern Brazil; *C. sanctifranciscense* KULLANDER, 1983, from the rio São Francisco and rio Parnaíba basins, in northeastern Brazil; and *C. taenia* (BENNETT, 1831), from Trinidad, and Golfo de Paria basin, in Venezuela (KULLANDER, 1983).

In the present paper, a new species of *Cichlasoma* is described from the rio Maranhão basin, northern Brazil.

## Materials and methods

### Abbreviations for institutions are

- CBF** Colección Boliviana de Fauna, Instituto de Ecología, Museo Nacional de Historia Natural, La Paz, Bolívia
- MCP** Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil
- MNRJ** Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil
- UFRJ** Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

Measurements and counts are made according to OTTONI *et al.* (2011), with addition of: number of teeth on the posterior margin of the ceratobranchial 5 and number of teeth on the transversal series of ceratobranchial 5 (KULLANDER, 1986); scale counts of the opercular plates and prepelvic scale series are made according to KULLANDER (1983); and predorsal scale series (squ. Predorsal), a longitudinal count of scales, on a dorsal view, from the first dorsal-fin spine to the last scale on the dorsal profile. In description and tables 2–3, the number of specimens exhibiting a character state is presented in parentheses.

Measurements are presented as percentages of standard length (SL), except for those related to head morphology, which are expressed as percentages of head length (HL) and Standard length (SL). Measure-

ments were taken on the left side of each specimen with digital calipers under a binocular microscope. Osteological studies were made on cleared and counterstained (C&S) specimens prepared according to TAYLOR & VAN DYKE (1985), and the osteological nomenclature follows COSTA (2006). Osteological studies of the new species were based on six counterstained specimens: MNRJ 14502, 3, 50.0–83.6 mm SL; and MNRJ 14504, 3, 56.2–63.7 mm SL. Nomenclature related to colour pattern follows KULLANDER (1983). The lateral band *sensu* KULLANDER (1983) is here called longitudinal stripe.

For species delimitation we adopted the population aggregation analysis (DAVIS & NIXON, 1992), a character-based method in which species are delimited by a unique combination of stable morphological character states occurring in one or more populations.

Comparisons with *Cichlasoma amazonarum*, *C. bimaculatum*, *C. orinocense*, *C. portoalegrense*, *C. pusillum* and *C. taenia* were based only on literature, and with *C. araguaiense*, *C. boliviense*, *C. dimerus*, *C. orientale*, *C. paranaense* and *C. sanctifranciscense* were based both on literature and comparative material.

**Comparative material.** *Cichlasoma araguaiense*: UFRJ 1451, 10, 40.9–84.2 mm SL; buriti palm stream 21 km south from São Miguel do Araguaia, Goiás state, Central Brazil; W. COSTA *et al.*, without informations about the date of the collect. UFRJ 4946, 21, 29.7–81.7 mm SL; rio Javés, rio Araguaia basin, Tocantins state, central Brazil; R. D'ARRIGO *et al.*, 7 Oct. 1999. UFRJ 4936, 20, 28.2–65.5 mm SL; rio Javés, rio Araguaia basin, Tocantins state, central Brazil; R. D'ARRIGO *et al.*, 7 Oct. 1999.

*C. boliviense*: CBF 02427, 1, 80.1 mm SL; Estación Biológica del Beni, rio Mamoré, Beni, Bolívia; W. STARNES *et al.*, 25 Aug. 1987. CBF 01078, 1, 61.1 mm SL; Nacional Park, Indigenan territory Isiboro-Sécure, Beni, Bolívia; S. BARREA, 17 May 1992. CBF 01894, 1, 105.8 mm SL; Espíritu Estanque, Beni, Bolívia; J. SARMIENTO & W. HANAGARTH, 23 Apr. 1987.

*C. dimerus*: UFRJ 5795, 2, 65.3–73.9 mm SL; SESC Pantanal, Mato Grosso state, central Brazil; S. LIMA *et al.*, 19 Sep. 2002. UFRJ 5082, 14, 37.4–57.3 mm SL; swamp near SESC Pantanal, Mato Grosso state, central Brazil; W. COSTA *et al.*, 10 Jun. 1999.

*C. orientale*: MNRJ 1256, 17 (3 C&S), 21.8–101.0 mm SL; rio Grangueiro, Crato, Ceará state, northern Brazil; A. CARVALHO, without informations about the date of the collect.

*C. paranaense*: UFRJ 3019, 2, 48.3–74.3 mm SL; buriti palm 15 km from Aparecida do Taboado, Mato Grosso do Sul state, rio Paraná basin, central Brazil; W. COSTA *et al.*, 18 Sep. 1994. UFRJ 2221, 15, 36.2–62.8 mm SL; stream on the road Chapadão do Sul-Paranaíba, 68 km north from Cassilândia, Mato Grosso do Sul state, central Brazil; W. COSTA *et al.*, 17 Sep. 1994.

*C. sanctifranciscense*: UFRJ 7797, 5, 64.2–87.9 mm SL; swamp on the road BR-394, Capim Grosso, Bahia state, northeastern Brazil; W. COSTA *et al.*, 10 May 2010. UFRJ 7788, 3, 30.2–53.0 mm SL; swamp on the Estrada do Vinho, rio São Francisco basin, between Lagoa Grande and Santa Maria da Boa Vista, Pernambuco state, northeastern Brazil; W. COSTA *et al.*, 11 May 2010. UFRJ 0118, 1, 38.2 mm SL; Januária, Minas Gerais state, northeastern Brazil; G. BRASIL, 12 Feb. 1990.



**Fig. 1.** *Cichlasoma zarskei*, new species; MNRJ 37576, 76.6 mm SL, holotype; rio Maranhão basin, Maranhão state, northern Brazil.

## Results

### *Cichlasoma zarskei*, new species

Fig. 1

**Holotype.** MNRJ 37576, 76.6 mm SL; Brazil: Maranhão state: lago Malhada Grande, rio Maranhão basin; G. NUNAN *et al.*, 22 Nov. 1985. **Paratypes:** Brazil: Maranhão state: MNRJ 14502, 56 (3 C&S), 48.1–99.6 mm SL; collected with holotype. MNRJ 14504, 77 (3 C&S), 43.1–86.0 mm SL; Igarapé Arari, Arari Municipality; G. NUNAN *et al.*, 22 Nov. 1985. MCP 45751, 4, 51.9–82.7 mm SL; Igarapé Arari, Arari Municipality; G. NUNAN *et al.*, 22 Nov. 1985

### Diagnosis

*Cichlasoma zarskei* sp. n. is distinguished from all its congeners, except *C. orientale*, by having a conspicuous posterior band of the longitudinal stripe (continuous or interrupted) (*vs.* inconspicuous posterior band of longitudinal stripe, almost absent in some specimens; KULLANDER, 1983), and dorsal, anal and caudal fins faintly dotted (*vs.* fins intensely dotted; KULLANDER, 1983). It is also distinguished from *C. orinocense*, *C. sanctifranciscense* and *C. portoalegrense* by having triserial predorsal squamation (*vs.* uniserial predorsal squamation in *C. sanctifranciscense*, and irregular predorsal squamation in *C. orinocense* and *C. portoalegrense*); from *C. araguaense*, *C. paranaense* and

*C. pusillum* by having four anal-fin spines (*vs.* 2–3 anal-fin spines); from *C. amazonarum* by having reduction of the squamation between dorsal and anal-fins rays (four or less scales *vs.* more than six scales), forâmen between infraorbital plate 3+4 and plate 5 smaller (Fig. 2) (*vs.* forâmen between infraorbital 3+4 and 5 larger (KULLANDER, 1983; fig. 11)), deeper entopterygoid (Fig. 3A) (*vs.* more slender entopterygoid (KULLANDER, 1983; fig. 14) and premaxilla with teeth on its entire dentigerous surface (Fig. 3B) (*vs.* premaxilla with teeth restricted to the medial half of its dentigerous surface (KULLANDER, 1983; fig. 13A)); from *C. boliviense* by having the caudal-fin base spot not ocellated (*vs.* caudal-fin base spot clearly ocellated); and from *C. orientale* by having fewer pleural ribs (8–9 *vs.* 11), more scales on E1 serie (25–26 *vs.* 23–24), shorter last dorsal-fin spine (last dorsal-fin spine length 11.7–15.3 % mm SL *vs.* 15.7–22.8 % mm SL), shorter last anal-fin spine (last anal-fin spine length 11.8–14.8 % mm SL *vs.* 15.0–20.3 % mm SL), longer snout (snout length 11.1–23.7 % mm SL *vs.* 4.9–8.6 % mm SL), wider head (head width 23.6–26.0 % mm SL *vs.* 18.8–22.5 % mm SL) and shorter lower jaw (lower jaw length 6.5–8.5 % mm SL *vs.* 11.8–14.8 % mm SL).

### Description

Morphometric data are summarized in Table 1, meristic data in Table 2. Body elongate and laterally

**Table 1.** Morphometric data of *Cichlasoma zarskei* sp. n. H = holotype, R = range, M = mean and SD = standard deviation.

	<b>H</b>	<b>R (n = 17)</b>	<b>M</b>	<b>SD</b>
Standard length (mm)	76.6	60.3–99.6	75.4	12.5
<b>Percents, standard length (SL)</b>				
Body depth	45.2	44.9–48.6	47.1	1.1
Predorsal length	41.2	40.4–43.5	41.7	0.8
Prepelvic length	43.7	40.2–44.8	43.1	1.3
Caudal peduncle depth	17.9	17.9–28.8	19.7	2.4
Caudal peduncle length	8.6	8.1–9.6	8.8	0.5
Dorsal-fin base length	65.1	62.5–66.0	63.3	0.9
Anal-fin base length	25.0	23.7–30.2	24.7	1.5
Pelvic-fin spine length	15.1	13.4–16.6	15.3	0.9
Pelvic-fin length	42.4	30.7–53.1	37.9	5.1
Last dorsal-fin spine length	13.7	11.7–15.3	13.8	1.0
Last anal-fin spine length	13.4	11.8–14.8	13.7	0.8
Pectoral-fin length	33.8	31.1–36.7	34.7	1.4
Head depth	36.2	33.6–38.3	36.4	1.1
Orbital diameter	9.9	9.4–11.6	10.3	0.5
Snout length	12.8	11.1–23.7	13.5	2.9
Head width	24.8	23.6–26.0	24.5	0.7
Interorbital width	15.7	15.5–16.7	15.9	0.4
Preorbital depth	25.3	22.4–27.0	24.5	1.4
Upper jaw length	11.0	10.7–21.2	11.7	2.5
Lower jaw length	7.9	6.5–8.5	7.7	0.6
Head length (mm)	30.8	21.6–34.7	27.5	4.5
<b>Percents, head length (HL)</b>				
Head depth	101.0	92.4–102.6	99.9	2.4
Orbital diameter	27.6	26.7–32.0	28.1	1.2
Snout length	35.7	31.0–64.7	37.0	7.7
Head width	69.2	64.7–70.4	67.2	1.8
Interorbital width	43.8	40.7–46.4	43.7	1.3
Preorbital depth	70.8	62.5–73.2	67.2	3.7
Upper jaw length	30.8	28.5–57.4	32.2	6.5
Lower jaw length	22.1	18.1–23.3	21.2	1.6

compressed. Dorsal profile slightly convex from snout to caudal peduncle origin. Dorsal-fin base slightly curved, progressively descending from origin to end. Ventral profile slightly curved from snout to caudal peduncle origin. Caudal peduncle approximately straight ventrally and dorsally. Head profile between tip of snout and orbit slightly curved. Nostrils in about 1/3 from the distance to tip of snout, between tip of snout and margin of orbit. Mouth terminal, distal tip of maxilla not reaching vertical tangent to anterior margin of orbit. Lower lip fold covering distal portion of upper lip. Lower jaw slightly shorter than upper one. Jaw teeth caniniform, slightly curved to inside mouth. Three rows of teeth, hyaline and red at tip. Outer row teeth increasing in size symphysiad, anterior teeth of upper jaw longest, anterior teeth of lower jaw subequal. Opercle not serrated.

Dorsal-fin origin placed at level of posterior margin of opercle. Dorsal fin rounded, pointed on posterior region. Tip of dorsal fin reaching vertical through half of caudal fin. Dorsal fin base squamation beginning at 14<sup>th</sup> dorsal-fin spine. Anal fin rounded anteriorly, pointed posteriorly. Anal-fin base squamation beginning at fourth anal-fin spine or first anal-fin ray. Tip of anal fin reaching vertical through middle of caudal fin. A single row of smaller scales between rays of dorsal and anal fins (mostly four scales in each row, rarely five scales on dorsal fin) (KULLANDER, 1983; figs. 67 and 68). Caudal fin long, with distal margin concave. Caudal fin with ctenoid scales, smaller than flank scales, covering about a 1/3 of fin. Scales of caudal-fin base and between dorsal and anal-fin rays with similar size. Pectoral fin rounded, its base located approximately on vertical through second dorsal-

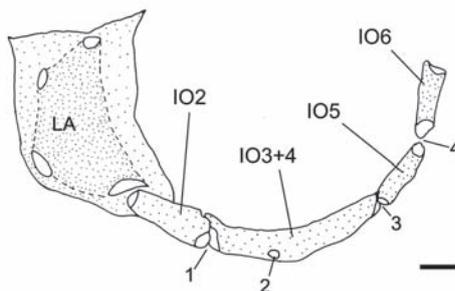


Fig. 2. Lacrimal and Infraorbital series of *Cichlasoma zarskei* sp. n. 1–4, forâmens; IO, infraorbitals; and LA, lacrimal.

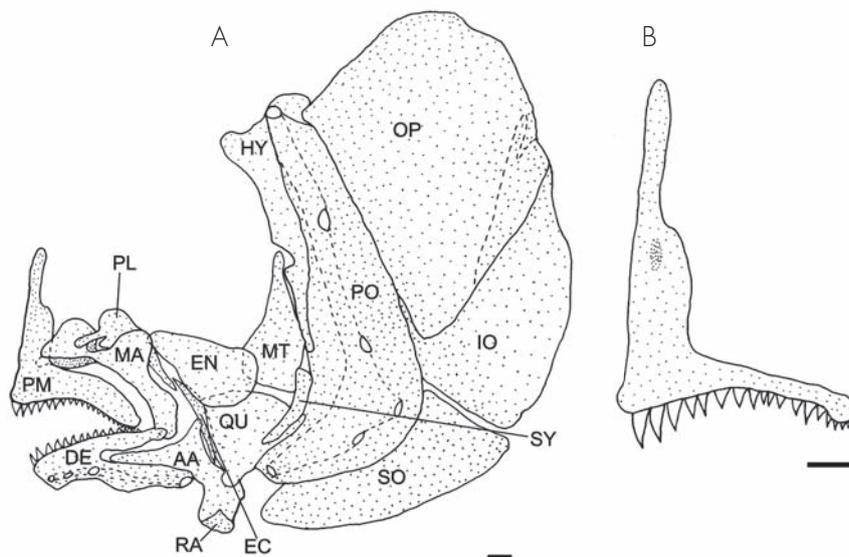


Fig. 3. Jaw suspensorium and opercular apparatus of *Cichlasoma zarskei* sp. n. **A:** entire jaw suspensorium; and **B:** only premaxillary.

AA – angulo-articular; DE – dentary; EC – ectopterygoid; EN – entopterygoid; HY – hyomandibula; IO – interopercle; MC – Mackel cartilage; MT – metapterygoid; MX – maxillary; OP – opercle; PL – palatin; PM – premaxilla; QU – quadrate; RA – retro-articular; RC – rostral cartilage; SO – subopercle; and SY – symplectic.

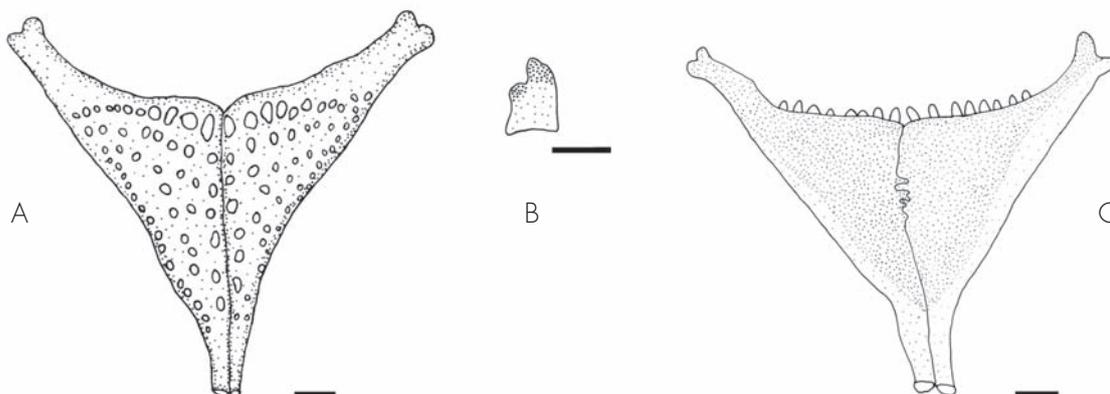


Fig. 4. Ceratobranchial 5 of *Cichlasoma zarskei* sp. n. **A:** dorsal view; **B:** tooth from posterior margin of ceratobranchial 5 (along midline); and **C:** ventral view.

fin spine. Pectoral fin not scaled. Pelvic fin pointed. Pelvic-fin base approximately on vertical through fourth dorsal-fin spine. Pelvic fin not scaled.

Scales on trunk and caudal peduncle covered with ctenoid scales. Chest scales also ctenoid. Triserial predorsal scales pattern (all scales ctenoids) (KUL-

**Table 2.** Meristic variation data of *Cichlasoma zarskei* sp. n.. Pc = procurent rays.

	Holotype	Range
Dorsal-fin spines	15	15 (32)–16 (4)
Dorsal-fin rays	11	11 (24)–12 (11)
Anal-fin spines	4	4 (42)
Anal-fin rays	9	9 (29)–10 (12)
Pelvic-fin spines	1	1 (50)
Pelvic-fin rays	5	5 (50)
Caudal-fin rays	–	3pc+8+8+3pc (6)
Pectoral-fin rays	14	14 (6)–15 (23)
Gill-rakers on first ceratobranchial	–	4 (2)–5 (2)–6 (2) + 15 (2)–16 (2)–17 (2)
Total vertebrae	–	26 (6)
Pleural ribs	–	8 (4)–9 (2)
Precaudal vertebrae	–	13 (6)
Caudal vertebrae	–	13 (6)
Scales of upper lateral line series	16	16 (17)–17 (6)
Scales of lower lateral line series	9	9 (19)–10 (3)
E0 series	27	25 (11)–26 (4)–27 (8)
E1 series	26	25 (4)–26 (19)
E2 series	22	21 (4)–22 (19)
Scales of dorsal fin origin series	4	4 (23)
Scales of the end of superior lateral line to dorsal fin series	3	3 (23)
Scales of anal fin origin series	8	8 (23)
Scales between lateral lines	2	2 (23)
Scales of peduncle depth	7	7 (23)
Cheek scales rows	3	3 (23)
Squ. Op.	10	10 (19)–11 (4)
Squ. Iop.	3	3 (23)
Squ. Sop.	3	3 (23)
Squ. predorsal	8	8 (15)–9 (8)
Squ. pr v	12	11(4)–12 (19)
Proximal radial on dorsal-fin base	–	25 (3)–26 (3)
Proximal radial on anal-fin base	–	10(2)–11 (3)–12(1)

LANDER, 1983; fig. 2). Scales on head and chest not distinctly smaller than flank scales. Two scale rows between lateral lines. Upper lateral line overlapping lower one by one or two scales. Side of head (opercle, subopercle and interopercle) covered with cycloid scales, but in some specimens above 65 mm SL covered with ctenoid scales. Preopercle without scales. Cheek with cycloid scales, but few ctenii present on posterior margin of some scales in some large specimens above 70 mm SL. Cheek with three rows of scales. Three vertical rows of opercular scales. Just one longitudinal row of interopercular and subopercular scales.

## Osteology

**Ceratobranchials.** Ceratobranchial 5 (Fig. 4) partly sutured medially and relatively robust (Figs. 4A and

4C), with 6 (1), 7 (4) and 8 (1) teeth along midline and 19 (1), 21 (2), 22 (1) and 24 (2) teeth along posterior margin. Posterior teeth tend to be laterally more compressed. Posterior and medial teeth larger than lateral and anterior teeth. Posterior teeth bicuspid, curved forward (Fig. 4B). Large laterally compressed teeth bicuspid, with second cusp raising anteriorly shelf (Fig. 4B). Microbranchiospines present only on external side of ceratobranchial 4.

**Lacrimal and infraorbital series (Fig. 2).** Lacrimal and infra-orbital series located on jaw suspensory, below orbit. Lacrimal approximately trapezoidal, with canal containing four pores. Infra-orbital series composed by four slender, canal shaped bones, located posteriorly from lacrimal, with four forâmens.

**Jaws, jaw suspensorium and opercular apparatus (Fig. 3).** Jaws connected to jaw suspensorium through articulation between angulo-articular and quadrate,

and through ligamentous connection joining upper jaw and palatine. Upper jaw composed by maxilla and premaxilla, joined by connective tissue (Fig. 3A). Premaxilla elongated, with teeth on its entire dentigerous surface. It bears a posteriorly directed elongated and flattened ascending process, larger than dentigerous process (Fig. 3B). Maxilla elongated, located dorsolaterally to premaxilla, with process in dorsal portion connecting it to medial portion of ascending process of premaxillary. Lower portion of maxilla in contact with posterior portion of dentary. (Fig. 3 A).

Lower jaw composed by dentary, angulo-articular and retro-articular. Dentary, the longer bone, occupying most of lower jaw, with teeth on 3/4 of its anterodorsal surface. Dentary canal with four pores (pore four has been lost in Cichlasomatinae (KULLANDER, 1998)). Angulo-articular triangular, with ventral process, and other smaller process on the extreme posterior portion, which supports articulation with quadrate. Retro-articular small and triangular, placed posteroventrally to angulo-articular (Fig. 3A). Both premaxilla and dentary with conical caniniform teeth, red at tip, and curved inside mouth, arranged in irregular rows.

Palatine located between posterior margin of maxilla and anterior margin of entopterygoid, approximately triangular, with small and pointed anterodorsal process, supporting a tick ligament connected to maxilla. Ectopterygoid deeper than wider, located between posterior margin of angulo-articular, and anterior margin of entopterygoid and quadrate. Quadrate approximately triangular, with anterior and posterior margins approximately straight, and dorsal margin rounded. Quadrate with elongated posterior process. Symplectic deeper than wider, with its ventral portion located between posterior process of quadrate and posterior margin of quadrate, and its dorsal portion between posterior margin of metapterygoid and anterior margin of preopercle. Entopterygoid and metapterygoid located above quadrate, entopterygoid placed anteriorly. Posterior margin of entopterygoid and anterior margin of metapterygoid in contact with each other. Entopterygoid approximately elliptical, with ventral margin in contact with quadrate. Metapterygoid not in contact with quadrate, and posterior margin in contact with both symplectic and hyomandibula (Fig. 3A). Hyomandibula elongated, firmly attached to preopercle.

Opercular apparatus composed by opercle, interopercle, subopercle and preopercle. Opercle, interopercle and subopercle thin. Preopercle elongated, firmly attached to hyomandibula and posterior process of quadrate. Anterior portion of preopercle in contact with symplectic, and posterior portion in contact with opercle and subopercle. Interopercle located below preopercle, in contact with its ventral surface (Fig. 3A).

**Coloration in alcohol (Fig. 1)** Side of body light brown with dark discontinuous horizontal bands from head to caudal peduncle end. Eight dark brown trunk bars (five abdominal bars). Conspicuous dark brown or black interrupted longitudinal stripe, located between lateral lines, along posterior margin of orbit and trunk bar 1. Two dark brown or black spots; first spot rounded and conspicuous, located on caudal-fin base, just above lower lateral line, near dorsal margin of caudal peduncle; second one rounded and conspicuous on junction between longitudinal stripe and trunk bar 6. No prominent dark scale-edgings.

Side of head with same colouration as trunk. Opercle with dark brown or black colouration. Pale preorbital stripe from anterior margin of orbit to nostrils. Dark brown spot above posterior half of orbit, connected with longitudinal stripe. Rounded and conspicuous dark brown cheek spot. Iris black.

Dorsal fin light brown, faintly and slightly dotted, dots more restricted to posterior portion or absent. Anal-fin colour pattern similar to dorsal fin. Caudal fin light brown, with

brown dots on entire fin, in some specimens dots restricted to caudal-fin base. Pectoral fin light brown, pelvic fin just darker.

**Etymology.** The name *zarskei* in honor to Axel Zarske, Ichthyologist and editor chief of Vertebrate Zoology.

**Distribution.** Rio Maranhão basin, northern Brazil.

### Revised diagnosis of *C. orientale*

*Cichlasoma orientale* differs from all its congeners, except *C. zarskei*, by having a conspicuous posterior band of the longitudinal stripe (continuous or interrupted) (*vs.* inconspicuous posterior band of longitudinal stripe, almost absent in some specimens; KULLANDER, 1983), and dorsal, anal and caudal fins faintly dotted (*vs.* fins intensely dotted; KULLANDER, 1983). It is also distinguished from *C. orinocense*, *C. sanctifranciscense* and *C. portoalegrense* by having triserial predorsal squamation (*vs.* uniserial predorsal squamation in *C. sanctifranciscense*, and irregular predorsal squamation in *C. orinocense* and *C. portoalegrense*); from *C. amazonarum* by having reduction of the squamation between dorsal and anal-fins rays (four or less scales *vs.* more than six scales); from *C. boliviense* by having the caudal-fin base spot not ocellated (*vs.* caudal-fin base spot clearly ocellated); and from *C. zarskei* by having more pleural ribs (11 *vs.* 8–9), fewer scales on E1 series (23–24 *vs.* 25–26), longer last dorsal-fin spine (last dorsal-fin

**Table 3.** Additional meristic data of *Cichlasoma orientale*. Pc = procurrent rays.

Caudal-fin rays	3pc+8+8+3pc (3)
Pleural ribs	11 (3)
Proximal radial on dorsal-fin base	24 (2)–25 (1)
Proximal radial on anal-fin base	10 (2)–11 (1)

spine length 15.7–22.8 % mm SL vs. 11.7–15.3 % mm SL), longer last anal-fin spine (last anal-fin spine length 15.0–20.3 % mm SL vs. 11.8–14.8 % mm SL), shorter snout (snout length 4.9–8.6 % mm SL vs. 11.1–23.7 % mm SL), fewer head width (18.8–22.5 % mm SL vs. 23.6–26.0 % mm SL) and longer lower jaw (lower jaw length 11.8–14.8 % mm SL vs. 6.5–8.5 % mm SL).

## Discussion

A new allopatric species of *Cichlasoma* is herein described from the rio Maranhão basin, northern Brazil. This is the first species of *Cichlasoma* described since the last revision of the genus, provided by KULLANDER (1983). *Cichlasoma zarskei* sp. n. is similar to *C. orientale* in shape, colour pattern and general counts. Some additional meristic data from *C. orientale* are herein presented in Table 3, as well as, a new diagnosis without overlapping character states. As well as *C. zarskei* sp. n., *C. orientale* has a triserial predorsal scale pattern (KULLANDER, 1983; fig. 2) Additionally to the character states cited in the diagnosis to distinguish *C. zarskei* sp. n. from *C. orientale*, there are other character states that make possible to distinguish both species, but with slight overlapping ranges: *C. zarskei* sp. n. differs from *C. orientale* by often having more proximal radials on dorsal-fin base (25–26 vs. 24–25), more scales on lower lateral line (9–10 vs. 6–9) and higher pectoral-fin rays mean (15 vs. 14).

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