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Ossancora, new genus of thorny catfish (Teleostei: Siluriformes: Doradidae) with description of one new species

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ABSTRACT.—*Ossancora*, new genus, is diagnosed within Doradidae by having the unique combination of posterior coracoid process approximately as long as posterior cleithral process in adults, posterior cranial fontanel occluded, long maxillary barbel with smooth elongate fimbriae, and teeth present on dentary and premaxilla. A similarly long posterior coracoid process is found in only one other doradid species, *Trachydoras paraguayensis*, which is distinguished, as are its congeners, from *Ossancora* by having a small posterior cranial fontanel retained in adults, a relatively short maxillary barbel with stout fimbriae, and edentulous jaws. Three nominal species are recognized as valid and redescribed in *Ossancora*: *Doras punctatus* Kner 1853, in both the Amazonas and Paraná-Paraguay basins, *Oxydoras eigenmanni* Boulenger 1895, in the Paraguay basin, and *Doras fimbriatus* Kner 1855 in the Amazonas basin. The younger name *Doras fimbriatus* Kner 1855 is considered valid as a *nomen protectum* according to Article 23.9 of the ICZN, and its older synonym, *D. loricatus* Kner 1853 qualifies as a *nomen oblitum*. A fourth new species, *Ossancora asterophysa*, is described and diagnosed in part by a gas bladder morphology that is distinctive among congeners. Three species, *O. eigenmanni*, *O. fimbriata* and *O. asterophysa*, form a monophyletic group based on three shared characteristics: smooth elongate fimbriae inserted in more than one row, one dorsally and one ventrally, along anterior margin of maxillary barbel (uniquely derived among Doradidae), elongate fimbriae on mental barbels, and anterior nuchal plate reduced, not sutured to epioccipital (latter two features uniquely derived among *Ossancora*). *Ossancora* is typical of lowland floodplain lakes and river channels, and its occurrence in the both the Amazonas and Paraná-Paraguay supports a historical link between these two basins. A key to species and detailed anatomical descriptions are provided. Type specimens are discussed and lectotypes are newly designated for *Oxydoras eigenmanni* Boulenger 1895, *D. fimbriatus* Kner 1855, and *Doras* (*Corydoras*) *punctatus* Kner 1853, respectively.

New taxa: *Ossancora* Sabaj Pérez & Birindelli, *Ossancora asterophysa* Birindelli & Sabaj Pérez

INTRODUCTION

Doradidae is a monophyletic family of catfishes (Siluriformes) endemic to South America that is readily diagnosed by three unique morphological synapomorphies: 1) presence of the infranuchal scute, a superficial, vertically oriented laminar bone co-formed by a fusion between an expanded ossicle of the lateral line canal and an ossified infranuchal ligament extending from beneath the posterior nuchal plate to the tip of the first rib which is supported by the sixth vertebra (Ferraris, 1988; Higuchi, 1992; Birindelli, 2010); 2) laminar expansion, both dorsally and ventrally, of lateral line ossicles anterior and posterior to the infranuchal scute (Birindelli, 2010); and 3) presence of the Müllerian ligament, a short ligament extending from dorsal face of Müllerian ramus to the first tympanal scute (Birindelli et al., 2009; Birindelli, 2010).

Recent years have witnessed a surge in discovery of doradid taxa with the addition of 18 newly described species including one fossil (Sabaj, 2005; Sousa and Rapp Py-Daniel, 2005; Birindelli et al., 2007; Higuchi et al., 2007; Sabaj Pérez et al., 2007; Birindelli et al., 2008; Piorski et al., 2008; Sabaj et al., 2008; Sabaj Pérez and Birindelli, 2008; Birindelli and Sousa, 2010; Sousa and Birindelli, 2011; Birindelli et al., 2011), validation of two previously synonymized nominal species (Piorski et al., 2008; Sousa and Birindelli, 2011), and one new genus and subfamily (Higuchi et al., 2007), raising the total diversity of the family to 92 species in 31 genera.

In their classification, Sabaj and Ferraris (2003) recognized three species as valid *incertae sedis* in Doradidae: *Doras fimbriatus* Kner 1855, *Doras punctatus* Kner 1853, and *Oxydoras eigenmanni* Boulenger 1895. Previously, in a phylogenetic analysis of all known doradid genera except *Rhynchodoras* Klausewitz and Rössel 1961, Higuchi (1992; cladogram and synapomorphies published in de Pinna 1998) grouped *D. punctatus* and *O. eigenmanni* into an unnamed genus "Petalodoras" sister to a clade com-

posed of *Nemadoras*, *Trachydoras* and a second unnamed genus "Stenodoras". Higuchi (1992) considered placement of *D. fimbriatus* in "Petalodoras" as tentative because of limited study material and differences in scute morphology. In a phylogenetic analysis of all doradid genera, Birindelli (2010) recovered all three species, *D. fimbriatus*, *D. punctatus* and *O. eigenmanni*, plus one undescribed species in a monophyletic group at the base of a large clade composed of all doradid taxa with fimbriate barbels.

The objectives of this paper are to formally describe this distinctive group as a new genus of Doradidae, to redescribe and rediagnose its three previously named valid species, and to describe one new species. Comments on phylogenetic relationships and biogeography, and a key to species are also provided.

MATERIAL AND METHODS

Measurements were made to the nearest 0.1 mm using digital calipers; methodology follows Sabaj Pérez and Birindelli (2008) with the following additions: snout to coracoid process = distance from snout to tip of posterior coracoid process; snout to cleithral process = snout to tip of posterior cleithral process; infranuchal scute depth = vertical distance between dorsalmost and ventralmost contours of infranuchal scute. Standard length (SL) is expressed in mm; other measurements are expressed as percentages of standard length, head length (e.g., subunits of head), or body depth at 10th midlateral scute (i.e., 10th midlateral scute depth). Each reported count is followed by number of individuals exhibiting that count in parentheses with an asterisk denoting the holotype.

Midlateral scute counts were taken on the left side of body (when undamaged) and begin with infranuchal scute (contacting posterior nuchal plate dorsally and first complete rib internally). The nuchal shield is considered to be composed of the anterior, middle and posterior nuchal plates (dermal bones) which are superficial expansions of the supraneural, first and second pterygiophores (endochondral bones), respectively. Vertebral counts included all vertebrae, with the compound caudal centra (PU1+U1) counted as a single element. Osteological nomenclature follows Weitzman (1962) with the following exceptions as per Fink and Fink (1981) and Arratia (2003a,b): anguloarticular (fusion of angular, articular and retroarticular bones) replaces separate articular (angular) and angular (retroarticular); anterior and posterior ceratohyal replaces ceratohyal and epihyal, respectively; autopalatine replaces palatine; basipterygium replaces pelvic bone; entopterygoid (tendon-bone entopterygoid) replaces mesopterygoid; mesethmoid replaces ethmoid; vomer replaces prevomer; epiocciptial replaces epiotic; parieto-supraoccipital replaces separate parietal and supraoccipital; posttemporo-supracleithrum replaces separate posttemporal and supracleithrum; and pharyngobranchial replaces suspensory pharyngeal. The first bone of the infraorbital series is referred to as infraorbital one (replaces lacrimal of Birindelli et al. 2007), is formed from a single ossification (Birindelli, 2010), and includes the antorbital and infraorbital branches of the infraorbital canal. Other authors (e.g., Arratia and Huaquín, 1995) have considered this bone homologous with the antorbital of characiforms, which does not bear a canal (Weitzman, 1962). For the small cartilage articulating with epibranchials 1 and 2 and pharyngobranchial 3 the term pharyngobranchial accessory cartilage is introduced; also referred to as accessory cartilaginous nodule (Bockmann and Miquelarena, 2008:22), and incorrectly as pharyngobranchial 1 and/or 2 (Higuchi, 1992; Birindelli et al., 2008). Gas bladder terminology follows Birindelli et al. (2009).

Specimens are designated as alc (alcohol), sk (dry skeleton) or cs (cleared and stained, prepared according to Taylor and Van Dyke, 1985) with measurements recorded as SL unless specified as TL. Museum abbreviations follow Sabaj Pérez (2010). Additional comparative material listed in Sabaj Pérez et al. (2007) and Birindelli et al. (2009).

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"Petalodoras".—de Pinna 1998:307, Fig. 14 [based on informal name introduced in unpublished doctoral dissertation by Higuchi (1992)].—Hercos et al., 2007:45 [list of fishes from Mamirauá Reserve, Rio Japurá, Brazil].—Sánchez-Botero et al., 2008:53 [for *O. punctata* in list of fishes observed in macrophyte stands in Amazonian floodplain lakes].

Genus B.—Moyer et al., 2004:2 [for *O. punctata* in molecular phylogenetic study]

Type species.—*Doras fimbriatus* Kner 1855.

Included species.—*Ossancora asterophysa* n. sp., *O. eigenmanni*, *O. fimbriata* and *O. punctata*.

Diagnosis.—*Ossancora* is diagnosed among Doradidae by having the unique combination of long maxillary barbel with smooth elongate fimbriae (Fig. 1), teeth present on dentary and premaxilla (Fig. 2), posterior cranial fontanel occluded (Fig. 3), and posterior coracoid process approximately as long as posterior cleithral process (Fig. 4).

Additional characteristics that distinguish *Ossancora* among fimbriate-barbel doradids include: entopterygoid approximately equal in size to metapterygoid (vs.

metapterygoid much larger in all other fimbriate doradids), reduced number of ribs (six or seven vs. more than seven in all fimbriate doradids except *Trachydoras*), and porous skin lacking from beneath posterior cleithral process (vs. present in *Doras*, *Hassar*, most *Nemadoras*, *Opsodoras ternetzi* and most *Trachydoras*).

Three of the included species, *O. asterophysa*, *O. eigenmanni* and *O. fimbriata*, are grouped as members of the *fimbriata* clade defined by a synapomorphy uniquely derived among Doradidae: fimbriae inserted in two distinct rows, one dorsally and one ventrally (vs. one ventrally), along anterior margin of maxillary barbel (Fig. 1). Within

Fig. 1. Head of *Ossancora asterophysa* in life highlighting elongate fimbriae inserted in two rows, dorsally and ventrally, along anterior margin of maxillary barbel; ANSP 182516, 74.2 mm SL.

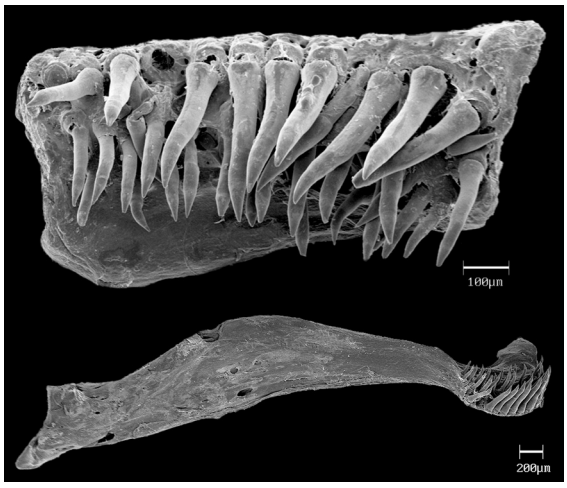


Fig. 2. Premaxilla (top) and dentary (bottom) in *Ossancora fimbriatus*, MZUSP 55833, 47.2 mm SL.

Ossancora the *fimbriata* clade is further diagnosed by having mental barbels with elongate fimbriae (vs. enlarged papillae in *O. punctata*), and anterior nuchal plate reduced (Fig. 3), diamond shaped (posterior longer and pointed), not firmly sutured to epioccipital (vs. broad, pentagonal anterior nuchal plate sharing broad lateral suture with epioccipital in *O. punctata*).

Description.—Small-sized doradids (to 107.7 mm SL) with moderately deep and weakly compressed head and body, relatively small and subterminal mouth, medium sized dorsolateral eyes, and short to moderately long snout. Abdominal region flattened. Lateral line complete with three tympanal scutes and 27–30 midlateral scutes. Infranuchal and postinfranuchal midlateral scutes with posteriorly oriented medial thorn and posterior margin entire or weakly serrated. Skin relatively smooth except for extremely minute punctate tubercles scattered on cheek, opercle and tympanal area. Axillary (pectoral) pore with simple slit-like opening tucked beneath anteroventral bony margin of posterior cleithral process. Gas bladder (Fig. 5) cordiform; terminal diverticula absent (*O. asterophysa* and *O. eigenmanni*) or present, either as small, conjoined extensions of the posterolateral chambers (*O. fimbriata*) or larger digitiform extensions conjoined proximally but with divergent tips (*O. punctata*).

Distribution and habitat.—*Ossancora* is known from the major rivers and tributaries of the Amazonas and Paraná-Paraguay basins, but is absent from the río Orinoco (Fig. 6). Like many doradids, *Ossancora* generally inhabits lowland floodplain lakes and waterways below about 200 m a.s.l. Records span a variety of black, clear and whitewater habitats, and include main river channels to depths of 22.5 m.

Etymology.—From the Latin *oss*, meaning bone, and *ancora*, meaning anchor, in reference to the shape and articulation of the pectoral spine and posterior cleithral and coracoid processes which resemble the shank and flukes, respectively, of a Danforth anchor. Gender feminine.

***Ossancora asterophysa*, new species, Birindelli & Sabaj Pérez**

Figs. 1, 3, 4, 5I–L, 6A, 7, 8, 9; Table 1

Doras eigenmanni.—Eigenmann, 1925:344 [in part, from Santarem Market, Rio Guaporé, Rio Jaurú; description and identification key].—Gosline, 1945:19 [literature compilation].—Fowler, 1951:488 [in part, literature compilation].—Chernoff et al., 2000:281 [río Manuripi, Bolivian Amazon].—Sarmiento et al.,

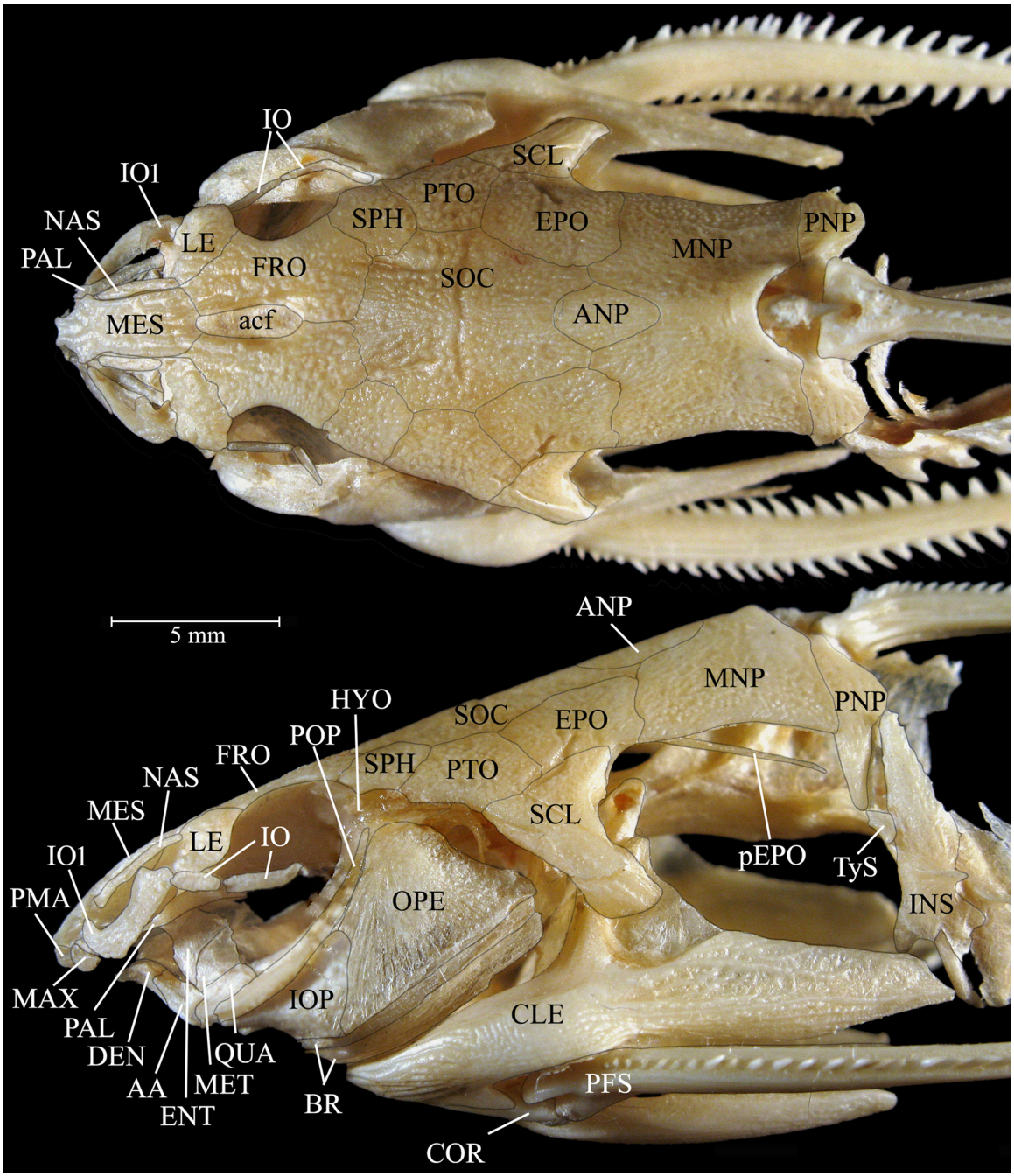


Fig. 3. Anterior portion of skeleton of *Ossancora asterophysa* in dorsal (top) and lateral (bottom) views; MZUSP 7838, 65.0 mm SL. AA anguloarticular, acf anterior cranial fontanel, ANP anterior nuchal plate, BR branchiostegal rays, CLE cleithrum, COR coracoid, DEN dentary, ENT entopterygoid, EPO epioccipital, FRO frontal, HYO hyomandibula, INS infranuchal scute, IO infraorbital, IOP interopercle, LE lateral ethmoid, MAX maxilla, MES mesethmoid, MNP middle nuchal plate, MET metapterygoid, NAS nasal, OPE opercle, PAL autopalatine, pEPO epioccipital process, PFS pectoral-fin spine, PMA premaxilla, PNP posterior nuchal plate, POP preopercle, PTO pterotic, QUA quadrate, SCL posttermporal-supracleithrum, SOC parieto-supraoccipital, SPH sphenotic, TyS tympanal scute.

1999:91 [río Manuripi, Bolivian Amazon].— Willink et al., 1999:105 [literature compilation, Bolivian Amazon].—Machado-Allison et al., 1999:124 [río Manuripi, Bolivian Amazon].—Akama in Buckup et al., 2007:114 [in part, literature compilation].—Fuentes and Rumiz, 2008:80 [río Bajo Paraguá, Santa Cruz, Bolivia].

Hemidoras brevis.—Fisher, 1917:421 [in part, from Santarem Market, Rio Guaporé, Rio Jaurú].

Oxydoras eigenmanni.—Sabaj and Ferraris, 2003:458 [in part, taxonomic checklist].—Ferraris, 2007:167 [in part, taxonomic checklist and type catalog].

Oxydoras cf. *eigenmanni*.—Birindelli et al., 2009:263, figs. 17I-L [gas bladder morphology].

Holotype.—MZUSP 105279 [ex. 7543] (79.2 mm SL), BRAZIL: Amazonas: rio Amazonas, Urucará, 9 Dec 1967, Expedição Permanente da Amazônia.

Paratypes.—BRAZIL: **Amazonas**: ANSP 187439 (1 alc), rio Amazonas, 35.5 km downriver of Santa Antônia, 20.6 km upriver of Itacoatiara, 03°15'37"S, 058°35'55"W, 20 Oct 1994, F. Langeani, et al.; ANSP 190653 (2 alc, 71.0–71.3 mm SL), MZUSP 7543 (13 alc, 1 cs, 51.2–73 mm SL), same data as holotype; INPA 22349 (6 alc, 36.5–107.7 mm SL), rio Solimões, paraná do lago do Rei, 14 Nov 2000, L. Rapp Py-Daniel, et al.; INPA 32089 (2 alc, 74.3–82.1 mm SL), rio Solimões, ilha da Marchantaria, lago Camaleão, 30 Jun 1998; **Pará**: ANSP 187437 (1 alc), rio Amazonas, 6.5 km downriver of Astreia, 33.7 km upriver of Santarém, 02°09'22"S, 054°50'20"W, 28 Oct 1994, A. Akama, et al.; ROM 88244 (2 alc, 68.7–72.8 mm SL), MZUSP 7838 (16 alc, 1 sk, 53.4–88.8 mm SL), Paraná do Jacaré, Faro Nhamundá, 13 Dec 1967, Expedição Permanente da Amazônia; CAS 60745 (2 alc, 63.2–65.7 mm SL), Santarém market, Dec 1924, C. Ternetz; MZUSP 5646 (3 alc, 94.7–103.2 mm SL), rio Amazonas, lago Paru, Oriximiná, Mar 1967, Expedição Permanente da Amazônia; MZUSP 31710 (1 alc, 95.5 mm SL), rio Amazonas, lago Grande, Monte Alegre, Apr 1983, R. Barthem; MZUSP 56699 (4 alc, 47.5–85.3 mm SL), rio Trombetas, 1.6 km downstream of lago Iripixi, 01°47'40.4"S, 55°51'15.4"W, Oct 1994, O. Oyakawa, et al.; MZUSP 92783 (4 alc, 48.9–62.8 mm SL), lago do Maiacá, right bank rio Amazonas, Santarém, 02°27'54"S, 054°39'31"W, Nov 2006, L. Sousa & J. Birindelli.

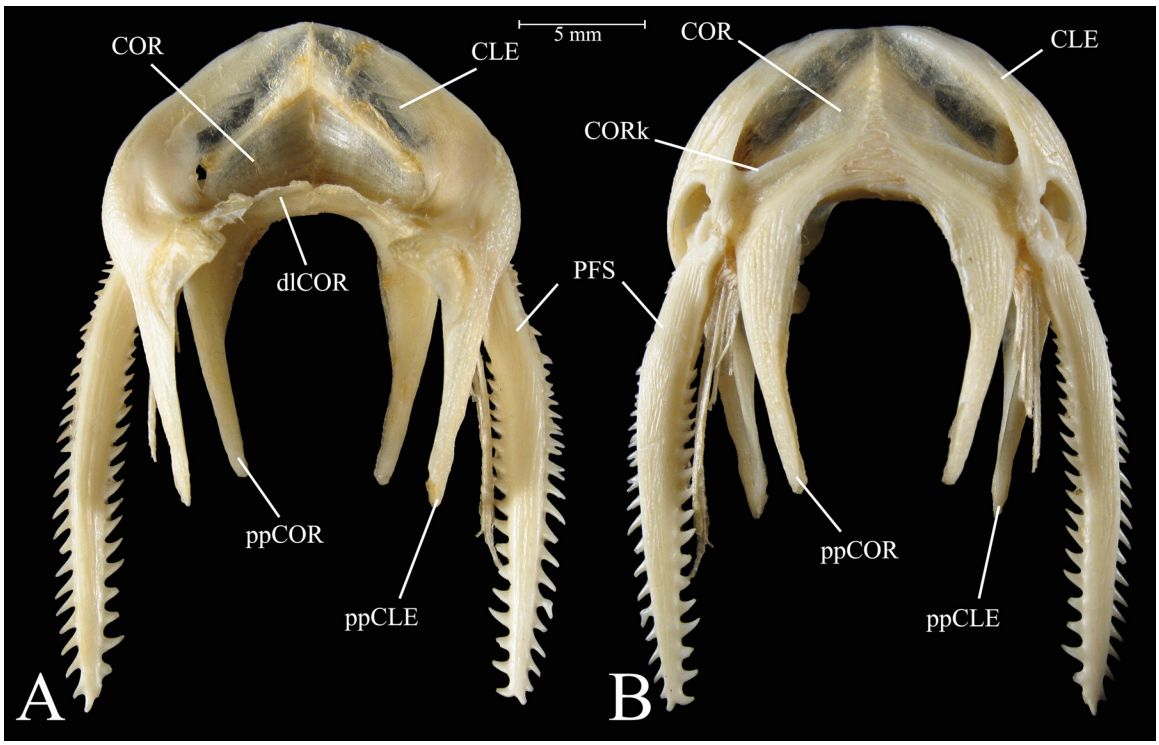


Fig. 4. Pectoral girdle in *Ossancora asterophysa* in dorsal (A) and ventral (B) views; MZUSP 7838, 65.0 mm SL. CLE cleithrum, COR coracoid, CORk coracoid keel, dlCOR dorsal lamina of coracoid, PFS pectoral-fin spine, ppCLE posterior process of cleithrum, ppCOR posterior process of coracoid.

Non-types.—BOLIVIA: **Beni**: ANSP 178755 (1 alc), Ibare (río Mamoré drainage), Trinidad, 1985, L. Lauzanne & G. Loubens; INHS 37106 (1 alc, 97.2 mm SL), cuneta (borrow pit), 3 km E Estacíon Biologica del Beni, on road to San Ignacio, 6 Aug 1995, M. Sabaj, et al.; INPA 633 (5 alc), río Mamoré, San José, Trinidad, 14°51'S 65°02'W, 3 Mar 1982, L. Lauzanne & G. Loubens; INPA 646 (4 alc), río Mamoré, 16 Mar 1984; MNHN 1988-1014 (5 alc), same data as ANSP 178755; MNHN 1988-1017 (5 alc), río Mamoré, Boca Ibare, 1983, L. Lauzanne & G. Loubens; MZUSP 27800 (1 alc, 82.1 mm SL), laguna San José, Trinidad, Mar 1982, ORSTOM; USNM 305639 (2 alc), Ballivia, 14°55'S 66°17'W, Aug 1987, W. Starnes. BRAZIL: **Amazonas**: ANSP 178546 (1 alc), rio Amazonas, downstream from Manaus, between mouths of rio Negro (upstream) and Paraná Caveiro (downstream), 03°11'14"S, 059°31'44"W, 22 Jul 1996, A. Zanata, et al.; ANSP 187434 (57 alc, 1cs), rio Amazonas, 24.1 km upriver of Itacoatiara, 21.3 km downriver of mouth of rio Madeira, 03°16'42"S, 058°35'18"W, 20 Oct 1994, M. Westneat, et al.; ANSP 187440 (1 alc), rio Solimões, 37 km downriver of Vila Iranduba, 3 km upriver of Vila Careiro, 03°13'23"S, 059°55'24"W, 20 Jul 1996, C. Cox-Fernandes, et al.; ANSP 187442 (4 alc), rio Amazonas, downstream from Manaus, between mouths of rio Negro (upstream) and Paraná Caveiro (downstream), 03°11'14"S, 059°31'44"W, 22 Jul 1996, A. Zanata, et al.; ANSP 187443 (1 alc), rio Madeira, 2.1 km downstream of Vila Urucurituba, 03°32'07"S, 058°54'23"W, 15 Oct 1994, J. Lundberg et al.; INPA 2512 (4 alc), INPA 2571 (1 alc), rio Amazonas, Lago do Rei, ca. 03°10'S, 59°43'W, 30 Nov 1984, E. Ferreira et al.; INPA 5272 (12 alc), rio Solimões, Ilha da Marchantaria, Iranduba, 03°15'41.21"S, 059°58'18.86"W, 26 Oct 1984, E. Ferreira et al.; INPA 9640 (1 alc), rio Jaú, near mouth of rio Negro, Parque Nacional do Jaú, Novo Airão, 29 Jun 1994, M. Garcia & J. Zuanon; INPA 18630 (1 alc, 72.2 mm SL), rio Solimões, mouth, no date, INPA ichthyological team; INPA 20814 (1 alc), INPA 20815 (1 alc), INPA 22153 (5 alc), rio Solimões, paraná do lago do Rei, Careiro, 03°08'31"S, 059°40'35"W, 29 Feb 2000; INPA 22155 (1 alc), same locality as INPA 20814, 25 Apr 2000; INPA 22233 (2 alc), Encontro das Águas, Manaus, 03°11'46"S, 059°55'33"W, 15 Mar 2000, L. Rapp Py-Daniel; INPA 22296 (6 alc), rio Solimões, Ilha da Marchantaria, Manaus, 03°15'41.21"S, 059°58'18.86"W, 16 Nov 2000, L. Rapp Py-Daniel; INPA 22348 (2 alc), same locality as INPA 22233, 29 Sep 1999; INPA 22350 (11 alc), rio Solimões at Lago do Padre, Manaus, 03°11'46"S, 059°55'33"W, 11 May 2000; INPA 23008 (6 alc), same locality as INPA 22350, 11 Oct 2000; INPA 23011 (1 alc), same locality as INPA 22350, 13 Sep 2000, L. Rapp Py-Daniel; INPA 23012 (1 alc), lago Catalão, Manaus, 03°09'30"S, 059°55'W, 11 Oct 2000; INPA 23013 (49 alc), same locality as INPA 20814, 19 Oct 1999, L. Rapp Py-Daniel; INPA 25766 (1 alc), rio Solimões at Lago Maratu, Manaus, 03°21'S, 060°12'36"W, 2003; INPA 26576 (5 alc), same locality as INPA 22350, 11 May 2000; INPA 26577 (1 alc), same locality as INPA 22233, 13 Apr 2000; INPA 26578 (3 alc), same locality as INPA 22233, 2 Feb 2000, L. Rapp Py-Daniel; MCP 29644 (1 alc, 66.3 mm SL), Paraná Maiana (lago Mamirauá system, estação A), 2.5 km from Boca do Mamirauá, Alvarães, 03°06'44"S, 064°47'32"W, 10 Oct 1999, W. Crampton, et al.; MCP 29658 (17 alc, 33.4-107.7 mm SL), lago Jaraqui, Alvarães, 02°44'10"S, 065°04'37"W, Aug 1996, W. Crampton et al.; MCP 29668 (1 alc, 56.2 mm SL), rio Japurá, near mouth of lago Mamirauá (0.2 km from lowest point of shore), Alvarães, 03°07'47"S, 064°46'34"W, 3 Dec 1999, W. Crampton, et al.; MZUSP 83263 (1 alc, 43.5 mm SL), rio Amazonas, 03°17'45"S, 058°55'20"W, Oct 1994, M. Westneat, et al.; MZUSP 102881 (10 alc, 37.9–51.8 mm SL), lago Amanã, Japurá, Sep 1979, R. Barthem; USNM 306900 (1 alc), USNM 306915 (1 alc), Ilha de Marchantaria, Sep 1977, P. Bayley; **Mato Grosso**: MCP 36414 (1 alc, 101.1 mm SL), córrego Barreiro (tributary of rio Guaporé), ca. 19 Km W of Pontes e Lacerda, 15°11'29"S, 059°25'31"W, 11 Jul 2004, V. Bertaco, et al.; MZUSP 84665 (1 alc, 85.7 mm SL), rio Guaporé, Vila Bela da Santíssima Trindade, Sep 1984, MZUSP/Polo Norte; **Pará**: ANSP 187438 (4 alc), rio Trombetas, 3.6 km downstream of Faz. Santana, 13.8 km upstream of Óbidos, 01°53'07"S, 055°37'53"W, 23 Oct 1994, M. Westneat, et al.; ANSP 187441 (2 alc), rio Trombetas, 26.7 km downriver of Porto Trombetas, 10.3 km upriver of Vila Aracua, 01°30'30"S, 056°10'56"W, 25 Oct 1994, J. Lundberg, et al.; CAS 6656 (1 alc, 97 mm SL), Santarém market, Sep 1924, C. Ternetz; CAS-SU 50361 (1 alc, 67.3 mm SL), CAS-SU 50359 (1 alc, 88.7 mm), vicinity of Belém ['received from Bokermann, São Paulo, 1957?']; INPA 5449 (3 alc), lago Salgado, rio Cuminã, rio Trombetas, Oriximiná, 01°45'S, 055°53'W, 27 Aug 1990, E. Ferreira et al.; INPA 7222 (1 alc), rio Tapajós, Muçum, near mouth of rio Cupari, Aveiro, 27 Oct 1991, L. Rapp Py-Daniel & J. Zuanon; INPA 10181 (2 alc, 91.2-97.7 mm SL), rio Amazonas, Lago Grande Monte Alegre, 5-12 Aug 1982, G. Santos & J. Zuanon; MZUSP 5038 (1 alc, 55.4 mm SL), Ilha de Marajó, Cachoeira do Arari, Jun 1966, Expedição do Departamento de Zoologia; MZUSP 31709 (1 alc, 64.3 mm SL), rio Guaipi, Ilha de Marajó, 0°51'S, 049°0'W, Jan 1982, R. Barthem; MZUSP 83210 (2 alc, 38.7–65.3 mm SL), rio Amazonas, 21.3 km downstream of Boca do Arapiri, 02°09'23.5"S, 054°51'57.3"W, Oct 1994, A. Akama, et al.; MZUSP 99421 (7 alc, 50–70.4 mm SL), same data as MZUSP 31709; MZUSP 107929

(1 alc, 62.2 mm SL), rio Trombetas, lago Bacabal, 01°31'14"S, 056°07'30"W, Oct 1994, F. Langeani, et al.; **Rondônia**: UFRO-I 858 (12) rio Cautário, mouth, Costa Marques, 12°13'59.7"S, 064°33'57.9"W, 18 Nov 2009, A. Cella-Ribeiro; UFRO-I 4919 (1 alc), rio Mamoré, near Guajará-Mirim, 11°30'08.6"S, 065°11'17.5"W, 22 Nov 2009, A. Cella-Ribeiro; UFRO-I 4920 (29), rio Mamoré, opposite mouth of rio Pacaás Novos, 11°10'57.3"S, 065°19'34.3"W, A. Cella-Ribeiro, 6 Jul 2009. PERU: **Loreto**: ANSP 181118 (1 alc), río Nanay, upstream half of large beach (left bank) at village of Pampa Chica, 4.54 km W of Iquitos, 03°45'09"S, 073°17'00"W, 21 Aug 2005, M.H. Sabaj & M.C. Pérez; ANSP 182508 (2 alc), río Nanay, downstream half of large beach (left bank) at village of Pampa Chica, 4.54 km W of Iquitos, 03°45'09"S, 073°17'00"W, 7 Aug 2005, M. Sabaj, et al.; ANSP 182516 (2 alc) same locality as ANSP 182508, 3 Aug 2005, M. Sabaj, et al.; ANSP 182612 (51 alc, 1 cs, 52.5–79.8 mm SL), río Nanay, large left bank beach upstream from mouth, N of Iquitos, 03°42'49"S, 073°16'43"W, 15 Aug 2005, M. Sabaj, et al.; INHS 36954 (1 alc), río Amazonas (W bank), N edge of Iquitos, 29 Jul 1995, M. Sabaj & J. Armbruster; INHS 55008 (1 alc), río Amazonas, near outlet of the large backwater W of Isla Iquitos, opposite Iquitos, 9 Aug 1999, M. Sabaj, et al.; MCP 26189 (2 alc, 45.3–46.6 mm SL), cocha Yanayacu, Reserva Nacional Pacaya-Samiria, 05°16'43"S, 074°55'57"W, 4 Aug 2000, J. Albert, et al.; MUSM ex. 17305 (4 alc, 35.4–50.5 mm SL), río Pacaya, Reserva Nacional Pacaya–Samiria (PV1), Requena, 4 Aug 2000, H. Ortega, et al.; **Ucayali**: MUSM 2071 (1 alc, 43.1 mm SL), río Ucayali, Roamine cocha, 17 Nov 1979, H. Ortega; MUSM 15499 (29 alc, 40.7–70 mm SL), laguna Yarinacocha, Pucallpa, 11 Sep 1986, H. Ortega; MUSM 19715 (1 alc, 67.5 mm SL), laguna Yarinacocha, caño Tushmo, Pucallpa, 30 Oct 2001, H. Ortega, et al.; MUSM ex. 593 (1 alc, 46 mm SL), same locality as MUSM 15499, 9 Aug 1973, H. Ortega; MUSM ex. 20497 (2 alc, 48–49.8 mm SL), same locality as MUSM 19715, 20 Aug 2002, Earthwatch Team IV; MUSM ex. 1982 (12 alc, 45.2–55.8 mm SL), same locality as MUSM 15499, 26 Aug 1986, R. Vari, et al.

Diagnosis.—*Ossancora asterophysa* is distinguished from *O. punctata* by having maxillary barbel with elongate fimbriae inserted in two distinct rows along anterior margin, one dorsally and one ventrally (Fig. 1), mental barbels with elongate fimbriae, and anterior nuchal plate reduced, diamond shaped, not sutured to epioccipital (Fig. 3). The new species differs from *Ossancora eigenmanni* and *O. fimbriata* by having the unique combination of: gas bladder (Fig. 5I–L) with numerous diverticula that are thin, moderately elongate (often branched), and grouped in roughly paired, small fascicles along the periphery of anterior face, shoulder and lateral walls of anterior chamber as well as lateral walls and posterior face of posterior chambers (vs. peripheral diverticula absent or few, restricted to anterolateral shoulder and sometimes anterior face of the anterior chamber in *O. eigenmanni*; Fig. 5M–P); terminal diverticula lacking or indistinguishable from other peripheral diverticula (vs. short terminal diverticula present in *O. fimbriata*; Fig. 5E–H); infranuchal plate not greatly expanded ventrally (vs. greatly expanded ventrally, reaching level of posterior coracoid process in adults in *O. fimbriata*); nuchal foramina absent (vs. usually present, except in some large adults, in *O. fimbriata*); less than 20 teeth per ramus on premaxilla and dentary (vs. 25–50 in *O. fimbriata*); mental barbel with elongate fimbriae in single row (vs. two rows in *O. fimbriata*).

Description.—Morphometrics in Table 1; holotype in Fig. 7; additional specimens in Fig. 8. Largest specimen examined 107.7 mm SL (INPA 22349). Dorsal profile of head rising moderately, often evenly or barely convex from snout tip to dorsal spine, otherwise becoming slightly more level just before dorsal spine effecting shallow hump. Dorsal profile of body descending more gradually, shallowly convex from dorsal spine to caudal peduncle. Ventral contour shallowly convex from snout tip to caudal peduncle, flattened across abdominal region. Caudal peduncle short with shallow hourglass shape in lateral view. Head acutely triangular with bluntly pointed snout in dorsal and lateral views. Body equilaterally triangular in cross-section through nuchal region.

Eye medium sized (diameter 18.7–24.4% of head length), covered by thin skin (adipose eyelid inconspicuous), placed dorsolaterally (dorsal rim nearly even with countour of head, not elevated above). Anterior naris bounded by complete tube of skin, tube slightly taller posteriorly; posterior naris slightly larger, bounded by shorter tube of skin narrowly interrupted posteriorly and expanded anteriorly as weak flap.

Mouth small, subterminal; gape scarcely curved in ventral view. Lips moderately developed with low, rounded papillae. Each premaxilla and dentary bearing small patch of acicular teeth with sharp tips. Both upper and lower tooth patches separated by distinct gap at symphysis. Teeth loosely arranged in about two rows; 8–17 (16*), modally 11 (25), per premaxilla; 10–17 (13*), modally 14 (25), per dentary.

Three pairs of barbels (maxillary, inner and outer mental), all fimbriate. Maxillary barbel long, tip surpassing pectoral-fin base; fimbriae smooth, long and inserted in two rows along anterior margin (Fig. 1); 2–5 fimbriae in dorsal row, 7–10 in ventral row, 9–15 (11*) total, modally

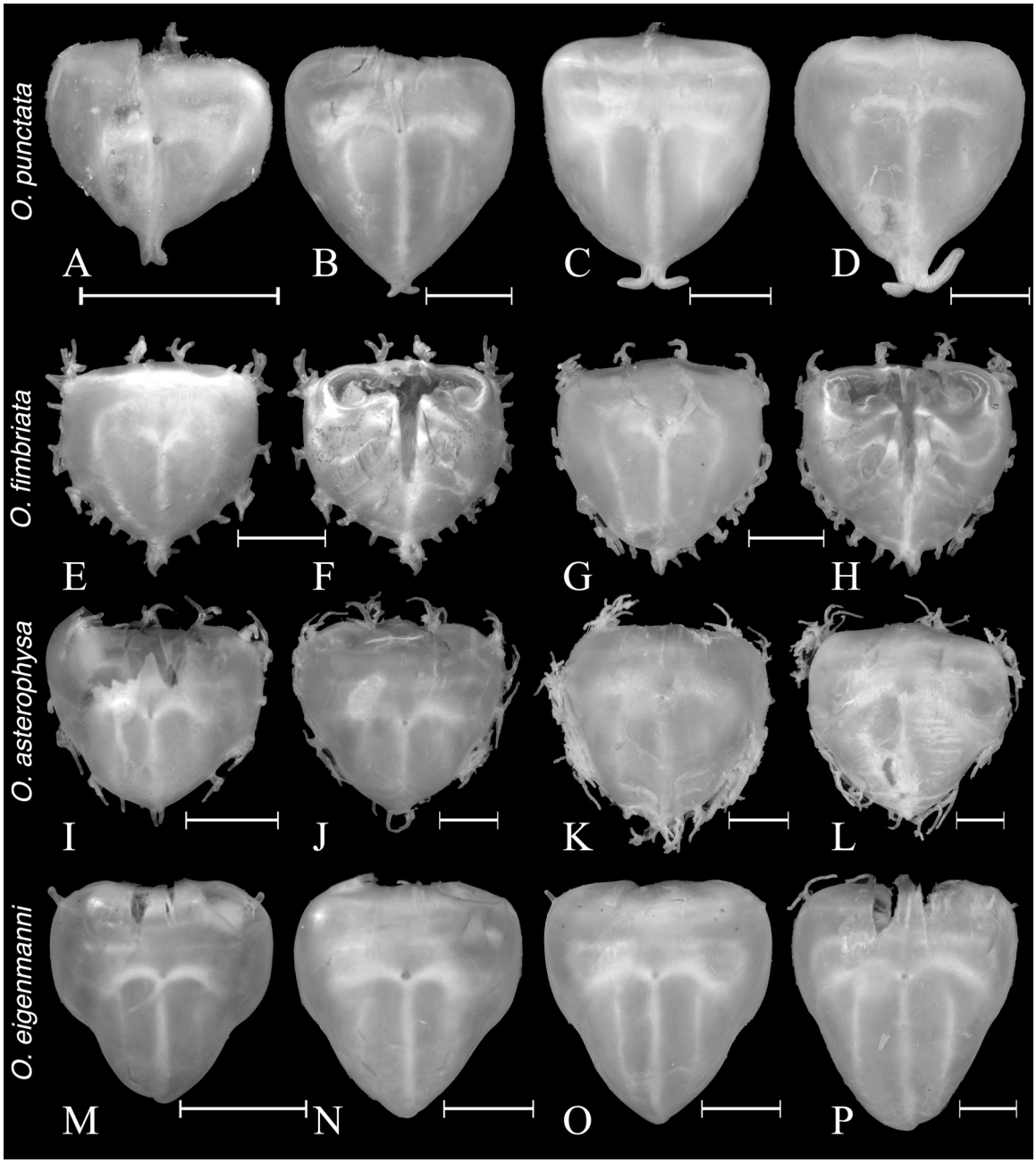


Fig. 5. Gas bladders in *Ossancora* in ventral (A-E,G,I-P) and dorsal (F,H) views. A-D. *O. punctata*: MZUSP 26265, 34.1 mm SL (A); NUP 3542, 65.4 mm SL (B); MZUSP 95000, 65.8 mm SL (C); MZUSP 7839, 72.6 mm SL (D). E-H. *O. fimbriata*: MZUSP 55833, 42.6 mm SL (E,F); MZUSP 55833, 62 mm SL (G,H). I-L. *O. asterophysa*: MZUSP 7543, 51.2 mm SL (I); MZUSP 7543, 73 mm SL (J); MZUSP 56699, 84.7 mm SL (K); MZUSP 84665, 85.7 mm SL (L). M-P. *O. eigenmanni*: MZUSP 95024, 38.3 mm SL (M); MZUSP 44423, 62 mm SL (N); MZUSP 95024, 65.3 mm SL (O); MZUSP 38176, 85.5 mm SL (P). Scale bars equal 5 mm.

11 (25). Origins of inner and outer mental barbels more or less co-linear; outer mental barbel usually finishing beyond gill opening and before transverse through pectoral-spine insertions; inner mental barbels slightly shorter. Mental barbels with single row of elongate fimbriae along medial margin; 4–7 (5*), modally 5, and 4–8 (5*), modally 6 (25), fimbriae on outer and inner mental barbels, respectively. First gill arch with 10–12 rakers, modally 12 (3); 8 or 9 on ceratobranchial, one at cartilaginous angle, one or two on epibranchial; length of longest raker about four times width. Branchiostegal rays 7 or 8 (2).

Dorsal fin II,6 (25), with distal margin approximately straight, vertical when erected. Dorsal-fin spine usually with antrorse serrations along basal two-thirds of anterior margin, distal tip smooth; fewer, much smaller, more erect and spaced serrations along distal half of posterior face. Pectoral fin modally I,8*, range I,7–9 (24); distal margin straight, oblique relative to body axis. Pectoral-fin spine with similarly sized serrations anteriorly and posteriorly; anterior serrations antrorse along entire margin; posterior serrations retrorse, fewer in number, from distal tip nearly to base. Pelvic fin i,6 (25); distal margin broadly rounded. Anal fin modally v,9*, range iii–v,8–10 (25); with scarcely rounded distal margin. Adipose fin relatively large, teardrop-shaped, base nearly as long as anal-fin base. Caudal fin i,7/8,i (25), moderately forked, intact

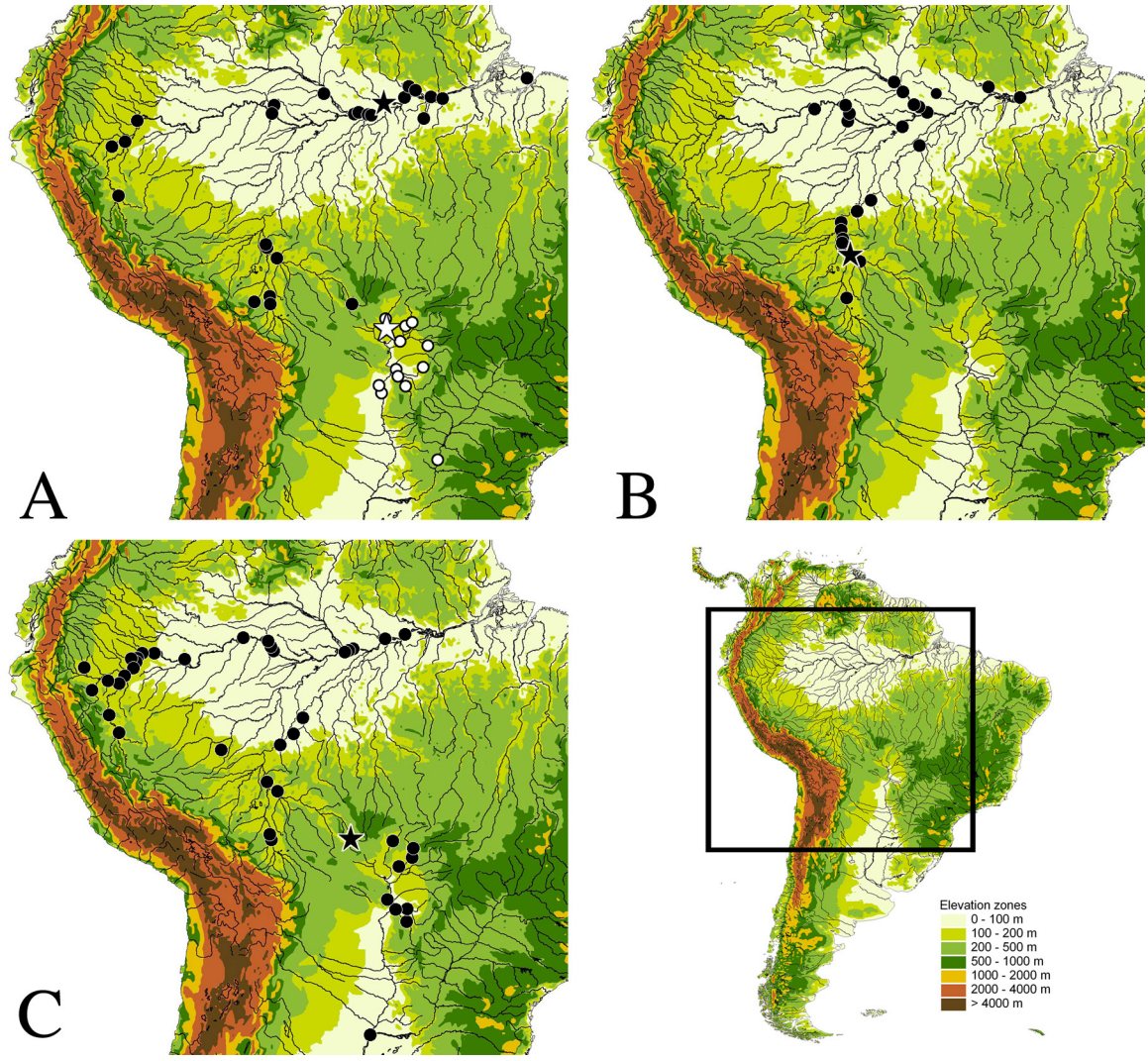


Fig. 6. Distributions of (A) *Ossancora asterophysa* (filled symbols) and *O. eigenmanni* (open symbols), (B) *O. fimbriata*, and (C) *O. punctata*. Stars indicate type localities.

Fig. 7. *Ossancora asterophysa*, holotype, MZUSP 105279 (79.2 mm SL), Brazil: Amazonas: rio Amazonas, Urucará, 9 Dec 1967, Expedição Permanente da Amazônia.

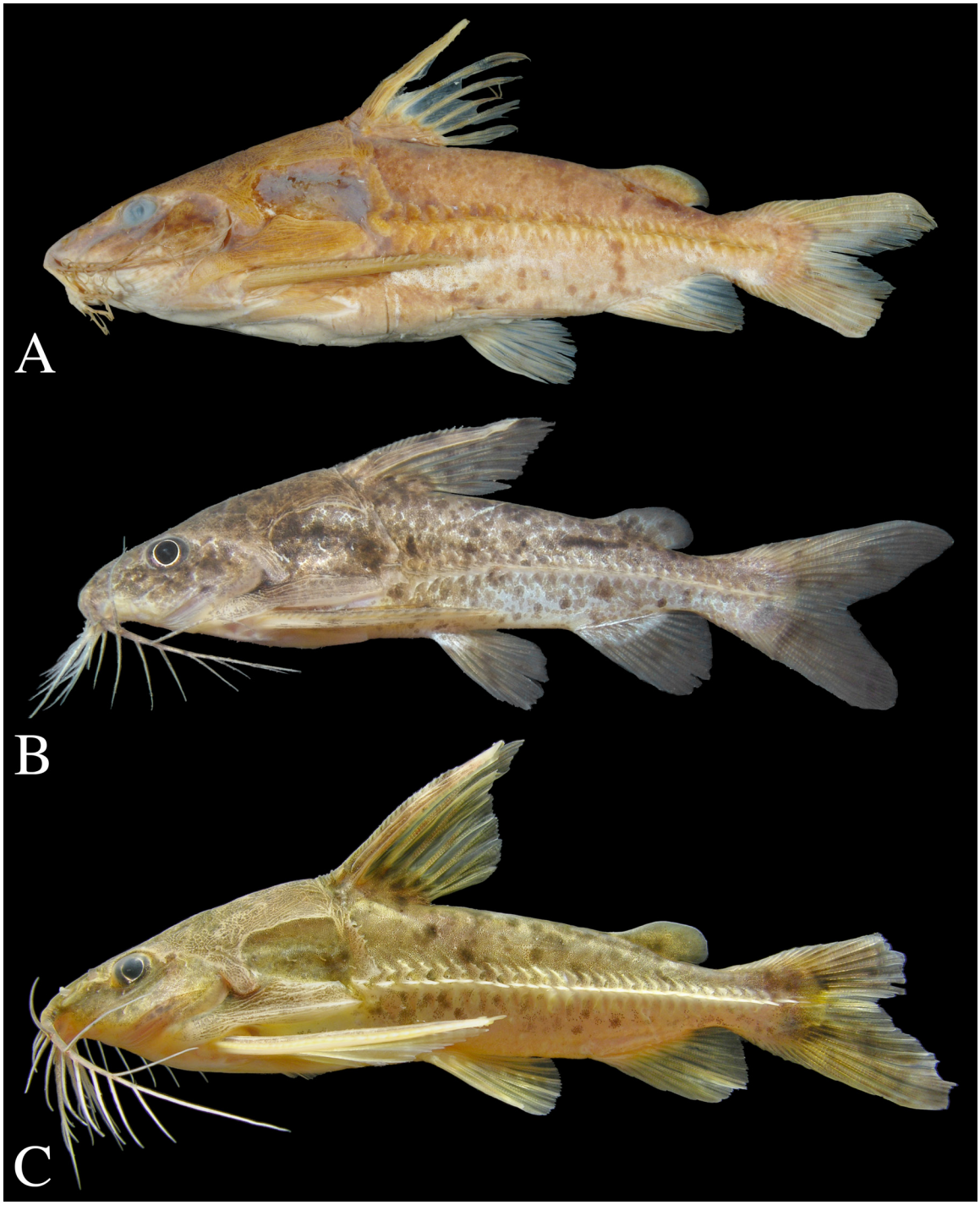


Fig. 8. *Ossancora asterophysa*. A. MZUSP 5646, 102.5 mm SL, rio Amazonas, lago Paru, Oriximiná, Pará, Brazil. B. MZUSP 92783, 58.4 mm SL (live), lago do Maiacá, right bank rio Amazonas, Santarém, Pará, Brazil (photo by Leandro Sousa). C. ANSP 182516, 74.2 mm SL (live), río Nanay, at village of Pampa Chica, 4.54 km W of Iquitos, Loreto, Peru.

lobes often pointed (particularly in juveniles), dorsal lobe often slightly longer and more slender than ventral. Dorsal procurrent rays modally 10, range 6–12 (9*) (25); ventral procurrent rays modally 9*, range 7–11 (25); dorsal and ventral procurrent rays slightly expanded laterally, anteriormost one approaching plate-like condition in larger specimens (SL >95 mm).

Lateral line ossified with complete series of three tympanal scutes and 28–30, modally 29* (25), midlateral scutes per side beginning with infranuchal. Tympanal scutes inconspicuous, largely concealed by skin; anteriormost largest, ossification slightly expanded beyond tubule; posteriormost smallest, ossification restricted to tubule. Infranuchal scute with distinct medial thorn flanked by laminar wings, each with entire or sparsely serrated posterior margin; dorsal wing about twice as deep as ventral wing; ventral wing finishing at or above posteriormost tip of posterior cleithral process. Postinfranuchal scutes similar, with medial thorn and sparsely serrated posterior margin, but with wings similarly sized; scutes overlapping, obliquely oriented and gradually decreasing in depth to caudal fin. Depth of 10th midlateral scute about one-third of corresponding body depth.

Gas bladder (Fig. 5I-L) moderately large, cordiform, width slightly exceeding length in specimens up to 85 mm SL, about equaling length in specimens >97 mm SL. Numerous diverticula along periphery of anterior face, shoulder and lateral walls of anterior chamber as well as lateral walls and posterior face of posterior chambers; diverticula thin and moderately elongate, often branched (becoming longer and more branched in larger specimens); grouped in roughly paired, small fascicles, the largest and most elaborate of which is at shoulder. Terminal diverticula lacking or indistinguishable from other peripheral diverticula.

Osteology.—Osteological features of head and anterior body in Fig. 3; pectoral girdle in Fig. 4; branchial skeleton in Fig. 9; and pelvic girdle in Fig. 10. Cephalic shield weakly ornamented with fine, broken striations and minute punctations; middorsal furrow usually evident in juveniles, lacking in adults. Cranial roof relatively planar between orbits, becoming triangularly arched (to about 90°) in nuchal region.

Mesethmoid moderately elongated; anterior portion narrow, lacking cornua for articulation with premaxillae; becoming wider posteriorly with paired lateral triangular processes, each nearly contacting anterior tip of infraorbital one; anteroventrally with low, gradual medial keel extending between paired premaxillae. Lateral ethmoid broad, participating in externally visible portion of cephalic shield and contacting infraorbital one anterolaterally. Nasal moderately long, tubular, nearly reaching tip of lateral process of mesethmoid.

Dorsal half of orbital rim rounded, moderately concave in dorsal view, completed by lateral ethmoid, frontal and sphenotic. Four infraorbitals. Infraorbital one large, talon shaped with sharp tip curving medially towards

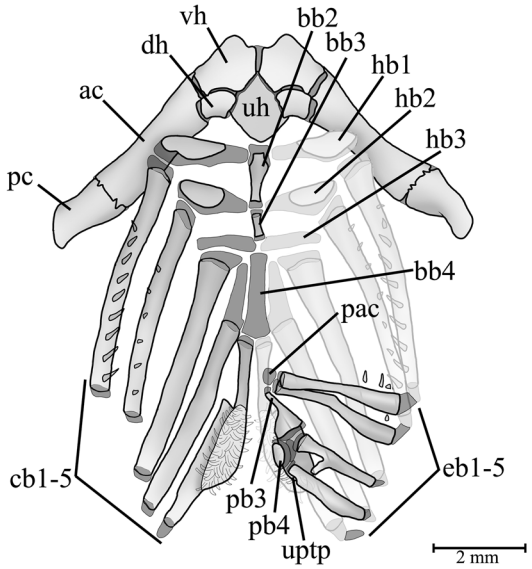


Fig. 9. Schematic illustration of branchial skeleton in dorsal view of *Ossancora asterophysa*, based on MZUSP 7543, 77.3 mm SL. ac anterior ceratohyal, bb basibranchial, cb ceratobranchial, dh dorsal hypohyal, hb hypobranchial, pac pharyngobranchial accessory cartilage, pb pharyngobranchial, pc posterior ceratohyal, uh urohyal, uptp upper pharyngeal tooth plate, vh ventral hypohyal.

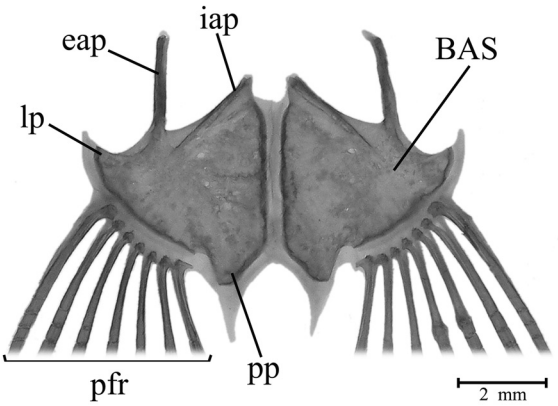


Fig. 10. Pelvic girdle (dorsal view) in *Ossancora fimbriata*, MZUSP 56703, 59.0 mm SL. BAS basipterygium, eap external anterior process, iap internal anterior process, lp lateral process, pfr pelvic-fin rays, pp posterior process.

tip of lateral process of mesethmoid; sutured posteriorly to lateral ethmoid, excluded from orbital rim. Remaining infraorbitals as tubular ossifications; infraorbital two shortest, excluded from orbital rim; infraorbital four longest, gently curved, almost contacting lateral corner of sphenotic.

Cranial fontanel with single elongate opening anterior to epiphyseal bar (posterior portion occluded); largely enclosed by frontals except anteriormost portion completed by mesethmoid.

Epioccipital with long, thin, rod-like posterior process nearly reaching posterior nuchal plate. Lateral margin of epioccipital partially delimiting tympanal region (i.e., posttemporo-supracleithrum not contacting middle nuchal plate). Lateral margins of nuchal shield scarcely concave in dorsal view. Anterior nuchal plate reduced, diamond shaped with longer portion pointed posteriorly, not sutured to epioccipital, completely enclosed by parieto-supraoccipital and middle nuchal plate. Nuchal foramina absent.

Premaxilla small, ventral face with squarish patch of acicular teeth. Maxilla relatively short, length excluding proximal condyles about twice its width. Autopalatine elongate, rod-like, proximal and distal ends weakly dilated. Dentary with small patch of acicular teeth near symphysis. Coronomeckelian bone present, extending from anguloarticular to dentary, covering meckelian cartilage. Mandibular sensory canal with three pores on lower jaw.

Suspensorium elongate, formed mainly by thin hyomandibula. Metapterygoid somewhat triangular, sharing diagonal suture with similarly sized entopterygoid which is connected medially to lateral ethmoid. Opercle subtriangular, contacting relatively large and triangular interpreopercle.

Hyoid and branchial arches depicted in Fig. 9; elements relatively compact, robust, particularly basibranchials and hypobranchials (compared with *Leptodoras oyakawai* in Birindelli et al., 2008:473, fig. 10). Urohyal small, with well-developed ventral process. Ventral hypohyal large, joined to anterior ceratohyal via cartilage and short suture; dorsal hypohyal small, not sutured to surrounding bones. Anterior ceratohyal rod-like, joined to posterior ceratohyal via cartilage and short suture. Five branchial arches. Basibranchials 2 and 3 ossified, rod-like; basibranchial 4 cartilaginous with elongate ventral process. Three hypobranchials; first two with roughly ovoid ossified portion and rim of cartilage continuous from articulation with basibranchial to ceratobranchial; third one entirely cartilaginous. Ceratobranchials 1–4 rod-like with cartilaginous caps; ceratobranchial 5 with elongate proximal stalk and rod-like distal portion, supporting lenticular tooth patch with numerous (ca. 40) sturdy, acicular teeth variable in size and irregularly set in about three rows. Epibranchials 1–4 ossified, with cartilaginous caps; epibranchial 3 with small uncinate process; epibranchial 4 with laminar posterior border. Epibranchial 5 developed as a cartilaginous nodule. Pharyngobranchials 3 and 4 ossified, each with cartilaginous caps. Medial ends of epibranchials 1 and 2 and pharyngobranchial 3 articulating with small pharyngobranchial accessory cartilage. Upper pharyngeal tooth plate lenticular with many long acicular teeth suspended beneath pharyngobranchials and epibranchials three and four. Gill rakers in single row, restricted to ceratobranchials and epibranchials of first two arches.

Total vertebrae 33 (1), 34 (4) or 35 (1). Centra 1–6 fused into the Weberian complex; seventh centrum firmly incorporated into Weberian complex via deep interdigitating suture (intervertebral disk between sixth and seventh centra remnant, barely visible). First unmodified intervertebral joint between seventh and eighth centra. Aortic passage completely enclosed by superficial ossifications nearly to obsolete joint between fifth and sixth centra. Müllerian ramus with ossified proximal portion; egg-like in outline with narrower distal end gradually transitioning into spherical cartilaginous knob directed posteroventrally into anterior chamber of gas bladder. Fifth centrum lacking distinct parapophyses. Vertebrae 6–11 (4) or 6–12 (3) bearing six and seven distinct pairs of simple ribs, respectively. Caudal fin with hypural fusion pattern PH; HY 1+2; HY 3+4; HY 5; hypurapophyses Type C (*sensu* Lundberg and Baskin, 1969:15).

Pectoral girdle (Fig. 4) with broadly rounded anterior margin; maximum width slightly greater than twice the length measured along medial symphysis of contralateral limbs. Coracoid with long posterior process finishing more or less even with tip of posterior cleithral process in adults. Entire posterior coracoid process visible externally, ornamented with fine longitudinal ridges and grooves. Portion of ventral surface of coracoid completing notch for pectoral-spine insertion also visible externally. Remaining ventral surface of coracoid concealed by skin, including portion along symphysis between posterior processes. Posterior coracoid processes weakly convergent posteriorly with gently curved inner margin, effecting horseshoe-like shape (Fig. 4B). Posterior process of cleithrum subtrapezoidal or rudder-shaped with oblique posterior margin angled dorsoanteriorly; dorsal profile descending gradually from posttemporo-supracleithrum with margin either straight, shallowly concave or gently sinuous (concave anteriorly, convex posteriorly); ventral profile gently bowed, convex. Surface ornamentation of posterior cleithral process generally separable into three longitudinal fields: dorsal, middle and ventral.

Dorsal field widest anteriorly, tapering posteriorly to dorsal posterior corner; middle field narrowly triangular, expanded posteriorly and somewhat sunken between low oblique ridge separating dorsal field and more prominent longitudinal ridge separating ventral field; ventral field weakly to moderately developed, tapered anteriorly and posteriorly; ventral longitudinal ridge often finishing as short, posteriorly directed spine.

Basipterygium with internal anterior process indistinct, mostly incorporated into main body of basipterygium (comparable to Fig. 10 for *O. fimbriata*); external anterior process distinct, rod-like, moderately long (length slightly greater than one-half width of each basipterygium); lateral process distinct, accentuated by cartilage; ossified posterior process distinct, attenuated by cartilage.

Coloration.—In alcohol (Figs. 7, 8A), upper sides of head and body (above midlateral thorns) generally tan to brown; lower sides somewhat lighter; ventral surfaces often uniformly pale, sometimes with diffuse dusky patches in larger specimens (SL >80 mm). Sides of head and body sometimes plain, more often irregularly mottled or speckled with small, diffuse, brown blotches. Fins somewhat hyaline, often with small, faint, dusky blotches or speckles scattered mostly on spines and rays. Caudal fin sometimes with dusky longitudinal streaks, particularly near base, formed by concentration of pigment in middle membranes of upper and lower lobes. Maxillary barbel tan with diffuse brown speckles. Mental barbels uniformly tan to pale.

In live specimens (Figs. 8B,C), darker blotches and speckles more conspicuous, sharply contrasted with lighter background. Background color greenish-gold in live specimens from río Nanay, a moderate blackwater tributary to the upper rio Amazonas.

Distribution and habitat.—*Ossancora asterophysa* is known from lowland areas in the Amazonas basin in Bolivia, Brazil and Peru (Fig. 6A). Records extend from Ilha do Marajó near the mouth of the rio Amazonas to laguna Yarinacocha, an oxbow lake connected to the río Ucayali. Additional records are from the río Mamoré and upper Guaporé, Madeira drainage. *Ossancora asterophysa* is most commonly known from whitewater habitats (e.g., Solimões/Amazonas, Madeira, Mamoré); however, some records are from clearwaters (Trombetas, Guaporé) and moderate blackwaters (Nanay). Near Iquitos, Peru, *O. asterophysa* was collected in shallows along the sandy or silted margins of large rivers (e.g., río Nanay, río Amazonas) during low water season, occasionally in large schools (ANSP 182612). The Calhamazon Expeditions collected *O. asterophysa* in bottom trawls of the rio Amazonas at depths ranging from 1.2–12.3 m.

Etymology.—Species name from the Greek *aster*, meaning star, and *physa*, meaning bladder, alluding to the proliferation of diverticula along the periphery of the gas bladder which distinguishes species from *Ossancora eigenmanni*. An adjective.

***Ossancora eigenmanni* (Boulenger, 1895) comb. nov.**
Figs. 5M–P, 6A, 11; Table 1

Oxydoras eigenmanni Boulenger, 1895:524. Type locality: Descalvados, Matto Grosso [= rio Paraguai at Fazenda Descalvados, MT, Brazil].—Boulenger, 1896:28–29, Pl. 4 (fig. 3) [description repeated with illustration of syntype added].—Eigenmann et al., 1907:116 [Corumba].—Bertoni, 1914:7 [Paraguay].—Bertoni, 1939:252 [Paraguay].—Sabaj and Ferraris, 2003:458 [in part, taxonomic checklist].—Ferraris, 2007:167 [in part, taxonomic checklist and type catalog].—Birindelli et al., 2009:263, figs. 17M-P [gas bladder morphology].

Hemidoras brevis.—Fisher, 1917:421 [in part, Corumba, Caceres].

Hemidoras eigenmanni.—Miranda Ribeiro, 1911:175 [new generic assignment, literature compilation].

Doras eigenmanni.—Eigenmann, 1925:344, Pl. 21 (figs. 3, 4) [new generic assignment; in part, Corumba, Caceres; redescription, illustration and identification key].—Fowler, 1951:488 [in part, literature compilation].—Arámburu et al., 1962:230, fig. 3 [Riacho Formosa, Formosa, Argentina; illustration].—Ringuelet et al., 1967:286, fig. 17B [Riacho Formosa, Formosa, Argentina].—Burgess, 1989:223 [literature compilation].—Burgess, 1993 [literature compilation].—Zawadzki et al., 1996:409 [rio Paraná, above and below Itaipu reservoir].—Eschmeyer, 1998:513 [catalog of fishes].—Menni, 2004:96 [literature compilation].—Akama in Buckup et al., 2007:114 [in part, literature compilation].

Lectotype.—BMNH 1895.5.17.53 (72.4 mm SL), Brazil: Mato Grosso: rio Paraguai at Fazenda Descalvados, C. Ternetz.

Paralectotypes.—BMNH 1895.5.17.50-52 (3 alc, 36.0-62.7 mm SL); same data as lectotype.

Non-type material.—BRAZIL: **Mato Grosso**: LBP 5627 (1 alc, 73.3 mm SL), Região de Rombado, tributary of rio Pirai/Poconé (Paraguai drainage), 16°22’43.5’S

56°25'51.8"W, C. Oliveira et al., 17 Feb 2000; MCP 10859 (1 alc, 102.2 mm SL), dry "sanga" under bridge Transpantaneira (MT-060), 70 km from Poconé, L. Malabarba & R. Reis, 9 Feb 1986; MCP 15790 (18), rio Paraguai, Cáceres and vicinity, 16°03'S, 57°42'W, R. Reis et al., 11 Aug 1991; MCP 29038 (1 alc), MCP 29039 (1 alc), MCP 29040 (1 alc), MCP 29045 (1 alc), MCP 29050 (1 alc), MCP 29051 (1 alc), rio Bento Gomes (Paraguai drainage), Poconé, 16°15'S, 056°37'W, W. Troy, 2000; MZUSP 42750 (1 alc, 34.9 mm SL), rio Cuiabá, Barão de Melgaço, 16°17'S, 055°58'W, Cepipam, May 1977; MZUSP 44423 (19 alc, 33.3-63.4 mm SL), rio Paraguay, Cáceres, 16°4'S, 057°41'W, joint MZUSP/USNM/MCP/UFMT Expedition, Aug 1991; MZUSP 95024 (60 alc, 30.8-77.3, 3 cs, 35.1-65.6 mm SL), rio Mutum, Barão de Melgaço, between Mimoso and Joselândia (Pantanal de Paiaguás), 16°19'30"S, 055°49'59"W, F. Machado et al., Sep 2006; NUP 2204 (1 alc, 87.8 mm SL), NUP 3504 (4 alc, 55.9-69.3 mm SL), Barão de Melgaço, Baía Sinhá Mariana, tributary of rio Cuiabá, 16°20'S, 055°54'W, Nupélia, 2001-2002; **Mato Grosso do Sul**: CAS 60780 (5 alc, 41.4-94.2 mm SL), Corumbá, J. Anisits, no date; MUSM 17171 (1 alc, 83.7 mm SL), río Negro, Lagoa Corixão, about 6.5 km west of Conejo Anhuma at road, 19°07'S, 055°20'53"W, A. Machado et al., 28 Aug 1998; MZUSP 36328 (1 alc, 44.1 mm SL), Corumbá, Nhecolândia, Fazenda Santa Branca, 19°15'S, 057°01'W, E. Bastos, Sep 1985; MZUSP 36365 (1 alc, 64.1 mm SL), Corumbá, Corixão, Capão Grande, Nhecolândia, G. Mourão, Sep 1985; MZUSP 38176 (5 alc, 46.4-85.7 mm SL), Corumbá, swamp passing rio Miranda, 19°41'S, 56°58'W, Cepipam, Oct 1977; MZUSP 52534 (3 alc, 72.1-80.4 mm SL), rio Piquiri, Pantanal de Paiaguás, Fazenda Santo Antônio, 17°18'S, 56°43'W, T. Lipparelli, Mar 1993; MZUSP 59460 (16 alc, 29.7–69.6 mm SL), rio Vermelho, Corumbá, 19°37'22"S, 056°57'27"W, C. Magalhães et al., Sep 1988; MZUSP 102819 (4 alc, 68.5–99.4 mm SL), rio Miranda, Corumbá, 20°14'S, 056°22'W, E. Resende, Nov 1989; MZUSP 102821 (1 alc, 97.1 mm SL), rio Piquiri, Bahia de Santo Antônio, Corumbá, E. Resende, Jul 1993; MZUSP 102822 (1 alc, 87.6 mm SL), Fazenda Lambari, Corumbá, R. Castella, Nov 1992; **Paraná**: MZUSP 42144 (1 alc, 77.5 mm SL), rio Paraná, Santa Helena, Prainha, 24°52'S, 054°24'W, Nupélia-Fuem, Mar 1981; PARAGUAY: **Alto Paraguay**: MZUSP 54323 (6 alc, 22.4–33.4 mm SL), río Paraguay, Puerto Voluntad, 20°42'S 057°57'W, M. Piza et al., Jun 1997; MZUSP 54324 (2 alc, 51.5–57.7 mm SL), río Paraguay, 20°12'S, 058°10'W, M. Piza et al., Sep 1997.

Diagnosis.—*Ossancora eigenmanni* is distinguished from *O. punctata* by having maxillary barbel with elongate fimbriae inserted in two distinct rows along anterior margin, one dorsally and one ventrally (Fig. 1), mental barbels with elongate fimbriae, and anterior nuchal plate reduced, diamond shaped, not sutured to epioccipital (Fig. 3). *Ossancora eigenmanni* differs from *O. asterophysa* and *O. fimbriata* by the unique combination of: gas bladder diverticula few, simple or sometimes weakly branched, restricted to anterolateral shoulder and sometimes anterior face of the anterior chamber (Figs. 5M–P vs. diverticula numerous and usually branched, present along entire periphery of gas bladder in *O. asterophysa*, Figs. 5I–L), infranuchal plate not greatly expanded ventrally (vs. greatly expanded ventrally, reaching level of posterior coracoid process in adults in *O. fimbriata*); nuchal foramina absent (vs. usually present, except in some large adults, in *O. fimbriata*); less than 20 teeth per ramus on premaxilla and dentary (vs. 25–50 in *O. fimbriata*); mental barbel with elongate fimbriae in single row (vs. two rows in *O. fimbriata*).

Description.—Morphometrics in Table 1; lectotype and additional specimens in Fig. 11. Largest specimen examined 99.4 mm SL (MZUSP 102819). Dorsal profile of head rising moderately, often evenly or barely convex from snout tip to dorsal spine, otherwise becoming slightly more level just before dorsal spine effecting shallow hump. Dorsal profile of body descending more gradually, shallowly convex from dorsal spine to caudal peduncle. Ventral contour shallowly convex from snout tip to caudal peduncle, flattened across abdominal region. Caudal peduncle short with shallow hourglass shape in lateral view. Head acutely triangular with bluntly pointed snout in dorsal and lateral views. Body equilaterally triangular in cross-section through nuchal region.

Eye medium sized (diameter 18.9–25.5% of head length), covered by thin skin (adipose eyelid inconspicuous), placed dorsolaterally (dorsal rim nearly even with countour of head, not elevated above). Anterior naris bounded by complete tube of skin, tube slightly taller posteriorly; posterior naris slightly larger, bounded by shorter tube of skin narrowly interrupted posteriorly and expanded anteriorly as weak flap.

Mouth small, subterminal; gape scarcely curved in ventral view. Lips moderately developed with low, rounded papillae. Each premaxilla and dentary bearing small patch of acicular teeth with sharp tips. Both upper and lower tooth patches separated by distinct gap at symphysis. Teeth loosely arranged in about two rows; 7–13, modally 11 (23), per premaxilla, 7–16, modally 13 (25), per dentary ramus.

Three pairs of barbels (maxillary, inner and outer mental), all fimbriate. Maxillary barbel long, tip surpassing pectoral-fin base; fimbriae smooth, long and inserted in two rows along anterior margin; 2–5 fimbriae in dorsal row, 7–10 in ventral row, 9–15 total, modally 13 (25).

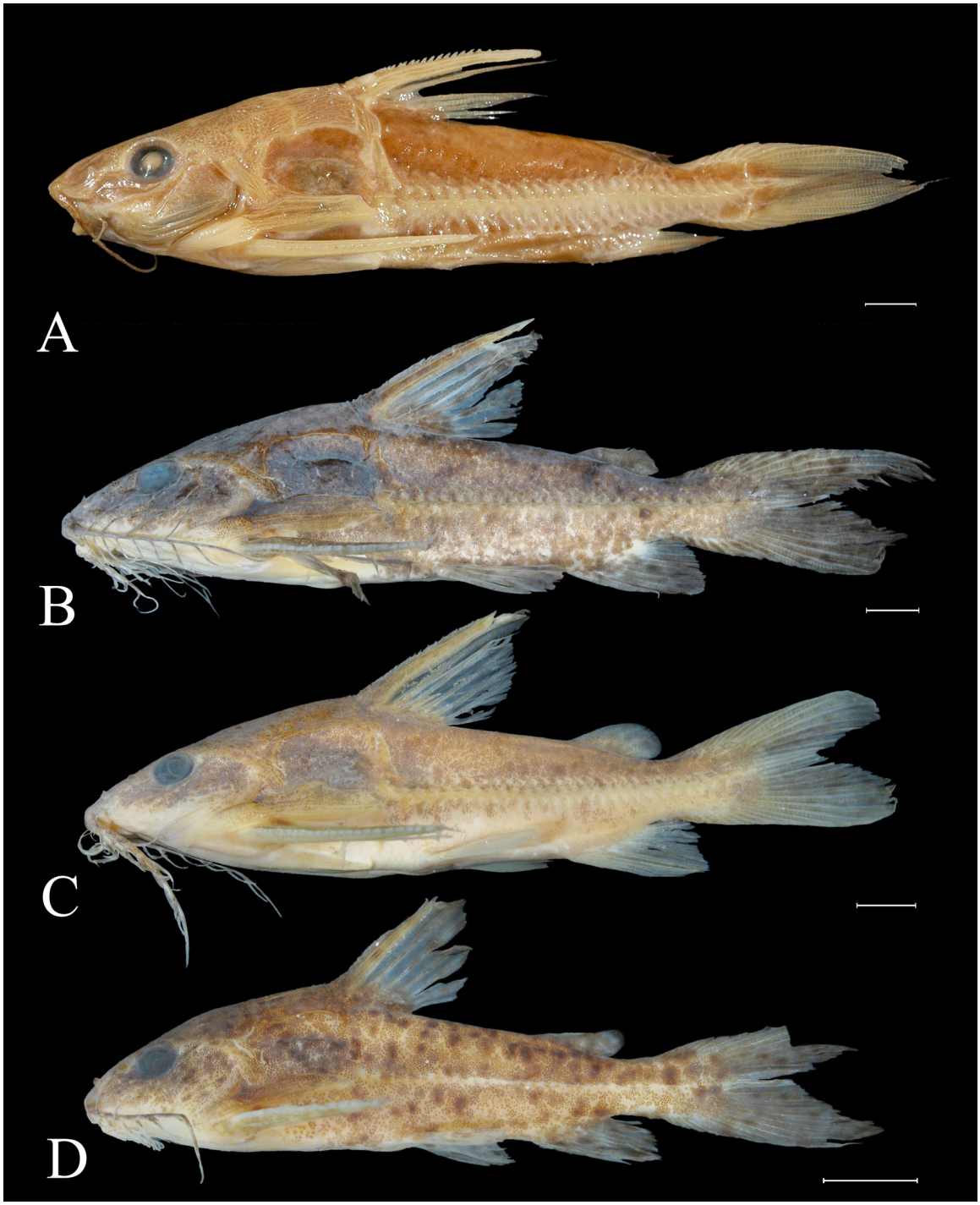


Fig. 11. *Ossancora eigenmanni*. A. BMNH 1895.5.17.53, 72.4 mm SL, lectotype, rio Paraguai at Fazenda Descalvados, Mato Grosso, Brazil (photo by Mark Allen). B. MZUSP 95024, 66.5 mm SL, rio Mutum, Barão de Melgaço, Mato Grosso, Brazil. C. MZUSP 44423, 63.8 mm SL, rio Paraguay, Cáceres, Mato Grosso, Brazil. D. MZUSP 44423, 32.7 mm SL, same data as proceeding. Scale bars equal 5 mm.

Origins of inner and outer mental barbels more or less co-linear; outer mental barbel usually finishing beyond gill opening and just before transverse through pectoral-spine insertions; inner mental barbels slightly shorter. Mental barbels with single row of elongate fimbriae along medial margin; 4–7, modally 6, and 4–8, modally 7 (25), fimbriae on outer and inner mental barbels, respectively. First gill arch with 10 or 13 rakers (2), 7 or 10 on ceratobranchial, 1 at cartilaginous angle, and 2 on epibranchial; length of longest raker about 4 times width.

Dorsal fin II,6 (23), with distal margin approximately straight, vertical when erected. Dorsal-fin spine usually with antrorse serrations along basal two-thirds of anterior margin, distal tip smooth; fewer, much smaller, more erect and spaced serrations along distal half of posterior face. Pectoral fin modally I,7, range I,7–9 (21); distal margin straight, oblique relative to body axis. Pectoral-fin spine with similarly sized serrations anteriorly and posteriorly; anterior serrations antrorse along entire margin; posterior serrations retrorse, fewer in number, from distal tip nearly to base. Pelvic fin i,6 (23), distal margin broadly rounded. Anal fin modally v,9, range iii–v,8–10 (23); with scarcely rounded distal margin. Adipose fin relatively large, teardrop-shaped, base nearly as long as anal-fin base. Caudal fin i,7/8,i (23), moderately forked, intact lobes often pointed (particularly in juveniles), dorsal lobe often slightly longer and more slender than ventral. Dorsal procurrent rays modally 8, range 8–10 (23); ventral procurrent rays modally 8, range 8–9 (23); dorsal and ventral procurrent rays slightly expanded laterally, anteriormost one approaching plate-like condition in larger specimens (SL >84 mm).

Lateral line ossified with complete series of three tympanal scutes and 27–29, modally 28 (23), midlateral scutes per side beginning with infranuchal. Tympanal scutes inconspicuous, largely concealed by skin; anteriormost largest, ossification slightly expanded beyond tubule; posteriormost smallest, ossification restricted to tubule. Infranuchal scute with distinct medial thorn flanked by laminar wings, each with entire or sparsely serrated posterior margin; dorsal wing about twice as deep as ventral wing; ventral wing finishing at or above posteriormost tip of posterior cleithral process. Postinfranuchal scutes similar with medial thorn and sparsely serrated posterior margin, but with wings similarly sized; scutes overlapping, obliquely oriented and gradually decreasing in depth to caudal fin. Depth of 10th midlateral scute about one-third of corresponding body depth.

Gas bladder (Fig. 5M–P) moderately large, cordiform, length about equalling width in specimen 38.3 mm SL, slightly exceeding width in specimens >62 mm SL. Peripheral diverticula absent or few, restricted to anterolateral shoulder and sometimes anterior face of the anterior chamber; diverticula thin, elongate, simple or once branched. Terminal diverticula lacking entirely; posterior chambers with smooth posterior walls and often appearing weakly asymmetrical at terminus.

Osteology.—No salient differences from *O. asterophysa* are noted.

Coloration.—Overall coloration in alcohol (Fig. 11) similar to that described for *O. asterophysa* with both plain and mottled or speckled forms.

Distribution and habitat.—*Ossancora eigenmanni* is known from lowland areas in the upper rio Paraguay basin and a single site in the rio Paraná, Brazil and Paraguay (Fig. 6A). *Ossancora eigenmanni* was not recorded for the upper rio Paraná before the construction of Itaipu Dam and formation of its reservoir in 1982, indicating the subsequent introduction of this species in the upper course of the drainage (Zawadzki et al., 1996).

Etymology.—The species was named in honor of Carl H. Eigenmann (1863–1927), whose insightful observations in his classic revision of Doradidae (Eigenmann, 1925) continue to guide and inspire those who study the group.

Remarks.—Carl Ternetz collected the syntypes at an old and well-known farm "Fazenda Descalvados" (ca. 16°43'58"S, 57°44'56"W) on the rio Paraguai, in Mato Grosso state, Brazil. Accessible by boat from Cáceres (approximately 100 km upstream and directly north), Fazenda Descalvados also was visited by other naturalists, including Mr. J.A.G. Rehn during the Matto-Grosso Expedition of the Academy of Natural Sciences of Philadelphia (Fowler, 1932).

***Ossancora fimbriata* (Kner, 1855) comb. nov.**

Figs. 2, 5E–H, 6B, 12; Table 1

Doras loricatus Kner, 1853:146, Fig. 2 on unnumbered plate. Type locality not stated. *Nomen oblitum* [see Remarks section].

Doras fimbriatus Kner, 1855:134, Pl. 3 (fig. 5). Type locality: Rio Guaporé. *Nomen protectum*.—Bleeker, 1858: 54 [literature compilation].—Eigenmann, 1925:342 [identification key].—Gosline, 1945:19 [literature compilation].—Fowler, 1951:488 [literature compilation].—Sands 1984:53 [distributional checklist, maximum size 125 mm].—Lauzanne and Loubens, 1985:113 [río Mamoré, Bolivia].—Burgess, 1989:223 [checklist].—

Burgess, 1993 [checklist].—Eschmeyer, 1998:583 [catalog of fishes].—Crampton, 1999:19 [río Tefé at Mamirauá].—Willink et al., 1999:105 [Bolivian Amazon; literature compilation].—Chernoff et al., 2000:281 [río Manuripi, Bolivan Amazon].—Ten et al., 2001:103 [río Blanco, Madeira basin].—Sabaj and Ferraris, 2003:458 [taxonomic checklist].—Moyer et al., 2004:552 [citation].—Varjo et al. 2004:36 [list of Finnish common names]—Akama in Buckup et al., 2007:114 [literature compilation].—Ferreira et al., 2007:148, unnumbered figure [rio Branco; photo of live specimen].— Ferraris, 2007:167 [taxonomic checklist and type catalog].—Birindelli et al., 2007:9 [citation].—Higuchi et al., 2007:33 [citation].—Sabaj Pérez et al., 2007:166 [citation].—Sabaj Pérez and Birindelli, 2008:190 [citation].—Fuentes and Rumiz, 2008:80 [río Bajo Paraguá, Santa Cruz, Bolivia].—Sarmento-Soares and Martins-Pinheiro, 2008:507 [citation].—van Oijen et al., 2009:47 [citation].—Birindelli et al., 2009:263, figs. 17E-H [gas bladder morphology].—Sousa and Birindelli, 2011:121 [citation].—Birindelli et al., 2011:540 [citation].

Oxydoras fimbriatus.—Günther, 1864:207 [new generic assignment, literature compilation].

Hemidoras fimbriatus.—Eigenmann and Eigenmann, 1888:158 [new generic assignment, literature compilatiom].—Eigenmann and Eigenmann, 1890:255 [literature compilation].—Eigenmann and Eigenmann, 1891:33 [literature compilation].—Eigenmann, 1910:394 [literature compilation].—Miranda Ribeiro, 1911:179 [literature compilation].

Lectotype.—NMW 45409 (80.3 mm SL), rio Guaporé, J. Natterer, 1817-1835.

Paralectotypes.—NMW 45407 (2 alc, 54.6–75.4 mm SL); NMW 45408 (1 alc, 78.8 mm SL); rio Guaporé, J. Natterer, 1817-1835.

Non-type material.—BOLIVIA: **Beni**: ANSP 178754 ex. MNHN 1988-1013 (1 alc), Boca Ibaré, tributary of río Mamoré, near Trinidad, 1983, L. Lauzanne & G. Loubens. INPA 642 (10 alc, 38.8–75.5 mm SL), same locality as ANSP 178754, 26 Aug 1983, L. Lauzanne & G. Loubens; MNHN 1988-1013 (8 alc), same data as ANSP 178754; MZUSP 27840 (4 alc, 65.1-70.5 mm SL), MZUSP 27841 (4 alc, 44.3-66.5 mm SL), same locality as ANSP 178754, Aug 1983, ORSTOM. BRAZIL: **Amazonas**: ANSP 187433 (13 alc, 1 cs, 54 mm SL), rio Jutaí (8.2-11.1 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°53’43”S, 067°00’34”W, 16 Nov 1993, J. Friel et al.; ANSP 187436 (1 alc), rio Negro (5.2-37.5 m trawl), 8.6 km downstream of Ponta Negra, 9 km upstream of Manaus, 03°07’49”S, 060°05’07”W, 21 Oct 1993, J. Lundberg et al.; ANSP 187445 (2 alc), rio Negro (5.6-7.4 m trawl), 17.0 km downriver of Carvoeiro, 47.4 km upriver of Moura, 01°17’52”S, 061°56’46”W, 9 Dec 1993, J. Friel et al.; ANSP 189059 (1 alc), rio Negro (7-8.4 m trawl), 10.2 km downriver of Santa Maria, 19.4 km upriver of Leprosario, 03°01’18”S, 060°24’55”W, 13 Dec 1993; J. Lundberg et al.; ANSP 189063 (2 alc), rio Jutaí (4.8-9.8 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutai, 02°52’56”S, 066°57’37”W, 16 Nov 1993, J. Lundberg et al.; ANSP 189071 (1 alc), rio Jutaí (3.7-12.73 m trawl), downstream of Pto. Antunes, upstream of Foz de Jutaí, 02°57’04”S, 067°00’27”W, 16 Nov 1993, J. Friel et al.; INPA 9589 (4 alc, 46.7–61.8 mm SL), INPA 9593 (59 alc, 20–49 mm SL), lago in front of igarapé Preto, Jaú drainage, Novo Airão, 25 Jun 1994, M. Goulding; INPA 9656 (9 alc, 23.8–51 mm SL), rio Negro, in mouth, Parque Nacional do Jaú, 25 Jun 1994, M. Goulding; INPA 12379 (9 alc, 36.8–42.9 mm SL), rio Negro, lago do Prato, 18 Sep 1991, M. Goulding; INPA 12673 (172 alc), rio Jaú, mouth of rio Preto, 3 Nov 1994, M. Goulding; INPA 12684 (1 alc, 41.6 mm SL), rio Jaú, at mouth, 3 Nov 1994, M. Garcia; INPA 18626 (1 alc, 82.9 mm SL), rio Uatumã, Balbina, Jul 1985, INPA ichthyological team; INPA 19103 (1 alc, 55 mm SL), rio Tefé, Ilha do Martelo, 03°46’49”S, 064°59’29”W, 26 Jul 1999, W. Crampton; INPA 22178 (1 alc), rio Uatumã, UHE Balbina, 1985; INPA 26725 (1 alc, 46.5 mm SL), rio Negro, below rio Cuieiras, 17 Oct 1992; MCP 29786 (1 alc, 69.2 mm SL), praia (beach) Caborini, in confluence of rios Solimões and Japurá, Alvarães, 03°09’34”S, 064°46’35”W, 7 Feb 2001, W. Crampton et al.; MCP 32951 (6 alc, 60–91.3 mm SL), same data as INPA 19103; MCP 32952 (4 alc, 52.1–74.5 mm SL), rio Tefé, Toco Preto, 03°47’19”S, 064°59’55”W, Oct 1999, W. Crampton et al.; MCP 32953 (2 alc, 69–82.5 mm SL), lago Tefé, mouth of igarapé Açú, 03°24’52”S, 064°48’07”W, 21 Jan 1999, W. Crampton et al.; MCP 32954 (2 alc, 47–65.4 mm SL), rio Tefé, Toco Preto, 03°47’18”S, 064°59’55”W, 21 Oct 1999, W. Crampton et al.; MCP 32955 (1 alc, 74.5 mm SL), rio Tefé, 03°46’49”S, 064°59’29”W, Jan 1999, W. Crampton et al.; MCP 32956 (1 alc, 75 mm SL), lago Jaraqui (lago Jarauá system), Alvarães, 02°44’10”S, 065°04’37”W, 5 Sep 1997, W. Crampton et al.; MCP 32957 (1 alc, 60 mm SL), lago Tefé, 03°17’58”S , 064°46’21”W, Jan 2000, W. Crampton et al.; MZUSP 55826 (24 alc, 28.6-51.2 mm SL), rio Jutaí (4.9–8.8 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°53’26”S, 066°57’55”W, 13 Nov 1993, J. Friel et al.; MZUSP 55832 (2 alc, 35.5-38.8 mm SL), rio Negro (5.1–11.7 m trawl), 6.1 km downstream of Carvoeiro, 35.2 km upstream of Moura, 01°23’19.9”S, 061°55’06.6”W, 8 Dec 1993, J. Friel et al.;

MZUSP 55833 (29 alc, 39.6-64.3 mm, 1 cs, 47.2 mm SL), rio Jutaí (8.2–11.1 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°54'25"S, 067°00'12"W, 16 Nov 1993, J. Friel et al.; MZUSP 56171 (18 alc, 29.9-53.4 mm SL), rio Jutaí (9.5–15.3 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°53'08"S, 067°00'25.9"W, 16 Nov 1993, J. Lundberg et al.; MZUSP 56703 (40 alc, 38.7-56.6 mm, 1 cs 45.5 mm SL), rio Jutaí (6.7–9.8 m trawl), downstream of Pto. Antunes, upstream of Copatana, 02°57'6"S, 067°00'29.7"W, 16 Nov 1993, O. Oyakawa, et al.; MZUSP 58242 (4 alc, 33-38.8 mm SL), rio Jutaí (7.25–10.3 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°52'47"S, 066°58'38.2"W, 16 Nov 1993, J. Lundberg et al.; UFRO-I 2058 (1 alc), rio Aripuanã at mouth, tributary of rio Madeira, Novo Aripuanã, 05°08'47.9"S, 060°23'51.8"W, 17 Jul 2009, L. Queiroz; USNM 332439 (3 alc), rio Cuieiras, Sep 1992, L. Chao; USNM 376153 (1 alc), rio Purus (18.3–22.2 m trawl), upstream of Beruri, 03°56'16"S, 061°26'55"W, 27 Jul 1996, A. Zanata et al.; USNM 376154 (55 alc), rio Jutaí (3.7–12.7 m trawl), downstream of Pto. Antunes, upstream of Foz do Jutaí, 02°57'22"S, 067°00'38"W, 16 Nov 1993, J. Friel et al.; **Pará**: ANSP 187432 (46 alc, 1 cs, 52.5 mm SL), rio Trombetas (4.9-7.5 m trawl), 26.7 km downriver of Porto Trombetas, 10.3 km upriver of Vila Aracua, 01°30'30"S, 056°10'56"W, 25 Oct 1994, J. Lundberg et al.; ANSP 189075 (1 alc), rio Trombetas (15.5-21.5 m trawl), 26 km downriver of Porto Trombetas, 9.9 km upriver of Vila Aracua, 01°30'59"S, 056°10'07"W, 25 Oct 1994, M. Westneat et al., 25 Oct 1994; INPA 10179 (1 alc), rio Amazonas, lago Grande de Monte Alegre, 02°02'14.6''S, 54°04'20.9''W, 5 Aug 1992, G. Santos & J. Zuanon; MZUSP 82894 (11 alc, 40.4-69.1 mm SL), rio Trombetas, Lago Bacabal, 2.1 km upstream of Vila Aracua, 01°31'14"S , 056°07'30"W, 25 Oct 1994, F. Langeani et al.; USNM 376230 (8 alc), same data as ANSP 189075; **Rondônia**: INPA 12155 (1 alc, 57.6 mm SL), rio Jamari, lago Brasileirinho, right bank at mouth of rio Jamari, 9 Jun 1988; INPA 12698 (1 alc, 54.5 mm SL), rio Guaporé, about 15 km above Costa Marques, 12°26'42.0''S, 64°13'37.9''W, 26 Mar 1987, G. Santos; UFRO-I 865 (25 alc), rio Cautário, mouth, 12°13'59.7"S, 064°33'57.9"W, 18 Nov 2009, A. Cella-Ribeiro; UFRO-I 1087 (9 alc), rio Sotério at mouth, tributary of rio Mamoré, 11°35'53.2"S, 065°13'48.3"W, 21 Nov 2008, Monteiro-Neto; UFRO-I 1643 (4 alc), rio Mamoré, near Guajará-Mirim, 11°03'25.3"S, 065°17'08.2"W, 22 Nov 2008, A. Cella-Ribeiro; UFRO-I 1688 (1 alc), igarapé Arara, near base of bridge Arara, Porto Velho, 10°00'56.1"S, 065°18'48.4"W, 5 Apr 2009, Mota; UFRO-I 4928 (12 alc), rio Mamoré, near Guajará-Mirim, 11°25'21.8"S, 065°19'13.2"W, 22 Nov 2008, A. Cella-Ribeiro; UFRO-I 4929 (7 alc), rio Mamoré, near mouth of rio Negro, 11°35'28"S, 065°13'53"W, 4 Jul 2009, A. Cella-Ribeiro; UFRO-I 4930 (3 alc), rio Mamoré, near Comunidade São Lourenço, 11°45'14.6"S, 065°10'00"W, 4 Jul 2009, A. Cella-Ribeiro; UFRO-I 4932 (24 alc), rio Mamoré, near Guajará-Mirim, 11°10'56.7"S, 065°19'54.8"W, 22 Nov 2008, A. Cella-Ribeiro; UFRO-I 4933 (1 alc), rio Mamoré, opposite mouth of rio Pacaás Novos, 11°10'57.3"S, 065°19'34.3"W, 6 Jul 2009, A. Cella-Ribeiro; UFRO-I 4934 (135 alc), rio Mamoré, near Guajará-Mirim, 11°36'11.1"S, 065°13'57.2"W, 22 Nov 2008, A. Cella-Ribeiro; UFRO-I 4935 (1 alc), rio Jaciparaná, lago Madalena, 09°17'06.8"S, 064°23'58.1"W, 1 Feb 2005, G. Torrente-Vilara; UFRO-I 4936 (1 alc), rio Sotério at mouth, tributary of rio Mamoré, 11°35'53.2"S, 065°13'48.3"W, 21 Nov 2008, A. Cella-Ribeiro; UFRO-I 4937 (1 alc), rio Mamoré, upstream of rio Pacaás Novos, 11°03'19.7"S, 065°17'12.6"W, 6 Jul 2009, A. Cella-Ribeiro; UFRO-I 4938 (2 alc), rio Mamoré, near Guajará-Mirim, 11°02'29.7"S, 065°17'24.8"W, 23 Nov 2008, A. Cella-Ribeiro; UFRO-I 4939 (1 alc), rio Mamoré, near vila Murtinho, 10°23'39.3"S, 065°22'57.6"W, 25 Nov 2008, A. Cella-Ribeiro, UFRO-I 4940 (4 alc), rio Mamoré, island upstream of rio Negro, 11°39'51.4"S, 065°13'20.9"W, 4 Jul 2009, A. Cella-Ribeiro; UFRO-I 6078 (5 alc), rio Mamoré, near Guajará-Mirim, 11°32'14.3"S, 065°12'44"W, 22 Nov 2008, A. Cella-Ribeiro.

Diagnosis.—*Ossancora fimbriata* is distinguished from *O. punctata* by having: maxillary barbel with elongate fimbriae inserted in two distinct rows along anterior margin, one dorsally and one ventrally (Fig. 1), mental barbels with elongate fimbriae, and anterior nuchal plate reduced, diamond shaped, not sutured to epioccipital (Fig. 3). *Ossancora fimbriata* differs from *O. asterophysa* and *O. eigenmanni* by having: infranuchal scute greatly expanded ventrally, reaching level of posterior coracoid process in adults (vs. not expanded ventrally, reaching or barely exceeding level of posterior tip of posterior cleithral process), nuchal foramina usually present (vs. always absent), 25–50 teeth per ramus on premaxilla and dentary (vs. less than 20), and short terminal diverticula usually present (vs. absent in *O. eigenmanni* and indistinguishable from other peripheral diverticula in *O. asterophysa*).

Description.—Morphometrics in Table 1; lectotype and additional specimens in Fig. 12. Largest specimen examined 94.7 mm SL (INPA 22178). Dorsal profile of head rising moderately; rounded along snout becoming straight to nuchal region, or more evenly convex from snout tip to nuchal region; slightly more level just before dorsal spine effecting shallow hump. Dorsal profile of body descending more gradually, approximately straight

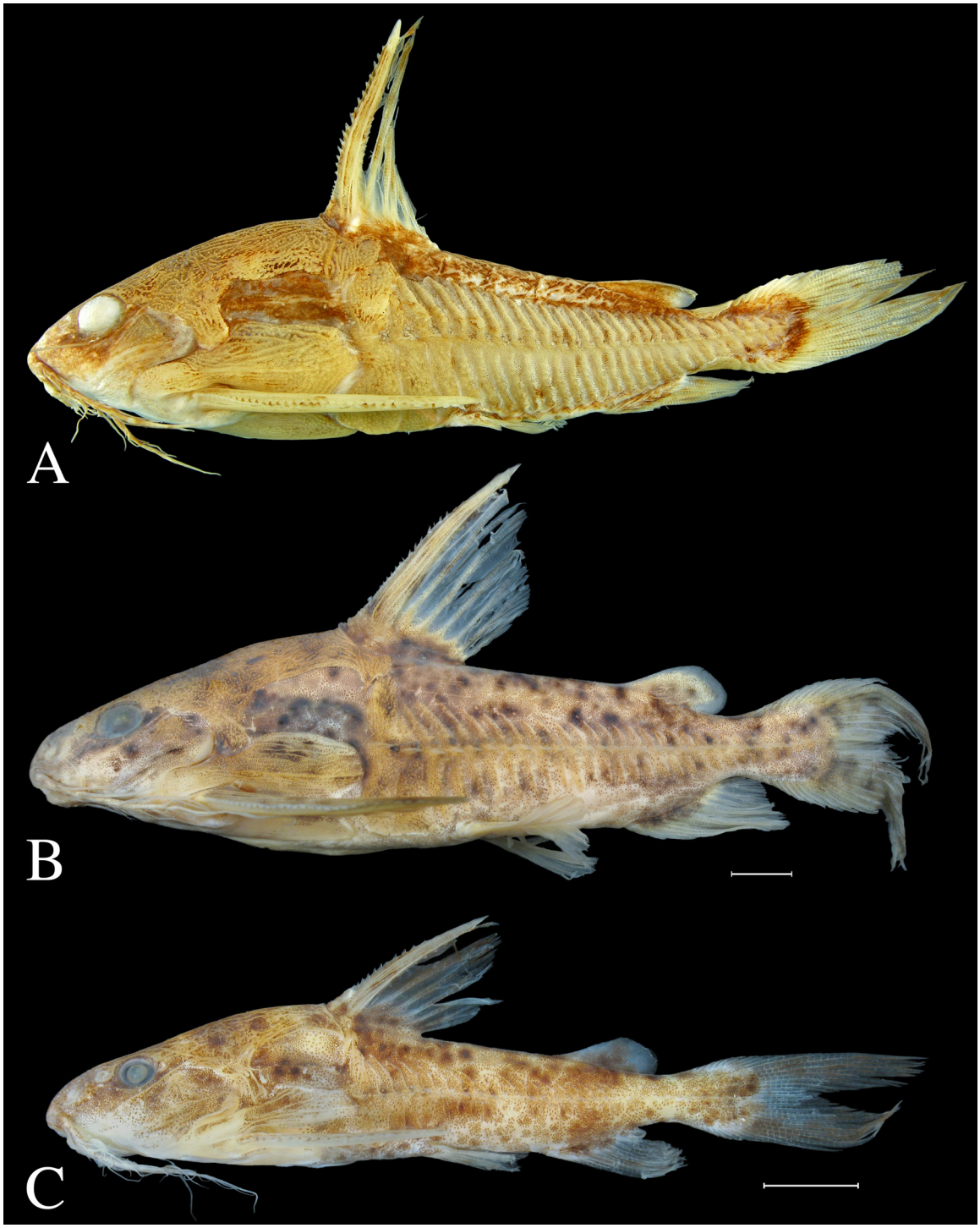


Fig. 12. *Ossancora fimbriata*. A. NMW 45409, Lectotype, 80.3 mm SL, rio Guaporé. B. MZUSP 82894, 69.2 mm SL, rio Trombetas, Cuminá, Pará, Brazil. C. MZUSP 55832, 38.8 mm SL, rio Negro, Amazonas, Brazil. Scale bars equal 5 mm.

from dorsal spine to posterior insertion of adipose fin. Ventral contour shallowly convex from snout tip to caudal peduncle, flattened across abdominal region. Caudal peduncle short with shallow hourglass shape in lateral view. Head acutely triangular with bluntly pointed snout in dorsal and lateral views. Body equilaterally triangular in cross-section through nuchal region.

Eye medium sized (diameter 18.6–25.3% of head length), covered by thin skin (adipose eyelid inconspicuous), placed dorsolaterally (dorsal rim nearly even with countour of head, not elevated above). Anterior naris bounded by complete tube of skin, tube slightly taller posteriorly; posterior naris slightly larger, bounded by shorter tube of skin narrowly interrupted posteriorly and expanded anteriorly as weak flap.

Mouth small, subterminal; gape scarcely curved in ventral view. Lips moderately developed with low, rounded papillae. Each premaxilla and dentary bearing patch of acicular teeth with sharp tips (Fig. 2). Dentary tooth patches separated by distinct gap at symphysis; premaxillary tooth patches more continuous across symphysis. Premaxillary and dentary teeth about 25–50, modally 30 (20), per ramus, loosely arranged in three to five rows.

Three pairs of barbels (maxillary, inner and outer mental), all fimbriate. Maxillary barbel long, tip surpassing pectoral-fin base; fimbriae smooth, long and inserted in two rows (dorsal and ventral) along anterior margin. Total fimbriae on maxillary barbel 9–20, modally 15 (19), with 2–5 inserted dorsally. Origins of inner and outer mental barbels more or less co-linear; outer mental barbel finishing approximately at transverse through pectoral-spine insertions; inner mental barbels slightly shorter. Inner mental barbel with 4–10, modally 6 (20), elongate fimbriae loosely arranged in two irregular rows along ventral face; outer mental barbel with 5–9, modally 8 (20), elongate fimbriae similarly arranged. First gill arch with 10 or 12 rakers (2), 7 or 9 on ceratobranchial, 1 at cartilaginous angle, and 2 on epibranchial; length of longest raker about 4 times width. Branchiostegal rays 7 (2).

Dorsal fin II,6 (19); with distal margin approximately straight, nearly vertical when erected. Dorsal-fin spine usually with antrorse serrations along basal two-thirds to three-quarters of anterior margin, distal tip smooth; fewer, much smaller, more erect and spaced serrations along distal half of posterior face. Pectoral fin modally I,9, range I,8–9 (18); distal margin straight, oblique relative to body axis. Pectoral-fin spine with anterior serrations slightly smaller than posterior ones; anterior serrations antrorse along entire margin; posterior serrations retrorse, fewer in number, from distal tip nearly to base. Pelvic fin i,6 (20), distal margin broadly rounded. Anal fin modally v,9, range iv–v,8–10 (20), with distal margin nearly vertical when extended. Adipose fin relatively large, teardrop-shaped, base nearly as long as anal-fin base. Caudal fin i,7/8,i (20), moderately to deeply forked with intact lobes pointed; dorsal lobe more slender and often slightly longer than ventral lobe. Dorsal procurrent rays modally 10, range 8–11 (20); ventral procurrent rays modally 10, range 8–11 (20); dorsal and ventral procurrent rays expanded laterally, anteriormost one approaching plate-like condition in larger specimens (SL >82 mm).

Lateral line ossified with a complete series of three tympanal scutes and 29–30, modally 30 (20), midlateral scutes per side beginning with the infranuchal. Tympanal scutes tubular, inconspicuous, concealed by skin; anteriormost longest, posteriormost shortest with alignment approaching vertical. Infranuchal scute with distinct medial thorn flanked by laminar wings, posterior margin entire or with a few minute serrations; dorsal and ventral wings about equal in depth; ventral wing becoming much broader ventrally, its margin extending well below tip of posterior cleithral process, finishing even with and nearly contacting tip of posterior coracoid process. Ventral wing of first postinfranuchal scute similarly expanded, its ventral margin even with that of infranuchal scute, together completing bony contour to lower side of body from posterior coracoid process to pelvic-fin insertion. Postinfranuchal scutes also with medial thorn and posterior margin bearing few minute serrations; ventral wing slightly taller than dorsal; scutes overlapping, obliquely oriented and gradually decreasing in depth to caudal fin. Depth of 10th midlateral scute one-half to two-thirds of corresponding body depth.

Gas bladder (Fig. 5E–H) moderately large, cordiform, width approximating length. Numerous diverticula spaced along periphery of anterior face, shoulder and lateral walls of anterior chamber as well as lateral walls and posterior face of posterior chambers (similar to *O. asterophysa*); diverticula slender, becoming intricately branched in larger specimens (SL >80 mm). Terminal diverticula usually present, but short and ornamented with numerous, more elongate diverticula (some branched in specimens >80 mm SL).

Osteology.—Osteology generally similar to that described for *Ossancora asterophysa*, excepting differences already noted in lateral line scutes and as follows.

In the pectoral girdle of *Ossancora fimbriata*, the lateral margins of the posterior coracoid processes are straight and parallel, not weakly convergent posteriorly; inner margins of coracoid processes likewise straight, but oblique, angled anteromedially. Posterior cleithral process is much deeper than in *O. asterophysa*, and its shape

slightly differs: subrectangular with posterior end bluntly rounded or obtusely triangular; dorsal profile descending gradually from posttemporo-supracleithrum with margin either straight or shallowly convex; ventral margin broadly convex. The surface ornamentation of the posterior cleithral process is separable into three longitudinal fields (dorsal, middle and ventral) as in *O. asterophysa*, but with dorsal and particularly ventral fields more expanded; the former reducing the area of the tympanal region and the latter more closely approaching the lateral margin of the posterior coracoid process.

Another salient difference is formation of paired nuchal foramina. Most specimens of *O. fimbriata* exhibit a small subcircular to subtriangular nuchal foramen at the junction of parieto-supraoccipital, epioccipital and middle nuchal plate (skin covering opening often more darkly pigmented than surroundings). In some specimens, however, including the syntypes from rio Guaporé (54.6–80.3 mm SL) and a large specimen (95.5 mm SL, INPA 22178) from rio Uatumã, the nuchal foramen is lacking, occluded by bone.

Vertebrae 33 (1) or 34 (1) with vertebrae 6–11 (1) or 6–12 (1) bearing ribs.

Coloration.—In alcohol, upper sides of head and body (above midlateral thorns) generally tan; lower sides somewhat lighter; ventral surfaces generally pale or with few dusky speckles in larger specimens (>90 mm SL). Sides of head and body, particularly above midlateral thorns, irregularly speckled with small dark brown spots and mottled with diffuse, brown blotches. Fins hyaline, sometimes with dusky blotches or darker speckles scattered mostly on spines and rays. Dusky longitudinal streaks sometimes evident on caudal fin, particularly near base, formed by concentration of pigment in middle membranes of upper and lower lobes. Maxillary barbel tan with diffuse brown speckles; mental barbels uniformly tan to pale.

Distribution and habitat.—*Ossancora fimbriata* is known from lowland areas in the Amazonas basin in Bolivia and Brazil (Fig. 6B) including the rio Negro and tributaries of the Madeira (Aripuanã, Guaporé, Jamari, Mamoré), Solimões (Jutaí, Purus, Tefé), and lower Amazonas (Uatumã and Trombetas). The Calhamazon Expeditions collected *O. fimbriata* in bottom trawls of the lower rio Trombetas at depths ranging from 15.5–22.5 m (ANSP 189075; MZUSP 82894; USNM 376230) and of the rio Jutaí at 3.7–15.3 m (ANSP 187433, 189063, 189071; MZUSP 55826, 55833, 56171, 56703, 58242). *Ossancora fimbriata* is generally trawled at greater depths than is *O. asterophysa*; although the two species have been taken together in the rio Trombetas at depths of 4.9–7.5 m (ANSP 187432, 187441) and 16–22.5 m (MZUSP 82894, 107929). *Ossancora fimbriata* is most commonly recorded from black and clearwater river channels and, unlike *O. asterophysa*, is apparently rare in whitewaters.

Etymology.—Species name *fimbriata*, though not stated by Kner (1855), may refer to the fimbriae present on the maxillary and mental barbels, or to the many diverticula on the gas bladder.

Remarks.—Kner (1853:146) proposed "*Doras loricatus*, n. sp." in the caption to a simple line drawing of the ventral face of a disembodied gas bladder (Fig. 2 of 9), thereby making the species-group name available by indication (ICZN Article 12.2.7). Although Kner (1853:139) provided general mention that his overall observations were made on whole specimens in alcohol provided by J. Natterer; his text lacked both a formal species description and specific reference to the number and locality of specimen(s) examined for *D. loricatus*. Nevertheless, Kner carefully compared and illustrated gas bladders in several species of doradids, and categorized those of *D. loricatus* and *Doras* (*Corydoras*) *ophthalmus* [= *Anduzedoras oxyrhynchus*] as simple, with "appendices" [= diverticula].

Kner (1855:134–136, Pl. 3 (fig. 5)) subsequently provided a detailed description of *Doras fimbriatus* accompanied by a line drawing of its anterior body (to dorsal spine) and pectoral fins in dorsal view. Kner (1855:134) listed "*Corydoras loricatus*, Heck im Mscrpt." beneath the name *D. fimbriatus* in reference to the manuscript name provided by Johann Heckel for Kner's (1853) earlier publication. Kner's *D. fimbriatus* was based on four syntypes (NMW 45407–09) from Rio Guaporé, one or two of which possibly served as the basis for Kner's (1853) illustration of the gas bladder for *D. loricatus*.

It is debatable whether Kner's (1853) *D. loricatus* was based on a single specimen, the holotype, from which the gas bladder was removed and faithfully illustrated (as proposed by Ferraris, 2007:167), or on multiple specimens, syntypes, wherein the illustration is interpreted as a composite of multiple gas bladders examined (as proposed by Sabaj and Ferraris, 2003:458). Based on Kner's (1853) detailed descriptions of gas bladder morphology, Kner's (1855) subsequent identification of four specimens as the basis for his formal description of *D. fimbriata*, and the fact that two of those four specimens (NMW 45407, 1 of 2; NMW 45408) are with abdomens cut for examination of gas bladder; we are inclined to believe that Kner (1853) based his new species on multiple syntypes. Furthermore, the ICZN (Recommendation 73F) states "when it is possible that the nominal species-group taxon was based

on more than one specimen, an author should proceed as though syntypes may exist…".

According to the ICZN (2011, online version), usage of a junior synonym prevails when two conditions are both met: 1) the senior synonym has not been used as a valid name after 1899 (Art. 23.9.1.1), and 2) the junior synonym has been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years (Art. 23.9.1.2). Both conditions are met by *D. fimbriatus* Kner 1855 with respect to senior synonym *D. loricatus* Kner 1853. *Doras fimbriatus* Kner 1855 was proposed and thoroughly described just two years after Kner (1853) made *D. loricatus* available, so the latter name has never been treated as valid subsequent to its original publication. *Doras fimbriatus* has been cited as a valid species by at least 51 authors in 25 works over the past 50 years (see Synonymy). To our knowledge the condition in Article 23.9.1.1 applies, and evidence that the conditions of Article 23.9.1.2 are met are presented above in the synonymy of *Ossancora fimbriata*. Therefore, under the Article 23.9 of the ICZN (i.e., Reversal of precedence), *D. loricatus* is here considered a *nomen oblitum* and the name *D. fimbriatus* is retained as valid, a *nomen protectum*, for taxonomic continuity.

Ossancora punctata (Kner, 1853) comb. nov.

Figs. 5A–D, 6C, 13; Table 1

Doras (*Corydoras*) *punctatus* Kner, 1853:146, Fig. 5 on unnumbered plate. Type locality not stated (see Remarks).

Doras punctatus.—Kner, 1855:136, Pl. 6 (fig. 10). Type locality: Mato Grosso and rio Guaporé [Brazil].—Bleeker, 1858:54 [literature compilation].—Eigenmann, 1925:343, Pl. 3 (fig. 5), Pl. 21 (figs. 1, 2), Text-fig. 12E [San Joaquin, Bolivia, R. Paranapura, Yurimaguas, Lake Cashiboya; redescription, illustration, identification key].—Fowler, 1940:96 [literature compilation].—Eigenmann and Allen, 1942:133 [Rio Paranapura, Lago Cashiboya].—Gosline, 1945:19 [literature compilation].—Van der Stigchel, 1946:92 [Guaporé].—Fowler, 1951:489 [literature compilation].—Lauzanne and Loubens, 1985:113 [río Mamoré, Bolivia].—Willink et al., 1999:106 [Bolivian Amazon, literature compilation].—Chernoff et al., 2000:281 [río Manuripi, Bolivan Amazon].—Ten et al., 2001:103 [río Blanco, Madeira basin].—Eschmeyer, 1998:1401 [catalog of fishes].—Sabaj and Ferraris, 2003:458 [taxonomic checklist].—Moyer et al., 2004:555 [molecular phylogenetic study].—Diogo et al., 2004:175 [osteology and myology].—Akama in Buckup et al., 2007:114 [literature compilation].—Ferraris, 2007:167 [taxonomic checklist and type catalog].—Birindelli et al., 2009:263, figs. 17A-D [gas bladder morphology].—Mojica et al., 2005:203 [río Amazonas at Letícia].—Bogotá-Gregory and Maldonado-Ocampo, 2006:81 [distributional checklist].

Corydoras punctatus.—Hyrtl, 1859:17 [vertebral count].

Oxydoras punctatus.—Günther, 1864:207 [literature compilation].

Hemidoras punctatus.—Eigenmann and Eigenmann, 1888:158 [new generic assignment, literature compilation].—Eigenmann and Eigenmann, 1890:255 [literature compilation].—Eigenmann and Eigenmann, 1891:33 [literature compilation].—Eigenmann, 1910:394 [literature compilation].—Miranda Ribeiro, 1911:178 [literature compilation].

Hemidoras nattereri.—Fisher, 1917:421 [in part, San Joaquin, Bolivia].

Hemidoras brevis.—Fisher, 1917:421 [in part, San Joaquin, Bolivia].

Lectotype.—NMW 45435 (105.9 mm SL), Brazil: Mato Grosso and rio Guaporé, J. Natterer, 1817–1835.

Paralectotypes (1 specimen from 17 original syntypes missing).—NMW 45434 (1 alc, 97.4 mm SL, plus 2 disembodied gas bladders); NMW 45436 (1 alc, 110.0 mm SL); NMW 45437 (1 alc, 108.2 mm SL); NMW 45438 (1 alc, 92.4 mm SL); NMW 45439 (2 alc, 60.1–61.8 mm SL); NMW 45440 (3 alc, 93.2–99.9 mm SL); NMW 45441 (4 alc, 55.3–62.2 mm SL); RMNH 2966 (1 alc); ZSM 4820 [ex. NMW 45439] (1 alc); Brazil: Mato Grosso and rio Guaporé, J. Natterer, 1817–1835.

Non-type material.—ARGENTINA: **Corrientes**: ANSP 181012 (1 sk), rio Parana (left bank) at private park (Club San Martin) near town of Perichon, N of rt. 12, NE of Corrientes, 11 Apr 2005, M. Sabaj & M. Mirande; ANSP 181015 (6 alc), purchased from aquarium fish wholesaler and aquaculture facility in Corrientes, reportedly from vicinity, M. Sabaj et al., 11 Apr 2005. BOLIVIA: **Beni**: INPA 637 (9 alc), rio Mamoré, San Gregorio, 27 Apr 1983; INPA 638 (6 alc), rio Mamoré, Ibaré, 26 Aug 1983; MZUSP 27802 (1 alc, 88.2 mm SL), laguna San Jose, Trinidad, ORSTOM, Mar 1982; MZUSP 27846 (1 alc, 72.8 mm SL), río Ibaré, Trinidad, ORSTOM, Oct 1981. BRAZIL: **Acre**: MCP 33829 (1 alc, 55.3 mm SL), igarapé Mapinguari, tributary of rio Andirá (Acre drainage), on the road BR 364, 45 km NW Rio Branco, 09°45'45"S, 068°03'49"W, 8 Aug 2001, L. Malabarba, et al.; **Amazonas**: INHS 70168 (1 alc, 108.1 mm SL), lago Janauari, near its outlet, about

8 km SW Manaus, 30 Mar 1978, P. Bayley; INPA 14021 (2 alc), rio Solimões, ilha da Marchantaria, 9 Jan 1998, C. Cox-Fernandes, et al.; INPA 18737 (46 alc), lago Jaraqui, rio Japurá, Reserva Mamirauá, Japurá, 3 Aug 1996; INPA 22020 (1 alc), rio Solimões, lago do Camaleão, Ilha da Marchantaria, Iranduba, 29 Apr 1999; INPA 22137 (16 alc), same locality as INPA 14021, 16 Nov 2000, L. Rapp Py-Daniel; INPA 22172 (1 alc), rio Solimões, Pirapora, near Encontro das águas, 13 Apr 2000; INPA 22228 (1 alc), rio Solimões, Lago do Padre, 11 May 2000; INPA 26669 (1 alc), rio Amazonas, Lago do Rei, Ilha do Careiro, 30 Nov 1984, E. Ferreira; MCP 29662 (5 alc, 59.4–66.6 mm SL), flooded forest (estação 1), between lago Secretário and canal do lago Mamirauá, 03°06'44"S, 064°47'55"W, 19 Aug 1999, W. Crampton et al.; MCP 29663 (5 alc, 53.9–70 mm SL), lago Jaraqui, lago Jarauá system, 02°44'10"S, 065°04'37"W, 3 Aug 1996, W. Crampton et al.; MCP 29664 (1 alc, 56.5 mm SL), lago Tefé, community Mogueira, 03°17'58"S, 064°46'21"W, 30 Aug 1999, W. Crampton et al.; MCP 29665 (1 alc, 68 mm SL), lago Arauaé, lago Mamirauá system, 03°02'52"S, 064°50'05"W, 25 Mar 1997, W. Crampton et al.; MCP 29666 (1 alc, 57.8 mm SL), lago Juruazinho, lago Mamirauá system, 03°02'35"S, 064°51'01"W, 23 Mar 2001; W. Crampton et al.; MCP 29667 (1 alc, 55 mm SL), lago Secretário, lago Mamirauá system), 0.5 km SW of community Boca do Mamirauá, 03°06'44"S, 064°48'01"W, Mar 2001, W. Crampton et al.; MCP 29806 (1 alc, 52 mm SL), Paraná Maiana (lago Mamirauá system, estação A), 2.5 km from Boca do Mamirauá, 03°06'44"S, 064°47'32"W, 12 Nov 1999, W. Crampton et al.; MCP 29807 (1 alc, 53.6 mm SL), canal of lago Mamirauá (estação A), in community Boca do Mamirauá, 03°06'37"S, 064°47'49"W, 2 Nov 1997, W. Crampton, et al.; MCP 29808 (1 alc, 66 mm SL), canal of lago Rato (lago Mamirauá system), 03°02'58"S, 064°51'21"W, 22 Sep 1999, W. Crampton et al.; MZUSP 7540 (3 alc, 61.0-70.4, 1 cs, 62.0 mm SL), paraná do Urucará, Urucará, Dec 1967, Expedição Permanente da Amazônia; MZUSP 27908 (9 alc, 56.8-83.5 mm SL), Igarapé Joari, Humaitá, 07°31'S, 063°2'W, Jul 1975, U. Caramaschi; MZUSP 56007 (2 alc, 58.4-89.3 mm SL), rio Solimões, 37 km downstream of Jutaí, 02°31'37"S, 066°36'27"W, Nov 1993, J. Friel et al.; MZUSP 62707 (1 alc, 82.6 mm SL), lago Janauacá, 03°25'S, 060°17'W, 1976–1977, Alpha Helix Amazon Expedition; **Mato Grosso**: MCP 29041 (1 alc), MCP 29048 (1 alc) MCP 29052 (1 alc) MCP 29053 (1 alc), rio Bento Gomes basin (Paraguai drainage), Poconé, 16°15'S, 056°37'W, 2000, W. Troy; MCP 36412 (5 alc, 49.9–57.2 mm SL), rio Guaporé, near bridge road of Vila Bela da Santíssima Trindade, 15°00'23"S, 059°57'20"W, 11 Jul 2004, V. Bertaco et al.; MZUSP 36933 (1 alc, 84.1 mm SL), rio Guaporé, Vila Bela da Santíssima Trindade, 15°01'37"S , 059°49'09"W, Sep 1984, J. Garavello et al.; MZUSP 37519 (3 alc, 101.6-108.8 mm SL), same data as MZUSP 36933, MZUSP/PoloNorte; MZUSP 44343 (1 alc, 59.7 mm SL), creek, Bara do Bugres, 15°20'S, 057°11'W, Aug 1991, MZUSP/USNM/MCP/UFMT Expedition; MZUSP 95000 (159 alc, 49.7-68.7 mm SL), rio Guaporé, Vila Bela da Santíssima Trindade, 15°01'37"S , 059°49'09"W, Oct 2006, F. Machado et al.; NUP 1053 (7 alc, 48-76.6 mm SL), Chapada dos Guimarães, Reservatório do Manso, Aug–Sep 2000, Nupélia; NUP 2204 (2 alc, 55-77.6 mm SL), Barão do Melgaço, Baia Sinhá Mariana, 16°20'S, 055°54'W, 2000–2003, Nupélia; NUP 3542 (1 alc, 70.3 mm SL), rio Cuiabá, Leverger, Sep 2002, Nupélia; **Mato Grosso do Sul**: MZUSP 41096 (7 alc, 57–59 mm SL), rio Miranda, Corumbá, Sep 1989, E. Resende; MZUSP 59565 (1 alc, 69.5 mm SL), rio Negro, Aquidauana, 19°34'54"S, 056°15'2"W, Sep 1998, B. Chernoff et al.; MZUSP 84209 (1 alc, 56.2 mm SL), rio Paraguai, Corumbá, Apr 1997, Embrapa; MZUSP 102818 (12 alc, 54.8-71.6 mm SL), morro do Azeite, Corumbá, Sep 1989, E. Resende; MZUSP 102820 (8 alc, 64-74.4 mm SL), rio Miranda, Corumbá, 20°14'S, 056°22'W, Nov 1989, E. Resende; **Pará**: MZUSP 7839 (10 alc, 53.9-79.4, 1 cs, 61.6 mm SL), paraná Jacarí, Faro, Dec 1967, Expedição Permanente da Amazônia; **Rondônia**: INPA 18634 (1 alc, 99.2 mm SL), rio Candeias, 2 km below the Samuel dam, 31 May 1994, J. Viana; MCP 36406 (20 alc, 49–62.7 mm SL), rio Jaci-Paraná at BR-364, 09°15'23"S, 064°23'13"W, 18 Jul 2004, R. Reis et al.; UFRO-I 860 (8 alc), rio Cautário, mouth, 12°13'59.7"S, 064°33'57.9"W, 18 Nov 2009, A. Cella-Ribeiro; UFRO-I 918 (1 alc), lago Madalena, rio Jaciparaná, 09°17'0.9"S, 064°23'57.1"W, 24 Nov 2008, Röpke; UFRO-I 2899 (1 alc), mouth of igarapé Belmont, rio Madeira, 08°38'34.3"S, 063°51'1.7"W, 10 Jun 2009, A. Cella-Ribeiro; UFRO-I 4921 (1 alc), rio Mamoré, near Guajará-Mirim, 11°30'08.6"S, 065°11'17.5"W, 22 Nov 2008, A. Cella-Ribeiro; UFRO-I 4922 (14 alc), rio Guaporé, near mouth of rio Cautário, 12°10'9.51"S, 064°42'16.9"W, 17 Nov 2008, A. Cella-Ribeiro; UFRO-I 4923 (10 alc), rio Mamoré, near mouth of rio Negro, 11°35'28"S, 065°13'53"W, 4 Jul 2009, A. Cella-Ribeiro; UFRO-I 4924 (1 alc), mouth of rio Sotério, rio Mamoré, 11°36'23.2"S, 065°13'34.5"W, 21 Nov 2008, A. Cella-Ribeiro; UFRO-I 4925 (1 alc), rio Cautário, mouth, 12°12'39.7"S, 064°34'58.5"W, 26 Sep 2009, A. Cella-Ribeiro; UFRO-I 4926 (1 alc), colocação Jatobá, rio Cautário, Jan 2004, G. Torrente-Vilara; UFRO-I 4927 (127 alc), mouth of igarapé Belmont, rio Madeira, 08°37'56.56"S, 063°50'20.51"W, 1 May 2004, G. Torrente-Vilara; UFRO-I 4931 (41 alc), rio Mamoré, near Guajará-Mirim, 11°30'08.6"S, 065°11'17.5"W, 22 Nov 2008, A. Cella-Ribeiro.

COLOMBIA: **Amazonas**: IAvH-P 2112 (1 alc), río Amazonas, 6 Aug 1980, H. Thorbjörn. PERU: **Loreto**: ANSP 113619 (1, 66.88 mm SL), río Amazonas, vicinity of Iquitos, 12 Sep 1954, L. Rivas; ANSP 139309 (3, 41.02-46.07 mm SL), río Nanay, opposite naval base, backwater pools off cocha, 4 mi above Amazon, 12 Oct 1955, C.C.G. Chaplin et al.; ANSP 139321 (5, 38.13-50.81 mm SL), rio Amazonas, left bank, due S of Isla Iquitos, vicinity of Iquitos, 17 Oct 1955, M. Hohn; ANSP 139322 (2, 38.2–42.7 mm SL), rio Amazonas, between Isla Iquitos & Isla Lapuna, near Isla Lapuna shore, vicinity of Iquitos, 9 Oct 1955, R. Patrick & C.C.G. Chaplin; ANSP 166265 (3, 55.2–57 mm SL), small stream ca. 65 km upstream from mouth of Rio Nanay, Santa Maria del Alto Nanay, 18 Aug 1989, P. Fromm et al.; ANSP 178206 (1 alc, 65.4 mm SL), caño Shirui (aka "Santa Rita"), right bank tributary of río Nanay, 3.32 mi NW center of Iquitos, near village of Pampa Chica, 03°45'23"S, 073°17'28"W, 2 Aug 2001, M. Sabaj et al.; ANSP 187005 (1 sk), río Nanay, large left bank beach upstream from mouth, N of Iquitos, 03°42'49"S, 073°16'43"W, 15 Aug 2005, M. Sabaj et al.; INHS 39633 (2), mayuruna Cocha (Oroso drainage), ca. 30 min. by boat downstream of mouth of Tonche Caño, 71.7 mi E Iquitos, bearing 265°, 03°35'25"S, 72°13'05"W, 13 Aug 1996, M. Sabaj et al.; INHS 40154 (1), río Orosa, mouth of Tonche Caño, Madre Selva II field station, 69.4 mi E Iquitos, bearing 267°, 12–13 Aug 1996, M. Sabaj et al.; INHS 40210 (2), quebrada Mazana, ca. 1 km up from confluence with río Itaya, S of Belém (Iquitos), 03°47'28.8"S, 073°14'54"W, 8 Aug 1996, B. Burr et al.; INHS 43283 (1), río Itaya 11 km SSW center of Iquitos, bearing 39° and quebrada Mazana at its confluence with río Itaya just S of Iquitos, 03°49'47.6"S, 073°18'02.9"W, 28 Jul 1997, M. Sabaj et al.; INHS 53827 (2 alc), río Napo (N channel), opposite Mazán, N of Isla Milagro, 03°28'59.2'S, 073°05'12.2"W, 30 Jul 1999, M. Sabaj et al.; INHS 54684 (4 alc), río Amazonas & río Tamshiyacu, ca. 2 mi S village of Tamshiyacu, E bank of río Amazonas & mouth of río Tamshiyacu, 04°01.69'S, 73°08.75'W, 28 Jul 1999, M. Sabaj et al.; INHS 54773 (9 alc), oxbow lake, floodplain along S bank of S channel of río Marañon due S of Nauta, 04°30.6'S, 073°34.1'W, 4 Aug 1999, M. Sabaj et al.; INHS 54977 (6), same data as INHS 53827; MCP 26181 (6, 34.1–44.5 mm SL), río Pacaya, lagoas Shauinto and Yanayacu, Reserva Nacional Pacaya-Samiria, 05°16'59"S, 074°25'29"W, 4 Aug 2000, J. Albert et al.; MCP 26192 (3, 42.6–47.9 mm SL), cocha Yanayacu, Reserva Nacional Pacaya-Samiria, 05°16'43"S, 074°55'57"W, 4 Aug 2000, J. Albert et al.; MCP 34511 (1, 44.2 mm SL), río Pacaya, cocha Yanayacu, 05°17'44"S, 074°24'19"W, 22 Sep 2002, J. Albert et al.; MUSM 4360 (3, 47.9–72.4 mm SL), río Huallaga, cocha Sanango, Yurimaguas, 20 Sep 1993, H. Ortega & F. Chang; MUSM 4426 (4, 44.2–53.9 mm SL), río Huallaga, Yurimaguas, 25 Sep 1993, H. Ortega & F. Chang; MUSM 7143 (1 alc, 32.8 mm SL), río Pastaza, laguna Rimachi, 15 May 1995, F. Chang; MUSM 12559 (1, 83.5 mm SL), río Amazonas, Iquitos, Mar 1944, D. Monge; MUSM 17305 (8, 32.8–44 mm SL), río Pacaya, PV1, Reserva Nacional Pacaya-Samiria, Requena, 4 Aug 2000, H. Ortega et al.; MUSM 17317 (2, 65.5–74.4 mm SL), same locality as MUSM 4360, 20 Sep 1993, H. Ortega & F. Chang; MUSM 17355 (2, 36.8–37 mm SL), río Pacaya, caño Yarina, Reserva Nacional Pacaya-Samiria, Requena, 3 Aug 2000, H. Ortega; MUSM 18550 (4, 39.3–47 mm SL), río Pastaza, laguna Rimachi, near caño Rimachi, 04°25'49.2"S, 076°40'19.8"W, 14 Aug 1999, A. Machado et al.; MUSM 18562 (5, 37–52.3 mm SL), same locality as MUSM 18550, 04°25'49.2"S, 076°40'19.8"W, 14 Aug 1999, H. Ortega et al.; MUSM 18619 (1, 60.4 mm SL), río Samiria, Parinari district, 9 Mar 2001, H. Ortega & E. Castro; MUSM ex. 10286 (2, 41–44.2 mm SL), río Ucayali, Quebrada Aguas Calientes, Contamana, 3 Jun 1996, H. Ortega et al.; **Ucayali**: MUSM 595 (3, 95–97.9 mm SL), río Ucayali, Shanashao, 21 Sep 1985, H. Ortega; MUSM 596 (6, 44.4–66.7 mm SL), río Ucayali, laguna Yarinacocha, Pucallpa, 10 Aug 1973, H. Ortega; MUSM 598 (4, 69.5–90.1 mm SL), río Ucayali, Utuquinía, 20 Oct 1984, J. Cánepa; MUSM 1425 (2, 60.1–65.8 mm SL), same locality as MUSM 596, 9 Oct 1985, H. Ortega; MUSM 1588 (1, 42.6 mm SL), río Ucayali, cocha Tacshitea, 3 Oct 1984, P. de Rham & H. Ortega; MUSM 1589 (2, 68–71.3 mm SL), río Ucayali, 8 Dec 1983, H. Ortega; MUSM 1681 (1, 75.8 mm SL), same locality as MUSM 598, 14 Jun 1982, H. Ortega; MUSM 1753 (1, 56.8 mm SL), same locality as MUSM 598, 19 Jul 1985, H. Ortega; MUSM 1982 [ex. USNM 284576] (38, 35.6–68.5 mm SL), same locality as MUSM 596, 26 Aug 1986, R. Vari et al.; MUSM 2080 (2, 62.3–63.5 mm SL), río Ucayali, 10 Jul 1987, C. Riofrio; MUSM 5060 (1, 85.1 mm SL), same locality as MUSM 596, 9 Jul 1987, C. Riofrio; MUSM 5120 (2, 44.2–47.3 mm SL), same locality as MUSM 596, 3 Aug 1988, E. Holm & G. Contreras; MUSM 5126 (7, 44.5–75.2 mm SL), same locality as MUSM 596, 3 Aug 1988, E. Holm & G. Contreras; MUSM 5130 (2, 52.1–72.6 mm SL), same locality as MUSM 596, 10 Aug 1973, H. Ortega; MUSM 5161 (46, 43.5–66.3 mm SL), same locality as MUSM 596, 19 Jul 1988, E. Holm & G. Contreras; MUSM 5164 (3, 71.9–87.4 mm SL), same locality as MUSM 598, 19 Jul 1983, H. Ortega; MUSM 5256 (3, 57–87.2 mm SL), río Callería, 4 Oct 1984, P. de Rham & H. Ortega; MUSM 5501 (9, 51.1–69.5 mm SL), same locality as MUSM 596, 3 Aug 1988, E. Holm & G. Contreras; MUSM 7459 (8, 43.5–61.3 mm SL), río Ucayali, laguna Yarinacocha, Yanua, Chullachaqui, 16 Jun 1995, C. Riofrio et al.;

MUSM 7464 (2, 53.6–57.8 mm SL), río Ucayali, laguna Yarinacocha, Isla del amor, Pucallpa, 16 Jun 1995, C. Riofrio et al.; MUSM 8577 (7, 58.1–77.1 mm SL), same locality as MUSM 596, 5 Dec 1995, I. Samanez; MUSM 10695 (2, 60–64.5 mm SL), río Ucayali, San Antonio, 15 Nov 1996, H. Ortega; MUSM 15413 (30, 40.3–85.3 mm SL), same locality as MUSM 596, 11 Sep 1986, H. Ortega; MUSM 15495 (12, 54.9–97 mm SL), same locality as MUSM 598, 22 Aug 1984, H. Ortega; MUSM 15782 (2, 53–73.5 mm SL), río Ucayali, laguna Yarinacocha, caño Tushmo, Pucallpa, 08°20'31.8"S, 074°20'30.9"W, 1 Nov 1999, H. Ortega; MUSM 15798 (1, 72.2 mm SL), same locality as MUSM 7464, 1 Nov 1999, H. Ortega et al.; MUSM 19714 (7, 60.2–79.6 mm SL), same locality as MUSM 15782, 30 Oct 2001, H. Ortega et al.; MUSM 20497 (15, 56.1–78.5 mm SL), same locality as MUSM 15782, 20 Aug 2002, Earthwatch Team IV; MUSM 22303 (1, 68 mm SL), Vista alegre, 17 Sep 1972, H. Ortega; MUSM 30427 (1, 63.5 mm SL), same locality as MUSM 596, 22 Nov 2003, H. Ortega.

Diagnosis.—*Ossancora punctata* is distinguished from congeners by having a well-developed, pentagonal anterior nuchal plate that is broadly sutured to epioccipital (vs. anterior nuchal plate reduced, diamond shaped, not sutured to epioccipital), maxillary barbel with fimbriae restricted to single row along anteroventral margin (vs. inserted in two distinct rows along anterior margin, one dorsally and one ventrally), mental barbels with small papillae (vs. with elongate fimbriae), and gas bladder with smooth external walls except for a pair of divergent terminal diverticula (vs. with numerous peripheral diverticula in *O. asterophysa* and *O. fimbriata*, or with one or two pairs of simple or weakly branched diverticula on anterolateral shoulder and sometimes anterior face of anterior chamber in *O. eigenmanni*).

Description.— Morphometrics in Table 1; lectotype and additional specimens in Fig. 13. Largest specimen examined 107.5 mm SL (MZUSP 37519). Dorsal profile of head rising moderately; scarcely convex for entire distance from snout tip to dorsal spine, otherwise with convex snout, then straight to dorsal spine. Dorsal profile of body descending more gradually, shallowly convex from dorsal spine to caudal peduncle. Ventral contour shallowly convex from snout tip to caudal peduncle, flattened across abdominal region. Caudal peduncle short with shallow hourglass shape in lateral view. Head acutely triangular with bluntly pointed snout in dorsal and lateral views. Body equilaterally triangular in cross-section through nuchal region.

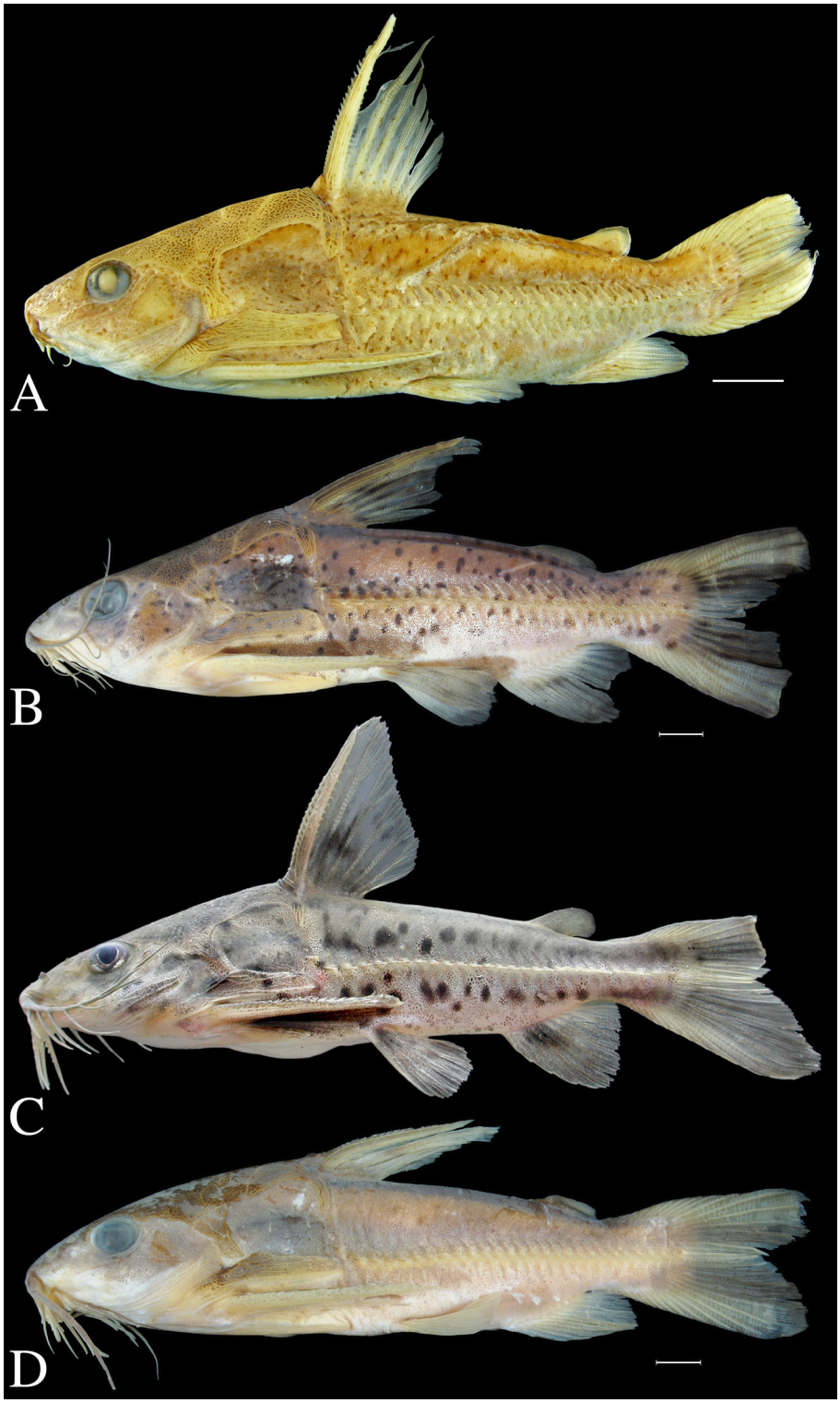
Eye moderately large (diameter 21.4–27.3% of head length), covered by thin skin (adipose eyelid inconspicuous), placed dorsolaterally (dorsal rim nearly even with countour of head, not elevated above). Anterior naris bounded by complete tube of skin, tube slightly taller posteriorly; posterior naris slightly larger, bounded by shorter tube of skin expanded anteriorly as weak flap.

Mouth small, subterminal; gape scarcely curved in ventral view. Lips moderately developed, relatively smooth with minute papillae. Each premaxilla and dentary bearing small squarish patch of acicular teeth with sharp tips. Both upper and lower tooth patches separated by distinct gap at symphysis. Premaxillary teeth 4–11, modally 4 (25), per ramus, loosely arranged in 2-3 rows. Dentary teeth 5–16, modally 8 (25), per ramus, arranged in about two rows.

Three pairs of barbels (maxillary, inner and outer mental), all fimbriate. Maxillary barbel moderately long, tip falling short or approximately reaching transverse through pectoral-spine insertions; with 6–9, modally 6 (25), smooth, elongate fimbriae inserted in single row along anteroventral margin. Inner and outer mental barbels short and thin with origins more or less co-linear; outer mental barbel reaching to about half the distance between lower lip and transverse through gill opening; inner mental barbel slightly shorter. Mental barbels relatively smooth or with few enlarged, rounded papillae; elongate fimbriae lacking. First gill arch with 14 (2) rakers, 10 or 11 on ceratobranchial, 1 at cartilaginous angle, 2 or 3 on epibranchial; length of longest raker about 4 times width. Branchiostegal rays 7 (2).

Dorsal fin II,6 (25), with distal margin approximately straight, vertical when erected. Dorsal-fin spine usually with antrorse serrations along basal two-thirds to three-quarters of anterior margin, distal tip smooth; fewer, much smaller, more erect and spaced serrations along distal half of posterior face. Pectoral fin modally I,8, range I,8–9 (24); distal margin straight, oblique relative to body axis. Pectoral-fin spine with similarly sized serrations anteriorly and posteriorly; anterior serrations antrorse along entire margin; posterior serrations retrorse, fewer in number, from distal tip nearly to base. Pelvic fin i,6 (20); distal margin broadly rounded. Anal fin modally iv,9, range iv–v,8–10 (25), with broadly rounded distal margin. Adipose fin moderately sized, teardrop-shaped. Caudal fin i,7/8,i (25); moderately forked, intact lobes bluntly pointed, dorsal lobe sometimes slightly longer and more

Fig. 13. (Page 143) *Ossancora punctata*. A. NMW 45435, lectotype, 105.9 mm SL, Mato Grosso and rio Guaporé. B. NUP 1053, 76.6 mm SL, Reservatório do rio Manso, Chapada dos Guimarães, Mato Grosso, Brazil. C. ANSP 178206, 65.4 mm SL, caño Shirui, trib río Nanay, Loreto, Peru. D. NUP 3542, 70.3 mm SL, rio Cuiabá, Leverger, Mato Grosso, Brazil. Scale bars equal 5 mm.


A
B
C
D

slender. Dorsal procurrent rays modally 11, range 9–13 (30); ventral procurrent rays modally 10, range 9–12 (30); dorsal and ventral procurrent rays slightly decreasing in width anteriorly, not approaching plate-like condition as in members of *O. fimbriata* clade.

Lateral line ossified with complete series of three tympanal scutes and 27–30, modally 28 (25), midlateral scutes per side beginning with infranuchal. Tympanal scutes inconspicuous, concealed by skin; ossification largely restricted to tubule, anteriormost longest. Infranuchal scute with distinct medial thorn flanked by slender, laminar wings with posterior margins entire and obscured by overlying skin; depth of dorsal wing equal to or slightly exceeding that of ventral wing; ventral wing finishing at or above posteriormost tip of posterior cleithral process. Medial thorn of infranuchal scute typically displaced dorsal to alignment of medial thorns of postinfranuchal scutes. Postinfranuchal scutes shallow and slender; posterior margin entire or with few minute serrations; scutes overlapping, obliquely oriented and gradually decreasing in depth to caudal fin. Depth of 10th midlateral scute about one-quarter of corresponding body depth.

Gas bladder (Fig. 5A–D) moderately large, cordiform, width slightly exceeding length in specimen 34.1 mm SL, about equaling length in specimens >65 mm SL; walls entirely smooth except for pair of finger-like terminal diverticula conjoined at base and with divergent tips. Terminal diverticula gradually more elongate in larger specimens, sometimes becoming asymmetrical (Fig. 5D).

Osteology.—Osteology generally similar to that described for *Ossancora asterophysa*, excepting differences already noted in lateral line scutes and procurrent rays of caudal fin; other salient differences as follows.

In all *Ossancora*, the mesethmoid has a pair of lateral triangular processes posterior to its anterior tip, in about the second quarter of its total length. In species of the *O. fimbriata* group, the tip of each lateral process is aligned with the pointed tip of infraorbital one, a talon-shaped bone that curves anteromedially towards the mesethmoid. In *O. punctata*, infraorbital one is similarly shaped, but its anterior tip is more rounded and not so aligned, finishing distinctly anterior to the tip of the lateral process of the mesthemoid.

In *O. punctata* the anterior nuchal plate is wide and pentagonal, sharing a long and firm suture with the epioccipital; and, the nuchal foramen is absent. In members of the *O. fimbriata* group the anterior nuchal plate is narrow, diamond shaped, and not sutured to the epioccipital; the nuchal foramen is absent (*O. asterophysa*, *O. eigenmanni*) or variably present or absent (*O. fimbriata*).

Subtle differences are noticeable in the surface texture of the cephalic shield. In *O. punctata*, the shield ornamentation is dominated by extremely fine and intricately reticulated ridges and punctations, and there is no sign of a middorsal groove in the nuchal region. In members of the *O. fimbriata* group, elongate striations are more prominent, particularly in the nuchal region, and a shallow middorsal groove (flanked by parallel ridges) is usually evident in juveniles.

In *O. punctata*, the posterior coracoid processes are parallel or scarcely divergent posteriorly (vs. weakly convergent in *O. asterophysa*). Posterior process of cleithrum in *O. punctata* is subtrapezoidal or rudder-shaped with oblique posterior margin angled dorsoanteriorly as in *O. asterophysa*; dorsal profile horizontal or descending gradually from posttemporo-supracleithrum with margin straight, scarcely to distinctly concave, or sinuous; ventral profile typically straight (vs. gently bowed, convex, in *O. asterophysa*). Surface ornamentation of posterior cleithral process generally separable into two (vs. three) longitudinal fields corresponding to the dorsal and middle fields found in members of the *O. fimbriata* group. Dorsal field widest anteriorly, tapering posteriorly to dorsal posterior corner and textured with fine oblique striations and grooves. Middle field narrowly triangular, expanded posteriorly and somewhat sunken between low oblique ridge separating dorsal field and more prominent longitudinal ridge defining ventral margin of process; textured with minute, finely reticulate ridges in larger specimens (SL 106.5 mm). Narrow ridges confining middle field sometimes finishing as minute spine posteriorly directed.

Vertebrae 33 (1) or 34 (1) with vertebrae 6–11 (2) bearing ribs.

Coloration.—Variable with spotted (Figs. 13A–C) and plain (Fig. 13D) forms. In alcohol, both forms with upper sides of head and body (above midlateral thorns) generally tan to medium gray; lower sides lighter, dusky in spotted form, pale in plain form; ventral surfaces uniformly pale. Spotted form with few to many small distinct dark spots scattered on sides of head and body (including posterior cleithral process) and sometimes fins; spots intensely pigmented, strongly contrasted with background color in some specimens, more diffuse and less contrasted in others. Dorsal fin hyaline with dusky base and melanophores often forming irregular dusky blotch centrally (blotch sometimes extended to distal margin). Paired and anal fins pale (plain form) or with melanophores forming irregular spots near base (spotted form). Caudal fin with dusky to dark longitudinal stripes formed by concentration of pigment in middle membranes and often rays of upper and lower lobes. Maxillary barbel tan to gray; mental barbels usually pale.

In life, ground color greenish gray, spots black (Fig. 13C).

Distribution and habitat.—*Ossancora punctata* is the most widely distributed species of *Ossancora*, known from lowland areas in the Amazonas and Paraná-Paraguay basins in Argentina, Brazil, Bolívia, Colombia and Peru (Fig. 6C). *Ossancora punctata* is recorded from both whitewater and blackwater habitats. Near Iquitos, Peru, specimens were collected in shallows along the sandy or silted margins of large rivers, as well as backwater pools and small flooded creeks near to large rivers.

Etymology.—Species name *punctata* presumably refers to the dark dots conspicuously evident on the head and body of the syntypes (e.g., Fig. 13A), although not stated by Kner (1853, 1855).

Remarks.—As for *Doras loricatus* (= *Ossancora fimbriata*), Kner (1853) first proposed *D. punctatus* in the caption to a line drawing of a disembodied gas bladder (Fig. 5 of 9). Kner (1853) categorized the gas bladder of *D. punctatus* as a transitional form between those lacking posterior diverticulum(a) and those having a secondary bladder distinguished from the main one by a short constriction. Kner (1855:136–138) subsequently provided a detailed description of *D. punctatus* that was accompanied by a line drawing (Pl. 6 (fig. 10)) of a specimen in lateral view, and based upon 17 specimens from "Mato-grosso und Rio Guaporé". Those localities are considered herein to represent at least two separate sites. The former is likely on the upper rio Guaporé near Vila Bela da Santíssima Trindade, capital of Mato Grosso state, Brazil, from 1752 to 1835, and labeled "Villa de Matto Grosso" on the map of John Haseman's route during the Carnegie Expedition to central South America (Eigenmann, 1915: Pl. 1).

Again as for *D. loricatus*, it is questionable whether *D. punctatus* is based on a single specimen, the holotype (i.e., sole source of gas bladder illustrated in Kner, 1853), or on multiple syntypes. Sixteen of the original 17 are currently found at NMW (14), RMNH (1) and ZSM (1); the last syntype may be a skeletonized specimen referred to by Hyrtl (1859:17) as *Corydoras punctatus* and currently lost (i.e., not found at ANSP or NMW, where Hyrtl Collection is mainly hosted). Of those found, five specimens are dissected with gas bladder entirely removed (NMW 45435, 45437, 45438, 45440 (2 of 3)), and one lot (NMW 45434) has one specimen cut ventrally with viscera removed and gas bladder intact, plus two additional disembodied gas bladders. It is impossible to determine the origins of the two disembodied gas bladders, or whether the gas bladder illustrated by Kner (1853) is of those found or missing. Again it seems probable that the species-level taxon was based on examination of more than one specimen. Therefore, we consider all 17 specimens cited by Kner (1855) to be syntypes of *D. punctatus* Kner (1853), and designate a lectotype (NMW 45435) herein.

DISCUSSION

Ossancora is proposed on the basis of a phylogenetic analysis of morphological characters for all doradid genera (Birindelli, 2010) that recovered four species (*O. asterophysa*, *O. eigenmanni*, *O. fimbriata* and *O. punctata*) in a clade sister to one including all other genera of fimbriate-barbel doradids (i.e., *Anduzedoras*, *Doras*, *Hassar*, *Hemidoras*, *Leptodoras*, *Nemadoras*, *Opsodoras* and *Trachydoras*). The clade inclusive of all fimbriate-barbel doradids has been long recognized as a natural group (e.g., Eigenmann, 1925), and its monophyly is well supported in both morphological (Higuchi, 1992; Birindelli, 2010) and molecular (Moyer et al., 2004) phylogenetic analyses. Birindelli (2010) defined the fimbriate-barbel clade on the basis of the following exclusive morphological synapomorphies: fimbriae on ventral face of maxillary barbel (Fig. 1); mental barbels similar in length; vomer with weakly-developed anterolateral processes; epioccipital participating in lateral margin of cranium (Fig. 3); mandibular sensory canal with only two or three pores; postinfranuchal scutes angled approximately 45° relative to body axis; hyomandibula elongate, with shallow medial expansion and not contacting metapterygoid; and Müllerian disc small and conical. *Ossancora* is recovered as the most basal genus of fimbriate-barbel doradids as it lacks three synapomorphies uniting the remaining taxa (Birindelli, 2010): skin beneath posterior cleithral process with multiple pores (secondarily lost in the monotypic *Anduzedoras* and some species of *Nemadoras* and *Trachydoras*), mesethmoid with sharply defined anteroventral keel (secondarily lost in derived species of *Leptodoras*), and metapterygoid much larger than entopterygoid (Fig. 3).

Ossancora is not presently defined by any uniquely derived synapomorphies. One characteristic, however, is limited among doradids to *Ossancora* and *Trachydoras paraguayensis*: the tips of the posterior coracoid and posterior cleithral processes are approximately even in adult specimens (Fig. 4). Specifically, the tip of the posterior coracoid process may barely exceed or fall short of the posterior cleithral process by no more than one-quarter the length of the latter. In *Ossancora*, the disparity in lengths increases in smaller specimens (e.g., length of posterior coracoid process less than half that of posterior cleithral process in small juveniles <35

Table 1. Comparison of measurements in species of *Ossancora*, n. gen.

	O. asterophysa n. sp.					*O. eigenmanni*				
	n	**Mean**	**Range**	**SD**	**Holotype**	**n**	**Mean**	**Range**	**SD**	**Lectotype**
Standard length (mm)	31		36.0 - 103.2		79.2	29		29.7 - 85.7		72.4
Percentages of standard length										
Predorsal length	25	43.28	40.79 - 45.31	1.36	44.70	23	44.30	41.09 - 47.71	1.35	43.72
Prepectoral length	25	26.52	24.69 - 29.25	1.16	27.02	23	27.60	26.23 - 28.91	0.80	27.35
Snout to coracoid process	25	44.56	42.31 - 47.47	1.21	45.83	23	46.97	45.00 - 50.49	1.11	48.14
Snout to postcleithral process	25	46.18	43.89 - 48.22	1.06	47.10	23	47.81	45.89 - 51.18	1.26	47.79
Head length	25	28.40	26.78 - 29.72	0.75	29.17	23	29.18	27.62 - 30.32	0.90	29.70
Body depth at dorsal fin origin	25	27.09	24.40 - 36.67	2.64	26.26	23	27.21	25.74 - 29.96	1.05	26.26
Caudal peduncle depth	25	8.10	7.18 - 12.47	0.99	8.33	23	8.96	8.33 - 10.74	0.53	8.54
Caudal peduncle length	25	12.53	10.47 - 14.95	1.10	12.12	23	12.91	11.06 - 14.44	0.85	—
Dorsal-fin spine length	22	25.92	22.11 - 29.34	2.09	23.74	22	25.42	20.30 - 31.07	2.30	27.69
Pectoral-fin spine length	24	32.88	28.62 - 36.16	1.76	33.46	23	32.31	28.04 - 37.86	1.96	35.08
Anal-fin base length	25	13.50	11.58 - 15.59	0.90	13.51	23	12.19	10.22 - 13.78	0.85	12.98
Adipose-fin base length	25	12.29	9.29 - 14.19	1.15	12.50	23	12.15	10.40 - 13.45	0.83	—
Infranuchal scute depth	25	12.65	5.43 - 14.94	1.82	13.64	23	13.31	11.38 - 15.09	0.97	—
Percentages of head length										
Snout length	25	45.87	43.41 - 47.86	1.29	47.62	23	47.18	44.59 - 51.22	1.63	45.77
Eye diameter	25	20.93	18.68 - 24.39	1.68	21.21	23	21.89	18.92 - 25.54	1.55	23.02
Interorbital width	25	30.46	27.32 - 34.78	2.01	33.77	23	33.01	28.14 - 36.61	2.56	31.07
Head width	25	68.40	64.56 - 74.49	2.07	67.10	23	70.53	67.16 - 77.18	2.44	—
Nuchal shield width	24	42.38	36.74 - 49.39	2.78	41.99	23	44.39	40.70 - 48.66	2.35	—
Cleithral width	25	104.07	97.58 - 111.99	4.11	98.70	23	104.17	98.51 - 110.81	3.51	98.60
Maxillary barbel length	25	131.52	110.39 - 162.58	13.50	117.75	23	127.30	107.47 - 141.49	7.87	—
Outer mental barbel length	25	67.65	53.46 - 92.21	10.27	53.68	22	64.59	53.45 - 74.35	5.98	—
Percentage of posterior cleithral process length										
Posterior cleithral process depth	25	47.27	40.91 - 54.89	3.29	47.47	23	44.51	38.54 - 50.94	2.83	—
Percentage of body depth at 10th scute										
10th midlateral scute depth	25	33.45	27.73 - 43.06	4.40	32.89	23	36.96	32.54 - 42.34	2.62	—

Table 1 cont. Comparison of measurements in species of *Ossancora*, n. gen.

	O. fimbriata					*O. punctata*				
	n	**Mean**	**Range**	**SD**	**Lectotype**	**n**	**Mean**	**Range**	**SD**	**Lectotype**
Standard length (mm)	41		28.6 - 94.7		80.4	35		49.7 - 107.5		107.8
Percentages of standard length										
Predorsal length	20	44.46	42.84 - 47.73	1.30	44.29	25	45.59	43.40 - 47.83	1.12	45.05
Prepectoral length	20	24.85	23.01 - 26.79	0.95	25.37	25	29.88	28.28 - 31.98	0.99	28.06
Snout to coracoid process	20	43.41	39.06 - 45.89	1.44	46.54	25	50.03	46.21 - 55.64	2.00	48.99
Snout to postcleithral process	20	45.58	43.40 - 47.81	1.25	47.53	25	49.70	47.66 - 51.55	1.04	48.11
Head length	20	27.09	25.33 - 28.26	0.82	26.76	25	31.17	29.03 - 32.97	0.96	29.16
Body depth at dorsal fin origin	20	26.41	24.54 - 30.41	1.28	28.24	25	28.30	25.85 - 31.07	1.24	27.86
Caudal peduncle depth	20	7.48	6.95 - 8.22	0.35	8.00	25	10.16	9.10 - 11.45	0.67	10.09
Caudal peduncle length	20	13.35	11.11 - 15.46	1.13	12.31	25	13.06	11.66 - 15.11	0.90	11.68
Dorsal-fin spine length	17	28.44	25.57 - 33.22	2.15	28.03	24	25.95	22.80 - 29.21	1.70	26.63
Pectoral-fin spine length	15	36.48	32.71 - 40.00	1.82	35.69	25	30.75	27.80 - 34.52	1.52	32.08
Anal-fin base length	20	12.99	11.58 - 13.94	0.70	11.01	25	13.84	12.48 - 15.97	0.84	13.80
Adipose-fin base length	20	11.60	9.93 - 13.09	0.83	11.01	24	9.84	8.05 - 10.99	0.86	7.54
Infranuchal scute depth	20	19.58	16.56 - 22.28	1.15	21.23	25	12.18	10.22 - 13.72	0.80	13.91
Percentages of head length										
Snout length	20	44.80	40.85 - 46.71	1.51	44.61	25	45.40	41.71 - 48.36	1.55	46.17
Eye diameter	20	22.15	18.63 - 25.32	1.87	25.84	25	24.30	21.35 - 27.27	1.59	22.75
Interorbital width	20	28.84	26.63 - 31.08	1.52	32.48	25	36.62	32.70 - 42.50	2.34	40.92
Head width	20	68.94	64.29 - 76.40	2.58	77.70	25	67.73	62.39 - 72.98	2.37	69.14
Nuchal shield width	20	41.22	35.34 - 44.38	2.10	50.42	25	33.13	28.63 - 38.14	2.27	38.47
Cleithral width	20	109.09	103.90 - 119.32	4.03	118.17	25	93.51	89.76 - 98.69	2.87	95.93
Maxillary barbel length	19	136.05	120.22 - 154.17	8.75	97.35	24	95.57	77.54 - 121.83	10.14	44.80
Outer mental barbel length	19	61.59	39.86 - 83.85	14.59	43.91	25	32.62	25.59 - 45.45	5.25	17.54
Percentages of posterior cleithral process length										
Posterior cleithral process depth	19	57.45	52.38 - 63.29	3.38	—	25	40.34	35.29 - 48.08	3.18	—
Percentages of body depth at 10th scale										
10th midlateral scute depth	20	53.79	46.08 - 63.21	4.29	—	25	32.18	23.01 - 41.81	5.47	—

mm SL). *Ossancora* is distinguished from *Trachydoras paraguayensis* and its congeners by having posterior cranial fontanel occluded (vs. posterior cranial fontanel present in adults), long maxillary barbel with smooth elongate fimbriae (vs. maxillary barbel relatively short with stout fimbriae), and teeth present on premaxilla and dentary (vs. jaws edentulous). In all other genera of Doradidae except *Physopyxis* the posterior coracoid process is much shorter than the posterior cleithral process, often reaching less than half and not exceeding two-thirds its length. *Physopyxis* is unique among doradids in having the posterior coracoid process about twice the length of the posterior cleithral process.

Within *Ossancora*, three species (*O. asterophysa*, *O. eigenmanni* and *O. fimbriata*) form a clade, the *O. fimbriata* group, diagnosed by a synapomorphy unique among doradids: fimbriae inserted in two rows, one dorsally and one ventrally, along anterior margin of maxillary barbel (Fig. 1). Two additional features of the *O. fimbriata* group apparently derived among *Ossancora*, but exhibited elsewhere among fimbriate-barbel doradids, are: elongate fimbriae on mental barbels, and anterior nuchal plate reduced, not sutured to epioccipital (i.e., permitting suture between parieto-supraoccipital and middle nuchal plate).

Within the *O. fimbriata* group, *O. asterophysa* closely resembles *O. eigenmanni*, and was previously identified as such in museum collections and recent publications (e.g., Sabaj and Ferraris, 2003:458). The two species are parapatric (Fig. 6A) and herein distinguished solely on the basis of gas bladder morphology (Fig. 5): peripheral diverticula numerous, present along walls of anterior and posterior chambers in *O. asterophysa* vs. diverticula absent or restricted to one or two paired locations on anterior chamber in *O. eigenmanni*. This difference is consistent for specimens of various sizes from throughout the range of either species.

A plausible argument can be made for the treatment of such differences in gas bladder morphology as geographic variation within a single species (i.e., *O. eigenmanni*). One notes, however, that there seem to be no synapomorphic characteristics for uniting *O. asterophysa* and *O. eigenmanni* as sister taxa relative to *O. fimbriata* (Birindelli, 2010). To the contrary, if the absence of peripheral diverticula, as in *O. punctata*, is considered a primitive trait, their proliferation may be considered a derived feature uniting *O. asterophysa* and *O. fimbriata* (*O. eigenmanni* having an intermediate condition wherein peripheral diverticula are present, but few). The new species, *O. asterophysa*, is therefore proposed as it has a distinct characteristic that is reliably diagnostic among congeners, and lacks a clear morphological synapomorphy for uniting it with its putative sister species, *O. eigenmanni*.

Biogeography.—The absence of *Ossancora* from the Orinoco basin is puzzling. *Ossancora* and *Anadoras* are the only two genera of Doradidae known from both the Amazonas and Paraná-Paraguay basins, but missing from the Orinoco. At least five doradid genera are widely distributed in all three systems (Amazonas, Paraná-Paraguay and Orinoco): *Oxydoras*, *Platydoras*, *Pterodoras, Rhinodoras* and *Trachydoras*. Numerous doradid genera (ca. 13 of 32) are shared between the Amazonas and Orinoco basins. *Ossancora* and *Anadoras* are not closely related, but occupy the most basal position in their respective clades, fimbriate-barbel doradids (Birindelli, 2010) and Astrodoradinae (Moyer et al., 2004; Sousa, 2010). At the species level, *Ossancora punctata* is one of three widely distributed in both the Amazonas and Paraguay basins, the others being *Pterodoras granulosus* and *Platydoras armatulus* (Sabaj Pérez et al., 2007; Piorski et al., 2008). *Trachydoras paraguayensis* is widespread in the Paraguay basin, but apparently restricted to the Madeira drainage in the Amazonas basin.

KEY TO SPECIES OF *OSSANCORA*

1A. Anterior nuchal plate wide, pentagonal, sharing broad suture with epioccipital; maxillary barbel with single row of fimbriae along anteroventral margin; mental barbels smooth or with small papillae; gas bladder with smooth walls except for a pair of finger-like terminal diverticula with divergent tips….. *Ossancora punctata* (Amazonas, Paraná-Paraguay)

1B. Anterior nuchal plate narrow, diamond shaped, not sutured to epioccipital; maxillary barbel with two rows of fimbriae along anterior margin, one dorsal and one ventral; mental barbels with elongate fimbriae; gas bladder with numerous peripheral diverticula (*O. asterophysa* and *O. fimbriata*), or with few diverticula restricted to anterior face and shoulder of anterior chamber (*O. eigenmanni*)….. 2

2A. Infranuchal scute greatly expanded ventrally, reaching level of posterior coracoid process in adults; nuchal foramen usually present; teeth on premaxilla and dentary 25–50 per ramus…..*Ossancora fimbriata* (Amazonas)

2B. Infranuchal scute not greatly expanded ventrally, reaching or barely exceeding level of posterior tip of posterior cleithral process; nuchal foramen absent; teeth on premaxilla and dentary ≤20 per ramus…..3

3A. Gas bladder with peripheral diverticula absent or few, restricted to anterolateral shoulder and sometimes anterior face of the anterior chamber (diverticula simple or once branched); posterior chambers with smooth posterior walls…..*Ossancora eigenmanni* (Paraná-Paraguay)

3B. Gas bladder with numerous peripheral diverticula on anterior face, shoulder and lateral walls of anterior chamber as well as lateral walls and posterior face of posterior chambers (diverticula often with multiple branches).... *Ossancora asterophysa* n. sp. (Amazonas)

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