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ZENARCHOPTERUS ORNITHOCEPHALA, A NEW SPECIES OF FRESHWATER HALFBEAK (PISCES: HEMIRAMPHIDAE) FROM THE VOGELKOP PENINSULA OF NEW GUINEA

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Abstract.—*Zenarchopterus ornithocephala* is the fifth freshwater species of the genus known from New Guinea. It resembles *Z. alleni* Collette and *Z. robertsi* Collette in having moderately high numbers of predorsal scales (more than 47), a connection of the supraorbital lateral-line canals across the top of the head, and a moderately large body size, but differs from those two species in having only the sixth anal fin ray enlarged in males instead of the fifth and sixth. It further resembles *Z. alleni* in having many vertebrae (49–50) but differs in having fewer predorsal scales (48–52 vs. 66), and a pectoral fin shorter than the head length.

Dr. Gerald R. Allen recently spent four months collecting in the freshwaters of New Guinea (Allen 1984). According to Dr. Allen (pers. comm.), the highlight of his 1982 trip was a 10-day foray via single engine Cessna in Irian Jaya, the Indonesian western half of the island of New Guinea. Among the new fish species collected on the Vogelkop Peninsula (Fig. 1) were a new *Melanotaenia,* a new teraponid, and a new *Zenarchopterus,* the fifth known from the freshwaters of New Guinea. The purpose of this paper is to describe the new species of *Zenarchopterus.* Methodology follows my previous papers on halfbeaks (Collette 1974, 1982). Material examined is in the collections of the Lembaga Biologi Nasional (National Biological Institute), Bogor, Indonesia (LBN); National Museum of Natural History, Washington, D.C. (USNM); the Western Australia Museum, Perth (WAM); and the Zoölogisch Museum, Universiteit van Amsterdam (ZMA).

Zenarchopterus ornithocephala, new species
Fig. 2

Diagnosis.—Sixth anal fin ray of adult male enlarged (Fig. 3A). Many total predorsal scales (48–52), position of predorsal scale that overlaps scales both anteriorly and posteriorly far anterior, 45 scales anterior to origin of dorsal fin. Upper jaw longer than wide (width divided by length 0.74–0.84); lower jaw about equal to head length (head length divided by lower jaw length 0.96–1.01). Pectoral fin much shorter than head length (head length divided by pectoral length 1.55–1.72). No dorsal fin rays modified in males.

Description.—Dorsal and anal fin rays 14; pectoral fin rays 10. Vertebrae (31–32) + 18 = 49–50. Gill rakers on first arch (4–5) + (13–14) = 17–19, on second arch (0–2) + (14–15) = 14–16. Left and right supraorbital lateral line canals connected across top of head (Fig. 4A–B).

Types.—Holotype: LBN 5419 (♂, 124 mm SL); Irian Jaya; Vogelkop Peninsula; stream at Fruata, 2°59′S, 133°32′E; G. R. Allen and H. Bleher; 16 Nov 1982.—

Fig. 1. Location of New Guinea rivers known to contain freshwater species of *Zenarchopterus*: *Z. ornithocephala* on the Vogelkop Peninsula; *Z. alleni* in the Mamberamo; *Z. kampeni* in the Mamberamo, Ramu, and Sepik; *Z. robertsi* in the Kumusi; and *Z. novaeguineae* in the Laloki, Fly, and Lorentz.

Paratypes: WAM P-27868-004 (♂, 93.9 mm SL) and USNM 266413 (♂, 94.5 mm SL); Irian Jaya; Vogelkop Peninsula; stream at Senopi, 0°50′S, 132°56′E; G. R. Allen and W. Tins; 18 Nov 1982.

Etymology.—A noun in apposition, from the Greek *ornis, ornithos* (bird) and *kephale* (head), after the Vogelkop (birdhead) Peninsula.

Habitat.—Notes on the habitat were kindly provided by Dr. Allen. Both sites were rainforest streams with slight turbidity. The bottom consisted of sand and gravel. The stream at Fruata was in mainly flat country at an elevation of 90 m; the stream at Senopi was in hilly terrain with a moderately fast flow at an elevation of 460 m. The pH was 7.8 and water temperature 28.3°C at Fruata; 7.5 and 27.5°C at Senopi.

Comparisons.—The five freshwater New Guinea species of *Zenarchopterus* share two specializations. They have more predorsal scales (33–66) than the other 13 species in the genus (26–34). They reach a larger maximum standard length (124–173 mm SL) than the marine species (126 mm, Collette 1982). The next largest species are *Z. buffonis* (Valenciennes)—126 mm; *Z. caudovittatus* (Weber)—123 mm; *Z. ectuntio* (Hamilton-Buchanan)—122 mm; and *Z. dispar* (Valenciennes)—121 mm.

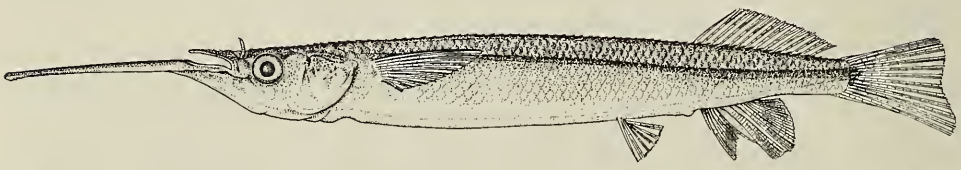

Fig. 2. *Zenarchopterus ornithocephala* LBN 5419, holotype, 124 mm, male; Irian Jaya; Vogelkop Peninsula; Fruata.

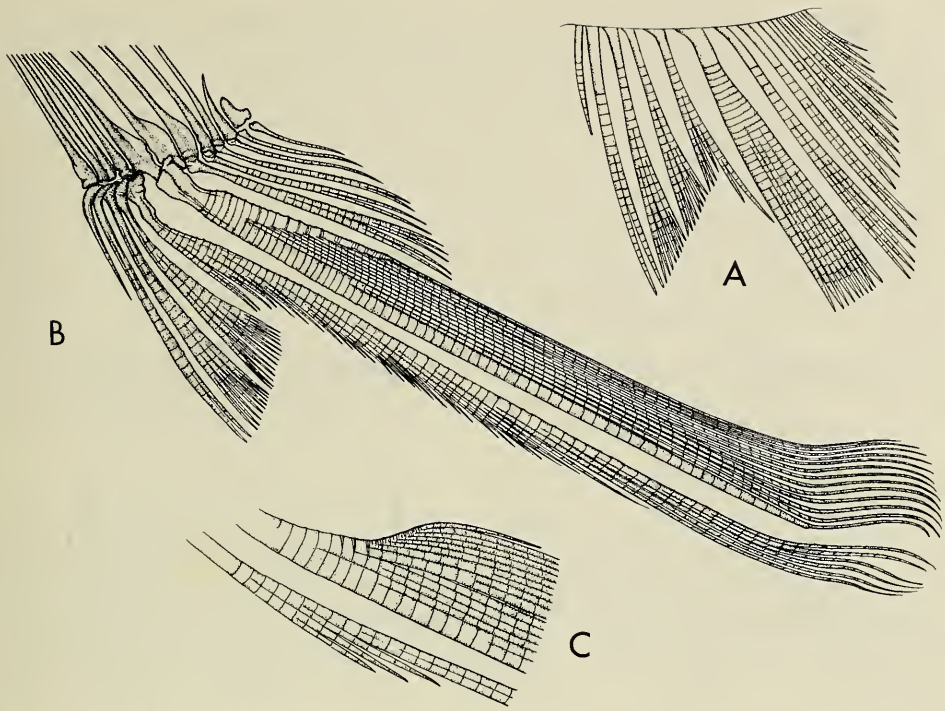

Fig. 3. Anal fin in males of three freshwater species of *Zenarchopterus* from New Guinea. A, *Z. ornithocephala,* holotype, LBN 5419; B, *Z. robertsi,* USNM 219229, 126 mm SL; C, *Z. alleni,* holotype, ZMA 116.479, basal portion of rays 5 and 6 only. (B and C from Collette 1982:fig. 3A–B).

Based on number of predorsal scales, maximum length, and male anal fin structure, the New Guinea freshwater species can be divided into two species groups: *Zenarchopterus kampeni* (Weber) and *novaeguineae* (Weber) have 33–47 predorsal scales; and the other three species have still higher counts, *robertsi* Collette and *ornithocephala* with 47–53 and *alleni* Collette with 66. *Zenarchopterus kampeni* and *novaeguineae* reach the largest size, 161 and 173 mm SL respectively. The other three freshwater New Guinea species are smaller, maximum sizes of 131 mm (*robertsi*), 130 mm (the unique holotype of *alleni*), and 124 mm (*ornithocephala*). *Zenarchopterus kampeni* and *novaeguineae* have the sixth anal fin ray enlarged and paddle-shaped (Collette 1982:fig. 3C–D); *robertsi* and *alleni* have the fifth and sixth rays greatly elongate (Fig. 3B–C), reaching beyond the caudal base; and *ornithocephala* has only the sixth ray enlarged.

Both *Z. ornithocephala* and *Z. alleni* have the left and right supraorbital lateral-line canals connected with a single median pore (Fig. 4A–C). The left and right canals are nearly connected in *Z. robertsi* (Fig. 4D) and *Z. novaeguineae,* but are completely separated in *Z. kampeni* (Collette 1982:fig. 5B) and many marine species of *Zenarchopterus.*

Comparative material.—In addition to collecting the three type-specimens of *Z. ornithocephala,* Dr. Allen and his associates collected additional material of three of the other four species of freshwater *Zenarchopterus* in Papua New Guinea from September to November, 1982. This material is listed here as an appendix to the material listed in Collette (1982).

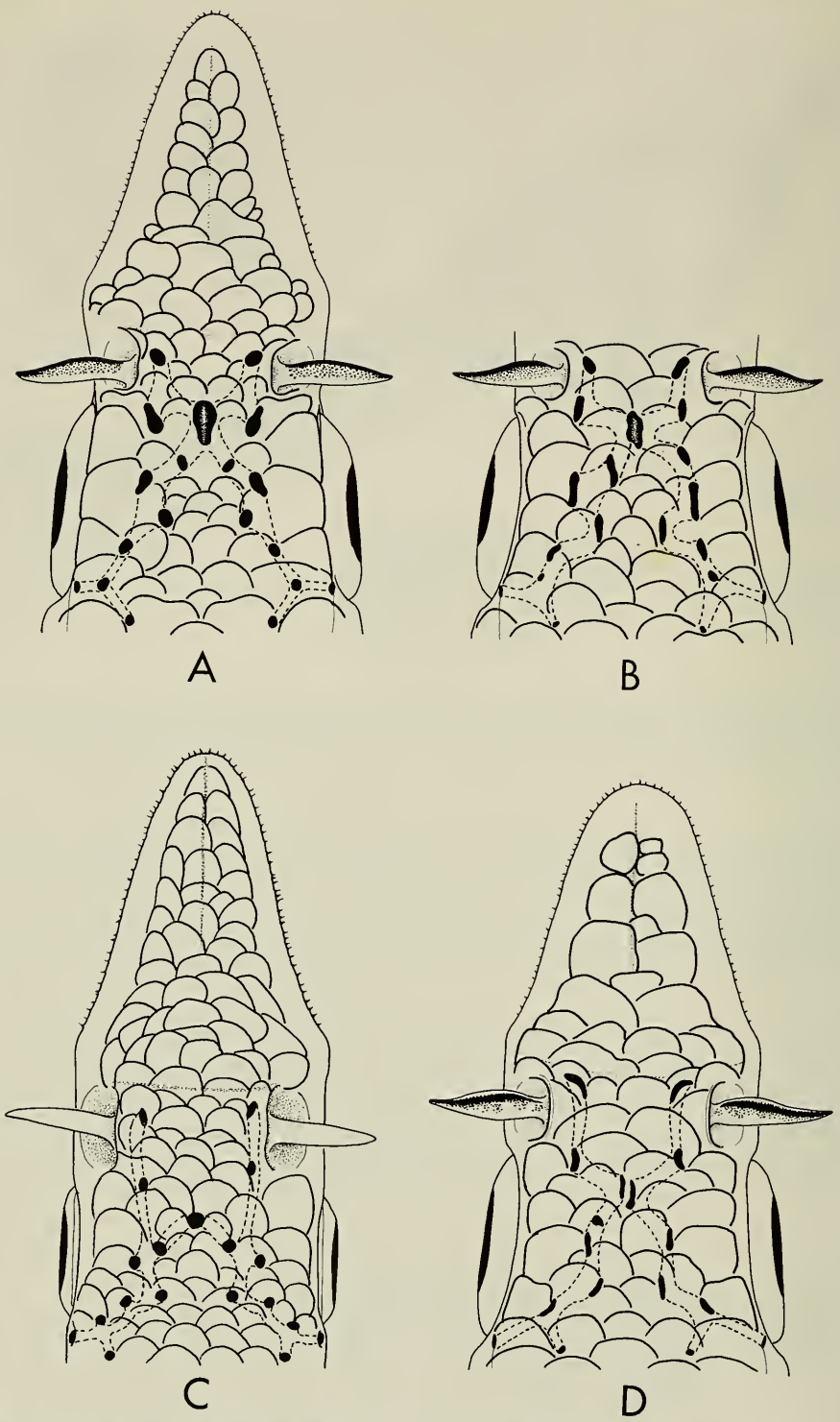

Fig. 4. Dorsal view of cephalic lateralis system in three freshwater species of *Zenarchopterus* from New Guinea. A, *Z. ornithocephala,* holotype, LBN 5419; B, *Z. ornithocephala,* paratype, USNM 266413; C, *Z. alleni,* holotype, ZMA 116.479. (Collette 1982:fig. 5A); D, *Z. robertsi,* paratype, USNM 219299.

Z. kampeni. Sepik R. WAM P-27847 (13, 28.9–125) and USNM 266411 (4, 113–144); Kwatit R. at junction with Sepik R.; 4°05′S, 143°06′E.

Z. novaeguineae. Oriomo R. WAM P-27815 (24, 41.1–118); Papua New Guinea; Oriomo R., 30 km upstream from mouth; 8°52′S, 143°11′E.

Fly R. WAM P-27812 (6, 51.5–148); trib. Nomad R., 1 km N of village; 6°18′S, 142°14′E.—USNM 266364 (1, 139); Nomad R., N of airstrip; 6°18′S, 142°14′E.—WAM P-27810 (1, 105); Hamami R. S of Nomad airstrip; 6°18′S, 142°14′E.—WAM P-27799 (4, 119–127); small creek 10 km S of Ningerum on Kiunga Rd.; 5°46′S, 141°08′E.—USNM 266363 (1, 113); Wai Somare R., 1 km S of Ningerum; 5°41′S, 141°09′E.—WAM P-27805 (1, 82.7); trib. of Ok Tedi R., 15 km N of Ningerum on Tabubil Rd.; 5°33′S, 141°16′E.

Z. robertsi. Kumusi R. WAM P-27790 (9, 65.5–128) and USNM 266412 (4, 96.2–125); Kaili Cr. 12 km E of Kokoda; 8°55′S, 147°47′E.

Acknowledgments

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