

Parakysis notialis, a new species of akysid catfish from Borneo (Siluriformes: Akysidae)

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Abstract *Parakysis notialis* sp. nov. is described from the Barito River drainage in southern Borneo. It can be distinguished from congeners in having a unique combination of the following characters: head length 26.5–27.0% SL, conical head, presence of median concavity on margin of lower lip, presence of laterosensory canal pore between inner and outer mandibular barbels, branched outer mandibular barbels, branches of inner mandibular barbels separated, deeply forked caudal fin with pointed lobes, 5 pectoral fin rays, 10 branched principal caudal fin rays, sparsely pigmented caudal fin, and absence of light brown saddle from base of posteriormost dorsal fin ray to caudal peduncle.

Key words *Parakysis* · Akysidae · New species · Borneo

Catfishes of the genus *Parakysis* Herre, 1940, are cryptically colored fishes found in small forest streams of Sundaic Southeast Asia. They have a highly rugose skin with tubercles all over the body, branched mandibular barbels, a long, low adipose ridge, and a forked caudal fin. The recent revision by Ng and Lim (1995) recognizes four valid species, viz., *P. verrucosus* Herre, 1940 from the Malay Peninsula, and the Riau Archipelago, *P. anomalopteryx* Roberts, 1989 from western Borneo, *P. grandis* Ng and Lim, 1995 from Sumatra and western Borneo, and *P. longirostris* Ng and Lim, 1995 from southern Malay Peninsula, Singapore, and the Riau Archipelago.

Recently, the second author obtained specimens of *Parakysis* from the Barito River drainage in southern Borneo (from where *Parakysis* has not been previously recorded), which belong to an undescribed species, herein described as *P. notialis* new species.

Materials and Methods

Measurements were made point to point with dial callipers and data recorded to 0.1 mm. Counts and measurements were made on the left side of specimens whenever possible. Subunits of the head are presented as proportions of head length (HL). Head length itself and measurements of body parts are given as proportions of standard length (SL). Measurements and counts were made following Ng and Lim (1995).

Fin rays were counted under a binocular dissecting microscope using transmitted light. Vertebral counts were taken from radiographs following the method of Roberts (1994). Numbers in parentheses following a particular fin ray or

vertebral count indicate the number of specimens with that count. Material for this study is deposited in the following collections: Natural History Museum, London (BMNH); California Academy of Sciences, San Francisco (CAS); collection of the second author (CMK); Museum of Comparative Zoology, Cambridge (MCZ); Museum Zoologicum Bogoriense, Cibinong (MZB); Museum of Zoology, University of Michigan, Ann Arbor (UMMZ); and the Zoological Reference Collection of the Raffles Museum of Biodiversity Research, Singapore (ZRC).

Parakysis notialis sp. nov.

(Figs. 1, 2A, 3A)

Holotype. MZB 5994, immature male, 20.1 mm SL; Borneo: Kalimantan Selatan, Barito River drainage, area of Tamiyang Layang, 2°01' S 115°07' E; T. Idei, 7 Sept. 2000.

Paratypes. CMK 16736, 1 female, 17.4 mm SL, 1 mature male 21.9 mm SL; ZRC 46951, 1 immature male, 16.6 mm SL; data as for holotype.

Diagnosis. *Parakysis notialis* can be distinguished from congeners by a unique combination of the following characters: head length 26.5–27.0% SL, conical head (Fig. 2A), presence of median concavity on margin of lower lip (Fig. 3A), presence of laterosensory canal pore between inner and outer mandibular barbels, branched outer mandibular barbels, branches of inner mandibular barbels separated, deeply forked caudal fin with pointed lobes, 5 pectoral fin rays, 10 branched principal caudal fin rays, sparsely pigmented caudal fin, and absence of light brown saddle from base of posteriormost dorsal fin ray to caudal peduncle.

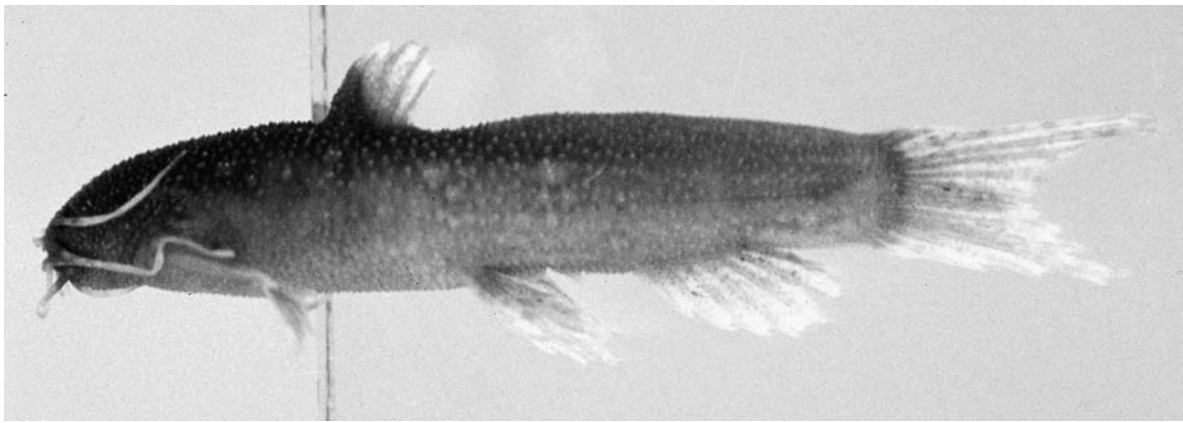


Fig. 1. *Parakysis notialis* sp. nov., CMK 16736, paratype, 21.9mm SL. (Copyright M. Kottelat)

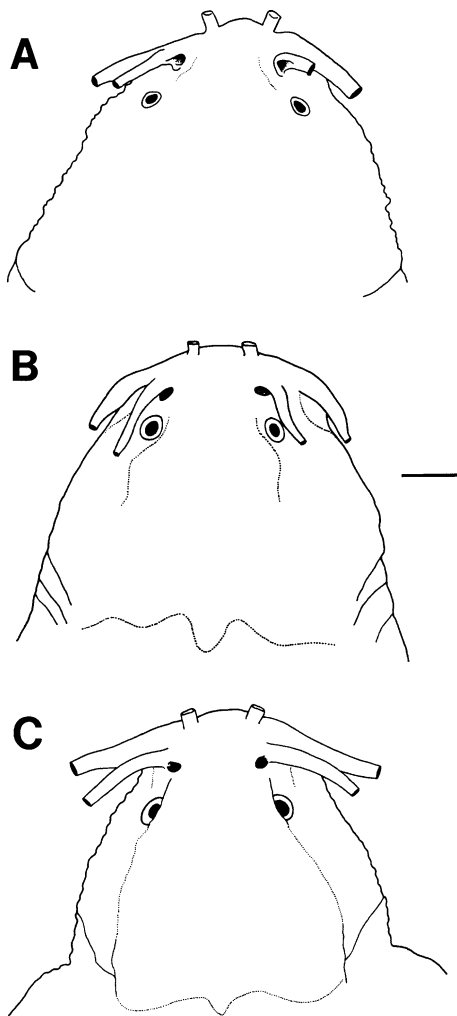


Fig. 2. Dorsal views of heads of **A** *Parakysis notialis* sp. nov., CMK 16736, paratype, 21.9mm SL; **B** *P. anomalopteryx*, BMNH 1982.3.29, paratype, 26.4mm SL; **C** *P. verrucosus*, ZRC 18857, 32.3mm SL. Bar 1 mm

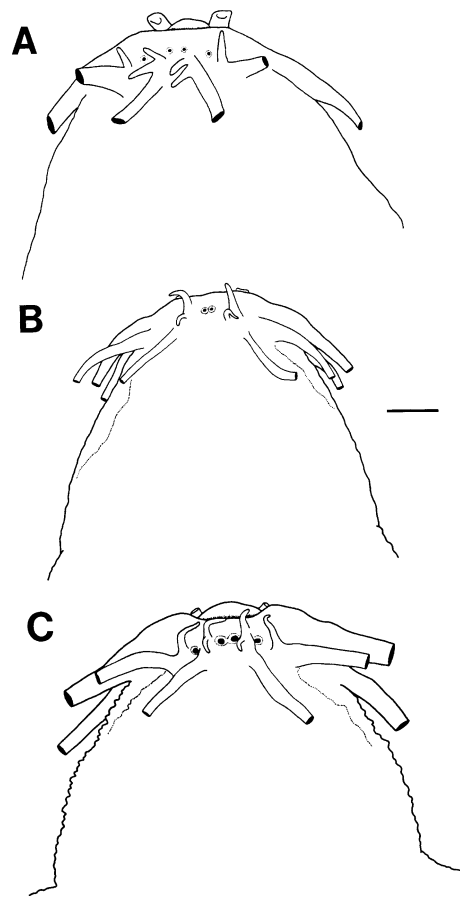


Fig. 3. Ventral views of heads of **A** *Parakysis notialis* sp. nov., CMK 16736, paratype, 21.9mm SL; **B** *P. anomalopteryx*, CAS 49420, paratype, 33.3mm SL; **C** *P. verrucosus*, ZRC 18857, 32.3mm SL. Bar 1 mm

Description. Body slightly compressed, becoming more so toward caudal peduncle. Dorsal profile rising evenly but not steeply from tip of snout to origin of dorsal fin and sloping gently ventrally from origin of dorsal fin to end of caudal peduncle. Ventral profile horizontal to posterior end of anal fin base, then sloping very gently dorsally from there to end of caudal peduncle. Skin rugose, covered with evenly distributed, rounded tubercles of uniform size. Lateral line complete and midlateral in position. Mandibular laterosensory canals with two pairs of pores: one medial to base of inner mandibular barbel and another between bases of inner and outer mandibular barbels (Fig. 2A). Vertebrae 18 + 12 = 30 (1), 18 + 13 = 31 (2), or 19 + 12 = 31 (1, holotype).

Head slightly depressed, dorsal surface covered with thick, rugose skin; dorsal profile strongly convex anteriorly; head length 26.5–27.0% SL (26.9% SL in holotype); head width 22.4–24.2% (22.4%) SL; head depth 13.4–14.6% (13.4%) SL. Eye very small and ovoid, horizontal axis longest; located entirely in dorsal half of head with small fleshy ridge of skin dorsally; eye diameter 9–10% (9%) HL. Orbit with free margin; interorbital distance 33–37% (37%) HL. Gill openings restricted, extending from just above to just below cleithral process. Gill membranes united with isthmus.

Mouth subterminal, fleshy upper lip with anterior medial lobe projecting anteriorly between two lateral lobes of lower jaw, snout length 24–32% (32%) HL. Oral teeth small, villiform, and in irregular rows on all tooth-bearing surfaces. Premaxillary and dentary tooth bands narrow and of equal width throughout. Vomerine teeth absent.

Barbels in four pairs. Nasal barbel slender, extending to horizontal line through middle of pectoral fin base [length 91–98% (98%) HL]. Maxillary barbel long and slender, with broad base originating at rictus of jaws and continuous with both upper and lower lips; extending to base of posteriormost pectoral fin ray [length 111–121% (111%) HL]. Inner mandibular barbel origin close to midline; barbel thicker and longer than nasal barbel and extending to horizontal line through base of pectoral spine [length 43–50% (50%) HL]. Base of inner mandibular barbel with two accessory barbels (branches) not confluent at base. Outer mandibular barbel origin close to midline of ventral surface of head, thicker and longer than nasal barbel, and extending to vertical line through base of posteriormost pectoral fin ray [length 76–86% (76%) HL]. Base of outer mandibular barbel with one accessory barbel (branch).

Dorsal fin located above middle of body; origin nearer from tip of snout than from caudal flexure; predorsal length 33.8–38.3% (38.3%) SL. Dorsal fin with 1 spine and 3 rays (4), margin convex; length of base 9.6–11.9% (11.9%) SL; spine short and robust, lacking serrations on posterior edge, length 9.1–12.5% (10.0%) SL.

Pectoral fin with short, stout spine, and 5 (4) rays; pectoral length 19.2–20.4% (20.4%) SL, length of fin 20.4–20.5% (20.4%) SL, length of spine 12.4–13.2% (12.4%) SL. Anterior and posterior spine margins smooth and without serrae. Pectoral fin margin straight anteriorly, convex posteriorly.

Pelvic fin origin at vertical through posterior end of dorsal fin base; prepelvic length 49.3–50.2% (50.2%) SL, length of fin 18.3–20.4% (20.4%) SL. Pelvic fin with i,4 (4) rays and slightly convex margin; tip of adpressed fin not reaching anal fin origin. Anus and urogenital openings located at vertical through middle of adpressed pelvic fin, body depth at anus 11.9–13.7% (11.9%) SL.

Long dorsomedian adipose ridge originating from just posterior to dorsal fin, continuous with upper procurrent caudal fin rays.

Anal fin base ventral to posterior half of adipose fin; preanal length 69.0–71.6% (71.6%) SL, length of fin base 15.1–15.4% (15.4%) SL. Fin with iii,6 (1), iv,4 (2), or iv,5 (1, holotype) rays and convex margin.

Caudal peduncle moderately slender; length 14.9–16.0% (14.9%) SL, depth 10.0–11.4% (10.0%) SL. Caudal fin deeply forked, with i,5,5,i (2) or i,6,4,i (2, including holotype) principal rays; upper and lower lobes pointed. Procurrent rays symmetrical, extending only slightly anterior to fin base.

Mature male with a long, conical genital papilla located immediately posterior to anus. Immature males with a shorter papilla. Female lacking genital papilla, but with a short, tubular extension of genital opening.

Color. In 70% ethanol: dorsal and lateral surfaces of head and body dark brown. Belly, chest, and ventral surface of head cream. A series of about five to six light brown spots on dorsolateral surface of body, arranged longitudinally from below dorsal fin base to caudal peduncle. Proximal three-quarters of dorsal fin dark brown, with distal one-quarter hyaline. Pectoral, pelvic, anal, and caudal fins hyaline with scattered brown spots, denser on rays than on membranes. Barbels cream with dark brown rings.

Distribution. Presently known only from the Barito River drainage, southern Borneo (Fig. 4).

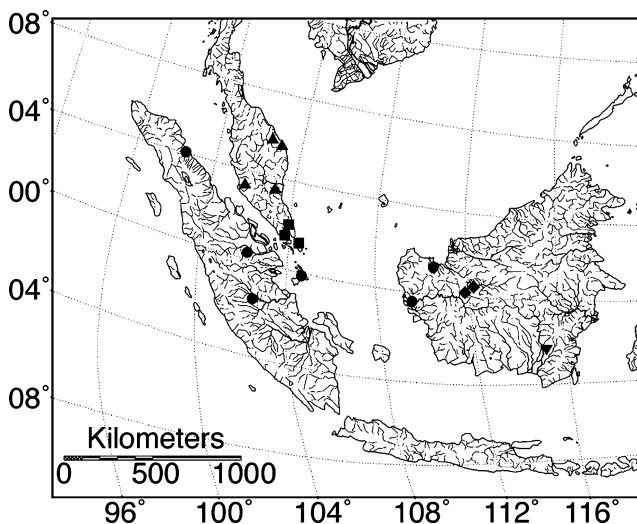


Fig. 4. Map showing distribution of *Parakysis* species: *P. anomalopteryx* ◆, *P. grandis* ●, *P. longirostris* ■, *P. notialis* sp. nov. ▼, and *P. verrucosus* ▲. (Base map courtesy of W. Rainboth)

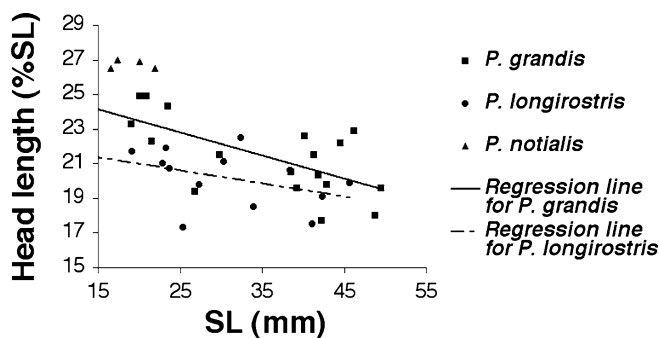


Fig. 5. Head length (%SL) plotted against SL (mm) for *P. grandis*, *P. longirostris*, and *P. notialis* sp. nov.

Etymology. From the Greek *notos*, meaning southern, in reference to the distribution of this species (southern Borneo). An adjective.

Remarks. *Parakysis notialis* can be distinguished from *P. anomalopteryx* and *P. verrucosus* in having a somewhat conical (vs. broadly rounded) head (Fig. 2). It further differs from *P. anomalopteryx* in having a marked median concavity on the margin of the lower lip (vs. lower lip margin entire and without concavity), the presence (vs. absence) of a laterosensory canal pore between the inner and outer mandibular barbels, and a branched (vs. unbranched) outer mandibular barbel (Fig. 3). It can be distinguished from *P. verrucosus* in having 10 (vs. 11) branched principal caudal rays and the branches of the inner mandibular barbels separate (vs. joined) at the base (Fig. 3).

Parakysis notialis differs from *P. grandis* and *P. longirostris* by a longer head (26.5–27.0% SL vs. 16.0–25.2%), 5 (vs. 6–7) pectoral fin rays, the absence (vs. presence) of a light brown saddle running from the base of the posteriormost dorsal fin ray to the caudal peduncle, and very little pigmentation (vs. extensive pigmentation) on the caudal fin. Head length is known to undergo allometric growth in various fish species. In the case of *P. grandis* and *P. longirostris*, for which we have examined specimens ranging in size from 19.0 to 49.5 mm SL (Fig. 5); growth of the head is slightly negatively allometric. However, even with this allometric growth, the head of *P. notialis* is still longer than that of *P. grandis* and *P. longirostris* when similarly sized specimens are compared (Fig. 5). *Parakysis notialis* further

differs from *P. longirostris* in having a deeply forked (vs. emarginate) caudal fin with pointed (vs. rounded) lobes.

Comparative material. *Parakysis anomalopteryx*: CAS 49420, 4 paratypes, 20.4–33.3 mm SL; BMNH 1982.3.29:191–192, 2 paratypes, 25.4–26.4 mm SL; MCZ 58352, 2 paratypes, 24.2–33.9 mm SL; Borneo: Kalimantan Barat, Sungai Mandai Kechil near its confluence with Kapuas mainstream, 18 km WSW of Putussibau. UMMZ 209923, 4 paratypes, 19.5–24.0 mm SL; Borneo: Kalimantan Barat, small forest streams flowing into Kapuas mainstream NE of Gunung Setunggul, 53 km NW of Sintang. *Parakysis grandis*: ZRC 39111, holotype, 27.8 mm SL; 3 paratypes, 19.2–27.0 mm SL; Sumatra: Riau province, small stream with grassy banks near Pangkalankasai, 43 km S of Rengat. CAS 133011, 3 paratypes, 20.9–26.8 mm SL; Borneo: Sarawak, 16 miles E of Kuching. CMK 7225, 11 paratypes, 38.5–49.5 mm SL; Borneo: Kalimantan Barat, Kapuas basin. ZRC 39862, 2 ex., 20.1–29.8 mm SL; Borneo: Sarawak, Batu Kawa–Matang area, Taman Koperkasa, ca. 10 km from Kuching (1°34'42.0" N, 110°16'24.7" E). *Parakysis longirostris*: ZRC 34491, holotype, 45.7 mm SL; ZRC 34492–34497, 6 paratypes, 23.3–42.4 mm SL; ZRC 12172–12173, 2 ex., 23.7–25.4 mm SL; Singapore: Nee Soon Swamp Forest. ZRC 33342–33344, 3 ex., 22.9–38.4 mm SL; Riau Archipelago: Pulau Bintan north (1°10'10.0" N, 104°23'10.6" E). ZRC 1161, 1 ex., 19.1 mm SL; Singapore: Sungai Seletar N of Seletar Reservoir. *Parakysis verrucosa*: CAS 133009, holotype, 32.0 mm SL; CAS 133010, 6 paratypes, 21.9–28.3 mm SL; Peninsular Malaysia: Johor, Mawai district. ZRC 18854–18857, 4 ex., 22.8–32.3 mm SL; Peninsular Malaysia: Selangor, 32 km on Rawang–Kuala Selangor road.

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