

***Akysis longifilis*, a new species of catfish (Teleostei: Akysidae) from Myanmar**

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Abstract

Akysis longifilis, new species, is described from the Sittang River drainage in Myanmar. It is a member of the *A. variegatus* species group and can be distinguished from congeners in the group (except for *A. brachybarbatus*, *A. fuliginatus*, *A. pictus*, *A. prashadi*, *A. variegatus*, *A. varius* and *A. vespa*) in having a smooth (vs. serrated) posterior edge of the pectoral spine. It is distinguished from *A. brachybarbatus*, *A. fuliginatus*, *A. pictus*, *A. prashadi*, *A. variegatus*, *A. varius* and *A. vespa* in having a unique combination of: length of adipose-fin base 25.7–31.1% SL, body depth at anus 9.7–13.6% SL, caudal peduncle length 18.3–23.2% SL, caudal peduncle depth 5.6–7.2% SL, head width 21.1–24.7% SL, nasal barbel length 67.4–96.4% HL, maxillary barbel length 123.2–159.6% HL, vertebrae 33–35, body with light saddle-shaped spots, and caudal fin forked.

Key words: Siluriformes, Sisoroidea, Sittang River, South Asia

Introduction

Members of the akysid catfish genus *Akysis* are small catfishes with tuberculate skin and a color pattern generally consisting of yellow patches or bands on a brown body. They are diagnosed by the anterior margin of the pectoral spine with a notch visible dorsally and the nasals with expansions beyond the canal-bearing region (de Pinna, 1996), and are found in fast-flowing streams and rivers in Southeast Asia [more specifically in the area bordered by the Irrawaddy River drainage to the west, the Barito River drainage to the east, the Lancanjiang (upper Mekong) drainage to the north and the Citarum River drainage to the south]. There is considerable hidden diversity within the genus; more than half of the 29 valid species have been described within the last decade (Ng, 1996; Ng & Kottelat, 1996; 1998; 2000; 2004; Ng & Tan, 1999; Ng & Freyhof, 2003; Ng & Rainboth, 2005; Ng & Sabaj, 2005).

Recently, specimens of *Akysis* collected from the Sittang River drainage in Myanmar were made available to me. This material was initially identified as *Akysis pictus* Günther, 1883 from southern Myanmar, but close examination revealed enough differences to warrant its recognition as a distinct species. The description of this new species as *Akysis longifilis* forms the basis of this study.

Material and methods

Measurements were made point-to-point with dial calipers and recorded to 0.1 mm. Ng & Kottelat (1998) are followed for all measurements and counts, with the following additions: dorsal-spine length, which is measured from the base to the tip of the dorsal spine, and head depth, which is measured at the base of the supraoccipital process (defined as the posterior margin of the supraoccipital excluding the supraoccipital process). Meristic values with an asterisk indicate those for the holotype.

Material examined in this study is deposited in the following institutions: Natural History Museum, London (BMNH); California Academy of Sciences, San Francisco (CAS); collection of Maurice Kottelat, Cornol (CMK); Naturhistoriska Riksmuseet, Stockholm (NRM); Nationaal Natuurhistorisch Museum, Leiden (RMNH); Florida Museum of Natural History, Gainesville (UF); University of Michigan Museum of Zoology, Ann Arbor (UMMZ); National Museum of Natural History, Washington DC (USNM); Zoölogisch Museum, Amsterdam (ZMA); Zoological Reference Collection, Raffles Museum of Biodiversity Research, Singapore (ZRC); Zoological Survey of India, Calcutta (ZSI).

Akysis longifilis sp. nov.

(Fig. 1)

Type material. Holotype: UMMZ 246172, 33.8 mm SL; Myanmar: Bago division, Pyu township, Pyu stream (tributary of Sittang River) ca. 229 km from Yangon, 18°29'N 96°26'E; Than Kyaw Toe, September 2005.

Paratypes: UMMZ 245966 (7), 31.5–53.1 mm SL; UF 161587 (2), 33.7–34.0 mm SL; data as for holotype.

Non-type material. UMMZ 246204 (1 c&s), 52.7 mm SL; data as for holotype.

Diagnosis

Akysis longifilis is a member of the *A. variegatus* species group and can be distinguished from congeners in the group (except for *A. brachybarbatus*, *A. fuliginatus*, *A. pictus*, *A. prashadi*, *A. variegatus*, *A. varius* and *A. vespa*) in having a smooth (vs. serrated) posterior edge of the pectoral spine. It differs from *A. brachybarbatus* in having a

narrower head (21.1–24.7% SL vs. 25.5–28.0) and a more slender caudal peduncle (5.6–7.2% SL vs. 7.9–8.1), and from *A. fuliginatus* in having a longer adipose-fin base (25.7–31.1% SL vs. 15.1–19.5), more slender body (9.7–13.6% SL vs. 14.1–16.6) and caudal peduncle (5.6–7.2% SL vs. 10.1–10.5), longer nasal and maxillary barbels (nasal barbel length 67.4–96.4% HL vs. 52.1–58.2; maxillary barbel length 123.2–159.6% HL vs. 100.0–109.1), presence of light saddle-shaped spots on the body (vs. uniformly dark body), and a forked (vs. truncate) caudal fin. *Akysis longifilis* can be distinguished from *A. pictus* in having a more slender caudal peduncle (5.6–7.2% SL vs. 7.7–8.5), longer adipose-fin base (25.7–31.1% SL vs. 22.0–23.6), and longer nasal and maxillary barbels (nasal barbel length 67.4–96.4% HL vs. 54.3–56.7; maxillary barbel length 123.2–159.6% HL vs. 95.7–128.8), and from *A. prashadi* in having a longer caudal peduncle (18.3–23.2% SL vs. 16.5–18.4). It differs from *A. variegatus* in having longer nasal and maxillary barbels (nasal barbel length 67.4–96.4% HL vs. 33.3–62.3; maxillary barbel length 123.2–159.6% HL vs. 78.3–114.8), from *A. varius* in having a forked (vs. truncate) caudal fin, and from *A. vespa* in having a longer adipose-fin base (25.7–31.1% SL vs. 17.6–21.1), more slender caudal peduncle (5.6–7.2% SL vs. 7.6–8.5), longer nasal and maxillary barbels (nasal barbel length 67.4–96.4% HL vs. 54.5–72.5; maxillary barbel length 123.2–159.6% HL vs. 89.0–98.2), and more vertebrae (33–35 vs. 31–32).

Description

Biometric data in Table 1. Body moderately compressed. Dorsal profile rising evenly but not steeply from tip of snout to origin of dorsal fin, then sloping gently ventrally from there to end of caudal peduncle. Ventral profile flat to anal-fin base, then sloping gently dorsally from there to end of caudal peduncle. Anus and urogenital openings located at vertical through middle of adpressed pelvic fin. Skin tuberculate. Lateral line complete and midlateral. Vertebrae 17+16=33* (2), 16+18=34 (2), 17+17=34 (2), 18+16=34 (1) or 17+18=35 (3).

Head depressed and broad, with rounded snout margin when viewed from above. Anterior nostril tubular, base of nostril not in contact with base of nasal barbel. Gill openings narrow, extending from immediately ventral to posttemporal to one-third of distance from ventral midline of body to base of pectoral spine. Bony elements of dorsal surface of head covered with thick, tuberculate skin. Eye ovoid, horizontal axis longest; located entirely in dorsal half of head.

Barbels in four pairs. Maxillary barbel long and slender, extending to vertical through middle of dorsal-fin base. Nasal barbel slender, extending to dorsalmost limit of gill opening. Inner mandibular-barbel origin close to midline, extending to base of pectoral spine. Outer mandibular barbel originating posterolateral of inner mandibular barbel, extending beyond base of last pectoral-fin ray.

Mouth subterminal, premaxillary tooth band not exposed when mouth is closed. Oral teeth small and villiform, in irregular rows on all tooth-bearing surfaces. Premaxillary

tooth band rounded, of equal width throughout. Dentary tooth band much narrower than premaxillary tooth band at symphysis, tapering laterally.

TABLE 1. Biometric data for *Akysis longifilis* (n=10).

	Holotype	Range	Mean±SD
%SL			
Predorsal length	34.9	34.9–39.1	36.6±1.56
Preanal length	66.6	63.4–69.8	66.4±2.29
Prepelvic length	52.7	47.1–52.7	50.3±1.62
Prepectoral length	20.7	19.4–24.0	21.5±1.67
Length of dorsal-fin base	14.8	11.8–16.6	14.2±1.73
Dorsal-spine length	14.2	10.8–18.0	14.4±2.24
Length of anal-fin base	13.9	10.9–15.9	13.8±1.86
Pelvic-fin length	13.9	12.2–17.3	14.3±1.67
Pectoral-fin length	23.7	20.5–26.0	23.5±2.22
Pectoral-spine length	17.2	14.5–21.6	17.3±2.17
Caudal-fin length	24.9	24.0–28.2	26.0±1.52
Length of adipose-fin base	25.7	25.7–31.1	27.6±2.06
Caudal peduncle length	22.8	18.3–23.2	21.5±1.77
Caudal peduncle depth	5.9	5.6–7.2	6.6±0.58
Body depth at anus	11.5	9.7–13.6	12.1±1.08
Head length	27.2	24.6–28.0	26.7±1.16
Head width	23.1	21.1–24.7	23.3±1.13
Head depth	13.9	13.2–16.3	14.6±1.11
%HL			
Snout length	31.5	30.2–40.5	34.1±3.13
Interorbital distance	31.5	31.5–38.8	35.3±2.38
Eye diameter	8.7	7.4–10.8	9.0±0.98
Nasal barbel length	75.0	67.4–96.4	81.9±9.21
Maxillary barbel length	132.6	123.2–159.6	137.8±12.59
Inner mandibular barbel length	59.8	40.0–71.6	60.7±9.30
Outer mandibular barbel length	92.4	80.9–111.4	94.7±10.73

Dorsal fin located above anterior third of body, with I,3,ii (1), I,4,i* (8) or I,5 (1) rays; fin margin convex; spine short and straight. Adipose fin with anterior margin slightly concave and posterior margin angular, origin at vertical through middle of pelvic-fin base. Caudal fin gently forked, with i,6,6,i (10) principal rays; lower lobe slightly longer and

broader than upper lobe. Procurrent rays symmetrical and extending only slightly anterior to fin base. Anal-fin origin at vertical through approximately midpoint of adipose-fin base. Anal fin with convex margin and iii,5,i* (7) or iii,6 (3) rays. Pelvic-fin origin at vertical through posterior end of dorsal-fin base. Pelvic fin with slightly convex margin and i,5 (10) rays; tip of adipose fin not reaching anal-fin origin. Pectoral fin with I,6,i (10) rays; fin margin posteriorly convex; anterior spine margin smooth, posterior margin without serrations.

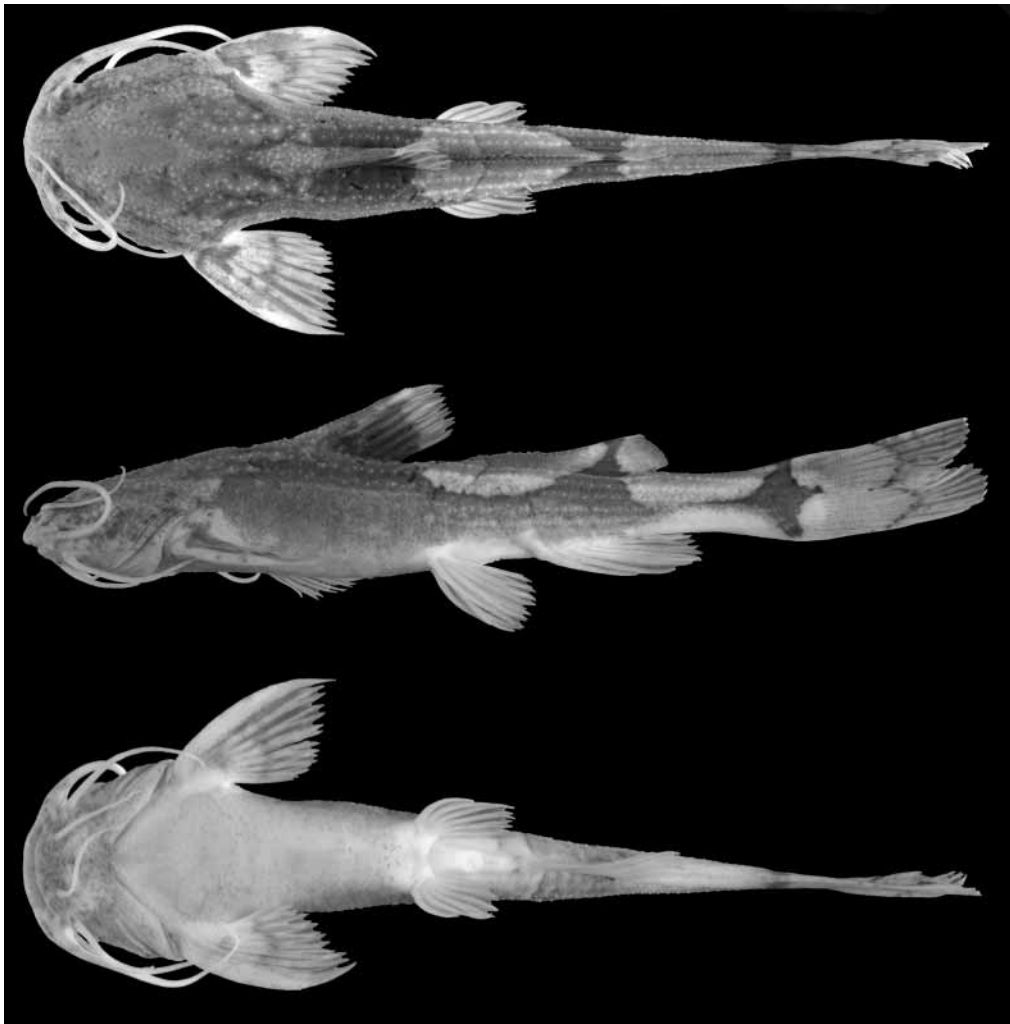


FIGURE 1. *Akysis longifilis*, UMMZ 246172, holotype, 33.8 mm SL; dorsal, lateral and ventral views.

Coloration. In ethanol: dorsal surface and sides of head medium grayish brown, with few darker brown spots randomly scattered throughout. Dorsal surface and sides of body dark grayish brown. Belly, chest and ventral surfaces of head and body light brown. Dorsal

half of body with two elongate saddle-shaped light brown spots: first on body at anterior three-quarters of adipose-fin base, second more elongate and between posterior fifth of adipose-fin base and caudal flexure. Ventral half of body with two similar saddle-shaped, light brown spots: first between anal and pelvic fins and second between posterior base of anal fin and caudal flexure. Anterior ventral spot largely coalescent with light brown coloration of ventral surfaces. Proximal two thirds of dorsal fin chocolate brown. Anal and pelvic fins hyaline with very few brown spots forming indistinct transverse band through middle of fin. Proximal half of pectoral fin with reticulate brown band; rest of fin hyaline. Caudal fin chocolate brown with distal one third of both upper and lower lobes with large, mostly hyaline spot (with scattered melanophores). Adipose fin dark grayish brown, except where lighter brown saddles-shaped spots on body run through fin. Barbels light brown, maxillary pair sometimes with few brown rings proximally.

Etymology

From the Latin *longus*, meaning long, and *filum*, meaning thread, in reference to the long barbels of this species. Used as a noun.

Distribution

Known from the type locality in the Sittang River drainage, southern Myanmar (Fig. 2).

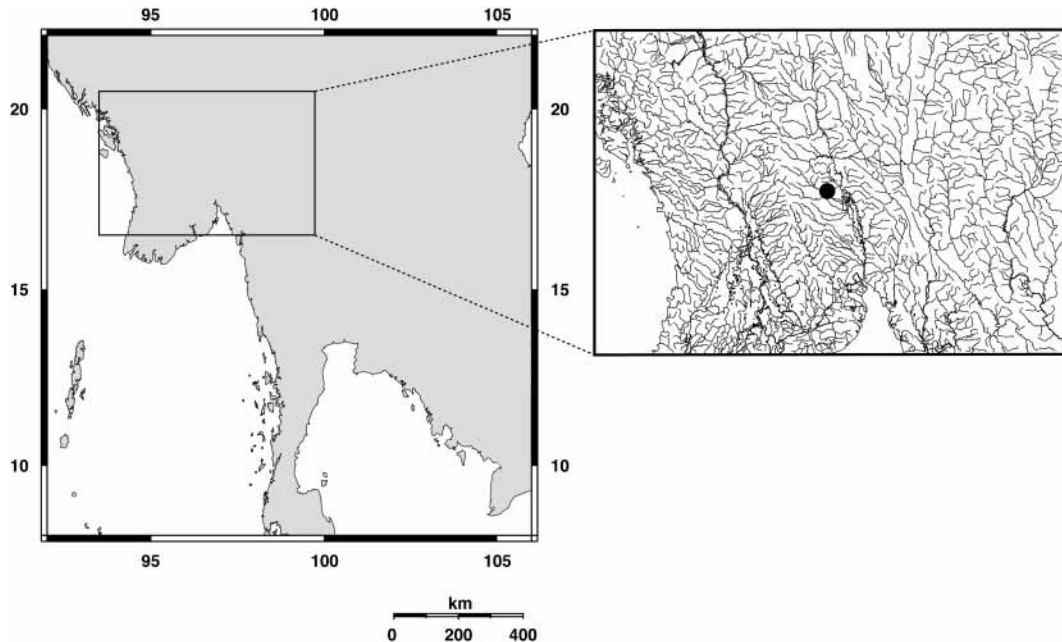


FIGURE 2. Type locality of *Akysis longifilis*.

Discussion

Three other species of *Akysis* are recorded from Myanmar (Ng & Kottelat, 2004): *A. pictus*, *A. prashadi* and *A. vespa*. These species are not known to occur sympatrically with *A. longifilis* (which is known from the Sittang River drainage; *A. pictus* and *A. vespa* are known from the Ataran River drainage, and *A. prashadi* from the Irrawaddy River drainage). *Akysis longifilis* differs from all three species by the differences outlined in the diagnosis, and these differences are not solely due to ontogeny. Biplots of the relevant diagnostic biometric characters for the four species (Figs. 3–7) show that the regression lines are significantly different (ANCOVA, $P < 0.01$ in all cases).

Both *A. pictus* and *A. vespa* are also found in southern Myanmar, but differ considerably from *A. longifilis* in coloration. *Akysis longifilis* possesses two distinct light saddle-shaped spots on the upper surfaces of the postdorsal region, while *A. pictus* possesses a very long light saddle-shaped spot in the same region (Fig. 8). The color pattern in *A. pictus* is unique to this species and reminiscent of that seen in species of *Acrochordonichthys*. *Akysis vespa* possesses two distinct vertical light bands (instead of saddle-shaped spots) in the postdorsal region.

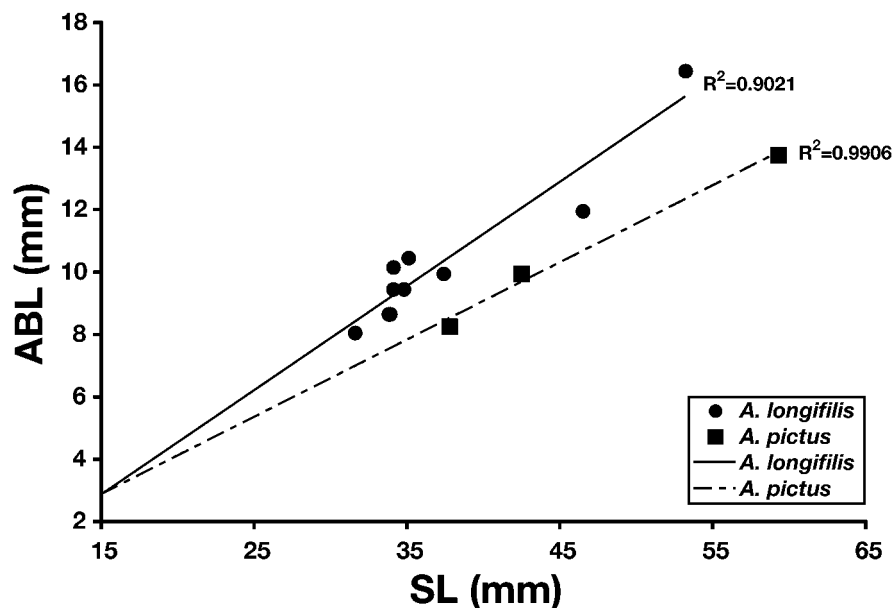


FIGURE 3. Biplots of adipose fin length (ABL) against standard length for *A. longifilis* and *A. pictus*.

Of the biometric characters, only barbel lengths distinguish *A. longifilis* from *A. variegatus*. However, there are also noticeable differences in the color patterns of the two species. Although all of the specimens of *A. variegatus* I examined have the color pattern strongly faded or missing, both Bleeker (1862: Pl. 83 Fig. 1) and Weber & de Beaufort (1913: Fig. 150) show this species to possess a distinct light colored vertical band on the

caudal peduncle. The caudal peduncle of *A. longifilis*, in contrast, is marked by two light colored saddle-shaped spots (one dorsal and one ventral), which do not coalesce into a vertical band. Furthermore, the two species have widely separate distributions (*A. longifilis* in the Sittang River drainage and *A. variegatus* in Java), with the two areas having significantly different fish faunas (Kottelat, 1989; Rainboth, 1991).

Comparative material

Akysis brachybarbatus: CMK 5667 (2 paratypes), 33.2–34.1 mm SL; China: Yunnan, Menlian county.

A. fuliginatus: UMMZ 241338 (holotype), 21.5 mm SL; UMMZ 235691 (2 paratypes), 19.1–19.9 mm SL; Cambodia: Stung Treng province, Mekong River on W edge of Kaoh Han, 16 km NE of Stung Treng, 13°38'N 106°3'E.

A. pictus: BMNH 1880.12.1.25-26 (2 syntypes), 37.7-42.4 mm SL; Myanmar: Tenasserim. UMMZ 245965 (1), 59.2 mm SL; Myanmar: Kayin state, hillstreams in Ataran River drainage in the vicinity of Payathonzu, 15°25'N 98°15'E.

A. prashadi: ZSI F10873/1 (holotype), 38.3 mm SL; Myanmar: Kachin state, Myitkyina district, S end of Lake Indawgyi and along W shore near Lonton village. CAS 98615 (1), 62.1 mm SL; Myanmar: Sagaing division, Kalemmyo markets. CAS 98616 (3), 20.8–50.4 mm SL; Myanmar: Kachin state, Ayeryawaddy River, just S of Myitkyina. NRM 41051 (1), 45.5 mm SL; Myanmar: Kachin state, Nant Yen Khan Cheng, effluent of Lake Indawgyi, upstream of road near Lonton village. UMMZ 245488 (16), 35.7–44.6 mm SL; Myanmar: Kachin state, Myitkyina district, hillstreams at Tonpan village, on road from Myitkyina to Tanai.

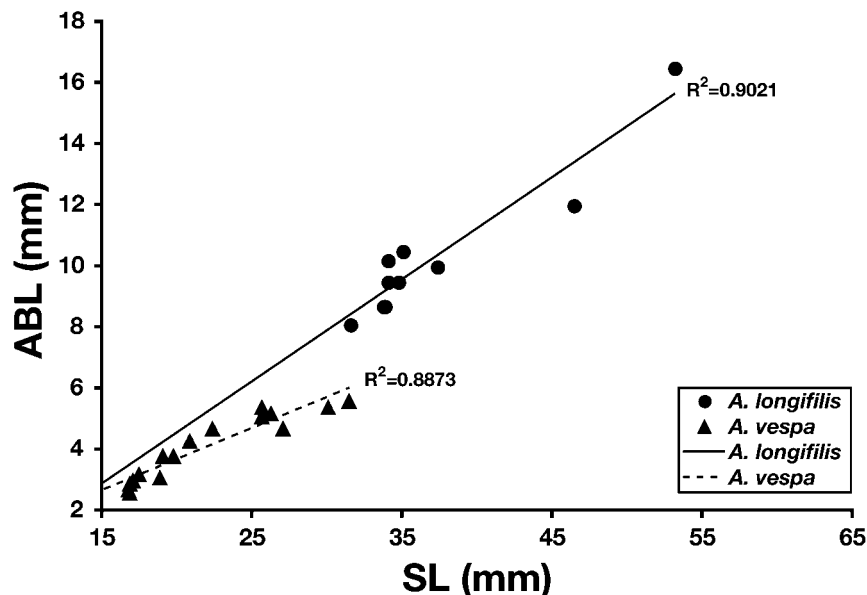


FIGURE 4. Biplots of adipose fin length (ABL) against standard length for *A. longifilis* and *A. vespa*.

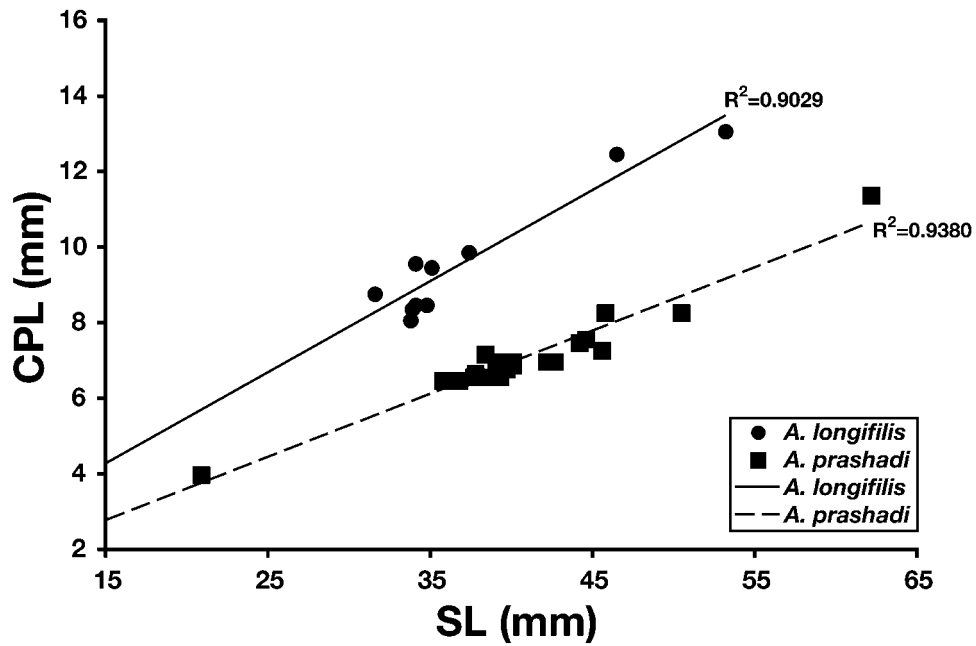


FIGURE 5. Biplots of caudal peduncle length (CPL) against standard length for *A. longifilis* and *A. prashadi*.

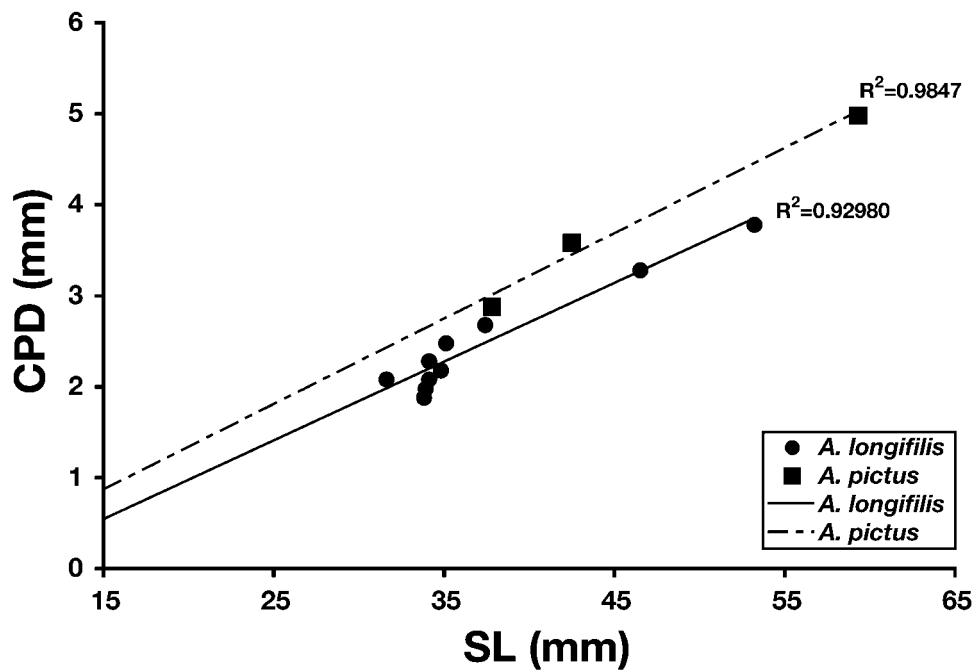


FIGURE 6. Biplots of caudal peduncle depth (CPD) against standard length for *A. longifilis* and *A. pictus*.

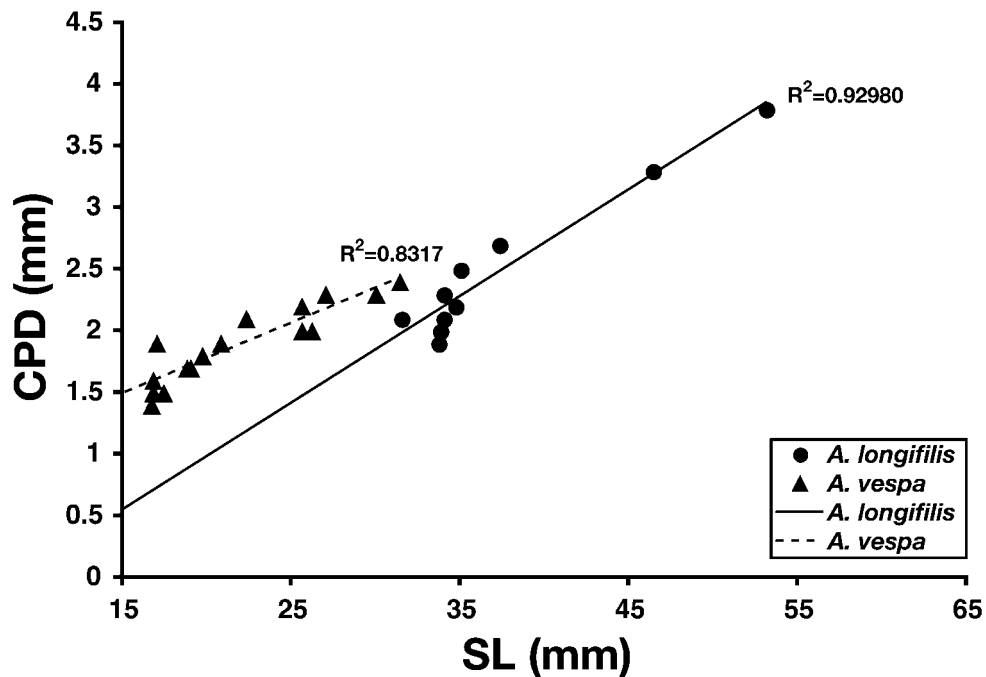


FIGURE 7. Biplots of caudal peduncle depth (CPD) against standard length for *A. longifilis* and *A. vespa*.

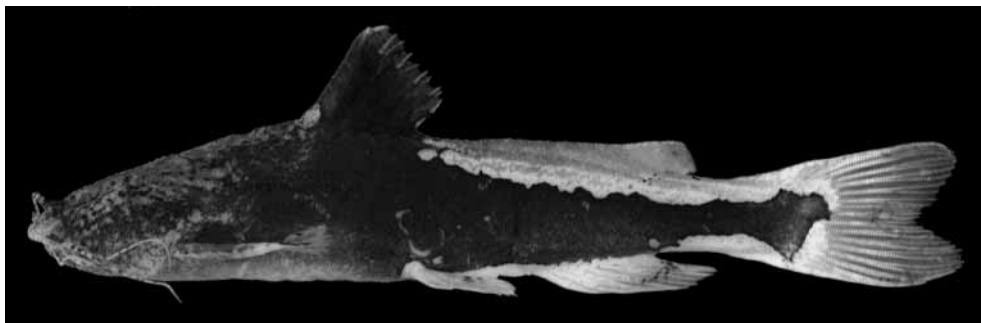


FIGURE 8. *Akysis pictus*, UMMZ 245965. 59.2 mm SL; Myanmar: Ataran River drainage.

A. variegatus: RMNH 6881 (16), 22.2–33.3 mm SL; Java: Batavia [=Jakarta] and Parongkalong [=Parungkarang]. ZMA 104.652 (1), 30.2 mm SL; Java: Batavia [=Jakarta].

A. varius: ZRC 41015 (holotype), 30.8 mm SL; CMK 12609, 1 paratype, 23.0 mm SL; Laos: Khammouan province, Xe Bangfai about 3 km upriver of Ban Pakphanang. CMK 12433 (6 paratypes), 13.5–21.7 mm SL; Laos: Khammouan province, Xe Bangfai, rapids about 2 km upriver of Ban Pungxe. UMMZ 214913 (2 paratypes), 20.4–20.6 mm SL; Thailand: Ubon Ratchathani province, Khong Chiam district, Huay Kwang, 1.5 km upstream from Mun River. USNM 232390 (7 paratypes), 16.2–20.7 mm SL; Thailand: Nakhon Ratchasima province, Lam Nam Mun, about 1 km below dam and 2 km downstream from Phima.

A. vespa: ZRC 46423 (holotype), 30.0 mm SL; CMK 17788 (8 paratypes), 15.7–31.4 mm SL; CMK 17953 (5 paratypes), 16.7–20.9 mm SL; CMK 17977 (5 paratypes); ZRC 49155 (4 paratypes), 16.4–28.9 mm SL; Myanmar: Kayin state, stream “Chon Son” between Kyondaw and Phadaw, about 20 km NW of Payathouzu (at border with Thailand), 15°25'N 98°15'E.

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Literature cited

- Bleeker, P. (1862) *Atlas ichthyologique des Indes Orientales Néerlandaises, publié sous les auspices du Gouvernement colonial néerlandais. Tome II. Siluroïdes, Chacoïdes et Hétérobranchoïdes*. Frédéric Muller, Amsterdam, 112 pp.
- de Pinna, M.C.C. (1996) A phylogenetic analysis of the Asian catfish families Sisoridae, Akysidae, and Amblycipitidae, with a hypothesis on the relationships of the neotropical Aspredinidae (Teleostei, Ostariophysi). *Fieldiana Zoology (New Series)*, 84, 1–83.
- Kottelat, M. (1989) Zoogeography of the fishes from Indochinese inland waters with an annotated check-list. *Bulletin. Zoologisch Museum Universiteit van Amsterdam*, 12, 1–55.
- Ng, H.H. (1996) *Akysis heterurus*, a new species of catfish (Teleostei: Akysidae) from eastern Sumatra, with notes on *Akysis hendricksoni* Alfred. *The Raffles Bulletin of Zoology*, 44, 3–10.
- Ng, H.H. (1999) The *Akysis* of Myanmar: a review (Teleostei: Akysidae). *The Raffles Bulletin of Zoology*, 47, 541–548.
- Ng, H.H. & Freyhof, J. (2003) *Akysis clavulus*, a new species of *Akysis* (Teleostei: Siluriformes: Akysidae) from central Vietnam. *Ichthyological Exploration of Freshwaters*, 14, 311–316.
- Ng, H.H. & Kottelat, M. (1996) *Akysis fuscus*, a new species of catfish (Teleostei: Akysidae) from the Kapuas basin, Borneo. *Ichthyological Exploration of Freshwaters*, 7, 19–26.
- Ng, H.H. & Kottelat, M. (1998) The catfish genus *Akysis* Bleeker (Teleostei: Akysidae) in Indochina, with descriptions of six new species. *Journal of Natural History*, 32, 1057–1097.
- Ng, H.H. & Kottelat, M. (2000) Description of three new species of catfishes (Teleostei: Akysidae and Sisoridae) from Laos and Vietnam. *Journal of South Asian Natural History*, 5, 7–15.
- Ng, H.H. & Kottelat, M. (2004) *Akysis vespa*, a new species of catfish (Siluriformes: Akysidae) from the Ataran River drainage (Myanmar). *Ichthyological Exploration of Freshwaters*, 15, 193–200.
- Ng, H.H. & Rainboth, W.J. (2005) Four new species of *Akysis* (Teleostei: Siluriformes: Akysidae) from mainland Southeast Asia, with comments on *Akysis ephippifer* Ng & Kottelat and *A. similis* Ng & Kottelat. *The Raffles Bulletin of Zoology*, Supplement 13, 33–42.

- Ng, H.H. & Sabaj, M. (2005) *Akysis hardmani* (Siluriformes: Akysidae), a new species of catfish from Thailand. *Ichthyological Exploration of Freshwaters*, 16, 215–222.
- Ng, H.H. & Tan, H.H. (1999) The fishes of the Endau drainage, Peninsular Malaysia with descriptions of two new species of catfishes (Teleostei: Akysidae, Bagridae). *Zoological Studies*, 38, 350–366.
- Rainboth, W.J. (1991) Cyprinids of South East Asia. *In*: Winfield, S. & Nelson, J.S. (Eds.) *Cyprinid Fishes. Systematics, Biology and Exploitation*. Chapman & Hall, London, 156–210.
- Weber, M. & de Beaufort, L.F. (1913) *The fishes of the Indo-Australian Archipelago. II. Malacopterygii, Myctophoidea, Ostariophysi: I Siluroidea*. E.J. Brill, Leiden, 404 pp.