Akysis portellus sp. nov., a new species of catfish (Teleostei: Akysidae) from the Sittang River drainage, Myanmar

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Abstract: A second species of akysid catfish from the Sittang River drainage in Myanmar, *Akysis portellus* new species, is described in this study. It can be distinguished from congeners (except for *A. brachybarbatus*, *A. fuliginatus*, *A. manipurensis*, *A. pictus*, *A. pulvinatus*, *A. prashadi*, *A. variegatus*, *A. varius*, *A. vespa* and *A. vespertinus*) in having a smooth (vs. serrated) posterior edge of the pectoral spine. It is distinguished from *A. brachybarbatus*, *A. fuliginatus*, *A. manipurensis*, *A. pictus*, *A. prashadi*, *A. pulvinatus*, *A. variegatus*, *A. varius*, *A. vespa* and *A. vespertinus* in having a unique combination of: length of adipose-fin base 17.1–19.2% SL, caudal peduncle length 19.1–22.0% SL, caudal peduncle depth 6.0–7.0% SL, gape width 9.5–11.1% HL, interorbital distance 30.8–36.8% HL, nasal barbel length 80.5–101.4% HL, maxillary barbel length 116.7–143.2% HL, inner mandibular barbel length 53.7–79.2% HL, outer mandibular barbel length 101.1–127.8% HL and caudal fin forked.

Keywords: Siluriformes, Sisoroidea, Sittang River, South Asia

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Introduction

Akysid catfishes are small to medium-sized hillstream catfishes generally found in fast-flowing streams and rivers in South and Southeast Asia. Members of the type genus, *Akysis*, are small species (typically not larger than 50mm SL) with tuberculate skin and a cryptic color pattern generally consisting of yellow patches or bands on a brown body. They have a distribution ranging from the Irrawaddy River drainage to the west, the Citarum River drainage to the east and south and the Lancanjiang (upper Mekong) drainage to the north. The genus had been divided ino two species groups (the *A. variegatus* and the *A. pseudobagarius* species groups) by Ng & Kottelat (1998), with members of the *A. pseudobagarius* group being reassigned to the genus *Pseudobagarius* by Ferraris (2007). There is considerable hidden diversity within the genus; more than half of the 20 valid species have been described in the last decade (Ng & Kottelat 1998, 2004; Ng & Tan 1999; Arunkumar 2000; Ng & Freyhof 2003; Ng & Rainboth 2005; Ng 2006, 2007; Page et al. 2007).

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

Material and Methods

Measurements were made point-to-point with dial calipers and recorded to 0.1mm. 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, head depth, which is measured at the base of the supraoccipital process (defined as the posterior margin of the supraoccipital excluding the supraoccipital process), and gape width, which is the horizontal distance of the mouth measured from one rictus to another. 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); 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 portellus* sp. nov.**
(Images 1-5; Figure 1; Table 1)

Type material:

Holotype: ZRC 51138, 32.7mm SL; Myanmar: Bago division, Shwe Kyin, 17°55'N-96°53'E; Than Kyaw Toe, August 2007.

Paratypes: NRM 57228 (5), 29.3-34.3mm SL; UMMZ 248469 (12), 23.8-33.8mm SL; ZRC 51139 (9), 28.9-35.0mm SL; data as for holotype.

Non-type material: ZRC 46429 (15), 30.9-42.6mm SL; Myanmar: from aquarium trade; H.H. Tan & H.H. Ng, 24 July 2001.

Diagnosis:

Akysis portellus sp. nov. is most similar to *A. longifilis*, which occurs sympatrically in the Sittang River drainage. It is distinguished from *A. longifilis* in having a shorter adipose-fin base (17.1-19.2% SL vs. 25.7-31.1), smaller mouth (gape width 9.5-11.1% HL vs. 12.9-14.7; Image 2) and a more rounded head shape when viewed dorsally (Image 3). *Akysis portellus* sp. nov. differs from other congeners (except for *A. brachybarbatus*, *A. fuliginatus*, *A. longifilis*, *A. manipurensis*, *A. pictus*, *A. prashadi*, *A. pulvinatus*, *A. variegatus*, *A. varius A. vespa* and *A. vespertinus*) in having a smooth (vs. serrated) posterior edge of the pectoral spine. It is distinguished from *A. brachybarbatus* in having a more slender caudal peduncle (6.0-7.0% SL vs. 7.9-8.1), from *A. fuliginatus* in having a more slender caudal peduncle (6.0-7.0% SL vs. 10.1-10.5), longer nasal and maxillary barbels (nasal barbel length 80.5-101.4% HL vs. 52.1-58.2; maxillary barbel length 116.7-143.2% 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, and from *A. manipurensis* in having a more slender caudal peduncle (6.0-7.0% SL vs. 9.3-10.0) and longer nasal barbels (nasal barbel length 80.5-101.4% HL vs. 68.9-89.4). *Akysis portellus* sp. nov. differs from *A. pictus* in having a more slender caudal peduncle (6.0-7.0% SL vs. 7.7-8.5), shorter adipose-fin base (17.1-19.2% SL vs. 22.0-23.6), and longer nasal and maxillary barbels (nasal barbel length 80.5-101.4% HL vs. 54.3-56.7; maxillary barbel length 116.7-143.2% HL vs. 95.7-128.8), from *A. prashadi* in having a longer caudal peduncle (19.1-22.0% SL vs. 16.5-18.4), and from *A. pulvinatus* in having a shorter adipose-fin base (17.1-19.2% SL vs. 23.0-25.2), more slender caudal peduncle (6.0–7.0% SL vs. 9.4–10.3), longer nasal and maxillary barbels (nasal barbel length 80.5-101.4% HL vs. 13.9-57.5; maxillary barbel length 116.7–143.2% HL vs. 78.5–105.0). It is distinguished from *A. variegatus* in having longer nasal and maxillary barbels (nasal barbel length 80.5–101.4% HL vs. 33.3–62.3; maxillary barbel length 116.7–143.2% HL vs. 78.3–114.8), from *A. varius* in having a forked (vs. truncate) caudal fin, from *A. vespa* in having a more slender caudal peduncle (6.0–7.0% SL vs. 7.6–8.5), and longer nasal and maxillary barbels (nasal barbel length 80.5–101.4% HL vs. 54.5–72.5; maxillary barbel length 116.7–143.2% HL vs. 89.0–98.2), and from *A. vespertinus* in having a more slender caudal peduncle (6.0–7.0% SL vs. 7.4–9.2), larger interorbital distance (30.8–36.8% HL vs. 24.5–28.8) and longer barbels (nasal barbel length 80.5–101.4% HL vs. 37.8–48.3; maxillary barbel length 116.7–143.2% HL vs. 84.9–96.6; inner mandibular barbel length 53.7–79.2% HL vs. 35.7–59.0; outer mandibular barbel length 101.1–127.8% HL vs. 66.3–83.1).

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 extending just posterior to base of last anal-fin ray. Vertebrae 16+16=32 (2), 17+15=32 (2), 16+17=33* (4) or 17+16=33 (2).

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.

Dorsal fin located above anterior third of body, with I,4 (2), I,4,i (6) or I,5* (2) 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,5,5,i (2) or i,6,6,i* (8) 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* (6), iii,6 (1), iv,4,i (1) or iv,5 (2) 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 adpressed fin not reaching anal-fin origin. Pectoral fin with I,6 (1), I,6,i (6) or I,7* (3) rays; fin margin posteriorly convex; anterior spine margin smooth, posterior margin without serrations.

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

Image 1. *Akysis portellus* sp. nov., ZRC 51138, holotype, 32.7mm SL; dorsal, lateral and ventral views.

Image 2. Anterior views of: a - *Akysis portellus* sp. nov., ZRC 51139, paratype, 33.3mm SL; b - *A. longifilis*, ZRC 51157, 30.6mm SL, showing differences in gape widths.

Image 3. Dorsal views of heads of: a - *Akysis portellus* sp. nov., ZRC 51139, paratype, 33.3mm SL; b - *A. longifilis*, ZRC 51157, 30.6mm SL, showing differences in shape.

Image 4. *Akysis portellus* sp. nov., ca. 31mm SL (specimen not preserved), showing live coloration.

Image 5. *Akysis portellus* sp. nov., UMMZ 248469, paratype, 30.4mm SL, showing orange hue present on head and body of some individuals.

Table 1. Biometric data for *Akysis portellus* sp. nov. (n=10)

	Holotype	Range	Mean±SD
%SL			
Predorsal length	35.2	33.8–38.1	36.1±1.5
Preanal length	64.8	64.0–69.2	66.5±1.9
Prepelvic length	45.6	45.6–51.4	48.2±2.5
Prepectoral length	23.2	20.1–23.2	21.7±1.2
Length of dorsal-fin base	14.1	12.6–14.1	13.4±0.7
Dorsal-spine length	13.1	13.1–15.9	13.9±1.1
Length of anal-fin base	14.7	12.7–15.6	14.6±1.1
Pelvic-fin length	15.0	12.9–15.0	13.8±0.8
Pectoral-fin length	22.6	22.0–24.5	23.2±0.9
Pectoral-spine length	15.0	14.3–16.3	15.5±0.7
Caudal-fin length	21.1	20.5–24.8	22.8±1.8
Length of adipose-fin base	18.7	17.1–19.2	17.9±0.9
Caudal peduncle length	20.8	19.1–22.0	20.6±1.3
Caudal peduncle depth	7.0	6.0–7.0	6.7±0.4
Body depth at anus	15.3	12.0–15.3	13.6±1.1
Head length	23.9	21.8–27.0	24.7±1.7
Head width	22.6	22.6–26.7	24.4±1.5
Head depth	14.4	14.4–17.4	15.9±1.3
%HL			
Snout length	39.7	31.7–40.3	37.0±3.9
Gape width	9.5	9.5–11.1	10.0±0.6
Interorbital distance	30.8	30.8–36.8	34.2±2.3
Eye diameter	10.3	8.8–12.5	10.3±1.3
Nasal barbel length	89.7	80.5–101.4	89.4±7.4
Maxillary barbel length	143.2	116.7–143.2	127.3±9.8
Inner mandibular barbel length	59.4	53.7–79.2	65.3±10.3
Outer mandibular barbel length	110.3	101.1–127.8	113.1±8.7

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. 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. Color in life similar, but more yellowish-brown overall (Image 4). Some individuals with marked orange hue over dorsal surfaces of head and body (Image 5)

Etymology:

From the Latin *portella*, the diminutive form of *porta*, meaning door. The name is used as a noun and alludes to the relatively small mouth of this species.

Distribution:

Known from the type locality in the Sittang River drainage, southern Myanmar (Image 1).

Discussion

Five other species of *Akysis* are recorded from Myanmar (Ng 2008): *A. longifilis*, *A. pictus*, *A. prashadi*, *A. vespa* and *A. vespertinus* with a sixth species, *A. manipurensis*, being known from the Chindwin River drainage (itself part of the Irrawaddy River drainage) in India (Vishwanath et al. 2007). Only *A. longifilis* is known to occur sympatrically with *A. portellus* sp. nov. in the Sittang River drainage (the type locality of *A. portellus* is about 90km downstream along the Sittang River from that of *A. longifilis*; Image 1). Although both species are superficially very similar, a side-by-side comparison reveals the differences outlined in the diagnosis. These differences in the gross morphology are not due to sexual dimorphism because the differences are consistent across members of both species. Although it cannot be excluded that the differences reflect different geographical variants of the same species, the highly distinct degree of difference in the shapes of the head and the mouth makes it unlikely that consistent morphological differences of this nature are merely due to geographical variation. Furthermore, the caudal peduncle of *A. portellus* appears to be more slender than that of *A. longifilis*, although this difference is not translated measurably (caudal peduncle depth 6.0–7.0% SL in *A. portellus* sp. nov. vs. 5.6–7.2 in *A. longifilis*). There also appear to be slight differences in color between the two species: the pelvic and anal fins of all *A. portellus* specimens examined appear to lack any markings, while those of *A. longifilis* usually have very few brown spots that form indistinct transverse bands through the middle of the fins. Finally, *A. portellus* sp. nov. has fewer vertebrae than *A. longifilis* (32–33 vs. 33–35), although the overlap in vertebral counts

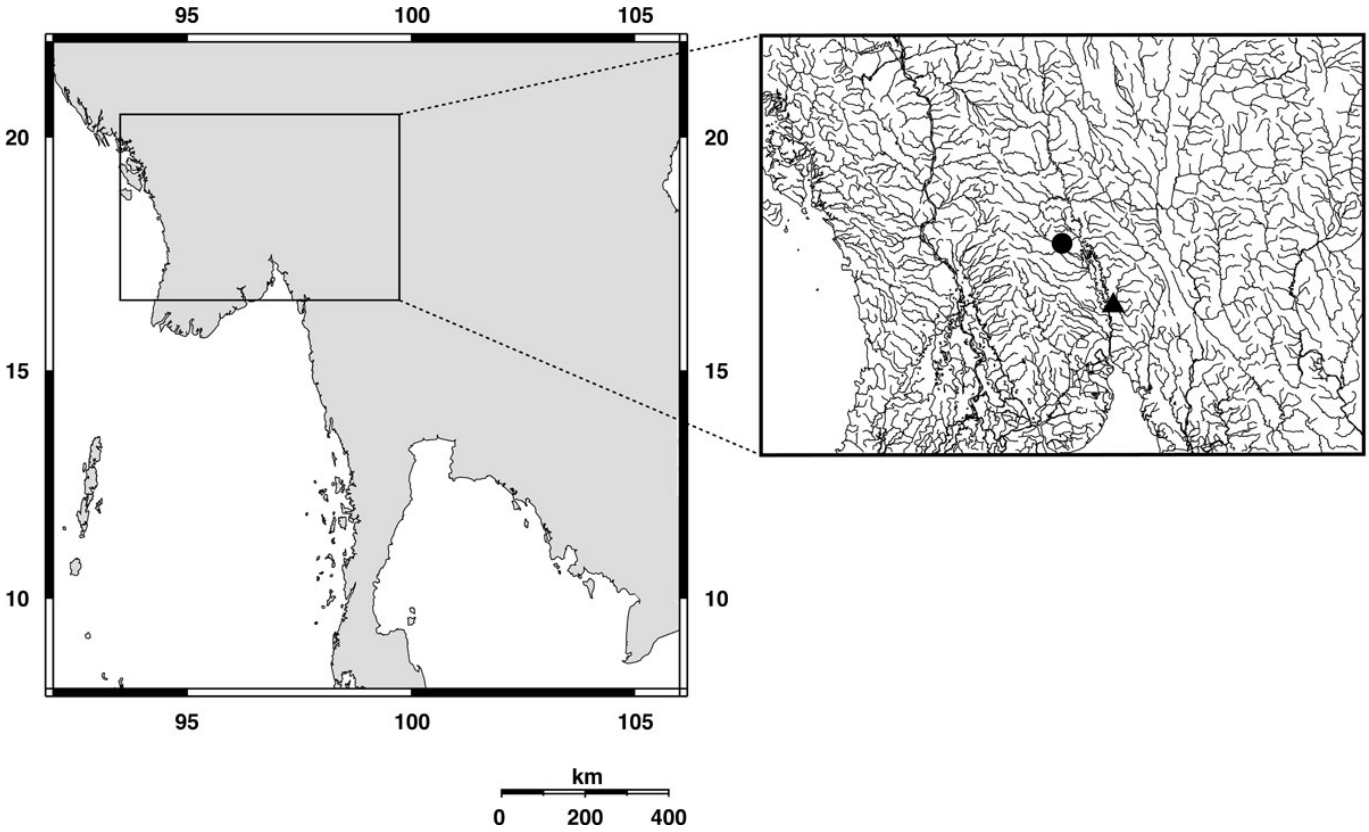

Figure 1. Type localities of *Akysis portellus* sp. nov. (triangle) and *A. longifilis* (circle).

diminishes its value as a diagnostic character.

Despite the diversity of the group, the occurrence of two species of *Akysis* in close sympatry is only known from the Endau River drainage, where *A. microps* and *A. hendricksoni* occur syntopically in the Kahang River (Ng & Tan 1999), and possibly in the Mekong River drainage (although known distribution of the sympatric species are separated by greater distances than is the case for *A. longifilis* and *A. portellus* sp. nov.; see Ng & Sabaj 2005, Image 2). Given the close overall similarity between *A. longifilis* and *A. portellus*, it is not surprising that an unpublished phylogenetic analysis using nuclear and mitochondrial markers revealed them to be sister taxa. The evoluionary implications of this are still being investigated and will be reported on at a later date.

Comparative material

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

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

A. longifilis: UMMZ 246172 (holotype), 33.8mm SL; UMMZ 245966 (7 paratypes), 31.5–53.1mm SL; ZRC 51157 (14), 26.2–44.6mm SL; Myanmar: Bago division, Pyu township, Pyu stream (tributary of Sittang River) ca. 229km from Yangon.

A. manipurensis: data from Vishwanath et al. (2007).

A. pictus: BMNH 1880.12.1.25-26 (2 syntypes), 37.7-42.4mm SL; Myanmar: Tenasserim. UMMZ 245965 (1), 59.2mm 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), 38.3mm SL; Myanmar: Kachin state, Myitkyina district, S end of Lake Indawgyi and along W shore near Lonton village. CAS 98615 (1), 62.1mm SL; Myanmar: Sagaing division, Kalemyo markets. CAS 98616 (3), 20.8–50.4mm SL; Myanmar: Kachin state, Ayeryawaddy River, just S of Myitkyina. NRM 41051 (1), 45.5mm SL; Myanmar: Kachin state, Nant Yen Khan Cheng, effluent of Lake Indawgyi, upstream of road near Lonton village. UMMZ 245488 (16), 35.7–44.6mm SL; Myanmar: Kachin state, Myitkyina district, hillstreams at Tonpan village, on road from Myitkyina to Tanai.

A. pulvinatus: UMMZ 248249 (holotype), 29.6mm SL; ZRC 51009 (3 paratypes), 21.7–26.6mm SL; Thailand; Ranong province, stream draining into Andaman Sea upstream of Kapoe, 9°34'14.0"N-98°41'40.4"E. UMMZ 245696 (1 paratype), 26.5mm SL; Thailand: Ranong province, Baan Na district, hillstreams flowing from Langkatuek, Klong Naka. UMMZ 248250 (2 paratypes), 22.8–23.9mm SL; Thailand; Phang Nga province, Tapi River drainage, Khlong Sok at Khao Sok canoe point, ca 5km upstream of 'fish cave', 8°52'45.8"N-98°41'19.4"E.

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

A varius: ZRC 41015 (holotype), 30.8mm SL; CMK 12609, 1 paratype, 23.0mm SL; Laos: Khammouan province, Xe Bangfai about 3km upriver of Ban Pakphanang. CMK 12433 (6 paratypes), 13.5–21.7mm SL; Laos: Khammouan province, Xe Bangfai, rapids about 2km upriver of Ban Pungxe. UMMZ 214913 (2 paratypes), 20.4–20.6mm SL; Thailand: Ubon

Ratchathani province, Khong Chiam district, Huay Kwang, 1.5 km upstream from Mun River. USNM 232390 (7 paratypes), 16.2–20.7mm SL; Thailand: Nakhon Ratchasima province, Lam Nam Mun, about 1km below dam and 2 km downstream from Phima.

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

A. vespertinus: UMMZ 248755 (holotype), 34.3mm SL; UMMZ 248756 (4 paratypes), 26.9–33.6mm SL; UMMZ 248757 (2 paratypes), 23.2–24.6mm SL; CMK 20752 (2 paratypes), 26.0–29.5mm SL; ZRC 51435 (2 paratypes), 26.8–27.1mm SL; Myanmar: Rakhine state: headwaters of Ann Chaung drainage, approx 19km E by S of Ann, 19°43'N-94°11'E.

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