

First Record of the Cyprinid Fish, *Esomus metallicus* (Actinopterygii: Cyprinidae) from Sumatra

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The cyprinid fish genus *Esomus* is characterized by elongated and compressed body with rounded abdomen; a pair of maxillary barbels which are very long and reach the ventral fin origin; and, dorsal and anal fins with short bases at the posterior portion of body (TALWAR & JHINGRAN, 1991; SMITH, 1945; RAINBOTH, 1996; KOTTELAT, 2001). The genus is distributed from the Indian sub-continent to Indochina including Myanmar and the Malay Peninsula (TALWAR & JHINGRAN, 1991; JAYARAM, 1999; KOTTELAT, 1989; 1998; 2001). Presently 11 species are recognized as valid (ESCHMEYER, 2012).

During a field survey by the authors (PM, MM and HS) in central Sumatra from 8 to 25 October 2011, five specimens of *Esomus* were collected from a small stream in the Reteh River basin, Batang District, Riau Province (Figs. 1 and 2). The specimens have been identified as *E. metallicus* Ahl, 1923, the most common and widely distributed species in Indochina. This is the first record of the genus and species from the island of Sumatra as well as Indonesia. This paper provides a brief morphological description of the specimens. A map of whole distributional range of *E. metallicus* based on voucher specimens and literature records is also provided as well as discussion on a status of the present record. Methods of counts and measurements follow HUBBS & LARGLER (1958); vertebral counts follow ROBERTS (1989).

Description.—Body elongated and compressed (body width 12.7–14.3 [mean:13.4] % SL [standard length]); head small and compressed (head length 25.6–27.5 [26.4] % SL; head width 13.3–14.6 [14.0] % SL, 49.9–55.6 [53.1] % HL); snout moderately long (snout length 6.5–6.9 [6.8] % SL, 24.5–26.6 [25.7] % HL); mouth superior and small, lower jaw longer than upper jaw, posterior end of maxillary not reaching an anterior margin of orbit (upper jaw length 5.0–6.5 [5.6] % SL, 18.7–24.4 [21.3] % HL); rostral barbel moderately long, reaching to around middle of orbit (length of rostral barbel 9.2–13.2 [11.3] % SL, 34.7–49.7 [21.3]); maxillary barbel very long, extending to ventral fin insertion (length of maxillary barbel 46.3–65.9 [56.0] % SL); eye moderately large (orbit diameter 6.9–7.5 [7.2] % SL, 22.8–25.2 [24.3] % HL), interorbital region somewhat swollen, upper margin of orbit not reaching dorsal contour of head in lateral view. Anterior nostril tube-like, attached to hole-like kidney-shaped posterior nostril.

Dorsal fin with two unbranched and 6 or 7 branched rays, base short (length of dorsal fin base 7.1–8.6 [7.9] % SL), inserted at posterior portion of body, opposite to anal fin, distal margin straight to convex. Anal fin with 3 unbranched and 5 branched rays, base short (19.3–20.2 [19.7] % SL), anterior origin attached to anus, distal margin concave or notch. Pectoral fin

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with single branched and 13 or 14 branched rays, relatively large and long (pectoral fin length 28.1–31.2 [30.1] % SL, length of pectoral fin base 6.5–7.8 [6.9] % SL), inserted at lower half of body, tip of the first unbranched ray elongate, reaching ventral fin origin. Ventral fin with single unbranched and 6 or 7 branched rays, inserted at ventral midline of body somewhat closer to posterior end of body. Caudal fin forked, tips of upper and lower lobes rounded, lower lobe slightly longer than upper lobe with 19 or 20 principle caudal fin rays (9 or 10 and 8 branched rays on upper lobe and lower lobe, respectively).

Lateral line incomplete (perforated scales 9–14), starting from just behind upper origin of gill opening, passing through upper base of pectoral fin then down to lower half of body and running parallel to abdominal out line of body to above anal fin base. Scale rows above and below lateral line, 5 ½, and ½, respectively. Longitudinal scale rows 29–31. Predorsal scales 17. Transverse scale rows 7 ½. Circumpeduncular scales 14. Abdominal vertebrae 18 (including four vertebrae comprising the Weberian complex). Caudal vertebrae 14 or 15. Total vertebrae 32 or 33.

Coloration in alcohol.—Body uniformly pale yellow or light brown, upper half (above a black lateral band) darker than lower half. A black band running at dorsal midline of body from posterior end of head to caudal fin base interrupted by a dorsal fin. A black lateral band running from posterior margin of orbit to caudal fin base. An axial streak (in black) present at lateral side of body, usually running parallel to the black lateral band just above it and attaching to it at around caudal peduncle. All fin membranes pale white. Some minute melanophores scattered on all fin membranes at portions attached to rays.

Ecological notes.—The *Esomus* specimens were collected from a slow running hill stream with clear water, about 50 cm in depth, bottom composed of mud, sand and fine gravel, dense vegetation at bank, and surrounded by some houses of local villagers. Other fish species collected together were *Hemirhamphodon pogonognathus*, *Mystacoleucus* sp., *Puntius binotatus*, *P. lateristriga*, *P. tetrazona*, *Rasbora* cf. *aprotaenia*, *R. trilineata* and *Trichopodus trichopterus*.

Discussion.—*E. metallicus* can be distinguished from other congeners by rostral barbels which are not reaching beyond the posterior margin of orbit, a black lateral band running from eye to caudal fin base and incomplete lateral line with 10–18 perforated scales (HORA & MUKERJI, 1928; SEROV *ET AL.*, 2006; SMITH, 1945; TAKI, 1974). Specimens of *E. metallicus* collected from Sumatra in the present study generally agreed well with the published diagnosis of the species except for the number of perforated scales which were one less than the published range. We think that this due to insufficient number of specimens used in the previous studies. *E. metallicus* has been reported from the Salween, the Chao Phraya, Bangpakong and Mae Klong River basins in Thailand, the Mekong River basin in Thailand, Laos, Cambodia and Vietnam, the Quang Tri (Thach Han), Cai and Dong Nai Rivers in central and southern Vietnam, Southeastern Thailand and Malay Peninsula (the Tapi River basin and Toh Daeng peat swamp in Narathiwat Province, Thailand, the Pahang River basin and Kelantan, Terengganu of western Malaysia), Singapore and Sabah in eastern Malaysia so far (FREYHOF *ET AL.*, 2000; KHAN *ET AL.*, 1996; KOTTELAT, 1989, 1998, 2001; LHEKNIM, 2004; KOTTELAT & NG, 1992; KOTTELAT & WHITTEN, 1996; LIM & NG, 1990; MAI & NGUYEN, 1988; MAI *ET AL.*, 1992; NGUYEN & NGO, 2001; RAINBOTH, 1996; RAINBOTH *ET AL.*, 1976; SEROV *ET AL.*, 2003, 2006; SIRIMONTAPORN,

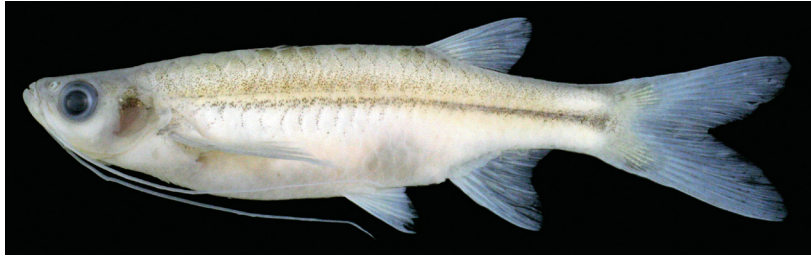


Fig. 1. *Esomus metallicus*, RLIKU 1974, 41.8 mm SL, a small stream at Krmpal Village (the Reteh River basin), Indragiri Hulu Regency, Riau Province, Sumatra, Indonesia

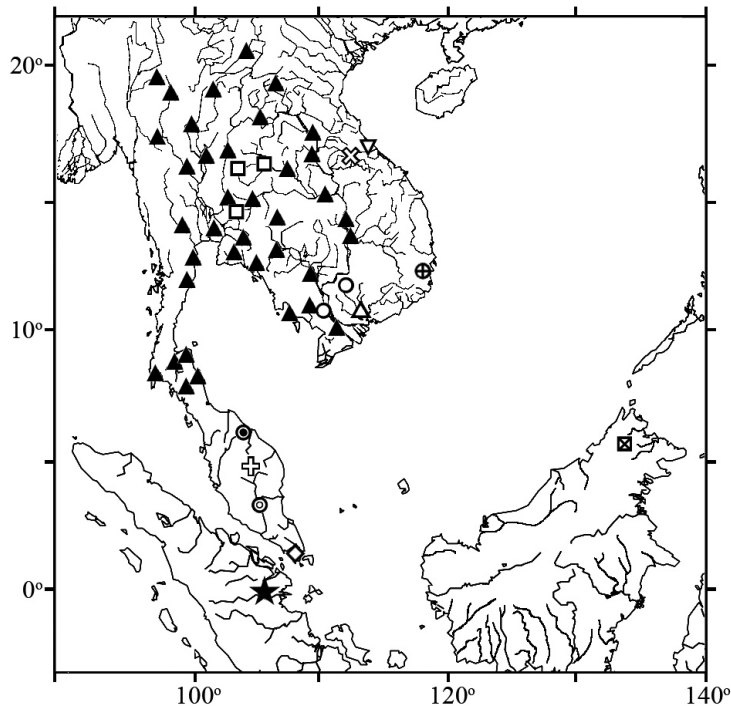


Fig. 2. Distribution of *E. metallicus*. Localities of specimens examined by authors: ★=the Reteh River basin, Indragiri Hulu Regency, Riau Province, Sumatra, Indonesia (RLIKU 1974); ▲=other specimens. Records from literatures: ▽=the Quang Tri River, Vietnam (SEROV *ET AL.*, 2006); △=the Sai Gon River, Dong Nai Province, Vietnam (FREYHOF *ET AL.*, 2000); ☿=the Xe Bangfai River, Laos (KOTTELAT, 1998); ○=Chau Doc and Tan Chao Provinces, Vietnam (MAI *ET AL.*, 1992); ⊕=the Cai River, Khan Vinh District, Khan Hoa Province, Vietnam (SEROV *ET AL.*, 2003); □=Lam Pao (Kalasin Province); Nam Pong (Khon Kaen Province) and Lam Takhong (Nakhon Ratchasima Province), Thailand (RAINBOTH *ET AL.*, 1976); ⊙=Toh Daeng peat swamp, Narathiwat Province, Thailand (VIDTHAYANON, 2002); ⊕=Sungai Golok area, Kelantan, Terengganu, Malaysia (KOTTELAT *ET AL.*, 1992); ⊙=the Pahang River basin, Malaysia (KHAN *ET AL.*, 1996); ◇=Singapore (LIM & NG, 1990; NG *ET AL.*, 1993); ☒=Sabah, Borneo (KOTTELAT & WHITTEN, 1996). All symbols were plotted at center of the smallest geographical units provided in each reference if specific localities were not noted.

1984; TAKI, 1974; VIDTHAYANON, 2002; present study) (Fig. 2). Records from the Pahang River basin of Malay Peninsula, Singapore and Sabah of Borneo are considered as results of introduction (KHAN *ET AL.*, 1996; KOTTELAT & WHITTEN, 1996; LIM & NG, 1990; NG *ET AL.*, 1993) (Fig. 2). *E. metallicus* has never been reported or collected in the previous studies of freshwater fish fauna of Sumatra (e.g. TAN & KOTTELAT, 2009; TAN & TAN, 1994; VOLZ, 1903, 1904; WEBER & DE BEAUFORT, 1916). The species also has never been recorded during recent field surveys by the present authors (MM and HS) in the Musi River basin (Husnah *ET AL.*, 2008), the Manna River basin (South Bengkulu Regency) (HUSNAH, 2011), the Siak River basin (MARINI & MAKRI, 2011), the Giam Siak Kecil floodplain area (MARINI & HUSNAH, 2011) and Riau Province (MARINI *ET AL.*, 2011) of Sumatra, although the species is usually abundant and one of the commonest freshwater fishes in flood plains within its natural distributional range (KOTTELAT, 2001; RAINBOTH, 1996; SMITH, 1945; personal observation [SA and PM]). NG *ET AL.* (1993) noted that *E. metallicus* was probably introduced to Singapore in the early or mid-1980s via the aquarium trade and presently has successfully established in the island. There is a possibility that the specimens collected from central Sumatra in the present study originated from intentional or unintentional release by ornamental fish keepers or by accidental transport with aquaculture fishes such as Tilapia (*Oreochromis niloticus*), which is presently established widely in natural waters of central Sumatra (personal observation [PM, MM and HS]), from neighboring countries such as Singapore, Malaysia and Thailand.

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Materials examined.—*Esomus metallicus*: RLIKU (Research Laboratory of Ichthyology, Department of Fishery Biology, Faculty of Fisheries, Kasetsart University, Bangkok, Thailand) 1974 (5 specimens), 33.9–41.8 mm SL, a small stream at Krmpal Village (the Reteh River basin), Batang Gansal District, Indragiri Hulu Regency, Riau Province, Sumatra, Indonesia, (0°44'45"N, 101°31'48.4"E), collected by Prachya Musikasinthorn, Patinya Sreesamran & Melfa Marini, 18 Oct. 2011.

ANSP 76847 (1), 32.0 mm SL, waterfall of Trang, a 40-ft fall of the Trang River at Chong, 12 mi.E of Thap Thian, Trang Province, Thailand, 13 Oct. 1936. ANSP 68048 (10), 42.0–84.0 mm SL, Me Poon, Siam (a small tributary of the Me Yom or Me Phun) (17°40'00"N, 90°42'00"E), 1936. CAS 44401 (4), 34.6–43.7 mm SL, slow moving river, lower region of the Rayong River above Rayong Village, Rayong Province, Thailand, 11–16 Dec. 1957. CAS 45007 (37), 41.2–76.2 mm SL, Bangkok District of Greater Bangkok, pond located at 14 Soi Prachankadee. Thailand, 6 Nov. 1960. IFRDI 848 (10), 38.9–40.9 mm SL, swamp at Reachea Norkor Village, Stung Treng Province, Cambodia, 26 Dec. 2007. KUMF 282 (2), 36.1–37.4 mm SL, tributary of Mae Ping River, north of Chiang Mai Province, Thailand, 1927. NIFI 0008 (19), 31.2–50.8 mm SL, Bung Borapet, Mueang Nakhon Sawan District, Nakhon Sawan Province, Thailand, 24 Apr. 1973. RLIKU 810 (6), 40.5–46.8 mm SL, Prey Nup, Koh Kong Province, Cambodia, 7 Mar. 2004. RLIKU 1901 (50), 32.2–46.2 mm SL, pond in ricefield, Tha Maka District, Kanchanaburi Province, Thailand, 12 Aug. 2007. RLIKU 1904 (50), 33.2–49.9 mm SL, Nong Jang Subdistrict, Bueng Sam Phan District, Phetchabun Province, Thailand, 24 Jul. 2007. RLIKU 1906 (40), 20.4–50.4 mm SL, small pond beside Road no.4 Km. 208–209, Cha-am District, Petchaburi Province, Thailand, 13 May 2006. RLIKU 1907, (66) 29.5–49.5 mm SL, Khlong Ban-Khlong Bo Saen, Thap Thong Lang Subdistrict, Thap Put District, Phangnga Province, Thailand, 1 Jan. 2007. RLIKU 1909 (25), 42.0–57.1 mm SL, Ban Huai Luern, Pua Subdistrict, Chiang Klang District, Nan Province, Thailand, 29 Dec. 2006. RLIKU 1910 (2), 52.5–52.9 mm SL, pond in Faculty of Fisheries, Nakhon Si Thammarat Rajamangala University, Khanom District, Nakhon Si Thammarat Province, Thailand, 23 Jul. 2007. RLIKU 1911 (2), 47.4–29.8 mm SL, Huai Bang Ngon, Bang Ngon Subdistrict, Phunphin District, Surat Thani Province, Thailand, 5 Apr. 2006. RLIKU 1912 (45), 26.2–39.1 mm SL, Naxaithong District, Vientiane Province, Laos, 5 Oct. 2009. RLIKU 1914 (30), 24.9–34.5 mm SL, Mae Pa Tai, Mae Pa Subdistrict, Mae Sot District, Tak Province, Thailand, 7 Oct. 2007. RLIKU 1915 (22), 38.5–53.8 mm SL, small stream at Rajamangala Chanthaburi University, Khao Khitchakut District, Chanthaburi Province, Thailand. 14 Jun. 2007. RLIKU 1916 (30), 28.2–37.0 mm SL, Singhanakorn District, Songkhla Province, Thailand, 13 Jan. 2008. RLIKU 1918 (2), 24.1–26.8 mm SL, above Khone falls, Champasak Province, Laos, 21 Sep. 2002. RLIKU 1919 (16), 22.7–34.9 mm SL, Pai River, Pai District, Mae Hong Son Province, Thailand, 2 Feb. 1993. RLIKU 1920 (20), 30.3–39.1 mm SL, ricefield at Kut Khaopun, Kham Thao, Mueang Nakhon Phanom District, Nakhon Phanom Province, Thailand, 2 Jun. 2009. RLIKU 1923 (16), 31.9–40.8 mm SL, Nong Nam Kheaw, Ubon Ratchathani Province, 30 Sep. 2005. RLIKU 1924 (10), 36.9–45.9 mm SL, floodplain beside road no. 53, Kampong Chhnang District, Kampong Chhnang Province, Cambodia, 4 Oct. 2009. RLIKU 1925 (10), 30.4–43.6 mm SL, small pond beside road no. 5, Unlongwa, Songkra, Battambang Province, Cambodia, 1 Oct. 2009. RLIKU 1927 (10), 37.7–62.6 mm SL, Sab Jampa peat swamp, Sab Jampa Subdistrict, Tha Luang District, Lop Buri Province, Thailand, 11 Oct. 2009. RLIKU 1943 (10), 43.0–56.4 mm SL, Ao Noi Subdistrict, Mueang Prachuap Khiri Khan District, Prachuap Khiri Khan Province, Thailand, 1 Oct. 2001. RLIKU 1957 (20), 34.0–52.8 mm SL, pond near ricefield at Nong Luang Subdistrict, Sawang Arom District, Uthai Thani Province, Thailand, 1 Feb. 2010. RLIKU 1971 (16), 31.5–57.7 mm SL, irrigation canal at Khok Klong, Bua Ban Subdistrict, Yang Talad District, Kalasin Province, Thailand, 12 Aug. 2001. RLIKU 1978 (35), 33.9–53.0 mm SL, Dong Phraram Subdistrict, Mueang Prachin Buri District, Prachin Buri Province, Thailand, 26 May 2007. UBUMF uncat (20), 40.6–48.2 mm SL, Nong Khan Village, Dong Yen Subdistrict, Mueang Mukdahan District, Mukdahan Province, Thailand, 5 May 2009. UMMZ 234510 (40), 27.9–43.4 mm SL, Prek Thnot at Kompong Speu Province, Maekong drainage, Cambodia, 26 Jan. 1996. UMMZ 246562 (15), 30.2–41.2 mm SL, Odong Mean Chey, Beng Samraoh, Cambodia, 17 Feb. 2005. UMMZ 227272 (38), 38.9–52.3 mm SL, Pond in banana grove, 2 km SW of Can Tho, reached by foot trail, Mekong River drainage, Phong Dinh Province, Vietnam, 15 Jul. 1974. UMMZ 240722 (8), 33.8–40.2 mm SL, Muang Xai market, Ko (Mekong), Oudom Xai, Laos, 30 Mar. 1997. UMMZ 242039 (39), 29.3–45.9 mm SL, Nam Ngum at Keng Khuan, Nam Ngum (Mekong) drainage, Xieng Khouang, Laos, 19 Mar. 1998. USNM 271332 (2), 35.9–36.0 mm SL, Water Lily Pond in Klong System Along Hwy 2, 2.4 km. north of Nakhon Ratchasima Province, Thailand, 11 Mar. 1971.

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