

MYSTUS PUNCTIFER, A NEW SPECIES OF BAGRID CATFISH (TELEOSTEI: SILURIFORMES) FROM NORTHERN SUMATRA

Ng Heok Hee

Fish Division, Museum of Zoology, University of Michigan, 1109 Geddes Avenue, Ann Arbor, Michigan 48109-1079, USA,
Department of Biological Sciences, National University of Singapore, 10 Kent Ridge Crescent, Singapore 119260.

Soetikno Wirjoatmodjo and Renny K. Hadiaty

Division of Zoology, Research and Development Center for Biology, Indonesian Institute of Sciences, Gedung Widiasatwaloka,
Jalan Raya Jakarta km. 46, Cibinong, Bogor 11961, Indonesia.

ABSTRACT. – *Mystus punctifer*, new species, is described from the Alas River drainage in Aceh province, northern Sumatra. It can be distinguished from congeners in having the unique combination of the following characters: overall chocolate brown with relatively large and distinct humeral spot (and no other markings on sides of body or caudal peduncle); 4-8 serrations on posterior edge of dorsal spine; length of adipose-fin base 27.3-29.8 % SL; body depth at anus 21.9-25.8 % SL; length of caudal peduncle 16.6-18.0 % SL; depth of caudal peduncle 10.7-12.3 % SL; head length 26.7-28.1 % SL; snout length 36.5-38.9 % HL; interorbital distance 37.1-38.5 % HL.

KEY WORDS. – *Mystus*, Sumatra, Aceh province, new species.

INTRODUCTION

In 150 years of ichthyological exploration in Sumatra, most of the focus has been on the central and southern parts of the island (see Tan & Ng, 2000, for a review), and particularly little has been studied about the freshwater fish fauna of the northern tip (here defined as north of 3°N and consisting almost entirely of the province of Aceh). The only studies of the freshwater ichthyofauna of northern Sumatra to date have been those of Fowler (1940) and Wirjoatmodjo (1987), but it is obvious that more studies are needed of this biogeographically interesting region shown to have a considerable number of endemic species (e.g. Hadiaty & Siebert, 1998). Studies are currently underway to address our lack of knowledge of the freshwater fish diversity of northern Sumatra, and the second and third authors have made ichthyological surveys to this effect.

It was while carrying out such a survey of the Alas River drainage that the second and third authors obtained specimens of a *Mystus* of an overall dark brown colour and a prominent black humeral spot. This colour pattern is unknown for any previously described *Mystus* species and the specimens from the Alas River are described as *M. punctifer*, new species, in this study.

MATERIALS AND METHODS

Measurements were made point to point with dial callipers and data recorded to tenths of a millimetre. 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 & Dodson (1999).

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, branchiostegal-ray, gill-raker or vertebral count indicate the number of specimens with that count. Drawings of the specimens were made with a Nikon SMZ-10 microscope and camera lucida. Institutional codes follow Eschmeyer (1998).

TAXONOMY

Mystus punctifer, new species

(Figs. 1, 2a)

Material examined. – Holotype – MZB 8703, 69.1 mm SL, Sumatra: Aceh, Gunung Leuser National Park, trail in Suag Belimbing research station, coll. R. K. Hadiaty & A. Mun'im, 5 Sep.1997.

Paratypes – MZB 5626, 1 ex., 151.2 mm SL; Sumatra: Aceh, Aceh Selatan, Sungai Kumbih (lower reaches of Sungai Alas), coll. S. Wirjoatmodjo & Ali, 21 Feb.1984; MZB 8707, 2 ex., 82.1-108.0 mm SL, Sumatra: Aceh, swamp in Suag Belimbing, coll. S. Wirjoatmodjo, 21 Feb.1999.

Diagnosis. – *Mystus punctifer* can be distinguished from its congeners by the unique combination of the following characters: overall chocolate brown with relatively large and distinct humeral spot (and no other markings on sides of body or caudal peduncle); 4-8 serrations on posterior edge of dorsal spine; length of adipose-fin base 27.3-29.8 % SL; body depth at anus 21.9-25.8 % SL; length of caudal peduncle 16.6-18.0 % SL; depth of caudal peduncle 10.7-12.3 % SL; head length 26.7-28.1 % SL; snout length 36.5-38.9 % HL; interorbital distance 37.1-38.5 % HL.

Description. – Head and 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 horizontal to origin of anal, then sloping dorsally to end of caudal peduncle. In % SL: head length 26.7-28.1, head width 18.7-21.2, head depth 17.2-18.1, predorsal distance 38.4-40.8, preanal length 70.3-73.2, prepelvic length 49.7-53.1, prepectoral length 23.4-26.3, body depth at anus 21.9-25.8, length of caudal peduncle 16.6-18.0, depth of caudal peduncle 10.7-12.3, pectoral-spine length 18.4-21.9, pectoral-fin length 21.7-23.0, dorsal-spine length 13.8-15.8, length of dorsal-fin base 14.3-16.7, pelvic-fin length 17.3-19.2, length of anal-fin base 13.2-14.6, caudal-fin length 29.2-32.4, length of adipose-fin base 27.3-29.8, adipose maximum height 6.3-7.3, post-adipose distance 12.8-13.5; in % HL: snout length 36.5-38.9, interorbital distance 37.1-

38.5, eye diameter 14.7-19.3, nasal barbel length 77.3-81.9, maxillary barbel length 354.2-385.3, inner mandibular barbel length 110.4-120.3, outer mandibular barbel length 155.9-169.1. Branchiostegal rays 8 (2) or 9 (1). Gill rakers 5+14 (1) or 6+14 (1). Vertebrae 19+17=36 (1), 20+18=38 (1) or 21+18=39 (1).

Fin ray counts: dorsal II,7 (3); pectoral I,8 (2) or I,8,i (1); pelvic i,5 (3); anal iv,9 (3); caudal 8/9 (3). Dorsal origin nearer tip of snout than caudal flexure. Dorsal spine stout, with 2-3 small dentations on anterior edge and 3-8 small dentations on posterior edge. Pectoral spine stout, with 10-15 serrations on posterior edge. Anal origin slightly posterior to adipose origin. Depressed dorsal not reaching adipose fin. Caudal fin forked; upper and lower lobe rounded posteriorly.

Colour. – Dorsal surface of head and body uniform chocolate brown, with a distinct black humeral spot; ventral surfaces of head and body dirty white; adipose fin and fin rays of all fins brown; inter-radial membranes of all fins with scattered melanophores.

Distribution. – Only known from the Alas River drainage in northern Sumatra.

Habitat. – *Mystus punctifer* has only been found in peat swamps and streams associated with peat swamps where the water is tea-coloured and very acidic (pH of about 3).

Etymology. – From the Latin *punctus*, meaning spot and *ferre*, meaning to bear; in reference to the prominent humeral spot of this species.

DISCUSSION

Bleeker (1862) divided *Mystus* into four separate genera: *Aspidobagrus*, *Hemibagrus*, *Heterobagrus* and *Hypselobagrus*, of which only the validity of *Hemibagrus* has been confirmed by Mo (1991). Although *M. punctifer* appears to be closely related to *M. nigriceps*, which Bleeker (1862) placed in *Hypselobagrus*, the validity of

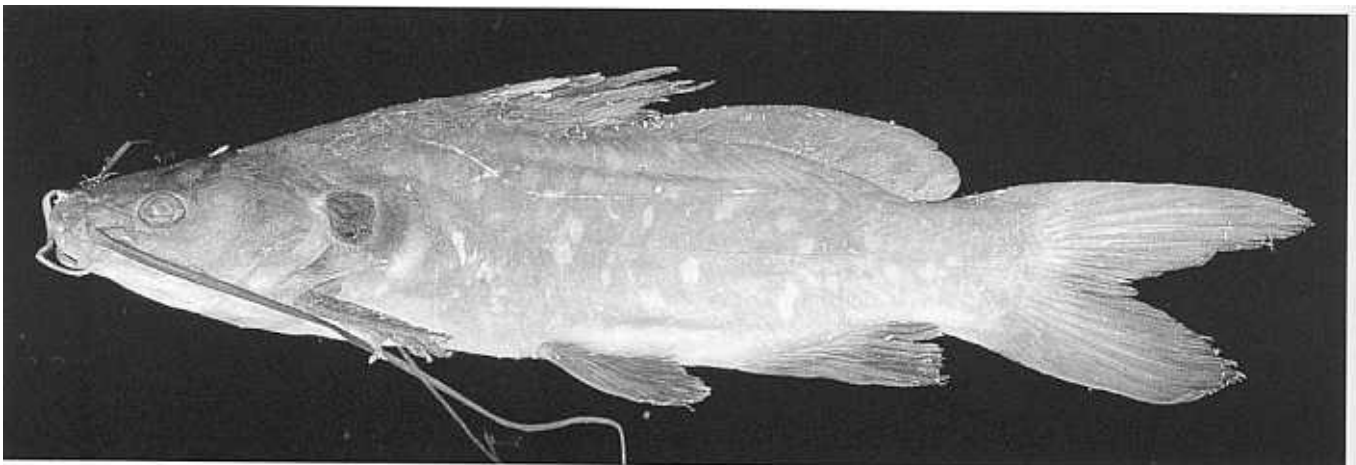


Fig. 1. *Mystus punctifer*, MZB 8707, paratype, 82.1 mm SL. Pale areas on sides of body are artefacts (where the body has been badly scratched during collection and preservation).

Hypselobagrus cannot be determined without a detailed systematic analysis of the genus *Mystus* as currently understood. I therefore tentatively retain *M. punctifer* and *M. nigriceps* in *Mystus* pending such a study.

Mystus punctifer can be distinguished from all other congeners in its coloration: an overall chocolate brown with a relatively large and distinct humeral spot (with no other markings on the sides of the body or the caudal peduncle). All other species of *Mystus* possessing a humeral spot have other markings on the body in the form of spots or bars on the caudal peduncle, stripes on the sides of the body, or a combination of both.

The only other species of *Mystus* with a similar coloration to *M. punctifer* is *M. bimaculatus* (Volz, 1904) (which, like *M. punctifer*, is found primarily in peat swamps). However, the colour pattern of *M. bimaculatus* consists of an overall chocolate brown body (like *M. punctifer*) with a dark humeral spot having a white margin on its anterior edge (unlike *M. punctifer*, which has the spot but lacks the white margin) and a black vertical bar on the base of the caudal peduncle with a white vertical bar immediately anterior to it (unlike *M. punctifer* which lacks the bars). *Mystus punctifer* possesses 2-3 small dentations on the anterior edge and 3-8 small dentations on the posterior edge of the dorsal spine, whereas the dorsal spine in *M. bimaculatus* is smooth both on the anterior and posterior edges (Fig. 2). In addition, *M.*

punctifer has a shorter adipose-fin base (27.3-29.8 % SL vs. 32.9-35.8), longer and deeper caudal peduncle (length of caudal peduncle 16.6-18.0 % SL vs. 13.9-16.6; depth of caudal peduncle 10.7-12.3 % SL vs. 9.6-10.3), shorter head (26.7-28.1 % SL vs. 28.6-30.6), longer snout (36.5-38.9 % HL vs. 29.6-33.0) and more widely-spaced eyes (interorbital distance 37.1-38.5 % HL vs. 35.0-36.5) than *M. bimaculatus*. The two species are not sympatric; *M. bimaculatus* is known from peat swamps in Peninsular Malaysia, Borneo and south and central Sumatra, while *M. punctifer* is only known from northern Sumatra. *Mystus punctifer* is also a larger species (up to ca. 150 mm SL) than *M. bimaculatus* (up to ca. 80 mm SL). Although a phylogenetic analysis was not carried out as part of this study, we tentatively consider *M. punctifer* to be a sister species of *M. bimaculatus*, based on their close overall similarity in morphology and ecology.

The only other species of *Mystus* that looks similar to *M. punctifer* is *M. nigriceps* (Valenciennes in Cuvier & Valenciennes, 1840). However, *M. punctifer* lacks the triangular mark seen on the base of the caudal peduncle of *M. nigriceps*, and also possesses a deeper body (21.9-25.8 % SL vs. 16.3-20.7) and a longer snout (36.5-38.9 % HL vs. 33.2-36.5).

COMPARATIVE MATERIAL

M. bimaculatus

ZRC 14250 (1), 71.0 mm SL, Peninsular Malaysia: Selangor, North Selangor peat swamp forest, blackwater ditches 5 km after bridge at Sungai Bernam headworks; ZRC 42491 (42), 24.4-66.9 mm SL, Sumatra: Sungai Bakung, stream draining into Danau Arang Arang, 1°37'31.0"S 103°47'20.6"E.

M. nigriceps

RMNH 3009, neotype, 99.4 mm SL, Java; RMNH 15857 (1), 105.3 mm SL, Java: Batavia (neotype of *Bagrus micracanthus*); CMK 9214 (7), 63.9-77.0 mm SL, Java: Jawa Timur, Brantas River basin, canal at Nggareman (Kecamatan Patianrowo, Kabupaten Kertosono) (7°34'S 112°5'E); CMK 9231 (8), 57.0-84.4 mm SL, Java: Jawa Timur, Brantas River basin, channelized stream through drained (formerly swampy) area at Campurdarat, S of Tulungagung (8°10'S 111°20'E); MZB 12 (1), 82.1 mm SL, Java: Batavia; MZB 10032 (2), 78.1-79.5 mm SL, Java: Jawa Timur, Kabupaten Bojonegoro, Kecamatan Bojonegoro, Desa Bojonegoro, Bengawan Solo; MZB 10056 (10), 56.1-86.1 mm SL, Java: Jawa Timur, Brantas River, Lengkonng Dam at Mojokerto; MZB 10066 (4), 77.6-110.5 mm SL, Java: Cijung River, Kecamatan Pamarayan Serang; MZB 10259 (2), 51.6-71.0 mm SL, Sumatra: Lampung Timur, Kabupaten Sekampong Udik, Desa Bojong, Sungai Kenali, tributary of Sungai Sekumpang; ZMA 121.814 (1), 78.6 mm SL, Java: Katring; ZMA 121.859 (2), 79.9-81.2 mm SL, Java: Opak River near Kritek; ZRC 43878 (4), Java: Jawa Tengah, Citalahab next to rice field, probably draining into Citanduy about 20 km to Banjar.

ACKNOWLEDGMENTS

We thank the following: Tan Heok Hui for taking the photographs; David Catania (CAS), Maurice Kottelat (CMK), Martien van Oijen (RMNH), Isaäc Isbrücker (ZMA) and Peter Ng (ZRC) for the loan of material under their care. Research grant R-154-000-062-112 to Peter K. L. Ng from

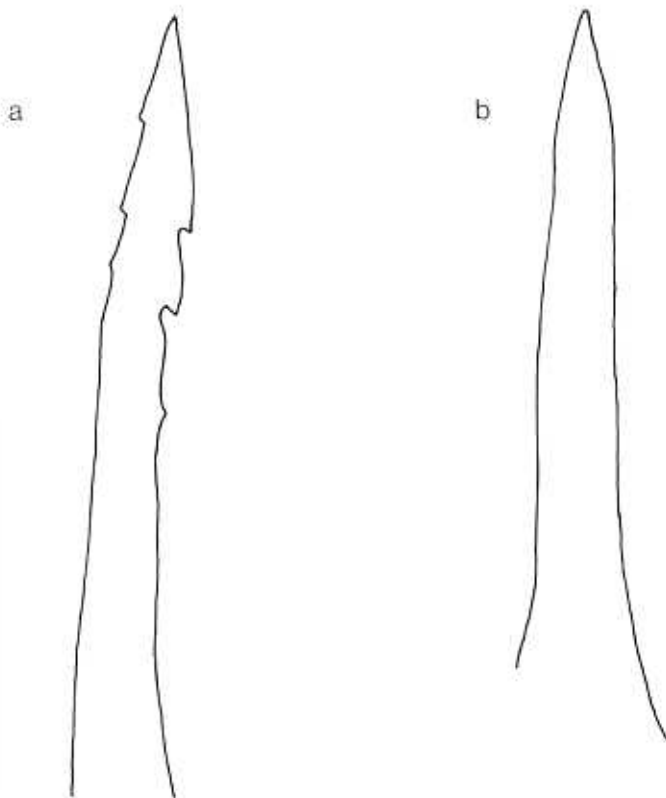


Fig. 2. Dorsal spines of: a. *Mystus punctifer*, MZB 8707, paratype, 82.1 mm SL; b. *M. bimaculatus*, ZRC 14250, 70.1 mm SL. Scale bar represents 5 mm.

the National University of Singapore provided financial support for this project.

LITERATURE CITED

- Bleeker, P., 1862. *Atlas Ichthyologique des Indes Orientales Néerlandaises. Tome 2. Siluroïdes, Chacoïdes et Hétérobrancoïdes*. Frederic Muller, Amsterdam. 112 pp., pls. 49-101.
- Eschmeyer, W., 1998. *Catalog of Fishes*. California Academy of Sciences, San Francisco, 2905 pp.
- Fowler, H. W., 1940. Zoological results of the George Vanderbilt Sumatran Expedition 1936-1939. Part II. Fishes. *Proc. Acad. Nat. Sci. Phila.*, **91**: 369-398.
- Hadiaty, R. K. & D. J. Siebert, 1998. Two new species of *Osteochilus* (Teleostei: Cyprinidae) from Sungai Lembang, Suag Balingbing Research Station, Gunung Leuser National Park, Aceh, northwestern Sumatra. *Rev. Fr. Aquariol.*, **25**: 1-4.
- Mo, T., 1991. Anatomy, relationships and systematics of the Bagridae (Teleostei: Siluroidei) with a hypothesis of siluroid phylogeny. *Thesis Zool.*, **17**: 1-216 and 63 figs.
- Ng, H. H. & J. J. Dodson, 1999. Morphological and genetic descriptions of a new species of catfish, *Hemibagrus chrysops*, from Sarawak, East Malaysia, with an assessment of phylogenetic relationships (Teleostei: Bagridae). *Raffles Bull. Zool.*, **47**: 45-57.
- Roberts, T. R., 1994. Systematic revision of Asian bagrid catfishes of the genus *Mystus* sensu stricto, with a new species from Thailand and Cambodia. *Ichthyol. Explor. Freshwaters*, **5**: 241-256.
- Tan, H. H. & H. H. Ng, 2000. The catfishes (Teleostei: Siluriformes) of central Sumatra. *J. Nat. Hist.*, **34**: 267-303.
- Wirjoatmodjo, S., 1987. The river ecosystem in the forest area at Ketambe, Gunung Leuser National Park, Aceh, Indonesia. *Arch. Hydrobiol. Beih.*, **28**: 239-246.