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The Fishes of the Endau Drainage, Peninsular Malaysia with Descriptions of Two New Species of Catfishes (Teleostei: Akysidae, Bagridae)

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Heok-Hee Ng and Heok-Hui Tan (1999) The fishes of the Endau drainage, Peninsular Malaysia with descriptions of two new species of catfishes (Teleostei: Akysidae, Bagridae). *Zoological Studies* **38**(3): 350-366. An annotated checklist of the fishes of the Endau River drainage in southeastern Peninsular Malaysia is provided. A total of 108 species in 26 families is reported from the Endau basin, of which 36 are new records and 2 are new species of catfish described here. *Akysis microps*, new species (Akysidae) resembles *A. heterurus*, but differs from it and other congeners by the following unique combination of characters: depth of caudal peduncle 8.3%-9.6% SL, length of anal-fin base 16.2%-18.6% SL, length of adipose-fin base 15.2%-23.0% SL, eye diameter 9%-13% HL, length of nasal barbel 95%-106% HL, length of maxillary barbel 139%-170% HL, length of inner mandibular barbel 94-102% HL, length of outer mandibular barbel 110%-154% HL, 10-11 anal-fin rays, and 5-7 serrations on the posterior edge of the pectoral spine. *Nanobagrus nebulosus*, new species (Bagridae), is characterized by large eyes (eye diameter 14.1%-15.1% HL), pectoral spine with 16 serrations on the posterior edge, 35-36 vertebrae, and a dark grayish-brown body with a series of cream-colored spots mostly on the dorsal surface of the body. It is also the 1st record of the genus from Peninsular Malaysia.

Key words: *Nanobagrus, Akysis*, New species, New records.

The freshwater ichthyofauna of river drainages in Peninsular Malaysia has been relatively well studied compared to many other river drainages throughout Southeast Asia. The drainages for which the freshwater fish fauna have been reported on include the Pahang River drainage (Zakaria-Ismail 1984, Khan et al. 1996), the Perak River drainage (Sauvage 1884, Hora 1941, Zakaria-Ismail and Lim 1995), the Sabak Bernam drainage (Ng et al. 1992), and the Terengganu River drainage (Kottelat et al. 1992). More comprehensive works covering all or part of the Malay Peninsula include those of Duncker (1904) and Herre and Myers (1937). The freshwater ichthyofauna of the Endau drainage has been described by Zakaria-Ismail (1986 1987), Lim, Kottelat, and Ng (1990), and Lim, Ng, and Kottelat (1990); a total of 63 species were recorded. The fact that new species are still being discovered from a drainage as well studied as the Endau drainage (e.g., Ng and Ng 1995) shows that our knowledge of freshwater fish taxonomy in Peninsular Malaysia is far from complete.

Recently, a series of field collections conducted in the Endau drainage (Fig. 1) resulted in several new records of freshwater fishes for the drainage; furthermore, specimens of *Akysis* and *Nanobagrus* were obtained which are shown to be belonging to undescribed species. This prompted us to compile a list, presented hereunder, of the fishes of the Endau River drainage in which 2 new species of catfishes (*Akysis microps* and *Nanobagrus nebulosus*) are described. The list is based in part on literature records and in part on material examined. We report here a total of 108 species of freshwater fish belonging to 26 families from the Endau River drainage (Table 1). In addition to the 108 species, we have unsubstantiated records of 3 additional species: *Himantura chaophraya* Monkolprasit and Roberts,

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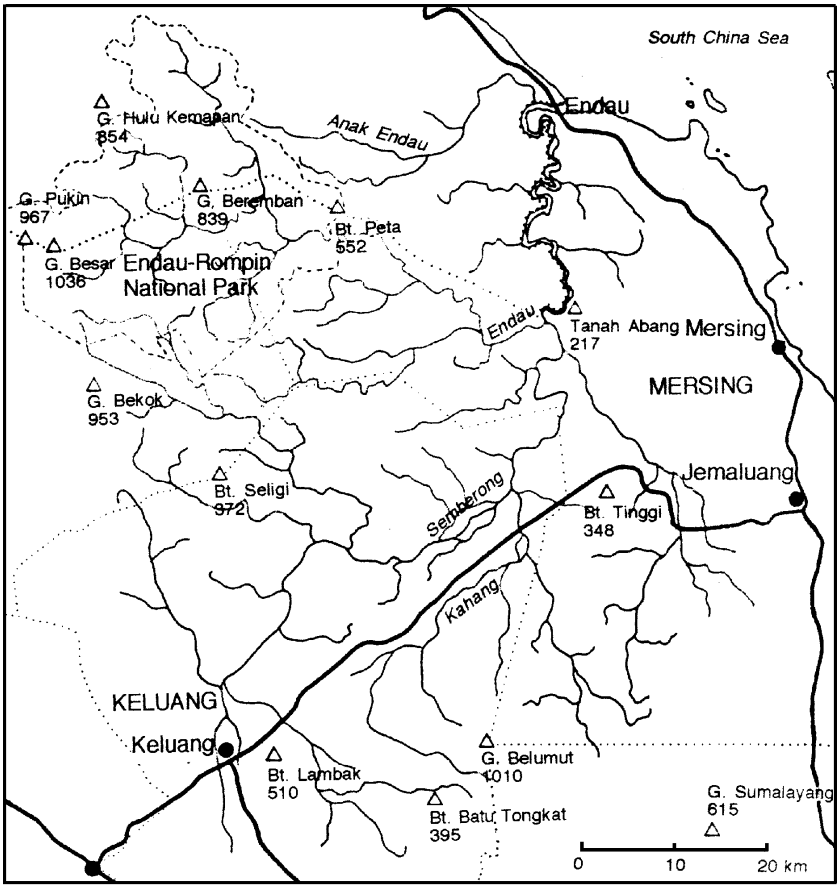
1990 (family Dasyatidae), *Macrochirichthys macrochirus* (Valenciennes, 1844) (in Cuvier and Valenciennes) (family Cyprinidae) and *Channa marulioides* (Bleeker, 1851) (family Channidae). We did not see any specimens of these fish, but these records were obtained by anglers fishing in the Endau River drainage and reported in local fishing magazines.

MATERIALS AND METHODS

Measurements were made point to point with dial callipers and data recorded to tenths of a millimeter. 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 measurement of body parts are given as proportions of standard length (SL).

Measurements follow those of Ng and Kottelat (1998a) for akysids and Ng and Kottelat (1998b) for small bagrids; the height of the serrations on the pectoral spine are measured as in figure 2 and the mean height of the serrations on each pectoral spine calculated. Fin ray counts were obtained under transmitted light using a binocular dissecting microscope, using the terminology of Hubbs and Lagler (1947). Gill raker counts were made using the method and terminology of Roberts (1992b). Vertebral counts were taken from radiographs using the method and terminology of Roberts (1994). Numbers in parentheses following a particular count are the number of examined specimens with that count. Listing of material is as follows: the name of the river followed by the catalogue number of the lots examined from that river in parentheses. Local name of collecting localities are used, “sungai” being the Malay word for river.

Drawing of the specimens were made with a



Map of the Endau basin of Peninsular Malaysia

Fig. 1. Map of Endau drainage showing the major tributaries. Heavy black lines indicate roads, and triangles indicate hills or mountains, where G. = Gunung and Bt. = Bukit.

Table 1. Fishes of the Endau drainage

Family Osteoglossidae	**Family Bagridae**
Scleropages formosus	*Hemibagrus gracilis*
Family Notopteridae	*H. nemurus*
Chitala lopis	*Leiocassis* cf. *micropogon*
Notopterus notopterus	*Mystus nigriceps*
Family Clupeidae	*M. singaringan*
Sundasalanx cf. *praecox*	*Nanobagrus nebulosus*
Family Cyprinidae	*Pseudomystus fuscus*
Barbodes schwanenfeldii	*P. stenomus*
Chela maassi	**Family Pangasiidae**
Crossocheilus oblongus	*Pangasius* sp.
C. langei	**Family Akysidae**
Cyclocheilichthys apogon	*Akysis hendricksoni*
C. armatus	*A. microps*
C. repasson	*Parakysis longirostris*
Dangila festiva	**Family Sisoridae**
Hampala macrolepidota	*Glyptothorax* aff. *major*
Luciosoma setigerum	**Family Clariidae**
Mystacoleucas marginatus	*Clarias batrachus*
Osteochilus cf. *enneaporos*	*C. teijsmanni*
O. hasseltii	**Family Chacidae**
O. microcephalus	*Chaca bankanensis*
Oxygaster anomalura	**Family Phallostethidae**
Parachela cf. *maculicauda*	*Phenacostethus smithi*
Poropuntius deauratus	**Family Hemiramphidae**
Rasbora bankanensis	*Dermogenys* cf. *pusilla*
R. caudimaculata	*Hemirhamphodon pogonognathus*
R. cephalotaenia	**Family Belonidae**
R. dorsiocellata	*Xenetodon canciloides*
R. dusonensis	**Family Syngnathidae**
R. einthovenii	*Doryichthys deokhatoides*
R. elegans	*D. martensii*
R. gracilis	**Family Synbranchidae**
R. kalochroma	*Monopterus albus*
R. pauciperforata	**Family Pristolepididae**
R. paucisqualis	*Pristolepis grootii*
R. sumatrana	**Family Nandidae**
R. trilineata	*Nandus nebulosus*
Systomus banksi	**Family Anabantidae**
S. johorensis	*Anabas testudineus*
S. lateristriga	**Family Osphronemidae**
S. partipentazona	*Betta pugnax*
Tor tambra	*Luciocephalus pulcher*
Trigonostigma heteromorpha	*Osphronemus goramy*
Family Balitoridae	*Sphaerichthys osphromenoides*
Homaloptera nebulosa	*Trichopsis vittata*
H. nigra	**Family Channidae**
H. ogilviei	*Channa gachua*
H. orthogoniata	*C. lucius*
H. tweediei	*C. micropeltes*
Nemacheilus masyae	*C. striata*
N. selangoricus	**Family Mastacembelidae**
Neohomaloptera johorensis	*Macrognathus aculeatus*
Vaillantella maassi	*M. maculatus*
Family Cobitidae	*Mastacembelus erythrotaenia*
Acantopsis dialuzona	*M. favus*
Acanthopsoides molobrion	**Family Eleotrididiae**
Pangio cuneovirgata	*Oxyleotris marmorata*
P. doriae	**Family Gobiidae**
P. filinaris	*Brachygobius xanthomelas*
P. kuhlii	*Glossogobius giuris*
P. malayana	*Pseudogobiopsis oligactis*
P. piperata	*P. siamensis*
P. shelfordii	**Family Soleidae**
Family Siluridae	*Achiroides* sp.
Belodontichthys dinema	
Ompok hypophthalmus	
Silurichthys hasseltii	
Wallago leerii	

Nikon SMZ-10 microscopic camera lucida and institutional codes follow Eschmeyer (1998). The reader is referred to Ng and Kottelat (1998a) for a list of comparative material of *Akysis*.

RESULTS

Family Osteoglossidae
Scleropages formosus (Müller and Schlegel, 1844)

Scleropages formosus: Zakaria-Ismail 1986: 26, 1987: 404; Lim, Kottelat, and Ng 1990: 314; Lim, Ng, and Kottelat 1990: 34.

Family Notopteridae
Chitala lopis (Bleeker, 1845)

Notopterus aff. *chitala*: Lim, Ng, and Kottelat 1990: 34.
Chitala lopis: Roberts 1992a: 370, fig. 4.

Notopterus notopterus (Pallas, 1769)

Notopterus notopterus: Zakaria-Ismail 1987: 405.

Materials: Sungai Kahang (ZRC 42901, ZRC 42964).

Family Clupeidae
Sundasalanx cf. *praecox* Roberts, 1981

Materials: Sungai Jasin (ZRC 22878).

Remarks: *Sundasalanx* was previously thought to be related to the salmoniforms of the East Asian family Salangidae (see Roberts 1981), until it was shown to be a highly modified clupeid by Siebert (1997a).

Family Cyprinidae
Barbodes schwanenfeldii (Bleeker, 1853)

Barbodes schwanenfeldii: Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 37.
Puntius schwanenfeldii: Zakaria-Ismail 1987: 406.

Materials: Sungai Kinchin (ZRC 8226, ZRC 8714, ZRC 8754-8756, ZRC 42625, ZRC 42960).

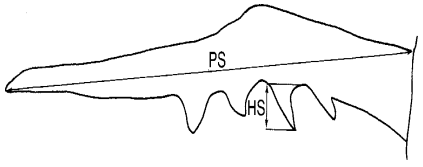


Fig. 2. Dorsal view of pectoral spine showing method of measurements. HS: height of serration, PS: length of pectoral spine.

***Chela maassi* (Weber and de Beaufort, 1912)**

Materials: Sungai Kahang (ZRC 42906), Sungai Kinchin (ZRC 8255-8256).

Remarks: This is the 1st record of this species from the Endau drainage.

***Crossocheilus oblongus* Kuhl and van Hasselt, 1823**

Crossocheilus oblongus (non Kuhl and van Hasselt): Lim, Ng, and Kottelat 1990: 41.

***Crossocheilus langei* (Bleeker, 1860)**

Materials: Sungai Kahang (ZRC 42748, ZRC 42804).

Remarks: This is the 1st record of this species from the Endau drainage. *Crossocheilus langei* can be differentiated from *C. oblongus* in having more lateral-line scales (33-34 vs. 30-31) and the presence (vs. absence) of a large black spot on the ventral surface between anus and anal fin (Alfred, 1971).

***Cyclocheilichthys apogon* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Cyclocheilichthys apogon: Zakaria-Ismail 1987: 405; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 39.

Materials: Sungai Jasin (ZRC 21434), Sungai Kahang (ZRC 42926), Sungai Kinchin (ZRC 8235-8239).

***Cyclocheilichthys armatus* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Material: Sungai Lenggor (ZRC 42896).

Remarks: This is the 1st record of this species from the Endau drainage.

***Cyclocheilichthys repasson* (Bleeker, 1853)**

Cyclocheilichthys repasson: Zakaria-Ismail 1987: 405.

Materials: Sungai Jasin (ZRC 21435-21436), Sungai Kinchin (ZRC 42627).

***Dangila festiva* (Heckel, 1843)**

Labiobarbus festivus: Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 39; Roberts 1993b: 324, fig. 5.
Labiobarbus festiva: Zakaria-Ismail 1987: 405 (mis-gender).

Materials: Sungai Jasin (ZRC 21438-21441), Sungai Kinchin (ZRC 8229, ZRC 8692-8695, ZRC 8718, ZRC 42624).

Remarks: Although both Kottelat (1987) and Roberts (1993b) have favored the use of *Labiobarbus* over *Dangila*, citing reasons for their usage, the matter has by no means been fully resolved. Some recent workers such as Rainboth (1996) have favored the use of *Dangila* instead. The crux of this problem lies in the interpretation of the International Code of Zoological Nomenclature and the exact identities of the type species for both nominal genera (W.J. Rainboth, pers. comm.). Pending a critical study of this problem, we tentatively follow Rainboth (1996) in using *Dangila* in place of *Labiobarbus*.

***Dangila leptocheila* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Labiobarbus leptocheilus: Roberts 1993b: 320, figs 1-3.

Material: Sungai Kahang (ZRC 42978).

***Hampala macrolepidota* Valenciennes, 1842**
(in Cuvier and Valenciennes)

Hampala macrolepidota: Mohsin and Ambak 1983: 216; Zakaria-Ismail 1987: 405; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 38.

Materials: Sungai Jasin (ZRC 21455-21456, ZRC 21481), Sungai Kahang (ZRC 42805), Sungai Kernam (ZRC 8730-8733), Sungai Kinchin (ZRC 8227-8228, ZRC 8721, ZRC 42623), Sungai Taku (ZRC 8751).

***Luciosoma setigerum* Valenciennes, 1842**
(in Cuvier and Valenciennes)

Luciosoma setigerum: Zakaria-Ismail 1987: 405; Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 42.

Materials: Sungai Kinchin (ZRC 8722-8723, ZRC 42622), Sungai Taku (ZRC 8748-8750).

***Mystacoleucas marginatus* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Mystacoleucas marginatus: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 41.

Materials: Sungai Jasin (ZRC 21449-21454), Sungai Kahang (ZRC 42928), Sungai Kinchin (ZRC 8233-8234, ZRC 8250-8252, ZRC 8711, ZRC 42641).

***Osteochilus* cf. *enneaporos* (Bleeker, 1852)**

Osteochilus cf. *enneaporos*: Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 40.

Materials: Sungai Jasin (ZRC 21447-21448), Sungai Kahang (ZRC 42749, ZRC 42782, ZRC 42912, ZRC 42943), Sungai Kinchin (ZRC 8198-8199, ZRC 8202-8205, ZRC 8207-8216, ZRC 8218, ZRC 8220-8225, ZRC 8715-8717, ZRC 8720, ZRC 42642), Sungai Taku (ZRC 8745-8746).

***Osteochilus hasseltii* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Osteochilus hasseltii: Mohsin and Ambak 1983: 216.

Materials: Sungai Jasin (ZRC 21445-21446), Sungai Kahang (ZRC 42750, ZRC 42781, ZRC 42913, ZRC 42940, ZRC 42975), Sungai Kinchin (ZRC 42628).

***Osteochilus microcephalus* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Osteochilus microcephalus: Zakaria-Ismail 1987: 405.
Osteochilus cf. microcephalus: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 40.

Materials: Sungai Kahang (ZRC 42970), Sungai Kinchin (ZRC 8200, ZRC 8217, ZRcC8712-8713, ZRC 8719), Sungai Taku (ZRC 8747).

***Oxygaster anomalura* van Hasselt, 1823**

Materials: Sungai Jasin (ZRC 21457-21458), Sungai Kahang (ZRC 42907, ZRC 42963).
Remarks: This is the 1st record of this species from the Endau drainage.

***Parachela* cf. *maculicauda* (Smith, 1934)**

Parachela cf. *maculicauda*: Lim, Ng, and Kottelat 1990: 42.

Materials: Sungai Kahang (ZRC 42905, ZRC 42977), Sungai Kinchin (ZRC 8255-8256).

***Poropuntius deauratus* (Valenciennes, 1842)**
(in Cuvier and Valenciennes)

Acrossocheilus deauratus: Mohsin and Ambak 1983: 216.
Poropuntius deauratus: Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 38.

Materials: Sungai Kernam (ZRC 8740-8743), Sungai Kinchin (ZRC 42626).

***Rasbora bankanensis* (Bleeker, 1853)**

Materials: Sungai Lenggor (ZRC 42831, ZRC 42885).
Remarks: This is the 1st record of this species from the Endau drainage; previous records of *R. bankanensis* by Lim, Kottelat, and Ng (1990) and Lim, Ng, and Kottelat (1990) were of *R. paucisqualis* instead.

***Rasbora caudimaculata* Volz, 1903**

Rasbora caudimaculata: Zakaria-Ismail 1987: 406; Lim, Ng, and Kottelat 1990: 35.

Material: Sungai Semberong (ZRC 7740-7745).

***Rasbora cephalotaenia* (Bleeker, 1852)**

Parluciosoma cephalotaenia: Zakaria-Ismail 1987: 405.
Rasbora cephalotaenia: Mohsin and Ambak 1983: 216; Lim, Ng, and Kottelat 1990: 35.

Materials: Sungai Lenggor (ZRC 42882), Sungai Semberong (ZRC 7193).

***Rasbora dorsiocellata* Duncker, 1904**

Rasbora dorsiocellata: Mohsin and Ambak 1983: 216.

***Rasbora dusonensis* Bleeker, 1851**

Rasbora myersi (non Brittan,1954): Lim, Ng, and Kottelat 1990: 36.

Materials: Sungai Kahang (ZRC 42751, ZRC 42908, ZRC 42979), Sungai Semberong (ZRC 7758-7761).
Remarks: This species was previously identified as *R. myersi*, until Alfred (1970) and Kottelat (1991) showed that *R. myersi* is a junior synonym of *R. dusonensis*.

***Rasbora einthovenii* (Bleeker, 1851)**

Rasbora eithoveni: Mohsin and Ambak 1983: 216; Zakaria-Ismail 1987: 406.

***Rasbora elegans* Volz, 1903**

Rasbora elegans: Zakaria-Ismail 1987: 406; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 35.

Materials: Sungai Kahang (ZRC 42911, ZRC 42965), Sungai Kernam (ZRC 8700-8705), Sungai Kinchin (ZRC 8264-8268, ZRC 8277-8278, ZRC 8649, ZRC 8673-8674, ZRC 8690-8691, Sungai Lenggor (ZRC 42639, ZRC 42830), Sungai Taku (ZRC 8269).

***Rasbora gracilis* Kottelat, 1991**

Materials: Sungai Kahang (ZRC 42914), Sungai Lenggor (ZRC 42883).
Remarks: This is the 1st record of this species from the Endau drainage.

***Rasbora kalochroma* (Bleeker, 1851)**

Rasbora kalochroma: Alfred 1970: 113; Zakaria-Ismail 1987: 406.

***Rasbora pauciperforata* Weber and de Beaufort, 1916**

Rasbora pauciperforata: Zakaria-Ismail 1987: 407.

***Rasbora paucisqualis* Ahl in Schreitmüller, 1935**

Rasbora bankanensis (non Bleeker, 1853): Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 35.

Materials: Sungai Kahang (ZRC 42752, ZRC 42798, ZRC 42923, ZRC 42941), Sungai Kinchin (ZRC 8273-8276), Sungai Lenggor (ZRC 42819, ZRC 42851, ZRC 42929), Sungai Semberong (ZRC 14412-14421), Sungai Taku (ZRC 8272).

Remarks: This species was previously synonymized with *R. bankanensis*, but Siebert (1997b) has shown *R. paucisqualis* to be a valid species. Both *Rasbora bankanensis* and *R. paucisqualis* are found in the Endau drainage, but do not occur syntopically. *Rasbora paucisqualis* seems to favor open streams with a moderate current while *R. bankanensis* seems to favor swampy areas (K.K.P. Lim, pers. comm.).

***Rasbora sumatrana* (Bleeker, 1852)**

Rasbora sumatrana: Mohsin and Ambak 1983: 216; Zakaria-Ismail, 1987: 407.

***Rasbora trilineata* Steindachner, 1870**

Materials: Sungai Kahang (ZRC 42753, ZRC 42909, ZRC 42971), Sungai Lenggor (ZRC 42886, ZRC 42930), Sungai Semberong (ZRC 14425-14430).

Remarks: This is the 1st record of this species from the Endau drainage.

***Systomus banksi* (Herre, 1940)**

Puntius binotatus (non Valenciennes, 1842; in Cuvier and Valenciennes): Zakaria-Ismail 1987: 406; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 36.

Materials: Sungai Kahang (ZRC 42904, ZRC 42974), Sungai Kinchin (ZRC 8261-8263, ZRC 42637), Sungai Lenggor (ZRC 42828, ZRC 42891).

Remarks: What is currently recognized as the genus *Puntius* s. l. is probably polyphyletic (Roberts 1989). Rainboth (1996) considers *Systomus* to be a valid genus distinct from *Puntius* s. str. in having a finely serrated (vs. smooth) dorsal-fin spine, 2-4 barbels (vs. 2 maxillary barbels), and less than 12 (vs. 12-20) gill rakers on the 1st gill arch. We tentatively follow Rainboth (op. cit.) in recognizing *Systomus* as a valid genus.

Systomus banksi has been considered a distinct species (as *Puntius banksi*) by Kottelat and Lim (1995), and can be differentiated from *S. binotatus* in having a dark wedge-shaped marking (vs. a round spot) on the sides of the body immediately below the dorsal fin. As there seems to be a considerable amount of variation in the markings between populations, it is also likely that both *S. banksi* and *S. binotatus* represent 2 extreme color forms of a single species. Pending a critical study of the taxonomy of members of the *S. binotatus* group, we tentatively follow Kottelat and Lim (1995) in considering *S. banksi* as valid. The species from the Endau drainage is identified as *S. banksi*, as it has the dark wedge-shaped marking on the sides of the body immediately below the dorsal fin.

***Systomus johorensis* (Duncker, 1904)**

Material: Sungai Kahang (ZRC 42902).

Remarks: This is the 1st record of this species from the Endau drainage.

***Systomus lateristriga* (Valenciennes, in Cuvier and Valenciennes, 1842)**

Puntius lateristriga: Mohsin and Ambak 1983: 216; Zakaria-Ismail 1987: 406; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 36.

Materials: Sungai Jasin (CAS 65108-65109, CAS 65113-65114, ZRC 21464), Sungai Kahang (ZRC 42942), Sungai Kernam (ZRC 8729), Sungai Kinchin (ZRC 8253-8254, ZRC 42638), Sungai Lenggor (ZRC 42829, ZRC 42838, ZRC 42890).

***Systomus partipentazona* (Fowler, 1934)**

Material: Sungai Kahang (ZRC 42754).

Remarks: This is the 1st record of this species from the Endau drainage.

***Tor tambra* (Valenciennes, in Cuvier and Valenciennes, 1842)**

Tor douronensis: Zakaria-Ismail 1987: 407; Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 38.
Tor soro: Lim, Kottelat, and Ng 1990: 315; Lim, Ng, and Kottelat 1990: 37.

Materials: Sungai Jasin (ZRC 21442-21444), Sungai Kernam (ZRC 8696, ZRC 8734-8739), Sungai Kinchin (ZRC 8230).

Remarks: The identification of this species follows that of Roberts (1993a). Probably all reported *Tor* in Peninsular Malaysia belongs to this species (Zakaria-Ismail and Lim 1995).

***Trigonostigma heteromorpha* (Duncker, 1904)**

Rasbora heteromorpha: Zakaria-Ismail 1986: 25; 1987: 406.

Materials: Sungai Lenggor (ZRC 42840, ZRC 42884).

Remarks: The generic placement of this species follows that of Kottelat and Witte (1999).

Family Balitoridae

***Homaloptera nebulosa* Alfred, 1969**

Materials: Sungai Kahang (ZRC 42777, ZRC

42810, ZRC 42969), Sungai Kinchin (ZRC 42646).

Remarks: This is the 1st record of this species from the Endau drainage, and it extends the known distribution of *H. nebulosa* southwards to the Endau basin (previously known only from the Kelantan drainage).

***Homaloptera nigra* Alfred, 1969**

Materials: Sungai Kahang (ZRC 42776, ZRC 42808).

Remarks: This is the 1st record of this species from the Endau drainage, and it extends the known distribution of *H. nigra* southwards to the Endau basin (previously known only from the Terengganu and the Pahang drainages).

***Homaloptera ogilviei* Alfred, 1967**

Materials: Sungai Kahang (ZRC 42778, ZRC 42811, ZRC 42919), Sungai Kinchin (ZRC 42645).

Remarks: This is the 1st record of this species from the Endau drainage.

***Homaloptera orthogoniata* Vaillant, 1902**

Homaloptera orthogoniata: Zakaria-Ismail 1987: 407; Lim, Ng, and Kottelat 1990: 43.

Materials: Sungai Kahang (ZRC 42775, ZRC 42812), Sungai Kinchin (ZRC 42644), Sungai Lenggor (ZRC 42845, ZRC 42887).

***Homaloptera tweediei* Herre, 1940**

Materials: Sungai Jasin (ZRC 21478), Sungai Kahang (ZRC 42779, ZRC 42809, ZRC 42920).

Remarks: This is the 1st record of this species from the Endau drainage.

***Nemacheilus masyae* Smith, 1933**

Material: Sungai Kahang (ZRC 42806).

Remarks: This is the 1st record of this species from the Endau drainage, and it extends the known distribution of *N. masyae* southwards to the Endau basin (previously known only from peninsular Thailand, and the Terengganu and Pahang drainages).

***Nemacheilus selangoricus* Duncker, 1904**

Nemacheilus selangoricus: Zakaria-Ismail 1987: 407; Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 42.

Materials: Sungai Jasin (CAS 60717), Sungai Kahang (ZRC 42780, ZRC 42807, ZRC 42916, ZRC 42962), Sungai Kinchin (ZRC 8280, ZRC 42635), Sungai Lenggor (ZRC 42835, ZRC 42893).

***Neohomaloptera johorensis* (Herre, 1944)**

Materials: Sungai Kahang (ZRC uncat.), Sungai Lenggor (ZRC 42844, ZRC 42888).

Remarks: This is the 1st record of this species from the Endau drainage.

***Vaillantella maassi* Weber and de Beaufort, 1916**

Vaillantella maassi: Zakaria-Ismail 1987: 407.

Material: Sungai Kahang (ZRC 42959).

Family Cobitidae

***Acantopsis dialuzona* van Hasselt, 1823**

Acantopsis dialuzona: Zakaria-Ismail 1987: 407.

Material: Sungai Lenggor (ZRC uncat.).

***Acanthopsoides molobrion* Siebert, 1991**

Materials: Sungai Kahang (ZRC 42769, ZRC 42793, ZRC 42899, ZRC 42950).

Remarks: This is the 1st record of this species from the Endau drainage.

***Pangio cuneovirgata* (Raut, 1957)**

Materials: Sungai Kahang (ZRC 42774, ZRC 42795, ZRC 42925, ZRC 42945, ZRC 42967), Sungai Lenggor (ZRC 42820).

Remarks: This is the 1st record of this species from the Endau drainage.

***Pangio doriae* (Perugia, 1892)**

Material: Sungai Kahang (ZRC 42900, ZRC 42949), Sungai Lenggor (ZRC 42821).

Remarks: This is the 1st record of this species from the Endau drainage.

***Pangio filinaris* Kottelat and Lim, 1993**

Materials: Sungai Lenggor (ZRC 42822).

Remarks: This is the 1st record of this species from the Endau drainage, and it extends the known distribution of *P. filinaris* southwards to the Endau basin (previously known only from the Terengganu and Pahang drainages). In life, *P. filinaris* is blood-red in color.

***Pangio kuhlii* (Valenciennes, 1846)**
(in Cuvier and Valenciennes)

Pangio kuhlii: Kottelat and Lim 1993: 225, fig. 14.

Materials: Sungai Kahang (ZRC 42772, ZRC 42792, ZRC 42944), ZRC 14323-14325, Sungai Lenggor (ZRC 42837, ZRC 42931).

Pangio malayana (Tweedie, 1956)

Pangio malayana: Kottelat and Lim 1993: 231, fig. 16.

Materials: Sungai Kahang (ZRC 42773, ZRC 42796, ZRC 42924, ZRC 42946, ZRC 42961), Sungai Lenggor (ZRC 42823), Sungai Semberong (ZRC 17744).

Pangio piperata Kottelat and Lim, 1993

Pangio piperata Kottelat and Lim 1993: 236, fig. 20.

Materials: Sungai Anak Jasin (ZRC 23074-23087, paratypes), Sungai Bong (ZRC 23049-23054, paratypes), Sungai Kahang (ZRC 42770, ZRC 42787, ZRC 42922, ZRC 42948, ZRC 42966), Sungai Kinchin (ZRC 8280), Sungai Lenggor (ZRC 42824).

Pangio shelfordii (Popta, 1903)

Pangio muraeniformis: Lim, Ng, and Kottelat 1990: 43.
Pangio shelfordii: Kottelat and Lim 1993: 240.

Materials: Sungai Anak Jasin (ZRC 23071-23073), Sungai Bong (ZRC 23055), Sungai Kahang (ZRC 42771, ZRC 42947, ZRC 42968), Sungai Kinchin (ZRC 8280-8281, ZRC 8285-8292), Sungai Lenggor (ZRC 42825, ZRC 42836, ZRC 42850, ZRC 42897, ZRC 42932), Sungai Seladang (ZRC 8710).

Family Siluridae

Belodontichthys dinema (Bleeker, 1851)

Wallago dinema: Mohsin and Ambak 1983: 216.

Ompok hypophthalmus (Bleeker, 1846)

Material: Sungai Kahang (ZRC 42755).
Remarks: This is the 1st record of this species from the Endau drainage.

Silurichthys hasseltii Bleeker, 1858

Silurichthys hasseltii: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 43; Ng and Ng 1998: 302.
Silurichthys phaiosoma (non Bleeker, 1851): Zakaria-Ismail 1987: 408.

Materials: Sungai Kinchin (ZRC 8240-8244, ZRC 8677, ZRC 8688), Sungai Lenggor (ZRC 42839), Sungai Taku (ZRC 8245).

Wallago leerii Bleeker, 1851

Wallago leerii: Lim, Ng, and Kottelat 1990: 44.

Material: Sungai Kahang (ZRC 42783).

Family Bagridae

Hemibagrus gracilis Ng and Ng, 1995

Hemibagrus gracilis Ng and Ng 1995: 136, figs 2-4A.
Mystus aff. *nemurus*: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 44.
Mystus planiceps (non Valenciennes): Zakaria-Ismail 1987: 408.
Mystus cf. *planiceps*: Ng and Lim 1994: 62.

Materials: Sungai Jasin (ZRC 21484, holotype, ZRC 21482, 21486-21487, paratypes), Sungai Kernam (ZRC 8726-8728, paratypes), Sungai Kinchin (ZRC 8294-8296, paratypes, ZRC 8757-8759, paratypes, ZRC 42629), Sungai Taku (ZRC 8752-8753, paratypes).

Hemibagrus nemurus (Valenciennes, 1839)

Mystus nemurus: Zakaria-Ismail 1987: 408.

Materials: Sungai Jasin (ZRC 21483), Sungai Kahang (ZRC 42758, ZRC 42788, ZRC 42952), Sungai Kinchin (ZRC 42630).

Leiocassis cf. *micropogon* (Bleeker, 1852)

Leiocassis cf. *micropogon*: Lim, Ng, and Kottelat 1990: 44.

Materials: Sungai Kahang (ZRC 42813), Sungai Kinchin (ZRC 8260, ZRC 42631).

Mystus nigriceps (Valenciennes, in Cuvier and Valenciennes, 1840)

Mystus micracanthus: Zakaria-Ismail 1987: 408.

Mystus singaringan (Bleeker 1846)

Materials: Sungai Kahang (ZRC 42756, ZRC 42791).
Remarks: This is the 1st record of this species from the Endau drainage.

Nanobagrus nebulosus sp. nov.

(Fig. 3a)

Holotype: ZRC 42600, 1 ♂, 34.5 mm SL; Malaysia: Johor, Sungai Kahang and tributary ca. 44.4 km from Mersing turnoff to Kluang just before side road to Endau Rompin Taman Negara, km 96 from Mersing to Batu Pahat (2°3.93'N 103°31.58'E); H.H. Tan et al., 24 Mar. 1998.
Paratypes: FMNH 62311, 2 unsexed, 19.3-20.1 mm SL; Malaysia: Johor, small stream along road from Kota Tinggi to Mawai; J.R. Hendrickson, 22 Feb. 1957.

Diagnosis: A species of *Nanobagrus* with large eyes (eye diameter 14.1%-15.1% HL), pectoral spine with 16 serrations on the posterior edge and 35 vertebrae; body brown with 3 rows of cream-colored spots located (on both sides) above, along and below the lateral line.

Description: Head depressed and broad, body moderately compressed. Dorsal profile rising evenly but not steeply from tip of the snout to origin of the

dorsal fin, then sloping gently ventrally from there to the end of the caudal peduncle. Ventral profile horizontal to origin of anal, then sloping dorsally to the end of the caudal peduncle. In percent SL: head length 22.6-26.4, head width 18.6-18.9, predorsal distance 34.8-38.8, preanal length 60.2-65.5, prepelvic length 41.8-49.0, prepectoral length 18.3-23.4, body depth at anus 13.9-16.5, length of caudal peduncle 16.2-19.9, depth of caudal peduncle 10.1-10.9, pectoral-fin length 20.6-22.9, length of dorsal-fin base 10.9-13.0, pelvic-fin length 11.9-16.5, length of anal-fin base 13.9, caudal-fin length 38.6, length of adipose-fin base 14.8-17.9, dorsal to adipose distance 18.9-23.5; in percent HL: snout length 25.6-28.3, interorbital distance 34.6-39.6, eye diameter 14.1-15.1, nasal barbel length 75.5-97.4, maxillary barbel length 122.6-144.9, inner mandibular barbel length 62.3-98.7, outer mandibular barbel length 113.2-124.4. Branchiostegal rays 6 (3). Gill rakers 2 + 7 (1). Vertebrae 18 + 17 = 35 (2) or 18 + 18 = 36 (1).

Fin ray counts: dorsal I,6,i (3), pectoral I,6 (3), pelvic ii,4,i (1) or i,5,i (2), anal iv,6,i (1), iii,8,i (1) or v, 8,i (1), caudal 8/8 (1) or 9/8 (2). Dorsal origin nearer tip of snout than caudal flexure. Pectoral spine stout, with 16 (1) large serrae posteriorly (Fig. 4a). Anal origin slightly posterior to adipose origin. Depressed dorsal not reaching adipose fin. Caudal fin forked.

Color : Dorsal surface and sides of head and body dark grayish-brown. Belly, chest and ventral surface of head cream. Cream-colored patches around eyes, the interorbital space and dorsal part of operculum. Occipital region with 2 creamy patches. Cream patches on dorsal and lateral parts of body located immediately posterior to dorsal fin, immediately posterior to adipose fin and caudal peduncle. Lateral line visible as a longitudinal row of 16 cream-colored spots. Adipose fin dark grayish brown with anterior quarter and the posterior third cream. Dorsal and caudal fin membranes hyaline with brown fin-rays. Pectoral, pelvic, and anal fins hyaline with scattered brown spots on fin rays. Barbels and pectoral spines brown on dorsal surface and cream on ventral surface.

Distribution: Presently known from the Endau and Sedili drainages in southeastern Malay Peninsula in the state of Johor.

Etymology: From the Latin *nebulosus*, meaning cloudy, in reference to the pattern of cream-colored patches on the body.

Remarks: Mo (1991) erected the genus *Nanobagrus* for bagrids with 7 pelvic-fin rays, reduced supraoccipital process and interneural, 6-8 gill rakers, 5-6 soft pectoral-fin rays, presence of the retractor tentaculi muscle, the 5th vertebra bearing ribs and 7 soft dorsal fin rays but 5 free proximal radials. *Nanobagrus* was previously considered monotypic, with *Akysis armatus* Vaillant, 1902, being the only described species.

Nanobagrus nebulosus differs from *N. armatus*

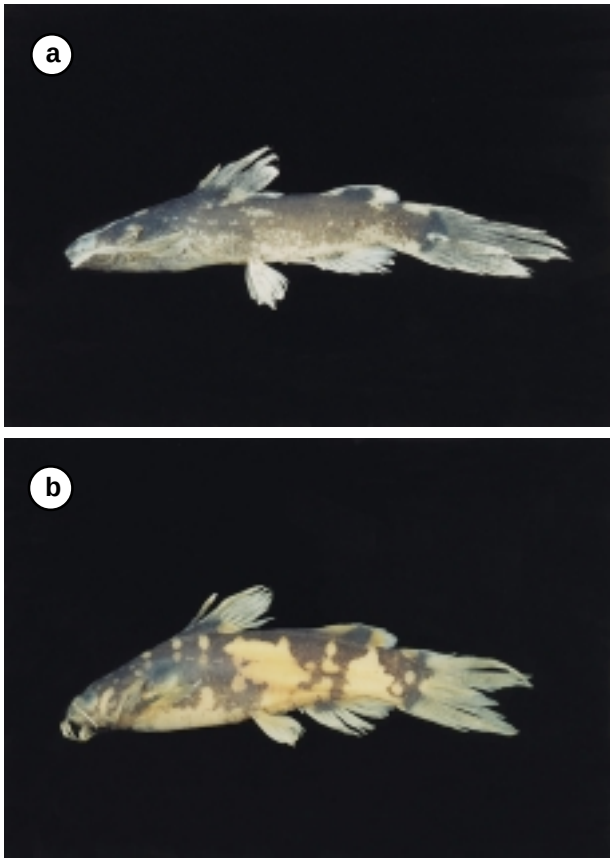


Fig. 3. a, *Nanobagrus nebulosus* n. sp., holotype, ZRC 42600, 34.5 mm SL; Malaysia: Endau River drainage; and **b,** *N. armatus*, CMK 6915, 28.6 mm SL; Borneo: Kapuas River drainage.

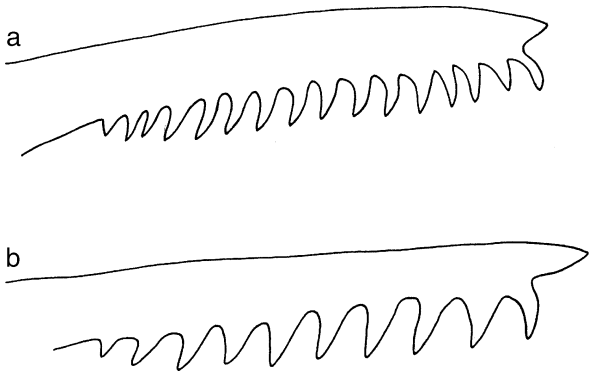


Fig. 4. Dorsal view of pectoral spines of: **a,** *Nanobagrus nebulosus* n. sp., ZRC 42600, holotype, 34.5 mm SL; and **b,** *N. armatus*, CMK 6915, 28.6 mm SL.

in having larger eyes (eye diameter 14.1%-15.1% HL vs. 9.0-12.5), more serrations on the posterior edge of the pectoral spine (16 vs. 8-11; fig. 4) and comparatively more vertebrae (35-36 vs. 33-34). The color patterns of the 2 species also differ: *N. armatus* has a brown body with numerous cream-colored spots and 2 relatively large and irregular cream-colored patches on the sides of the body while in *N. nebulosus*, the pattern consists of a dark grayish-brown body with a series of cream-colored spots mostly on the dorsal parts of the body (compare Fig. 3a and 3b). The species are geographically separated, with *N. armatus* known from the Mahakam and Kapuas basins in Borneo while *N. nebulosus* is known currently from the Endau basin in Peninsular Malaysia.

Nanobagrus nebulosus superficially resembles juvenile specimens of *Pseudomystus stenomus*, which is found syntopically, but can be differentiated by its distinct (vs. diffuse) cream patches, lateral line visible as a series of cream spots (vs. a distinct cream line), the presence of 7 (vs. 5) dorsal-fin rays and 16 (vs. 8-9) serrations on the posterior edge of the pectoral spine, and the presence (vs. absence) of a transverse brown band on the dorsal fin.

Comparative materials: *Nanobagrus armatus*: RMNH 7844, 1 unsexed, holotype, 21.7 mm SL; Borneo: Tepoe; A. W. Nieuwenhuis, 1896-97. - CAS 49371, 2 unsexed, 19.2-25.3 mm SL; Borneo: Kalimantan Barat, Kapuas River basin, Sungai Belimbing, large forested stream 46 km SSE of Sintang and 15 km by road WNW of Nangaipinoh; T. R. Roberts and S. Woerjoatmodjo, 20 Jul. 1976. - CAS 49372, 3 unsexed, 18.1-21.2 mm SL; USNM 230278, 4 unsexed, 16.2-19.5 mm SL; Borneo: Kalimantan Barat, Kapuas River basin, Sungai Mandai Ketchil near its confluence with Kapuas mainstream, 18 km WSW of Putussibau; T.R. Roberts and S. Woerjoatmodjo, 11 Aug. 1976. - CMK 6915, 1 ♂, 2 ♀♀, 20.3-28.6 mm SL; Borneo: Kalimantan Barat, right tributary of Sungai Sibau, about 3 km upstream of Putussibau; M. Kottelat et al., 28 Apr. 1990.

Pseudomystus fuscus (Popta, 1906)

Materials: Sungai Lenggor (ZRC 42889, ZRC 42933).

Remarks: This is the 1st record of this species from the Endau drainage.

Pseudomystus stenomus Fowler, 1938

Materials: Sungai Jasin (ZRC 21476-21477), Sungai Kahang (ZRC 42760, ZRC 42784).

Family Pangasiidae
Pangasius sp.

Pangasius sp.: Lim, Ng, and Kottelat 1990: 46.

Remarks: The record of this species from the Endau drainage is based on a report by Kiew (1986).

Family Akysidae
Akysis microps sp. nov.
(Fig. 5)

Holotype: ZRC 42596, 1 ♂, 27.8 mm SL; Malaysia: Johor, Sungai Kahang and tributary ca. 44.4 km from Mersing turnoff to Kluang just before side road to Endau Rompin Taman Negara, km 96 from Mersing to Batu Pahat (2°3.93'N, 103°31.58'E); H.H. Tan et al., 11 Mar. 1998.

Paratypes: ZRC 42597, 4 ♂♂, 2 ♀♀, 20.2-27.0 mm SL; data as for holotype. - CAS 99371, 1 ♂, 21.5 mm SL; CMK 14803, 1 ♂, 1 ♀, 21.5-22.3 mm SL; ZRC 42599, 3 ♂♂, 2 ♀♀, 22.8-28.8 mm SL; locality as for holotype; H.H. Tan et al., 24 March 1998. - BMNH 1998.7.19.1-2, 1 ♂ 1 ♀, 21.9-25.0 mm SL; MZUSP 53470, 2 ♂♂, 1 ♀, 21.2-22.8 mm SL, 1 ♀, c&s, 28.0 mm SL; locality as for holotype; P.K.L. Ng et al., 1 Apr. 1998.

Diagnosis: *Akysis microps* is distinguished from all its congeners by possessing the following combination of characters: depth of caudal peduncle 8.3%-9.6% SL, length of anal-fin base 16.2%-18.6% SL, length of adipose-fin base 15.2%-23.0% SL, eye diameter 9%-13% HL, length of nasal barbel 95%-106% HL, length of maxillary barbel 139%-170% HL, length of inner mandibular barbel 94%-102% HL, length of outer mandibular barbel 110%-154% HL, 10-11 anal-fin rays, and 5-7 serrations on the posterior edge of the pectoral spine.

Description: Head depressed and broad, body moderately compressed, relatively shorter. Mouth terminal or slightly subterminal; tip of snout not or

Fig. 5. *Akysis microps* n. sp., holotype, ZRC 42596, 27.8 mm SL; Malaysia: Endau River drainage.

only slightly protruding beyond apex of lower jaw. Dorsal profile rising evenly 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. Head covered with small tubercles, body with tubercles arranged in 5-6 longitudinal rows on each side. Posterior and anterior nostrils relatively small and located further apart with some distance between base of nasal barbel and anterior nostril. Anterior nostril located at tip of a short tube. Median fontanel not reaching base of occipital process. Occipital process narrow, its tip tapering and reaching predorsal plate. Premaxillary toothband not exposed when mouth is closed. In percent SL: head length 21.6-25.2, head width 24.8-29.5, predorsal distance 35.2-40.3, preanal length 57.7-64.0, prepelvic length 44.1-50.0, prepectoral length 18.2-25.4, body depth at anus 12.9-15.5, length of caudal peduncle 17.0-24.4, depth of caudal peduncle 8.3-9.6, pectoral-spine length 18.0-23.2, pectoral-fin length 25.2-29.1, length of dorsal-fin base 11.2-15.0, pelvic-fin length 10.3-16.2, length of anal-fin base 16.2-18.6, caudal-fin length 23.3-27.1, length of adipose-fin base 15.2-23.0; in percent HL: snout length 33-46, interorbital distance 39-48, eye diameter 9-13, length of nasal barbel 95-106, length of maxillary barbel 139-170, length of inner mandibular barbel 94-102, length of outer mandibular barbel 110-154. Branchiostegal rays 6 (7). Gill rakers 0 + 4 (1). Vertebrae 16 + 16 = 32 (3), 15 + 18 = 33 (1) or 16 + 17 = 33 (1). Body covered with tubercles, with 4-5 longitudinal rows on lateral surfaces posterior to dorsal-fin base.

Fin ray counts: dorsal I,4,i (7), pectoral I,5,i (6) or I,6 (1), pelvic i,4,i (7), anal iv,5,i (4) or iii,6,i (3), caudal 7/5 (5) or 7/6 (2). Dorsal origin nearer tip of snout than caudal flexure. Pectoral spine stout, with 5 (1), 6 (4), or 7 (2) large serrae posteriorly (Fig. 6a). Anal origin slightly posterior to adipose origin. Depressed dorsal not reaching adipose fin. Caudal fin truncate.

Color: Dorsal surface and sides of head and body brown. Belly, chest, and ventral surface of head light yellow with fine brown spots. Three irregular light yellow patches over top and sides: one on occipital region, another posterior to dorsal fin and contiguous with adipose fin and the 3rd from posterior end of adipose base to immediately anterior to caudal flexure. Latter 2 markings contiguous with, or laterally narrowly separated from similar markings extending dorsally from surroundings of anal fin. Two to 3 light yellow spots ventral to dorsal fin on both sides of body. Adipose fin brown, except for light yellow at origin and along edge. Basal 2/3 of dorsal fin brown, remaining 1/3 with brown spots. Pectoral, pelvic, anal, and caudal fins with brown spots. Barbels and pectoral spines transversely barred with brown rings.

Distribution: Presently known only from the Endau River drainage in southeastern Malay Peninsula in the state of Johor.

Etymology: From the Greek “mikros”, meaning small and “ops”, meaning eye; in reference to the relatively small eye of this species. Used as a noun in apposition.

Notes on biology: The specimens were caught among patches of *Cryptocoryne affinis* (Araceae) about 50 cm deep in a large stream (about 10 m wide) with a sandy bottom. The water was tea-colored (pH 7.0), and the current was moderate. *Akysis hendricksoni* was found syntopically with this species. Other fish caught together with this species were: *Pangio cuneovirgata, P. doriae, P. kuhlii, P. malayana, P. piperata, P. shelfordii* (Cobitidae),

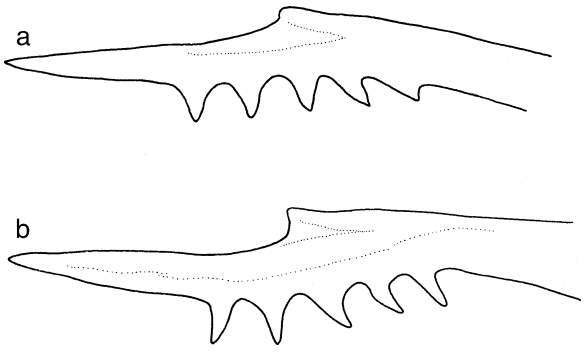


Fig. 6. Dorsal view of pectoral spines of: **a,** *Akysis microps* n. sp., ZRC 42597, paratype, 27.0 mm SL; and **b,** *A. heterurus*, ZRC 42615, 25.0 mm SL.

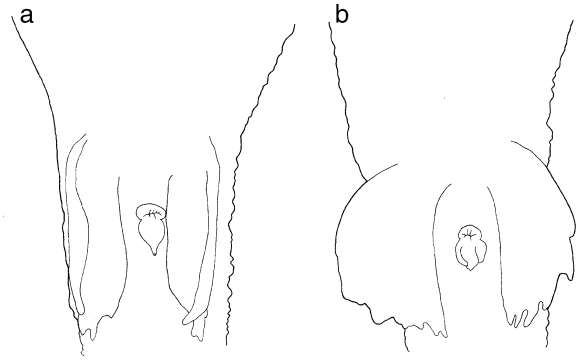


Fig. 7. Schematic illustration of the ventral view of the pelvic fins and external genitalia of *A. microps* n. sp.: **a,** male, ZRC 42596, holotype, 27.8 mm SL; **b,** female, ZRC 42597, paratype, 27.0 mm SL.

Homaloptera nebulosa, H. nigra, H. ogilviei, H. orthogoniata, H. tweediei (Balitoridae), *Leiocassis micropogon* (Bagridae), *Pseudomystus fuscus* (Bagridae), *P. stenomus* (Bagridae), *Glyptothorax* aff. *major* (Sisoridae), and *Mastacembelus favus* (Mastacembelidae).

Akysis microps exhibits sexual dimorphism of a form different from that reported by Ng and Kottelat (1996 1998a) for *A. fuscus* and *A. alfredi*. In males, the anus is situated immediately in front of a genital papilla with a bulbous base. The genital opening is located at the tip of this papilla, but, unlike *A. fuscus* and *A. alfredi* (see Ng and Kottelat 1996 1998a), there is no flap covering this opening (Fig. 7a). Likewise in females, the anus is situated immediately in front of the genital opening, which is partially covered by an appendage (Fig. 7b). No obvious sexual dimorphism can be found in the morphology of the pelvic fins (unlike in *A. fuscus* and *A. alfredi*). No significant differences were found in the length of the pelvic fin (13.7%-16.2% SL in males vs. 10.3-14.3 in females), the distance between the origin of the 1st (anteriormost) pelvic ray and the origin of the 1st (anteriormost) anal ray (14.0%-14.7% SL in males vs. 14.1-15.5 in females), or the inter-pelvic distance (2.9%-4.0% SL in males vs. 3.1-3.3 in females). The ova of *A. microps* were relatively large (diameter about 1.0 mm).

Remarks: Members of the genus *Akysis* are small, cryptically colored catfish characterized by the possession of 4 pairs of barbels, the lack of palatal teeth, adipose fin with a long base, gill opening extending above the pectoral base and a tough leathery skin covered with tubercles. They have been poorly studied due to the paucity of material, and it is only recently that more material has been made available for in-depth studies (Ng 1996, Ng and Kottelat 1996 1998a). Currently, only 2 species of *Akysis* are known from Peninsular Malaysia (Ng and Kottelat 1998a): *Akysis alfredi* Ng and Kottelat, 1998, and *A. hendricksoni* Alfred, 1966.

Akysis microps belongs to the *A. variegatus* species-group as defined by Ng and Kottelat (1998a) in having a terminal mouth, anterior nostril at the tip of a short tube and located further apart from the posterior nostril at a distance between the base of the nasal barbel and the anterior nostril, and a truncate caudal fin. *Akysis microps* can be differentiated from all other congeners in the group (except *A. heterurus* Ng, 1996, *A. recavus* Ng and Kottelat, 1998, and *A. varius* Ng and Kottelat, 1998) in having a truncate (vs. emarginate) caudal fin. *Akysis microps* closely resembles *A. heterurus* in having a similar color pattern and a truncate caudal fin. However, it can be differentiated from *A. heterurus* in having a shorter anal-fin base (16.2%-18.6% SL vs. 18.8-25.2), smaller eye (eye diameter 9%-13% HL vs. 14-18), and longer inner mandibular and outer mandibular barbels (length of inner mandibular barbel 94%-102% HL vs. 50-94; length of outer mandibular barbel 110%-154% HL vs. 89-138). The serrations on the posterior edge of the pectoral spine of *A. microps* are also distinctly smaller than those of *A. heterurus* (Fig. 6): the average heights of the serrations of *A. microps* are 3.9%-5.8% (vs. 7.3-8.1) of the length of the pectoral spine.

A total of 11 species of *Akysis* are known from Indochina (Vietnam, Laos, Cambodia, Thailand, and Myanmar) and the Malay Peninsula, of which 2 species (*A. recavus* and *A. varius*) have truncate caudal fins (Ng and Kottelat 1998a). *Akysis microps* differs from *A. recavus* in having convex (vs. slightly concave) margins of the head when viewed dorsally, eyes positioned dorsolaterally without a suborbital depression (vs. eyes lateral with a suborbital depression), a deeper caudal peduncle (depth of caudal peduncle 8.3%-9.6% SL vs. 6.1-8.6); smaller eye (eye diameter 9%-13% HL vs. 14-20), longer barbels (length of nasal barbel 95%-106% HL vs. 21-85; length of maxillary barbel 139%-170% HL vs. 63-118; length of inner mandibular barbel 94%-102% HL vs. 22-42; length of outer mandibular barbel 110%-154% HL vs. 58-93), more serrations on the posterior edge of the pectoral spine (5-7 vs. 4). *Akysis microps* differs from *A. varius* in having a shorter adipose-fin base (15.2%-23.0% SL vs. 25.6-29.5), smaller eye (eye diameter 9%-13% HL vs. 13-20), longer barbels (length of nasal barbel 95%-106% HL vs. 44-66; length of maxillary barbel 139%-170% HL vs. 86-127; length of inner mandibular barbel 94%-102% HL vs. 40-75; length of outer mandibular barbel 110%-154% HL vs. 60-103), more serrations on the posterior edge of the pectoral spine (5-7 vs. 0-5), and more anal-fin rays (10-11 vs. 8-10).

The only other species of *Akysis* of the *A. variegatus* species-group known from Peninsular Malaysia is *A. hendricksoni*, but *A. microps* can be differentiated from this species by its truncate (vs. emarginate) caudal fin, longer nasal and inner mandibular barbels (length of nasal barbel 95%-106% HL vs. 55-79; length of inner mandibular barbel 94%-102% HL vs. 53-87), and the presence (vs. absence) of light yellow spots below the dorsal fin.

Akysis microps differs from *A. brachybarbatus* He and Chen, 1981, *A. ephippifer* Ng and Kottelat, 1998, *A. maculipinnis* Fowler, 1934, *A. pictus* Günther, 1883, *A. prashadi* Hora, 1936, and *A. variegatus* (Bleeker, 1846) in having a truncate (vs.

emarginate) caudal fin, longer barbels (length of nasal barbel 95%-106% HL vs. 31-95; length of maxillary barbel 139%-170% HL vs. 61-141; length of inner mandibular barbel 94%-102% HL vs. 32-80; length of outer mandibular barbel 110%-154% HL vs. 59-117), and more serrations on the posterior edge of the pectoral spine (5-7 vs. 0-5).

Comparative Materials: *Akysis brachybarbatus*: see Ng and Kottelat (1998a). *A. ephippifer* : see Ng and Kottelat (1998a). *A. hendricksoni*: see Ng and Kottelat (1998a). *A. heterurus*: see Ng and Kottelat (1998a); additional materials - ZRC 42309, 2 unsexed, 20.9-25.9 mm SL; Sumatra: Jambi, Sungai Alai at 19.5 km Muara Bungo-Muara Tebo road; H.H. Tan et al., 22 Jul. 1997. *A. maculipinnis*: see Ng and Kottelat (1998a). *A. pictus*: BMNH 1880.12.1:25-26, 2 unsexed, syntypes, 37.7-42.4 mm SL; Myanmar: Tenasserim; J. Wood-Mason, ca. 1880. *A. prashadi*: CAS 98615, 1 unsexed, 62.1 mm SL; Myanmar: Sagaing Division, Kalemyo markets (reportedly from Myit-tha River and nearby hill streams of Myit-tha drainage); C.J. Ferraris and U Myint Pe, 12 Nov. 1996. - CAS 98616, 3 unsexed, 20.8-50.4 mm SL; Myanmar: Kachin State, Ayeyarwaddy River, just south of Myitkyina; local fishermen, 7-8 Nov. 1997. *A. recavus*: see Ng and Kottelat (1998a). *A. variegatus*: see Ng and Kottelat (1998a). *A. varius*: see Ng and Kottelat (1998a).

***Akysis hendricksoni* Alfred, 1966**

Materials: Sungai Kahang (ZRC 42612-42613).

Remarks: *Akysis hendricksoni* was found syntopically with *A. microps*. This is the 1st recorded instance in which 2 species of *Akysis* are found syntopically, and also extends the range of *A. hendricksoni* southwards to the Endau basin (previously only known from the Sungai Golok, Sungai Terengganu, and Sabak Bernam drainages).

The specimens of *A. hendricksoni* from the Endau basin show great infraspecific variation in color. Large specimens (ca. 40 mm SL) have a normal pattern of yellow patches on a brown body similar to specimens from the Terengganu and Sungai Golok drainages (see Ng and Kottelat [1998a] for a detailed description of the coloration), but have a larger and more prominent band of yellow on the tip of the snout compared to specimens from the Terengganu and Sungai Golok drainages. Some of the smaller specimens (ca. 25 mm SL) have the yellow patches on the body much reduced in size, so much so that the whole fish appears almost uniformly brown. The latter form of coloration has not been seen in specimens from the Terengganu and Sungai Golok drainages examined.

***Parakysis longirostris* Ng and Lim, 1995**

Material: Sungai Kahang (ZRC 42759).

Remarks: This is the 1st record of this species from the Endau drainage, and it extends the known distribution of *P. longirostris* northwards to the Endau basin (previously known only from Pulau Bintan, Singapore and the Sedili drainage).

Family Sisoridae

***Glyptothorax* aff. *major* (Boulenger, 1894)**

Glyptothorax major : Lim, Ng, and Kottelat 1990: 47.

Materials: Sungai Jasin (ZRC 7752-7754), Sungai Kahang (ZRC 42757, ZRC 42789, ZRC 42951), Sungai Kinchin (ZRC 42632), Sungai Lenggor (ZRC 42848).

Remarks: The taxonomy of Southeast Asian *Glyptothorax* is currently very confusing. The species of *Glyptothorax* most commonly encountered in the Malay Peninsula has often been identified as *G. major*. But the real *G. major* is a much bigger species that seems to be restricted to northern Borneo. This species thus appears to be distinct from *G. major* s. str. for which the name *G. fuscus* Fowler, 1934 is available. Pending a detailed study of the types to ascertain the exact identity of the species from the Malay Peninsula, we tentatively identify this species as *G.* aff. *major*.

Family Clariidae

***Clarias batrachus* (Linnaeus, 1758)**

Clarias batrachus: Zakaria-Ismail 1987: 408.

***Clarias teijsmanni* (Bleeker, 1857)**

Clarias teijsmanni: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 46.
Clarias teysmanni: Zakaria-Ismail 1987: 408.

Materials: Sungai Kernam (ZRC 8744), Sungai Lenggor (ZRC 42827).

Family Chacidae

***Chaca bankanensis* Bleeker, 1852**

Chaca bankanensis: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 47.

Materials: Sungai Kinchin (ZRC 8259, ZRC 8652), Sungai Lenggor (ZRC 42878).

Family Phallostethidae

***Phenacostethus smithi* Myers, 1928**

Material: Sungai Lenggor (ZRC 42934).

Remarks: This is the 1st record of this species from the Endau drainage.

Family Hemiramphidae
***Dermogenys* cf. *pusilla* van Hasselt, 1823**

Dermogenys cf. *pusillus*: Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 48.

***Hemirhamphodon pogonognathus* (Bleeker, 1853)**

Hemirhamphodon pogonognathus: Lim, Kottelat, and Ng 1990: 316; Lim, Ng, and Kottelat 1990: 47; Anderson and Collette 1991: 156, fig 4.

Materials: Sungai Kahang (ZRC 42803, ZRC 42917, ZRC 42954, ZRC 42973), Sungai Kernam (8697-8698), Sungai Kinchin (ZRC 8297-8304, ZRC 8650-8651, ZRC 8671-8672, ZRC 8685-8687, ZRC 42633), Sungai Lenggor (ZRC 42832, ZRC 42846, ZRC 42895).

Family Belonidae
***Xenentodon canciloides* (Bleeker, 1853)**

Xenentodon canciloides: Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 48.
Xenentodon cancila (non Hamilton, 1822): Zakaria-Ismail 1987: 408.

Materials: Sungai Jasin (ZRC 21459-21463), Sungai Kinchin (ZRC 8257).

Family Syngnathidae
***Doryichthys deokhatoides* (Bleeker, 1853)**

Materials: Sungai Kahang (ZRC 42786), Sungai Lenggor (ZRC 42935).
Remarks: This is the 1st record of this species from the Endau drainage.

***Doryichthys martensii* (Peters, 1869)**

Doryichthys martensii: Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 48.

Materials: Sungai Emas (ZRC 7663), Sungai Kahang (ZRC 42763, ZRC 42794, ZRC 42953), Sungai Kinchin (ZRC 8258; ZRC 42640).

Family Synbranchidae
***Monopterus albus* Zuiew, 1793**

Monopterus albus: Zakaria-Ismail 1987: 408; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 49.

Materials: Sungai Kinchin (ZRC 8246-8247), Sungai Lenggor (ZRC 42841).

Family Pristolepididae

***Pristolepis grootii* (Bleeker, 1851)**

Pristolepis fasciata (non Bleeker, 1851): Zakaria-Ismail 1987: 408; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 49.

Materials: Sungai Kahang (ZRC 42762, ZRC 42799, ZRC 42956), Sungai Kinchin (ZRC 8231-8232, ZRC 8279, ZRC 8724-8725, ZRC 42643)

Family Nandidae
***Nandus nebulosus* (Gray, 1833)**

Materials: Sungai Kahang (ZRC 42761, ZRC 42918), Sungai Lenggor (ZRC 42842, ZRC 42879).
Remarks: This is the 1st record of this species from the Endau drainage.

Family Anabantidae
***Anabas testudineus* (Bloch, 1792)**

Anabas testudineus: Zakaria-Ismail 1987: 408.

Family Osphronemidae
***Betta pugnax* (Cantor, 1850)**

Betta pugnax: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 49; Tan and Tan 1996: 420, figs 1, 3, 4a-b.

Materials: Sungai Batu Labi (ZRC 8305, ZRC 8319), Sungai Kahang (ZRC 42766), Sungai Kernam (ZRC 8706-8709), Sungai Kinchin (ZRC 8305-8311, ZRC 8318-8319, ZRC 8654-8670, ZRC 8678-8684, ZRC 42634), Sungai Lenggor (ZRC 42833, ZRC 42849, ZRC 42892, ZRC 42936), Sungai Taku (ZRC 8270-8271).

***Luciocephalus pulcher* (Gray, 1830)**

Luciocephalus pulcher : Lim, Ng, and Kottelat 1990: 50.

Materials: Sungai Kahang (ZRC uncat.), Sungai Lenggor (ZRC 42826, ZRC 42843, ZRC 42898, ZRC 42937).

***Osphronemus goramy* La Cépède, 1802**

Osphronemus goramy: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 50.

Materials: Sungai Jasin (ZRC 21479), Sungai Kahang (ZRC 42765, ZRC 42785, ZRC 42927), Sungai Kinchin (ZRC 8248-8249).

***Sphaerichthys osphromenoides* Canestrini, 1860**

Materials: Sungai Lenggor (ZRC 42881, ZRC 42938).
Remarks: This is the 1st record of this species from the Endau drainage.

***Trichopsis vittata* (Cuvier and Valenciennes, 1831)**

Materials: Sungai Kahang (ZRC 42764, ZRC 42921, ZRC 42980).

Remarks: This is the 1st record of this species from the Endau drainage.

Family Channidae
***Channa gachua* (Hamilton, 1822)**

Channa gachua: Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 51.

***Channa lucius* (Cuvier and Valenciennes, 1831)**

Channa lucius: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 51.

Materials: Sungai Kahang (ZRC 42797, ZRC 42955), Sungai Lenggor (ZRC 42880).

***Channa micropeltes* (Cuvier and Valenciennes, 1831)**

Channa micropeltes: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng, 1990: 317; Lim, Ng, and Kottelat 1990: 51.

***Channa striata* (Bloch, 1797)**

Channa striata: Zakaria-Ismail 1987: 409.

Material: Sungai Kahang (ZRC 42903).

Family Mastacembelidae
***Macrognathus aculeatus* (Bloch, 1786)**

Material: Sungai Kahang (ZRC uncat.).

Remarks: This is the 1st record of this species from the Endau drainage.

***Macrognathus maculatus* (Cuvier, 1831)**

Macrognathus maculatus: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 51.

Materials: Sungai Jasin (ZRC 7751), Sungai Kahang (ZRC 42768, ZRC 42800, ZRC 42957), Sungai Kinchin (ZRC 8312-8315), Sungai Lenggor (ZRC 42834, ZRC 42847, ZRC 42894).

***Mastacembelus erythrotaenia* Bleeker, 1850**

Mastacembelus erythrotaenia: Zakaria-Ismail, 1987: 409.

***Mastacembelus favus* Hora, 1923**

Mastacembelus favus: Zakaria-Ismail 1987: 409; Lim, Kottelat, and Ng 1990: 317; Lim, Ng, and Kottelat 1990: 52.

Materials: Sungai Kahang (ZRC 42801, ZRC 42958), Sungai Kinchin (ZRC 8316-8317, ZRC 42621).

Family Eleotrididae
***Oxyeleotris marmorata* (Bleeker, 1852)**

Material: Sungai Kahang (ZRC 42802).

Remarks: This is the 1st record of this species from the Endau drainage.

Family Gobiidae
***Brachygobius xanthomelas* Herre, 1937**

Materials: Sungai Kahang (ZRC 42915, ZRC 42972), Sungai Lenggor (ZRC 42939).

Remarks: This is the 1st record of this species from the Endau drainage.

***Glossogobius giurus* (Hamilton, 1822)**

Material: Sungai Kahang (ZRC uncat.).

Remarks: This is the 1st record of this species from the Endau drainage.

***Pseudogobiopsis oligactis* (Bleeker, 1875)**

Materials: Sungai Kahang (ZRC 42767, ZRC 42790).

Remarks: This is the 1st record of this species from the Endau drainage. *Pseudogobiopsis oligactis* was previously listed as *P. campbellianus* (Jordan and Seale, 1907) by Lim et al. (1993) in their list of Malaysian fishes. *Vaimosa perakensis* Herre, 1940 is apparently a junior synonym of this species (H.K. Larson, pers. comm. to K.K.P. Lim).

***Pseudogobiopsis siamensis* Fowler, 1934**

Material: Sungai Jasin (ZRC 21480).

Remarks: This is the 1st record of this species from the Endau drainage.

Family Soleidae
***Achiroides* sp.**

Material: Sungai Kahang (ZRC 42910).

Remarks: This is the 1st record of *Achiroides* from the Endau drainage. The specimen obtained was a juvenile and too small for proper identification at the species level.

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馬來半島 Endau 集水區之魚類兼記鯰魚（真骨魚：粒鯰科，鮠科）之兩新種

黃旭晞[1] 陳旭輝[1]

本文報告馬來半島東南部之 Endau 河川集水區之魚種名錄。名錄中共報導 Endau 當地中 26 科 108 種魚類。其中 36 種為新記錄， 2 種為新種。其中小眼粒鯰(*Akysis microps*)為粒鯰科之一新種。本種與異尾粒鯰(*A. heterurus*)相近，但與此種及與同屬他種之差異在下列特徵之綜合：尾高為標準體長之 8.3% ～ 9.6% ，臀鰭基長為標準體長之 16.2% ～ 18.6% ，脂鰭基長為標準體長之 15.2% ～ 23% ，眼徑為頭長之 9% ～ 13% ，鼻鬚長為頭長之 95% ～ 106% ，頷鬚長為頭長之 139% ～ 170% ，內顎鬚長為頭長之 94% ～ 102% ，外顎鬚長為頭長之 110% ～ 154%；臀鰭鰭條 10 ～ 11 ，胸鰭棘後緣有 5 ～ 7 鋸齒。星雲短鬚(*Nanobagrus nebulosus*)為鮠科之一新種，其特徵為眼大（眼徑為頭長之 14.1% ～ 15.1%），胸鰭後緣有 16 個鋸齒，脊椎骨 35 ～ 36 個，其暗灰色體軀上有一系列乳酪色斑，大多在體之背面。本種亦為馬來半島本科之新記錄屬。

關鍵詞：短鬚屬(*Nanobagrus*)，粒鯰屬(*Akysis*)，新種，新記錄。

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