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MYSTUS KERALAI (SILURIFORMES: BAGRIDAE), A NEW FISH SPECIES FROM KERALA, INDIA

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ABSTRACT

Mystus keralai, a new species of the family Bagridae, is described from Chenappady of Manimala River of Kerala, India. It is distinguished from its relative species by the following combination of characters: head longer; eyes smaller; median longitudinal groove on head narrow, long and reaching base of occipital process, the latter reaching basal bone of dorsal fin; maxillary barbels very long, extending beyond base of caudal fin; pectoral spine longer; base of rayed dorsal fin greater; adipose dorsal fairly long, commencing a little behind the posterior base of rayed dorsal fin; a light brownish green line goes through lateral line in between elongated humeral and triangular caudal spots. The new fish is described and compared with its relatives.

Key words: Manimala River, *Mystus seengtee*, *Mystus cavasius*, new species.

INTRODUCTION

Mystus Scopoli, is a diverse group of small to medium sized Bagrid catfishes, from South Asia. It is the most common genus in India, especially in Kerala. They are characterized by anteriorly situated eyes with free circular margins, sub equal jaws, one or two median longitudinal grooves on the dorsal surface of head, short or long occipital process, four pairs of maxillary barbels, an anterior rayed dorsal and posterior low adipose dorsal fin.

The present cat fish described from the Manimala River of Kerala, India bears features of the genus *Mystus* but possesses enough characters to distinguish it from its congeners. So it is described here as a new species *Mystus keralai*.

MATERIALS AND METHODS

Measurements were made point to point with dial calipers 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 and measurements of body parts are given as proportions of standard length (SL). Identification of the new species and its relatives was carried out following Misra (1976), Jayaram and Anuradha (2003), and Jayaram (2006 and 2010). Methods used are those of Jayaram (2002). Type specimens of the new species are deposited in the freshwater fish museum of Zoological Survey of India, Kolkata, West Bengal.

Abbreviations used: ZSI- Zoological Survey of India, Kolkata, West Bengal; ZSI/WGRC- Zoological Survey of India, Western Ghats Regional Centre, Calicut, Kerala; LBAD- length of base of adipose dorsal fin; LBRD- length of base of rayed dorsal fin.

Mystus keralai, sp. nov

(Figure 1- 4 and 7. A, 7. D and Table 1)

Type materials examined

Holotype: ZSI FF 5091, 59.0 mm SL, India: Kerala, Manimala River at Chenappady, Mathews Plamoottil, 10 January 2011.

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Paratype: ZSI FF 5092, 1 specimen, 58.0 mm SL, India: Kerala, Manimala River at Chenappady, Mathews Plamoottil, 10 January 2011.

RESULTS AND DISCUSSION

Diagnosis

Mystus keralai differs from its relative species in having an elongated, wider but less deep head, smaller eyes, deeper anterior part of frontal groove, longer base of adipose dorsal fin, elongated pelvic fin, anal fin and pectoral spine, weaker pectoral spine and longer base of rayed dorsal fin base. The new species can be further distinguished from its congeners in having very long maxillary barbels which reach beyond caudal base, a distinct mid lateral stripe and elongated humeral spot and triangular caudal spot.

Description

Biometric data are given in Table 1. Head depressed; dorsal profile evenly sloping and ventral profile almost straight. Bony elements of dorsal surface of head covered with thin skin; median longitudinal groove on head narrow, long, reaching base of occipital process; anterior part of cranial fontanelle in between orbits is deep while its posterior part shallow. Occipital process distinct, narrow and reaching basal bone of dorsal fin. Four pairs of barbels; maxillary pair very long, extending beyond base of caudal fin, nasal almost as long as head, outer mandibulars reaching nearly base of pelvic origin and inner pair reach behind pectoral base. Eyes comparatively small; anterior nostrils located nearer to tip of snout than orbit.

Figure 1. *Mystus Keralai*, Holotype, ZSI FF 5091, 59.0 mm SL, Manimala River, Kerala, India.

Figure 2. *Mystus keralai*, Paratype, ZSI FF 5092, Paratype, 58.0 mm SL, Manimala River.

Figure 3. *M. keralai* head- dorsal view.

Figure 4. Head- lateral view.

Rayed dorsal fin originates considerably behind the origin of the pectoral and fairly in front of pelvic origin; it is higher than the body; its tip not filamentous. Rayed dorsal fin with one spine and seven branched rays; spine ossified but weaker, its outer margin smooth and inner margin feebly serrated. At the base of rayed dorsal fin a '<' shaped small ridge present. Adipose dorsal base fairly long, commencing a little behind rayed dorsal fin and above the origin of pelvic fin. Pectoral fin with one spine and eight branched rays; spine strong, outer margin smooth, inner margin strongly serrated with 12-13 teeth. Pectoral tip never reaches ventral; Ventral fin with one unbranched and five branched rays, located just below the posterior base of rayed dorsal fin, its tip reaches nearly below middle of adipose dorsal and just in front of anal fin origin; Anal fin comparatively longer, provided with four undivided and nine branched rays; it never reaches base of caudal fin.

Caudal fin with 15 rays; upper lobe of caudal slightly longer. Many minute pores present on head and body; muscle bands on the lateral sides of the body can be clearly seen; sensory organs in the form of very small tubes present on anterior ¾ of the lateral line.

Coloration

Body pale yellowish green; eyes bluish black; 4-5 small black spots present below the root of 3rd-6th dorsal fin rays. A light brownish black elongated humeral spot and a similar but triangular spot on caudal base; a light brownish green line goes through lateral line in between humeral and caudal spots.

Distribution: Currently known only from the type locality in Kerala.

Etymology: The specific epithet "*keralai*" refers to Kerala, the state of India from which the new species was described firstly.

Habitat: The River stretch of Manimala River at Chenappady, the type locality of *Mystus keralai*, is highly sinuous and generally rocky with deep pools at certain locations. Sand deposit occurs as sporadic patches or fillings in the pools. The bed materials are generally of coarser grade and the sand content is very low. The width of the River channel varies between 45m and 110m. The water depth in the active channel during summer seasons ranges from 0.5 m to 3 m. The riparian vegetation is more or less scanty; the common plant species along the bank includes *Bambusa bambos, B. vulgaris, Homonoia riparia, Ficus glomerata, Gmelina arborea, Hydnocarpus pentandra etc*. *Anguilla bengalensis, Salmostoma boopis, Danio malabaricus, Barilius bakeri, Gonoproktopterus kurali, Rasbora daniconius, Puntius mahecola, Haludaria fasciatus, Pethia ticto, Dawkinsia filamentosa, Systomus subnasutus, Batasio travancoria, Ompok malabaricus, Clarias dussumieri, Heteropneustes fossilis, Mesonoemacheilus triangularis, Bhavania australis, Xenentodon cancila, Aplocheilus lineatus, Parambassis thomassi, Etroplus maculatus, Etroplus suratensis, Anabas testudineus, Pristolepis malabaricus, Mastacembelus armatus, Macrognathus guentheri* etc are some of the co-occurring fish species.

Comparisons

Mystus seengtee Sykes (1839) (Fig. 5, 7. C & 7. F) and *Mystus cavasius* Hamilton- Buchanan (Fig. 6, 7. B & 7.E) are the close relative species of *Mystus keralai.* Both these have an unusually elongated maxillary barbels reaching beyond

caudal base, long and narrow double cephalic fontanels reaching occipital process, the latter extends to rayed dorsal fin base, a feebly serrate rayed dorsal fin and a long based adipose fin. At the front base of dorsal spine a '<' shaped black spot present in *M. cavasius* and *M. seengtee*; a similar shaped, but colorless, ridge of skin present on the same position in *M. keralai*. Hamilton-Buchanan (1822) described *Mystus cavasius* from Gangetic provinces under the name *Pimelodus*. *Pimelodus* (*Mystus*) *seengtee* Sykes, a relative of *Mystus cavasius*, is considered to be distributed in the South Indian fresh water bodies. Chakrabarty and Ng (2005) redescribed catfishes identified as *Mystus cavasius* and resurrected *Pimelodus seengtee* from synonymy with *M. cavasius.*

As the new fish shows much similarity to *Mystus cavasius* Hamilton-Buchanan and *M. seengtee* Sykes, the first author collected a few fresh specimens of these relative fish species from River Ganges in West Bengal and Mananthavady River in Wayanad, Kerala respectively for comparative studies. Detailed morphometric analysis revealed that the new species differs greatly from these congeners. In *Mystus cavasius* median longitudinal groove on head shallow, indistinct and white to grayish white (vs. moderately deep, distinct and without a specific colour in the new species), a small black spot present at the base of rayed dorsal fin and on humeral region (vs. no distinct spot at the base of dorsal fin and humeral spot elongated), no spot at caudal base (vs. a triangular brownish black spot present), dorsal spine stronger (vs. weak), anterior part of frontal groove in between eyes shallow (vs. deep), upper caudal lobe markedly longer than lower one (vs. no sharp difference between the two), head shorter (21.4- 23.8 % SL vs. 27.1- 27.6) and deeper (64.0- 66.7 % HL vs. 53.1- 62.5), eyes larger (29.2- 30.0 % HL vs. 21.9- 25), base of adipose dorsal fin longer (40.2- 45.6 % SL vs. 34.5- 37.3), body width at anal fin lesser (6.1- 8.0 % SL vs. 10.3- 11.2) and pectoral spine shorter (12.5- 14.9 % SL vs. 16.9-17.2). Hamilton's *Mystus* differs from the present species in many other morphometric features as shown in Table 1.

Figure 5. Freshly collected *Mystus seengtee*, ZSI FF 4936, Mananthavady River, Wayanad, Kerala.

Figure 6. Freshly collected *Mystus cavasius*, ZSI FF 4930, River Ganges, West Bengal.

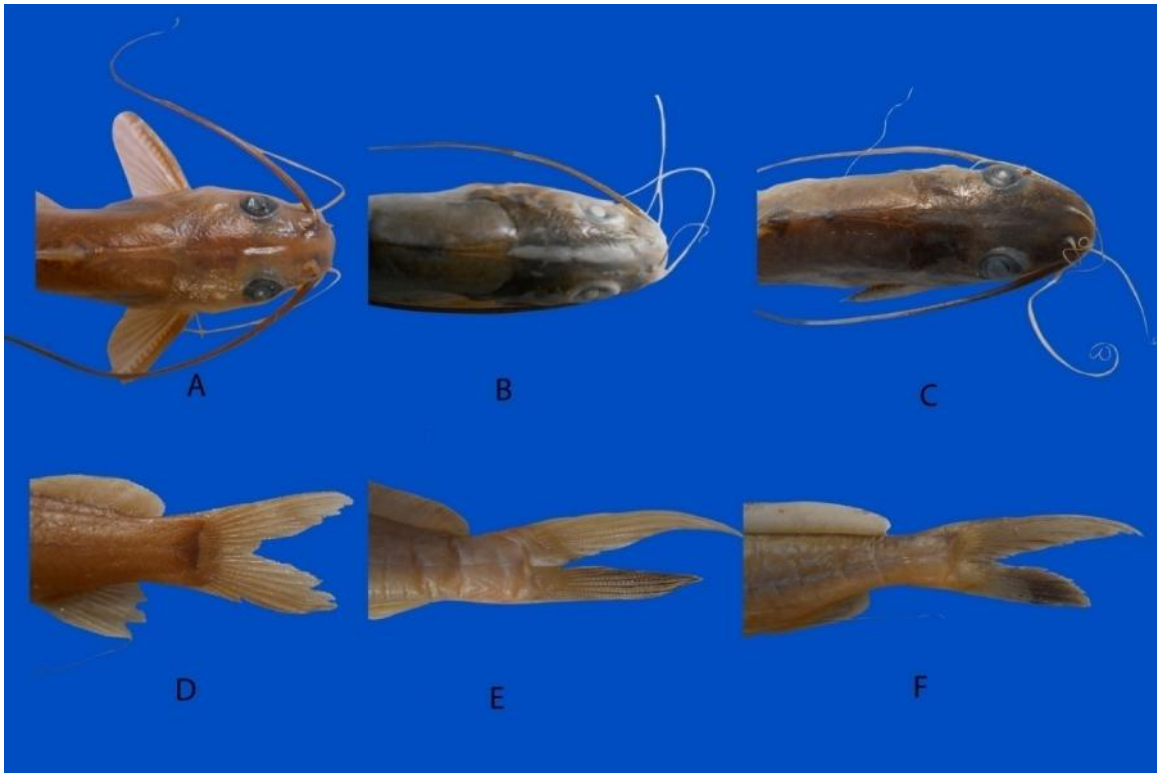

Figure 7. Head and caudal fin of *Mystus keralai* and its close relative species (A. Dorsal side of head of *Mystus keralai*; B. *M. Cavasius*; C. *M. seengtee*; showing the deep cephalic fontanel in *M. keralai*. D. Caudal fin of *Mystus keralai*; E. *M. cavasius*; F. *M. seengtee;* showing the equal caudal lobes in *M. keralai*).

Table 1. Biometric data for *Mystus keralai* and its relative species.

SL. No.	Characters	*Mystus keralai*				*M. cavasius*			*M. seengtee*		
		HT	Range HT+PT	Mean	SD	Range	Mean	SD	Range	Mean	SD
1	Total length (mm)	78	72-78	75	4.24	124.5-144.0	141	4.2	157.5-204.5	184.1	19.6
2	Standard length (mm)	59	58-59	58.5	0.71	96.5-112.0	108.5	4.9	120.0-156.5	140.6	13.5
		% of SL									
3	Head length	27.1	27.1-27.6	27.4	0.33	21.4-23.8	22.6	1.6	22.1-24.2	22.8	0.9
4	Head width	18.9	18.1-18.9	18.5	0.62	15.0-17.1	16.2	1.3	13.4-15.9	15.1	1.0
5	Body depth at dorsal origin	22.4	21.0-22.4	21.7	0.95	17.8-21.2	18.9	1.5	20.3-22.7	21.4	3.7
6	Body depth at anal origin	18.7	18.6-18.9	18.8	0.23	12.9-15.7	14.3	1.3	14.2-15.8	15.3	0.8
7	Body width at dorsal origin	16.9	15.8-17.0	16.4	0.77	12.9-15.2	14.7	0.6	13.8-14.5	14.2	0.3
8	Body width at anal origin	10.3	10.3-11.2	10.8	0.62	6.1-8.0	7.4	0.9	7.6- 8.3	7.8	0.3
9	Pre dorsal length	38.9	36.2-38.9	37.6	1.96	32.1-39.1	35.6	4.8	34.4-34.8	34.6	0.2
10	Post dorsal length	67.7	67.2-67.8	67.5	0.38	63.8-69.5	66.7	4.0	65.2-71.0	67.4	2.6

11	Pre pelvic length	54.2	48.3-54.2	51.3	4.22	44.4-46.6	45.6	0.1	45.4-49.0	47.4	1.8
12	Length of rayed dorsal	23.7	22.4-23.7	23.1	0.93	18.8-22.4	20.6	2.6	20.7-23.4	22.5	1.3
13	Height of adipose dorsal	6.7	6.7- 8.3	7.5	1.0	4.7-6.7	6.4	0.4	5.5- 6.6	5.7	0.5
14	Length of pectoral	19.5	17.2-19.5	18.4	1.59	14.7-17.1	15.9	1.7	16.9-20.0	18.1	1.3
15	Length of pelvic	18.8	17.2-18.8	18.0	1.11	14.3-15.2	14.8	0.7	15.3-16.7	16.1	0.7
16	Length of anal	21.2	18.1-21.2	19.6	2.18	10.5-13.6	10.6	0.2	13.5-16.7	14.8	1.2
17	Length of dorsal spine	13.5	12.9-13.6	13.2	0.45	10.6-13.3	12.0	1.8	13.7-15.9	15.1	1.2
18	Length of pectoral spine	16.9	16.9-17.2	17.1	0.21	12.5-14.9	13.7	0.5	13.4-14.8	14.5	0.3
19	Length of upper caudal lobe	32.2	29.8-32.2	31.0	1.68	28.6-31.4	30	2.0	30.3-31.6	30.9	0.6
20	Length of lower caudal lobe	28.8	28.1-28.8	28.4	0.52	22.8-25.7	24.5	1.7	21.7-24.2	23.0	1.2
21	Length of base of rayed dorsal	16.9	16.9-17.2	17.1	0.20	12.5-13.3	12.9	0.5	13.4-14.6	13.9	0.6
22	Length of base of adipose dorsal	37.3	34.5-37.3	35.8	1.98	40.2-45.6	41.9	2.5	42.1-46.2	43.6	1.8
23	Length of base of pectoral	3.7	3.6- 3.7	3.7	0.08	4.0-4.7	4.4	0.1	4.0- 4.8	4.3	0.4
24	Length of base of pelvic	5.1	3.5- 5.1	4.3	1.15	2.4-3.1	2.5	0.2	3.5-4.2	3.8	0.3
25	Length of base of anal	13.7	12.1-13.7	12.9	1.17	8.6-10.7	9.6	1.5	9.2-10.3	9.8	0.5
26	Length of base of caudal	16.0	15.5-16.0	15.8	0.4	10.3-11.1	10.6	0.5	7.9-12.1	9.8	2.1
27	Length of caudal peduncle	18.6	18.6-20.7	19.7	1.45	20.9-22.8	21.6	0.9	19.2-22.4	20.7	1.3
28	Depth of caudal peduncle	11.8	11.8-12.2	12.1	0.27	8.0-9.1	8.3	0.4	7.6-8.3	7.9	0.3
29	Distance from pelvic to anal	20.3	19.3-20.3	19.8	0.74	21.8-24.8	24.4	0.4	19.8-23.6	21.5	1.1
30	Distance from anal to cauda	31.4	31.4-31.4-	31.4	0	22.8-30.7	27.8	2.7	28.9-31.3	29.9	1.1
31	Distance from adipose dorsal to caudal	12.9	12.9-14.4	13.7	0.8	12.1-13.5	12.8	0.5	9.5-10.3	10.1	0.4
32	Distance from anal to vent	6.4	6.0- 6.4	6.2	0.3	4.7-6.1	5.4	0.5	7.0-9.6	7.8	0.1
33	Distance from ventral to vent	15.5	15.5-16.1	15.8	0.4	14.3-19.6	16.3	2.0	13.3-16.3	15.0	1.6
34	Head length (mm)	16	16	16	0	24.0-25.0	24.5	0.7	29.0-35.0	32.0	2.4
				% of HL							
35	Head depth	62.5	53.1-62.5	57.8	6.63	64-66.7	65.0	1.4	65.6-68.8	67.2	1.8

36	Head width	70	65.6- 70	67.8	3.1	70.4-72.0	71.4	0.8	60.9-71.4	66.2	4.7
37	Distance from occiput to snout	86.3	84.4-86.3	85.4	1.3	86.9-91.9	88.6	2.0	82.8-87.5	84.8	2.4
38	Distance from occiput to dorsal origin	50.0	46.7-50.0	48.4	2.3	61.3-68.0	64.5	2.6	60.3-71.9	65.8	5.6
39	Length of frontal groove	62.5	50.0-62.5	56.3	8.8	82.5-91.3	87.2	2.5	58.6-65.7	61.2	3.9
40	Length of occipital process	36.3	36.3-40.6	38.5	3.0	39.1-44.8	42.4	2.0	60.3-71.9	67.3	5.8
41	Post orbital length	40.6	40.6-43.8	42.2	2.3	39.6-41.5	40.6	0.5	39.3-42.9	40.9	1.8
42	Head length excluding snout	68.8	62.5-68.8	65.7	4.4	64.6-70.0	68.2	1.6	65.5-71.9	67.7	3.6
43	Eye diameter	25	21.9-25.0	23.4	2.19	29.2-30.0	29.6	0.6	26.9-32.8	27.3	2.5
44	Inter orbital width	34.4	34.3-34.4	34.4	0.07	33.3-34.0	33.7	0.5	21.9-31.4	26.0	2.4
45	Inter narial width	25	20.0-25.0	22.5	3.54	18.0-20.8	19.4	2.0	14.6-15.6	15.3	0.2
46	Snout length	37.5	37.5	37.5	0	40.0-41.7	40.8	1.2	31.3-35.9	35.2	1.9
47	Width of gape of mouth	45	37.5-45.0	41.3	5.30	36.0-41.7	38.8	4.0	32.8-37.1	34.4	1.8
48	Length of maxillary barbels	418	375- 418	396	30.40	377-440	408.5	44.5	382.8-443.8	418.4	43.1
49	Length of nasal barbels	82.5	81.25-82.5	81.8	0.88	68.0-70.8	69.4	2.0	62.1-78.1	71.0	8.2
50	Length of outer mandibular barbels	162.5	146.8-162.5	154.7	11.05	132-145.8	138.9	9.7	146.9-167.1	156.4	5.8
51	Length of inner mandibular barbels	80.6	80.6-81.3	80.9	11.05	64.6-88.0	76.3	16.5	81.4-93.1	85.8	6.4
	Ratios										
52	LBAD/LBRD	1.8	1.8- 2.1	1.9	0.2	3.2-3.7	3.5	0.2	2.9-3.4	3.1	0.2
53	Length of caudal peduncle/depth of caudal peduncle	1.6	1.4- 1.6	1.5	0.1	2.4-2.8	2.6	0.2	2.3-2.8	2.6	0.2
54	Inter orbital width/eye diameter	1.3	1.2- 1.3	1.3	0.1	0.7-0.8	0.8	0.1	0.7-0 .9	0.8	0.1
55	Snout length/eye diameter	1.4	1.3- 1.4	1.4	0.1	0.9-1.4	1.2	0.2	1.0-1.3	1.2	0.1
56	Length of OP/width of OP	6.5	5.6- 6.5	6.1	0.7	3.3-3.6	3.4	0.1	5.1-5.8	5.4	0.4

The present species shows some similarities to *Mystus seengtee* described firstly by Sykes (1839). In *Mystus seengtee* body brownish grey (vs. pale yellowish green in the new species), anterior part of cranial fontanelle in between orbits shallow (vs. deep), a black spot present in front of dorsal spine base (vs. no distinct black spot), mid lateral stripe absent (vs. a light brownish green mid lateral stripe present), no distinct humeral or caudal spot (vs. an elongated brownish black spot present on humeral region and a triangular brownish black spot on caudal base), no spots present below dorsal fin rays (vs. 4-5 small black spots present below the root of 3rd- 6th dorsal fin rays), bones of head ornamented with numerous fine radial grooves (vs. absent in the new species), no mid dorsal ridge present at the base of rayed dorsal fin (vs. a

distinct fleshy mid dorsal ridge present at the base of rayed dorsal fin), outer margin of dorsal fin concave (vs. convex), dorsal spine strong and rigid (vs. weak and flexible), adipose dorsal fin spanning almost all of post dorsal distance (vs. adipose dorsal never spanning all of post dorsal distance), head shorter (22.1- 24.2 % SL vs. 27.1- 27.6) and less wide (13.2- 15.9 % SL vs. 18.1- 18.9), eyes larger (26.9- 32.8 % HL vs. 21.9- 25.0), height of adipose dorsal fin shorter (5.5- 6.6 % SL vs. 6.7- 8.3), dorsal spine longer (13.7- 15.9 % SL vs. 12.9- 13.6) and pectoral spine shorter (13.4- 14.8 % SL vs. 16.9- 17.2). Sykes' *Mystus* differs from the new species in many other morphometric features as shown in Table 1.

Mystus oculatus, M. armatus, M. menoni, M. indicus, M. montanus, M. malabaricus, M. heoki and *M. canarensis* are *Mystus* species described originally from aquatic bodies of Kerala; but they are not closely related species of *M. keralai*. For the detailed taxonomic analysis all the above *Mystus* species were collected by the first author of this paper from their type localities. In *Mystus malabaricus* (Jerdon, 1849), *M. heoki* Plamoottil & Abraham (2013 a) and *M. canarensis* Grant (1999, 2004), occipital process is short and never reach basal bone of dorsal fin (vs. occipital process longer and reach basal bone of dorsal fin in *M. keralai*). In *Mystus oculatus* (Valenciennes, 1839), base of adipose dorsal fin shorter (17.2- 19.0 % SL vs. 34.5- 37.3 in *M. keralai*) and maxillary barbels are shorter, reaching anal fin and 308.7- 322.7 % HL (vs. maxillaries longer, reaching beyond caudal fin base and 375.0- 418.0 % HL). *Mystus armatus* was considered as a synonym of *M. oculatus* by many taxonomists including Grant (1999, 2004); but recently Plamoottil & Abraham (2014) redescribed and resurrected *Mystus armatus* from its synonymy with *M. oculatus* based on the collection of fresh specimens of both from its type localities. In *Mystus armatus* (Day, 1865) cephalic groove never reach occiput (vs. reach occiput in *M. keralai*) and adipose dorsal fin base shorter (27.0- 28.9 % SL vs. 34.5- 37.3). In *M. menoni* Plamoottil & Abraham (2013 b), head is shorter (22.9- 24.3 % SL vs. 27.1- 27.6 in *M. keralai*), and wide (73.1- 80.0 % HL vs. 65.6- 70.0) and cephalic fontanel never reach occiput (vs. reach occiput). In *Mystus indicus* Plamoottil and Abraham (2013 c), dorsal surface of head rough and not covered with skin (vs. covered with a thin skin in *M. keralai)*, both sides of occipital process and rayed dorsal fin prominently swollen (vs. not swollen) and pre dorsal length lesser (30.8- 36.0 % SL vs. 36.2- 38.9). In *Mystus montanus* (Jerdon, 1849), maxillary barbels (226.3 % HL vs. 375- 418 in *M. keralai)* and base of adipose dorsal shorter (21.5 % SL vs. 34.5- 37.3) and cephalic fontanel never reach occiput (vs. reach occiput).

Comparative materials examined

***Mystus cavasius*:** ZSI FF 4930, 5 ex, 96.5- 112.0 mm SL, Serrampore, Ganges River, West Bengal, collected by Mathews Plamoottil, 14.04.2012; ZSI/FF 2870, 3 ex, 66- 101 mm SL, Tangla, Danang, Assam, coll. S. L. Hora, 14.11. 1939; ZSI/FF 1375, 2 ex, Hoknarsipur, coll. K. C. Jayaram, 07.05.1977; ZSI/FF 2247, 2 ex, Tezpur fish market, Darrang Dt, Assam, coll. B. Prasad & Hora SL; ZSI/FF 2563, 1 ex, 76.1 mm SL, Derrang, Assam, coll. B. Prasad & S. L. Hora, 4.11. 1933.

***Mystus seengtee*:** ZSI FF 4936, 4 ex, 120- 156.5 mm SL, Koodal kadavu, Mananthavady River, Wayanadu, Kerala, collected by Mathews Plamoottil, 20.03.2013; ZSI/WGRC/IR/V2141, 2 ex, Kuriarkutty, Parambikkulam, Palakkadu Dt, coll. K. G. Emiliyamma, 11.12. 2007**;** ZSI/WGRC/IR/V 10611, 3 ex, Parambikkulam, Palakkadu Dt, coll. K. C. Gopi, 29.03.1997**.** ZSI/WGRC uncat. 2 ex, Karuvannoor puzha, Thrissur District, coll. K. C. Gopi.

***Mystus malabaricus*:** ZSI FF 4931, 5 ex., 71.5- 102 mm SL, Kallodi, Mananthavady River, Wayanad, Kerala, collected by Mathews Plamoottil, 20.03.2013; ZSI/SRC 313, 2 ex., Muthanga, coll. R. S. Pillai, 12.10.1976; ZSI/WGRC 9395,1 ex., Ranipuram, Kazargod Dt, coll. M. madhavan,idenfified by K.C. Gopi, 07.07.1996; ZSI unreg. 7 ex., Mananthavady River at Choothakadavu near Kaniyaram,coll. K. C. Jayaram, 14.02.1985; ZSI uncat, 3 ex., Cauvery River, Kerala, coll. G. M. Natarajan, 1984.

Mystus oculatus: ZSI FF 4933, 5 ex., 85- 91 mm SL, Arattupuzha, Karavannoor River, Trichur, Kerala, collected by Mathews Plamoottil, 10.01.2013; ZSI 487, I ex., India, purchased from Francis Day; ZSI, unreg, 4 ex., 78.0- 86.8 mm SL, Chaliyar River at Edavanna, 2 km from Manjeri, Kerala, coll. K. C. Jayaram and Anuradha, 18.02.1985.

Mystus armatus: ZSI FF 5095, 2 exs., 69.7- 84.8 mm SL, Arattupuzha, Karavannoor River, Trichur, collected by Mathews Plamoottil, 13.01. 2013; ZSI/WGRC 7886, 2 ex., Kuniyanpuzha, Kazargod, coll. Jafer Sherif, identified by K. C. Gopi, 01.07.1995; ZSI/WGRC 7425, 1 ex., Bhavani River, Wayanadu, coll. P. M. Suresh, 02.02. 1995; ZSI/WGRC/ 8470, 3 ex., Thoonacadavu dam, Parambikkulam WLS, Palakkadu, coll. P. M. Sureshan, identified by. K. C. Gopi, 27.10.95; ZSI uncat. 10 ex., 60- 84 mm SL, Puzhakkal, 15 km north of Trichur, Kerala, coll. K. C. Jayaram and Anuradha Sanyal, 20. 02. 1985; ZSI uncat. 6 ex., 56- 77 mm SL, Muppinipotti on Punnanpuzha, Kerala, coll. K.C. Jayaram & Anuradha Sanyal, 18.02. 1985; ZSI/WGRC/9397, 1 ex., Ranipuram, Kazargod, coll. M. Madhavan, idenfified by K.C. Gopi, 07.07.1996;

***Mystus montanus*:** ZSI FF 5096, 1 ex., 67.5 mm SL, Koodal kadavu, Mananthavady River, Wayanad, collected by Mathews Plamoottil, 16.03.2013; KFRI/88, 1 ex., Noolpuzha, coll. Shaji, C. P, 11.06.1996; ZSI uncat, 8 ex., 65- 76 mm SL, Chittoorpuzha at Thathamangalam road bridge about 17 km south of Palaghat town, coll. K. C. Jayaram & Anuradha Sanyal, 20. 02. 1985; ZSI uncat, 7 ex., 59- 78 mm SL, Malampuzha dam, Kerala, coll. K. C. Jayaram & Anuradha Sanyal, 22.02. 1985; ZSI/SRC/5217, 1 ex., 42 mm SL, Parambikulam, coll. M. B. Reghunathan, 13.08.97.

***Mystus canarensis*:** ZSI FF 4939, 1 ex., 88.5mm SL, Manimala River at Mundakkayam, Kerala, collected by Mathews Plamoottil, 10.02.12; STC/DOZ 12, 4 ex., 87-101 mm SL, Manimala River at Mundakkayam, Kerala,coll. Mathews Plamoottil, 10.02.12.

***Mystus indicus*:** Holotype **,** ZSI/FF 4627, 100 mm SL, Kuttoor, Manimala River, Kerala, India; collected by Mathews Plamoottil, 17 February 2011. Paratypes, ZSI/WGRC/2418, 7 specimens, 81- 107 mm standard length, Kuttoor of Manimala River, Kerala, India; collected by Mathews Plamoottil, 07 March 2011.

***Mystus heoki*:** Holotype, ZSI/FF 4626, 137 mm SL, Elankadu, Manimala River, Kerala, India; collected by Mathews Plamoottil, 10 January 2011. Paratypes, ZSI/WGRC 2419, 5 specimens, 85.5- 120 mm standard length, Elankadu, Manimala River, Kerala, India; collected by Mathews Plamoottil, 10 January 2011.

***Mystus menoni*:** Holotype, ZSI/FF 4628, 101.7 mm standard length, Manimala River at Elankadu, Kerala, India; collected by Mathews Plamoottil, 10 January 2011. Paratypes, ZSI/WGRC/IR/V 2417, 5 specimens, 96- 121 mm standard length, Manimala River at Elankadu, Kerala, India, collected by Mathews Plamoottil, 10 January 2011 and 16 October 2011.

CONCLUSIONS

Mystus keralai is a small cat fish found in the middle level regions of Manimala River; it is consumed usually by the local people; they mentioned that its population has declined greatly due to the pollution of the water body; detailed scientific studies with more specimens can only reveal the biological aspects of this fish.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest associated with this article.

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