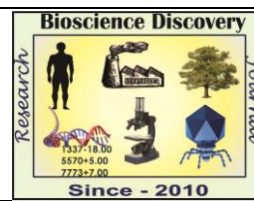


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Print & Online, Open Access, Research Journal Available on <http://jbsd.in>

ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)

**Research Article**



## *Labeo filiferus*, a new fish species (cypriniformes, cyprinidae) from Kerala, India

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### Article Info

Received: 15-03-2017,

Revised: 20-04-2017,

Accepted: 02-05-2017

### Abstract

*Labeo filiferus*, a new species of the family cyprinidae, is discovered from Pathanamthitta District of Kerala, India. The new fish species is described, scientifically named and compared with its congeners.

### Keywords:

Carp, Cyprinids, *Labeo calbasu*, *Labeo nigrescens*, Pamba River

### INTRODUCTION

Cuvier (1816) created the genus *Labeo* to accommodate *Cyprinus niloticus* from the Nile River. *Labeo* species are considered as members of the tribe Labeonini within the putative cyprinid subfamily Labeoninae. According to the most recent phylogenetic research *Labeo* is included in the subtribe *Labeoina* (Yang et al., 2012). Jayaram (1974) considered *Labeo* as an Ethiopian element represented by ancient well stabilized species occurring in a wide range of ecological niches. Many similar genera such as *Bangana*, *Morulius*, *Marulius* (Hamilton, 1822), *Nandina* (Gray, 1831), *Rohita* (Valenciennes, 1842), *Rohitichthys*, *Tambra*, *Acra*, *Chrysophekadion* and *Rohitodes* (Bleeker, 1859, 1863) had been proposed for *Labeo* which are now considered as synonyms of the genus. The great taxonomic ambiguities created were solved by Day (1878) who stabilized the generic use of name *Labeo* and the genus became accepted. The genus *Labeo* contains more than 100 species and are widely distributed in the Old World tropics. Despite the popular acceptance of the *Labeo* species, its systematic details remained in confusion

for years. Jayaram & Dhas (2000) undertook the task of revision of this genus and rearranged various species of *Labeo* into 8 groups based on morphological characters.

*Labeo* species are medium sized elongate fishes with rounded abdomen; swollen snout projecting beyond the mouth, the latter is semilunar and inferior; lips fringed and continuous at the angle of mouth forming a labial fold; dorsal fin without any osseous rays; lateral line complete and mostly straight. The *Labeo* species collected from Pamba River at Edakadathy possess the characters of the genus but bear many differences from its congeners; so it is described here as a new species *Labeo filiferus*.

### MATERIALS AND METHODS

Methods used are those of Jayaram (2002). 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. Subunits of the head were presented as proportions of head length (HL).

Head length and measurements of body parts were given as proportions of standard length (SL). Distance between two fins or between fin and vent is taken from the origin of the fin. The new fish is deposited in museum of ZSI at Shillong, India.

**Abbreviations Used:** NERC- Zoological Survey of India, North Eastern Regional Centre, Shillong, Meghalaya, India; ZSI - Zoological survey of India, Kolkata; SRC/ZSI- Zoological survey of India, Southern regional Centre, Chennai; LL/D- scales between lateral line and dorsal fin; LL/V- Scales between lateral line and ventral fin; LLS- Lateral line Scales; PDS- Pre dorsal scales; ED- Eye diameter; STL- Snout length; DCP- Depth of caudal peduncle; LCP- Length of caudal peduncle.

## RESULTS AND DISCUSSION

### *Labeo filiferus* sp. nov.

**Holotype:** V/F/NERC/4054, 200 mm SL, India: Kerala, Pamba River at Edakadathy, coll. Mathews Plamoottil, 11 August 2015.

**Diagnosis:** *Labeo filiferus* can be diagnosed from its congeners in having black colored body and fins, prominent barbels, smaller eyes, longer snout, elongated dorsal fin, filamentous tip of which reach above caudal fin base, longer pelvic fin reaching behind anal fin origin, unusually elongated anal fin reaching the tip of middle caudal fin rays and deeper caudal peduncle. The new species further differs from its relative species in having 15 pre dorsal scales, 8½ scales between lateral line and dorsal fin, 5½ scales between lateral line and ventral fin and 39 lateral line scales.

**Description:** General body shape and appearance is shown in figures 1- 3. Morphometric data as in Table 1 and meristic counts as in Table 2. Body laterally compressed; dorsal profile more arched; region from dorsal front to occiput a little bent, after sinking down very slightly goes straight to snout tip; post dorsal region slightly concave. Snout swollen and projects over the jaw; it has a number of hard tubercles, which are the aggregations of non- keratinized epidermal cells. Eyes situated considerably behind and above the angle of jaws, and not seen from below ventral side of head; inter orbital region convex; nostrils are longitudinal and situated nearer to orbits than to snout tip and covered by a flap originating from the anterior end;

jaws greatly unequal, upper jaw broader than lower jaw; lower lip prominently fringed; two pairs of prominent barbels; one pair of maxillaries and one pair of rostrals; maxillaries fairly reach nostrils; do not reach orbit; rostrals never reach nostrils or orbit; mouth inferior and moderately protractile; width of gape of mouth considerably shorter than inter narial distance.

Dorsal fin inserted nearer to snout than to caudal base, behind pectoral origin, just above the pectoral tip and distinctly in front of ventral fin base; third dorsal ray unusually elongated, filamentous and it reach above caudal fin base; all dorsal fin rays are soft and flexible; last dorsal fin ray branched to root and considered as one. Height and base length of rayed dorsal fin greater than all other fins. Pectoral fin inserted ventrolaterally and its tip never reach ventral fin base - an eye diameter in front of the latter; outer margin of pectoral fin nearly convex; pectoral fin shorter than all other fins; ventral fin inserted considerably behind dorsal front; tip of ventral fin extends considerably behind the origin of anal fin; reach to 4<sup>th</sup> ray of anal fin; ventral fin longer than pectoral fin but shorter than dorsal, anal and caudal fin. Anal opening located an eye diameter in front of anal fin origin. Anal fin inserted behind the posterior base of dorsal fin; its outer margin concave and a little in front of tip of last dorsal ray. Anal fin tip greatly elongated and when laid flat it reach considerably behind caudal fin base and reach to tip of middle caudal fin rays; anal fin longer than pectoral and pelvic fins and shorter than dorsal and caudal fins. Caudal fin deeply forked and last caudal fin rays greatly elongated and filamentous; caudal fin shorter than dorsal fin and longer than all other fins; caudal peduncle deeper than its length. Scales relatively large; not easily deciduous and clearly countable; two axillary scales present on either side of base of ventral, one above the other; of this, the upper one soft and delicate; lower one more fleshy. Scales on breast region small; lateral line appear as broken bands; it passes through just below the mid lateral part of the body, slightly towards the lower half of the body. Colour: If life and in preservation body and fins black coloured; eyes are brilliantly colored with orange tinge.

**Table 1. Morphometric characters of *Labeo filiferus***

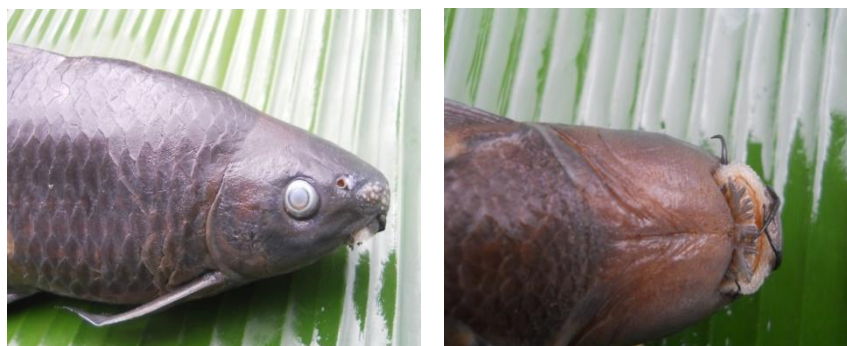
SL. No.	Characters	Holotype
1	Total Length (mm)	208.0
2	Standard Length (mm)	200.0
<b>% of Standard Length</b>		
3	Head Length	25.0
4	Head Depth	20.0
5	Head Width	16.5
6	Body Depth at Dorsal fin	33.0
7	Body Depth at Anal fin	22.0
8	Body Width at Dorsal fin	19.0
9	Body Width at Anal fin	12.5
10	Pre dorsal Distance	48.5
11	Post dorsal Distance	54.5
12	Pre pectoral Distance	23.5
13	Pre pelvic Distance	53.0
14	Pre anal Distance	81.6
15	Height of Dorsal fin	48.5
16	Length of Pectoral fin	24.5
17	Length of Pelvic fin	33.0
18	Length of Anal fin	34.0
19	Length of caudal fin	40.0
20	Length of Base of Dorsal fin	26.5
21	Length of Base of anal fin	10.0
22	Length of caudal Peduncle	13.5
23	Depth of Caudal Peduncle	15.5
24	Width of Caudal Peduncle	8.0
25	Distance from Pectoral to Pelvic	30.0
26	Distance from Pelvic to Anal fin	27.0
27	Distance from Anal fin to caudal fin	22.0
28	Distance from Anal fin to ventral fin	6.0
29	Distance from ventral to Vent	21.5
30	Depth of Caudal Peduncle/ Length of Caudal peduncle	114.8
<b>% of HL</b>		
31	Head Depth	80.0
32	Head Width	66.0
33	Eye Diameter	18.0
34	Inter orbital Width	54.0
35	Inter narial distance	46.0
36	Snout Length	47.6
37	Width of Gape of Mouth	29.0
38	Length of maxillary Barbels	30.0
39	Length of Rostral barbels	16.0
40	Pre occipital distance	74.0
41	Distance from Occiput to Dorsal fin	122.0
42	Head Length excluding Snout	66.0
43	Eye diameter/ Snout length	37.8
44	Eye Diameter/Interorbital Width	33.3
45	Length of caudal peduncle/ head length	54.0
46	Depth of Caudal Peduncle/ Head length	62.0
47	Head length/ Length of base of Dorsal fin	106.0

**Table II. Meristic Counts of *Labeo filiferus***

Sl. No	Characters	Counts
1	Dorsal fin rays	ii, 15
2	Pectoral fin rays	i, 17
3	Ventral Fin Rays	i, 8
4	Anal Fin rays	ii, 5
5	Caudal Fin rays	19
6	Lateral Line Scales	39+2
7	Pre dorsal Scales	15
8	Pre pelvic Scales	11
9	Pre anal Scales	25
10	Scales between Lateral line and Dorsal fin	8½
11	Scales between Lateral line and ventral fin	5½
12	Scales between Lateral line and anal fin	6½
13	Circumpeduncular Scales	20



**Fig.1. *Labeo filiferus*, Holotype, NERC/4054.**



**Fig. 2. Anterior region of *L. filiferus*    Fig. 3. Ventral view of head of *L. filiferus***

**Etymology:** The specific epithet '*filiferus*' was taken from Latin; '*filum*' in Latin means 'thread' and '*fero*' means 'to bear', refers to very long filamentous dorsal fin ray which reach above caudal fin base.

**Comparison:** *Labeo filiferus* can be distinguished from *Labeo nigrescens* Day of Mangalore in having an unusually elongated dorsal fin (48.8 % SL vs. 33.5) with (vs. without) filamentous tip and concave (vs. straight) outer margin, short (24.5 % SL vs. 29.0) pectoral fin which does not reach (vs. reach) pelvic fin, unusually elongated (34.0 % SL vs. 23.5) anal fin which reach (vs. do not reach) to the tip of middle caudal fin rays, LL/D 8½ (vs. 7½), LL/V 5½ (vs. 4½), PDS 15 (vs. 11) and LLS 39 (vs. 36). *Labeo filiferus* also has small eyes (ED 18.0 % HL vs. 25.0), longer snout (STL 47.6 % HL vs. 39.0) and deeper caudal peduncle (DCP 114.8 % LCP vs. 86.0).

*Labeo filiferus* can be distinguished from *Labeo calbasu* (Hamilton) of Bengal in having hard tubercles on snout (vs. snout smooth without any tubercles in *Labeo calbasu*), an unusually elongated dorsal fin (48.8 % SL vs. 33.5) with (vs. without) filamentous tip, a longer ventral fin which extends behind the origin of anal fin (vs. ventral fin never reach anal fin), an unusually elongated (34.0 % SL vs. 20.0) anal fin which reach (vs. does not reach) to tip of middle caudal fin rays, deeper caudal peduncle (DCP 114.8 % LCP vs. 95.0), fewer lateral line scales (39 vs. 40- 44) and greater pre dorsal scales (15 vs. 10- 13). The new species differs from *Labeo dussumieri* (Valenciennes) described from Alleppey, Kerala in having 39 (vs. 50- 55) lateral line scales. *Labeo filiferus* differs from *Labeo rohita* (Hamilton) of Gangetic provinces in having more branched rays in dorsal fin (15 vs. 12- 14) and pectoral fin (17 vs. 15- 16) and fewer lateral line scales (39 vs. 40-43). The new species further differs from *L. rohita* in having longer (vs. shorter) dorsal fin which reach (vs. does not reach) above caudal fin base, elongated ventral fin reaching behind (vs. never reach) anal fin origin, unusually elongated anal fin which reach (vs. do not reach caudal base) to the tip of middle caudal fin rays, longer snout (47.6 % HL vs. 22.0- 30.0) and deeper (DCP 114.8 % LCP vs. 65.0- 90.0) caudal peduncle.

The fishes of the genus *Labeo* are widely distributed in the inland water bodies of India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Malaysia, Tropical Africa and Syria. Thirty one species of *Labeo* are residing in the water bodies of

India (Talwar & Jhingran, 1991). Of these, twenty one were described from various parts of India (Jayaram & Dhas, 2000). Hamilton (1822) described 10 new species of *Labeo* from the country. The only one *Labeo* species described from Kerala until the date is *Labeo dussumieri* (Valenciennes, 1842). *Labeo filiferus* will be the second species of the state. John & John (2006) mentioned that they had collected a few specimens of *Labeo nigrescens* from Perumthenaruvu waterfalls of Pamba River. The type locality of the new species is 5 km upstream of their collection site. Those specimens were nothing but *L. filiferus* itself. These authors strongly believes that many unnamed species of *Labeo* occurs in the aquatic bodies of Malabar and Central Travancore. It is hoped that more species of the genus will be described in near future.

**Comparative materials examined:** *Labeo nigrescens*: ZSIF 1125, 1 example, 172.0 mm in SL, Mangalore, Karnataka, coll. Francis Day. *Labeo calbasu*: SRI/ZSI, Unregistered, 106.0 mm in SL, Jamkhandi, coll. K. C. Jayaram, 18.05. 1988; SRI/ZSI, Unregistered, 400.0 mm in SL, Satrasala, coll. K. C. Jayaram, 27.03. 1989. *Labeo rohita*: SRI/ZSI, Unregistered, 75.0- 170.0 mm in SL, Sathanur Dam, coll. Venkateswarlu, 27.07. 1979. *Labeo dussumieri*: ZSIF 1132, 1 example, 155.0 mm in SL, Malabar, coll. Francis Day; ZSIF 2743, 1 example, 147.5 mm in SL, Malabar, coll. Francis Day.

#### ACKNOWLEDGMENT

We are greatly indebted to Dr. Richard Pyle, Database Coordinator and Associate Zoologist in Ichthyology, Bishop Museum, Hawaii for his kind help.

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How to Cite this Article:

**Mathews Plamoottil and Primoz Zupancic, 2017.** *Labeo filiferus*, a new fish species (cypriniformes, cyprinidae) from Kerala, India. *Bioscience Discovery*, **8**(3):301-306.