TWO NEW CYPRINID FISHES FROM TRAVANCORE, SOUTH INDIA, WITH REMARKS ON *BARBUS (PUNTIUS) MICROPOGON* CUV. AND VAL.

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In a recent article,[1] a remarkable new genus of the Schizothoracine fishes was described from the Periyar Lake, Travancore, and attention was directed to the location and physical features of the Lake. Of the two new Cyprinid fishes, which form the subject matter of the present article, one was obtained from the Lake, while the other was collected from the Kallar, a tributary of the Pambiyar River, a few miles to the south of the Lake.

In their account of the freshwater fishes of Travancore, Hora and Law[2] have referred to the preponderance of endemic species in Peninsular India and indicated that this fauna must have been isolated from that of the rest of India for a considerable period. The two new forms of fish described in this paper add further to their list of the endemic species known from the State.

I wish to express here my great indebtedness to Dr. Baini Prashad and Dr. S. L. Hora of the Zoological Survey of India for the loan of material, literature and suggestions. The illustrations were prepared by the artists of the Zoological Survey of India under the supervision of Dr. Hora.

Barbus (Puntius ophicephalus, sp. nov.

B. iii ; D. 3/7 ; P. 1/13 (1/13–1/15)[3]; V 1/8 ; A. 2/5 (2/5–3/5) ; C. 19 (17-19) ; L. l. 40+1 (40-42+1-2). L. tr. 7-7½/6.[4]

Tamil name.—EECHATHALAI KENDAI.

The head and anterior portion of the body are not compressed in the adult though somewhat compressed in the young. The dorsal profile is slightly more arched than the ventral ; it is convex from the tip of the snout to the dorsal fin and almost straight behind that fin. The top of the head and nape are noticeably broad and flattened. The maximum depth of the body, which is at the nape or immediately behind it, is contained 4·3 (3·8–4·1) times in the standard length. The large and bluntly conical head is broad and depressed (compressed in the young). The height of the head is equal to its width (in the young the head is higher than broad) which is 2/3 of its length. The head is contained

[1] Raj, B. Sundara, *Rec. Ind. Mus.* XLIII, pp. 209–214 (1941).

[2] Hora, S. L., and Law, N. C., *Rec. Ind. Mus.* XLIII, pp. 233–256 (1941).

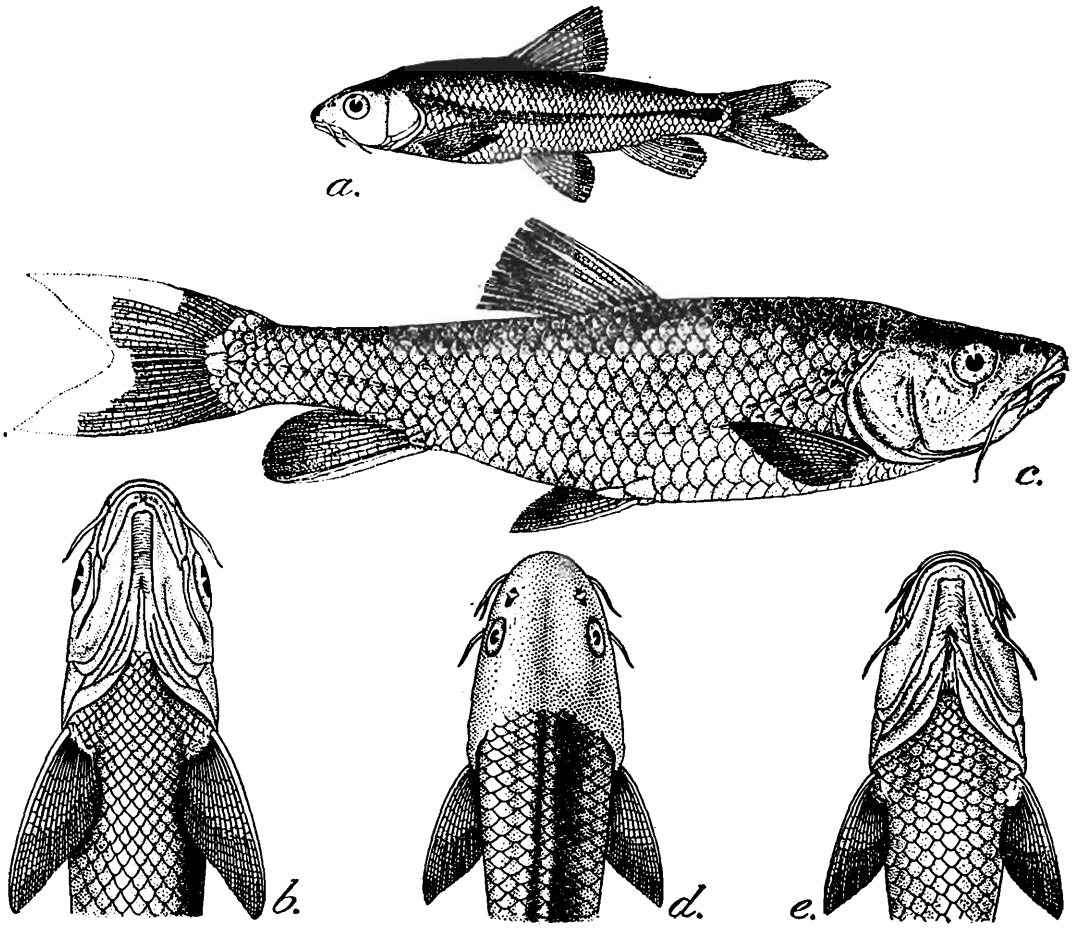
[3] In the descriptions which follow the scale counts and measurements of the holotype, which is the largest complete specimen collected, are given, followed within brackets by the range of variation, if any, shown by the paratypes.

[4] Counted from the origin of the dorsal fin to the lateral line and from the lateral line to the midventral row immediately in front of the root of the ventral fin, omitting the mid-dorsal, mid-ventral and lateral line rows of scales.

3·7 (3·2-4) times in the standard length. The caudal peduncle is 1½ times as long as high at its narrowest part.

The eyes are large and rather elevated, being placed close to the dorsal profile and almost entirely in the anterior half of the head. They are distinctly dorso-lateral in position in the adult. The diameter of the eye is contained 5·5 (3·2–5·5) times in the length of the head and 2·2 (1·2–2·2) times in the interorbital space, which is more or less flat. The eyes in the young are proportionately larger.

The snout, which is somewhat prominent and broadly rounded anteriorly, is wider than long and is about 1/3 in the length of the head. It has short lateral lobes which bear the rostral pair of barbels. Its



TEXT-FIG. 1.—*Barbus* (*Puntius*) *ophicephalus*, sp. nov.

a. Lateral view of a Paratype : × ⅓ ; *b*. Ventral surface of head and anterior part of body of same : × 1 ⅕ ; *c*. Lateral view of Holotype : × ½ ; *d*. Dorsal surface and anterior part of body of same : × ½ ; *e*. Ventral surface and anterior part of body of same : × ½.

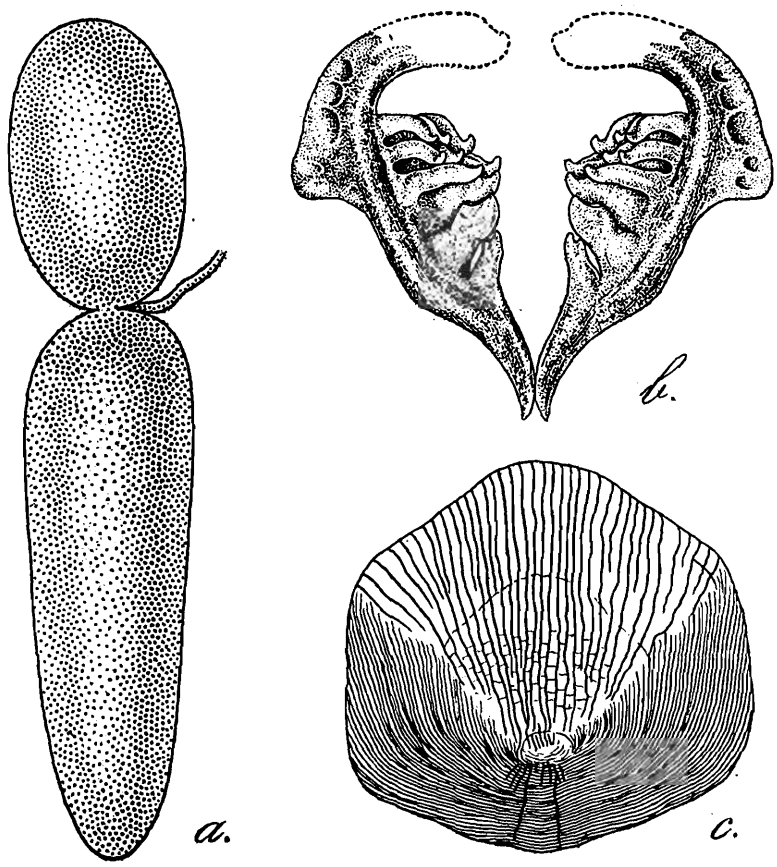
anterior margin is sharp, entire, and forms a horizontal rostral fold. A few scattered pearl organs are present on the sides of the snout in some specimens.

The mouth is subinferior and horseshoe-shaped; its cleft is more or less horizontal and does not reach below the anterior border of the eye. The upper jaw is feebly protractile and projects beyond the lower jaw. The lips, papillated in some examples, are fairly thick and continuous at the angles of the mouth by a narrow bridge and not by the whole width. The lower lip is separated from the lower jaw by a superficial furrow. The postlabial groove is narrowly interrupted in the middle.

A rostral and a maxillary pair of barbels are present, the former are equal in length to and the latter 1½ times as long as the diameter of the eye. They are relatively shorter in the young. The left rostral barbel of the holotype is bifid, evidently an abnormality.

The gill openings are large. The gill membranes are united with the isthmus below the posterior border of the preopercle. The gill rakers are few— 4 (4-6)—widely spaced, short and stout; the longest is 2/5 of the gill filaments.

The pharyngeal teeth[1] are in three rows 5·3·2–2·3·5. They are strongly compressed and hooked, with oblique spoon-like grinding sur-



TEXT-FIG. 2.—*Barbus* (*Puntius*) *ophicephalus*, sp. nov.

a. Air-bladder : ×2 ; *b*. Pharyngeal bones and teeth : ×4 ; *c*. A scale from dorsal surface : ×6.

The above parts were dissected out from a Paratype.

faces. The pharyngeal bone is 4 times as long as broad and has a well defined anterior angle and a narrow pitted surface which does not extend beyond the angle.

The scales are moderately large, the largest being about 3/4 the size of the eye. In the scapular region the scales are broader than long and have a gently convex basal margin, more or less straight lateral margins, and a bluntly conical apex. The nuclear area is large and is basal in position. The radii are developed all round the scale. The circulii are degenerate in the apical field. A long axillary scale is present at the root of the ventral fin. The lateral line is complete, and extends in the form of open pores on the head as far as the nasal openings. There are two lateral lines on the right side of the holotype,

[1] The description is after that of Y. T. Chu, *Biol. Bull. St. John's University, Shanghai*, II, pp. 83, 84 (1935).

the upper terminating after the tenth scale, evidently an abnormality. There are 3 ($3\frac{1}{2}$–5) rows of scales between the lateral line and the base of the ventral fin, 17 (15–17) predorsal scales, and 16 rows round the caudal peduncle.

The dorsal fin, which is as long as the head from the anterior margin of the eye to the gill cleft, commences slightly nearer the tip of the snout than the base of the caudal fin, somewhat in advance of the ventral fin. It has a slightly concave or nearly straight free margin. Its last undivided ray is stiff and slightly enlarged but very weak, smooth and articulated in its upper part. The pectoral fin is somewhat falciform and as long as the head without the snout. In the young it is comparatively longer. It does not reach the ventral, when depressed, by a distance equal to half its own length. The ventral fin is shorter than the pectoral, has an obliquely truncate free margin, and does not reach the anal fin, when depressed, by a distance about two-thirds its own length (in young specimens this distance is only half the length of the fin). The anal fin, which is longer than the dorsal fin, has a rounded free margin. In the young this fin is shorter than the dorsal. It reaches when depressed, the root of the caudal fin, (in the young the anal does not reach the caudal). The caudal fin is deeply emargin ate.

In fresh specimens the back and the fins are rich golden brown, the sides and the abdomen silvery brown. A broad dark band runs along the lateral line which is composed of fine black spots on the bases of the lateral line scales.

The food of the specimen dissected consisted almost exclusively of insects. The alimentary canal is about 2·75 times as long as the body.

Barbus ophicephalus is rare and was found in the Kallar, a tributary of the Pambiyar River, to the South of the Pachakani Estate adjoining the Periyar Lake. It inhabits rocky pools in which decaying vegetation is present in large quantities. The vernacular name of the fish refers to this peculiar habitat. Four specimens were collected in 1935 and seven in 1937, ranging in size from 56 to 196 mm. The measurements of the largest (holotype) and the smallest (paratype) are given below.

Holotype.—F. 13514/1, Zoological Survey of India (*Ind. Mus.*), Calcutta. Besides the holotype, 7 paratypes (F 13515/1) are also deposited in the collection of the Zoological Survey of India.

Measurements in millimetres.

	Holotype.	Paratype.
Standard length	163	42
Height of body	38	11
Length of head	44	13
Width of head	30	7
Height of head	30	9
Length of caudal peduncle	25	7
Least height of caudal peduncle ..	15	5
Diameter of eye	8	4
Interorbital space	18	5
Length of snout	14	4
Length of dorsal fin	33	10
Length of pectoral fin	31	9
Length of ventral fin	26	7
Length of anal fin	34	8

Remarks.—Dr. Hora called my attention to the close resemblance of this species to *Barbus lithopidos* Day.[1] It is, however, distinguished from Day's species by the absence of a horny covering to its jaws in the preserved specimens, the smaller number of its fin rays and the larger number of its lateral line and predorsal scales. I examined all the specimens of *B. lithopidos* in the collection of the Zoological Survey of India including Day's own specimens as well as one in my collection from Nilambur. The fin rays and scales in 7 specimens of *B. lithopidos*, ranging in size from 90 to 325 mm. in standard length were as follows :

D. 4/9 ; A. 3/5 ; V 2/9 ; L. l. 36-38+1 ; Predorsal scales 11–14.

In a very young specimen measuring 57 mm. in standard length the counts were :

D. 4/8 ; A. 3/5 ; V 1/8 ; L. l. 30.

The corresponding numbers in 8 specimens of *Barbus ophicephalus*, ranging in size from 42 to 163 mm. in standard length, were as follows :

D. 3/7 ; A. 2-3/5 ; V 2/8 ; L. l. 40–42+1–2 ; Predorsal scales 15–17

Two of the specimens of *B. lithopidos* were very young specimens measuring 57 and 90 mm. in standard length respectively. They differed from the rest in the remarkable depth of body, which was 2·6 times in the length in both, whereas in the rest the depth of body ranged from 3·3 to 3·7 times in the length. Evidently this is a characteristic of the young of *B. lithopidos*. The depth of body in *B. ophicephalus* ranges from 3·8 to 4·1 times in the length. Even in the youngest specimens, 42 mm. in standard length, the depth is 4·1 times in the length.

In *B. lithopidos*, except in the very young specimens, the anterior rays of the dorsal fin are distinctly prolonged and the caudal fin is proportionately longer with narrow, falciform, sharply pointed lobes ; whereas in *B. ophicephalus* the corresponding dorsal rays and the caudal fin are short, and the latter having broad blade-shaped lobes. Finally the difference in colour is very marked. Except in the very young specimens, *B. lithopidos* has the outer rays of the caudal fin characteristically white ; this was seen in all the specimens examined, including those collected by Day nearly three-quarters of a century ago. Moreover, *B. lithopidos* is devoid of a dark lateral band on the body.

Barbus (Puntius) micropogon, subsp. **periyarensis,** nov.

D. 3/9 (3-4/9) ; P. 1/15 (1/13-15) ; V 2/8 ; A. 3/5 ; C. 19 ; L. l. 42–43+2 ; L. tr. 7/7.

Tamil name.—KARIVAN (The charcoal-coloured one).

The body is oblong and compressed, its greatest depth, which is below the commencement of the dorsal fin, is 3·2 (3·2–3·3) times in the standard length. The head is rather small, conical, and somewhat depressed. Its length is 4·5 (4·2–4·5) times in the standard length and its width is almost equal to its height. The caudal peduncle is a little longer than high ; its least height being 1·2 (1·1–1·3) times in its length.

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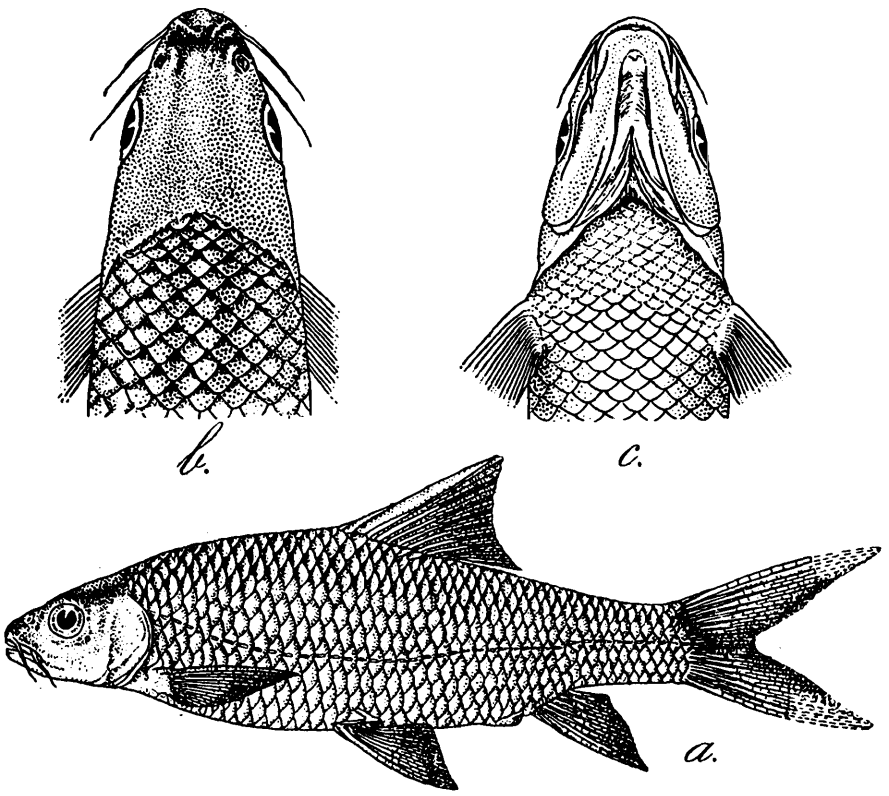
[1] Day, F., *Proc. Zool. Soc. London*, p. 708 (1873) ; *Fish. India*, p. 567, pl. cxxxviii, fig. 2 (1878) ; *Faun. Brit. Ind.* Fish. I, p. 310 (1889).

The eye is large, comparatively larger in the young; its diameter is contained 4·3 (3·1–5·5) times in the length of the head. It is placed nearer the dorsal profile than the ventral, and almost entirely in the anterior half of the head. The interorbital space is proportionately wider in the adult. It is nearly flat and is 1·7 (1·1–2·5) times in the diameter of the eye.



TEXT-FIG. 3.—*Barbus* (*Puntius*) *micropogon*, subsp. *periyarensis*, nov.

a. Lateral view of Holotype: ×⅓; *b*. Dorsal surface of head and anterior part of body of same: ×⅔; *c*. Ventral surface of head and anterior part of body of same.: ×⅔.

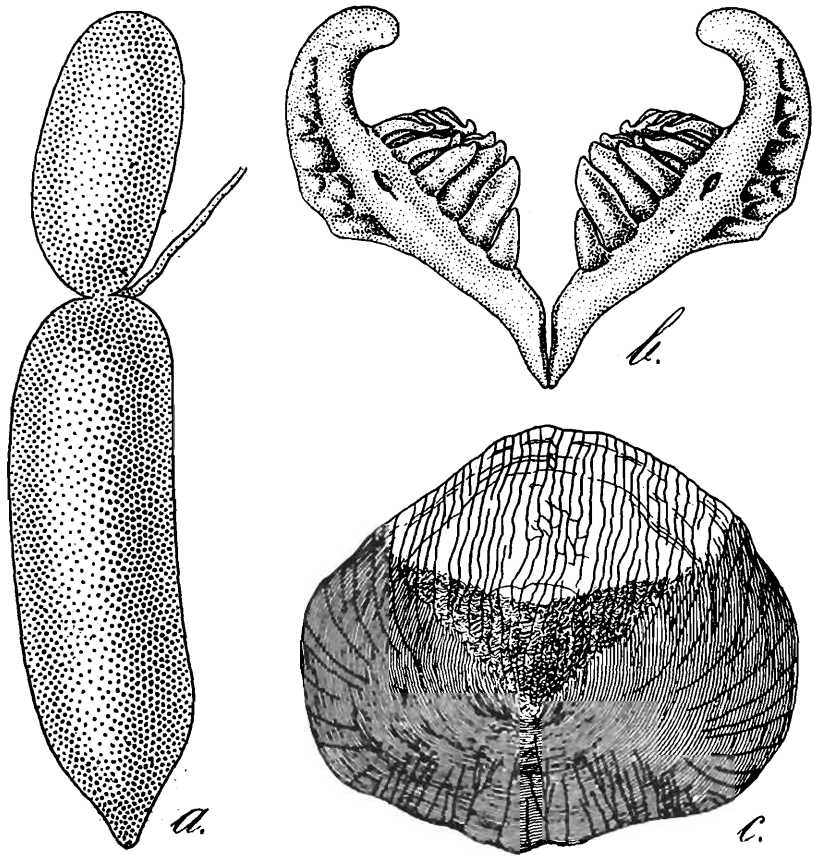
The snout is conical and bluntly pointed and has no free lateral lobes. It is 1·5 (1·1–2·2) times as long as the diameter of the eye. The mouth is semicircular and subinferior (distinctly inferior in the adult). The cleft of the mouth is nearly horizontal and does not reach below the anterior border of the eye. The rostral fold is deep, horizontal and entire. The lips are moderately developed and continuous round the corners of the mouth. The postlabial groove is interrupted in the middle. The upper jaw is longer than the lower.

A rostral and a maxillary pair of barbels of almost equal size are present, and reach well beyond the anterior and posterior borders of the orbit respectively.

The 9 or 10 gill rakers in the adult are mere stumps anteriorly; the longest of them is hardly one-fourth as long as the gill filaments. The pharyngeal bone is 2/3 as wide as long; its anterior eduntulous process is very short and the pitted surface narrow. The anterior angle is prominent.[1] The pharyngeal teeth are compressed and hooked and as usual in three rows: 5·3·2–2·3·5. The alimentary canal is a little

[1] The description is after Y. T. Chu, *Biol. Bull. St. John's University, Shanghai* II, pp. 83, 84 (1935).

over twice as long as the body and in the specimen dissected contained green vegetable matter.



TEXT-FIG. 4.—*Barbus* (*Puntius*) *micropogon* sub. sp. *periyarensis*, nov.

a. Air-bladder : ×1¾ ; *b*. Pharyngeal bones and teeth : ×4½ ; *c*. A scale from dorsal surface : ×5.

The above parts were dissected out from a Paratype.

The scales are fairly large ; the largest is of the same size as the eye. They are rounded with a wavy basal margin The nucleus is basal. The circulii are obsolescent in the apical region. The apical radii are numerous and more or less parallel ; the median ones reach the nucleus. A few lateral and basal radii are present in the scales of the caudal peduncle. There are 4 rows of scales between the lateral line and the base of the ventral fin, 16 rows round the caudal peduncle and 21 (19–21) predorsal scales.

The dorsal fin commences opposite the ventral and midway between the tip of the snout and the base of the caudal fin. It is longer than the head. The last undivided dorsal ray is osseous, smooth and much enlarged. In young specimens it is relatively longer. The free margin of the dorsal fin is concave. The first branched ray, which is the longest, when depressed, reaches ½ (½–¾) the way to the root of the caudal fin. The pectoral fins are somewhat falciform and nearly as long as the head. They reach the 12th (12th-13th) scale of the lateral line, and are separated from the base of the ventral fin by a quarter of their own length. The ventral fins have an obliquely truncate free margin and are separated from the anal fin by half their own length. The anal has an obliquely truncate free margin and when depressed reaches the base of the caudal fin (in immature specimens the anal fin is shorter). The anal fin in

breeding females is longer than the dorsal and often reaches beyond the base of the caudal. The caudal fin is deeply forked. The upper lobe is longer than the lower. The head and body are dark brown or blackish ; the fins are stained black.

Measurements in millimetres.

	Holotype.	Smallest paratype.
Standard length	200	117
Length of head	47	28
Width of head	30	17
Height of head	32	18
Height of body	63	37
Length of snout	16	9
Diameter of eye	11	9
Interorbital space	19	10
Length of caudal peduncle	27	18
Least height of caudal peduncle	23	14

Holotype.—F 13516/1, Zoological Survey of India (*Ind. Mus.*), Calcutta. Besides the holotype, 1 paratype (F 13517/1) is also deposited in the collection of the Zoological Survey of India.

Remarks.—*B. micropogon*, which has not so far been recorded from Travancore, is one of the commonest fish in the lake. The above description is based on the head of a large specimen, the length of which was not noted, and three smaller specimens, which alone were preserved. For the relationships of the new subspecies reference may be made to the following account of *B. micropogon* Cuv. and Val.

REMARKS ON *BARBUS (PUNTIUS) MICROPOGON* CUV. & VAL.

Barbus (Puntius) micropogon Cuv. & Val.

1842. *Barbus micropogon*, Cuvier & Valenciennes, *Hist. Nat. Poiss.* XVI, p. 188.
1848. *Barbus mysorensis*, Jerdon, *Mad. Journ. Litt. Sci.* XV, p. 312.
1867. *Puntius (Barbodes) gracilis*, Day, *Proc. Zool. Soc. London*, p. 290.
1868. *Barbus conirostris*, Günther, *Cat. Fish. Brit. Mus.* VII, p. 127.
1877. *Barbus conirostris*, Beaven, *Handbook. Fr. Water Fish. India*, p. 44.
1878. *Barbus micropogon*, Day, *Fish. India*, p. 563, pl. cxxxvi, fig. 3; pl. cxxxviii, fig. 4.
1889. *Barbus micropogon*, Day, *Faun. Brit. Ind.* Fish. I, p. 304.
1927. *Barbus micropogon*, Narayan Rao and Seshachar, *H. Yly. Journ. Mysore Univ.* I, pp. 117, 130.
1931. *Barbus micropogon* var. *mysorensis*, Mukerji, *Journ. Bombay Nat. Hist. Soc.* XXXV, pp. 166, 167.
1937. *Barbus micropogon*, Hora, *Rec. Ind. Mus.* XXXIX, p. 19.

There is a certain amount of confusion in the taxonomy of *Barbus micropogon*. Cuvier and Valenciennes[1] originally described this species in 1842 from Mysore ; their description based on a young specimen (3″ long) is meagre and is not accompanied by a figure. In 1848, Jerdon[2] described two similar species from the Cauvery, *Barbus mysorensis* with 38 scales along the lateral line in 9 rows and snout covered with mucous pores, and *Barbus gracilis* with 42 scales along the lateral line

[1] Cuvier, G. and Valenciennes, A., *Hist. Nat. Poiss.* XVI, p. 188 (1842).
[2] Jerdon, T. C., *Mad. Journ. Litt. Sci.* XV, pp. 312, 313 (1848).

in 12 rows and snout smooth. He noted that both the species occurred together in the same locality in the Cauvery and that the latter was " a very well defined species " In 1867, Day[1] in redescribing *B. gracilis* under the name *Puntius (Barbodes) gracilis* gave the number of scales along the lateral line as 40 and along the transverse series as 7/4. At the same time he described a new species *Puntius (Barbodes) dubius* from the Bhavani, a tributary of the Cauvery, with 42 scales along the lateral line, and remarked that in appearance *B. dubius* was the same as *P. gracilis* from which it might be only a sexual difference. In 1868, Günther[2] redescribed *B. micropogon* from a stuffed specimen and mentioned only $2\frac{1}{2}$ scales between the lateral line and the root of the ventral fin on account of which and other differences Day[3] did not consider Günther's *B. micropogon* as synonymous with that of Cuvier and Valenciennes. Günther[4] also described a new species, *B. conirostris*, with the scale counts " L. l. 40 and L. tr. 7/7 " from specimens supplied by Day as *B. gracilis* and included *B. gracilis* Jerdon and *P. gracilis* Day in its synonymy, but recognised *B. dubius* as a valid species, with Day's reservation that as it is extremely similar to *B. conirostris* (=*P. gracilis* Day) and might be only a sexual difference. *B. mysorensis* Jerdon was considered by Günther[5] as a doubtful species. In 1870, Day[6] stated : " It appears not improbable that *B. mysorensis*, Jerdon is the same as *B. conirostris*, Günther. The species I termed *B. dubius*, I find, has five series of scales between the lateral line and the base of the ventral fin." In his later publication, Day[7] merged Jerdon's two species, *B. mysorensis* and *B. gracilis*, and Günther's *B. conirostris* in the synonymy of *B. micropogon*, but retained his own species *B. dubius* as distinct. However, he recognised *B. mysorensis* Jerdon as a variety of *B. micropogon* with numerous pores on the snout and preorbitals. In 1931, Mukerji[8] redescribed *B. mysorensis* from two specimens, 135 and 160 mm. long, in the collection of the Zoological Survey of India, and distinguished it from the *forma typica* as follows :—

B. micropogon.	*B. micropogon* var. *mysorensis.*
" 1. Head less than 4 times in length of body.	Head 4·25 times in length of body.
2. Snout blunt and without tubercles.	Snout pointed and covered with pointed tubercles.
3. Anal fin when laid flat extends to the base of the caudal fin.	Anal fin when laid flat extends to the middle of caudal peduncle.
4. 38-39 scales along lateral line.	41-42 scales along lateral line.
5. 12 predorsal scales.	14-15 predorsal scales."

The form from the Periyar Lake described above differs in having 42+2 scales along the lateral line and 19–21 predorsal scales, and it is on these characters that it has been kept separate as a subspecies.

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1 Day, F., *Proc. Zool. Soc. London*, p. 290 (1867).
2 Günther, *A., Cat. Fish. Brit. Mus.* VII, p. 126 (1868).
3 Day, F., *Fish. India*, p. 563 (1878).
4 Günther, A., *Cat. Fish. Brit. Mus.* VII, p. 127 (1868).
5 Günther, A., *Cat. Fish. Brit. Mus.* VII, p. 83 (1868).
6 Day, F., *Proc. Zool. Soc. London*, p. 373 (1870).
7 Day, F., *Fish. India*, p. 563 (1878).
8 Mukerji, D. D., *Journ. Bombay Nat. Hist. Soc.* XXXV, pp. 166, 167 (1931).

In order to determine the validity of the various forms of *B. micropogon* mentioned above, the following specimens in the collection of the Zoological Survey of India, the Madras Fisheries Department and the specimens collected by me from the Periyar Lake were examined.

Barbus dubius.

1. Day's type. Indian Museum No. 2373, Bhavani R. .. 250 mm.
   Pores on snout.
   L. l. 42+2.[1]
   L. tr. 9/4-5.
2. Indian Museum No. F. 12388/1, Cauvery, Coorg .. .. 64 mm.
   No pores on snout.
   L. l. 42+1.
   L. tr. 8/4.
3. Madras Fisheries Department, Cauvery, Mettur Dam. .. 320 mm.
   Pores on snout.
   L. l. 42+2.
   L. tr. 9/4½.
4. Madras Fisheries Department, Cauvery, Mettur Dam .. 230 mm.
   Pores on snout.
   L. l. 42+1.
   L. tr. 8/3½.

Barbus micropogon and varieties.

5. Indian Museum, No. 2305, Day's specimen from Bhavani R. 110 mm.
   No pores on snout.
   L. l. 39+1.
   L. tr. 7/3½.
6. Indian Museum, No. 2372, Day's specimen from Bhavani R. 200 mm.
   Pores on snout.
   L. l. 40+1.
   L. tr. 6-7/3½.
7. Indian Museum No. 2411, Day's specimen from Bhavani R. 165 mm.
   Pores on snout.
   L. l. 40+2.
   L. tr. 7/3½.
8. Indian Museum No. F. 11140/1, Burton's specimen from Bhavani R. 138 mm.
   Pores on snout.
   L. l. 39+1.
   L. tr. 7/3½.
9. Madras Fisheries Department, Cauvery, Mettur Dam. .. 120 mm.
   Pores on snout.
   L. l. 39+1.
   L. tr. 7/3½.
10. Madras Fisheries Department, Cauvery, Mettur Dam .. 125 mm.
    Pores on snout.
    L. l. 38 & 39.
    L. tr. 8/3½.
11. Madras Fisheries Department, Periyar Lake .. .. 200 mm.
    No pores on snout.
    L. l. 42+2.
    L. tr. 7/3½.
12. Madras Fisheries Department, Periyar Lake .. .. 150 mm.
    No pores on snout.
    L. l. 43+1.
    L. tr. 7/3½.
13. Madras Fisheries Department, Periyar Lake .. .. 117 mm.
    No pores on snout.
    L. l. damaged.
    L. tr. 7/3-3½.

[1] The additional scales are those on the caudal fin.

There is no one character which absolutely distinguishes *B. dubius* from *B. micropogon*. If, however, both the number of scales along the lateral line and the number of transverse rows of scales from the origin of the dorsal fin to the lateral line and from the lateral line to the root of the ventral fin (omitting the mid-dorsal and lateral line rows) be taken into account the specimens examined can be arranged in three groups as follows :—

GROUP 1.—L. l. 38–40+1-2 and L. tr. 7-8/3½.
Specimens Nos. 5-10 from Bhavani and Cauvery rivers named *B. micropogon* and var. *mysorensis* in the collections.

GROUP 2.—L. l. 42–43+1-2 and L. tr. 7/3-3½.
Specimens Nos. 11–13. The new subspecies from the Periyar Lake.

GROUP 3.—L. l. 42+1-2, and L. tr. 8-9/3½-5.
Specimens No. 1-4 from Bhavani and Cauvery rivers named *B. dubius* Day in the collections.

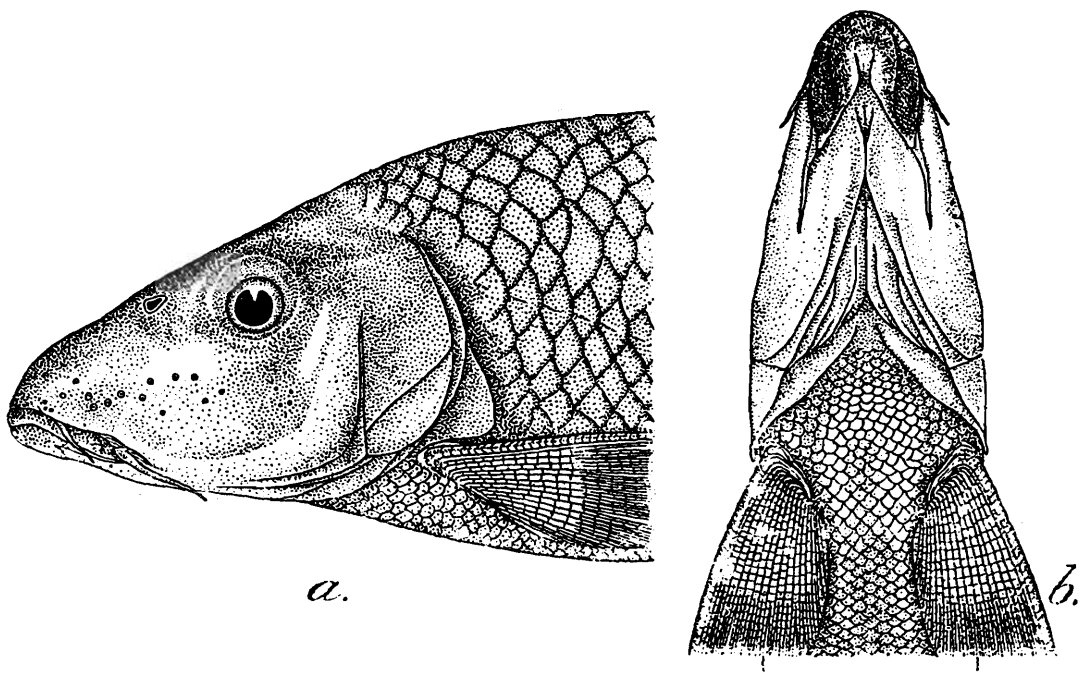
The wider range of specimens now examined in *Group* 1 does not support Mukerji's[1] attempt to distinguish *B. micropogon forma typica* from the variety *mysorensis* chiefly on the presence or absence of pores on the snout, as the other distinguishing characters mentioned by him are intermixed. For instance, specimen No. 2305, which has no pores on the snout, has a head which measures 4·2 times in standard length, while specimen No. 2372, which has pores on its snout, has an anal fin extending to the base of the caudal fin. The occurrence of pores and the prolonged anal fin will in all probability prove to be secondary sexual characters, as they are in some other species of *Barbus*.

Group 2 from the Periyar Lake is sufficiently distinct from *Group* 1 to rank as a subspecies and has accordingly been described above as new.

Group 3 represents all the specimens labelled *B. dubius* in the collections. The number of scales along the lateral line in young and adult specimens is 42 as in *Group* 2, but the latter has only 7/3½ transverse rows of scales. Further, except in one very young specimen, measuring 64 mm. (No. F. 12388/1 from Coorg), the length of the snout is twice the diameter of the eye. Though Day in all his descriptions gives the length of the snout as 1½ diameter of the eye, in his type specimen (No. 2373) as well as in his figure the length of the snout is two eye-diameters. Though in the very large specimen of *periyarensis* the diameter of the eye is contained 2·2 in the snout, the shape of the snout is very different from that of *B. dubius*. Also the eye is nearer the edge of the opercle than the tip of the snout in all the specimens of *B. dubius*, except in the very young specimen in which it is placed in the middle of the head. In *B. micropogon* and its subspecies *periyarensis*, the eye is nearer the tip of the snout and rarely in the centre of the head. The mouth of *B. dubius* is narrow and pointed anteriorly, whereas in *B. micropogon* it is broad and semicircular. Except in the very young specimens, the long and peculiarly shaped snout as well as its

[1] Mukherji, D. D., *Journ. Bombay Nat. Hist. Soc.* XXXV, pp. 166, 167 (1931).

bright pink colour changing to a uniform silvery white after preservation readily distinguish *B. dubius* from *B. micropogon* and its subspecies



TEXT-FIG. 5.—*Barbus* (*Puntius*) *dubius* Day.

a. Lateral view of head and anterior part of body : ×*ca*. ⅔ ; *b*. Ventral surface of head and anterior part of body : ×*ca*. ⅔.

periyarensis. Further, the scales, size for size, are smaller and the dorsal spine weaker in *B. dubius*. These two characters are discernable even in very young specimens measuring two to three inches in length.

Both *B. micropogon forma typica* with 38–40+1 scales along the lateral line and 7-8/3½ transverse rows and *B. dubius* Day with 42+1-2 scales along the lateral line and 8-9/3½-5 transverse rows occur together in the Bhavani and the Cauvery. As Jerdon's *B. mysorensis* with 38 scales along the lateral line in 9 rows and *B. gracilis* with 42 scales along the lateral line in 12 rows were found by Jerdon in the same locality and the latter was considered by him " a very well defined species ", there is little doubt that the species described by Jerdon correspond to *B. micropogon* and *B. dubius* respectively. Day gave the lateral line scales in *B. gracilis* as 40, evidently mistaking it for *B. micropogon*, and redescribed the form with 42 scales as his new species *B. dubius*. Following Day, Günther also assigned the form with 40 lateral line scales to *B. gracilis* and renamed it as *B. conirostris*. Günther's *B. micropogon* is evidently not a synonym of *B. micropogon* Cuv. & Val. In his later works, Day[1] persisted in ignoring the 42 scales, the distinctive character of *B. gracilis* mentioned by Jerdon, and included both *B. mysorensis* and *B. gracilis* as synonyms of *B. micropogon*. Cuvier and Valenciennes's being the first name of the species with 38 to 41 scales along the lateral line should supersede *B. mysorensis* Jerdon and *B. conirostris* Günther. For the species with 42 scales along the lateral line *B. gracilis* Jerdon has priority over *B. dubius* Day, but as Jerdon's name is preoccupied by *B. gracilis* Schleg., the species has to be designated *B. dubius* Day.

[1] Day, F. *Fish. India*, p. 563 (1878) ; *Faun. Brit. Ind.* Fish. I, p. 304 (1889).