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THE GAME FISHES OF INDIA.

BY

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(With one coloured plate and three text-figures.)

(Continued from page 169 of Vol. xliii, No. 2)

XVI.—THE MAHSEERS OR THE LARGE-SCALED BARBELS OF INDIA.

9. FURTHER OBSERVATIONS ON MAHSEERS FROM THE DECCAN.

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INTRODUCTION.

In the last article of this series (4)¹, attention was directed to the specific identity of Sykes's three species of *Barbus* from the Deccan, and it was shown that while *B. kolus* and *B. khudree* could be recognised as valid, doubts still existed about the identity of

¹ Numerals in thick type within brackets refer to the serial numbers of the various publications listed in the bibliography at the end of the paper.

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B. mussullah. From the evidence then available, it seemed possible that *B. mussullah* might be the same fish which Hamilton (3) had previously described from Mysore as *B. curmuca* and which was later recorded from the Deccan also. However, a detailed consideration of the systematic position of this species was deferred till Dr. M. Suter had an occasion to carry out further investigations at Sirur, the type-locality of *B. mussullah*. He has now completed his studies and favoured me with the following report in his letter dated December 8, 1942. He writes :—

'I have now been to Sirur, Sykes's type-locality for his *Barbus mussullah* mainly in order to ascertain as definitely as possible whether *Barbus curmuca* occurs in the Ghod river and whether it is known to the local fishermen.

'The information elicited on hand of a preserved specimen and with the help of the excellent coloured picture from the pamphlet of the *Bombay Nat. Hist. Society* "Game Fishes of Bombay" proved entirely negative, i.e., neither the specimens nor the illustration were recognised as representing a fish of local occurrence, or at all known to local fishermen. A resemblance to *B. kolus* was indeed remarked upon and I was asked whether this (*B. kolus*) was the fish I wanted to know about.

'As you relate in your article in the August number of B. N. H. Society's *Journal*, the same men, on a former occasion, picked a picture of *B. curmuca* (out of the illustrated volume of Day's *Fishes of India*) as representing "*mussullah*" out, when later on they showed me a catch of very large high-backed mahseer, they assured me that this was "*mussullah*" and admitted that their identification of Day's picture had been an error caused mainly by the fact that they thought the shape of the head in the picture seemed to them a good likeness of the head of "*mussullah*", being somewhat "roman nosed".

'They also criticised Sykes's drawing of "*mussullah*" as being correct for the head, but wrong for the body, the scales being too small and too many.

'The position is now as follows :

1. *Barbus curmuca* is not known to the professional fishermen at Sykes's type-locality for *B. mussullah*.

2. The sturdy and high-backed species of mahseer of the Deccan is the only fish known to these men by the name of "*mussullah*" and most of the men differentiate it clearly from the slenderer species of mahseer (*Barbus khudree* Sykes).

3. Sykes expressly relates having been given a specimen of "*mussullah*" weighing 42 lbs. at Sirur, and the local fishermen repeatedly stated to me that the high-backed mahseer was the only fish with large scales known to them, whichever reached such a size or exceeded it.

The only other big fish with prominent scales known to the men are, *B. khudree*, *B. dobsoni* (= *jerdoni*), *Labeo calbasu*, *L. porcellus*, and *L. fimbriatus*.

4. The designation "*mussullah*" is also used by the fishermen of the Bhima and Idrayani rivers for large mahseer only, and many of the men use it for the high-backed species only, expressly differentiating it from the slenderer *B. khudree* Sykes, for which they have other designation, such as *khudchee*, *barsa*, etc.

Others, whilst quite aware of the difference between the two types of mahseer, will apply the name of "*mussullah*" to large specimens of both types. The more observant ones, however, will not do so.

'Faced by the above result of my investigations at Sykes's locality I cannot but arrive at the conclusion, that the fish to which Sykes applied the name of *B. mussullah*, was none other than the stockily-built and high-backed mahseer of the Deccan.

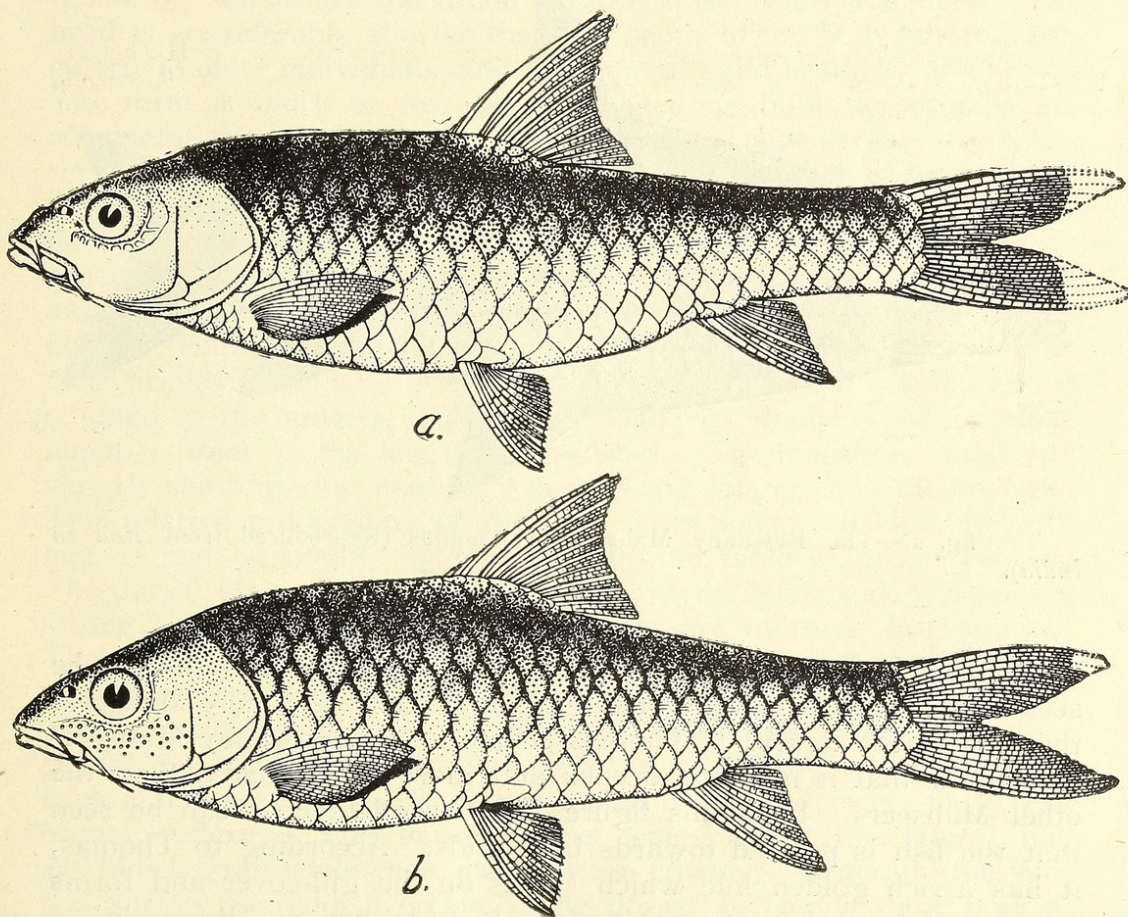
'The uncertainty prevailing for so long in respect of the identity of Sykes's species was caused by his incomplete description in respect of scale counts, and by the undoubted incorrectness of the drawing prepared by his employee, in which the scales were filled in haphazardly without any count having been taken.

'I have no doubt that you will arrive at the same conclusion and that thereby, the question will have arrived at its final elucidation.'

All ichthyologists and lovers of sport will ever remain grateful to Dr. M. Suter for the great trouble taken by him in elucidating the taxonomic position of Sykes's *B. mussullah* as there seems no doubt now that in describing this fish he intended to portray the high-backed mahseer of the Deccan waters. The difference in form between the two species of Deccan mahseers is clearly shown in the drawings on the coloured plate.

Dr. Suter has found both species of the Deccan mahseer pretty foul feeders at times. During the rains, he found them at such unsavoury spots as the place of discharge of surplus municipal sewage and has repeatedly seen them consume fresh buffalo dung.

Though the young of the various kinds of mahseer generally look alike, and the differences pointed out by Annandale (1) between the two species of Deccan mahseer are not very distinctive, it is quite possible that his *musundi* of the Upper Kistna may represent



Text-fig. 1.—Lateral views of young specimens of Annandale's two species of Mahseer from the Deccan.

(a) *Barbus tor* (Hamilton), known near Satara as *Kudis*. \times ca. $\frac{1}{4}$.
This is probably a young of *B. khudree* Sykes.

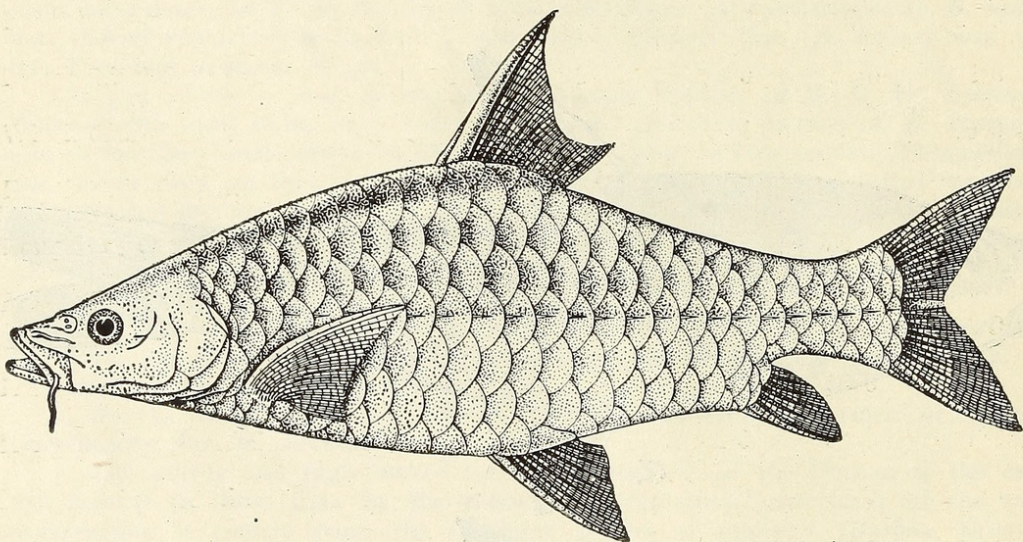
(b) *Barbus mussullah* Sykes, known near Satara as *Masundi*. \times ca. $\frac{1}{4}$.

Barbus mussullah and his *B. tor*, locally known as *Kudis*, may be *B. khudree*. To facilitate reference in future, I give here drawings of Annandale's young specimens of the two species.

The remarkable shape of Sykes's *B. mussullah* did attract the attention of later ichthyologists, but owing to his defective description and figure they could not identify it correctly. For instance, in recording *Barbus megalepis* McClelland from South India, Jerdon (5) stated:—

'I obtained a single small specimen of what I consider may be this fish in the Cauvery at Seringapatam. It was only a few inches long, but the fishermen, who call it *Kilche*, said it grew to an enormous size.'

The fish that grows to an enormous size in the Cauvery and its tributary streams, such as the Bhavani River, is figured and described by Thomas (6, pp. 22, 23) under the composite name *Barbus*



Text-fig. 2.—The Bawanny Mahseer of Thomas (Reproduced from *Rod in India*).

tor in accordance with Day's (2, p. 573) nomenclature, though he seemed to have been aware of the fact that 'there are more Mahseers than have been named'. Thomas called it 'The Bawanny Mahseer' and noted that it is much deeper and more high backed than the other Mahseers. From his figure, reproduced here, it can be seen that the fish is pointed towards both ends. According to Thomas, it has a rich golden hue which shines on the gill-cover and forms predominant colour of every scale. It is known as 'Bom-min'.

Some years ago, Mr. S. H. Prater of the Bombay Natural History Society sent me a colour sketch of a baby Mahseer, 16½ inches long and 1½ lbs. in weight, caught by Messrs Van Ingen and Van Ingen of Mysore in the Bhavani River. The local name of the fish was given as *Kargolchi*. Though the colouration of this specimen, as shown in the sketch, is different from that of the Poona examples of *B. mussullah*, there seems hardly any doubt about its identity. It would thus appear that Sykes's *mussullah* is fairly widely distributed

in the rivers of the Western Ghats. This remarkable mahseer may be redescribed as follows:—

***Barbus (Tor) mussullah* Sykes.**

1838. *Barbus mussullah*, Sykes, *Proc. Zool. Soc. London*, p. 159.
 1840. *Barbus mussullah*, Sykes, *Ann. Mag. Nat. Hist.*, IV, p. 56.
 1841. *Barbus mussullah*, Sykes, *Trans. Zool. Soc., London*, II, p. 356.
 1849. *Barbus megalepis*, Jerdon (*nec* McClelland), *Madras Journ. Litt. & Sci.* XV, p. 311.
 1897. The Bawanny Mahseer, Thomas, *Rod in India*, 3rd Edition, pp. 22, 23.

D. 4/9; A. 3/5; P. 16; V. 9; C. 19; L. 1. 25-26; L. tr. 4½/5½.

Whereas the Khudree Mahseer corresponds with the Mosal Mahseer of the Himalayan waters, *Mussullah* is similar in certain respects to the *Tor* Mahseer. In the *Tor* Mahseer, however, the head is always smooth, while in Sykes's species there are series of small tubercles, sometimes indistinct, on the sides below the eyes. The head is considerably shorter than the depth of the body, more particularly in older individuals, and the general build is stocky and heavy. The form is more or less spindle-shaped as both the profiles are considerably arched; the dorsal profile rises considerably from the tip of the snout to the base of the dorsal fin and then sharply slopes down to the base of the caudal fin. The ventral profile is comparatively gently arched. The head is pointed anteriorly; in mature specimens its length is contained about 5 times in the total length and 4 times in the length without the caudal. The depth of the body is contained from 3½ to 3¾ times in the total length and little over 3 times in the length without the caudal. The eye is small and is situated in the anterior half of the head; its diameter is contained about 6 times in the length of the head. The mouth is small and slightly slanting; the maxillary barbels are longer than the rostrals. The relative proportions of different parts vary considerably with age as can be readily made out from the table of measurements. The dorsal fin is situated in the middle of the back and possesses a strong, bony dorsal spine. All the fins are more or less pointed. The scales are large and well set; there are about 26-27 scales along the lateral line and 3½ rows below it to the base of the pelvic fin.

The colouration varies considerably. The young ones are rather silvery on the sides with pink reflexes, a creamy belly and slaty back and fins. In some large specimens the colour is very dark with bronzy reflexes. The bases of the scales below the lateral line are bluish gray while their margins are creamy. Generally the ventral surface is reddish cream. The dorsal surface is dark bronze. The bases of the scales in the upper half are mauvish gray while the bodies are reddish bronze with darker margin. The fin rays of the dorsal and caudal fins are reddish gray, while the interspinous membranes are bluish gray. The other fins are reddish gray, and all the fins are shot with bright blue streaks which are very prominent in the caudal.

The colours are more golden and reddish orange in the specimens from the Bhavani River. It would thus appear that whereas the predominant colour of the two Mahseers of the Deccan is bluish in

the Poona waterways, it is reddish in the specimens found in the Cauvery and Bhavani Rivers much further south.

TABLE OF MEASUREMENTS.

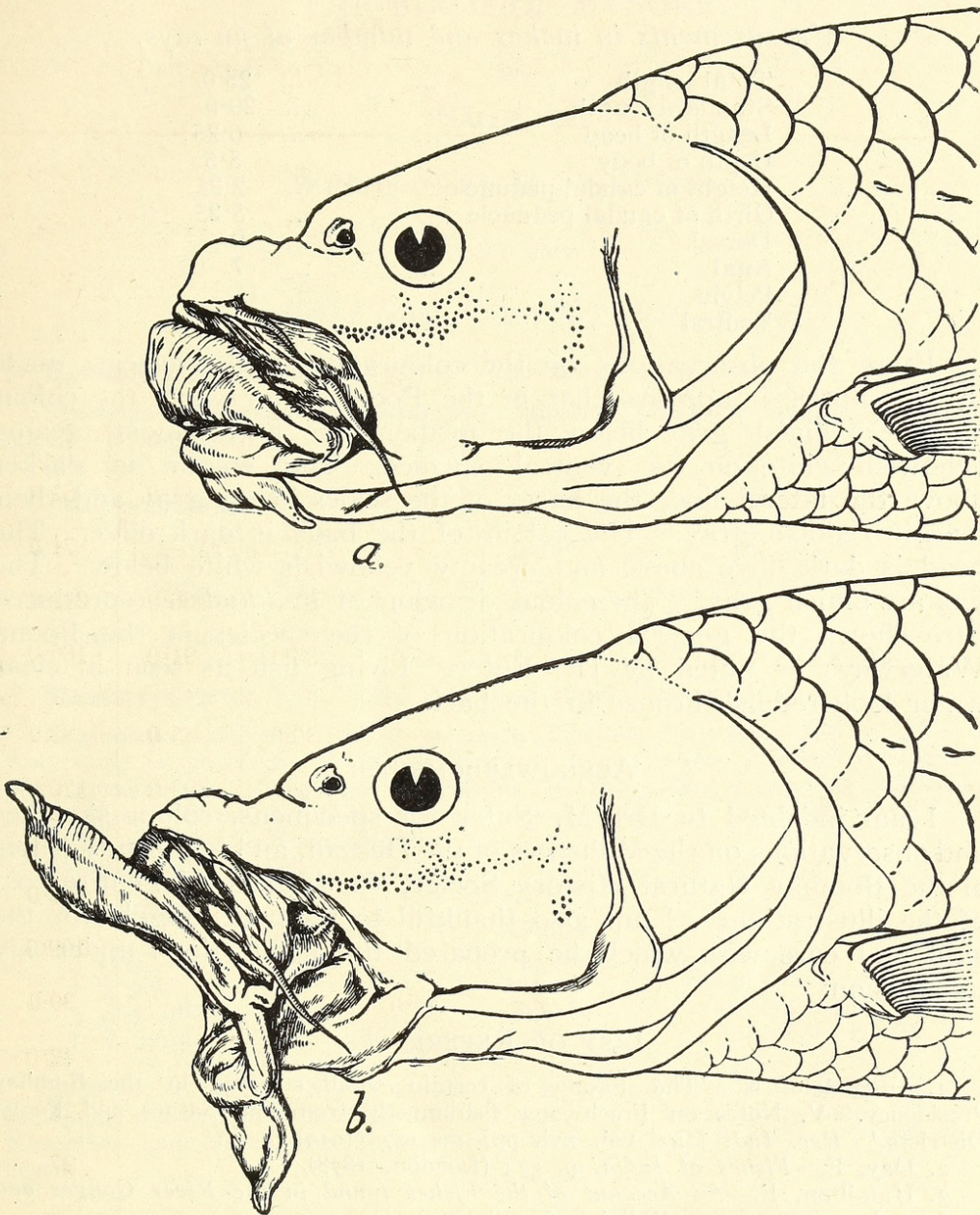
*Measurements in millimetres and scale counts of Barbus (Tor)
mussullah Sykes*

Total length ...	...	148.0	270.0	275.0	622.0	750.0
Standard length ...	...	115.0	215.0	225.0	494.0	600.0
Length of head ...	...	33.0	58.0	60.0	125.0	149.0
Width of head ...	...	17.0	32.0	35.5	85.0	102.0
Diameter of eye ...	...	8.0	9.0	10.5	17.0	28.0
Length of snout ...	...	10.0	21.0	22.0	46.0	45.5
Interorbital distance ...	...	10.0	23.0	22.0	51.0	61.0
Width of body ...	...	16.0	35.0	Eviscerated		71.0
Depth of body ...	...	38.0	73.0	81.5	166.0	231.0
Length of caudal peduncle ...	...	16.0	35.0	33.0	91.0	106.0
Least height of caudal peduncle ...	...	15.0	29.5	30.0	63.0	82.0
Length of dorsal fin ...	...	29.0	52.0	52.0	99.0	120.0
Length of pectoral fin ...	...	23.0	43.0	42.0	96.0	125.0
Length of pelvic fin ...	...	21.0	39.0	38.0	88.0	104.0
Length of anal fin ...	...	25.0	44.0	45.0	95.0	109.0
Length of rostral barbel ...	...	6.5	12.0	12.0	27.0	30.0
Length of maxillary barbel ...	...	9.0	15.0	16.0	37.0	42.0
No. of predorsal scales ...	...	10	10	10	10	11
No. of scales along L. 1. ...	...	26	26	26	27	27
No. of scales between L.1 and V. ...	...	3½	3½	3½	3½	3½
Scales round caudal peduncle.		13	12	13	12	12

Barbus (Tor) khudree Sykes.

In the preceding article of this series (4), it was stated that the sketches and specimens of *B. khudree* received from Dr. Suter would be dealt with later, but the transfer of the Zoological Survey of India to Benares for the duration of the war has made it impossible for me to comment in detail on them. It can, however, be stated with certainty that the material is similar to that collected by Dr. Fraser at Deolali and Poona,

A female mahseer, $5\frac{1}{2}$ lbs. in weight, taken by Dr. Rishworth on the 20th December, 1942, in the Uhlas, a small river about 40



Text-fig. 3.—Head and anterior part of body of *Barbus (Tor) khudree* Sykes, showing hypertrophied lips. The specimen was collected by Dr. Rishworth in the Uhlas River, 40 miles north of Bombay. $\times \frac{1}{2}$.

(a) Lips and mouth closed; (b) Lips and mouth protruded.

In the fresh condition, Dr. Rishworth found that the lips could be extended much further than shown in the drawings made from preserved specimens.

miles north of Bombay flowing into the Arabian Sea from the western slopes of the Ghats, has been identified as *B. khudree*. It is one of the few specimens of mahseer which have been collected from the cis-Ghat area and is characterized by greatly hypertrophied lips. The accompanying sketches show the lips and mouth protruded and closed. The colour of the specimen was similar to that found in the Deccan examples of this species, but the fins were tipped with

yellowish pink. Its stomach contained green vegetable matter. The following further particulars about this specimen were supplied by Dr. Rishworth:—

Measurements in inches and number of fin rays.

Total length	...	...	25.0
Standard length	...	...	20.0
Length of head	...	...	6.25
Depth of body	...	...	5.5
Height of caudal peduncle	...	...	2.25
Girth of caudal peduncle	...	...	5.25
Dorsal	...	...	9
Anal	...	...	7
Pelvic	...	...	15
Ventral	...	...	9

From the observations on the colouration of the species made by Dr. Suter, it appears that in the Poona Waterways the colour is silvery bluish gray below the median line and almost creamy yellowish white on the ventral surface. The colour is darker above the lateral line, the bases of the scales being gray and their margin reddish gray. The colour of the back is dark olive. The head is dark olive above and creamy yellowish white below. The fins are bluish gray. The colour drawing of *B. khudree* reproduced here shows the general colouration of the species in the Poona Waterways as noted by Dr. Suter. Living fish as seen in clear water look reddish bronze in the back.

ACKNOWLEDGMENTS.

I am indebted to Dr. M. Suter for specimens, colour sketches and observations on the Mahseers of the Deccan, and to the authorities of the Bombay Natural History Society for bearing the entire cost of the illustrations. I am also thankful to Babu B. Bagchi for the skill and care with which he prepared the illustrations under my supervision.

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EXPLANATION OF PLATE.

Two types of Mahseer from the Poona Waterways.

Upper : *Barbus* (Tor) *khudree* Sykes. \times ca. $\frac{1}{2}$.

Lower : *Barbus* (Tor) *mussullah* Sykes. \times ca. $\frac{1}{4}$.

The drawings were made from specimens and colour sketches supplied by Dr. M. Suter.



Hora, S L. 1943. "The Game Fishes of India. Xvi. the Mahseers Or the Large scaled Barbels of India. 9. Further Observations on Mahseers from the Deccan." *The journal of the Bombay Natural History Society* 44, 1–8.

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