

THE GAME FISHES OF INDIA.¹

BY

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(With one coloured plate and one black and white plate)

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XV. THE MAHSEERS OR THE LARGE-SCALED BARBELS OF INDIA.

8. ON THE SPECIFIC IDENTITY OF SYKES'S SPECIES OF *Barbus* FROM THE DECCAN.

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INTRODUCTION.

Having discussed chronologically in the preceding six articles the specific limits of the Large-scaled Barbels described by Hamilton (4, pp. 303-307)² and McClelland (7, pp. 333-338) from Northern India, we now turn to the species of *Barbus* described by Sykes from the Deccan. In 1838, Sykes (9, p. 159; 10, p. 56; 11, pp. 356-358) read a paper before the Zoological Society of London 'On the Fishes of the Deccan', and described 3 new Barbels, *vis.*, *B. mussullah*, *B. khudree* and *B. kolus*. Of these, *B. kolus* with two barbels, an interrupted labial groove and pertaining to Hamilton's subgenus *Puntius* has been recognised as a valid species by later workers (3, p. 136; 2, p. 573), while the taxonomy of the other two has till recently been in a state of great confusion. In 1919, Annandale (1, p. 135) referred certain specimens from the Kistna river to *B. mussullah* and commented upon the specific characters of the species; while in 1938, Hora and Misra (5, p. 24) discussed and defined the specific limits of *Barbus khudree*. It must, however, be understood that, judging by the present standards,

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² 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.

Sykes's descriptions are inadequate and his drawings¹ inaccurate in several respects. We have, therefore, very meagre data to rely upon for elucidating the taxonomy of his species, and a collection of topotypes is essential for defining the specific limits of all the forms described by him from the Deccan. In view of the examination of a large amount of additional material of *B. khudree* from the Western Ghats and the information collected, through the kindness of Dr. M. Suter, D.Sc., from the respective type localities of *B. mussullah* and *B. khudree*, I am in a somewhat better position to evaluate the specific limits of these forms.

Barbus mussullah Sykes.

The following is the full description of the species as given by Sykes (II, pp. 356, 357):—

'Pectoral fins of 16 rays; ventral of 9 rays; dorsal fin of 12 rays, including the first double ray: tail forked, of 24 rays, including the short rays at each exterior side of the insertion of the tail: a remarkable projecting prominence between the upper lip and nostrils, giving to the fish the appearance of being Roman-nosed: the eyes are situated far back, and between the eyes and the corners of the mouth there are a number of circular, rough, prominent *papillae*, but these are not constant: corners of the mouth furnished with a short feeler, and the base of the nasal prominence, near the tip, also furnished with one on each side: dorsal fin in the centre of the back, on a prominence which slopes suddenly behind; ventral fins on the centre of the belly, on a perpendicular from the first dorsal ray: tail suddenly narrows below, after the anal fin; anal fin with the posterior angle bluntly rounded off. The lateral line is slightly arched at the shoulder, then falls, and runs straight to the anal fin; over this it rises a little, and then runs straight to the centre of the fork of the tail. The whole of the upper parts of the fish are covered with large², coarse silvery scales, having blue and red reflections, and on the under parts a yellow tinge prevails; it is very bony, and its length, to the end of the fork of the tail, is 12 inches, and height, 3 inches; but its greatest growth is 5 feet. When small this species resembles the *Kolus*, but in the latter the colour is more reddish-silvery: the fins are reddish, and the *Mussullah* is a much coarser, and infinitely larger fish. A male brought to me at Seroor³, from the Goreh river, measured in

¹ Regarding his fish illustrations, Sykes (9, p. 157) observed:

'It only remains to state that the whole of my fishes were drawn from absolute measurements, and have a scale of size attached to each figure; they were caught in the various rivers on whose banks I encamped, as individuals were required; so that my draftsman, who worked constantly under my own eye, never had to finish his drawings from shrivelled and discoloured specimens.'

In spite of this assurance, unfortunately much reliance cannot be placed on Sykes's illustrations for the correct identification of the species described by him.

² A perusal of the account of the species described by Sykes shows that by 'large' scales he means up to 44 scales along the lateral line, as all his species with 'small' scales possess 60-70 scales along the lateral line. Sykes's drawing of *B. mussullah* clearly shows that the species is not characterised by large scales in the sense the term is used in the present series of articles.

³ Regarding the type-locality of *Barbus mussullah*, Dr. M. Suter has very kindly given the following note:—

'I believe that Sykes's "Seroor" must be identical with the place called "Sirur" on modern maps. This is a large village 43 miles from Poona on the road to Ahmednagar. It figures in Grant Duff's History of the Mahrattas as "Seroor" and also in the Gazetteers, and was formerly a military Cantonment. It is situated on the Ghod river. The last consonant, being palatal, is pronounced more like an *r* than like a *d* and the name sounds more like Ghore.'

that Ammandale's *B. mussullah* and *B. tor* are referable to a single species *B. khudree* Sykes.

What then is Sykes's *B. mussullah*? A reference to his description given above shows that 'When small, this species resembles the *Kolus*, but in the latter, the colour is more reddish-silvery: the fins are reddish, and the *Mussullah* is a much coarser, and infinitely larger fish'. Under the description of *B. kolus*, Sykes observed. 'This fish resembles the *Mussullah* much in form, but the latter is a larger and coarser fish, and bluer in colour'. He also compared *B. kolus* with Hamilton's *Cyprinus curmuca* and stated 'Differs slightly from the *Cyprinus curmuca* of Hamilton, in having 2 rays in the dorsal and 1 in the ventral more, and in the scaly appendage to the ventral fins.'

A comparison of Sykes's figures of *B. mussullah* and *B. kolus*, reproduced here, clearly shows the great similarity between the two species in the form of the head and the presence of tubercles on the snout. The differences are in the number of barbels, 4 in the former and 2 in the latter, and the form of the body.

In the fish-fauna of the Western Ghats, there are two kinds of Barbels, *B. curmuca* and *B. kolus*, in which the snout is produced and covered with series of tubercles. According to Day (2, p. 567), *B. curmuca* attains 'at least 4 feet in length,' while *B. kolus* 'upwards of a foot in length'. It would thus appear that the larger fish, *B. mussullah* Sykes, may be identical with *Cyprinus curmuca* Hamilton. Unfortunately, *Curmuca* was described and figured by Hamilton (Buchanan's *Journey from Madras through the countries of Mysore, Canara, and Malabar*, III, p. 344, pl. xxx, 1807; 4, p. 294) with 2 barbels, though in reality this species possesses 4 barbels as described by Day (*Proc. Zool. Soc. London*, p. 707, 1873; 2, p. 567). This species, as pointed out by Day, is remarkable in possessing both pairs of barbels on the maxillaries and none on the snout; the lower barbels are stated to be equal to the length of the orbit while the upper ones are much shorter and are, therefore, liable to be missed, especially when hidden in the maxillary grooves. It is likely that both Buchanan (afterwards Hamilton) and Jerdon (*Madras Journ. Lit. Sci.* XV, p. 306, 1848) overlooked the upper pair of barbels. In Sykes's figure of *B. mussullah*, however, both pairs of barbels are shown as subequal and arising from the maxillaries.

The above information regarding the possible identity of *B. mussullah* with *B. curmuca* was supplied to Dr. Suter, who very kindly undertook to visit Sirur and collect specimens from the type-locality. He visited Sirur in the latter half of November and sent me the following report about his trip in his letter dated the 3rd December 1941:

'My trip to Sirur etc. unfortunately proved abortive as far as collecting specimen of *Barbus mussullah* Sykes is concerned. The Ghod river at Sirur is nowadays very silted up and large fish are there available only during and just after the rainy season.

'I also visited the pools above and below the confluent of the Mutta-Mulah and Bhima rivers, which are famous for holding large fish. These pools were, however, still too deep for netting, and the local fishermen asked me to come sometime in January or February.

length 3 feet 4 inches, and in height 1 foot, and weighed nearly 42 lbs. avoirdupois. The flesh wanted flavour. The *Mussullah* differs from the *Musal* of Dr. Hamilton, in having 1 ray less in the dorsal and pectoral fins, and in the first rays of these fins being double instead of quadruple; in the latter respect, and indeed in many others, resembling the *C. Putitora*: it also differs in having the nose and upper lip tuberculated, and in colour. The prominence on the nose is also marked. Russell describes three *Barbels*, calling them *Cyprini*, but none of them are identical with the present fish.¹

In spite of the above fairly long but generalised description and figure of *B. mussullah*, it was not possible for later ichthyologists to recognise its identity. Gunther (6, p. 83) regarded it as a species *inquirendum* and Day (2, p. 565) included it in the synonymy of his composite *Barbus tor*. Annandale (1, p. 135) in rescuing this species from obscurity observed:

'Sykes's description of this fish is inadequate, and his figure inaccurate, but he refers to and illustrates one trivial but apparently constant character that gives me confidence in identifying specimens sent by Mr. McIver. This character is the presence under the eye of a group of small tubercles not confined to one sex and visible with the aid of a lens in quite young fish.

'A more important differential character, not recognized by Sykes but shown in his figure, is, however, to be found in the structure of the mouth, the opening of which is much more oblique than in any race of *Barbus tor*. The extremity of the maxillary lies directly under the middle part of the eye. This feature is well shown on plate 111. There are 13 (3/10) dorsal and 8 (3/5) anal fin-rays; 25-26 scales in the lateral line, 4 rows of scales above it and 3 below.

'*B. mussullah* is common in the upper Kistna, where it occurs with the local race of *B. tor*. The Mahratta fishermen of Satara never fail to distinguish the two species. *B. tor* they call *Kudis*; *B. mussullah*, *Masundi*. Mr. McIver, to whom I am indebted for this information, has caught a specimen of the *Masundi* 21 lbs. in weight.'

Spence and Prater (9, p. 46) have given a brief account of *B. mussullah* after Annandale and have also recorded *B. tor* from the Deccan.

I have examined Annandale's specimens of *B. mussullah* (local name: *Masundi*) and *B. tor* (local name: *Kudis*) from the Kistna river. If the tubercles on the snout constitute a valid specific character, then we certainly have two distinct species in this material; the nature of the mouth opening is variable and the two species cannot be distinguished on this character. An examination of a large number of specimens from the Western Ghats and Central India shows that the presence of tubercles on the head is not a constant feature as was pointed out by Sykes himself. I now find that some of the specimens from Deolali referred to *B. khudree* by Misra and myself (5, pp. 24-28) also possess tubercles. In fact, the large specimen figured by us has a patch of tubercles on the sides of the head. These tubercles are small and low, and not as prominent as those of the Bokar Mahseer, *Barbus (Lissochilus) hexagonolepis* McClelland. For this reason, unless they are carefully looked for, they are liable to be missed. I am now convinced

¹ Sykes stated that the tuberculated condition of the sides of the head is not constant. In the case of *Barbus kolus*, Misra and I (5, p. 28, pl. i) found that in the males the tubercles on the snout are more numerous and prominent, while in the females only a few small tubercles are present on the sides of the snout. Similar sexual dimorphism is perhaps characteristic of *B. mussullah* also.

'In all the places visited "*mussullah*" seems to be well known to the fishermen. There is no question of these men confusing it with mahaseer, as they all declared that '*mussullah*' is quite distinct from mahaseer. They describe it as a long fish with large scales and with a long head, the mouth being more blunt than in mahaseer, owing to the upper parts of head and mouth being higher. This feature corresponds to Sykes's remark about its being Roman nosed. It is described as silvery on lower parts and sides and dark on the back.

'When shown the pictures in Day's book they picked out the picture of *Barbus curmuca* as representing '*mussullah*'. This is indeed very interesting, and I hope another visit to the pools below and above the confluence of the Bhima and the Mutta-Mulah in the netting season will solve the question.

'I further visited a large pool in the Mutta-Mulah some 15 miles south-east of Poona, where the local men gave the same description of '*mussullah*' as mentioned by their colleagues at Sirur etc. They say that they catch this fish mainly in August and September, after which time the fish retire to the much deeper pools further downriver.'

Though the absolute identity of *B. mussullah* with *B. curmuca* can only be established after an examination of the specimens from the type-locality, from the taxonomic findings detailed above and the field investigations carried out by Dr. Suter, there seems hardly any doubt that *B. mussullah* is in all probability a synonym of *B. curmuca*. If that be so, *mussullah* is not a fish of the Mahseer or *Tor-type*, but of the *Puntius-type*.

Barbus khudree Sykes.

Hora and Misra (5, pp. 24-28) have already discussed and defined the specific limits of *Barbus khudree* and from the material that has recently become available from the type-locality it is clear that this is the Mahseer of the Poona Waterways. Though the form varies to some extent with age, its general resemblance to *B. mosal* (Hamilton) is very striking. As pointed out above, in a number of specimens of all sizes the lateral sides of the snout are covered with a patch of small, rather indistinct, tubercles and it was this character which led Annandale (1, p. 135) to divide young specimens from the Kistna river into *B. mussullah* with tubercles and *B. tor* without tubercles. The presence or absence of tubercles may be a secondary sexual character, but the material available is not sufficient to elucidate this point.

According to Sykes, the anal, ventral and pectoral fins of *B. khudree* are tipped with blood-colour, but 'The same fish, under varied circumstances of age, has the fins tipped with bluish instead of red'. Dr. Suter, who has seen many hundreds of Mahseer from all the rivers of Poona and its environs, informs me that he has never caught a specimen of *B. khudree* having the fins tipped with red. It is probable that in this region only young specimens up to 10 inches in length have the fins tipped with red while the fins are bluish in older individuals. According to Dr. Suter, 'the fish attains a much larger size than the limit of 1½ feet mentioned by Sykes, mahaseer up to 25 lbs. and over having been caught here on many occasions and fish over 30 lbs. are caught every year in the Mutta-Mulah river at Kirkee in the hot weather on balls of atta (wheat flour)'. These fish are known to reach a weight of

50 lbs. However, in a colour sketch of the Khudree Mahseer collected from Mysore by Messrs. Van Ingen & Van Ingen and sent to me by Mr. S. H. Prater of the Bombay Natural History Society the colouration is similar to that described by Sykes. I take the present opportunity to reproduce it here. I shall deal later with the sketches and specimens of *B. khudree* received from Dr. Suter. It may, however, be pointed out that the vernacular name 'Khudree' is not very helpful in determining Sykes's *B. khudree*, since *Barbus sarana* (Ham.) is called 'Lal Puree Khadree' and *B. jerdoni* Day 'Sufed Puree Khadree'. Though both these species possess 4 barbels, the dorsal spine of the former is serrated while that of the latter is weak. Basing his identification on colouration, Dr. Suter is inclined to regard *B. khudree* as identical with *B. sarana*, but Sykes's three species of Barbels were characterized by the possession of a smooth spine, and the allied species with a serrated spine were included by him in other genera.

ACKNOWLEDGMENTS.

It gives me great pleasure to acknowledge with sincere thanks the help I have received from Dr. M. Suter in elucidating the probable systematic position of Sykes's species of *Barbus*. My thanks are also due to Mr. K. S. Misra who helped me in various ways; in fact the suggestion that *B. mussullah* may be identical with *B. curmuca* came from him in the first instance. The Bombay Natural History Society has borne the entire cost of the illustrations and for this I am indebted to the authorities of the Society. For the colour sketch of the Mahseer from the Bhavani River and for several other courtesies, I am obliged to Mr. S. H. Prater.

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EXPLANATION OF PLATES.

PLATE I.

A colour sketch of *Barbus (Tor) khudree* Sykes.

The drawing was made from a specimen collected at Poona, while the colours were taken from a sketch made by Messrs. Van Ingen & Van Ingen of Mysore of a Bhavani River Mahseer 4 feet 9 inches in length and 90 lbs. in weight.

The general colour is mauvish neutral above and silvery below; each scale is provided with a black margin and golden line in the middle. The sides of the head are marked with pale gold or pale greenish gold colours and the iris is golden silvery. The ventral surface of the head is bright silvery-white. The pectoral, pelvic and anal fins are pinkish while the dorsal and caudal fins are pinkish red.

PLATE II.

Copies of Sykes's drawings of *Barbus mussullah* and *B. kolus*.
a. *Barbus mussullah* Sykes; b. *Barbus kolus* Sykes.