

\*ON THE *BARILIUS BOLA* HAMILTON FROM BANDA DISTRICT (U.P.)  
AND ITS NEW SYNONYM

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ABSTRACT

The present investigation deals with the description of the adult and young specimens of *Barilius bola* Hamilton from Banda district (U. P.) and discusses the reasons as to why a newly described species *Barilius corbetti* Tilak and Hussain should be considered synonymous with *Barilius bola*. The youngs of *B. bola* resemble with *B. corbetti* in various morphological, meristic, morphometric features and colour pattern.

INTRODUCTION

While studying the fish fauna of Banda district,<sup>1,2</sup> the author examined a large number of adult (166-210 mm, 14 specimens) and young (36-59 mm, 20 specimens) specimens of *Barilius bola* Hamilton. The characteristic features of the species (morphological, meristic and morphometric) were compared with the descriptions as given by Day<sup>3</sup> and Hora<sup>4</sup> and few interesting points of differences noted. Besides, a comparison was also made with a newly described species—*Barilius corbetti* Tilak and Hussain<sup>5</sup> which has been considered 'a closest ally' of *B. bola* by the authors. Through a close examination of the material it was discovered that *B. corbetti* resembled with the adults of *B. bola* in some and with the youngs in many more characteristic features as evidenced by the following description. Henceforth, the present communication attempts to discuss the synonymous nature of *B. bola* and *B. corbetti*.

DESCRIPTION (Adults and Youngs of *B. bola*)

**Fin formula:** B iii. D11-12(III/8-9) P15-16 (I/14-15) V9(I/8) A13(III/10)  
C19 L.1. 80-90 L.tr.  $13\frac{1}{2}$ - $15\frac{1}{2}$ /10-12 $\frac{1}{2}$ .

**Body contour:** Trout like. Height 5.4-5.9(6.5-8.2)\*\* in the total length (TL) and 4.3-4.7 (5.1-6.4) in standard length (SL).

**Head:**—The IIIrd suborbital bone nearly as wide as the operculum behind it. Length of head 4.6-4.7 (4.3-4.7) in TL and 3.7-3.8 (3.4-3.7) in SL. Width of head 2.2-2.4(2.0-2.5) and height 1.6-1.7 (1.5-1.8) in the length of head (HL). Snout pointed and in the youngs there is a groove across it which separates the anterior

\*Forms the part of D. Phil. thesis, Garhwal University, Srinagar (Garhwal, U.P.), 1981.

\*\*The ratios given in the parenthesis ( ) relate to the youngs.



part of the snout from the region of the nostrils. It nearly equals the diameter of eye in the youngs whereas more in the adults—3.7-3.8(3.6-4.2) in HL. *Mouth* wide, directed upwards, in adults the posterior extremity of maxilla extends nearly one diameter behind posterior margin of eye while only upto opposite the hinder edge in the youngs. *Eyes* with adipose lids in the adults while with free orbital margins in the youngs. Diameter of eye quite variable from young to adult—shorter than snout in adults whereas nearly equal in the youngs—5.2-6.4(4.6-4.3) in HL, 1.4-1.7 (1.0-1.1) in snout and 1.4-1.7(1.0-1.2) in the interorbital width. The latter 1.6-1.7 (3.2-4.2 in HL. *Barbels* present both in the young and adult, a short maxillary pair above the angles of jaws.

**Orientation of fins:** *Dorsal* originates behind the ventrals. Predorsal length 2.1(2.1-2.3) in TL and 1.6-1.7(1.6-1.8) in SL. Distance between its origin and base of caudal 2.6-2.8(2.9-3.3) in TL and 2.1-2.3(2.1-2.6) in SL. Height of the fin 1.4(0.9-1.1) in the height of body. *Pectorals* smaller than head. Almost equal to the height of head at the occiput in youngs whereas slightly longer in the adults and 1.5-1.6(1.5-1.8) in HL. Not reaching the ventrals and separated from the latter by the distance equal to nearly half of their length. Ventrals small, preventral distance 2.4(2.4-2.5) in TL and 1.9-2.0(1.8-2.4) in SL, distance between origin of pectoral and ventral fins 4.7-5.1(5.1-6.0) in TL and 3.8-4.1 (4.0-4.9) in SL. Free border of ventrals concave in youngs, inner rays produced in males. *Anal* base 2.0-2.1 (2.1-2.4) in HL. *Caudal* forked, lower lobe longer, 5.0-5.5 (4.0-5.1) in TL and 4.0-4.5 (3.0-4.1) in SL. Length of caudal peduncle 6.2-6.4 (6.7-7.3) in SL and height 2.2-2.3 (2.5-2.1) in the height of body and 1.5-1.7 (1.3-1.8) in its length.

**Scales:** Small,  $4\frac{1}{2}$ -5 $\frac{1}{2}$  rows between the lateral line and base of ventrals. Predorsals 35-38(38-42).

**Lateral line:** Complete in adults and in all youngs above 45 mm in length. Incomplete in the young below 44 mm but its extent is quite variable among different sized individuals—ceasing after 25-26 (36 mm), 25-30 (37 mm), 35 (38 mm), 28-30 (40 mm), 30-32 (41 mm) and 40-42 (44 mm) scales along the lateral line. It indicates that the lateral line is still in making (perforations on the scales appearing) and will gradually become complete in adults.

**Colour:**—Silvery, more below the lateral line. Greenish-grey along the dorsum. Adults show 3-4 rows of blue-green irregularly arranged oblong spots on the sides, 12-14 in the first row, the spots in successive rows exhibiting alternate arrangement.

In young there are 10-14 blue-black vertical bands on the upper part of the body with a few small and faint intermediate bands, the anterior one and sometimes the second descending down to the lateral line. These vertical bars are the future oblong spots of the first row of the adults. The fainter ones situated at a lower level belong to the successive rows of the spots to be added.

#### REMARKS

1. Through the study of the present material (adults) the range of variations has been enlarged in the following characteristics as compared to Day<sup>3</sup>: Number of



dorsal and pectoral fin rays, length of head and caudal fin in TL, number of rows of scales between the lateral line and base of ventrals and before the dorsal fin.

2. As compared to Hora<sup>4</sup> the ranges are enlarged in—the number of dorsal and pectoral fin rays, length of head in SL and height of body in TL and SL and width and height of head in HL.

Hora<sup>4</sup> also stated that “the commencement of the dorsal fin is equidistance between the anterior margin of eye and base of caudal fin in the young specimens while in the adults it is midway between the posterior margin of eye and base of caudal fin”. In the present study it is observed both in adults and youngs to be like that observed by him in the adults.

3. Interesting feature to note in the present material is the presence of a maxillary pair of barbels, both in the adult and young specimens. Hamilton<sup>6</sup>, Day<sup>3</sup> and Hora<sup>4</sup> described the barbels to be altogether absent in *B. bola* which may be due to their having overlooked the minute tendrils. Reginald and Prater<sup>7</sup> observed 4 or 2 or none, sometimes small and rudimentary barbels in the specimens from Bombay. Dey<sup>8</sup> has also found the presence of a pair of maxillary barbels in all specimens from Assam and Meghalaya.

4. The young ones resemble with the adults in the presence of a minute pair of maxillary barbels and a complete lateral line in all the specimens above 44 mm in TL. On the other hand the youngs differ with the adults in the following :

(i) Body narrower. (ii) Cleft of mouth extending to against the hinder edge of the orbit. (iii) Lateral line incomplete in specimens below 44 mm. (iv) 10-14 vertical bands on the sides.

5. A comparison with the description of *B. corbetti* sp. nov. (Tilak and Hussain,<sup>5</sup> revealed that the latter is synonymous with *B. bola*. The species *B. corbetti* has been described (not mentioning the state of maturity or the sex of the individual) only on the basis of a single, 37 mm long specimen from Patraipani Nala in the Corbett National Park (U. P.) The authors of the species have called *B. corbetti* ‘a closest ally’ of *B. bola* and separated the latter from the former on the basis of the following :

(i) “In *B. corbetti* the cleft of mouth extends to against the hinder border of the orbit while it extends to about 1.5 diameters of eye behind the posterior margin of orbit in *B. bola*

(ii) “There is pair of minute barbels in *B. corbetti* while barbels are absent in *B. bola*.

(iii) “The lateral line is incomplete in *B. corbetti* (ceasing after 40 scales) while it is complete in *B. bola*

(iv) “In *B. corbetti* the length of head is 3.62 times and depth of body 6.44 time in SL while the length of head and depth of body are equal to each other and contained 4.3-4.6 in SL in *B. bola*.



(v) "There are 12 vertical bands on the lateral sides in *B. corbetti* while in *B. bola* there are two or more rows of 12-20 blotches along the sides."

A comparison of all these above mentioned characters of *B. corbetti* with those of *B. bola* (adults and youngs) clearly indicate that the former resembles with the latter so closely that one cannot be separated from the other on the basis of even a single character. From the description it will also be seen that these characters are quite variable among different sized individuals. As regards the barbels, their presence or absence in *Barilius* spp has been considered a variable character as substantiated by the studies of Mukerji<sup>9</sup> and Dey<sup>8</sup>. The author also noticed the variability in the nature and number of barbels in *B. barna* and *B. barila* (Gupta).<sup>2</sup> As discussed above (vide column 3) a pair of maxillary barbels has always been noticed in the youngs and adults of *B. bola*. Thus, the presence of barbels in *B. corbetti* cannot be considered a specific character and does not separate *B. corbetti* from *B. bola*. The variability on the extent of lateral line is also evident from the description and it was found to be incomplete in all the youngs below

TABLE 1

<i>B. bola</i> Hamilton (youngs)	<i>B. corbetti</i> Tilak and Hussain <sup>5</sup>
1. Height of body 6.5-8.2 in TL and 5.1-6.4 in SL.	8.22 in TL and 6.44 in SL.
2. Length of head 4.3-4.7 in TL and 3.4-3.7 in SL.	4.62 in TL and 3.62 in SL.
3. Snout 3.6-4.2 in HL.	4.0 in HL.
4. Eye diameter 3.6-4.3 in HL and 1.0-1.1 in snout.	4.0 in HL and 1.0 in snout.
5. Predorsal length 2.1-2.3 in TL and 1.6-1.8 in SL.	2.17 in TL and 1.70 in SL.
6. Height of dorsal fin 0.9-1.1 in the height of body.	1.12 in the height of body.
7. Distance between origin of dorsal and base of caudal 2.9-3.3 in TL and 2.1-2.6 in SL.	2.96 in TL and 2.32 in SL.
8. Preventral distance 2.4-2.5 in TL and 1.8-2.4 in SL.	2.55 in TL and 2.00 in SL.
9. Distance between the origin of pectoral and ventral 5.1-6.0 in TL and 4.0-4.9 in SL.	6.16 in TL and 4.83 in SL.
10. Caudal fin 4.0-5.1 in TL and 3.0-4.1 in SL.	4.62 in TL and 3.62 in SL.
11. Least height of caudal peduncle 1.3-1.8 in its length.	1.83 in its length.

44 mm. The specimen examined by Tilak and Hussain<sup>5</sup> falls within the size range where the lateral line is observed to be incomplete and it is most probable that the lateral line is still in developing stage or the perforations on the scales have not become conspicuous in the posterior part of body. The increase in the extent of lateral line in the young specimens above 44 mm indicates towards the same fact. It is also observed that the cleft of mouth deepens as the size of the young increased. The vertical bars of the young ones are like those of *B. corbetti* and actually these bars represent the oblong blotches of the 1st row of adults whereas the fainter spots in between these bars are the blotches to be added in successive rows of blotches in the adults (as also observed by Hora<sup>4</sup>), Tilak and Hussain<sup>5</sup> also noticed 1 or 2 small and faint intermediate bands in *B. corbetti*. Besides all these morphological characters, marked resemblances are also apparent in various important morphometric features of *B. corbetti* and young of *B. bola*, as given in Table 1.

Conclusively, it seems that the description of *B. corbetti* is based on a young specimen of *B. bola* and as such *B. corbetti* does not justify a specific status. Further, in systematics the description of a new species only on the basis of single specimen and variable characters is not feasible.

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