

## NEW DISTRIBUTIONAL RECORD OF THE GIANT CAT FISH *BAGARIUS YARRELLI* FROM RAVI RIVER, PUNJAB

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### ABSTRACT

*Bagarius yarrelli* (Sykes), the giant cat fish showed its distribution from Krishna River (type locality) to Ganges and Brahmaputra in India and the new distribution record from Ravi River, Punjab is reported herein and the comparison is made from a topotype in Krishna River, Maharashtra.

**KEYWORDS:** *Bagarius yarrelli*, Giant Cat fish, new distribution record.

### INTRODUCTION

The south and southeast Asian genus *Bagarius* is represented by two species, *B. bagarius* (Hamilton, 1822) from Ganges River and *B. yarrelli* (Sykes, 1841) from Krishna River, south India. In the generic revision, Roberts (1983) described one more species from Mekong basin in Laos and Thailand. Based on his report the true *Bagarius bagarius* is originally described from Ganges River and it is relatively a small species and the giant species *B. yarrelli* showed wider distribution in India, Bangladesh, Myanmar, Thailand, Laos, Vietnam, Sumatra, Borneo, and Java. In India, it was recorded from Krishna River (type locality) and Pennar River, Roberts (1983).

However, the occurrence of *B. yarrelli* from Ravi River, Punjab is a new distributional record and also herein we report a specimen of *B. yarrelli* from the type locality.

### MATERIALS AND METHODS

Fish collections were made from 2004-2011 by earlier workers led by M. Arunachalam from river sites, from nearby fishermen and from fish markets. Measurements were made point to point using digital caliper. Methods used for the meristic and morphometric data are based Hubbs and Lagler (1964). Morphometric characters of 9, 18-26 and 29-31 and 34-35 (Table 2) are the truss measurements (Strauss and Bookstein 1982) and the additional characters are; nasal barbel length, inner rostral barbel length, outer rostral barbel length, adipose fin base length, pre adipose fin base length and pectoral spine length. Body measurements are expressed as percentage of Standard Length (%SL); head measurements are expressed as percentage of Head Length (%HL).

### Abbreviations used

MSUMNH (Manonmaniam Sundaranar University Museum of Natural History) and also from CMA (Collections of M. Arunachalam).

### RESULTS

**Figure 1** *Bagarius yarrelli* CMA 330, 1ex, 217.40 mm SL, from Krishna River, collected by Dr. M. Arunachalam and team, 15 October 2004.



**Figure 2** *Bagarius yarrelli* CMA 335, 1ex, 262.94 mm SL, from Rohini River, Uttar Pradesh collected by Dr. M. Arunachalam and Dr. C. Vijayakumar, 03 March 2013.



**Figure 3** *Bagarius yarrelli* CMA333, 1ex, 399.00 mm SL, from Ravi River, Punjab, collected by Dr. M. Arunachalam and team, 11 October 2011.



**Description:** Body and abdomen elongate, flattened up to pelvic and its depth at dorsal origin, 15.95-19.94 %SL. Body entirely covered by heavily keratinised skin, superficially differentiated in unculiferous plaques or tubercles. Head depressed and broad and its length, 26.33-32.02 %SL; head depth at nostril, 16.18-24.65 %HL; head depth at pupil, 34.61-48.59 %HL. Mouth interior and crescentic. Eyes small, superior, subcutaneous dorsally placed at the posterior half of head, not visible from below ventral surface. Orbit width, 3.28-8.59 % HL; inter orbital width, 31.52-37.13

%HL. Barbels 4 pairs. Maxillary barbels with stiff and broad bases, extending to the base of the pectoral fin origin. Nasal pair short and the outer mandibular pair is long while the inner mandibular barbel is shorter than the outer one.

Fin counts are: Dorsal-fin rays i-6 (7); anal fin rays i-9 (7); pelvic fin rays i-5 (7); pectoral fin rays i-12 or 13 (7); caudal fin rays 8+9 (7). Dorsal spine is smooth, elongated, soft and filamentous. Dorsal fin length, 22.70-29.72 %SL; pre dorsal length, 34.47-39.93 %SL; post dorsal length, 59.07-70.90 %SL. Pectoral spine strong, flattened, serrated entirely and having a soft filamentous prolongation and its length, 33.70-42.64 %SL; pelvic fin length 16.42-18.27 %SL; distance between pectoral fin and vent, 41.20-46.03 %SL; distance between pelvic fin and vent, 16.25-18.81 %SL. Distance between pectoral insertion and pelvic insertion, 20.16-25.62 %SL; distance between pectoral insertion and anal origin, 36.21-43.23 %SL; distance between pelvic insertion and anal origin, 15.25-21.71 %SL. Caudal fin deeply forked, upper lobe longer and both lobes are produced into soft filamentous prolongation. Caudal fin length, 21.72-60.52 %SL.

Scales are absent.

**Coloration:** Body yellowish, with large irregular black bands and markings. Bases of the dorsal and adipose with large black patches. There are numerous round small black spots over the entire body excluding the belly.

**Distribution:** India: Krishna and Pennar rivers in peninsular India, Ganges River system, Indus River basin, Pakistan, Nepal, Myanmar, Bangladesh, Thailand, Vietnam, Laos and Indonesia.

**Table 1.** Morphometric characters of *Bagarius yarrelli*. Body character measurements are represented as % standard length and head character measurements are represented as % head length.

Measurements from point to point (identified by numbers and names)	<i>B. yarrelli</i>	
	CMA 330 n=1	CMA 331,332, 333, 334, 335. n=7
1. Standard length (mm)	217.40	192.77-430
% of standard length		
2. Snout to urocentrum	96.39	95.99-97.74
3. Pre-anal length	70.86	68.63-73.88
4. Pre-dorsal length	36.39	34.47-39.93
5. Pre-pelvic length	50.28	51.56-54.22
6. Pre-pectoral length	26.36	28.64-30.56
7. Pre-occipital length	25.46	31.40-33.83
8. Caudal peduncle length	19.62	11.96-17.89
9. Dorsal fin origin to pelvic fin insertion	20.70	22.27-26.79
10. Dorsal spine height	15.31	16.64-20.86
11. Anal fin height	16.16	16.88-18.52
12. Depth of caudal peduncle	4.13	4.46-5.59
13. Caudal fin length	23.18	21.72-60.52
14. Dorsal fin height	23.97	22.70-29.72
15. Pectoral fin length	29.03	33.70-42.64
16. Pelvic fin length	16.74	16.42-18.27
17. Adipose base length	12.60	11.51-13.97
18. Pre-adipose length	63.00	67.38-73.70
19. Occiput to dorsal fin origin	11.66	2.39-8.87
20. Occiput to pectoral fin insertion	15.50	14.45-21.07
21. Occiput to pelvic fin insertion	30.36	25.93-30.17
22. Dorsal fin insertion to pelvic fin insertion	12.85	13.54-19.45

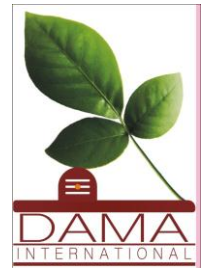
23. Dorsal fin origin to pectoral fin insertion	15.06	15.92-18.06
24. Dorsal fin origin to anal fin origin	36.44	36.61-42.09
25. Dorsal fin insertion to caudal fin	53.68	44.63-54.45
26. Dorsal fin insertion to anal fin origin	24.94	25.06-28.03
27. Dorsal fin insertion to anal fin insertion	32.11	33.07-38.27
28. Dorsal fin base length	10.05	9.56-14.63
29. Anal fin base length	10.80	11.07-14.46
30. Pectoral fin insertion to pelvic fin insertion	22.45	20.16-25.62
31. Pectoral fin insertion to anal fin origin	40.26	36.21-43.23
32. Pelvic fin insertion to anal fin origin	18.05	15.25-21.71
33. Head length	30.03	26.33-32.02
34. Total length	115.18	114.21-158.14
35. Post-dorsal length	62.76	59.07-70.90
36. Body depth	16.03	15.95-19.94
37. Distance from pectoral fin insertion to vent	40.93	41.20-46.03
38. Distance from pelvic fin insertion to vent	16.21	16.25-18.81
39. Pectoral fin spine length	16.41	16.30-27.05
% of Head length		
40. Snout to opercle	71.66	71.24-78.58
41. Upper jaw length	32.15	33.96-43.13
42. Nasal barbel length	5.21	7.73-11.21
43. Pre-nasal length	17.26	15.18-21.13
44. Orbit width	6.50	3.28-8.59
45. Inter-orbital width	31.00	31.52-37.13
46. Inter-nasal width	14.28	16.38-19.61
47. Head width	70.14	63.29-78.06
48. Head depth at nostril	17.22	16.18-24.65
49. Head depth at pupil	39.68	34.61-48.59
50. Head depth at occiput	45.21	48.77-64.86
51. Maxillary barbel length	26.81	26.88-32.38
52. Rostral barbel length inner	16.82	17.16-21.10
53. Rostral barbel length outer	88.71	72.77-84.41

**Table 2.** Meristic characters of *Bagarius yarrelli*

Meristic characters	<i>B. yarrelli</i>	
	CMA 330 n=1	CMA 331,332, 333, 334, 335. n=7
1. Dorsal fin rays	i.6	i.6
2. Anal fin rays	iii.10	i-iii.10
3. Pelvic fin rays	i.5	i-ii.5-6
4. Pectoral fin rays	i.12	i.12-13
5. Caudal fin rays	8+9	8+9

### DISCUSSION

Roberts (1983) made a revision of the south and south-east Asian cat fish *Bagarius* in which he mentioned that *Bagarius bagarius* (Hamilton) is a small species not exceeding 200 mm SL and known from Ganges and from Mekong River basin. The giant species *Bagarius yarrelli* originally described by Sykes from Moola Mutta River (Krishna River



basin, south India) has a wide distribution in India, Burma, Thailand, Laos, Kampuchea, northern and southern Vietnam, Sumatra, Borneo and Java. However, 3 specimens obtained from Rohini River and one specimen from Gomati River, one from Sarayu River (tributaries of Ganges River) and one specimen from main Ganges River showed the diagnostic character and color pattern are similar to *B. yarrelli*. Gill rakers in all the specimens showed a range of 16-18 while, in *B. bagarius*, the gill rakers (Roberts, 1983) showed 2-15. All the 6 specimens collected from Ganges River, and its tributaries with the length 192.77 - 430 mm SL and one specimen from Ravi River, Punjab showed length of 399 mm SL. Hence based on the concept of Roberts (1983) that *B. yarrelli* is the giant species.

It is also noteworthy to mention that Srivastava (1968) in his book of Fishes of U.P. and Bihar (P.108-110) stated that he collected specimens of *Bagarius bagarius* with a total length range of 9.8-17.7 cm from Rohini River, Uttar Pradesh, India. In his description he ascertained that his specimens belonged to *B. bagarius* but the figure (Fig. 70 P.109) showed the adipose fin origin is posterior to vertical line through anal fin origin. All the 6 specimens collected from Ganges River basin including 3 specimens from Rohini River, Gorakhpur, Uttar Pradesh showed the above character by proving that the specimens from Uttar Pradesh clearly belong to *B. yarrelli*. One specimen from Krishna River and another one from Ravi River, Punjab showed the similar character of adipose fin origin as Roberts (1983) mentioned. Moreover, *B. yarrelli* had small ridges or humps in the skin but thus ridges are usually well developed in *B. bagarius*. Likewise, the description of Srivastava (1968) that "skin somewhat scabrous over the summit of the head and slightly so on the body" confirmed the description that his specimens may also belong to *B. yarrelli*.

**Comparison materials:** *Bagarius yarrelli* CMA 330, 1ex, 217.40 mm SL, from Krishna River, collected by Dr. M. Arunachalam and team, 15 October 2004. CMA331, 1ex, 392.30 mm SL, from Gomati River, Uttar Pradesh, collected by Dr. M. Arunachalam and Dr. C. Vijayakumar, 10 July 2011. CMA332, 1ex, 430.00 mm SL, from Ganges River, Uttar Pradesh, collected by Dr. M. Arunachalam and team, 11 July 2011. CMA333, 1ex, 399.00 mm SL, from Ravi River, Punjab, collected by Dr. M. Arunachalam, Dr. M. Raja and Dr. C. Vijayakumar, 11 October 2011. CMA334, 1ex, 262.94 mm SL, from Sarayu River, Uttar Pradesh, collected by Dr. M. Arunachalam and Dr. C. Vijayakumar, 24 November 2012. CMA335, 3ex, 192.77-284.68 mm SL, from Rohini River, Uttar Pradesh, collected by Dr. M. Arunachalam and Dr. C. Vijayakumar, 03 March 2013.

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