



ISSN: 2347-5129
IJFAS 2015; 2(3): 204-206
© 2015 IJFAS
www.fisheriesjournal.com
Received: 15-11-2014
Accepted: 27-12-2014

Bhenila Bailung
Department of Life Sciences,
Dibrugarh University, Dibrugarh,
Assam-786004, India.

S. P. Biswas
Department of Life Sciences,
Dibrugarh University, Dibrugarh,
Assam-786004, India.

New description of a Bagrid Catfish *Mystus dibrugarensis* (Chaudhuri, 1913) from Dihing river of Upper Assam

Bhenila Bailung and S. P. Biswas

Abstract

Proper description helps in correct identification of a species. The present work was focused on description of *Mystus dibrugarensis* i.e. a highly localized fish species found in the upper Brahmaputra basin by using morphometric and meristic measurements. It belongs to the Bagridae family, distinctly differs from the other native variety of *Mystus* in the presence of two black spot; one at the base of the operculum and another spot at the caudal peduncle region. A distinct black mid lateral line connects the two spot. The caudal fin is forked and upper lobe is longer and pointed than the lower lobe. Male possesses a distinct genital papilla whereas the female has a round genital opening in front of the anal fin.

Keywords: Brahmaputra, Morphometric, Meristic, Description, Genital papilla.

1. Introduction

Mystus dibrugarensis (Chaudhuri, 1913) is locally known as *singora*. It is distributed in the river of upper Brahmaputra drainage of Assam mainly in Dibrugarh and Tinsukia district. It is preferred as food fish, and individual of 6-9 cm size has high ornamental value. It is a bottom dweller, mostly inhabiting the river (Das and Biswas, 2008)^[3]. This is an endemic fish species found in the upper Assam region. Proper description helps in correct identification of a species. A morphometric trait proves to be the most frequently employed and cost effective method (Sajina *et al.*, 2011)^[7] which provides a concept of size and shape at different time period.

Many workers described different fish species with the help of morphometric measurements. Ng and Dodson (1999)^[5] did a morphological study of *Hemibagrus chrysops*. Chakrabarty and Ng (2005) described a new species from Myanmar which is identified as *Mystus cavasius*. Manimegalai *et al.*, (2010)^[4] provided a morphometric analysis of *Etroplus maculatus*. Further, Darshan *et al.*, (2011)^[2] reported a new catfish, *Mystus ngasep* from the headwaters of Chindwin drainage in Manipur, India. Recently, Ng and Kottelet (2013) revised the description of *Hemibagrus bleeker* morphometric analysis. The present work is aimed to describe this species with the help of various morphometric and meristic analysis.

2. Materials and Methods

2.1 Collection of specimen

Specimen *Mystus dibrugarensis* were collected from different fish landing sites from the Dihing River of Dibrugarh district of Assam between July 2012 and August 2013. Dihing River is a snow-fed large tributary of mighty River Brahmaputra in upper Assam. The river originates from the Patkai mountain range in Arunachal Pradesh and flows through Tinsukia and Dibrugarh district in Assam to its confluence with Brahmaputra at Disangmukh.

2.2 Experimental work

The total lengths of the fishes to the nearest centimeter were recorded point to point with slide caliper and binocular stereo microscope following Ng and Kottelet (2013). A total of 150 specimens of different size ranges were examined.

Morphometric measurements were recorded from left side of the specimen. Various morphometric subunits were examined such as total body length, standard length, length up to

Correspondence
Bhenila Bailung
Department of Life Sciences,
Dibrugarh University,
Dibrugarh, Assam-786004, India

caudal peduncle, pre dorsal, pre pelvic, pre pectoral, pre anal length, adipose fin length, distance between dorsal and adipose fin, maximum height of adipose fin, genital papilla length, length of caudal peduncle, caudal peduncle depth, head length, head width, head breath, eye diameter, interorbital distance, snout length, body depth at anal point, dorsal fin spine and total length, pectoral, pelvic and anal fin length. Some meristic subunits such as number of rays in all fins including a number of spine and the number of soft rays were also recorded.

Standard deviation of different morphometric subunits was done. Percentages of standard length, head length, pre dorsal length, pre pectoral length, pre pelvic length, pre anal length were calculated in relation to total body length while the percentage of head width and depth were on total body depth and snout length, eye diameter, intra orbital distance of total head length.

3. Results

Table 1: Morphometric measurements of *Mystus dibrugarensis*

Morphometric subunits	Range (cm)	Mean \pm SD	% of TL	% of HL
Total body length	7.10 – 9.50	8.37 \pm 0.38	100	-
Standard length	5.86 – 8.10	6.41 \pm 0.43	76.58	-
Length up to caudal peduncle	6.24 – 8.90	6.97 \pm 0.48	83.27	-
Pre dorsal length	1.18 – 3.44	2.37 \pm 0.28	28.31	-
Pre pectoral	1.29 – 2.54	1.56 \pm 0.22	18.63	-
Pre pelvic	2.65 – 4.18	3.30 \pm 0.27	39.42	-
Pre anal length	2.29 – 5.37	4.57 \pm 0.38	54.59	-
Adipose fin length	0.80 – 2.48	1.36 \pm 0.25	16.24	-
Distance between dorsal and adipose fin	0.50 – 1.78	0.91 \pm 0.25	10.87	-
Maximum height of adipose fin	0.12 – 0.40	0.33 \pm 0.52	3.94	-
Length of caudal peduncle	0.65 – 1.72	1.03 \pm 0.17	12.31	-
Caudal peduncle depth	0.47 – 1.24	0.71 \pm 0.11	8.48	-
Body depth at anus	0.74 – 1.80	1.28 \pm 0.14	15.29	-
Dorsal fin spine length	0.60 – 1.80	0.86 \pm 0.17	10.27	-
Dorsal fin length	0.91– 2.35	1.77 \pm 0.18	21.14	-
Dorsal fin base length	0.74 – 1.41	1.02 \pm 0.11	12.18	-
Pectoral fin length	1.03– 1.90	1.31 \pm 0.14	15.65	-
Pelvic fin length	0.80– 1.55	1.05 \pm 0.11	12.54	-
Anal fin length	0.71 – 1.98	1.33 \pm 0.17	15.89	-
Anal fin base fin length	0.61 – 1.59	0.81 \pm 0.14	9.67	-
Caudal fin length (upper lobe)	1.70 – 2.29	1.95 \pm 0.12	23.29	-
Caudal fin length (lower lobe)	1.30 – 2.01	1.71 \pm 0.11	20.43	-
Head length	0.58 – 2.24	1.63 \pm 0.21	19.47	100
Head width	0.90 – 1.50	1.25 \pm 0.11	14.93	76.68
Head depth	0.60 – 1.40	1.03 \pm 0.11	12.31	63.19
Eye diameter	0.30 – 0.50	0.37 \pm 0.04	4.42	22.69
Inter orbital distance	0.30 – 0.79	0.61 \pm 0.64	7.28	37.42
Snout length	0.21 – 0.63	0.34 \pm 0.81	4.06	20.85

TL- Total body length and HL- Head length

Table 2: Meristic measurement of *Mystus dibrugarensis*

Meristic subunits	Spine	Soft rays	Total rays
Pectoral fin	1	6-8	7-9
Dorsal fin	1	7	8
Pelvic fin	-	All	6
Anal fin	-	All	9-10
Caudal fin	-	All	17-19

4. Discussion

4.1 Description of the species

The body is laterally compressed. The body colour is generally blackish to brownish. Dorsal profile is darker than the ventral. It is different from other *Mystus* species by the presence of two black spot, one is at the base of the operculum and another is in the caudal peduncle region and a distinct black mid lateral line connecting the two spot. Dorsal profile slightly rises to the starting point of dorsal fin and then gently sloping ventrally up to the end of adipose fin and thereafter slightly depressed in the caudal peduncle region.

Mouth sub terminal; snout length is 20.85% of head length. Head is flattened, looked like a triangle when viewed from above. Head width (76.68% of head length) is observed more than the head depth (63.19% of head length). Eye diameter rather small (4.06% of TL and

22.69 % of the HL); Interorbital distance 37.42% of head length; Four pair of barbels, maxillary barbels reach up to the base of anal fin. Nasal barbels exceed the eye, inner mandibular barbels reach the base of the pectoral fin and outer mandibular barbels little longer than outer mandibular barbels. Head length is found (19.47% of body length) more than the total body depth.

Dorsal fin length covers the gap between the dorsal and adipose fin. In the dorsal fin, a total of 8 rays and 7-9 numbers of rays were recorded in the pectoral fin. In both the fins, the first one is a hard spine and remaining other rays are soft. Pectoral fin spine is act as defensive organ. In the pelvic and anal fin, 6 and 9-10 fin rays respectively are recorded. Adipose fin is smooth and not united with a dorsal fin. Interspace between the dorsal and adipose fin was found 16.24% of total length. In the caudal fin, 16-19 branched rays are encountered. Fin rays of caudal fin are little harder than the rays of other fins, but not hard as the spine. The caudal fin is forked and upper lobe is longer (23.29% of TL) and pointed than lower lobe (20.43% of TL).

Sex differentiation was found distinct. Male species have a conical projection termed as genital papilla in the ventral side of the body in front of the anal fin. Female are differ from the male species in the absence of genital papilla, instead of which there is a round genital opening.

5. Conclusion

Mystus dibrugarensis differs from *M. tengara* in the presence of two black spot and mid lateral line and absence of longitudinal bands. Moreover, absences of black spot near the base of dorsal fin; absence of interspace between dorsal fin adipose fin; smaller eye diameter (4.06% of TL) made different this species from *M. cavasius* (eye diameter 8.31% of TL). In *M. bleekeri*, adipose fin starts from the end point of dorsal fin which is not found in the case of *M. dibrugarensis*. This species also differs from *M. vittatus* in the presence of longer maxillary barbel that reaches anal fin. Further, *M. dibrugarensis* differs from *Mystus ngasep*; a new species described from Chindwin drainage, Manipur in the number of gill rakers (16–19 vs. 28) on the first arch and vertebrae (40–41 vs. 36) and in the absence of a thin black mid-lateral line connecting the tympanic spot and the black spot at the base of the caudal fin (Darshan *et al.*, 2011) [2].

6. Acknowledgement

We are thankful to Heok Hee Ng and Maurice Kottelat for providing valuable literature required for this study. The first author is grateful to NFDB Hyderabad for financial support and dept. of Life Sciences, Dibrugarh University, Assam for providing the necessary facilities during the period of study.

7. Photographs



Fig 1: Lateral view of *Mystus dibrugarensis* (Male: 13.3cm)



Fig 2: Lateral view of *Mystus dibrugarensis* (Female: 14 cm)

8. References

1. Chakrabarty P, Ng HH. The identity of catfishes identified as *Mystus cavasius* (Hamilton, 1822) (Teleostei: Bagridae), with a description of a new species from Myanmar. *Zootaxa* 2005; 1093:1-24.
2. Darshan A, Vishwanath W, Mahanta PC, Bharat A. *Mystus ngasep*, a new catfish species (Teleostei: Bagridae) from the headwaters of Chindwin drainage of Manipur, India. *Journal of Threatened taxa* 2011; 3(11):2177-2183.
3. Das JN, Biswas SP. A handbook of ornamental fishes of the Brahmaputra Basin, Eastern Book House, Guwahati, India, 2008, 56.
4. Manimegalai MS, Karthikeyeni S, Vasanth S, Ganesh AT, kumar SV, Subramanian P. Morphometric Analysis –A Tool to Identify the Different Variants in a fish species *Etroplus maculatus*. *International Journal of Environmental Sciences* 2010; 1(4):481- 497.
5. Ng HH, Dodson JJ. Morphological and Genetic descriptions of a new species of catfish, *Hemibagrus chrysop*, from Sarawak, East Malaysia, with an assessment of phylogenetic relationships

(Teleostei: Bagridae). *The Raffles Bulletin of Zoology* 1999; 47(1):45- 57.

6. Ng HH, Kottelat M. Revision of the Asian catfish genus *Hemibagrus bleekeri* 1862 (Teleostei: Siluriformes: Bagridae). *The Raffles Bulletin of Zoology* 2013; 61(1):205-291.
7. Sajina AM, Chakraborty SK, Jaiswar AK, Pazhayamadam DG, Sudheesan D. Stock structure analysis of *Megalaspis cordyla* (Linnaeus, 1758) along the Indian coast based on truss network analysis. *Fisheries Research* 2011; 108:100-105.