

New reports of the catfish *Sperata seenghala* (Sykes, 1839) from Gomati River of Tripura, India

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ABSTRACT

The natural distribution of *Sperata seenghala* (Sykes, 1839) is expanded here with four specimens collected from Gomati River in Kakraban locality under Gomati district of Tripura. This record, the first time for this species in Gomati River within the river basin of Tripura, a small hilly state of the North-Eastern part of India. The main meristic features and morphometric variables of the studied specimens are given. The findings may be utilized for assessing natural population stocks of *S. seenghala* in Gomati river of Tripura which is one of the most important freshwater resources as well as a fish genetic resource of the state.

INTRODUCTION

The Siluroid catfish *Sperata seenghala* (Sykes, 1839) is one of the larger freshwater catfish in the rivers, reservoirs, floodplains, wetlands and inter-connected watersheds of the Indian sub-continent (Talwar and Jhingran, 1991). The species is commercially important and widely distributed in south Asia and has been reported from Afghanistan, Pakistan, India, Bangladesh, Thailand, Myanmar and Nepal (Jhingran, 1991; Tripathi, 1996). Jayaram (1977) also reported its occurrence from some area of freshwater ecosystem in China. However, the population of this fish species is declining drastically during the last three decades in India. Information on the distribution of *Sperata seenghala* in North-East India in general and Tripura in particular is not clearly known.

It has been considered as one of the most admired and edible fish species amongst indigenous catfish species due to good taste and high market demand in many parts of the country. It can be distinguished from other *Sperata* species by its spatulate, blunt snout, relatively short barbels and mouth which are only 1/3 as wide as the head area.

Lipton (1983) reported this species earlier. So, the present study report may be utilized for maintaining its natural population in Gomati river of Tripura which is the most important fresh water resource of the state.

MATERIALS AND METHODS

The specimens were captured from Gomati River of Tripura as a part of ichthyofaunal status survey and brought to the laboratory for taxonomic study. The river originates from the tributary connected to Longtharai and Atharamura, river of Tripura. The basin lies in the Gomati district, Sephahijala district and some part of Dhalai district spreading from eastern to western boundary of the state. It is located between latitudes $23^{\circ}19'$ and $23^{\circ}48'N$ and longitudes $91^{\circ}14'$ and $91^{\circ}58'E$. The river generally flows in west and south-west direction and it enters into the Bangladesh territory through Sonamura area of Tripura. The total length of the river from origin to Indo-Bangladesh border is 167.4 km. The river then flows through Bangladesh and meets the Meghna river system near Daudkandi. River bank of the study area is typically formed by exposed sediments stabilized by riparian vegetation and is flooded up to half of the hydrological annual cycle. The River Gomati is one of the most important perennial fresh water resources of Tripura and due to its origin from hilly area, the main river channel carries heavy loads of suspended sediment, as well as relatively high loads of dissolved salts. The climate of the study area is ranging from 3.9 to $8.0^{\circ}C$ during winter period and 31.0 to $34.0^{\circ}C$ in the summer months. Gomati river area usually receives an average rainfall of about 838.40mm (**Fig. 1**).

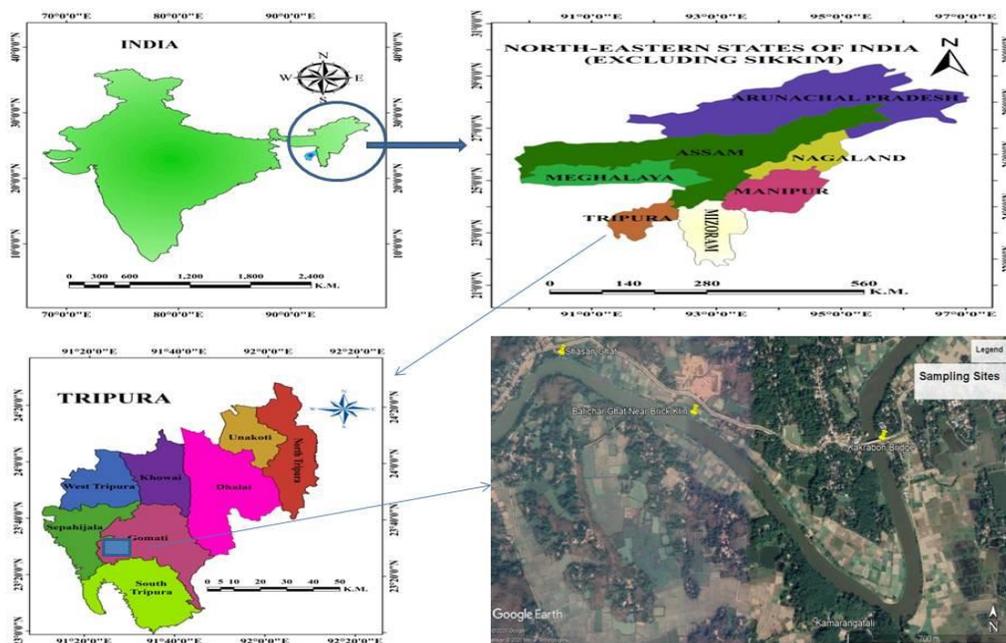


Figure 1: Location map of fish specimens collected from Gomati River, Tripura

With the help of conventional drag net during winter period the fish sample was collected from river Gomati, Tripura. As many as four fish specimens were collected from Kakraban area of Gomati River, Tripura during early morning

period. The specimens were preserved and deposited at museum of Zoology Department, Ramkrishna Mahavidyalaya, Kailashahar, Tripura. *Sperata seenghala* was identified following the identification key and diagnosis (Datta, 1988; Jayaram, 1999). Morphometric measurements were done using digital calipers to the nearest millimetre and the photography of the specimen was taken with digital camera NIKKON COOPIX P610 (Figs. 2, 3, 4).



Figure 2: Photograph of the new record locality of *Sperata seenghala* in the Gomati River of Tripura



Figure 3: Photograph of specimen *Sperata seenghala*



Figure 4: Female (a) and Male (b) specimen of *Sperata seenghala*

RESULTS

Meristic characters

Observation 1: River Gomati (Kakraban-Bridge:Coordinates: 23.483925⁰N91.393092⁰E, Elevation:23m) 20 February, 2020, (coll. D Das), Local name (Guchi aor), Total length 41cm., weight 244g, sex-male.

Fin formula D.1/7; P.1/9; V.6; A.11 (3/8); C.19, Barbels four pairs.

Observation 2: River Gomati (Kakraban-Balicharghat:Coordinates:23.487025⁰N 91.379245⁰E, Elevation:22m), 8 October, 2020 (coll.D Das), Local name(Guchi aor), Total length 36.5 cm,weight 204g, sex-female.

Fin formula D.1/7; P.1/9; V.6; A.12 (3/9); C. 21, Barbels four pairs.

Observation 3: River Gomati (Kakraban-Shasanghat:Coordinates:23.484813⁰N 91.385005⁰E, Elevation:20m) 6 January 2021(coll. D Das),Local name(Guchi mach), Total length 35.2 cm.,weight 153g, sex-female.

Fin formula D.1/7; P.1/9; V.6; A. 11(3/8); C.21, Barbels four pairs.

Observation 4: River Gomati (Kakraban-Shasanghat: Coordinates:23.484813⁰N 91.385005⁰E, Elevation:20m) 6 January 2021(coll. D Das), Local name (Guchi mach), Total length 43.2 cm., weight 503 g, sex-male.

Fin formula D.1/7; P.1/9; V.6; A. 11(3/8); C.20, Barbels four pairs.

Description

Diagnosis of general meristic characters-

Fin formula D.1/7; P.1/9; V.6; A.11-12 (3/8-9); C.19-21, Barbels four pairs.

Dorsal fin has one unforked fin ray and seven forked fin ray(D.1/7) while pectoral fin has one unforked and nine forked fin rays(P.1/9). Similarly, ventral(pelvic) fin has six forked fin rays(V.6) while anal fin has three unforked and eight to nine forked fin rays A.11(3/8-9).On the other, caudal fin(C.19-21) has nineteen to twenty one forked fin rays.This particular fish species bears four barbels at the surrounding of the mouth.

Morphometric characters-

Body profile: Body devoid of scales, elongated and compressed, dorsal profile from rayed dorsal fin shallowly concave up to caudal peduncle, abdomen convex.

Head: Large, slightly depressed. Snout broad and spatulate, upper jaw rather the longer. Mouth almost terminal, with shallow cleft reaching half the way to the orbit and width of gap equals to 1/3rd of head length. Upper surface of head is granulated in ridges. The median longitudinal groove on the head reaches the base of the occipital process. The greatest width of head equals half its length.

Occipital process and interneural shield: Occipital process is twice as long as wide at its base, separated from basal bone of dorsal fin by an intermediate interneural shield. It is 4 times as long as broad.

Teeth: Uniformly viliform on jaws and palate in continuous crescentic bands.

Barbel: Barbels extend posteriorly to pelvic fins or beyond to anal fin. Barbels-4 pairs; the maxillary ones extend to the middle or just beyond the hind margin of the dorsal fin, the nasal to opposite the middle of the orbit, the external mandibular ones to the base of the pectoral fin, whilst the internal ones are one-third shorter.

Lateral line: Present, complete and simple.

Colour: Color is brownish-gray on back, silver on flanks and belly. A dark well defined rounded black spot is on the adipose dorsal fin. Figure 1 depicts the specimen collected from Gomati River, Tripura.

The morphometric characteristics of the specimens were studied according to the measurements scheme (**Figure-5**) adopted for the present study and is presented in **Table-1and Table 2**.

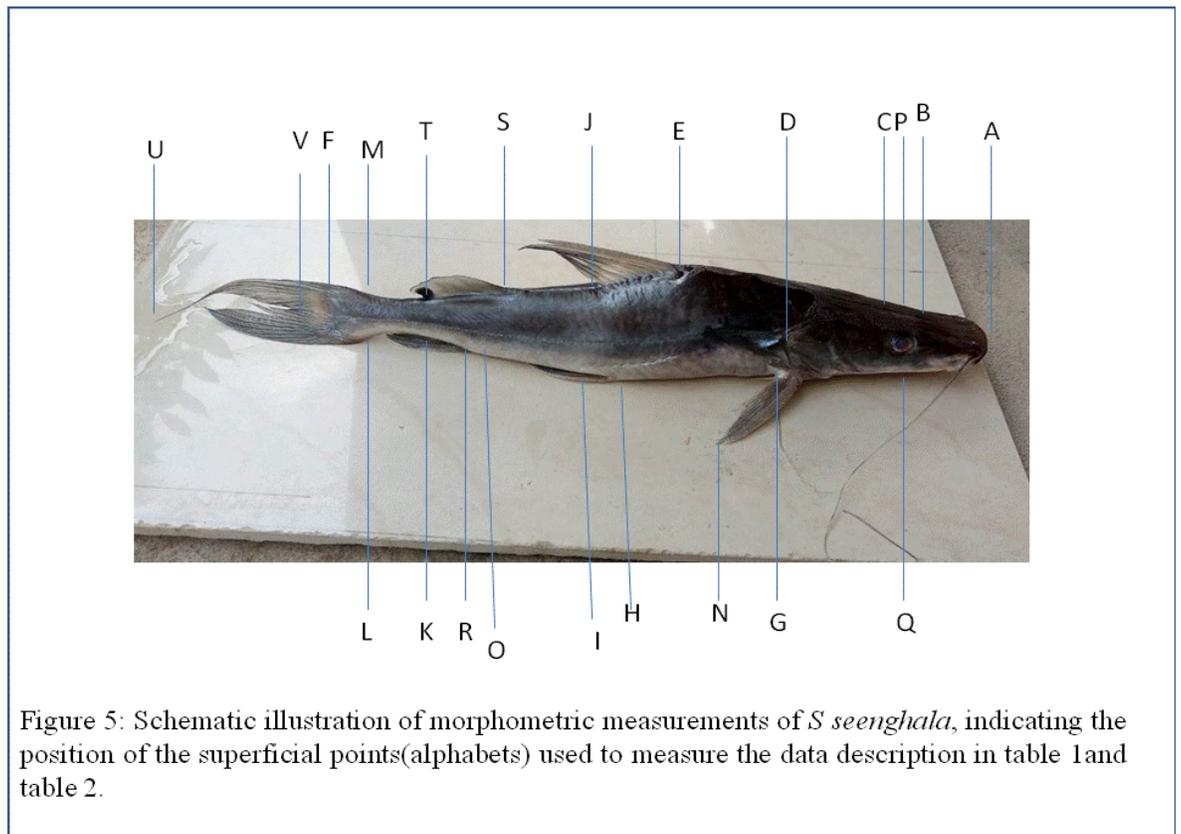


Figure 5: Schematic illustration of morphometric measurements of *S seenghala*, indicating the position of the superficial points(alphabets) used to measure the data description in table 1and table 2.

Table 1: Morphometric details of *S. Seenghala* in the present study

Morphometric variables	Alphabets Code	Measurements (mm)				Mean(mm)
		OBS-1	OBS-2	OBS-3	OBS-4	
Total length(TL)	A-U	410	365	352	432	389.75
Fork length(FL)	A-V	325	289	267	341	305.50
Standard length(SL)	A-F	310	276	249	322	289.25
Head length(HL)	A-D	95.0	87.8	77.8	85.1	86.42
Width of head(HW)	P-Q	32.6	27.7	25.2	34.0	29.87
Orbital length(OL)	B-C	12.5	13.6	12.8	13.7	13.15
Pre orbital length(PROL)	A-B	37.5	31.8	30.5	41.0	35.20
Post orbital length(POL)	C-D	44.2	43.7	38.0	57.7	45.90
Inter orbit distance(IOD)	Not shown	20.7	18.9	17.0	24.5	20.27
Eye diameter(ED)	Not shown	9.1	8.7	7.2	8.8	8.45
Nasal barbel length (NBL)	Not shown	28	31.3	31.1	30.1	30.12
Maxillary barbel length (MBL)	Not shown	216	203	187	207	203.25
Outer mandibular barbel length (OMBL)	Not shown	80.8	76.4	78.7	78.7	78.65
Inner mandibular barbel length (IMBL)	Not shown	41.5	39.4	38.5	51.2	42.65
Maximum body depth(MBD)	Not shown	55	52.9	45.5	67.4	55.20
Pre dorsal length(PRDL)	A-E	139.8	130.4	118.2	155.8	136.05
Post dorsal length(PDL)	J-F	138.7	118.5	108.9	149.6	128.92
Pre ventral length(LPRV)	A-H	171.0	151.4	140.3	193.0	163.92
Pre anal length(LPRA)	Not shown	232	212	188	255	221.75
Pectoral to pelvic origin(LPTFPLF)	G-H	97.0	75.9	74.3	103.8	87.75
Pelvic to anal(LPLFAF)	H-O	62	55.2	47.5	64.4	57.27
Dorsal fin base(DFB)	E-J	43.7	38.8	36.0	48.3	41.7
Anal fin base(AFB)	O-K	28.8	26.7	24.0	33.6	28.27
Length of caudal peduncle(LCP)	K-F	51.7	41.7	37.4	57.5	47.07
Depth of caudal peduncle(DCP)	L-M	20.2	17	15.2	22.5	18.72
Distance from vent to anal fin(DVAF)	O-R	44.9	36.8	31.2	36.9	37.45
Pectoral fin length(PFL)	G-N	55.9	55.6	46.1	59.1	54.17
Adipose fin length(AFL)		11.9	13.0	10.0	16.0	12.72
Length of Adipose fin base(LAFB)	S-T	48.8	40.6	40.5	55.9	46.45
Distance between dorsal and adipose fin(DBDFAF)	J-S	36.9	33.5	27.9	35.4	33.42

Table 2: Relative value of some characteristic morphometric features

TL/HL	4.50
SL/HL	3.34
TL/MBD	7.06
SL/MBD	5.24
HL/ED	10.22

DISCUSSION

The specimens were identified as *Sperata seenghala* following the identification key and diagnosis proposed by **Datta**(1988) and **Jayaram**(1999). *Sperara seenghala* has close resemblance with the *Sperara aor*, reported from Indian waters having similar fin counts. However, it differs from *S aor* by its spatulate blunt snout, relatively short barbels and mouth that is only 1/3 as wide as the head length. The specimens presented some variation in meristic count and morphometric measurements found in different localities. This is the first record of the species outside its known geographic area suggesting its range extension to lower part of Gomati River of Tripura, North eastern part of India.

S. seenghala reported in **1983-84** by **Lipton** in Tripura has never reported subsequently in systematic way, only sporadic information are found from the study of **Barman**(2004), and **Goswami et al.**(2012), though many of the fish diversity studies carried out by several authors in Tripura state (**Banik et al., 2012; Bhattacharya and Banik, 2012; Nath et al., 2015; Mandal, 2018**). From Indian fresh waters the species was reported earlier from Punjab (Harike wetland) (**Chinthareddy et al., 2018**), Maharastra (Godavari river) (**Babare et al., 2013**), Maharastra (South Konkan) (**Yeragi and Yeragi, 2014**), Madhya Pradesh (Gwalior) (**Parihar et al., 2010**), Himachal Pradesh and Punjab (Indus river system) (**Saini et al., 2008**).

In view of the above, we reported this species in Tripura after a very long period. Therefore, our recent record of this species suggests the population of *S. seenghala* to be in a precarious state which emphasized the distribution record of this species in Tripura.

Based on the meristic characteristics and morphometric data the systematic position of the species belonging to class Actinopterygii, order Siluriformes and family Bagridae.

CONCLUSION

While the reasons for new fish records are manifold, some reasons are more obvious than the others. The availability of bagrid catfish *S. seenghala* in the lower part of Gomati river in Tripura province may be migrated to new locality from Meghna River of Bangladesh for suitable physico-chemical features of the new environment. But, continuous effort is required for minimizing various anthropogenic threats like siltation, sand mining, over fishing etc. to conserve and propagation of its natural stock from all stakeholders.

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