



Mahseer Fishes of River Barak, Jatinga, Dholeswari and Ganol in North East India

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Abstract

Ichthyofauna and limnology of the river Barak, Jatinga, Dholeswari and Ganol in north east India has been investigated. 111 species of fishes including five species of mahseer were recorded from the four rivers. The limnological parameters did not show much abrupt fluctuation with temperature of air 25-30°C, Water 24-26°C, pH 6.56-9.58, Conductivity 63-165.63 µmho/cm, Dissolved Oxygen 5.42-7.61 mg/l, Free CO₂ 7.25-28.47 mg/l, Total Alkalinity 20-121.95 mg/l. Except the major water quality like pH and dissolved oxygen all the other parameter supports mahseer fishery in these rivers mainly in Ganol and Barak.

Keywords: Mahseer, North-East, Barak, Ganol.

Introduction

The north-eastern region of India lies between 22°00'N and 29°05'N and 88°00'E and 97°30'E and shares international border with Bhutan, China, Myanmar and Bangladesh and contains more than one-third of the country's total biodiversity. The north-eastern region of India is considered as one of the hotspots of freshwater fish biodiversity in the world¹. This rich diversity of the region could be assigned to certain reasons, notably, the geo-morphology and the tectonics of this zone. The region is dominated by two drainage systems namely the Brahmaputra in the north and the Barak in the south. Important rivers of the Brahmaputra drainage are Subansiri, Kameng, Bhareli, Dhansiri, Manas, Umiam, Kopili, Myntang, Jingiram and Simsang while Irang, Makru, Tuivai, Jiri, Chiri, Madhura, Jatinga, Katakhal, Dholeswari, Singla, Longai, Sonai, Kynshi, Umngot, Myntdu and Ganol are the prominent rivers of the Barak drainage. The other hill-stream tributaries of river Barak are Bubankhal, Monkhal, Kotaikhal, Chotirkhal, Sivadung, Lalmatikhal, Chandikhal etc.

The average temperature varies between 3.9°C and 15.6°C in winter and climbs upto 15°C and 28°C during summer. With the hills rising to 3,500 m m.s.l., the region is cool despite its proximity to tropics². River Barak is the biggest river in Southern part of north east India flowing through the Barak valley region of Assam. Barak originates from Japvo peak in Nagaland (N 25°28' E 94°17') at (approx 3353.65 m m.s.l.) and flows through Karong village along the Manipur-Nagaland border, drains almost the entire Manipur valley before entering Assam. Then the river starts crawling east ward in the plains crossing Silchar city and receiving several other tributaries like Chiri, Jiri, Madhura, Sonai etc. It then flows through the western part of Silchar where it joined by

the river Jatinga, Dholeswari along with several other tributaries, bifurcates into Surma-Kushiara, enters Bangladesh and join with Ganol to form Meghna. The river Meghna then combines with Padma and falls in the Bay of Bengal. River Jatinga is one of the major North bank tributaries of river Barak. The river originated from Barail Hill range in the village Jatinga (N 25°07'29.0" E 93°1'36.0") at North Cachar Hills district of Assam. The river Jatinga then flows all the way though the western boundary of the Barail Wildlife Sanctuary and after joining with several other tributaries like Chhotarekha, Bororekha, Daku, Chhota Lokha, Dimru, Ditokcherra, Kayang, Dolu, Badri etc merge with Barak river at a place called Jatingamukh below Barkhola village near Chandpur (N 24°53'3.2" E 92°44'34.8"). River Dholeswari is one of the south bank tributaries of river Barak originated from the Mizo hills around Lunglei district of Mizoram at Zobawk (N 22°51'31.2" E 92°48'28.9") in the name of river Tlawng at an altitude of 2500 m m.s.l. The river then enters its mid reach region around a place called Sairong, about 30 kms from Aizwal city, the river flows thereafter mainly with riffle-pool and joins the tributaries like Thosibowk, Gudur, Meidum, Pakwa etc till it reaches the base level zone around the village Bhairabi along Assam- Mizoram border (N 24°10'25.2" E 92°32'20.5"). At village Rongpur-III in Hailakandi District (N 24°23'48.7" E 92°35'0.34") the original course of the river is diverted and the main stream joined a canal called Katakhal that later falls river Barak near village Katakhal (N 24°49'40.8" E 92°38'32.6") traversing a total distance of 369.4 Km. However, the shallow original course of Dholeswari joins Barak little downstream near Panchgram at Hailakandi District (N 24°51'35.2" E 92°36'48.2"). The Ganol is a 1st order river originating from the eastern side of the Nokrek Biosphere, drains the entire Western Garo Hills joining several other tributaries before

entering Assam through Dhubri district near Mankachar after travelling a distance of 94 km from the origin. The river then enters Bangladesh near Char Aomkhaoa (25° 31' 45.22" N 89° 51' 18.02" E) and flows a major distance, which joins the Barak near Munshiganj and ultimately falls in the Bay of Bengal after joining with the Brahmaputra drainage traveling a distance of 655.5 km. The origin of the rivers are hilly and the reach type is mainly pool and riffle to braided type, while bedrock, boulders, cobbles and gravels form the main components of the river substratum forming suitable feeding and breeding ground for hill stream fishes including few important fishes like Mahseers etc.

Out of about 930 species of fishes inhabiting the freshwaters of India, the north-eastern India is represented by 267 species belonging to 114 genera under 38 families and 10 orders². The present report represents temporal ichthyofaunal distribution in the upper reaches of the rivers along with the estimation of physico-chemical parameter of the rivers, which is experiencing debilitating anthropogenic activities.

Material and Methods

The preliminary field surveys were conducted during 2007-2011. Habitat inventory parameters were recorded in a standard format³ from each study spot in the field itself. Some of the physico-chemical parameters were measured on the field itself, and water samples were collected in the pre-cleaned bottles to study other parameters in the laboratory using methods described in^{4,5} and other standard literature. Geographical coordinates were recorded using hand held Garmin GPS-60. The fish samples were collected with the help of local people using various types of nets and methods permissible by the concerned district authority and also from the nearest fish landing centers. The collected specimens were preserved immediately in 10% formaldehyde and kept in the specimen museum of the Department of Life Science, Assam University, Silchar and Department of Zoology, Don Bosco College, Tura. Preliminary identification was done following standard literature of Jayaram^{6,7}, Menon⁸ and with the help of expertise available at Zoological Survey of India, Shillong.

Results and Discussion

The results of habitat inventory study are shown in table 1, 2, 3, 4 and the comparison of physico-chemical characteristics of these rivers with that of other Indian rivers with mahseers are given in table 5. The preliminary survey on the ichthyofauna in the four rivers in north east India has revealed 103 species including 5 species of mahseers under 57 genera belonging to 24 families and 10 orders. A total of 87 species from river Barak, 51 species from river Jatinga, 40 species from river Dhaleswari and 10 species from river

Ganol were recorded during the study period. The list of fishes is given in table-6.

The mahseers are large cold water cyprinids occurring in upland rocky streams of India, Nepal, China, Myanmar, Sri Lanka, Pakistan, Thailand and Bangladesh. The river Ganol along with its tributaries originated from the hills and consequently, these torrential hill streams is a habitat of hill stream fishes including mahseers most of them are included under Red Data Book of IUCN⁹. Unfortunately no breeding ground of mahseer was recorded in the main course of the rivers. But alarmingly, these lucrative fishes are feared to be in grave danger so much so that they are now practically on the threshold of extinction. This dismal state of affairs necessitated the present study, hitherto remained unattended, to undertake with utmost rigor and service.

Observed anthropogenic activities which may cause perturbations in ichthyofaunal distribution are: Habitat destruction by construction of Dams and Barrages. Extraction of sand and stone from the river bed. Indiscriminate fishing and dynamiting. Point and Non-point pollution. Forest Denudation and Erosion of Banks. Constant emission from Government and private Dairy Farm, Poultry Farm etc.

Conclusion

The present investigation depicts a detailed systematics, ecology, distribution and habitat analysis of the ichthyospecies of the four rivers with special emphasize on the mahseer fishes in the Barak drainages.

A common goal in the studies of habitat mapping and community ecology is to uncover patterns of species abundance or distribution and determining the factors that are responsible for them. Rejuvenation of mahseer fishery is of utmost importance for North East region as it is a known species suitable for culture in medium altitude areas (2500-3500 MSL) wherein the number of suitable economic species is very limited. Moreover, due to their omnivorous feeding and restrictive breeding habits they are very useful for hill stream ecology which is abundant in this region.

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Table-1(A)
Habitat inventory of the river Barak at different study sites

S. No.	Habitat parameters	Karong	Tamenlong	Tipaimukh	Khangrendar
1	Stream order	2nd order	3 rd order	Fourth order	Fourth order
2	Position	N 25 ^o 18'16.5" E 94 ^o 03'1.4"	N 24 ^o 41'7.7" E 93 ^o 20'29.8"	N 24 ^o 14'8.9" E 93 ^o 01'2.1"	N 24 ^o 28'25.4" E 93 ^o 2'59.8"
3	Altitude m.s.l. (m)	1018	65	26	25.4
4	Valley segment	Colluvial	Colluvial	Colluvial	Alluvial
5	Microhabitat type	Fast water with much strong riffles with occasional pools.	Fast water with much strong riffles with occasional pools.	Mainly runs and Backwater pools with occasional riffles.	Occasional riffles, Backwater pool and mid-channel pool
6	Mean Width (m)	40-110	45-150	30-350	50-140
7	Mean depth (m)	0.07-0.5	0.05-0.5	0.53-1	0.21-3
8	Cover type	Overhanging vegetation, turbulence, turbidity, undercut bank and depth cover.	Overhanging Vegetation, Bottom free boulders, undercut bank and turbulence.	Overhanging vegetation, Depth cover.	Depth cover, overhanging vegetation, bottom free big boulders and undercutbank.
9	Substrate type	Gravels, cobbles, fine, boulder and few bed rocks.	Cobbles, gravels, bedrocks and boulders.	Fine, sand, Boulder and few bed rocks.	Few bedrock, Boulders and mainly fine sand
10	Riparian land use	Human habitation forests and agriculture	Human habitation and forests.	Human habitation forests and agriculture	Human habitation and forests.
11	Signs of erosion	Visible	Visible.	Visible	Much
12	Water current (m/s)	2.01	1.51	0.66	0.87
13	Gradient in degree	10 ^o	17 ^o	28 ^o	11 ^o

Table-1(B)
Habitat inventory of the river Barak at different study sites

S. No.	Habitat parameters	Fulertal	Tarapur	Panchgram	Katigarah
1	Stream order	Fourth order	Fourth order	Fifth order	Fifth order
2	Position	N 24 ⁰ 47'18.5" E 93 ⁰ 1'34.8"	N 24 ⁰ 50'56.8" E 92 ⁰ 46'42.7"	N 24 ⁰ 51'45.5" E 92 ⁰ 36'33.6"	N 24 ⁰ 52'28.6" E 92 ⁰ 33'52.8"
3	Altitude m.s.l.(m)	29	24.5	22	23
4	Valley segment	Alluvial	Alluvial	Colluvial	Alluvial
5	Microhabitat type	Run-sheet, eddypool, Backwater pool and mid-channel pool	Run-sheet, eddypool, mid-channel pool and backwater pool	Mainly run-sheet and pool.	Mainly run-sheet and pool.
6	Mean Width (m)	150-300	170-250	50-200	90-300
7	Mean depth varies between (m)	2.4-3	2.5-4	2.0-6	2.5-5.2
8	Cover type	Depth cover, overhanging Vegetation, bottom free big boulders and undercut bank.	Overhanging Vegetation, Depth and small woody debris and turbidity.	Turbidity, depth and turbulence.	Turbidity, depth and turbulence.
9	Substrate type	Few bedrock, Boulders and mainly fine, sand	Only fine, sand, silt and clay.	Mostly fine and sand.	Mostly fine.
10	Riparian land use	Human habitation	Mostly Human habitation.	Human habitation and Industries.	Human habitation
11	Signs of erosion	Much	Visible.	Visible	Visible
12	Water current (m/s)	0.50	0.55	0.33	0.27
13	Gradient in degree	15 ⁰	12 ⁰	8 ⁰	10 ⁰

Table-2
Habitat inventory of the river Jatinga at different study sites

S. No.	Habitat parameters	Maharajpur	Damcherra	Balacherra	Chandpur
1	Stream order	Fifth order	Fifth order	Fourth order	Fourth order
2	Position	N 25 ⁰ 07'3.9" E 92 ⁰ 51'59.3"	N 25 ⁰ 1'1.8" E 92 ⁰ 45'37.0"	N 24 ⁰ 57'55.3" E 92 ⁰ 45'42.6"	N 24 ⁰ 53' 20.1" E 92 ⁰ 44' 39"
3	Altitude m.s.l. (m)	164.63	47.2	26.21	24.2
4	Valley segment	Alluvial	Colluvial	Alluvial	Alluvial
5	Microhabitat type	Mainly run-sheet and pool-riffle.	Mainly run-sheet and pool-riffle.	Mainly run-sheet with some pool-riffle.	Mainly run-sheet.
6	Mean Width (m)	90-300	80-150	55-130	150-300
7	Mean depth (m)	0.25-2.5	0.5-0.6	0.10-1.2	0.24-3
8	Cover type	Turbidity, depth turbulence, undercut banks and overhanging vegetation.	Turbidity, depth, turbulence, and overhanging vegetation.	Overhanging Vegetation, Depth and small woody Debris and turbidity.	Depth cover, overhanging vegetation, bottom free big boulders and undercut bank.
9	Substrate type	Mostly fines along with cobbles gravels and boulders.	Mostly fine, sand cobbles and gravels.	Only fine, sand, cobbles.	Only fine, sand, silt and clay.
10	Riparian land use	Human habitation railways and forests.	Human habitation railways.	Mostly Human habitation.	Human habitation
11	Signs of erosion	Visible	Visible	Visible.	Much
12	Water current (m/s)	0.46	0.77	0.17	0.07
13	Gradient in degree	10 ⁰	8 ⁰	2 ⁰	1.5 ⁰

Table-3(A)
Habitat inventory of the river Dhaleswari at different study sites

Sl No.	Habitat parameters	Near Khawrihnim	Near Nghalchhun	Sairong	Bhairabi
1	Stream order	Second order	Third order	Third order	Fourth order
2	Position	N 23°37'50.7" E 92°39'0.6"	N 23°45'40.6" E 92°37'37.9"	N 23°48' 36.8" E 92°38' 57.9"	N 24°11'6.01" E 92°31'54.0"
3	Altitude m.s.l. (m)	436	381	74.08	54
4	Valley segment	Colluvial	Colluvial	Colluvial	Colluvial
5	Microhabitat type	Mainly cascade and riffle-pools.	Mainly riffle-pool, with some cascade and run-sheet.	Mainly riffle-pool, with some cascade and run-sheet.	Mainly run-sheet with some riffle-pool.
6	Mean Width (m)	4-10	8-50	50-150	40-125
7	Mean depth (m)	0.7-1	1.5-1	2.0-6	2.5-5
8	Cover type	Overhanging Vegetation, bottom free big boulders and undercutbank.	Overhanging vegetation, bottom free big boulders and undercutbank.	Turbidity, depth and turbulence.	Turbidity, depth and turbulence.
9	Substrate type	Mainly boulders with few bedrock, and cobbles.	Mainly boulders with few bedrock, cobbles and gravels.	Mainly cobbles with few bedrock, boulders and gravels.	Mostly fines and gravels.
10	Riparian land use	Dense forest.	Dense forest.	Human habitation, horticulture and Industries.	Human habitation and forest.
11	Signs of erosion	Nil	Nil	Visible	Visible
12	Water current (m/s)	0.12	0.96	0.29	0.57
13	Gradient in degree	11.5 ⁰	9.5 ⁰	8 ⁰	10 ⁰

Table-3(B)
Habitat inventory of the river Dhaleswari at different study sites

Sl No.	Habitat parameters	Gharmura	Panchgram
1	Stream order	Fourth order	Fourth order
2	Position	N 24 ⁰ 16' 39.2" E 92 ⁰ 30' 57.9"	N 24 ⁰ 51'21.5" E 92 ⁰ 36'16.3"
3	Altitude above m.s.l. (m)	34.75	20.5
4	Valley segment	Alluvial	Alluvial
5	Microhabitat type	Pool riffle and run.	Run-sheet.
6	Mean Width (m)	50-110	17-50
7	Mean depth (m)	1.3-2.0	0.4-1.5
8	Cover type	Depth cover, overhanging Vegetation, turbulence and turbidity.	Overhanging Vegetation, Depth and Small woody debris and turbidity.
9	Substrate type	Mainly fines and sand.	Only fine, sand, silt and clay.
10	Riparian land use	Human habitation and market place.	Mostly Human habitation and industries.
11	Signs of erosion	Much	Visible.
12	Water current (m/s)	0.10	0.07
13	Gradient in degree	5 ⁰	4 ⁰

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Table-4
Habitat Inventory of River Ganol at different study sites

Sl No.	Habitat parameters	Ranggalwari	Balkawari	Chibragre	Goiragre
1	Stream order	2nd order	2nd order	1st order	1st order
2	Position	25°33'37.11"N 90°11'38.01"E	25°33'48.01"N 90°12'15.69"E	25°34'57.85"N 90°13'42.38"E	25°34'48.99"N 90°14'45.60"E
3	Altitude above m.s.l. (m)	288	162	320	320
4	Valley segment	Alluvial	Colluvial	Colluvial	Colluvial
5	Microhabitat type	Mainly runs and Backwater pools with occasional riffles.	Occasional riffles, Back water pool and mid-channel pool	Fast water with much strong riffles with occasional pools.	Fast water with much strong riffles with occasional pools.
6	Mean Width (m)	35-45	38-45	25-30	30-35
7	Mean Depth (m)	1.5-2	1.5-2	2-3	1.5-2
8	Cover type	Overhanging vegetation, turbulence, turbidity, undercut bank and depth cover.	Overhanging Vegetation, Bottom free boulders, undercut bank and turbulence.	Overhanging vegetation, Boulders, Cobbles and Depth cover.	Depth cover, overhanging Vegetation, bottom free big boulders and undercut bank.
9	Substrate type	Few bed rock, boulder, cobbles, fine and sand.	Mainly bedrocks and boulders.	Sand, Boulder and few bed rocks.	Mainly bedrock, Boulders, cobbles and boulders.
10	Riparian land use	Human habitation forests and horticulture	Human habitation and forests.	Human habitation Forests and tourist spot.	Human habitation and forests.
11	Signs of erosion	Visible	Less.	Visible	Much
12	Water current (m/s)	0.12	0.2	0.3	0.15

Table 5
Comparison of abiotic factors of studied rivers with that of other rivers in India supporting mahseer populations.

Parameters Rivers	Water temp (0c)	Turbidity (NTU)	pH	Dissolved Oxygen (mg/l)	Free CO2 (mg/l)	Total alkalinity (mg/l)	Conductivity μ mho/cm	Phosphate (mg/l)	Nitrate (mg/l)	Current velocity (m/s)
Ganga (2004)	19.5	23.5	7.55	-	-	-	-	-	-	0.7
Sutlej (1994)	23	-	7.9	9.02	-	102	296	0.0067	0.135	0.14
Alakananda (1994)	14.75	496.48	7.7	9.39	0.89	39.22	78.75	0.067	0.08	1.34
Bhagirathi (1994)	11.9	173.9	-	-	-	80.7	-	-	-	2.15
Bilangana (1994)	12.4	175.05	7.3	12.3	1.85	30	75	0.056	0.09	2.1
Jia Bharali (1984)	21	-	7.3	10.45	3	34	-	-	-	-
Mat (2002)	26	6	8.62	6	2.5	12.2	161	-	-	-
Jatinga (2002)	24	16.8	7.31	8.53	23.33	40	126	-	-	-
Barak (2002)	25	71	6.95	7.05	42	101.5	110.5	-	-	-
Dhaleswari (2002)	28.5	104	6.59	7.25	3	47.5	164	-	-	-
Barak (2008)	25.94	35.80	6.86	6.28	28.47	121.95	154.97	0.364	.070	.84
Jatinga (2007-08)	24.97	14.80	7.14	7.61	11.69	47.81	105.31	0.22	0.05	0.37
Dhaleswari (2007-08)	25.42	92.65	9.58	6.84	16.79	75.98	165.63	0.440	0.140	0.35
Ganol	26	-	6.56	5.42	7.25	20	63	-	-	0.19

Table – 6
 List of fishes in the three rivers

Sl. No.	Ichthyospecies	Ba	Ja	Dh	Ga
1	<i>Notopterus notopterus</i> (Pallas).	+	-	+	-
2	<i>Pisodonophis boro</i> (Hamilton).	+	-	-	-
3	<i>Tenualosa ilisa</i> (Hamilton)	-	+	-	-
4	<i>Gudusia chapra</i> (Hamilton)	+	+	-	-
5	<i>Securicula gora</i> (Hamilton)	-	+	+	-
6	<i>Salmophasia bacaila</i> (Hamilton)	+	+	+	-
7	<i>Aspidoparia morar</i> (Hamilton)	+	+	+	-
8	<i>Barilius bakeri</i> Day	+	-	-	-
9	<i>Barilius barila</i> (Hamilton)	+	+	-	-
10	<i>Barilius barna</i> (Hamilton)	+	+	+	-
11	<i>Barilius barnoides</i> Vinciguerra	+	-	-	-
12	<i>Barilius bendelisis</i> (Hamilton)	+	+	-	+
13	<i>Barilius dogarsinghi</i> Hora	+	+	-	-
14	<i>Barilius shaera</i> (Hamilton)	+	-	-	-
15	<i>Barilius teleo</i> (Hamilton)	-	+	+	-
16	<i>Barilius vagra</i> (Hamilton)	-	+	+	-
17	<i>Chela cachius</i> (Hamilton)	+	-	-	-
18	<i>Chela laubuca</i> (Hamilton)	+	-	+	-
19	<i>Esomus danricus</i> (Hamilton)	+	-	+	+
20	<i>Devario aequipinnatus</i> McClelland	+	+	-	-
21	<i>Devario devario</i> (Hamilton)	-	+	-	-
22	<i>Danio dangila</i> (Hamilton)	+	-	-	-
23	<i>Devario naganensis</i> Chaudhuri	+	+	-	-
24	<i>Rasbora daniconius</i> (Hamilton)	+	-	-	-
25	<i>Amblypharyngodon mola</i> (Hamilton)	+	+	+	+
26	<i>Tor mosal</i> (Hamilton)	+	-	-	-
27	<i>Tor putitora</i> (Hamilton)	+	-	-	+
28	<i>Tor tor</i> (Hamilton)	+	-	-	+
29	<i>Tor progenius</i> (McClelland)	-	+	+	-
30	<i>Neolissochilus heaxagonolepis</i> (McClelland)	+	-	-	-
31	<i>Osteobrama cotio</i> (Hamilton)	+	-	+	-
32	<i>Chagunius nicholsi</i> (Myers)	+	-	-	-
33	<i>Puntius chola</i> (Hamilton)	+	+	-	-
34	<i>Puntius conchoni</i> (Hamilton)	+	+	+	-
35	<i>Puntius jerdoni</i> (Day)	+	-	-	-
36	<i>Puntius puntio</i> (Hamilton)	+	+	+	-
37	<i>Puntius sarana sarana</i> (Hamilton)	-	+	-	-
38	<i>Puntius sophore</i> (Hamilton)	+	-	-	-
39	<i>Puntius ticto</i> (Hamilton)	+	-	+	-
40	<i>Cirrhinus cirrhosus</i> (Bloch)	+	+	+	-
41	<i>Cirrhinus ariza</i> (Hamilton)	+	-	+	-
42	<i>Labeo boga</i> (Hamilton)	+	-	-	-
43	<i>Labeo calbasu</i> (Hamilton)	+	+	+	-
44	<i>Labeo goni</i> (Hamilton)	+	+	-	-
45	<i>Labeo pangusia</i> (Hamilton)	+	+	-	-
46	<i>Labeo rohita</i> (Hamilton)	+	-	-	-
47	<i>Crossocheilus latius</i> (Hamilton)	+	+	-	-
48	<i>Garra gotyla</i> (Gray)	-	+	-	+
49	<i>Garra gravelyi</i> (Annandale)	+	-	-	-
50	<i>Garra nasuta</i> (McClelland)	+	+	-	-
51	<i>Garra naganensis</i> Hora	+	-	-	-

52	<i>Psilorhynchus balitora</i> (Hamilton)	+	+	-	+
53	<i>Acanthocobitis botia</i> (Hamilton)	+	+	+	-
54	<i>Neonemacheilus peguensis</i> (Hora)	+	-	-	-
55	<i>Schistura multifasciatus</i> (Day)	+	-	-	-
56	<i>Schistura rupecula</i> (McClelland)	+	-	-	-
57	<i>Schistura vincigurrae</i> (Hora)	+	-	-	-
58	<i>Schistura prashadi</i> (Hora)	-	-	-	+
59	<i>Botia Dario</i> (Hamilton)	+	+	+	-
60	<i>Botia rostrata</i> Gunther	+	+	-	-
61	<i>Lepidocephalichthys guntea</i> (Hamilton)	+	-	-	-
62	<i>Lepidocephalichthys iorrata</i> (Hora)	-	-	-	+
63	<i>Rita rita</i> (Hamilton)	+	-	+	-
64	<i>Mystus bleekeri</i> (Day)	+	-	+	-
65	<i>Mystus cavasius</i> (Hamilton)	+	+	-	-
66	<i>Mystus vittatus</i> (Bloch)	+	+	-	-
67	<i>Sperata aor</i> (Hamilton)	-	-	+	-
68	<i>Sperata seenghala</i> (Sykes)	+	+	+	-
69	<i>Omcock bimaculatus</i> (Bloch)	-	+	-	-
70	<i>Wallago attu</i> (Bloch & Schneider)	+	-	+	-
71	<i>Ailia coila</i> (Hamilton)	+	+	+	-
72	<i>Clupisoma garua</i> (Hamilton)	+	-	+	-
73	<i>Eutropiichthys murius</i> (Hamilton)	+	-	+	-
74	<i>Eutropiichthys vacha</i> (Hamilton)	+	+	+	-
75	<i>Amblyceps mangois</i> (Hamilton)	-	+	-	-
76	<i>Bagarius bagarius</i> (Hamilton)	+	+	+	-
77	<i>Gagata gagata</i> (Hamilton)	+	-	-	-
78	<i>Nangra nangra</i> (Hamilton)	+	-	+	-
79	<i>Nangra viridescens</i> (Hamilton)	-	+	+	-
80	<i>Erethistes pussilus</i> Muller & Troschel	+	-	+	-
81	<i>Glyptothorax striatus</i> (McClelland)	-	+	-	-
82	<i>Glyptothorax telchitta</i> (Hamilton)	+	+	+	-
83	<i>Glyptothorax trilineatus</i> Blyth	+	-	-	-
84	<i>Chaca chaca</i> (Hamilton)	+	-	-	-
85	<i>Sicamugil cascasia</i> (Hamilton)	+	-	+	-
86	<i>Xenentodon cancila</i> (Hamilton)	+	+	-	-
87	<i>Aplocheilus panchax</i> (Hamilton)	+	-	+	-
88	<i>Magrognathus aral</i> (Bloch & Schneider)	+	-	-	-
89	<i>Macrogynathus pancalus</i> Hamilton	+	+	-	-
90	<i>Mastacembalus armatus</i> (Lacepede)	+	+	+	-
91	<i>Chanda nama</i> Hamilton	+	+	+	-
92	<i>Parambassis ranga</i> (Hamilton)	+	+	-	-
93	<i>Johnius coitor</i> (Hamilton)	+	-	+	-
94	<i>Badis badis</i> (Hamilton)	+	+	-	-
95	<i>Nandus nandus</i> (Hamilton)	+	-	-	-
96	<i>Glossogobius giuris</i> (Hamilton)	+	+	+	+
97	<i>Anabas testudineus</i> (Bloch)	+	-	-	-
98	<i>Colisa fasciatus</i> (Schneider)	+	-	-	-
99	<i>Colisa lalia</i> (Hamilton)	+	-	-	-
100	<i>Colisa sota</i> (Hamilton)	+	-	-	-
101	<i>Channa orieantal</i> (Schneider)	+	-	-	-
102	<i>Channa panctatus</i> (Bloch)	+	+	-	-
103	<i>Channa striata</i> (Bloch)	-	+	-	-

NB: '+' means Present, '-' means absent