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Ichthyofaunal diversity of upper stretches of the River Brahmaputra in Jorhat district of Assam

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Abstract

The study was conducted from April 2022 to September 2022 to explore the ichthyofaunal diversity of Brahmaputra River in Jorhat district of Assam. The present fish faunal record revealed presence of 23 species of fish belonging to 17 genera, nine families and six orders. Cyprinidae was dominant family with seven species in the study area. In terms of species distribution catfishes are dominant with 10 species in the category. Of the 23 species recorded, two species are categorized under near threatened category and one under vulnerable category. This report could be useful for conservation and management of fishes in Jorhat district of Assam.

Keywords:

Fish fauna, habitat, Brahmaputra River

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Introduction

The Brahmaputra river is a well-known transboundary river system recognized for its extensive size. It originates from the Kailash Mountain and traverses a total distance of 2,900 km, passing through Tibet, India, and Bangladesh. The river has a catchment area of approximately 580,000 km² (Baruah & Baruah, 2009; Kumar, 1997). In India, the river flows for 900 km, with 640 km of its course running through Assam (Kumar, 1997). The Assam plain receives significant tributaries originating from the Himalayas, including Subansiri, Ranga Nadi, Jia Bhareli, Puthimari, Manas, and Tipkai, which merge with the Brahmaputra from the northern side. From the east, the Mishmi Hills contribute eastern tributaries such as Dibang and Lohit, while southern tributaries like Burhi Dihing, Dhansiri, and Kopili join the Brahmaputra in the Assam Plain.

The water bodies in North Eastern India are globally renowned for their diverse fish species (Kottelat and Whitten, 1996). The fish diversity in northeast India has been extensively studied by various researchers. The region boasts a rich collection of fish germplasm, with 267 fish species, 114 genera, 38 families, and 10 orders documented in the area (Dutta *et al.*, 2018). According to the findings of Goswami *et al.*, (2012), a comprehensive total of 422 fish species were documented. These species were classified into 133 genera and 38 families. Yadav and Chandra (1994) highlighted the shared fish fauna between the region and the Indo-Gangetic fauna, with contributions from Burma and southern China. Vishwanath (2017) specifically focused on the Brahmaputra river system and identified 229 finfish species, including 27 endemic species. Bhattacharjya *et al.* (2004) conducted a study in

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Assam and reported a cumulative diversity of 217 fish species in the Brahmaputra and Barak River systems. This diverse range of species represented 36 different families. Boruah and Biswas (2002) recorded 167 fish species in the upper Brahmaputra, with a significant proportion considered as ornamental varieties. Further studies by Bhattacharjya *et al.* (2017) reported 141 finfish species in the Brahmaputra river of Assam, while Motwani *et al.* (1962) documented 126 fish species, including 41 commercially significant species. Sarma *et al.* (2012) identified 97 species, including exotic ones, in the lower reaches of the River Brahmaputra in Assam. Das *et al.* (2014) studied the River Siang in the East Siang district of Arunachal Pradesh and identified 90 fish species across eight orders, 24 families, and 59 genera. In their research, Kaushik and Bordoloi (2016) identified 61 fish species in the Ranganadi River, which serves as a tributary of the Brahmaputra. Additionally, Baishya *et al.* (2016) documented 52 small indigenous fish species in the upper stretches of the River Brahmaputra. Additionally, Deori *et al.* (2015) recorded 50 fish species from the Dihing River, a Brahmaputra tributary. Despite these previous studies, the ichthyofaunal studies in the Jorhat district of Assam remain insufficiently covered. Therefore, the present study aims to assess the diversity of fish species in the Jorhat district, filling this research gap.

Material and Method

Fish were caught from upper stretch of the River Brahmaputra in Jorhat district of Assam at a depth of 15 to 20 ft using drag nets, traps, gill nets, and bottom set long lines (Dham Boroxi). The drag nets were

utilized in the main stretch where the river current is least, while the traps and gill nets were employed along the rocky shores commonly referred to as spur/spar. Additionally, the bottom set long lines were placed across the river. The potential upper stretch of the River Brahmaputra covering the Jorhat district was surveyed, and sampling points were distributed accordingly. The fish samples were collected fortnightly for six months starting from April 2022 to September 2022. The collected fish samples were subjected to a series of steps for preservation and identification. Initially, the representative specimens were anesthetized and thoroughly washed. Subsequently, they were preserved in 10% formalin for further analysis in the laboratory. To determine the species of the collected fish samples, reference books by Talwar and Jhingran (1991) and Jayaram (2010) were consulted, following their recommended identification procedures.

Result and Discussion

The main objective of this research was to document the fish diversity in the upper regions of the River Brahmaputra, specifically focusing on the Jorhat district of Assam. A detailed list of observed fish species, along with their local names, size range, and habitat, can be found in Table No. 1. A total of 23 fish species, representing six orders, nine families, and 16 genera, were recorded within the study area (Fig. 1). It is important to note that previous studies conducted by Vishwanath (2017), Bhattacharjya *et al.* (2004), Boruah and Biswas (2002), Bhattacharjya *et al.* (2017), Motwani *et al.* (1962), Sarma *et al.* (2012), Das *et al.* (2014), Kaushik and Bordoloi (2016),

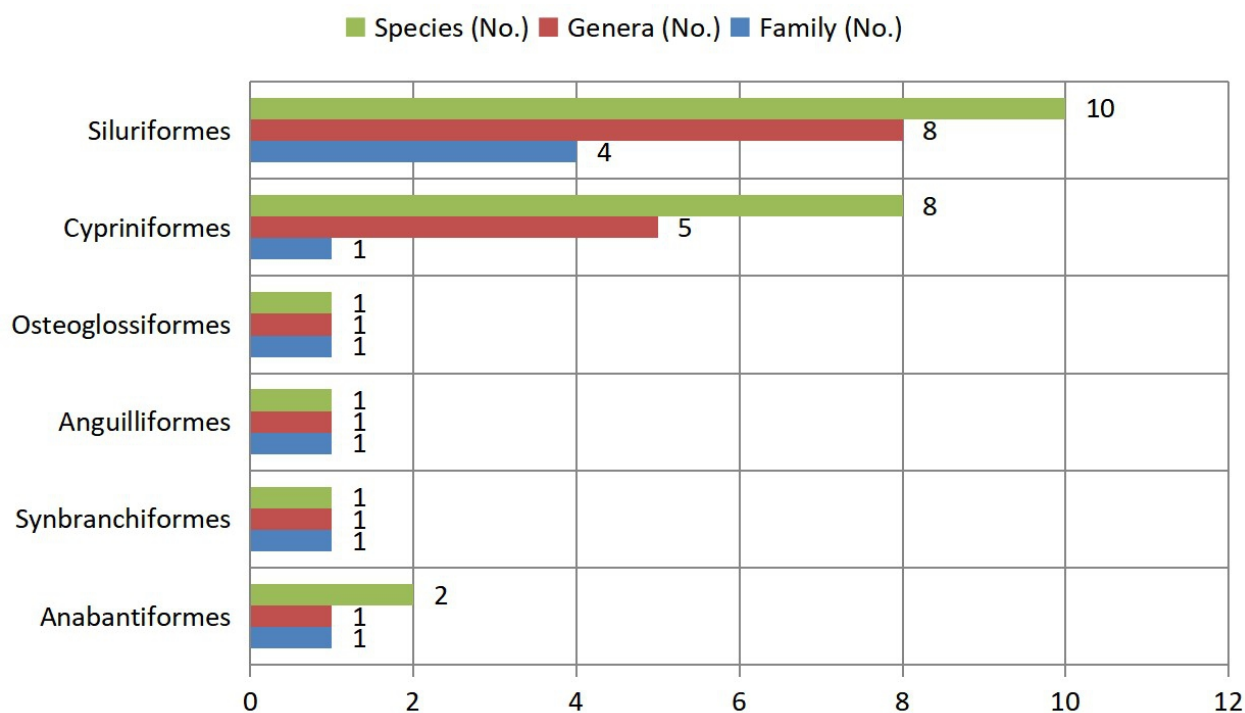


Fig 1. Number of family, genera and species of fishes recoded under six orders from the upper stretches of the River Brahmaputra in Jorhat District of Assam

Table 1. Check list of fishes from upper stretches of the River Brahmaputra in Jorhat District of Assam with note on local name, size range and habitat

Order: Family & Species	Local name	Size Range	Habitat
Anabantiformes: Channidae			
<i>Channa marulius</i>	Sal/Hal	1 to 7.5 kg	Shores with aquatic vegetation
<i>Channa striata</i>	Sol/Hol	0.5 to 2 kg	Shores with aquatic vegetation
Synbranchiformes: Mastacembelidae			
<i>Mastacembelus armatus</i>	Bami	10 to 45 cm	Rocky shores
Anguilliformes: Anguillidae			
<i>Anguilla bengalensis</i>	Kako bami/ Nag bami	1 to 9 kg	Rocky shores
Osteoglossiformes: Notopteridae			
<i>Chitala chitala</i>	Chitol	1 to 10 kg	Rocky shoes
Cypriniformes: Cyprinidae			
<i>Salmostoma bacaila</i>	Selkona	5 to 9 cm	Shallow waters with mild current
<i>Labeo gonius</i>	Kurhi	1 to 2.5 kg	Rocky shores to medium deeper section of the stretch
<i>Labeo rohita</i>	Rou	5 to 8 kg	Medium deep to deeper sections of the stretch
<i>Labeo calbasu</i>	Mali/ Kaliajora	1 to 3 kg	Rocky shores to medium deeper section of the stretch
<i>Labeo catla</i>	Bahu/ Bhokua	5 to 9 kg	Medium deep to deeper sections of the stretch
<i>Cirrhinus mrigala</i>	Mrikia	0.5 to 6 kg	Medium deep pool
<i>Cabdio morar</i> the bottom	Boriala	5 to 13 cm	Shallow water with algal vegetation at
<i>Cyprinus carpio</i>	Common carp	1 to 8 kg	Medium deep pool
Siluriformes: Siluridae			
<i>Wallago attu</i>	Borali	1 to 20 kg	Deeper section of the river
<i>Ompok bimaculatus</i>	Pavo	7 to 16 cm	Shallow to mid deep section of the river stretch
Siluriformes: Schilbeidae			
<i>Eutropiichthys vacha</i>	Bacha	18 to 25 cm	Fast flowing water
Siluriformes: Bagridae			
<i>Bagarius bagarius</i>	Garua/Gorua	3 to 75 kg	Deeper section of the river stretch
<i>Mystus cavasius</i>	Borsingorah	14 to 23 cm	Shallow to deeper areas
<i>Mystus vittatus</i>	Singorah	10 to 18 cm	Shallow to deeper areas
<i>Sperata aor</i>	Arii	3 to 11 kg	Deeper pools
<i>Sperata seenghala</i>	Bheu	4 to 17 kg	Deeper pools
<i>Rita rita</i>	Ritha/Litha	16.2 to 27 cm	Rocky shores
Siluriformes: Ailiidae			
<i>Clupisoma garua</i>	Neria	20 to 35 cm	Fast flowing water

Baishya *et al.* (2016), and Deori *et al.* (2015) have reported a higher number of fish species in the river Brahmaputra in Assam compared to the present study conducted in the selected stretches of the river in the Jorhat district. The reason behind less number of fish fauna from present study compared to earlier fish faunal records could be shorter study duration and limited sampling area. Of the 23 species, the *Chitala chitala* and *Ompok bimaculatus* belong to the near threatened category, *Bagarius bagarius* belong to vulnerable category. All the 23 species which have been recorded except the *C. carpio* are endemic to India.

Conclusion

Out of the documented 23 fish species, two species fall under the near-threatened category, while one species is classified as vulnerable. It is noteworthy that all 23 recorded fish species have food value.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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