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Indigenous fish diversity of Jamtara Forest Division, Jamtara, Jharkhand, India

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Abstract

Indigenous fish (IF) are a great source of nutrition due to the presence of protein, calcium, phosphorous, iron, vitamins, low fat, omega-3 fatty acids, and other micronutrients along with helpful to maintain the aquatic ecosystem of a landscape. The population of IF species are declining due to many factors including anthropogenic and climatic changes. Documentation of IF is very important for further conservation and research & development works. Keeping this in view, an attempt has been made to document the IF of Jamtara Forest Division (JFD), Jamtara, Jharkhand. Survey was carried out from May 2023 to September 2023 and documented 42 IF species of 30 genera and 19 families. Threats are also observed and discussed with local communities and all findings are presented here. The present study will be a base-line data for further works on IF of JFD, Jamtara, Jharkhand.

INTRODUCTION

Fishing is an age-old culture practiced by the people of India since the beginning of human civilization. Humans have been inclined to build their settlements near water bodies so as to easily avail themselves of the benefits of nature. In the coastal regions of India, fish is often consumed with rice, usually fried or in the form of curry. Fish is considered lean meat due to

its low-fat content and is an easily digestible food source of animal protein. It has a remarkable amount of vitamins A and D, which are vital for human bones, teeth, eyes, and skin. They also provide a good supply of calcium, phosphorous, iron, and iodine for humans, which are important requirements to develop resistance against infections (Jerath et al. 2015). Freshwater indigenous fish are more nutritious than saltwater and artificially cultivated ones. They are generally found in rivers, floodplains, ponds, lakes, streams, wetlands, and paddy fields (Hembrom and Bodra 2021). The indigenous fish (IF) traditionally provided income and livelihoods to the local fishing communities, along with maintaining the health and well-being of the rural people, especially the poor (Zafar 2021). IF also maintain the ecological balance of water bodies. They are prey and predators too. They also control the spreading of some health problems like malaria and dengue. Nowadays, the fishing culture is diminishing due to several anthropogenic activities. Climate change, pollution, extensive use of pesticides, overexploitation of fish, etc. are major threats to the habitat, population, and reproduction biology of indigenous freshwater fish. Rapid urbanization is converting water bodies into human settlement areas, grazing areas, or agricultural lands, thereby decreasing the availability of water bodies for fishing. Increased temperatures and acidity, lowered dissolved oxygen, and changes in salinity due to global warming have harshly impacted the survival rate of IF. The introduction and artificial culture of exotic or hybrid fish species into natural waterbodies like wetland areas or other freshwater ponds, lakes, or rivers is also a serious threat to the traditional local fish, causing a decrease in their population or extinction altogether. The loss of traditional indigenous fishing culture is a matter of major concern due to its direct link with the loss of biodiversity, livelihood, and nutrition for the people (Mandal and Nandi 2018). Therefore, initiatives should be taken to conserve and protect the habitat and population of IF. Culturing the indigenous fish varieties can also provide greater economic benefits to the rural fishing communities, along with solving the food security issues of the country. Awareness of the nutritional and medicinal values of indigenous fish can play an important role in their conservation. Keeping the importance of indigenous fish on the health, livelihood, income, economy, and culture of human beings in mind, a survey was conducted in Jamtara Forest Division (JFD), Jharkhand, India, to document their diversity and develop strategies to protect them in their natural habitat. In this aspect, Jamtara Forest Division is blessed with a lot of waterbodies. The district has many wetlands like Maithon reservoir (backwaters), Jamjori Lake, Bududih Lake, Ajay River, Barakar River, Shela River, Rajaiyya river, besides other numerous smaller artificial waterbodies, where variety of migratory and resident birds are observed. The presence of natural and artificial waterbodies holds the potential for thriving avifauna diversity which indicate the diversity of surface and small indigenous fish species as they are food of avifaunal species. The present study brings attention to the conservation of water birds through the conservation of indigenous fish species and provides base-line data for the sustainable livelihood of local communities using fish species.

METHODOLOGY

Jamtara Forest Division, Jharkhand, is home to many water bodies. Therefore, an attempt has been made to document the indigenous fish species. A survey was carried out from May 2023

to September 2023. Interactions were made with fishing communities, and fish species were collected for identification. The local names were noted. The photographs of indigenous fish species were taken and identified in the field as per their morphological characteristics with the help of available literature (Chanda 2018; Kumar and Devidas 2023).

RESULTS AND DISCUSSION

Literature survey revealed that about 43 species of indigenous fish were documented from Jamtara Forest Division, Jamtara, Jharkhand. They are belonging to 30 genera of 19 different families (Table 1). Out of the 43 enumerated indigenous fish species, 19 fish species from family Cyprinidae, 4 species from Channidae, 2 species from Ambassidae, Bagridae, Notopteridae, and 1 species each belonging to the family Amblycipitidae, Anabantidae, Anguillidae, Belonidae, Clariidae, Clupeidae, Cobitidae, Gobiidae, Heteropneustidae, Mastacembelidae, Pangasiidae, Siluridae, Sisoridae and Synbranchidae (Figure 1).

Among the 43 fish species, people have high preference for *Labeo rohita* and *Catla catla* in comparison to other fishes. *Pethia ticto*, *Puntius chola*, *Puntius conchoniis*, *Puntius gelius*, *Puntius sophore*, and *Puntius stigma* are least palatable to the local fishing communities of the study area.

Table 1: Some common indigenous fish of Jamtara Forest Division, Jharkhand

Scientific Name	Local Name	Family	Palatability
<i>Amblyceps mangois</i>	Billi	Amblycipitidae	++
<i>Amblypharyngodon mola</i>	Mourala	Cyprinidae	++
<i>Anabas testudineus</i>	Koi	Anabantidae	++
<i>Anguilla bengalensis</i>	Bao	Anguillidae	++
<i>Barilius barna</i>	Boroli	Cyprinidae	++
<i>Barilius bendelisis</i>	Calha	Cyprinidae	++
<i>Catla catla</i>	Katla	Cyprinidae	+++
<i>Channa gachua</i>	Chanaga	Channidae	++
<i>Channa marulius</i>	Sol	Channidae	++
<i>Channa punctata</i>	Girai	Channidae	++
<i>Channa striatus</i>	Shol	Channidae	++
<i>Chitala chitala</i>	Chital	Notopteridae	++
<i>Cirrhinus mrigala</i>	Mrigal	Cyprinidae	++
<i>Cirrhinus reba</i>	Bata	Cyprinidae	++
<i>Clarias batrachus</i>	Magur	Clariidae	++
<i>Esomus danricus</i>	Darika	Cyprinidae	++
<i>Garra lamta</i>	Chaoksi	Cyprinidae	++

<i>Glossogobius giuris</i>	Balia	Gobiidae	++
<i>Glyptothorax telchitta</i>	Telchitta	Sisoridae	++
<i>Gudusia chapra</i> (Figure 2)	Khairi	Clupeidae	++
<i>Heteropneustes fossils</i>	Singhi	Heteropneustidae	++
<i>Labeo bata</i>	Bata (Figure 5)	Cyprinidae	++
<i>Labeo calbasu</i>	Kalbasu	Cyprinidae	++
<i>Labeo rohita</i>	Rohu	Cyprinidae	+++
<i>Laubuca laubuca</i>	Dankena	Cyprinidae	++
<i>Lepidocephalichthys guntea</i>	Gutum	Cobitidae	++
<i>Macrognathus albus</i>	Bomboie	Mastacembelidae	++
<i>Monopterus cuchia</i>	Kuchia	Synbranchidae	++
<i>Mystus tengra</i>	Tengara	Bagridae	++
<i>Mystus vittatus</i>	Tengara	Bagridae	++
<i>Notopterus notopterus</i>	Pholui	Notopteridae	++
<i>Pangasius pangasius</i>	Pangas	Pangasiidae	++
<i>Parambassis lala</i>	Chanda (Figure 7)	Ambassidae	++
<i>Parambassis ranga</i>	Chanda	Ambassidae	++
<i>Pethia ticto</i> (Figure 4)	Titpunti, Pothi	Cyprinidae	+
<i>Puntius chola</i>	Chola punti	Cyprinidae	+
<i>Puntius conchonius</i>	Punti	Cyprinidae	+
<i>Puntius gelius</i>	Chuna	Cyprinidae	+
<i>Puntius sophore</i>	Lalpunti	Cyprinidae	+
<i>Puntius stigma</i>	Puthi	Cyprinidae	+
<i>Salmostoma bacaila</i>	Banspatta (Figure 3)	Cyprinidae	++
<i>Xenentodon cancila</i>	Gang tur (Figure 6)	Belonidae	++
<i>Wallago attu</i>	Koyali	Siluridae	++

(+: Less palatability; ++: Mild palatability; +++: Good palatability)

Other researchers have also reported the IF from different areas. Verma and Murmu (2010) reported 40 species of fish belonging to 28 genera and 15 families from Dimna Lake of East Singhbhum, Jharkhand which lies near Dalma Wildlife Sanctuary during the survey period of

about 12 months from January to December 2008. Ranjan and Verma (2017) recorded 41 species of indigenous ornamental fish under 19 families and 6 orders during their survey work in the Bokaro district, Jharkhand over the period of 17 months from April 2016 to August 2017. Ranjan and Verma (2017) reported 31 fish species belonging to the 5 orders and 11 families while conducting a survey in Tenughat Dam of the Bokaro district, Jharkhand during the period of April 2016 to March 2017. Hembrom and Bodra (2021) studied all the water bodies from the Dumka block of Jharkhand from 2018 to 2020 and collected fish samples from different freshwater sources using local and modern trapping methods. He described 31 species of fish belonging to 17 families in which the family Cyprinidae was found to be dominant followed by the family Channidae. Tudu et al. (2022) reported 65 species of fish belonging to 45 genera 22 families and 11 orders with the highest species composition in the family Cyprinidae followed by the family Sisoridae from the Swarnarekha river in Jharkhand with a first report on *Cirrhinus cirrhosis* from the state.

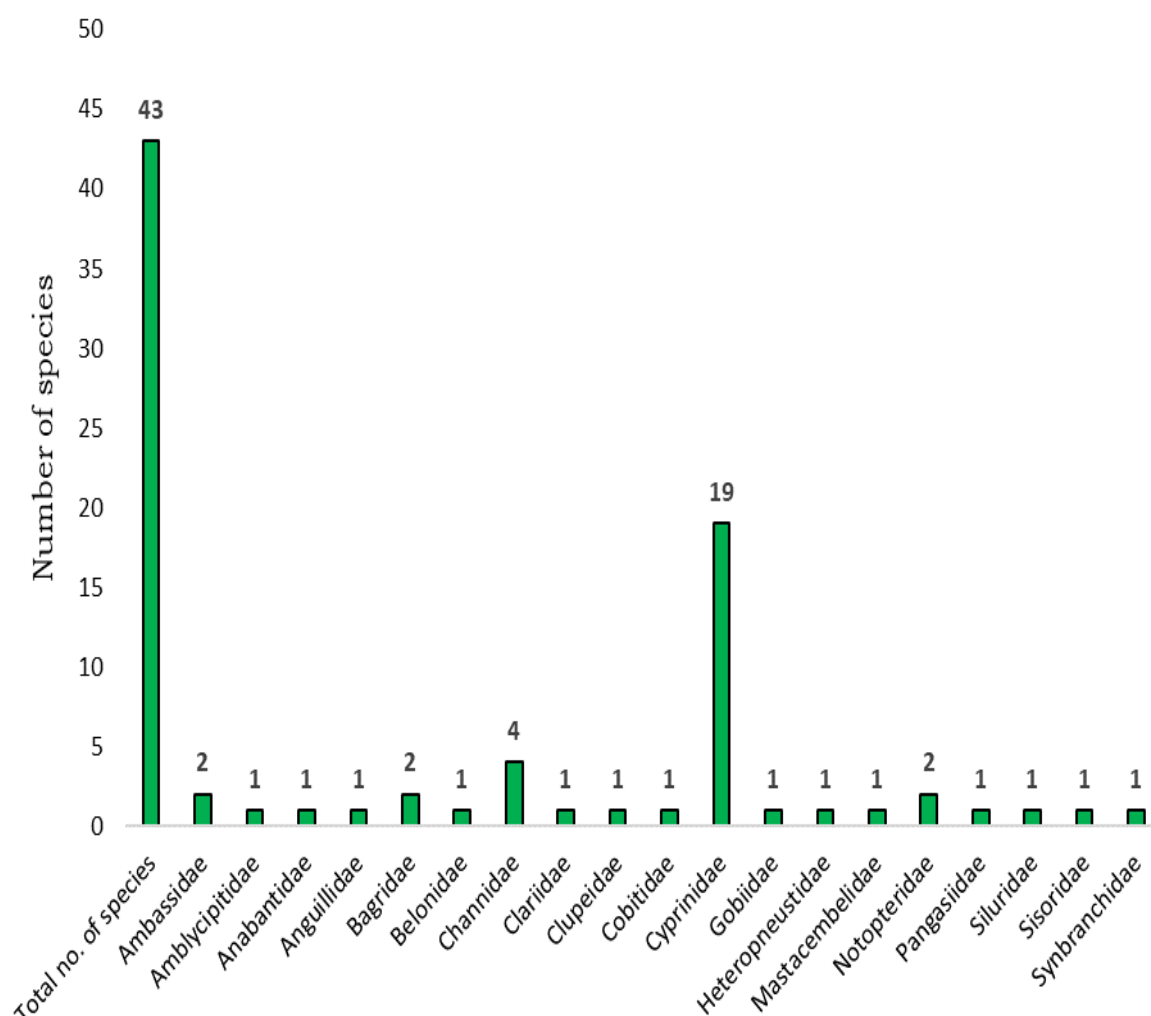


Figure 1: Graph representing the indigenous fish diversity of the study area



Figure 2: *Gudusia chapra* (Khairi)



Figure 3: *Salmostoma bacaila* (Banspatta)



Figure 4: *Pethia ticto* (Titpunti, Pothi)



Figure 5: *Labeo bata* (Bata)



Figure 6: *Xenentodon cancila* (Gang tur)



Figure 7: *Parambassis lala* (Chanda)

CONCLUSION

Indigenous fish species is a wealth of an area. They not only provide the food but also balance the aquatic life and provide livelihood to the local community. Therefore, documentation of Indigenous fish species is very important. The present study has documented 43 indigenous fish species from Jamtara Forest Division, Jharkhand and highlighted their food values. The study concludes that there is an urgent need to take necessary steps for their conservation and sustainable utilization.

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