



Preliminary studies on Ichthyofaunal diversity of river Bagh in District Gondia, Maharashtra, India

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ABSTRACT

The importance of lotic ecosystems as an environmental resource that can be used for the benefit of mankind cannot be overemphasized. It is used for fisheries, domestic and industrial water supply, recreation, transportation, irrigation, communication, tourism as well as for receiving waste water effluents. Their value derives, to some degree, from their biological diversity including genetic, species and community diversity. The present study deals with the ichthyofaunal diversity of river Bagh near Gondia, which is the main tributary of the river Waingangā. The result of present investigation reveals the occurrence of 62 fish species belonging to 08 orders, 16 families and 34 genera among which order Cypriniformes was dominant with 31 species, followed by Order Siluriformes with 12 species, Order Ophiocephaliformes with 06 species and Synbranchiformes with 05 species.

Keywords: *Cypriniformes, fish fauna, Bagh River, Gondia.*

INTRODUCTION

Species diversity varies dramatically among regions and among localities within regions. The lotic ecosystems often support high regional diversity because they are geologically persistent and encompass a wide variety of habitat types. Further, natural environmental variation, which occurs over a range of spatiotemporal scales, maintains this regional habitat diversity (Poff *et al.*, 1997). The spatial and temporal distribution of surface runoff regulates the availability of suitable habitat and influences species diversity. In combination temperature, hydrology, geomorphology and associated riparian vegetation form a habitat (Southwood, 1977) that controls the persistence and diversity of species at local and regional scales (Poff and Ward, 1990).

The natural connectivity of river corridors has been interrupted, preventing migration and dispersal of many species and blocking much access to regional refugia when local conditions deteriorate (Benke, 1990).

Further, the widespread, intentional introduction of non-native species into sites outside their historical biogeographic ranges has disrupted relationships among native riverine species and threatens native species diversity in many lotic ecosystems (Moyle 1986, Minckley and Deacon 1991).

The fish fauna is an important aspect of fishery potential of any water body. The knowledge of fish diversity is essential not only for their rational management but also for conservation strategies. The present study aims to contribute a better knowledge of the ichthyofaunal diversity of the area.

Gondia District is situated between 20°39' to 21° 38' N and 79° 27' to 80°42' E, located in the North eastern part of the Maharashtra state and bordered by states of Chhattisgarh and Madhya Pradesh. The river under investigation is the tributary of river Waingangā and has overall length of about 166 km. It originates from the Chhattisgarh plateau and flows north on granitic landscape.

MATERIALS AND METHODS

The climate of the region varies from semi-arid climate in the north to tropical in most of the region with distinct wet and dry seasons. The studies were carried out during June 2016 to May 2017. Fishes were collected from fishermen on the landing sites nearer

the sampling sites along the stretch of river under study. The fishes were identified up to species by referring standard literature, Day (1985), Srivastava (1985), Talwar and Jhingran (1991), Jayaram (1994) and Menon (1999).

RESULT AND DISCUSSION

Biodiversity is essential for stabilization of ecosystems and protection of overall environmental quality (Ehrlich and Wilson, 1991). The concern for biological diversity is however a concern for man himself. The endangered species signify degradations in the environment, which may threaten mans existence on earth. Fish constitute almost half of the total number of vertebrates of world. Among 39,900 identified vertebrates, fish constitute 54.44% of which 38.72% are fresh water species (Jayaram, 1999).

In the present investigation, 62 fish species recorded belonging to 08 orders, 16 families and 34 genera. Omprakash *et al.*, (2007) reported 50 species of fishes from river Kharun and Jonk of the Mahanadi river system. Dahegaonkar (2008) reported 42 species of fishes belonging to 6 orders and 12 families from four lotic ecosystems near Chandrapur. Bagra and Das (2010) recorded 43 species of fishes including 4 orders and 9 families from Siyom river of Arunachal Pradesh. Jadhav *et al.*, (2011) recorded 58 species belonging to 16 families and 35 genera.

Table 1 : Fish Diversity in Bagh River , Gondia District (M.S.)

Sr. No.	Order	Family	Scientific Name
1	Cypriniformes	Cyprinidae	<i>Catla catla</i>
			<i>Labeo rohita</i>
			<i>Labeo calbasu</i>
			<i>Labeo bata</i>
			<i>Labeo boggut</i>
			<i>Labeo fimbriatus</i>
			<i>Cirrhinus mrigala</i>
			<i>Cirrhinus reba</i>
			<i>Chela phulo</i>
			<i>Chela atpas</i>
			<i>Chela cachius</i>
			<i>Oxygastor oxygastor</i>
			<i>Oxygastor bacaila</i>
			<i>Ctenopharyngodon idella</i>
			<i>Cyprinus carpio</i>
<i>Hypophthalmichthys molitrix</i>			
<i>Lepidocephalus guntea</i>			

Table 1: Continued...

Sr. No.	Order	Family	Scientific name
			<i>Garra lamta</i>
			<i>Garra mullya</i>
			<i>Garra gotyla</i>
			<i>Amblypharyngotdon mola</i>
			<i>Puntius ticto</i>
			<i>Puntius sophore</i>
			<i>Puntius sarana</i>
			<i>Puntius chola</i>
			<i>Nemacheilus botia</i>
			<i>Osteobrama cotio</i>
			<i>Osteobrama belangeri</i>
			<i>Danio devario</i>
			<i>Rasbora rasbora</i>
			<i>Rasbora daniconius</i>
2	Siluriformes	Bagridae	<i>Mystus seenghala</i>
			<i>Mystus vittatus</i>
			<i>Mystus blikeri</i>
			<i>Mystus cavasius</i>
			<i>Mystus aor</i>
			<i>Rita rita</i>
		Siluridae	<i>Ompok pabda</i>
			<i>Ompok bimaculatus</i>
			<i>Wallago attu</i>
		Clariidae	<i>Clarias batrachus</i>
			<i>Clarias gariepinus</i>
Heteropneustidae	<i>Heteropneustes fossilis</i>		
3	OstioGLOSSIFORMES	Notopteridae	<i>Notopterus chitala</i>
			<i>Notopterus notopterus</i>
4	Ophiocephaliformes	Ophiocephalidae	<i>Ophiocephalus marulius</i>
			<i>Ophiocephalus orientalis</i>
			<i>Ophiocephalus punctatus</i>
			<i>Ophiocephalus striatus</i>
		Gobiidae	<i>Glassogobius giuris</i>
			<i>Gobiopsis macrostoma</i>
5	Perciformes	Nandidae	<i>Nandus nandus</i>
		Ambassidae	<i>Chanda nama</i>
			<i>Chanda ranga</i>
6	Synbranchiformes	Mastacembelidae	<i>Macrognathus pancalus</i>
			<i>Macrognathus acculeatus</i>
			<i>Macrognathus armatus</i>
		Cichlidae	<i>Oreochromis mossambica</i>
Anabantidae	<i>Anabus testudinus</i>		
7	Cyprinodontiformes	Belonidae	<i>Xenentodon cancila</i>
		Clupeidae	<i>Gadusia chapra</i>
8	Anguilliformes	Anguillidae	<i>Anguilla bengalensis</i>

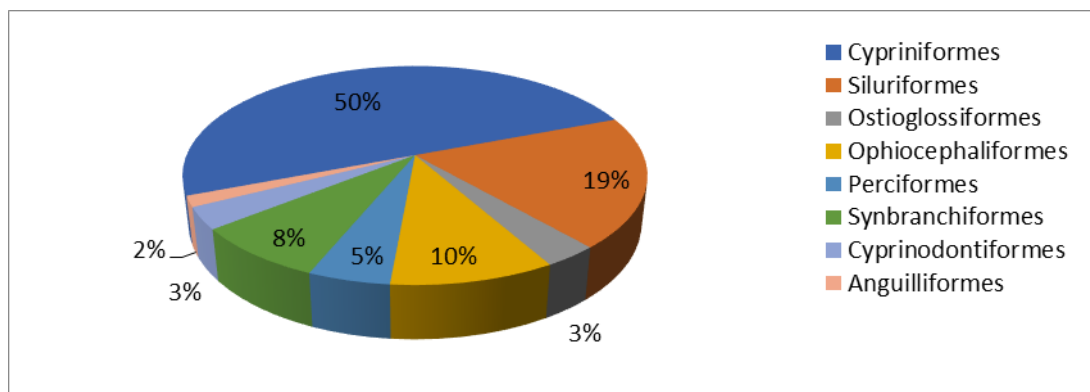


Figure 1: Graphical presentation of fish diversity among different Orders in River Bagh near Gondia

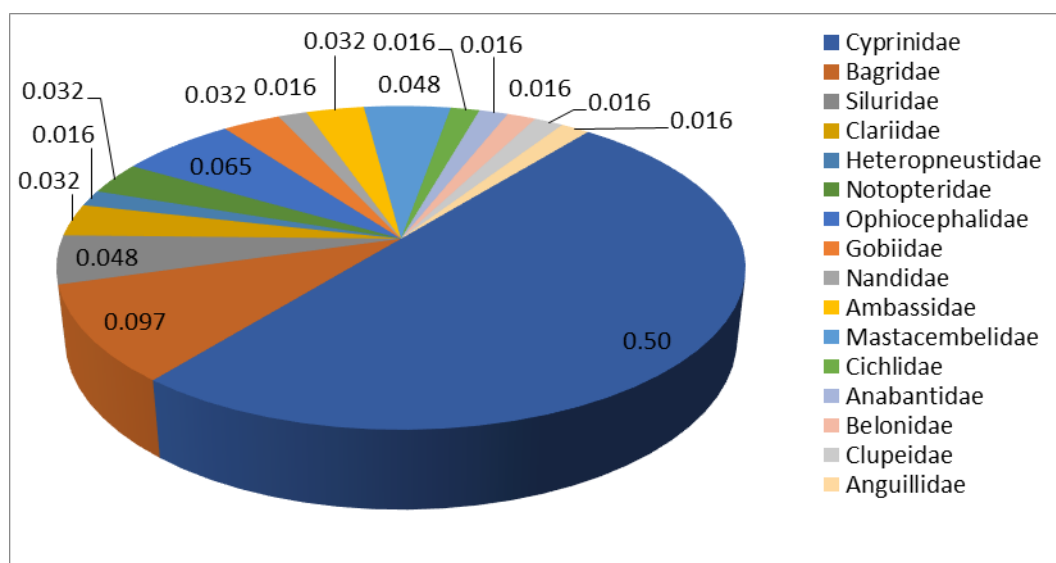


Figure 2: Graphical presentation of fish diversity among different families in River Bagh near Gondia

The dominance of Order Cypriniformes was recorded with 31 species of 17 genera contributing 50% of total fish species recorded. It is followed by Order Siluriformes with 12 species of 06 genera, Order Ophiocephaliformes with 06 species, Order Synbranchiformes with 05 species, Order Perciformes with 03 species, order Ostigi glossiformes and order Synbranchiformes each with two species and order Anguilliformes with one species. Rankhamb (2011) recorded 26 species of 15 different genera belonging to 5 Orders and 7 families from the Godavari river at Mudgal. He observed the dominance of Order Cypriniformes with 15 species, which is similar with the present observations. Jayaram (1995) recorded 195 species of fishes under 93 genera and 46 families from river Krishna and its tributaries.

The family wise interpretation revealed Cyprinidae as the largest family accommodating 17 genera and 31 species. It constituted most of the major carps like

Catla catla, *Labeo rohita*, *Cirrhinus mrigala* and *Cyprinus carpio*. The occurrence of *Garra gotylya*, *Garra mullya* near rocky substratum was common while *Rasbora daniconius* in the shallow region. Various species of genus *Labeo* recorded but with fewer occurrences except *rohita*. Family Cyprinidae followed by Family Bagridae with 06 species maximally dominated by genus *Mystus*. Among different species, *Mystus cavasius* shows its abundance. It is very popular food fish in the local area. The other dominant families in diversity were Mastacembalidae and Ophiocephalidae with 3 and 4 species respectively. In family Ophiocephalidae, *Ophiocephalus marulius* and *Ophiocephalus orientalis* were dominated the genera with their abundance. In family Mastacembalidae, *Macrognathus acculeatus* commonly called lesser spiny eel was abundant.

Abundance of species *Oreochromis mossambica* member of Family Chichilidae can become a

problematic invasive species and may disrupt relationships among native riverine species and threatens native species diversity. Moyle, 1976 observed that introduction of *O. mossambicus* and *Tilapia zilli* in California reservoir has affect the native ichthyofauna. The invasion of alien fishes is potentially serious threat to the indigenous fish fauna (Singh and Lakra, 2011)

The occurrence of species like *Glossogobius gyrus*, *Xenontodon cancilla* (Indian garfish), *Anguilla bengalensis* (river eel), *Gadusia chapra*, *Nandus nandus*, *chanda ranga* (Indian glass fish) was rare in the vicinity.

CONCLUSION

In the present investigation, it is observed that anthropogenic activity altering the fine tune of the river ecosystem and causes habitat alteration and fish stock depletion. It is inferred that, river is sustaining the present pollution load. However, logarithmic growth of human population and habitat expansion in near future is likely to influence the water quality and fish diversity of the river system.

Conflicts of Interest: The author declares no conflict of interest

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