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Fish diversity of Morna River with first report of *Ophisternon benghalenses* from Maharashtra, India

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Abstract

The fresh water fish community of the Morna River in Washim and Akola districts of Maharashtra was studied for a period of one year (August 2012 to July 2014). A total of 30 fish species were recorded during the study belonging to 10 families and 5 orders. Among these, *Ophisternon bengalense* was first time reported from Maharashtra on West coast of India. Family Cyprinidae was dominant comprising 46% of species followed by Notopteridae, Balitoridae, Channidae, Bagaridae, Siluridae and Mastocembelidae (7% each), Gobidae, Ambassidae, Symbranchidae, and Claridae (3% each). This clearly illustrates the fish diversity of the Morna River. Among the reported species of fishes juvenile of *Ophisternon bengalense* is first time reported from Maharashtra.

Keywords: *Ophisternon benghalenses*, Maharashtra, Morna River

Introduction

The country is endowed with vast and varied resources possessing river ecological heritage and rich biodiversity. Freshwater fishery sites are varied like 45,000 Km. of rivers, 1,26,334 Km. of canals, ponds and tanks 2.36 million hectares and 2.05 million hectares of reservoirs [1]. During the last two decade, biodiversity attracted attention of many workers exploring the flora and fauna of different habitat of the world. Fishes form one of the most important groups of vertebrates, influencing our life in various ways. Fresh water ecosystems support large numbers of species of plants and animals. Fish inhabiting freshwaters comprise 25% of living vertebrates (about 55,000 described species) and represent 13-15% of the 100,000 freshwater animal species currently known [2]. Piscine diversity in aquatic ecosystem refers to variety of fish species. Depending on context and scale piscine diversity can refer to alleles or genotypes within a piscine population, to species or genotypes or life forms within a piscine community. According to a workshop estimate hosted out by National Bureau Fish Genetic Resources a total of 227 Indian freshwater fishes are threatened based on the IUCN Red list Categories of 1994.

Many studies are already been carried out by different workers on the many reservoirs and rivers of Maharashtra some of which includes, Ahirrao and Mane^[3] studied the fish diversity and taxonomy and fisheries from fresh waters of Parbhani district, and recorded thirty two species of fishes belonging to twenty five genera and nine families from two orders. Shinde *et al.* [4]. In Pravara river at Pravara Sangam (Ahmednagar) reported 41 fish species belonging to 7 orders, 14 families and 26 genera. Fifty one species belonging to 14 families and 33 genera were recorded by Kharat *et al.* [5]. Out of which 13 endemic to the Western Ghats and two to the Krishna river system. Sheikh [6] investigated 37 species of freshwater fishes belonging to 21 different genera, in 11 families 08 order from Pranhita River at Sironcha of, Gadchiroli district. Tamboli [7] surveyed riverine fish fauna of Bilaspur division of Chhattisgarh State and recorded a total 65 species of fishes in the Mahanadi river basin, 53 fish species in Mand River, 45 fish species in Hasdo river, 43 fish species in Arpa river, 41 was in Kelo river, 33 species of fishes in Leelagar and 26 species of fishes in Borai river. Studies on ichthyofaunal diversity of Krishna River in Mahabubnagar district of Telangana was carried out by Laxmappa *et al.* [8]. And a total of 109 fish species belonging to 7 orders 19 families and 46 genera was recorded during their study.

Most studies on riverine fisheries of Maharashtra have focused on large rivers such as Godavari and several authors showed Western Ghats of India as a rich freshwater fish fauna

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with a high level of endemism [9]. However, studies focusing on small riverine fisheries are rare probably due to the perception that fisheries of small rivers are not economically viable although fish from such rivers may grow to large sizes. Despite these fisheries production opportunities, these ecosystems are currently faced with serious anthropogenic degradation, including poor agricultural activities, clearance of riparian vegetation, nutrient enrichment and climate change. The need for biodiversity studies of such ecosystems cannot therefore be overemphasized. This study focused on the fish diversity of the river Morna. The present work was undertaken to document its fish fauna.

2. Material and Methods

Description of Study site: Morna River, one of the minor river (Fig. 1) in Vidarbha region of Maharashtra and one of

the tributary of the Purna River comes in the vicinity of Tapi. The Morna River originates from the village Nagzari located in Washim district (20.21645 E 76.94407N) and meets the river Purna at the village Andura in Akola district (N 20.89083 E 76.86386). Physiographically, the study area consists of minor depositional and majority of erosional landforms, the topography is characterized by the presence various landforms like mesa, butte, lava hills, lava flat, escarpments and lava plateaus. The area is dominated by monotonous flat top terraces, which are results of lateral erosion of lava flows. At places, local radial pattern of drainage is also seen. The river is dammed at three places viz Kalambeshwar (N 20.24754 E 76.94304), Medshi (N 20.31179 E 76.94476) and Patur (N 20.42088 E 76.99636) to save Akola city from flood condition.

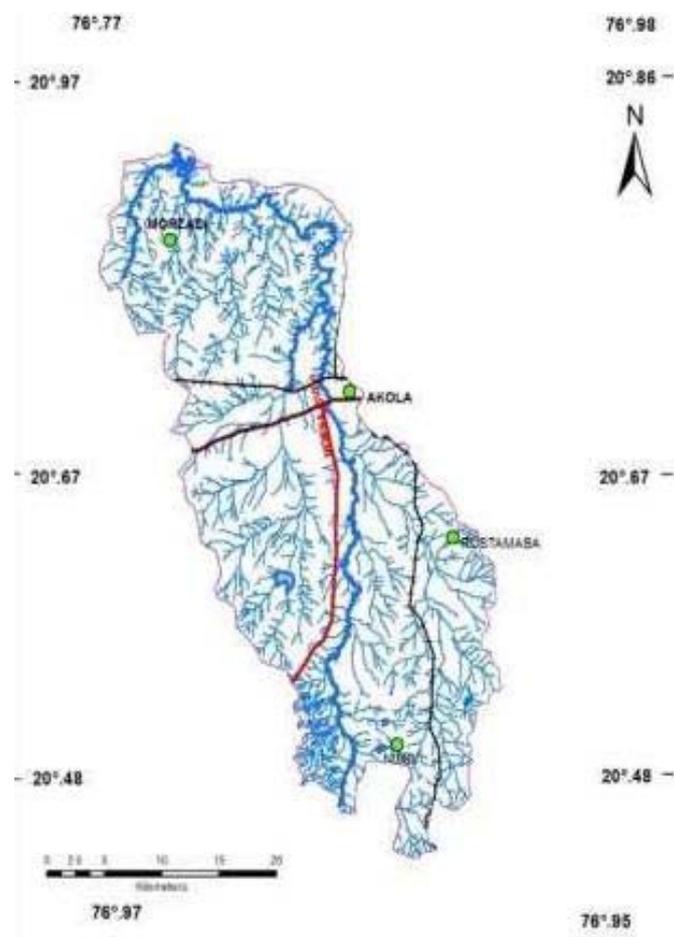


Fig 1: Morna River Basin in Akola district

Specimen Collection

The fishes were collected monthly from all the three reservoirs and other sites from August 2012 to July 2014 with the help of local fishermen by using different nets like gill net, cast net, traps, hooks and hand picking from various sites fixed on the stretch of the river. The samples were brought to the laboratory and their colouration, general pigmentation and fin formula was recorded and were preserved in 10% formalin. The identification of the species was carried out by using standard literatures of Talwar and Jhingran, vol. 1 & 2 [10], Day, vol. 1 & 2 [11]. Some of the samples were sent to Zoological Survey of India, WRS Pune for further identification.

3. Results and Discussion

Present investigation revealed with a total of 30 species of fishes belonging to 11 families and 5 orders (Table 1). Family Cyprinidae was dominant comprising 46 % of species which is supported by Vishwakarma & Vyas[12] followed by Notopteridae, Balitoridae, Channidae, Bagaridae, Siluridae and Mastocembelidae (7 % each), Gobidae, Ambassidae, Symbranchidae, and Claridae (3% each) which is shown in Fig. 2. Same observations were recorded in the ichthyological fauna from the Buldhana District of Maharashtra carried out by Joshi *et al* [13] Among the reported species of fishes juvenile of *Ophisternon bengalense* (ZSI, WRC Pune, F. No. 6-1/2012/825 dated October 12, 2012) is first time reported from Maharashtra

(Fig. 3). In India, its distribution is mainly in east-coastal waters. It is likely to occur along west-coastal waters also since it is reported from the Kerala coast. That means the coastal waters of all the littoral states are likely to have its distribution. That is, the coastal states of West-Bengal, Odisha, Andhra Pradesh, TamilNadu (along the East Coast), Kerala, Karnataka, Goa, Maharashtra, and Gujarat (along the

West Coast), though the reported cases of distribution along the coasts from Karnataka to Gujarat are not available (Reply through email by Director, ZSI on Oct 30, 2012). Dahanukar and Raghvan^[14] provided the checklist of 320 species of freshwater fishes of the Western Ghats with record of *Ophisternon bengalense*.

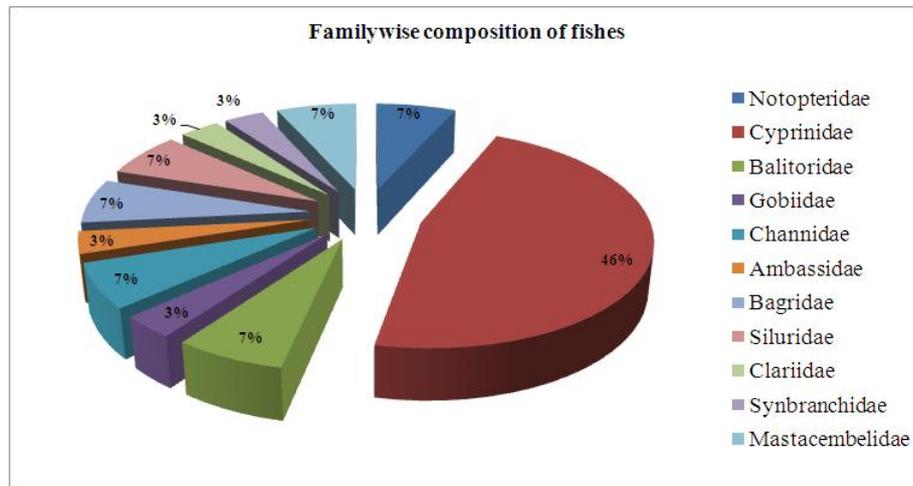


Fig 2: Percent composition of families of fishes from the Morna River.

Table 1: Species composition of fishes of Morna river.

Sr. No.	Order	Family	Species	
1	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i> (Pallas)	
2			<i>Notopterus chitala</i> (Hamilton)	
3	Cypriniformes	Cyprinidae	<i>Puntius sophore</i> (Hamilton)	
4			<i>Puntius sarana</i> (Hamilton)	
5			<i>Catla catla</i> (Valenciennes)	
6			<i>Labeo rohita</i> (Hamilton)	
7			<i>Labeo calbasu</i> (Cuvier)	
8			<i>Cirrhina mrigala</i> (Bloch)	
9			<i>Cirrhinus reba</i> (Hamilton)	
10			<i>Ctenopharyngodon idellus</i> (Steindachner)	
11			<i>Hypophthalmichthys molitrix</i> (Valenciennes)	
12			<i>Cyprinus corpio</i> (Linnaeus)	
13			<i>Gonoproktopterus kolus</i> (Sykes)	
14			<i>Crossocheilus latius</i> (Hamilton)	
15			<i>Garra mullya</i> (Sykes)	
16			<i>Rasbora daniconius</i> (Hamilton)	
17			<i>Nemacheilus moreh</i> -(Sykes)	
18			Balitoridae	<i>Nemacheilus botia</i> (Hamilton)
19			Perciformes	Gobiidae
20	Channidae	<i>Channa punctata</i> (Bloch)		
21	<i>Channa marulius</i> (Hamilton)			
22	Ambassidae	<i>Parambassis ranga</i> (Hamilton)		
23	Siluriformes	Bagridae	<i>Mystus bleekeri</i> (Day)	
24			<i>Mystus cavasius</i> (Hamilton)	
25		Siluridae	<i>Ompok bimaculatus</i> (Bloch)	
26			<i>Wallago attu</i> (Bloch & Schneider)	
27			<i>Heteropneustes fossilis</i> (Bloch)	
28	Synbranchiformes	Synbranchidae	<i>Ophisternon bengalense</i> (McClelland)	
29		Mastacembelidae	<i>Mastacembelus armatus</i> (Lacepede)	
30			<i>Macrogathus pancalus</i> (Hamilton)	

Details of *Ophisternon bengalense*

Locality: Morna River Medshi Tq. Malegaon Dist. Washim
Date of collection: 25th August 2012 (1st Specimen) and 27th August 2012 (2nd specimen)
Colour: Blood red (in fresh specimen)
Length: 17 cm

Post anal length: 8 cm
Length of head: 6 mm
Mouth cleft: 2mm (1+1mm)
 Cylindrical, elongated, reticulated body, tail laterally compressed. Blood vessel are remarkably seen mid-dorsally restricted to head.

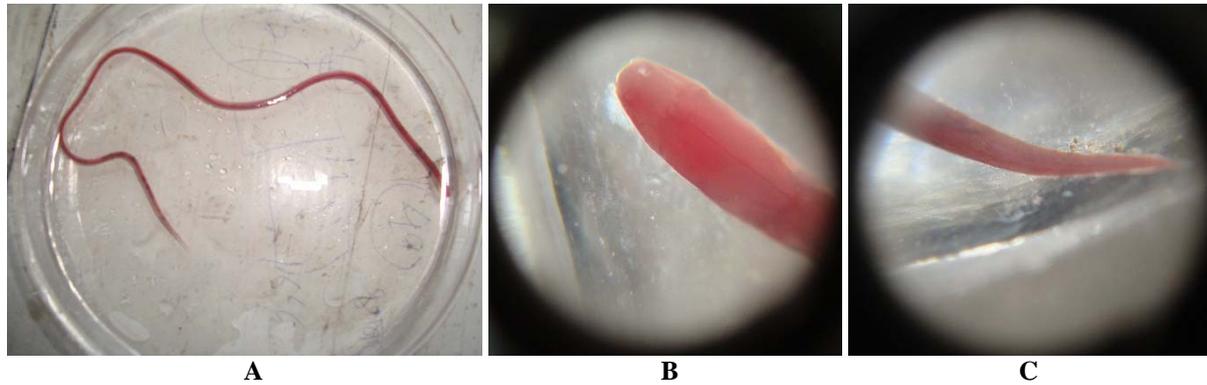


Fig 3: *Ophisternon bengalense*, A- A juvenile in glass aquarium, B- Blood vessel remarkably seen mid-dorsally restricted to head C- Laterally compressed tail

Most of the above fishes are Cyprinids. This is in agreement with observations of in almost all the rivers surveyed where Cyprinids also dominated.

4. Conclusion

Recognizable diversity of fishes is seen in the river but still it requires further investigation to be carried out in night hours so as to estimate the fishes which carry. The over

exploitation, aquatic pollution, construction of check dams across the rivers, destruction and degeneration of habitat, anthropogenic activities, mining activities, deforestation and invasion of exotic species are the main threat to global freshwater biodiversity. Over propagation of hydrophyte like *Eicchornia sp.* at the Akola city is became a serious problem as it forms barrier in the free movement of the lotic species.



Fig 4: The surface of the river is completely covered by *Eicchornia sp.* at Akola city

5. Recommendations

This freshwater ecosystem is the most endangered ecosystem and its decline is greater than the most affected terrestrial ecosystems. It can be managed and conserved by

- i. Reducing destruction and degeneration of habitat.
- ii. Controlling anthropogenic activities, mining activities, deforestation and invasion of exotic species.
- iii. Controlling large scale industrialization and the consequent effluent discharge which is going to make the rivers lifeless or dead.
- iv. Avoiding the construction of check dams across the rivers, interrupts the fish migration during its breeding season.

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