RESEARCH ARTICLE

Existence of the freshwater fish faunal diversity in Osmanabad district (MS), India

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ABSTRACT

The present study deals with the existence of the fish faunal diversity in riverine and reservoir in Osmanabad district (Mah), India. During the investigation study period 2015-16 it was observed that the number of 26 species of fish fauna belonging to 12 families and 6 orders were recorded. The Cypriniformes represented 11 species of the fishes, followed by Siluriformes - 6 species, Perciformes - 5 species, Ostcoglossiformes - 2 species, Anguilliformes - 1 species and Synbranchiformes - 1 species were observed. The highest number of 11 species was recorded in the order of Cypriniformes. The predominant order of fish fauna in this district are Cypriniformes, Siluriformes and Perciformes. All above fish fauna species recorded were found to be widely distributed in the riverine and reservoirs. Detailed results are summarized in the present paper.

Keywords: fish faunal diversity, Cypriniformes, Siluriformes and Perciformes.

INTRODUCTION

Biodiversity is an important factor for the stability of an ecosystem. In the Asian region the knowledge of the freshwater fish faunal biodiversity and its conservation aspects are relatively less documented as it is still in exploration and discovery phase (Nguyen and DeSilva, 2006). Similarly, Indian fish fauna remains in need of in depth systematic study as many species are still to be described or to be discovered and the available information is form a few well studied location only (Bhat, 2003., Goyal and Arora, 2009, Le`ve`que *et al.,* 2008; Molur and Walkar, 1998). India is one of the mega biodiversity countries in the world. There are rich in freshwater ecosystems (Kar *et al.,* 2006). There are 450 families of freshwater fishes globally, out of which 40 families are represented from India (Jayaram, 2010, Keshave *et al.,* 2013). India possesses maximum number of fresh-water fishes comprising 225 species (DeSilva, 2007; Karmarkar, and Das, 2005). The freshwater resources are currently experiencing an alarming

rate of decline in fish diversity with 17 species critically endangered, 69 species under endangered and 81 species under vulnerable status in the East Himalayas and Western Ghats (Allen *et al.,* 2010; Molur *et al.,* 2011; Shinde *et al.,* 2009).

Dam and reservoirs in India, which are constantly increasing in number, play an important role not only in electric and water supply but also in providing a source of fish to be local community, for food, research, sustainable aquaculture and maintenance of fish diversity (Yusoff and Ambak, 1999). Most of the rivers and reservoirs are now dominated by exotic fish like grass carps, silver carp and other predatory fishes, which tolerate high pollution and static water levels. Over exploitation and habitat degradation as an example have depleted the stocks and reduced the replacement rate in the population (Khan *et al*., 1996).

Previous study indicates that most of the work is related to fish fauna available from riverine and reservoir ecosystem. Very little attention is information about the freshwater fish diversity except the work (Kharat *et al.,* 2012; Shinde *et al.,* 2009). In the present investigation an attempt has been made to highlight the fish diversity to formulate future strategies for development and fish conservation & also helps in species selection for aquaculture in this region.

MATERIAL AND METHODS

Osmanabad is one of the district of Marathwada regions of the state of Maharashtra in India. It is situated in the southern part of the state. It lies on the Deccan plateau, about 600 m above sea level. It is lies between north latitudes 17^0 35` and $18^0$ 40` and longitude 75^0 16` and $76^0$ 40`. The Osmanabad district (fig-1) has a geographical area of 7512 sq.km the district forms part of Godavari basin and Manjra sub basin. Manjra, Sina, Terna, Bori, Benitura, Banganga are the main rivers flowing through the district.

The rainy season starts from mid-June and continues till the end of September. The climate is humid in October and November and dry and cool from mid-November to January. From February to June the climate is dry and becomes increasingly hot. During summer the temperature of Osmanabad district is low compared to other districts of Marathwada region. The average annual rainfall in the district is 730 mm. Temperature max 42.1^{0}c and min 8^{0}c.

The freshwater fishes were collected with the help of local fisherman by fishing craft, gears and various types of nets are used (fig-2). Collected fishes were properly preserved in 10% formalin in laboratory. All the specimen fishes were identified performed standard literature. The Integrated Taxonomic Information System (ITIS) standard report fish base (http://fishbase.org) and other reference books are used as fish identified up to species level.

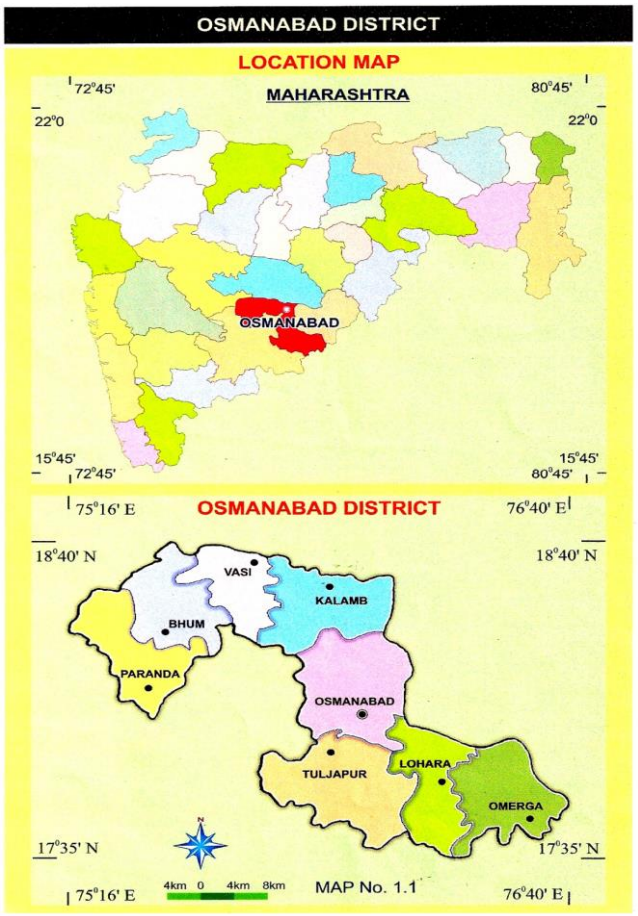

Fig 2: Location study area of existence of the freshwater fish faunal diversity in riverine and reservoir of Osmanabad district, Maharashtra State.

RESULTS AND DISCUSSION

In the present investigation total number of 26 species occurs in freshwater fish fauna belonging to 6 orders. The analysis of data indicated that the order Cypriniformes was dominant with 11 fish species followed by order Siluriformes 6 fish species and Perciformes 5 fish species. The order Osteoglossiformes two fish species, Anguilliformes and Synbranciformes each with one species have been recorded are shown in Table 1 and Fig 3.

Table 1: The freshwater fish fauna diversity existence in various river and reservoirs of Osmanabad district.

Sr. No	Order	Family	Scientific name of the fish species
1	Cypriniformes	Cyprinidae	*Catla catla* (Ham and Jhingran)
			Cirrhinus mrigala (Hamilton)
			Cyprinus carpio (Linnaeus)
			Labeo rohita (Ham and Buch)
			Labeo calbasu (Ham and Buch)
			Labeo fambriatus (Ham)
			Puntius ticto (Ham)
			Puntius vittatus (Day)
			Rasbora daniconius (Ham and Buch)
			Ctenopgaryngodon idella
		Nemacheilinae	*Nemacheilus anguilla*
2	Siluriformes	Bagridae	*Mystus seenghala* (Sykes)
			Mystus cavasius
			Mystus vittatus
		Siluridae	*Wallago attu* (Schneider)
		Heteropneustidae	*Heteropneustes fossilis* (bloch)
		Claridae	*Clarias batrachus* (Linnaeus)
3	Perciformes	Channidae	*Channa marulius* (Ham)
			Channa punctatus (Bloch)
			Channa striatus (Bloch)
		Anabantidae	*Anabas testudineus*
		Cichlidae	*Oreochromis mossambicus* (Peters)
4	Anguilliformes	Anguillidae	*Anguillia bengalenesis* (Gray)
5	Osteoglossiformes	Notopteridae	*Notopterus notopterus* (Pallas)
			Notopterus chitala (Ham)
6	Synbranchiformes	Mastacembelidae	*Mastacembelus armatus* (Lac)

Fig. 2: Capturing the freshwater fish of the local fisherman in Osmanabad district (Mah).

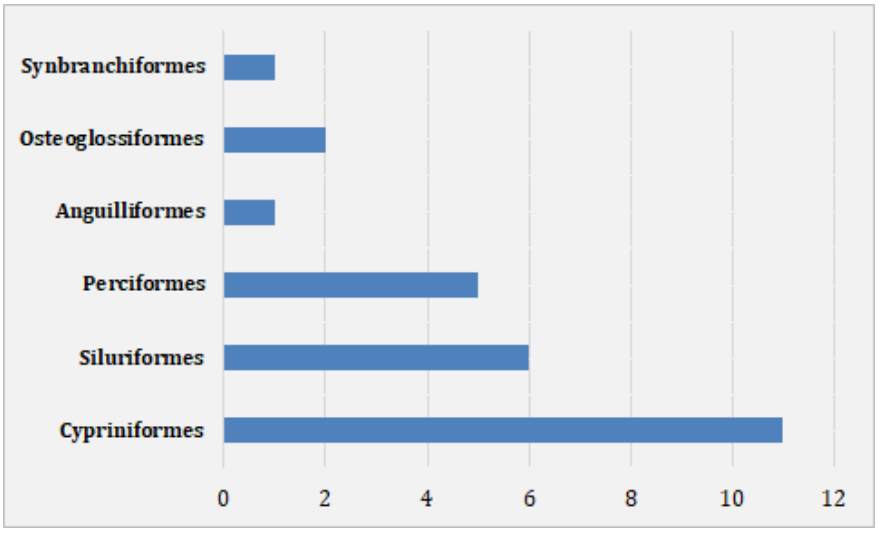

Fig. 3: Diagrammatic representation of the existence of fish order in riverine and reservoir of Osmanabad district.

The family Cyprinidae *Catla catla, Cirrhinus mrigala, Cyprinus carpio, Labeo rohita*, L. calbasu, L. fimbriatus, *Puntius ticto*, P. vittatus, *Rasbora daniconius, Ctenopgaryngodon idella* and *Nemacheilus anguilla* were recorded. The freshwater fish labeo are three species represented by Cyprinus genus.

The order Siluriformes followed by four families and contributed by 6 fish species, *Wallago attu, Mystu seenghala, M. cavasius, M. vittatus, Clarias batrachus* and *Heteropneustes fossilis* were observed.

The order Perciformes followed by three families and contributed by 5 fish species, *Channa marulius, C. punctatus, C. striatus, Anabas testudineus* and *Oreochromis mossambicus* were recorded. The order Anguilliformes was contributed *Anguillia bengalenesis*. The family Notopteridae was contributed *Notopterus notopterus* and *Notopterus chitala* and the order Synbranchiformes contributed by fish species Mastacembelus armatus were found.

In previous studies various workers have been studied the taxonomical fish diversity from riverine as well as reservoir system. The present findings are based on the available published literature and samples at zoological survey of India, Pune suggesting that there are 73 freshwater fish in the state of Maharashtra (Ghatge and Shelke, 2013, Panigraphy *et al.,* 2010). Reservoir fisheries in Maharashtra use mostly transplanted Indian carps (*Catla catla, Labeo rohita* and *Cirrhina mrigala*) and exotic species (Hypopthasmichtys molitrix, Ctenopharyngodon idella and *Cyprinus carpio*) as stocking material. Some of the reported exotic species in Maharashtra are Oreochromis mossambica (Kharat, 2003., Singh and Lakra, 2011., Sugunan, 1995). In recent times anthropogenic activities and climatological change are drinking its biodiversity under severe crises and thus making it the most endangered natural system in the world (Suski and Cooke, 2007, Woodward *et al.,* 2010). About 28 fish species observed including 9 species of carps, 5 of catfishes, 2 of feather backs, 5 of live fishes and 7 belonging to miscellaneous fishes in Palas Nilegaon reservoir in Osmanabad district (Sakhare and Joshi, 2000).

Studied Ichthyofish diversity and conservation aspect in a lake and rivers ecosystem in India's inland water resources are diversified as they are plentiful (Khan *et al.,* 1996; Kharat *et al.,* 2012). Reservoir contributed the single largest inland fishery resources both in terms of size and production potential (Kamble and Medkhede, 2013). Fish species were the important indicator of ecological health. The abundance and health of fish showed the health of water bodies (Hamzah, 2007).

The present work is concluded that the existence of freshwater fish fauna diversity assumes top most priority under changing habitat degradation and biological characters of species serve the baseline information for further studies on resource conservation and maintenance. The finding of this study is expected to benefit the planning and management toward sustainable fishery and conservations

programs of riverine and reservoir. The total number of species recorded during this study period has shown a good indicator of rich diversity in riverine and reservoir of Osmanabad district in Maharashtra.

Conflicts of interest: The authors stated that no conflicts of interest.

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