



## STUDY OF ICHTHYOFAUNA OF LONIMAVLA RESERVOIR IN RELATION TO AQUACULTURE PARCTICE, AHMEDNAGAR DISTRICT, MAHARASHTRA.

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### ABSTRACT:

The present investigation was carried out to study the ichthyofauna of Lonimavla reservoir and its potential towards fish culture. The assessment was based on the study of fish diversity from December 2013 to November 2014. During the study period altogether 11 fish species belonging to 6 families and 5 orders were found in the dam. The members of order Cypriniformes dominated by 6 species followed by order Perciformes with 2 species and orders Clupeiformes, Mastacembeliformes and Siluriformes with one species each. The present study showed that Lonimavla reservoir possesses rich fish diversity and served the need of local fishermen community and also protein rich food to the local people but proper conservation measures are required to maintain sustainability and richness of the species diversity of the reservoir.

**Keywords:** Ichthyofauna, Lonimavla reservoir.

### INTRODUCTION:

Fishes constitute the most conspicuous component of inland aquatic fauna and rank very high as a source of proteins. Aquatic ecosystem consists of physico-chemical and biotic components which directly affect the diversity of flora and fauna of water bodies (Borane, 2015). Fishes are the only major group of vertebrate which affect the human civilization from ancient time. They are one of the good and cheapest sources of protein food for all classes of people. So it is essential to study the distribution and the availability of fish from freshwater reservoirs and tanks (Khodake et al., 2014).

Fishes are one of the important elements in the economy of many nations as they have been a stable item in the diet of many people. For sustained exploitation and simultaneous conservation of fisheries resources, basic scientific information on biodiversity is vital (Sone and Malu, 2000; Shendge, 2008; Pawar et al., 2011). Fish diversity is also good bioindicators of water quality like zooplankton species considered as biological tool for further bio-monitoring and assessing trophic status of water bodies (Kawade and Pandarkar, 2015, Kale et al., 2017). India occupies 9<sup>th</sup> position in the world in provisions of freshwater larger biodiversity. There are about 450 families of freshwater fishes globally. Roughly 40 are represented in India. About 25 of these families contain commercially important species. (Khodake et al., 2014). In India there are 2500 species of fishes of which 930 lives in freshwater and 1,570 are marine (Ubarhande et al., 2011

and Das B. K. et al., 2014). The study of fish diversity in reservoir used for fish cultivation becomes an essential tool for better fish production. In the field of fish diversity of different freshwater bodies earlier contributions were made by many workers (Khedkar, 2005; Rao et al., 1998; Sharma and Nayak, 2001; Sone et al., 2008; Srivastava et al., 2008; Pawar and Pandarkar, 2010; Pawar et al., 2011). There are over 19000 reservoirs in India covering 3,15,366 ha and many more are under construction (Sugunan, 2000). Reservoir fishery in India is also important from social economic point of view as it has the potential of providing employment to about 2 million people (Khan et al., 1991). In fish diversity and its culture, studies of interrelationship between the physicochemical parameters and plankton production of reservoir and its relation with fluctuation of zooplankton are of great importance (Kawade and Pandarkar, 2014, 2016a, 2016b).

For successful pisciculture, the water in which fish are grown should have favorable conditions for their growth which, in turn, is intimately linked with several physical, chemical and biological characteristics of water and management practices adopted. Physico-chemical characteristics of water will affect the primary and secondary production of the water bodies. The survival and production of fish in a water body is dependent on the primary and secondary production. Primary production depends on the water quality parameters. Fish growth under culture condition is greatly dependent on the availability of zooplankton

population. All carps in larval and juvenile stages feed exclusively on zooplankton, which provides food for fishes and plays a major role in the fish production. Productions of fish from water bodies basically depend on right selection of cultivable varieties and control of predatory, weed fishes (Sone and Malu, 2000) and predator insects (Singh, 2007). In any fish pond, different types of predator wild fishes, aquatic insects, etc., are very common. The predator fish prey on the small fishes. The predator insects are also harmful as they prey on the small fries and fingerlings. They also bite and injure the big fishes and cause a big loss in fish farming.

Lonimavla reservoir is selected as freshwater bodies for the present study, where several edible fish species occur and fishing is done regularly. There is tremendous scope for enhancing inland fish production in this water body through scientific management. No attempt so far been made to study fish diversity from this reservoir. Hence, it was felt essential to undertake this study.

#### **MATERIAL & METHODS:**

Lonimavla reservoir, selected as a freshwater body for the proposed investigation is located at village Lonimavla, Tahsil - Parner in Ahmednagar District, Maharashtra. The reservoir is 66 km away from west of Ahmednagar city. It is located between 9°0'40" North latitude and 74°19'24" East longitudes, western part of Ahmednagar district. This reservoir is completely filled not only in monsoon season but also in rest of the seasons due to inflow from Kukadi canal. Fishes were collected with the help of local fishermen using different type of nets, during December 2013 to November 2014 from Lonimavla reservoir.

Immediately photographs were taken with the help of digital camera. After noting their original colour and general pigmentation, the specimens were brought to the laboratory and preserved in 10% formalin solution. The large fishes were given an incision in their abdomen and preserved. The meristic and morphometric characters were measured and fishes were identified up to the species level, with the help of standard texts (Dutta Munshi and Srivastava, 1988; Day, 1994; Jayaram, 1999). The scientific recognition and classification of fish and zooplankton species were made by using standard books and keys. Specimens with

doubtful identifying characters were identified from Zoological Survey of India, Pune.

#### **RESULTS & DISCUSSION:**

In the present Ichthyofaunal study, different fish species were observed in the Lonimavla reservoir, Dist. Ahmednagar, Maharashtra, India. Many fishes have economically important and sold after collection in the local fish market. In the present Ichthyofaunal study, different fish species were observed in the Lonimavla reservoir, Dist. Ahmednagar, Maharashtra. Many fishes have economic importance and are sold after collection in the local fish market. In the present fish diversity study, 11 fish species of 09 different genera, 06 families and 5 orders were recorded from the Lonimavla reservoir number of catches carried out during December 2013 to November 2014. The members of order Cypriniformes dominated by 6 species followed by order Perciformes with 2 species and orders Clupeiformes, Mastacembeliformes and Siluriformes with one species each.

Among the 6 fish families, family Cyprinidae was dominant group with 6 species in which *Catla catla*, *Cirrhinus mrigala*, *Cirrhinus reba*, *Labeo rohita*, *Labeo bata* and *Garra mullya* were found most abundant followed by family Notopteridae and Cichlidae with one species each in which *Notopterus notopterus* and *Oreochromis mossambica* were found abundantly. Followed by family Gobidae and Bagridae with one species each i.e. *Glossogobius giuris* and *Mystus bleekeri* were found moderately in Lonimavla reservoir, however family *Mastacembalidae* with one species i.e. *Mastacembalus armatus* were found rare in reservoir. Dominance of fish species belonging to families Cyprinidae was also reported from other fresh water bodies (Ahirrao and Mane, 2000; Kareservoir and Gaikwad 2006; Khedkar, 2005; Mishra and Gupta, 2007; Shrikant *et.al.*, 2009). In the present study a good number of fish species availability and their production in Lonimavla reservoir may be related to suitable ecology of water body which provides proper breeding ground for fish. The collected fish species were also classified on the basis of their relative abundance into abundant, moderate and rare. The results of the present investigation reveals the occurrence of total 11 fish species that indicates good fish diversity and production, and which in turn may be related to the suitable water quality of the water body.

**Table 1.** Systematic fish diversity, feeding habits and relative abundance of fish species of Lonimavla reservoir.

Sr. No.	Order	Family	Genus Species	Species	Feeding habits	Relative abundance
			Scientific name	Common name		
1.	Clupeiformes	Notopteridae	<i>Notopterus notopterus</i> (Pallas)	Notopterus	O	A
2.	Cypriniformes	Cyprinidae	<i>Cirrhinus mrigala</i> (Hamilton)	Mrigala	O	A
			<i>Cirrhinus reba</i> (Hamilton)	Reba	O	A
			<i>Catla catla</i> (Hamilton)	Katla	H	A
			<i>Labeo bata</i> (Hamilton)	Bata	O	A
			<i>Labeo rohita</i> (Hamilton-Buchnan)	Rohu	O	A
			<i>Garra mullya</i> (Sykes)	Mullya	H	A
3.	Mastacem-baliformes	Mastacem-balidae	<i>Mastacembalus armatus</i> (Lacepede)	Vam	P	R
4.	Perciformes	Cichlidae	<i>Oreochromis mossambica</i> (Peters)	Tilapia	O	A
		Goboidae	<i>Glossogobius giuris</i> (Hamilton)	Goby	P	M
5.	Siluriformes	Bagridae	<i>Mystus bleekeri</i> (Day)	Cat fish	P	M

(O- omnivorous, H-herbivorous, P-planktivorous; A-abundance, R-rare, M-medium)

During the study of diversity indices of fish heterogeneity and Ichthyofaunal diversity of Kalu dam, Ahmednagar, Maharashtra. The evaluation was based on the study of fish diversity from Nov. 2014 to Oct. 2015. During the study period altogether 27 fish species belonging 10 families and 5 orders were found in the dam. Cypriniformes was the dominated order with 14 species followed by Perciformes 5 species, Siluriformes 4 species, Synbranchiformes 3 species and Osteoglassiformes with 1 species (Kawade and Pandarkar, 2016a and 2016b). Also during the study on aquatic fauna of Mandohol dam in relation to aquaculture practices, Ahmednagar district, altogether 19 fish species belonging 10 families and 5 orders were found in the dam, Cypriniformes was the dominated order with 11 species followed by Perciformes 4 species, Siluriformes 2 species, Mastacembaliformes 1 species and Osteoglassiformes with 1 species. Similar results were found by many researchers, During study of Ichthyofaunal studies of Visapur reservoir in relation to fish culture, Ahmednagar district, reported the occurrence of 15 fish species belonging to 5 orders, 7 families and 12 genera. Order Cypriniformes were dominated by 8 species (Pandarkar et al., 2014). Ichthyofaunal diversity in Jamkhedi reservoir in Dhule District showed the occurrence of 20 fish species belonging to 6 orders, 10 families and 20 genera. Order Cypriniformes were dominated by 10 species (Khodake et al., 2014). Ichthyofaunal diversity of Godavari river at Mudgal, dist. Parbhani, reveals that the occurrence of 26 fish species belonging to 5 orders, 7 families and 15 genera. Order Cypriniformes were dominated by 15 species (Rankhamb, 2011). Freshwater fish fauna of Krishna River at Wai where they recorded 51 species belonging to 14 families and 33 genera (Kharat et al., 2012). Occurrence of 21 fish species belonging to 13 genera, 6 families and 5 orders were studied during study of Ichthyofaunal diversity of Pimpaldari tank, Hingoli. (Jayebhaye et al., 2013). 28 fish species, belonging to 25 genera and 12 families were grouped under 7 orders from Rangavali dam, Navapur, dist. Nandurbar recorded by (Jaiswal and Ahirrao 2012). 21 species from 19 genera, 10 families and 7 orders were studied in which Cyprinidae family is dominant with 10 species recorded during study of fish fauna at Paintakli dam Bhuldhana district (Ubharhande and Sonawane, 2012). The present study involves the assessment of a freshwater body Lonimavla reservoir in order to find out its potential towards pisciculture.

In the present study a good number of fish species availability (11) and their production in Lonimavla reservoir may be related to suitable ecology of water body which provides proper breeding ground for fish.

**ACKNOWLEDGEMENTS:** The Authors are thankful Principal, New Arts, Commerce and Science College, Ahmednagar for providing requisite facilities and Zoological Survey of India for their valuable information.

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