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Fishery status of upper Morna reservoir, Medshi (M. S.)

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Abstract
Fish samples from Upper Morna Reservoir of Medshi were collected from Aug. 2009 to Jan. 2010. The data on fish harvest of two consecutive years was obtained from *Shree Ganesh Machchhimar Co-operative Society Limited Medshi. Reg. No. 369.* The average fish production of the reservoir was 432.73 kg/hectare/year. In the present investigation six culturable species i.e. *Catla catla, Labeo rohita, Cirrhina mrigala* and *Ctenopharyngodon idella, Hypophthalmichthys molitrix and Cyprinus corpio*, seven predatory fishes i.e. *Wallago attu, Mastocembalus armatus, Mystus seenghala, Ophiocephalus gachua, Ophiocephalus striatus, Ompok bimaculatus*, and *Notopterus chitala* and six weed species i.e. *Tilapia mossambica, Puntius sophore, Cirrhinus reba, Rasbora rasbora, Rasbora doniconius* and *Parambassis ranga* were recorded. The reservoir was found to be more productive as compared to the national average fish production from the reservoirs which is 29.7 kg/hector.

Keywords: upper morna reservoir, fishery status, culturable fishes, weed fishes, predatory fishes

1. Introduction

India has a large spread of fresh water resources in the form of rivers, lakes, ponds, etc. The reservoirs have an area of about 3 million hectares and produce 20,000 tonnes of fish annually. By impounding the river system, reservoirs are constructed for effective utilization of water for irrigation, power generation and flood control. Along with these primary goals these water sources can be effectively used for fish farming. Reservoirs contribute considerably to the inland fish production of India which has been estimated at 93,000 tons [1]. In spite of this fact, reservoir fish production has been treated as a by-product, giving it less importance as a fish production system. The importance of reservoirs derives mainly from advantages from environmental and social perspectives. The benefit of increased yield and income generated of fishing communities of reservoirs is more equitably distributed. There is also a need to dovetail the twin objectives of yield optimisation and environmental conservation [2].

Many studies are already been carried out by different workers on the many reservoirs of Maharashtra some of which includes, Ahirrao and Mane [3] studied the diversity of ichthyofauna, 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. Sone and Malu [4] studied fish diversity in relation to aquaculture in Ekburji Reservoir of Washim and observed eight predatory and four weed fishes. Venkateshwarlu *et al.* [5] studied the fish fauna of Bhadra reservoir, Western Ghats and recorded of twenty seven fish species belonging to five orders. Pawar *et al.* [6] studied the fish diversity in the Sirur dam near Mukhed, Nanded district and obeserved eleven species of fishes. Salaskar and Yeragi [7] studied the fish fauna of Powai Lake of Mumbai and observed the fish productivity of the lake which was found to be 44.724 kg/ha/year. Pawar *et al* [8] studied fish fauna of Pethwadas dam taluka Kandhar in Nanded district and recorded twenty six fish species. Battul *et al*. [9] studied fish diversity from Ekrukh Lake near Solapur, Maharashtra and observed common carp, cat fishes & eel fishes in the fish population. Chandanshive *et al.* [10] studied the fish fauna of Pavana river of Pune and recorded fifty-nine species of different fishes. Rathod *et al.* [11] studied the diversity of fish fauna of Umra (Shamsudin) resrvoir, Washim district and observed that twelve species belong to twelve different genera of three orders of six families from this reservoir. Tijare *et al.* [12] made Ichthyofaunal study from the lake of Gadchiroli and observed thirty two species of twenty five genera belonging to thirteen families under six orders. 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 [13].

Maharashtra is having 87000 sq km area suitable for fishing. This area is divided into coastal and inland fisheries. However, more than 90 percent of the fish production comes from sea water. Maharashtra state stands 1st in the total number of fisheries co-operatives and fish production in the country. Maharashtra is having 2245 fisheries cooperatives societies and 31 cooperative societies are having 2.46 lac members [14]. Present study was conducted on fish fauna of Upper Morna reservoir, Medshi with special reference to its fishery status.

2. Material and Methods

2.1 Description of Study site

The upper Morna reservoir is located at Medshi, in Washim district of Maharashtra. It is constructed on the upper stretch of the Morna river, one of the minor river 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 and meets the river Purna at Andura in Akola district. The main aim of construction of this reservoir was to save Akola city from the flood conditions, which was generally being arisen in the rainy seasons. Beside this the reservoir is used for irrigations, fishing activities and drinking purposes by the people around reservoirs.

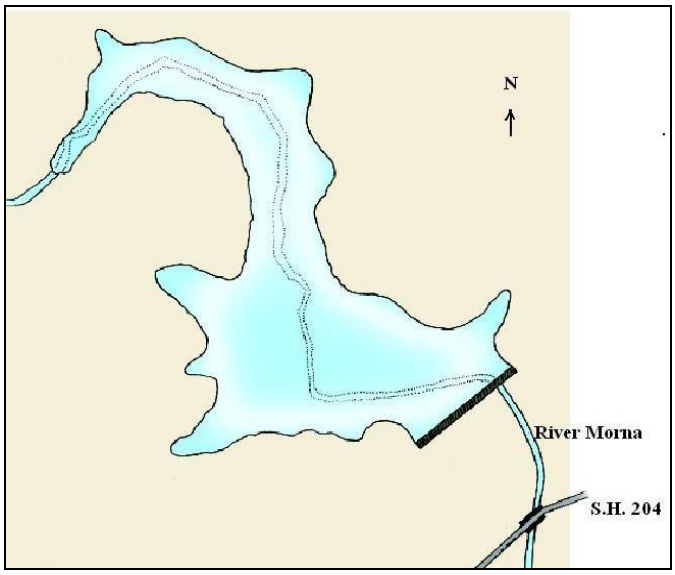

Fig 1: Upper Morna Reservoir

Table 1: Salient features of Upper Morna Reservoir

Water Utilization	**15.41 MM^3**
Total Water Storage	15.59 MM^3
Length of Dam	600.00 M
Maximum Height of Dam	21.90 M
Length of Spillway	170.00 M (Ogee Type)
Reservation for water supply	3.091 MM^3
Benefited Districts & Talukas	Dist: Washim, Tal: Malegaon

2.2 Specimen Collection

The fishes were collected monthly from Aug. 2009 to July 2010 with the help of fishermen by using different nets like gill net, cast net, traps, hooks & hand picking. The samples were brought to laboratory and their coloration, general pigmentation & fin formula were recorded and were preserved in 10% formalin. The identification of the species was carried out by using standard literatures [15, 16].

2.3 Data Collection

Observation, questionnaire, interview and discussion methods were used to collect accurate data. Secondary data is obtained from office documents of the *Shree Ganesh Machchhimar Co-operative Society Limited Medshi, Reg. No. 369.* The data on fish capture for two consecutive years i.e. from 2008 and 2009 was collected from the fishermen society. The data on harvesting was analyzed statistically and year wise fishery status of the reservoir was studied.

3. Results and Discussion

A fish diversity of Upper Morna reservoir was investigated and the total 19 species of fishes were recorded for a period six month i.e. Aug. 2009 to July 2010. In the present investigation six culturable species i.e. *Catla catla, Labeo rohita, Cirrhina mrigala* and *Ctenopharyngodon idella, Hypophthalmichthys molitrix and Cyprinus corpio*, seven predatory fishes i.e. *Wallago attu, Mastocembalus armatus, Mystus seenghala, Ophiocephalus gachua, Ophiocephalus striatus, Ompok bimaculatus*, and *Notopterus chitala* and six weed species i.e. *Tilapia mossambica, Puntius sophore, Cirrhinus reba, Rasbora rasbora, Rasbora doniconius* and *Parambassis ranga* were recorded.

Fig 2: First author with the members of Shri Ganesh Machchhimar Co-operative Society

In July 2006, a total of 270,000 fingerlings for composite fish culture of four species combinations i. e. *Catla: Rohu: Mrigala: Cyprinus* was procured at the ratio 9:3:6:2 and harvested a total of 54,312 specimen accounting a weight of 108,624 kg of yield [17] which in the year July 2007 a total of 300,000 seed of same combination was procured and a total of 60,178 fishes weighing 120,356 kg. [18]. From this data it is clear that the survival rate of the fish is very less i. e. less than 20%. This weight less be due to the changing climate, pathogenic attack and presence of the predatory fishes. In the present investigation, a yield of 1019.93kg/ hectare and 1576.47kg/ hectare were obtained for 2008 and 2009 respectively. Whereas the national average fish production from the reservoirs is 29.7 kg/hector which could be a satisfactory production. Thus it clear cut indicates that though the survival rate is low the fish productivity of this reservoir is high. This yield can also be increased by proper management of the reservoir.

The predatory fishes habitually prey upon the desirable species of fish at different stages of their rearing kill and consume them. This fishes at the time or strong competitor's for food for the desirable species. The young ones too are equally harmful to the fry of culturable species. In the present investigation seven species of predatory nature were observed in the Upper Morna reservoir. These fishes are *Wallago attu, Mastocembelus armatus, Ophiocephalus gachua,*

Ophiocephallus striatus, Ompok bimaculatus, and Notopterus chitala. Many of the above mentioned predatory fishes are food fishes of local importance. Predatory fishes like *Notopterus chitala* and *Ophiocephalus marualius* were least in number while the catch of *Wallago attu, Ophiocephalus guchua* was quite encouraging.

The majority of common weed fishes are profuse breeder. The weed fishes are themselves of little food value, generally small sized and totally uneconomic but tend to over grow or even choke out the desired species. In the present investigation a total of six species of weed fishes were observed and these are *Tilapia mossambica, Puntius sophore, Cirrhinus reba, Rasbora rasbora, Rasbora doniconius* and *Parambassis ranga*. They generally consume large quantity of zooplanktons, the main food of the carp spawn. The young weed fishes directly feed on carp hatchlings and spawn. The predatory and weed fishes occurs their naturally. The entry of predatory and weed fishes in the Upper Morna reservoir is unavoidable since it is constructed on lotic fresh water system i.e. River Morna. Presence of unwanted (both predatory and weed fishes) is one of major aspect to be considered in obtaining the fish yield from a particular water body [4]. Unlike rivers, which are under increasing threat of environmental degradation, reservoirs in India offer ample scope for fish yield optimization through effective management [19, 20, 21].

4. Conclusion

The average national productivity from all categories of reservoirs is estimated at about 15 kg/ ha/ year and the average fish production of upper Morna reservoir was found to be 432.73 kg/hectare/year**.** It means that there is satisfactory fish production. Proper regulation of weed species and predatory species will enhance the production of fishes in the reservoir. Also avoiding fishing of larval and immature fishes can increase the production. Supplementary feeding and fertilization should be carried out and the fishermen should make acquainted with proper fishing and proper training facilities to get complete profit out of the reservoir.

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