Study of fish fauna and productivity of Loni reservoir, Tq. Kinwat (Maharashtra)

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Abstract

Loni reservoir is a medium project. It is used for irrigation, drinking and for fish production. It exhibits diversity of fish fauna. It represents 15 species of fish. Amongst there 3 species of major carps, 4 species of murrels, 4 species of cat fishes, 2 species of snake fishes, 2 species of ornamental fishes. Out of these 15 species 12 species are commercially important. Average fish production is 8.82 kg/ha/yr.

Keywords: Loni reservoir, Fish fauna

1. Introduction

Fishes of the inland water bodies of the Indian sub-continent have been subject to study since last century. Indian water resources are diversified, as they are plentiful. Lakes and reservoirs contribute the single largest inland fishery resources both in terms and size and production potential.

Ichthyofauna of a lake basically represents the fish faunal diversity and their abundance. Indian lake preserve a rich variety of fish species which support the commercial fisheries. The present study deals to observe the fish diversity in reservoir Loni, Taluka Kinwat of Maharashtra State.

Indian reservoirs preserve a rich variety of fish species, on the basis of studies conducted so far, large reservoirs on an average harbour 60 species of fishes; of which 40 species contribute to the commercial fisheries. Indian major carps occupy a prominent place among the commercially important fishes. More recently, number of exotic species have contributed substantially to commercial fisheries. Being basically a carp country both the indigenous and exotic carps, catla, rohu, mrigal, silver carp, grass carp and common carp, account for a great bulk of the production.

2. Material and Methods

Present work carried out in the reservoir Loni in Kinwat taluka of Maharashtra state. This work conducted during the year 2009-10. Area of reservoir is 142 hectares.

The fishes collected from the reservoir every month by repeated netting and preserved in 4% formalin for further studies. The fishes were identified up to species level with the help of Day, Jayaram, Qureshi and Tamot.14, 22, 36, 50.

The fish productivity was calculated with the help of the following formula as described by Agarwal2.

\[ P = NS \]

Where, \( P \) = Fish Productivity (kg/ha/yr)
\( N \) = Constant including natural mortality 0.25 and accidental mortality 0.40 i.e. 0.65
3. Result and Discussion

This reservoir has diversity of fish fauna with 15 species (Table 1). The major carps catla, rohu, mrigal are dominated due to their seed stocking. The other group of fishes found in reservoir are murrels (4 species), cat fishes (4 species), snake fishes (2 species), and other food fishes (2 species).

The major carps, murrell (3 species), cat fishes (4 species), snake fishes (1 species) and other fishes (1 species). All fishes useful as food fishes except Gambusia, which is a larvivorous fish. Out of 15 species found in this reservoir 12 are commercially important. The major carps, Catla catla, Labeo rohita, Cirrhina mrigala. The murrels Channa striatus, Channa punctatus. The cat fishes Clarias batrachus, Heteropneustes fossilis, Aorichthys scenghala, Mystus bleekeri. The snake fishes, Mastacembelus armatus, Mastacembelus punctul and other fishes like Cerasseus auratus are important commercially.

Ahirrao (2000) recorded 32 fish species belonging to 25 genera and 8 families from Parbhani district of Maharashtra. Joshi25 reported the ichthyofauna of Bori reservoir in Maharashtra. Krishna & Ravi Shankar27 reported 31 ichthyofauna in secrete lake, Durgamcheru, Ranga Reddy District. Hiware and Pawar20 recorded 43 fish species from Nuth Sagar Dam Paithan in Aurangabad district. Battul et al6 recorded 18 fish species in Ebkukh lake near Solapur, Maharashtra. Jayabhaye et al21 recorded 25 fish species belonging to 7 orders in Jawalgaon reservoir in Solapur district of Maharashtra. Gaur and Mohan4 recorded 19 fish species belong to 8 families and 14 genera. The Loni reservoir shows less fish diversity in comparison to other reservoirs.

The fish productivity of major carp in Loni reservoir was 8.82 kg/ha/yr during 2009-2010 (Table 3).

Agarwal (1990) recorded the productivity of fish in many small and minar reservoirs in Haryana - Suraj Kund - 355.7 kg/ha/yr, Hallipark – 227.8 kg/ha/yr, Karnal – 17 kg/ha/yr, Dhoz – 160 kg/ha/yr, Tillyar – 138 kg/ha/yr, Damdara 63.95 kg/ha/yr, Mornital – 138 kg/ha/yr. Devi16 recorded the productivity of 445 kg/ha/yr and 528 kg/ha/yr during 1993-95 in Ibrahimbagh and Shanthamraj reservoirs of Rangareddy district, Andhra Pradesh.

The present productivity of fish observed in Loni Reservoir was much less than small and minor reservoirs but shows close association with large reservoirs, which were observed by Srivastava and Tamor. The present yield of fish from the Loni reservoir shows close relationship 8.82 kg/ha/yr during 2009-2010 (Table 3).

The present yield of fish from the Loni reservoir shows close relationship 8.82 kg/ha/yr. It has been estimated that the catch rate from large, medium and small reservoirs is as low as 11.43, 12.30 and 49.90 kg/ha/yr respectively with a gross average of 29.70 kg/ha/yr. Data collected by CIFRI suggests that the fish production potential of reservoirs is much higher, ranging from 50-75 kg/ha/yr for medium and large reservoir fisheries, till recent past, and inadequate implementation of management norms are the main cause for the present poor production from Indian reservoirs. Sreenivasan47 estimated the production potential of Indian reservoirs at 100 kg/ha/yr. Even according to a conservative administrative estimate the potential yield of Indian reservoirs is around 50 kg/ha/yr. Burli and Sontakki7 reported that low fish production (4-6 kg/ha/yr) was noticed in Malaprabha and Ghapatrabha reservoirs of Karnataka, though the fish seed is stocked. This is due to the poor management practices in reservoirs. Tamor77 has studied the fish production of irrigation reservoirs of Madhya Pradesh and the production is only 70 kg/ha/yr. Bandyopadhyay et al5 reported that after the introduction of Indian major carps and exotic carps in Manipur waters, dramatic change in the fish production was observed Gowda18 reported the productivity of reservoirs of Karnataka as 30 kg/ha/yr with a total water spread area of 2.10 lakh ha (73 reservoirs). The increase was due to stock monitoring, fishing efforts in the reservoirs marking use of improved gears would enhance fish production. Srivastava and Tamor33 reported that based on the primary production studies PFY
(Potential Fish Yield) of Tawa reservoir would be around 84 kg/ha/yr and observed only 33% of PFY. They further reported that there is still enough scope of increasing fish yield even to 50% to 60% of PFY, which could be achieved easily through scientific management norms. Das reported that a large gap existed between fish yield potential (383.3 kg/ha/yr) and actual harvest (80 kg/ha/yr) in Yerrakalva reservoir, West Godavari, Andhra Pradesh. He opined that there is an ample scope of increasing fish production which could be achieved by sustainable management norms. The same trend may apply to enhance the fish production.

Table 1. Ichthyofaunal diversity in medium reservoir Loni, Taluka Kinwat, Maharashtra

| Variety / Common Name | Scientific Name |
|-----------------------|-----------------|
| Major Carps (3 Species) | Catla catla, Labeo rohita, Cirrhina mrigala |
| Murrels (4 Species) | Channa marulius, Channa striatus, Channa punctatus, Channa gachua |
| Cat Fishes (4 Species) | Clarias batrachus, Heteropneustes fossilis, Aorichthys scenghala, Mystus bleekeri |
| Snake Fishes (2 Species) | Mastacembelus armatus, Mastacembelus punculan |
| Ornamental Fishes (2 Species) | Cerasseus auratus, Gambasia affinis |

Table 2. The total fish catches in Loni reservoir during 2007-2008

| Sr. No. | Type of Fish | Total Quantity (Kg.) | Percentage | Fish Catch (kg/ha/yr) |
|---------|--------------|----------------------|------------|----------------------|
| 1.      | Major Carps  | 1052                 | 83.99      | 2007-08 8.82         |
| 2.      | Murrels      | 50                   | 7.99       |                      |
| 3.      | Cat Fishes   | 50                   | 7.99       |                      |
| 4.      | Other Food Fishes | 0.5 | 0.039 | |
|         |              |                      | 1252.5     |                      |

Table 3. The total major carps catches in Loni reservoir during 2007-2008

| Sr. No. | Type of Fish | Total Quantity (Kg.) | Percentage |
|---------|--------------|----------------------|------------|
| 1.      | Catla        | 520                  | 49.43      |
| 2.      | Rohu         | 210                  | 19.96      |
| 3.      | Mrigal       | 322                  | 30.61      |
|         |              | 1052                 |            |

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