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# FUTURE PROSPECTS OF FISHERIES DEVELOPMENT IN BIHAR AND ITS SOME SELECTED OX-BOW LAKES OF MUZAFFARPUR DISTRICT

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***Abstract:*** *Inland fish production in the country has registered a phenomenal increase during last five decades. The domestic demand of fish in the country is projected about 6.1 million tonnes by the year 2003.About more than half of which has come from inland sector. The only way to achieve the fish production is to encourage aquaculture, sustainable resource management of inland water bodies such as ponds, tanks, reservoirs, lakes etc. The vast and varied inland fisheries resources of Bihar are one of richest in the country. Inland fish production of the state during the year 2002-03 was 2.2 to 2.5 lakh tonnes, inspite of best efforts made by the state to increase its production.*

*The present study was undertaken on water resource and their fish production in Muzaffarpur district with special reference to Ox-bow lakes. This district has 16 numbers of blocks. The survey was conducted only in three blocks because most of ox-bow lakes lie in these blocks. Ox-bow lakes surveyed were Motipur, Kanti, Brahampura and Manika. The biggest Ox-bow lake is Motipur having water spread area of 140 ha. With an average fish production of 5,500 Kg./yr. similarly the smallest Ox-bow lake is Brahmaputra with a water spread area of 45.50 ha. And an average fish production of 2,502 Kg/yr (2002-03). The Kanti Ox-bow lake where a lots of industrial wastes being deposited, the production was very low as compared to the other Ox-bow lakes.*

***Keyword:*** ***F****uture prospects of fisheries, development in Bihar and Muzaffarpur District.*

**Introduction:** In the developing countries, fish constitutes one of the single largest cheap source of animal protein. Fish protein is a relatively high digestibility and biological value for human beings, as it contains all the essential amino acids in adequate amount and balanced proportion. There is no doubt that fish could make a more significant to nutrition, particularly among undernourished. Indian fisheries have made great strides during the past five decades. As a result, India now produces over 6.1 million tones of fish and shellfish from capture fisheries and aquaculture, thereby contributing immensely to the food basket of the country. During this period, fish production has registered over eight-fold increase, from 0.75 million tonnes in 1950. Further, the share of inland fisheries sector in the total fish production, which was 29% in 1950-51, has gone up by 50% at present. India being the fourth largest global producer of fish, is playing an important role in world fisheries scenario. Further, with a production of over 2.2 metric million tonnes from aquaculture as in 2000, the country occupies second position in the world in inland fish production, only next to China. The aquaculture sector has shown overwhelming growth of 46.8% during the last two decades i.e., from 0.37 million tonne in 2002. Further, fresh water continues to have a major share out of total aquaculture production with contribution of over 95% in terms of quantity [1].

After creation of Jharkhand state (15th November 2000), Bihar has lost a sizeable extent of water areas in the form of reservoir. At present only 30% of large reservoir in the residual Bihar. As far as fisheries resources in the state of Bihar is concerned, they mainly comprise ponds, tanks, small reservoirs, rivers and water logged areas like ox-bow lakes and chaurs [2,3]. Around 65,000 ha of water areas are covered by ponds and tanks and nearly 35,000 ha of water areas consists of ox-bow lakes and chaurs [4]. At present annual

production of fish in the state is 2.2-2.5 lakh tonne, while average annual production of fish seed is 350 million numbers against the requirement of 600 million fry per year. There are 18 hatcheries in the state; one in government sector, 03 in corporate sector and 14 in private sector. The functional FFDAs in the state is 33.

**Materials and Methods**

The present investigation of water resources and their fish production was conducted in the Muzaffarpur district of Bihar. This district has 16 numbers of blocks but the survey was done in Mushari, Motipur and Kanti block which are prominent in fish production. The town / village selected were Brahamputra and Manika under Mushari block and Haruna and Kanti Village under Motipur Block respectively. Besides discussion with various officials in Fisheries Directorate, Bihar were also done to collect more information. The primary survey was conducted in Mushari, Motipur and Kanti block of Muzaffarpur district. This district is selected for the survey because it is bestowed withseries of ox-bow lakes and among them some lakes like Manika, Brahampura, Motipur and Kanti are highly significant from fisheries point of view. These ox-bow lakes have define bearing on socio-economic conditions of the area, being one of the major sources of livelihood for thousands of fisherman living in their vicinity [5]. This district has second highest water area of ox-bow lakes after east and West Champaran district of Bihar. All above four selected ox-bow lakes are located in different corner of Muzaffarpur district. Manika lake is 13 km east of Muzaffarpur town, while Kanti and Motipur lake located in the 16 kmand 36 km respectively in the west of Muzaffarpur town on Muzaffarpur –Raxaul highway. The Brahampura lake is located in the city itself. In Mushari block, selected villages were Brahampura and Manika lake while in Motipur and Kanti block, the selected villages were Harayana and Kanti respectively. In above all four selected villages, direct contact to the fish farmers were done and information on the following matters were collected as per structured questionnaire.

**Results and Discussion**

The primary data was collected from the four ox-bow lakes of Muzaffarpur district of Bihar and from Directorate of Fisheries, Govt of Bihar, Patna which represent different fisheries activities undergoing and resources available in the state. All these relevant data shows the present status of Fisheries in Bihar. The data during survey were presented in the form of tables and figures wherever necessary. The primary data was collected from the four ox-bow lakes of Muzaffarpur district of Bihar and from Directorate of Fisheries, Govt of Bihar, Patna which represent different fisheries activities undergoing and resources available in the state. All these relevant data shows the present status of Fisheries in Bihar. The data during survey were presented in the form of tables and figures wherever necessary.

Total no. of ponds and tanks of variable size is 40,520 which are distributed throughout the entire state covering a total water spread area of 68,821 ha comprising both government and private sector (2002-03). Total fish production in the state of Bihar is 2.61 lakh tonnes as against the total requirement of about 4.5 lakh tonnes per annum (2002-03, Up to March' 03). Per capita fish consumption in the state is one of the lowest in the country i.e., less than 1 kg/.

**Table I: Details of reservoirs in different district of Bihar**

| Name of district | Name of the reservoirs | Type of reservoirs (Small : <1000 ha, Medium : 1000-5000 ha, Large : 5000-10,000 ha | Area (in ha) |
|---|---|---|---|
| Banka | Badua Jalasay | Medium | 1335.50 |
| | Amahara Jalasay | Small | 21.00 |
| | Madhyagiri Jalasay | Small | 269.00 |
| | Belharna Jalasay | Small | 20.00 |
| Bhagalpur | Chandan Jalasay | Medium | 1050.00 |
| Munger | Jalkund | Small | 5.00 |
| | Kharagpur Jalasay | Small | 210.00 |
| | Morvey Jalasay | Small | 40.50 |
| Jamui | Nagi Jalasay | Small | 439.00 |
| | Amrit Jalasay | Small | 20.00 |
| | Nakti Jalasay | Small | 179.00 |
| Total | | | 3,589.00 |

*Source : Statistical division of Directorate of Fisheries, Govt. of Bihar*

At first Bihar Fishery Cooperative Society Act was enacted in 1935 which was revised in November, 1960. The organization and functioning of fisheries cooperatives are based

on provisions made in Act and by-laws of the fisheries cooperatives. The main objectives of the fisheries cooperatives are to inculate the habit of the thrift, self-reliance and extension of co-operatives philosophy among fishermen community which are to be achieved through following activities.

Total no. of fishery Co-operative Society in the state is 370 and as far as its role in the socio-economic development is concerned is negligible because almost all fishery co-operative society in the state has become functionless. Most of them are even undernourished. Only few Fishery Co-operative Society like "Matysa Jivi Sahyog Samity" of Musahri block, Muzaffarpur and "Kusheshwarsthan Fisherman Co-operative Society" of Kusheshwarsthan block, Darbhanga are engaged in the management of maun and chaur fisheries of the respective block but not in a proper manner [6]. As far as different types of fish farming practices undergoing in the state is concerned, most of the the farmers only stock the IMC fish seed in the seasonal pond and further after 6 months they harvest the fish without following any scientific fish culture practices. Ponds under FFDA where composite fish farming is done scientifically. The fish seed stocked in these ponds are IMC viz. *Catla catla, Labeo rohita, Cirrhinus mrigala* and Exotic carps viz. *Ctenopharyngodon idella, Hypopthalmichthiys molitrix* and *Cyprinous carpio* [7]. The stocking rates vary from 5000-8000 figerlings per hectare and species ratio are 40% surface feeder, 20% column feeder, 30% bottom feeder and 10% micro-vegitation feeders. However, it has been found that the stocking densities and species ratio are sometimes altered depending upon the availability of fish seed.

**Table II: Different type of fish fauna found in Bihar**

| Biological name | Family | Local name |
|---|---|---|
| Catla catla | Cyprinidae | Catla |
| *Cirrhinus mrigala* | Cyprinidae | Naini |
| *C. reba* | Cyprinidae | Reba |
| *Labeo rohita* | Cyprinidae | Rohu |
| *L. calbasu* | Cyprinidae | Calbasu |
| *L. bata* | Cyprinidae | Bata |
| *L. gonius* | Cyprinidae | Kursa |
| *L. bogat* | Cyprinidae | -- |
| *L. pangusia* | Cyprinidae | Kursa |
| *L. dero* | Cyprinidae | Gudari |
| *L. dyochellius* | Cyprinidae | Gurdi |
| *Cyprinous carpio* | Cyprinidae | Common carp |
| *Hypopthalmichthiys molitrix* | Cyprinidae | Silver, Silver carp |
| *Ctenopharyngodon idella* | Cyprinidae | Grass carp |
| *Puntius ticto* | Cyprinidae | Pothia |
| *P. sarana* | Cyprinidae | Pothia |
| *P. sophore* | Cyprinidae | Pothia |
| *P. chola* | Cyprinidae | Pothia |
| *Barilius bola* | Cyprinidae | Dhawai |
| *B. bendelisis* | Cyprinidae | Dhawai |
| *Rasbora danricus* | Cyprinidae | Rasbora |
| *Esomus danricus* | Cyprinidae | Darkai |
| *Oxigaster bacaila* | Cyprinidae | Chelwa |
| *O. gora* | Cyprinidae | Chelwa |
| *Osteobrama cotio* | Cyprinidae | -- |
| *Botia dayi* | Cyprinidae | Bhagwa |
| *B. Dario* | Cyprinidae | Bhagwa |
| *Danio rario* | Cyprinidae | --Tengra |
| *D. dangila* | Cyprinidae | --Tengra |
| *Tor tor* | Cyprinidae | Mahaseer |
| *T. putitora* | Cyprinidae | Mahaseer |
| *Garra gotyla* | Cyprinidae | Bunda |
| *Gadusia chapra* | Clupeidae | Chapri |
| *Notopterus chital* | Notopteridae | Chital |
| *N. notopterus* | Notopteridae | Bhunni, Moi |
| *Lepidocephalichthys guntea* | Cobitidae | Gumha |
| *Noemacheilus botia* | Cobitidae | -- |
| *Wallago attu* | Siluridae | Boari |
| *Ompok bimaculatus* | Siluridae | Jalkapoor |
| *Mystus seenghala* | Bagaridae | Aria, Tengra |
| *M. vitatus* | Bagaridae | Tengra |
| *M. cavasius* | Bagaridae | Tengra |

| | | |
|---|---|---|
| *M. tengara* | Bagaridae | Tengra |
| *M. aor* | Bagaridae | Aria,Tengra |
| *Rita rita* | Bagaridae | Rita |
| *Heteropneustes fossiis* | Saccobranchidae | Singhi |
| *Clarius batrachus* | Claridae | Magur |
| *Alia colia* | Schilbeidae | Banspatta |
| *Clupisoma garua* | Mugilidae | Garua |
| *Eutropiichthys vacha* | Ophiocephalidae | Bachwa |
| *Rhinomugil corsula* | Ophiocephalidae | Aruari |
| *Channa pancalus* | Ophiocephalidae | Garai |
| *C. striatus* | Ophiocephalidae | Sori |
| *C. marulius* | Ophiocephalidae | Bhawra |
| *C. gachua* | Ophiocephalidae | -- |
| *Tilapia mossambica* | Cichilidae | Telpiya |
| *Nandus nandus* | Cichilidae | -- |
| *Chanda nama* | Ambassidae | Chanda |
| *C. ranga* | Ambassidae | Chanda |
| *Mestacembalus armatus* | Mestacembalidae | Bami |
| *M. aculatus* | Mestacembalidae | Gainchi |
| *Glossogobius giuris* | Globidae | Bulla |
| *Anabus testudineus* | Anabantidae | Anabas |

Different types of gear used in harvesting of fish are Drag net, Gill net, Cast net, Hook and line, Scoop net etc.

**Table III: Various types of aquatic weeds found in different types of water body with their common name.**

| Groups | Scientific name | Common name |
|---|---|---|
| Floating weeds | *Eicchornia crassipes* | Jalkumbhi |
| | *Pistia stratiotes* | Jal patra |
| | *Azolla pinnata* | -- |
| | *Trapa bispinosa* | Singhara |
| | *T. maximowiczii* | Singhara |
| | *Lemna minor* | Duck weed |
| | *Wolffia sp.* | -- |
| Emergent weeds | *Euryale ferox* | Makhana[8] |
| | *Nelumbo nucifera* | Kamal |
| | *Nymphoides indica* | Floating heart |
| Submerged weeds | *Hydrilla verticillata* | Hydrilla |
| | *Potamogeton pectinatus* | -- |
| | *Vallisneria spiralis* | |
| Marginal weeds | *Ipomea aquatic* | Bankarmi |
| | *Limmophila sp.* | -- |
| | *Marsilea quadrifolio* | |
| | *Utricularis stelliris* | |
| Algal blooms | *Microcystis aeruginosa* | Microcystis |
| | *Anabena* | Bluue green algae |
| Algal mats | *Pithophora* | Filamentous algae |
| | *Spirogyra* | |

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