

CHANGING PATTERN OF FISH LANDINGS AND FISH SPECIES COMPOSITION IN THE GANGA RIVER SYSTEM

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ABSTRACT

The River Ganga and Yamuna are main capture Fishery resources in Allahabad region. Fish landings in Allahabad region were observed during January 1998 to Dec. 1998. Average annual landing was recorded 199.3 tonnes. Indigenous major carps rohu, bhakur, mrigal contributed 5.2, 6.2 and 3.5 tonnes respectively. Among the major Carps the catch was dominated by Calbasu and average annual landing was recorded 29.6 tonnes. Trash fish also dominated the catch. If it is compared with present situation, the catch of Indian major Carps have become negligible. Catch is dominated by exotic fishes and certain cat fishes. Hilsa is not seen in the riverine catches.

Keywords : Major Carps, catfish, exotic fishes, fisheries.

Statistical records of fish catch composition is helpful in understanding the trends in fisheries and effective management for sustained production of fish.

Data on fish landings can be used to assess the present position of fish stocks and for the prediction of trends. The changing trend in the riverine fish species composition is indicative of alteration of environment, fishing activities, pollution and other natural and anthropogenic influences.

The Ganga River system is one of the

most important river systems and has a catchment area of 9.71 lakh km² (Job, 1951). Various attempts have been made to study the fishery productivity and population dynamics in this river system by a number of scientists; Jhingran 1970; Afser, 1992; Gupta and Tyagi, 1992; Singh et. al. 1996).

MATERIALS AND METHODS

A study of riverine fisheries and fish catch composition was made during 1998 from the rivers Ganga and Yamuna at Allahabad. Fish collecting centres (Teliarganj, Daraganj Gaughat Sadiapur) were visited every week and on-the-spot study of fish catch was made to find our species-wise percentage contribution of fish. On the basis of total landings of fish at the four fish collecting centres an estimate was also made of per day total catch of fish which was computed to give an estimate of per month and annual catch of the fish.

RESULTS AND DISCUSSION

The study of fish landings at Allahabad during Jan. 1998 to Dec. 1998 showed an average landings of 199.3 t per year. Labeo calbasu has emerged as the most dominant fish among the carps (average annual landings 29.6 t). Average annual landings of Labeo rohita, catla catla and cirrhinus mrigala were recorded 5.2 6.2 and 3.5 t respectively. Larger catfish (Aorichthys seenghala A. aor, Wallago attu and Rita rita) made the highest contribution to the

fishery (average annual landings 114.1 t) with a percent contribution of 57.2. The two species of *Aorichthys* (*A. aor* and *A. seenghala*) dominated the catch with a percentage contribution of 42.3. The Schilbeid species *Clupisoma garua* was abundant in the catch by number but due to its lean body constituted only 9.5% of the total catch.

Miscellaneous fishes were represented by *Labeo bata*, *Setipinna phasa*, *Ailia coila*, *Cirrhinus reba*, *Gadusia chapra*, *Gonialosa manmina*, *Notopterus chitala*, *N. notopterus* *Mastacembelus armatus*, *M. pancalus*,

Oxygaster bacaila, *Pangasius pangasius*, *Silonia silonia*, *Aorichthys cavasius*, *A. vittatus*, *Sciana coitor*, *Punitus sarana*, *P. sophore*, *Osteobrama cotio* *Gagata cenia*, *Aspidopara morar*, *Anabas testudineus*, *Nandus nandus*, *Colisa fasciata*, *Rhinomugil carsula*, *Channa punctatus*, *Glossogobius giuris*, *Chagunius chagunio* *Hilsa ilisha*. *Chanda nama*, *Xenentodon cancila*, *Ompok bimaculatus* and *Tetradon cutcutia*. Miscellaneous fishes formed an important part of the fishery. Their average annual landings were observed 18.0 tonnes.

Comparative statement of average annual landings

Species	1958-59 to 1965-66		1973 to 1986		Jan 1998 to Dec. 1998	
	<i>Jhingran et.al.1970.</i>		Gupta and Tyagi, 1992			
	Av. (t)	%	Av. (t)	%	Av. (t)	%
<i>L. rohita</i>	16.67	8.5	2.87	2.1	5.2	2.6
<i>C. catla</i>	16.86	8.6	4.26	3.1	6.2	3.1
<i>C. mrigala</i>	36.01	18.4	9.40	6.8	3.5	1.8
<i>L. calbasu</i>	9.57	4.9	23.82	17.1	29.6	14.9
<i>A. aor and</i>	34.28	17.5	23.36	16.8	84.4	42.3
<i>A. seenghalat</i>						
<i>W. attu</i>	12.54	6.4	4.98	3.6	9.2	4.6
<i>H. ilisha</i>	20.16	10.3	NG	-	neg	-
<i>Others</i>	49.65	25.4	70.21	50.5	61.2	30.7
Total	195.74		138.9		199.3	

Av. (t) = Average annual landings (tonnes)

neg = Negligible

NG = value not given

River are important inland fishery resource. Increased fishing pressure in the rivers coupled with water pollution and anthropogenic activities has adversely affected the fish population. The effect of environmental changes cause increased rate of erosion and silt loads in rivers causing depletion of dissolved

oxygen and fish food organisms (Dudgeon, 1994) Considerable fluctuations in DO values, pH and conductivity were attributed to several factors such as flooding, increased organic load from sewers and nallas and anthropogenic influences (Singh et. al., 1996; Nautiyal et. al. 1997).

Fisheries abundance and distribution are largely controlled by physico-chemical environmental variables and other factors, including fish food organisms (Ricker 1975; Welcome, 1985). Impact of environmental degradation on fisheries of the river Ganga have been studied by a number of workers including Jhingran (1989), Bilgrami et. al. (1992). Maturation and spawning of Indian carps are affected by a number of environmental factors like flooded conditions of river monsoon cycle, high turbidity and slightly low temperature of flooded river.

Jhingran 1970 observed the capture fishery of river Ganga at Buxar (Bihar, India) and recorded *C. mrigala* (*mrigala*) as the most dominant and *L. calbasu* contributed only 4.3% of total major carp fishery. *M. aor* was found to be most dominant among catfishes and *Clupisoma garua* contributed to a lesser extent (0-0.8% during 1952 and 1954). He recorded the hilsa as the most dominant fishery and next in order of importance were catfishes followed by carps. Kumar (1996) studied the fishery of river Ganga around Patna and found that *C. catla* dominated the major carp fishery and catch of *L. calbasu* was recorded minimum. Hilsa landings showed a drastic decline.

Jhingran et. al. (1970) recorded the *mrigala* as the most dominant (18.4%), *L. calbasu* contributing only 4.9% to the total fishery. Gupta and Tyagi (1992) reported the dominance of major carp fishery (28.9%) followed by major catfishes (20.3%) in Allahabad region. *L. calbasu* occupies a prominent position in the catch and has emerged as principal component of major carp fishery in Allahabad region (Tyagi et. al., 1994.)

Analysis of fish catch composition indicated that calbasu contributed 14.9% to the

total fishery with an average annual landing of 29.6 t. During recent years the catch of other three major carps (*L. rohita*, *C. catla* and *C. mrigala*) has declined. Hilsa landings at Allahabad are negligible and *W. attu* showed a declining trend. Larger catfishes (*Aorichithys* and *Rita*) and *Clupisoma garua* and the fishery of miscellaneous species, including trash fishes dominated the catch.

Thus during the period of observation in 1998 there was no contribution of exotic fishes like common carp, tilapia etc. even a single specimen was not recorded and if this is compared with present situation it is clear that the exotic fishes like common carp, tilapia etc. have not only entered the riverine system but have become well established and catch of Indian major carps have become negligible and presently riverine fisheries is dominated by exotic fishes and certain cat fishes and trash fishes.

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