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## Fish transportation and marketing in Dumraon and Buxar, South Bihar, India

**Suday Prasad****Abstract**

Marketing of any fresh food item is the backbone of the food chain. Fish being one of the very important commodities, the bulk of them have to be transported and marketing either in live or fresh condition. Fish transportation and marketing in Shahabad special reference to Dumraon & Buxar were studied during 2018-2019. Results based on a survey of fish market with help of direct observations and interview technique. The paper deals with the infrastructure facilities of fish market; present fish market structure and the factor influence the fish marketing system. Our study indicates that the chain of fish market from producer to retailers goes onward through a number of intermediaries, fish market structure, species, quality; size and weight of fish have an influence on the price of fish. However, the prices of fish were increases and varied per kilogram according to their weight, size and species wise. The demand of fish, especially India Major Carps, Catla (*Catla catla*), Rohu (*Labeo rohita*) and Mrigal (*Cirrhinus mrigala*) is high, but supply limited. Price of IMC fluctuated from 200-275 Rs/Kg. Whereas Singhi (*Heteropneustes spp.*) price was found 400 Rs/Kg. these fishes are the main food for selective class of people and they ready for give high price. It was observed that there was not involved any of fisherwomen in transportation and marketing of fish in this area. The study revealed the problem of fish seller during marketing times, which are briefly discussed in the present communication.

**Keywords:** Fish marketing system, structure, fish seller problem, dumraon, buxar

**Introduction**

The fisheries sector plays an important role in the Indian economy and chains of socio-economic status of fishing communities of state in view of its contribution to the food basket, nutritional security, foreign exchange earnings, and employment generation an income [1, 2, 3]. Marketing of fish is one of the main circumstances of socio economic condition of the local people and fish production system of any area with a chain of various system, intra-linkage and inter-linkage from production sector to consumer sector [4]. The growth of fish production and development of fisheries sector is highly dependent on an efficient fish marketing system [5]. The main source of fishes in Dumraon and Buxar fish market is Oxbow lake (local name Bhagar, which expanded about 20 km, from East Nainijore to West Chakki Block near Dumraon. Ganga river and many ponds that supplies various varieties of live and fresh fishes [6, 7a]. Fishing is done by two types of conventional gears, i.e. dragnet and cast nets. Mostly fishermen catch fishes all the days of the months of the years except one month from July-August (*Sawan month*). Few fishermen fishes catch in very small quantities. Livelihood status of the people involved in fish related activities depended on the fisheries resources and marketing system [8]. Most of the fishermen and fish traders are poor. Livelihood condition of fishermen is not satisfactory at all in other state and countries [9]. The rapid pace of technological changes in the production methods has posed challenges to the fish marketing system. Comparatively very little or none research has been carried out on marketing aspects of South Bihar especially Dumraon & Buxar.

In this context above, an effort have been done to the present study was undertaken to know the existing fish marketing and transportation system. Also try to study socio-economic status of traders, fish farmers and fish retailer in South Bihar.

**Materials and Methods**

The present investigation was taken up to cover Shahabad specially, Buxar & Dumraon, in South Bihar for the reason that it is a major and border area of the state where fish marketing has a significant present. Dumraon is sub-division of district Buxar; it's one of the oldest

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municipalities of Bihar and one of India's oldest princely states. Buxar situated at border of Uttar Pradesh. The primary data were collected by personal interviews of the fish market functionaries. Before the actual data collection, several field visits were made by the first author particularly to the fish culture ponds, oxbow lake, and fish markets to build up rapport with the producers, sellers and buyers. Apart from this the necessary information was also collected through observation, interviews with fisher leader, their retailers and consumers. The secondary source of data on different variables were collected from appropriate government and non-government organization such as department & Directorate of Fisheries Govt. of Bihar, and published data like journals, reports, and research findings.

Using Microsoft excel software, data from different relevant sources were coded and recorded in to a database system. To make certain the accuracy of the data recorded at each stage of the survey, and simple tubular, percentage analysis was done.

**Table1:** Estimated wetlands areas of fisheries resources in Buxar and Bihar

Bihar			Buxar			
S. No.	Resources	Stretch / area (ha.)	Wetland/ category	No. of wetland	Total area of wetland (ha)	% of wetland
	Rivers	3200 km	Lake/ ponds	2	705	18.97
	Wetlands	500000	Oxbow lakes/cut off meander	5	396	10.65
	Reservoir	25000	Water logged	1	4	0.11
	Ox-bow lakes	9000	River/stream	6	2444	65.75
	Ponds / tanks	80000	Tanks/ponds	8	32	0.86
			Wet lands	136	136	3.66
	Total			158	3717	100.00
Source: Deptt. of Animal & Fish Resources (Fisheries) Govt. of Bihar			Source: Wetland report for Ganga River Basin, Environmental Management Plan. June-2012. Constoium Indian Institute of Technology			

Present study observed that all religious and social groups in Dumraon and Buxar like fresh fish (without ice) better than iced or preserved fish. Mainly large and live of fresh fishes are brought by the income groups with ready to pay high price. Whereas, medium and small sized fishes are consumed by the poor people.

### Transportation and handling of fish

Transportation and marketing of any fresh food items is backbone of the food chain. The quality of fish also depends upon the mode of transportation. Fish is generally transported from the place of landing to fish markets and consumers either by road or by rail [12]. The fish transportation system, determines the demand and hygienic condition of fish, it, because with the change of time, fish will perish rapidly, also its value decreases. Dumraon and Buxar gets a very good facility from the topography, as his market is situated near the Ganga river and also at the side of the highway. Two types of fishes are found here as dead fish and live fish. Normally, Singhi, Pangasius, Magur and India Major Carps etc.

## Results and Discussion

### Fishery and wetland resources

Despite abundant of aquatic resources of Bihar in term of about 3,200 km of rivers, 500000 hectares floodplain wetlands area, 9000 hectares of oxbow lakes also called *Mauns*, 25000 hectares of reservoirs and 80,000 hectares of ponds and tanks, fish supply is short of demand in the state of Bihar. Whereas wetlands report in Buxar in term of lake & pond (18.97%), oxbow lakes / cut off meander of the Ganga river (10.65%), water logged areas (0.11%), River/ stream (65.75% and wetlands about (3.66%) reported by Indian Institute of Technology, Consortium-2012) detail predicted in Table1. These recourses offer a great potential for enhancing fish and shell fish production for domestic and international market [10]. Tropical climate is congenial for faster growth of shell fish (freshwater prawn production) and its farming assuming great importance due to high demand, good price and high returns [11,12].

transported as live form. Dead fish carried to the market in box or crates' but live fish by drum. Each drum contains 40-60 kg fish with water. Live fishes also transported by small trucks, tempos, vans, matador, auto-rickshaws etc covered with thick polyethylene and filled with water for long distance transportation by road details presented in Fig. 1 & 2. Fish has carried in to basket, hundy and out of the market by head load; baskets involve un-necessary handling as there is no access of vehicles.

### Fish market structure and channel

In present investigation it is observed that freshwater aquaculture has evolved from a domestic activity to an industrial activity in South Bihar. Indian Major Carps, Exotic Carps and some other fishes like Pugnacious and Rup-Chanda are the main farmed species in these areas and IMC (Catla, Rohu and Mrigal) are the main food for a selective class of people. They also prefer fish like Singhi, Grass carp and freshwater small prawn.

**Table 2:** Show the list of retail selling daily fish markets in Dumraon and Buxar

S. No.	Buxar		Dumraon	
	Name of place	Marketing time	Name of place	Marketing time
1	Fish market (Nagarpalika)	Morn./ Evening	Jangli Bazar	Morning
2	Fish market (Nahar par)	Evening	Sabji bazaar (Gola)	Evening
3	Fish market (Station road)	Morn./Evening	Old Bhojpur Chouk	Evening
4	Fish market(sugar mill)	Morn./evening	Rly. Station road	Morning

The actual and potential buyers describe about character of the structure of the market. It is the place where demand of a product exist <sup>[4]</sup>. The present study in Dumraon fish market is performed only for a few hours in early morning where traders are in favored in fish trading from 6 am to 9 am. From the Buxar fish market, of the fish trading system in the market is unusual to a certain extent details presented in Table 2. In the only one place, fish is mainly trader here. In fish market Dumraon and Buxar, fishermen have not got a fixed space for their business. They sitting for fish selling on road side

(Fig.1&2. There is no stalls for the traders/fishermen and no any sheds are exists. There is no electricity and preservation of fish or freezing facilities. Buxar and Dumraon fish market especially during the rainy season found so poor with hygienic condition. During marketing (rainy season) time these place become so muddy and walking become very complicated. There is no proper drainage system and sanitation received a low priority at all stage of marketing particularly in Buxar main fish market and Gola road Dumraon.



Fig 1: Fish transported by auto rickshaw and marketing Abbedkar fish market Buxar



Fig 2: Fish marketing during evening on road side, Purana Bhojpur, Dumraon

In present investigation were observed that, fish farmers usually culture both Indian Major Carps and Exotic Carps, they were very familiar among the farmers due to known

culture technology, higher growth rate and good market price details presented in Table 3.

Table 3: Average selling price of fish (Rs/Kg) and demand of fish in Buxar and Dumraon.

Buxar				Dumraon			
Fish species	Size of fish	Price	Demand	Fish species	Size of fish	Price	Demand
<b>Indian Major Carps</b>							
Catla	Small	200	High	Catla	Small	200	High
<i>Catla catla</i>	Large	250	High		Large	250	High
Rohu	Small	200	High	Rohu	Small	200	High
<i>Labeo rohita</i>	Large	270	High		Large	275	High
Mrigal	Small	140	Medium Medium	Mrigal	Small	120	Medium Medium
<i>Cirrhinus mrigala</i>	Large	180			Large	170	
<b>Exotic Carps</b>							
Silver carp	Small	80	Medium	Silver Carps	Small	80	Medium
<i>Hypophthalmichthys moltrix</i>	Large	140	High		Large	140	High
Grass carp	Small	80	Medium	grass Carps	Small	80	Medium
<i>Ctenopharyngedon idela</i>	Large	110	High		Large	110	High
Common carp	Small	80	Low Medium	Common carps	Small	80	Low Medium
<i>Cyprinus carpio</i>	Large	150			Large	150	
<b>Other carps</b>							
Bata ( <i>Labeo bata</i> )	-	190	High	Bata		180	High

Puntius spp.	-	100	low	Pontius	90	low
Bighead	-	160	Medium	Bighead	150	Medium
Rup-Chanda	-	130	Medium	Rup-chanda	120	Medium
<b>Cat fishes</b>						
Singhi <i>Heteropneustes spp.</i>	-	400	High	Singhi	400	High
Magur ( <i>Clarius garipinus</i> )	-	140	Medium	Magur ( <i>C. garipinus</i> )	130	Medium
Pungasius spp.	-	160	Medium	Pungasius	160	Medium
Bowari ( <i>W. attu</i> )	-	160	Medium	Bowari ( <i>W. attu</i> )	160	Medium
Tengra ( <i>Mystus</i> )	-	200	High	Tengra	180	High
<b>Others small fishes</b>						
Tilapia, Channa, Cuche	-	130	Medium	Tilapia	120	Medium
Channa spp.	-	140	Medium	Channa,	140	Medium
Freshwater prawn (small)	-	400	high	Small prawn	400	high
Snake head fishes	-	200	Medium	Snake head fishes	200	Medium
Anabas spp.	-	170	Medium	Anabas spp.	170	Medium
Murrel spp.	-	150	Medium	Murrel spp.	150	Medium

Marketing channels play a vital role in facilitating the meeting of the demand for fish. Fish marketing distribution channel are sets of organization that depends on each other involved in a series of action to make a product or service available for use or consumption, <sup>[4]</sup>. Fish marketing channels and its products from source of fishing and method of fishing by channel members (local readers, fishers or fish farmer, whole seller distributor etc. <sup>[13]</sup>.

List of day wise wholesale market and retail markets; during study period following chart indication the path of movement of fish from the producer to the consumers.

1. Fishermen/ producer-consumers
2. Fishermen / producer-retailer-consumers
3. Fishermen/ producer -wholesaler/retailer
4. Fisherman/ producer-commission agent- wholesaler-retailer- consumers

The problems which must be met in the successful transportation and distribution of fish are many and diverse. <sup>[14]</sup> reported the price of fish fluctuated very widely during the fishing season. In fish market Dumraon, Andhra Pradesh fishes only rohu and pugnacious were sold price fluctuated from 150/kg and 100/kg respectively. Mr. Loha Singh fish seller that selling Andhra fish in Dumraon. It is also observed that there was no any involved fisherwoman in transportation and marketing of fish (fish shale) profession in these areas especially in Dumraon, Buxar and Kaimur.

### Price and demand of fish

In present study it is observed that, the daily supply of fish in market depending on the variation in catches during peak or off season. Virtually most of the fish (near about 80%) is locally supplied and near about 20% is imported from outside other part of Bihar, like West Bengal, Andhra Pradesh. <sup>[1]</sup> reported that the fluctuation in price of fish is very high because of the uncertain nature of production, perishable nature and variation in short run supply. Freshwater prawn farming is assuming greater importance due to very high demand, good price and high returns <sup>[14]</sup>. According to species and size wise price of fish be converted into different with season of the year and freshness of fish, for example, among the carp species, Indian major carp (Catla, Rohu, and Mrigal) get a hold of higher price than the exotic carps (Silver, Grass and Common carp) a result very much similar to that the consumers are not willing to pay high prices, but an important factor is lower production costs to allow supplying fish at this place. More or less similar observation reported by <sup>[4]</sup>. In

present investigation, it was observed that the demand of fish especially <sup>[11]</sup>. Indian Major Carp was very high in the Buxar & Dumraon market, but supply was limited. Indian major carps fluctuated from 200-275 Rs/Kg.

Naturally, the price of carp depends on market structure, location, species, quality, size and weight <sup>[15]</sup>. reported the price is also influence by supply and demand of fishes and these are generally seasonal variations in prices with the highest in summer (March to May) and the lowest in winter (November to January), during the fish harvesting season. In present study it is found that the price per kilogram of carp increases with size for both native and exotic species details presented in Table 3. It was also estimated that fish sellers of Buxar & Dumraon fishes sold an average 600 kg and 300 kg per day respectively. It is also observed that most of the fishes in Buxar and Dumraon in fish market were Indian and exotic carps. Small quantities of other fishes like Hilsa, large size *Macrobrachium* prawn & Shrimp and cat fishes were occasionally sold in the market. It was also observed that fishes like Rohu, Pungasius etc were imported from Andhra Pradesh. Some species of fishes like Tengra, Bowari, Pothia and dry fishes were also exported Howrah, Siligudi/day. Compared to the advancements the fish production the fish marketing system is very poor and highly inefficient in India reported by <sup>[16]</sup>. As a result, fish farmer are looking forward to the up gradation of freshwater aqua farming from a domestic activity to an industrial activity.

### Conclusion

Our study indicates that the chain of fish market from producer to retailers goes onward through a number of intermediaries, fish market structure, species, quality; size and weight of fish have an influence on the price of fish. However, the prices of fish were increases and varied per kilogram according to their weight, size and species wise. The demand of fish, especially India Major Carps, Catla (*Catla catla*), Rohu (*Labeo rohita*) and Mrigal (*Cirrhinus mrigala*) is high, but supply limited. Price of IMC fluctuated from 200-275 Rs/Kg. Whereas Singhi (*Heteropneustes spp.*) price was found 400 Rs/Kg, these fishes are the main food for selective class of people and they ready for give high price. The fish marketing infrastructure should be developed by identifying the possible production and collection centers in this area.

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