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Inland Fisheries in Chours and Mons of River Ganges for Inducted Gene Banks

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Abstract

Chours and *mons* are situated on the banks of River Ganges plan of Bihar are important fisheries habitats and probably remained unexplored to a greater extent. The author has tried to identified the reasons why the fisheries of this zone may need to be sustained in long runs.

Keywords: *Chours*, *Mons*, Fisheries in River Ganges, Fish gene pool.

1. Introduction

River basins, suitable for inland fisheries in many Asian countries, the main river and the permanent water bodies create the habitat where the fish can survive until the next flooding (Jensen, J.G., 2001) ^[1]. The study of *chours* and *mons* in Gangetic plane shows a great prospect in capture fisheries development. Since fisheries enhancement techniques like: protection of natural fish resources, stocking, introduction of new species, and cage and pen fish culture and their impact of application of these techniques was enormous (Marttin, F.J.B., 2001) ^[2]. Freshwater bio-diversity concerns are not always wholly addressed by attention to fisheries management or wetland conservation but also the quantity and quality of data (Kottelat, M.; Whitten, T., 1996) ^[6]. Plenty of fisheries resource identified geo-spatially in part of northern Gangetic plane and this zone may be brought under fisheries development programme in years to come. The amount of fish that can be produced, whether by capture from natural systems, or through aquaculture, depends on water quality and water quantity (Kapetsky, J.M., 2000) ^[4]. In this zone a little to moderate human interventions may be required to make these water resources suitable for fisheries exploitation purposes and that too without damaging ecology. The human modification of freshwater systems, water quantity, water quality; inland fisheries, and bio-diversity (Revenge C. *et al*, 2000) ^[3] provides an overview of fisheries ecosystem. The objective of the present study is to observe the inside of *chours* and *mons* with regard to inland fisheries logistics and tried to focused on the hindering factors prevailing, which otherwise and excellent fisheries resource base area situated at middle Ganges plan.

2. Materials and Method

This study area was mainly on the *chours* and *mons* which are created naturally by the course of the river Ganges and it's tributaries in it's long run time span on the middle stretch in the state of Bihar. The basic observations towards the inland fisheries development are mentioned.

- Unorganized - No society. Only natural capture fisheries.
- Many *chours* and *mons* are of this category.
- Organized - Society run, culture based capture fisheries in a few numbers of such organized ownership Govt.ownership -Natural fisheries, no human intervention, Poaching and fish loss during flood is predominant in many places in this regions.

The problem of severity of hydrophytes comes mostly due to the non-operational water bodies in long run, because of less fishing activities and almost negligible human interventions in thus creating a concern in inland fisheries. The major flora identified are mentioned below

- *Ichornea crassipes*
- *Hydrilla*, of submerged type
- *Ipomoea sp*
- *Algae*

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- *Graminicious sp*
- *Nilamba sp.*
- *Macrophytes*

Since these flora are part of the ecology of *Mons* and *Chauras*, has got some beneficial effects, a few species can be treated as feed for some carps, for example *algae* and *hydrilla* are the ideal feeds for Grass carps, provided the same species is recruited.

Flood problem associated with river systems and tributaries. The river water is the source of water resource in *Mons* and *chauras*, during rainy season water is accumulated in this sites and made available for year the round. Since flood is very common natural phenomena, a little of fish loss and interruption in fishing occurs during flood. These rivers, mentioned below, remained silent except during rainy seasons.

- Ganges
- Budi Gandak
- Bagmati
- Baya
- Kamala and Tiljuga

Drainage and sewage

- Pre flood - Entering flood water through some pocket areas
- Post flood - Leaching out of fisheries water
- Canal - Fisheries water are utilized in agriculture
- Industrial effluents - like sugarcane, Beverages & others

Depth of water

It is known that every fish species does prefer an ideal depth of water, at the level species prefer to run, 'fish-run' height. Ideal depth of natural water for inland fisheries should be same or little more than the height of 'fish-run'. Although the height of 'fish run' differs from species to species. But in general most of the major carps, minor carps does like the water height of around six fit, where as the catfishes like water height of more. In the studied area a varying depth of water were observed and mentioned.

- Zero depth (A thin water layer - 1-ft)
- Shallow depth (1-3 ft)
- Medium depth (3-6 ft)
- Heavy depth (More than 6 ft)

In many areas may be a little manmade amendment, by earthing in depth can create ideal structures for inland fisheries in this zone. This zone lack in fish seed owing to non-availability of fisheries hatchery, fish seed from nature are generally good but very much inadequate for stocking in *Chauras* and *mons*.

- Non abundance of fish seed in nature
- Inadequate fisheries hatchery available
- High fish seed mortality during transportation of fish seeds

Water quality of *chauras* and *mons* in general remains in good forms for inland fisheries. Although bottom soil which is most often remains clay in nature, resulting susceptibility in water pollution and thus this provide stress condition for fishes. Water type of this zone are of following types:

- Acidic
- Neutral
- Alkaline

Water retention capacity of most of the *chauras* and *mons* remains throughout the year. And thus facilitates ideal situation for inland fisheries, although a few areas may

suitable for seasonal fisheries, but probably remained unexplored

Assuming that *chauras* and *mons* are to be mainly used for fisheries, a ten points, towards the utilization of fisheries resources, optimally, are identified. Resource features associated with the *chauras* and *mons* and ranked importance of major ten problems, based on people opinions, (particular opinion from single group of a single *chauras* and *mons*) of ten such sites those remained in the districts of Vaishali, Muzaffarpur, Samastipur and Begusarai districts of Bihar. Sites are selected randomly, are given below. The score found is mostly identical from one site to others since prevailing condition in these *chauras* and *mons* are of similar in nature with respect to inland fisheries.

Status	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Ownership problem	1	2	1	1	1	1	2	1	1	1
Water and ecology	6	7	9	7	7	8	9	8	9	8
Weeds and excessive flora	2	1	2	2	2	2	1	2	2	4
Fish pest and diseases	3	3	5	6	4	9	6	5	4	9
Lack of fisheries knowledge	4	6	3	3	3	3	4	3	3	2
Lack of fish seed available	5	4	4	4	5	4	3	4	5	3
Flood water	7	8	7	5	7	7	8	7	6	7
Depth of water	9	5	6	9	6	5	7	6	8	6
Drainage and sewage water	8	9	8	8	9	6	5	9	7	5
Fish market	10	10	10	10	10	10	10	10	10	10

Showing, ranked importance of fisheries hurdles

(iii) Mathematical derivations

Score (equation i) and average score (equation ii), of each problem calculated and based on their values final rank is obtained and shown below.

$$P_i = \sum_{j=1}^n S_{ij} \text{ where, } i=1 \text{ to } 10, j= 1 \text{ to } 10 \text{ ----- (i)}$$

$$P_i = \sum_{j=1}^n S_{ij} / n \text{ where, } i=1 \text{ to } 10, j= 1 \text{ to } 10 \text{ ---- (ii)}$$

(P_i is the i th problem and S_{ij} is the rank associated with j th sampling site)

3. Results and Discussion

Score associated with each problem is calculated and derived, the major problem which apparently seen is the ownership in *chauras* and *mons*. In an earlier study in relation to ownership, it has been found that study of the impact of ownership of fishing rights is depends on ownership and mainly on attitude to entrepreneurship (Sipponen, M, 1998) [5], whereas it has been found there is no or least problem in marketing of fish, since, there is ample of local market as well as in adjoining states.

Based on the simplified mathematical equation (i) and eq. (ii) and factors identified in this following order

- Ownership problem
- Weeds and flora
- Lack of fisheries knowledge
- Lack of fish seed available
- Fish pest and diseases
- Depth of water
- Flood water
- Drainage & sewage water
- Poor water quality and ecology
- Fish market

4. Conclusion

Towards the inland fisheries development at *mons* and *chaurs* ownership is critical. A few Mons and Chauris where delineation is distinct and permanent are auctioned for limited years and fisheries are performed. Besides a many partially delineated one but certainly have some potential resources for fisheries remained unused. Where, may be, bidders or initiators of fisheries are not knowing how to access those water bodies. Or maybe this water bodies are not given importance for fisheries due to undefined reasons. Thus ownership of such water-bodies will remain in bay unless the clear policies are decided. Water weeds and floating hydrophytes are part of fisheries ecology, their abundance can be reduced once fishing activity starts, it is assumed that mainly uncultured water bodies remained weed choked. Thus this hurdle can be resolved by means of fisheries operations. In this connection knowledge in fisheries, specially fish species selection, stock composition, etiology and disease and pest management in the resource areas of *chaurs* and *mons* needs to build awareness among local communities and to develop active fisheries resource people may be lacking.

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